

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS4000**

Model

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

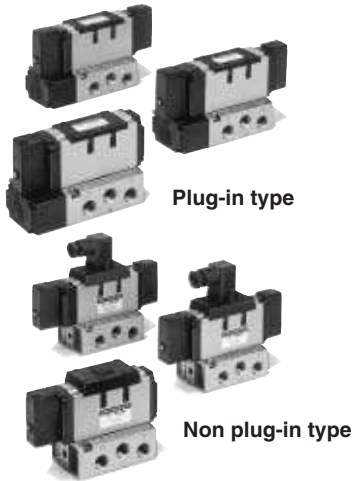
Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency. Note 2) Based on JIS B 8375-1981 (The value at supply press. 0.5 MPa).
 Note 3) The figures in the above list are for without sub-plate. In the case of with plug-in sub-plate and with non plug-in sub-plate, add 0.50 kg and 0.43 kg respectively. Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

Compact yet provides a large flow capacity
1/2: C: 12 dm³/(s·bar)

Low power consumption: 1.8 W DC

Easy maintenance

2 types of sub-plates:
Plug-in and non plug-in



JIS Symbol

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

Standard Specifications

Valve specifications		Fluid	
Maximum operating pressure		Air/Inert gas	
Minimum operating pressure		1.0 MPa	
Proof pressure		0.1 MPa	
Ambient and fluid temperature		0.15 MPa	
Lubrication		1.5 MPa	
Pilot valve manual override		Non-lube ⁽²⁾	
Shock/Vibration resistance		Non-locking push type (Flush)	
Enclosure		150/50 m/s ² ⁽³⁾	
Coil rated voltage		Type E: Dustproof (level 0), Type F: Dripproof (level 2), Type D: Splashproof (level 4) ⁽⁴⁾	
Allowable voltage fluctuation		100, 200 VAC, 50/60 Hz; 24 VDC	
Coil insulation type		-15 to +10% of rated voltage	
Apparent power (Power consumption) AC		Class B or equivalent (130°C) ⁽⁵⁾	
Inrush Holding		5.6 VA/50 Hz, 5.0 VA/60 Hz	
Power consumption DC		3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz	
Electrical entry		1.8 W (2.04 W: With light/surge voltage suppressor)	
		Plug-in type: Conduit terminal	
		Non plug-in type: Grommet terminal, DIN terminal	

Note 1) Use dry air at low temperatures.
 Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.
 Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)
 Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

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

Option Specifications

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


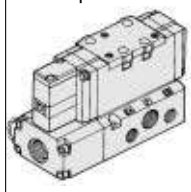
Note) Operating pressure: 0 to 1.0 MPa
 Pilot pressure 2 position: 0.1 to 1.0 MPa, 3 position: 0.15 to 1.0 MPa

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

How to Order

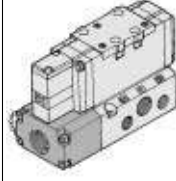
Body type

O: Plug-in type sub-plate

Electrical entry

F: Plug-in type conduit terminal



Porting specifications

Nil	Side ported
B*	Bottom ported

* In the case of external pilot (Option), bottom piping is not available.

Port size

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

* EA, EB: Rc 3/8

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Plug-in **VFS4 2 0 0** — **5 F** — **03**

Non plug-in **VFS4 2 1 0** — **1 E** — **03**

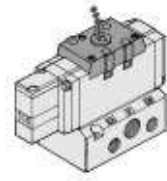
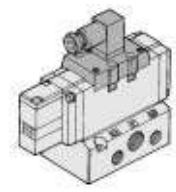
Option

Nil	None
Z	With light/surge voltage suppressor
P*	Non-rotating DIN terminal

* In the case of w/ "Z", enter "ZP".
* Type "P" is available for DIN type only.

Electrical entry

E:	Grommet terminal
D:	DIN terminal

Coil rated voltage

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

* Option

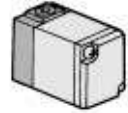
Pilot type

Nil	Internal pilot
R*	External pilot

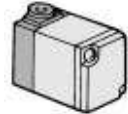
* Option

Pilot valve Manual override


Nil: Non-locking push type (Flush)




A*: Non-locking push type (Extended)



B*: Locking type (Tool required)



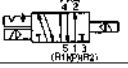
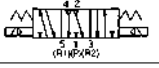
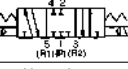
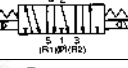


C*: Locking type (Lever)



* Option

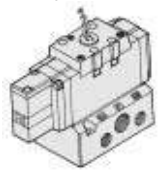
Symbol

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

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

Body type

1: Non plug-in type sub-plate



Body option

0	Standard
1*	Direct manual override


* Option

How to Order Pilot Valve Assembly

SF4 - 1 F - 30

Coil rated voltage	Manual override
1 100 VAC, 50/60 Hz	Nil Non-locking push type (Flush)
2 200 VAC, 50/60 Hz	A* Non-locking push type (Extended)
3* 110 to 120 VAC, 50/60 Hz	B* Locking type (Tool required)
4* 220 VAC, 50/60 Hz	C* Locking type (Lever)
5 24 VDC	
6* 12 VDC	
7* 240 VAC, 50/60 Hz	
9* Other	

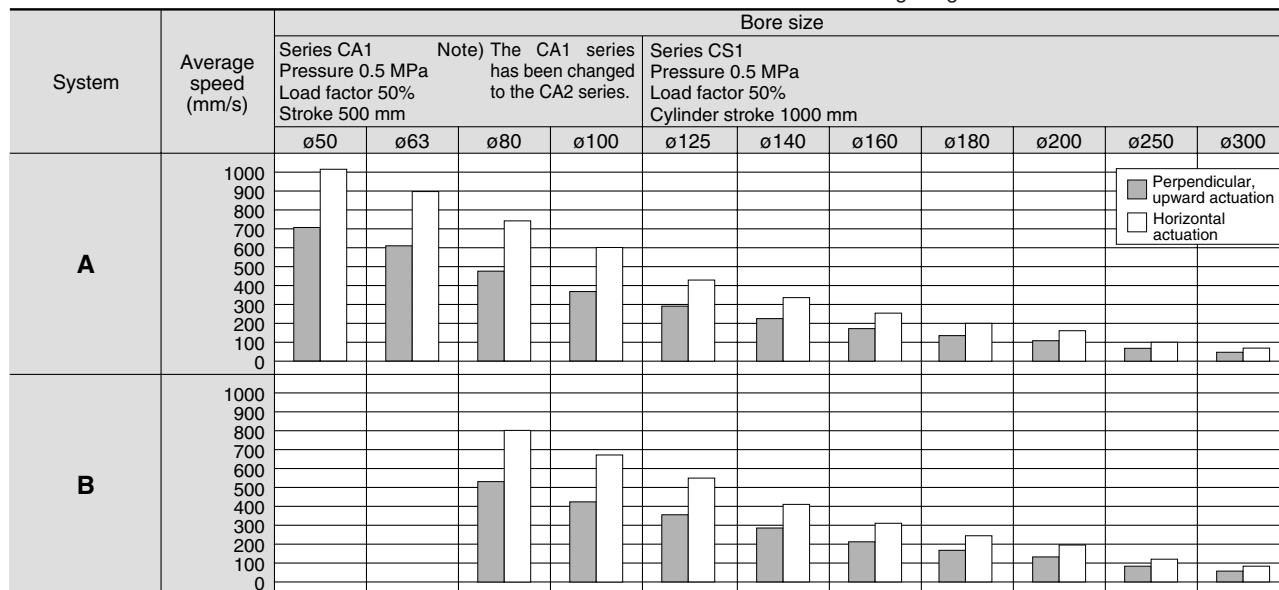
* Option

 * Refer to page 3-8-5 for voltage conversion.

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000

Cylinder Speed Chart

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



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

System Components

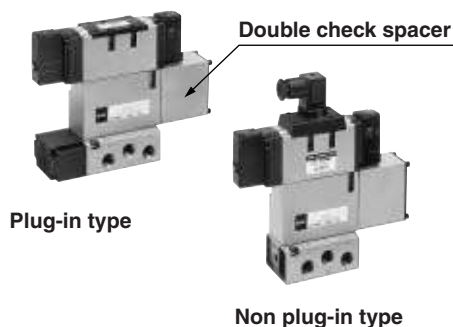
System	Solenoid valve	Speed controller	Silencer	SGP (Steel pipe) Port size x Length
A	Series VFS4000 Rc 3/8	AS420-03 (S = 73 mm ²)	AN300-03 (S = 60 mm ²)	10A x 1
B	Series VFS4000 Rc 1/2	AS420-04 (S = 97 mm ²)	AN400-04 (S = 90 mm ²)	15A x 1

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

Double Check Spacer/Specifications

Can hold an intermediate cylinder position for an extended time

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



Specifications

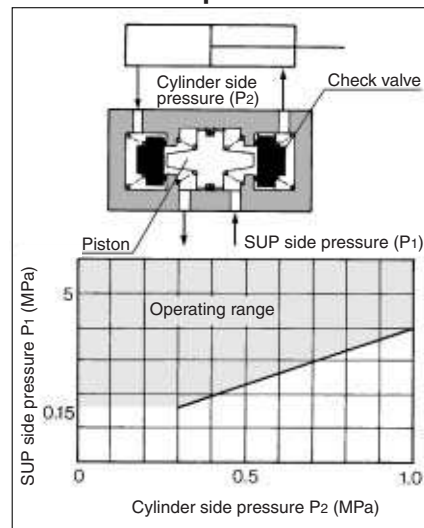
Double check spacer part no.	Plug-in type	Non plug-in type	
	VVFS4000-22A-1	VVFS4000-22A-2	
Applicable valve model	VFS4400-□F	VFS4410-□D VFS4410-□E	
Leakage * (cm ³ /min)	Solenoid one side energized	P	EA 230 EB or less
		P	EA 230 EB or less
	Solenoid both sides de-energized	A	EA 0
		B	EB 0

* Supply pressure: 0.5 MPa

⚠ Caution

- In the case of 3 position double check valve (VFS46□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

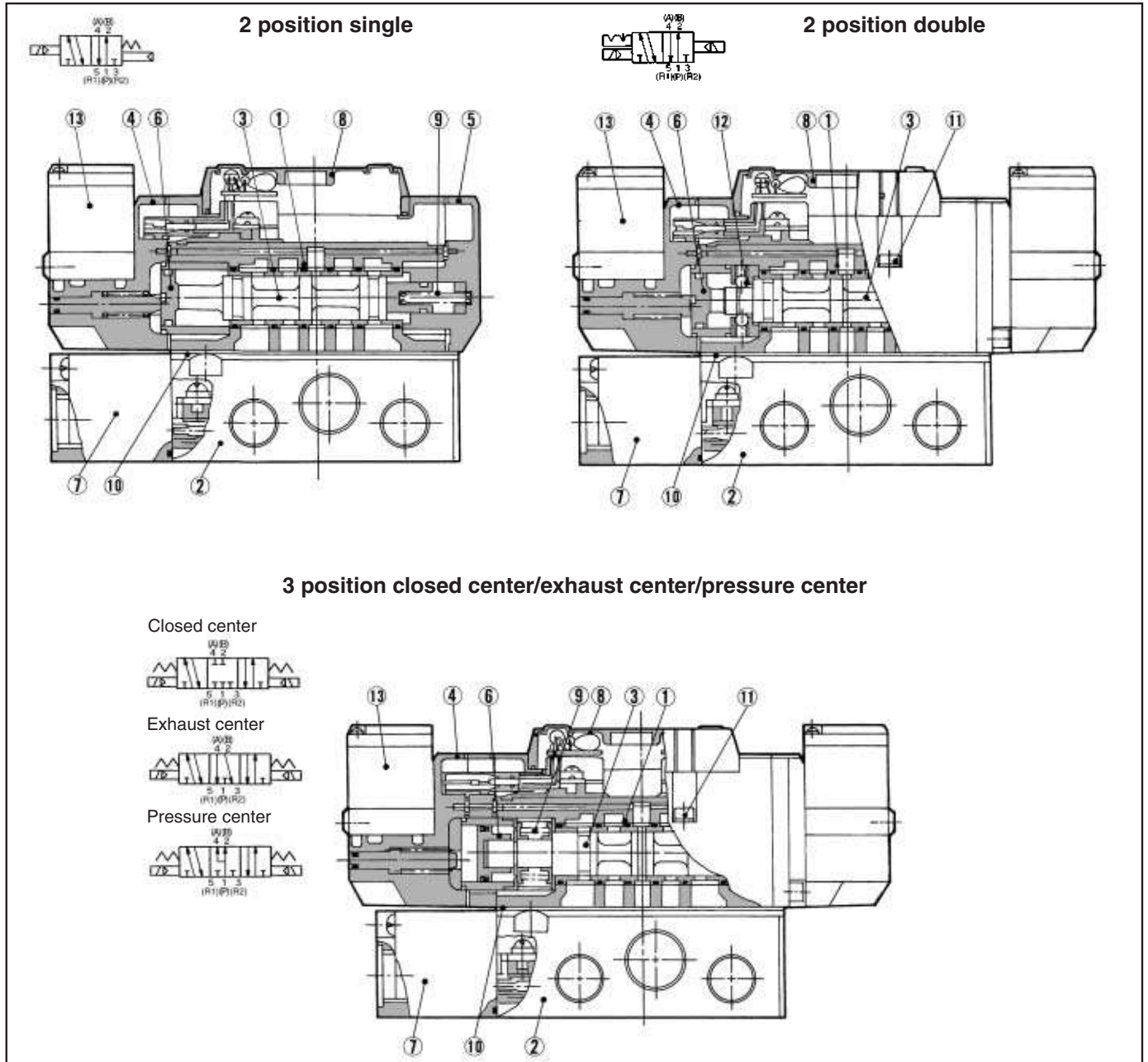
Check Valve Operation



- The combination of VFS41□0, VFS42□0 and Double check spacer for prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

Series VFS4000

Construction




Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Sub-plate	Aluminum die-casted	Platinum silver
③	Spool/Sleeve	Stainless steel	—
④	Adapter plate	Aluminum die-casted	Black
⑤	End plate	Aluminum die-casted	Black
⑥	Piston	Resin	—
⑦	Junction cover	Resin	—
⑧	Light cover	Resin	—

Sub-plate Assembly Part No.

Plug-in	VFS4000-P- ⁰³ / ₀₄
Non plug-in	VFS4000-S- ⁰³ / ₀₄

 * Mounting bolt and gasket are not included.

Part no. for mounting bolt and gasket
BG-VFS4000

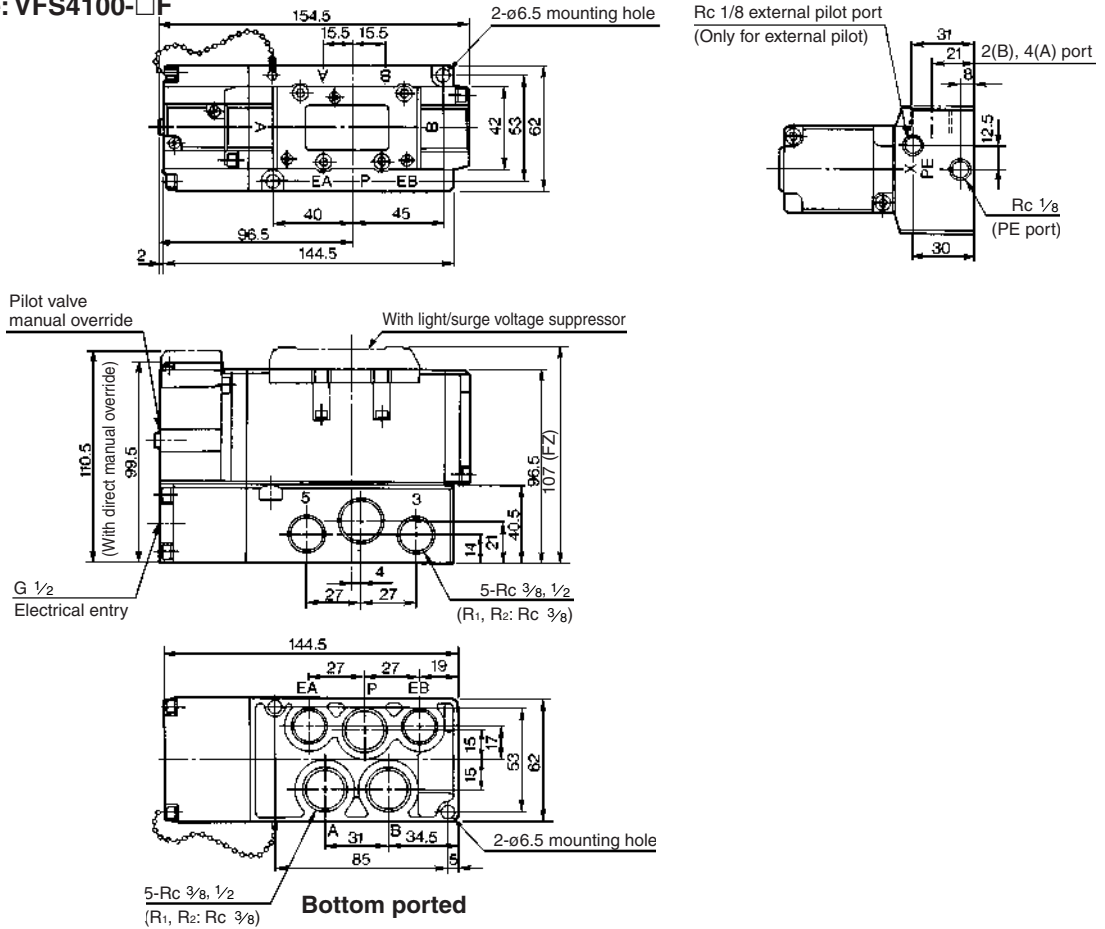
Replacement Parts

No.	Description	Material	Part no.		
			VFS41□□	VFS42□□	VFS43□□/44□□/45□□
⑨	Return spring	Stainless steel	VF4000-18-1	—	VF4000-18-2A
⑩	Gasket	NBR	VF4000-20-1	VF4000-20-1	VF4000-20-1
⑪	Hexagon socket head screw	Steel	M4 x 40	M4 x 40	M4 x 40
⑫	Detent assembly	—	—	VF4000-12A	—
⑬	Pilot valve assembly	—	Refer to "How to Order Pilot Valve Assembly" on page 3-8-70.		

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000

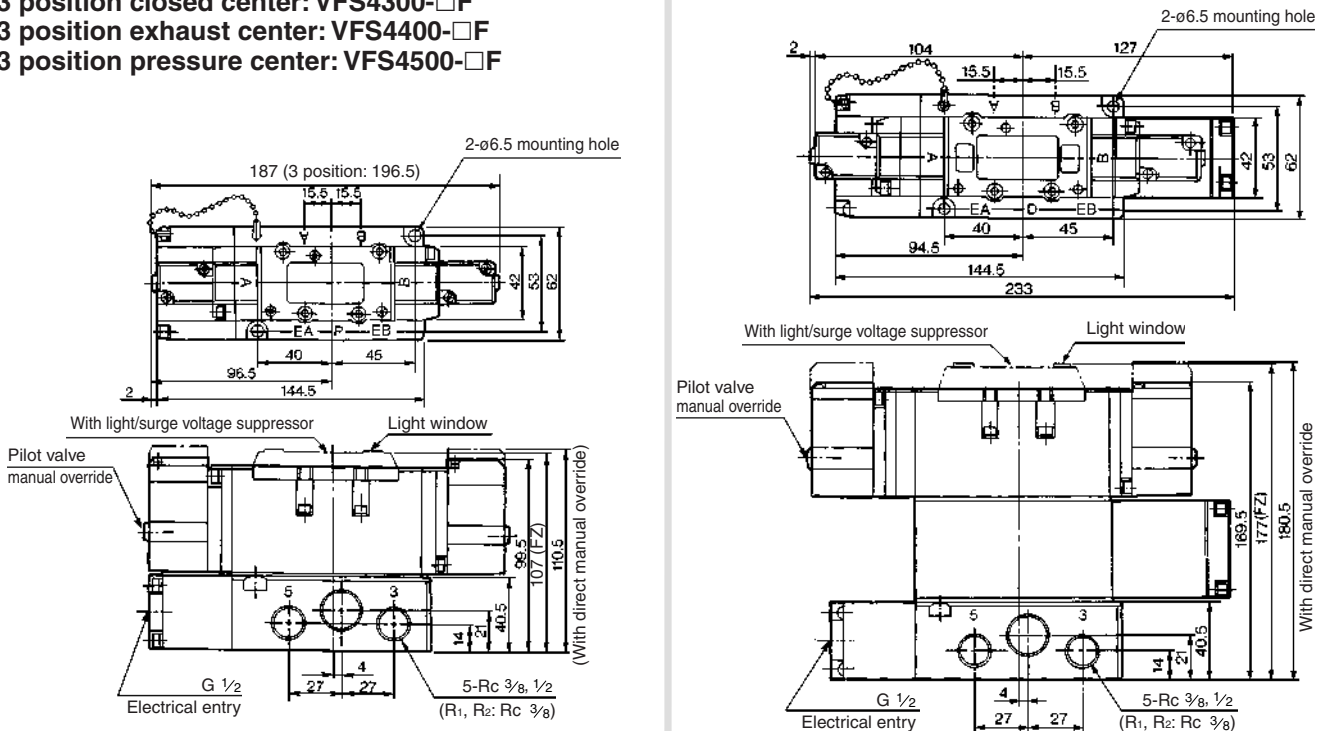
Plug-in 2 position single/double, 3 position closed center/exhaust center/pressure center/double check

2 position single: VFS4100-□F



- 2 position double: VFS4200-□F
- 3 position closed center: VFS4300-□F
- 3 position exhaust center: VFS4400-□F
- 3 position pressure center: VFS4500-□F

3 position double check: VFS4600-□F

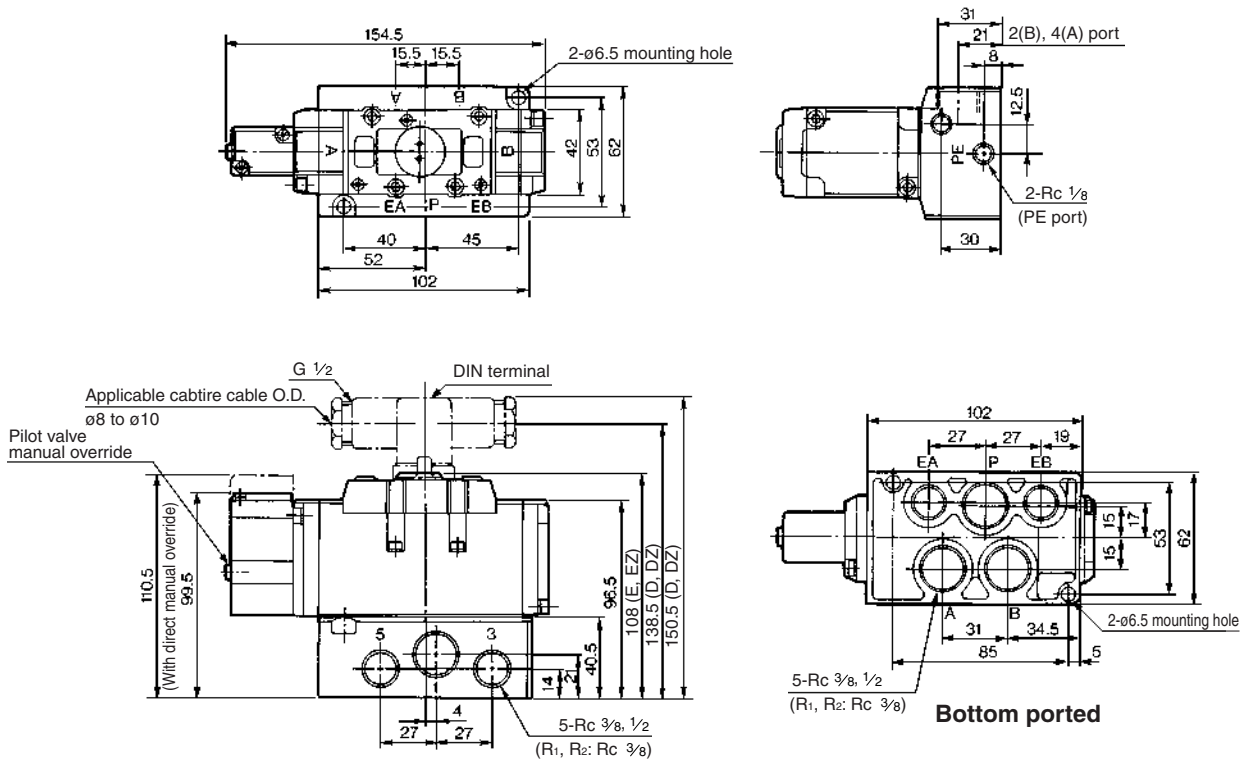


- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS**
- VS4
- VQ7
- EVS
- VFN

Series VFS4000

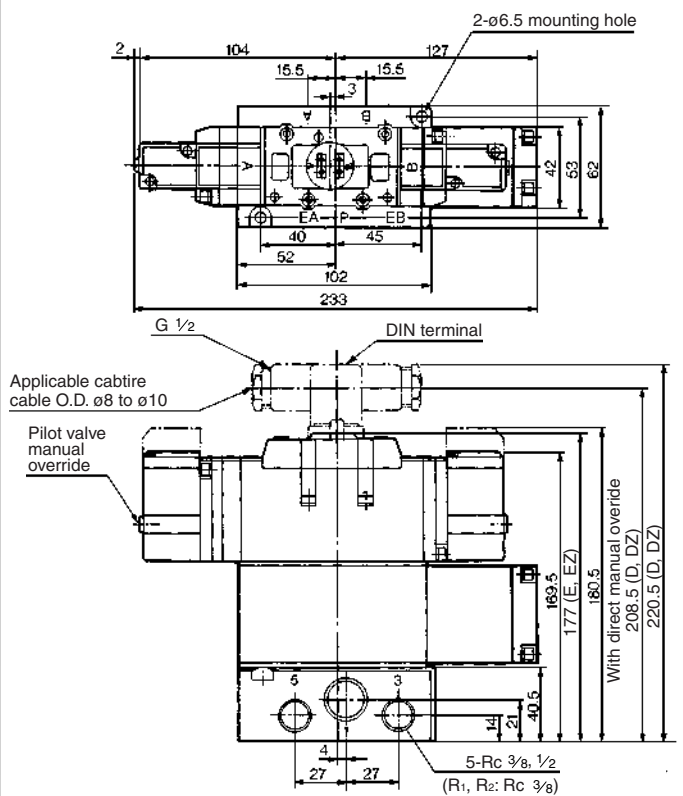
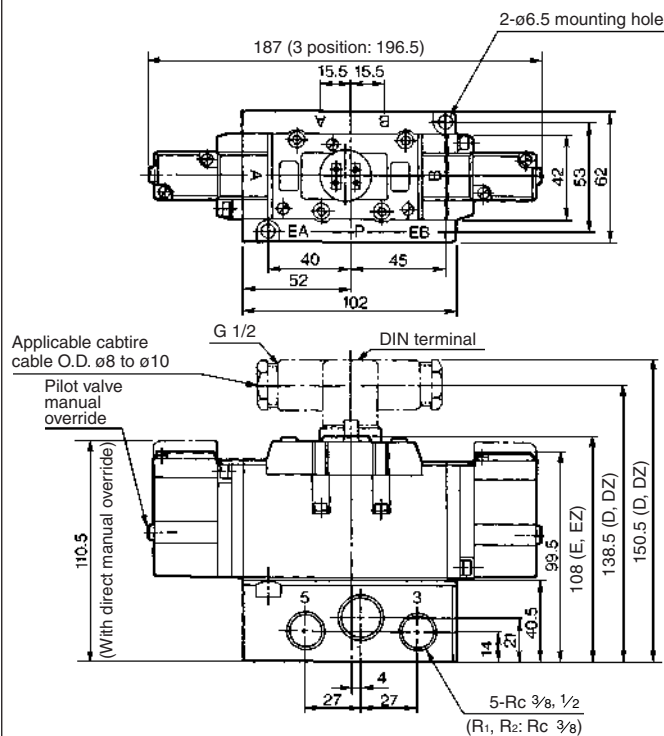
Non Plug-in 2 position single/double, 3 position closed center/exhaust center/pressure center/double check

2 position single: VFS4110-□E, VFS4110-□D



2 position double: VFS4210-□E, VFS4210-□D
3 position closed center: VFS4310-□E, VFS4310-□D
3 position exhaust center: VFS4410-□E, VFS4410-□D
3 position pressure center: VFS4510-□E, VFS4510-□D

3 position double check: VFS4610-□E, VFS4610-□D

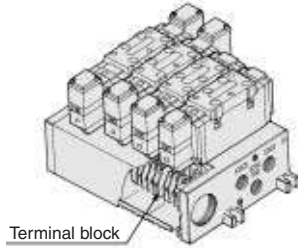


Series VFS4000

Manifold Specifications

Plug-in Type: With Terminal Block

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



VV5FS4 - 01T - 06 1 - 03

Series VFS4000 Manifold
Plug-in type with terminal block

Stations	
02	2 stations
⋮	⋮
10	10 stations

Port size

Symbol	P, R1, R2	A, B
03	Rc 1/2	Rc 3/8
04	Rc 1/2	Rc 1/2
M	Mixed	

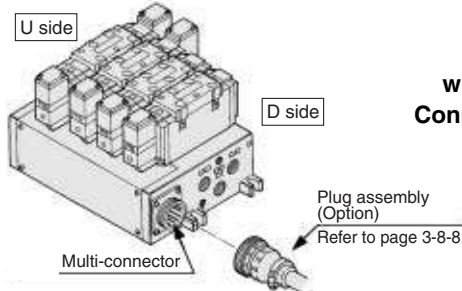
Thread type	
Nil	Rc
N*	NPT
T*	NPTF
F*	G

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

* For bottom ported, Rc 3/8 is only available.

Plug-in Type: With Multi-connector (Wiring specifications: Refer to page 3-8-8.)

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



VV5FS4 - 01C D - 05 2 - 03

Series VFS4000 Manifold
Plug-in type with multi-connector
Connector mounting direction

Stations	
02	2 stations
⋮	⋮
08*	8 stations

Port size

Symbol	P, R1, R2	A, B
03	Rc 1/2	Rc 3/8
04	Rc 1/2	Rc 1/2
M	Mixed	

Thread type	
Nil	Rc
N*	NPT
T*	NPTF
F*	G

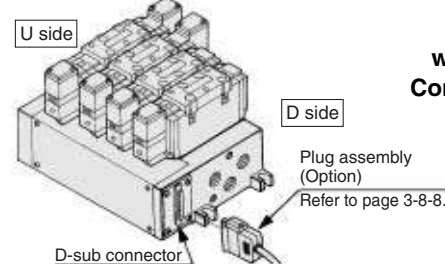
D	D side mounting
U	U side mounting

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

* For bottom ported, Rc 3/8 is only available.

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

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



VV5FS4 - 01F D - 06 1 - 03

Series VFS4000 Manifold
Plug-in type with D-sub connector
Connector mounting direction

Stations	
02	2 stations
⋮	⋮
08*	8 stations

Port size

Symbol	P, R1, R2	A, B
03	Rc 1/2	Rc 3/8
04	Rc 1/2	Rc 1/2
M	Mixed	

Thread type	
Nil	Rc
N*	NPT
T*	NPTF
F*	G

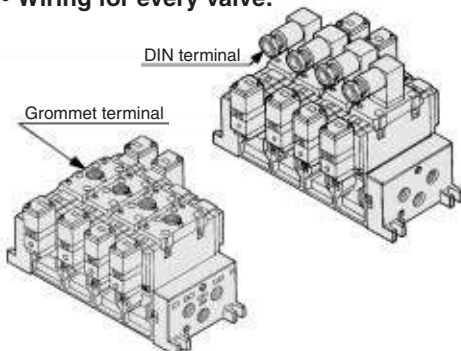
D	D side mounting
U	U side mounting

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

* For bottom ported, Rc 3/8 is only available.

Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



VV5FS4 - 10 - 05 2 - 03

Series VFS4000 Manifold
Non plug-in type

Stations	
02	2 stations
⋮	⋮
10	10 stations

Port size

Symbol	P, R1, R2	A, B
03	Rc 1/2	Rc 3/8
04	Rc 1/2	Rc 1/2
M	Mixed	

Thread type	
Nil	Rc
N*	NPT
T*	NPTF
F*	G

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

* For bottom ported, Rc 3/8 is only available.

Series VFS4000

How to Order Manifold Assembly

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

<Example>

- Plug-in type with terminal block: 6 stations
(Manifold base) VV5FS4-01T-061-03 1
(2 position single) VFS4100-5FZ 3
(2 position double) VFS4200-5FZ 2
(Blanking plate) VVFS4000-10A 1
- Non plug-in type: 6 stations
(Manifold base) VV5FS4-10-061-04 1
(2 position single) VFS4110-5D 5
(3 position exhaust center) VFS4410-5D 1
(Individual EXH spacer) VVFS4000-R-04-2 1

Manifold Specifications

Base model	Wiring	Porting specifications	Port size Rc		Stations	Applicable valve model
		A, B port	P, EA, EB	A, B		
Plug-in type VV5FS4-01□	• With terminal block • With multi-connector • With D-sub connector	Side/ Bottom	1/2	3/8, 1/2	2 to 10*	VFS4□00-□F
Non plug-in type VV5FS4-10	• DIN terminal • Grommet terminal					VFS4□10-□D VFS4□10-□E



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

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

Model	Passage/Stations	Station 1	Station 5	Station 10	
VV5FS4	1 → 4/2 (P → A/B)	C [dm ³ /(s·bar)]	10.5	10.5	10.5
		b	0.20	0.20	0.20
		Cv	2.5	2.5	2.5
	4/2 → 5/3 (A/B → R1/R2)	C [dm ³ /(s·bar)]	11	11	11
		b	0.20	0.20	0.20
		Cv	2.9	2.9	2.9



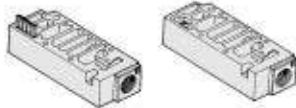
* Port size: Rc 1/2

Manifold Option Parts Assembly

Individual SUP spacer

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

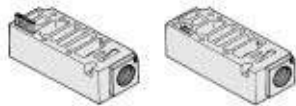
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-P-03-1	VVFS4000-P-03-2



Individual EXH spacer

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

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



* SUP block 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 or when a reverse pressure valve is used to a standard manifold valve, insert EXH block disk in between stations to separate valve exhaust.

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



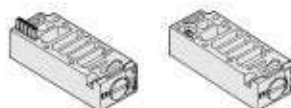
EXH block disk

SUP block disk

Throttle valve spacer

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

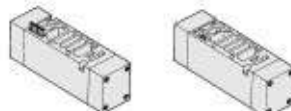
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-20A-1	VVFS4000-20A-2



Double check spacer

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

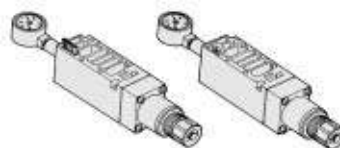
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-22A-1	VVFS4000-22A-2



Interface regulator

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

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



Blanking plate

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

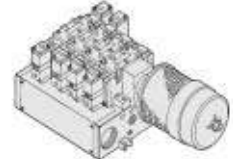
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-10A	

Manifold Option

With exhaust cleaner

Plug-in type/Non Plug-in type

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

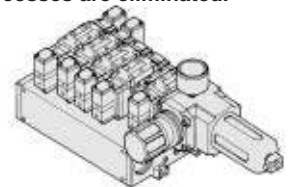


For details, refer to page 3-8-79.

With control unit

Plug-in type/Non Plug-in type

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

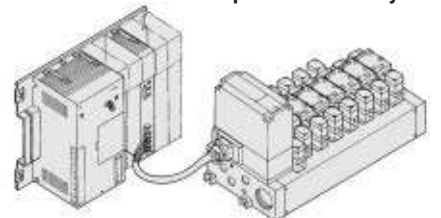


For details, refer to page 3-8-81.

With serial interface unit for serial transmission

Plug-in type

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

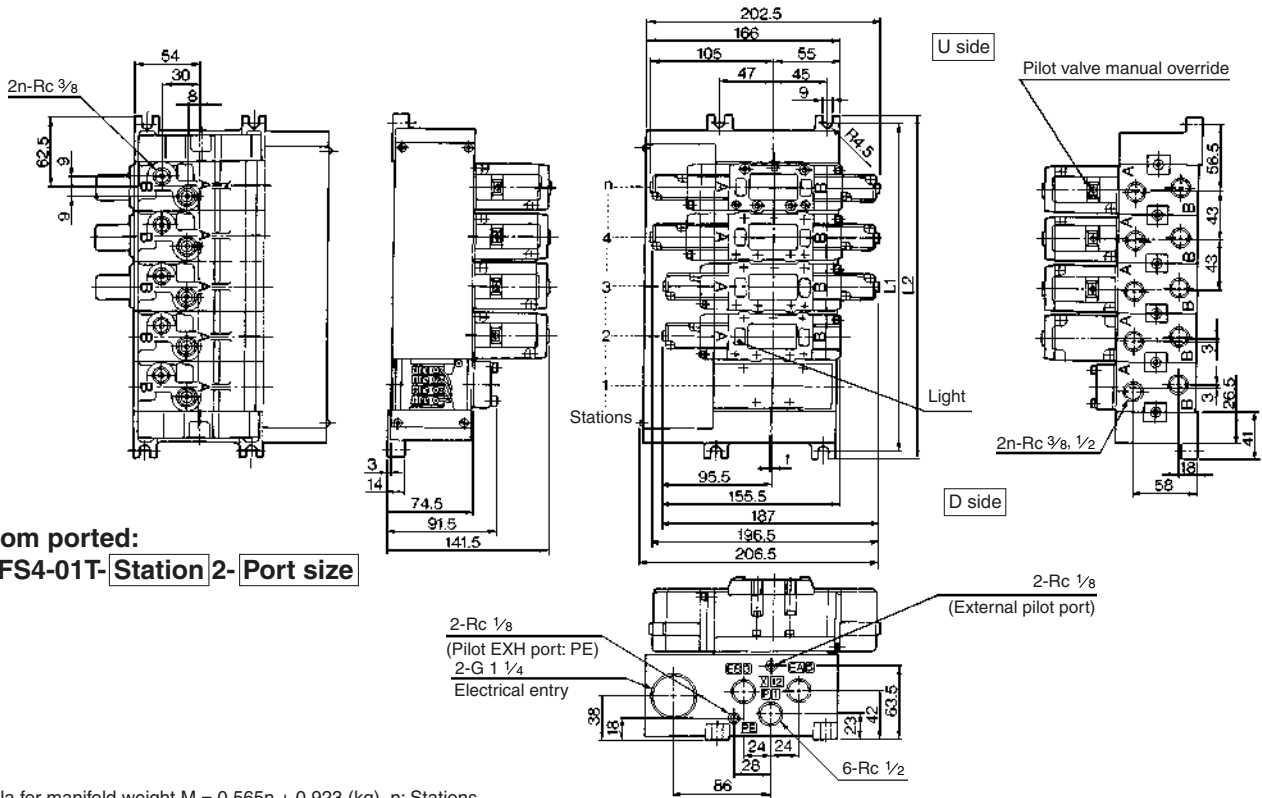


For details, refer to "Serial Transmission" catalog separately.

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000

Manifold Plug-in type, Non plug-in type

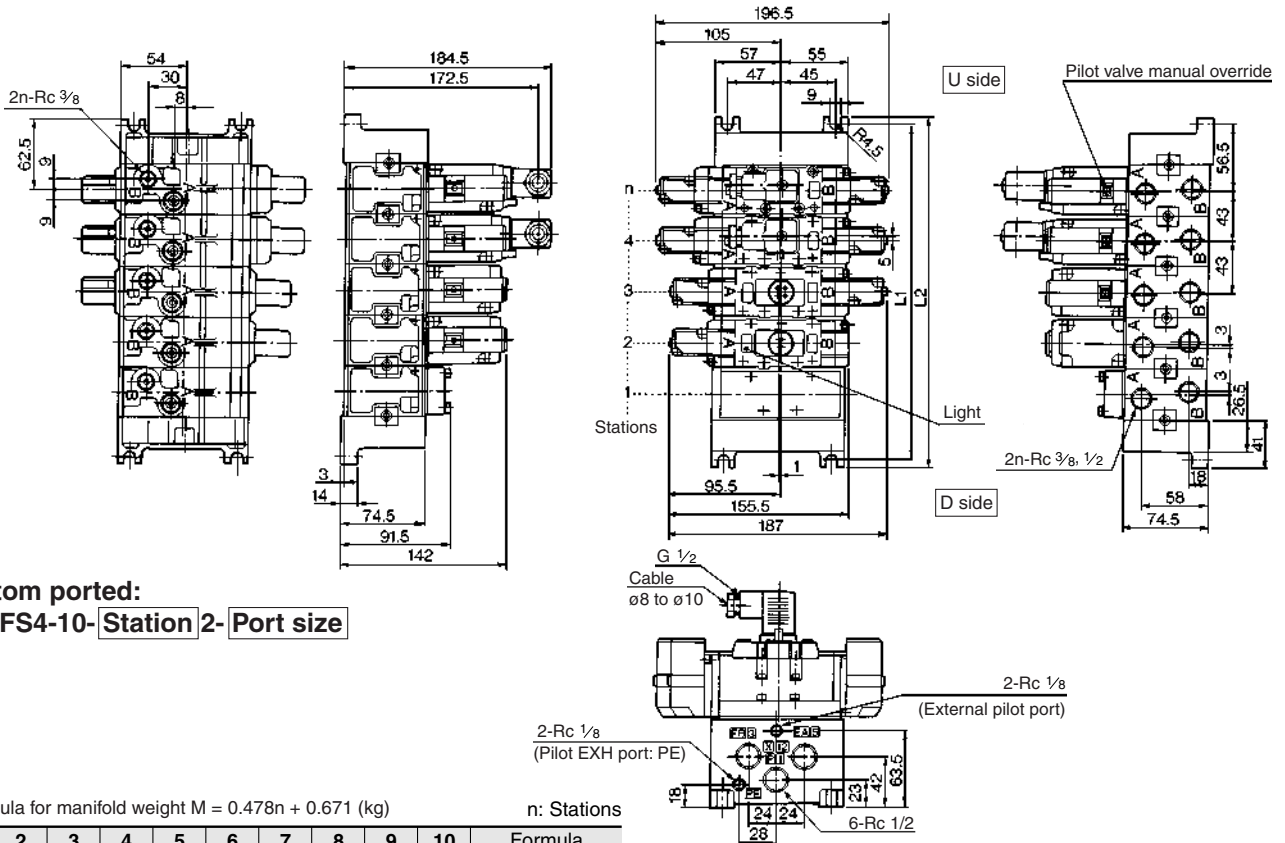
Plug-in type (With terminal block): VV5FS4-01T- Station 1- Port size



Bottom ported: VV5FS4-01T- Station 2- Port size

Formula for manifold weight $M = 0.565n + 0.923$ (kg) n: Stations

Non plug-in type: VV5FS4-10- Station 1- Port size



Bottom ported: VV5FS4-10- Station 2- Port size

Formula for manifold weight $M = 0.478n + 0.671$ (kg) n: Stations

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

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

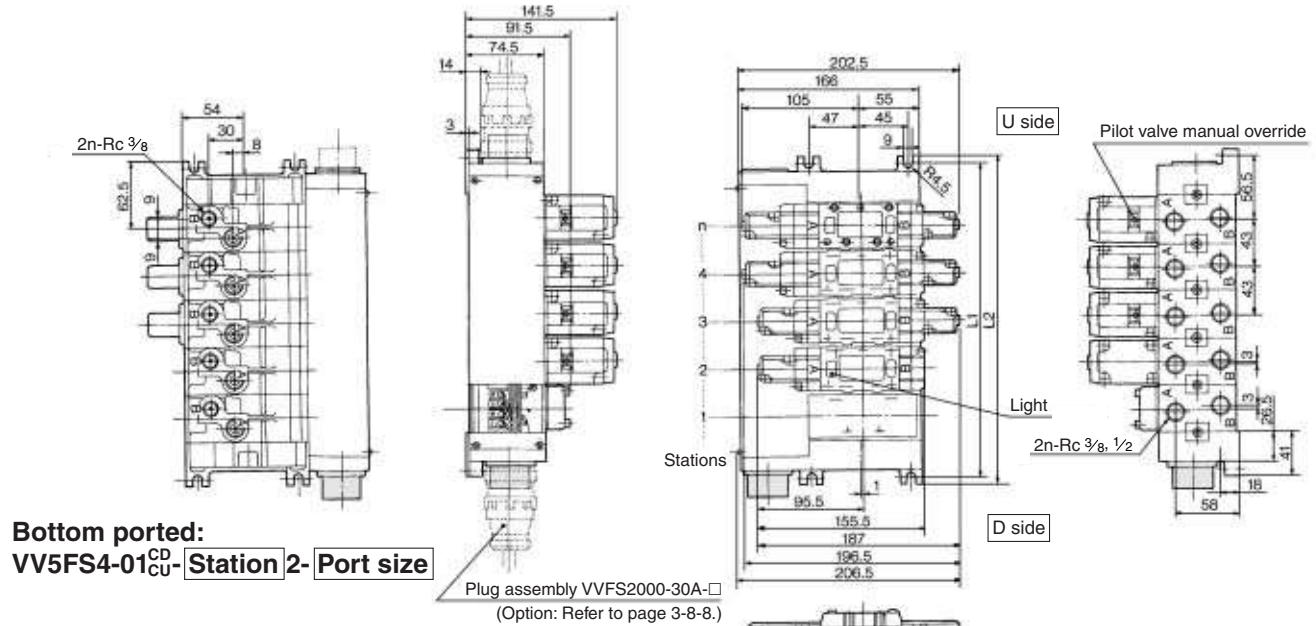
EVS

VFN

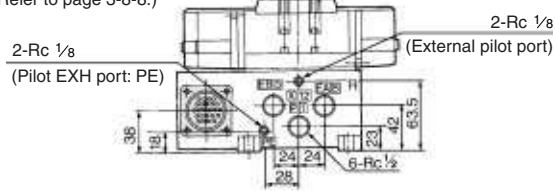
Series VFS4000

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

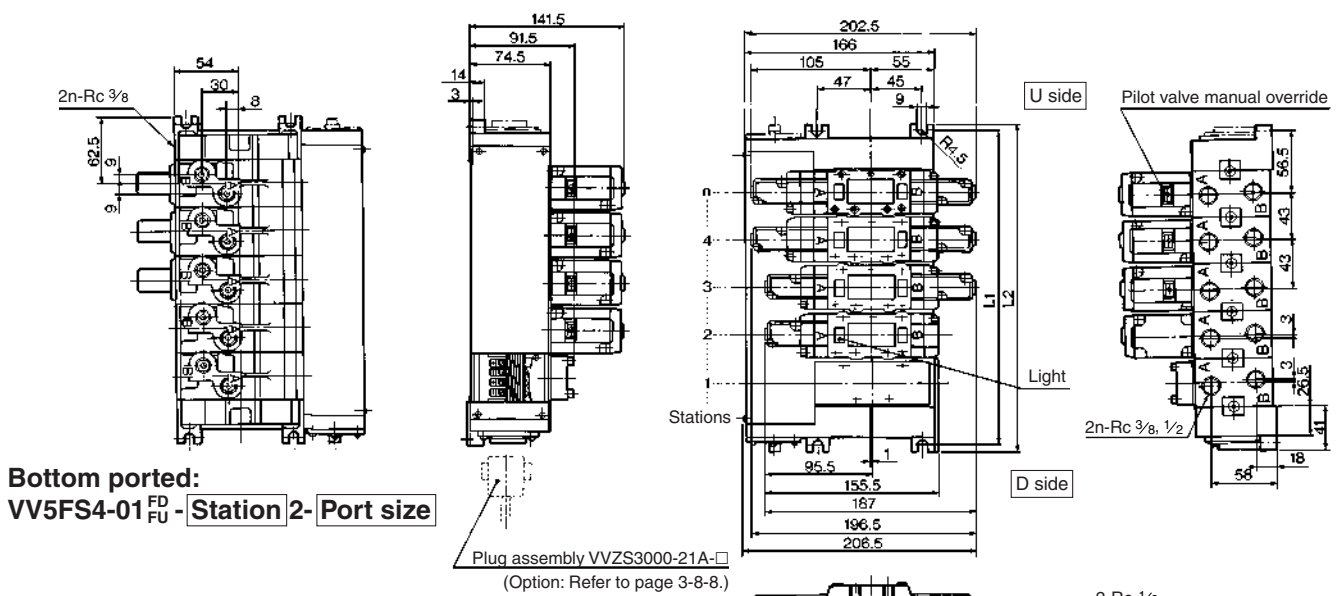
Plug-in type with multi-connector: VV5FS4-01CD-Station 1- Port size, VV5FS4-01CU-Station 1- Port size



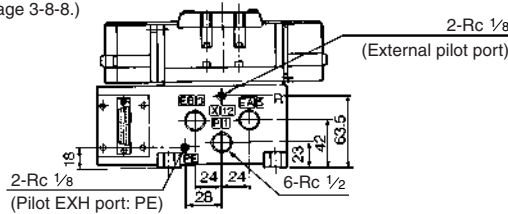
Formula for manifold weight $M = 0.57n + 1.011$ (kg) n: Station
 * Wiring specifications: Refer to page 3-8-8.



Plug-in type with D-sub connector: VV5FS4-01FD-Station 1- Port size, VV5FS4-01FU-Station 1- Port size



Formula for manifold weight $M = 0.57n + 0.935$ (kg)
 * Wiring specifications: Refer to page 3-8-8.

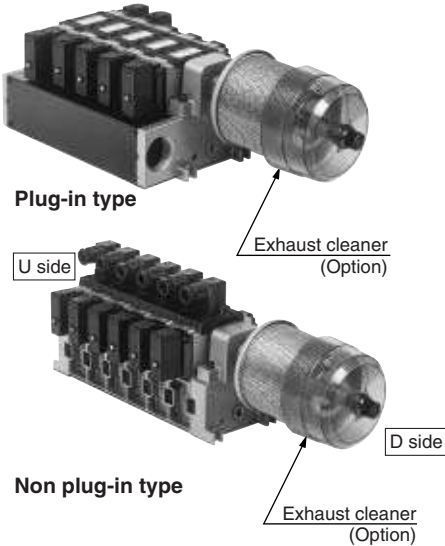


Stations	2	3	4	5	6	7	8	Formula
L ₁	156	199	242	285	328	371	414	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	L ₂ = 43 x n + 82

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000

Manifold with Exhaust Cleaner

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



Manifold Specifications

Manifold	Plug-in type: VV5FS4-01□	Non plug-in type: VV5FS4-10
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS4□00-□F	VFS4□10-□D, VFS4□10-□E
Porting specifications	Common SUP/Common EXH	
	2(B), 4(A) port Rc	Side: Rc 3/8, 1/2, Bottom: Rc 3/8 (Option)
Stations	1(P), 3(R2), 5(R1) port	P: Rc 1/2, EXH: Rc 1, 1 1/2
Applicable exhaust cleaners	2 to 10 ⁽¹⁾	
	AMC610-10 (Connecting port size R 1), AMC810-14 (Connecting port size R 1 1/2) ⁽²⁾	

- Note 1) With multi-connector, or with D-sub connector: 8 stations max.
Note 2) Stations of 5 or more and high frequency of operation should be used with AMC810-14. Exhaust cleaners AMC610-10 and AMC810-14 are not attached.

How to Order

VV5FS4-10-06-1-03-CD

Series VFS4000
Manifold

Base type/Electrical entry

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

Connector mounting direction

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

Stations

02	2 stations
⋮	⋮
10	10 stations

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

Exhaust cleaner mounting direction

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

* Please indicate exhaust cleaner size or port size.

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Port size

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

* For bottom ported, Rc 3/8 is only available.

Symbol

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

* Option

⚠ Caution

When using an exhaust cleaner, mount it downwards.



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

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

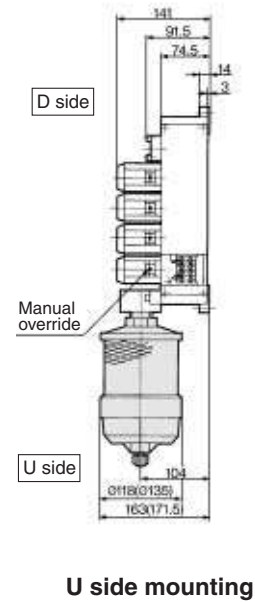
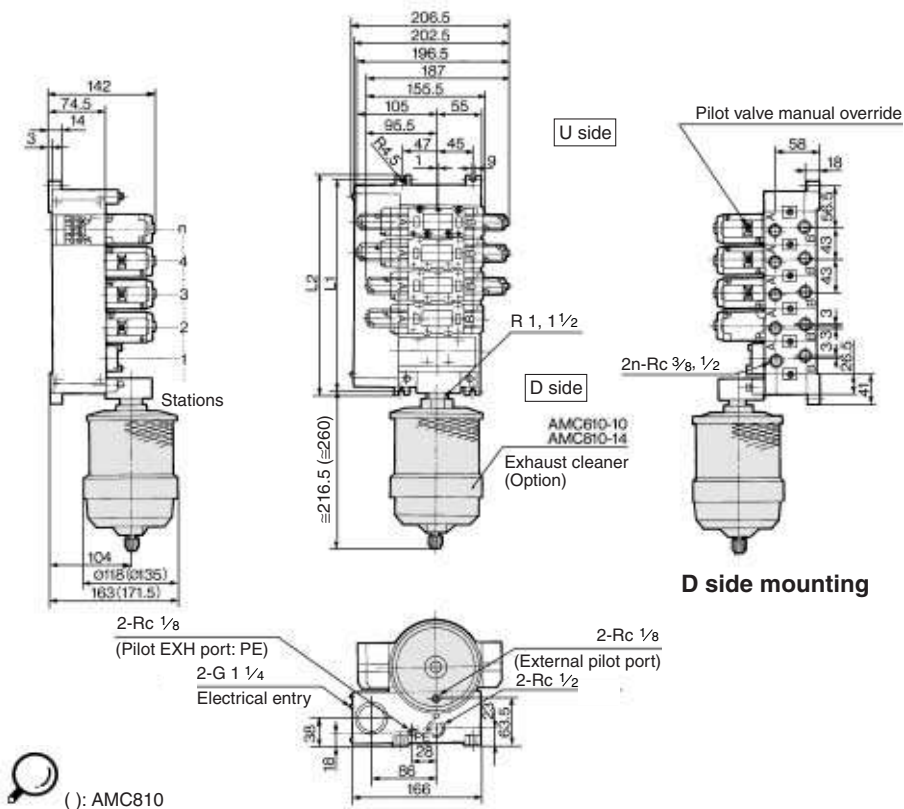
<Example>

- Plug-in type with terminal block (6 stations)
 - (Manifold base) VV5FS4-01T-061-03-CD 1
 - (2 position single) VFS4100-5FZ 3
 - (2 position double) VFS4200-5FZ 2
 - (Blanking plate) VVFS4000-10A 1
 - (Exhaust cleaner) AMC610-10 1
- Non plug-in type (6 stations)
 - (Manifold base) VV5FS4-10-061-04-CU 1
 - (2 position single) VFS4110-5E 3
 - (2 position double) VFS4210-5E 2
 - (Blanking plate) VVFS4000-10A 1
 - (Exhaust cleaner) AMC810-14 1

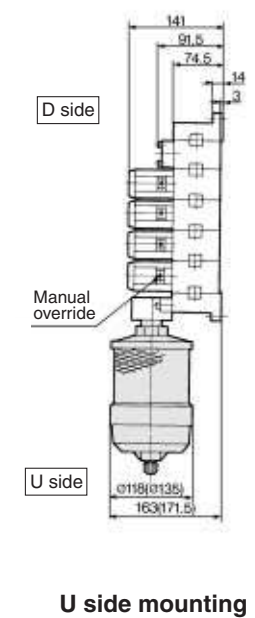
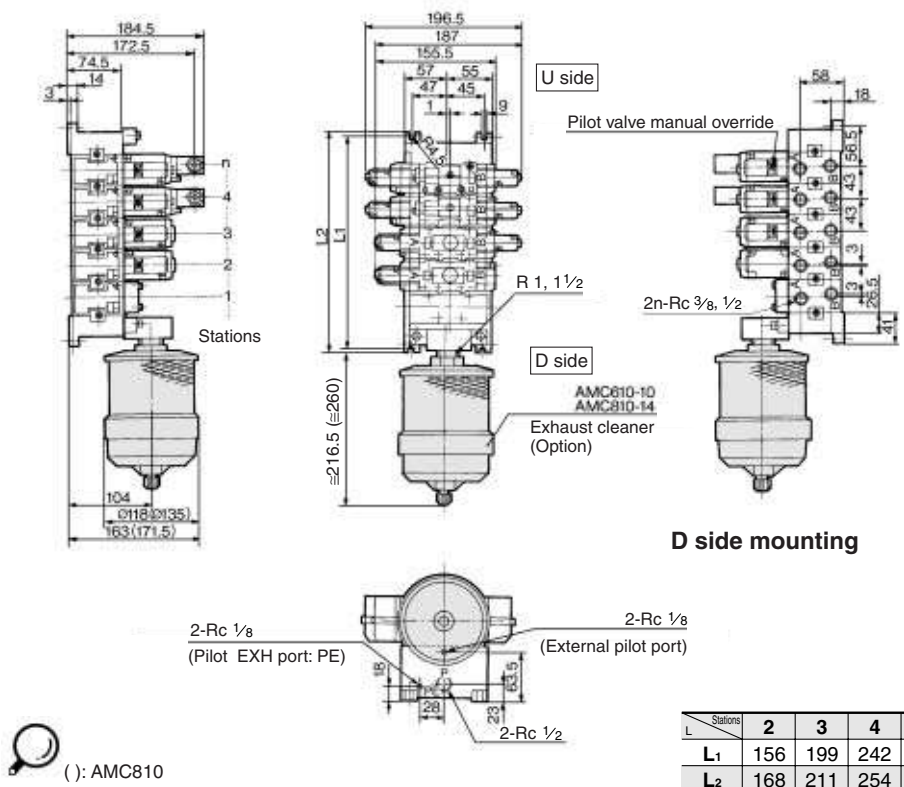
Series VFS4000

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

Plug-in type: VV5FS4-01T- Station 1- Port size -^{CD}_{CU}



Non plug-in type: VV5FS4-10- Station 1- Port size -^{CD}_{CU}



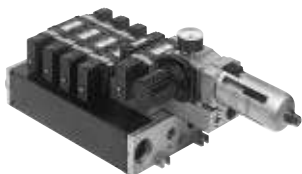
n: Stations

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

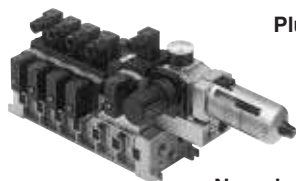
5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000

Manifold with Control Unit

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



Plug-in type



Non plug-in type

Caution

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

Manifold Specifications

Manifold	Plug-in type: VV5FS4-01□	Non plug-in type: VV5FS4-10
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS4□00-□F	VFS4□10-□D, VFS4□10-□E
Porting specifications Rc	Common SUP, Common EXH	
	2(B), 4(A) port	Side: Rc 3/8, 1/2, Bottom: Rc 3/8
	1(P), 3(R2), 5(R1) port	Side: Rc 1/2
Stations	2 to 10*	

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

Control Unit Specifications

Air filter (With auto-drain/With manual drain)	
Filtration degree	5 μm
Regulator	
Set pressure (Outlet pressure)	0.05 to 0.85 MPa
Pressure switch ⁽¹⁾	
Set pressure range: OFF	0.1 to 0.6 MPa
Differential	0.08 MPa or less
Contact	1a
Indicator light	LED (RED)
Max. switch capacity	2 VA AC, 2 W DC
Max. operating current	24 VAC/DC or less: 50 mA
	48 VAC/DC: 40 mA
	100 VAC/DC: 20 mA
Air release valve (Single only)	
Operating pressure range	0.1 to 1.0 MPa

Control Unit/Option

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

- Note 1) Voltage: 24 VDC to 100 VAC
Inner voltage drop: 4 V
- Note 2) Combination of a valve VFS41□□ (single) and a release valve spacer can be used as an air release valve.
- Note 3) The non plug-in type cannot be mounted afterwards.

How to Order

VV5FS4-01C D-08 1-03 □-AP □

Series VFS4000 Manifold

Base type/Electrical entry

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

Connector mounting direction

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

Stations

02	2 stations
:	:
10*	10 stations

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

Symbol

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

* Option

Port size

Symbol	P, R1, R2	A, B
03		Rc 3/8
04	Rc 1/2	Rc 1/2
M		Mixed

* For bottom ported, Rc 3/8 is only available.

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Air release valve coil rating

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

Control unit type

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

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

<Example>

- Plug-in type with terminal block: In order to mount control unit, it requires 2 stations.
 - (Manifold base) VV5FS4-01T-081-03-AP5 1
 - (2 position single) VFS4100-5FZ 4
 - (2 position double) VFS4200-5FZ 2
- Non plug-in type: In order to mount control unit, it requires 2 stations.
 - (Manifold base) VV5FS4-10-061-03-A 1
 - (2 position single) VFS4110-5D 4

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

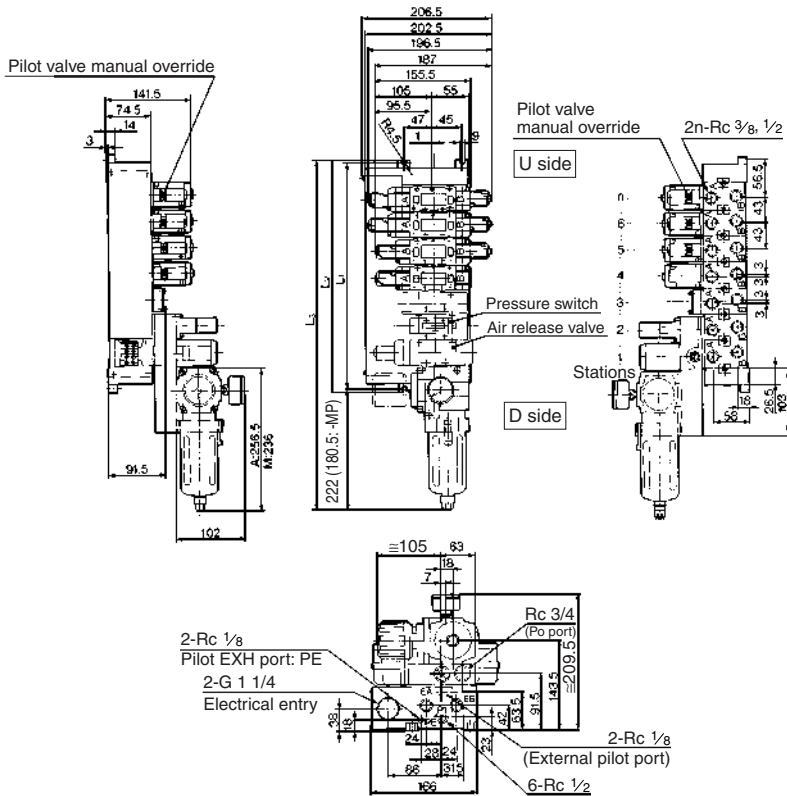
EVS

VFN

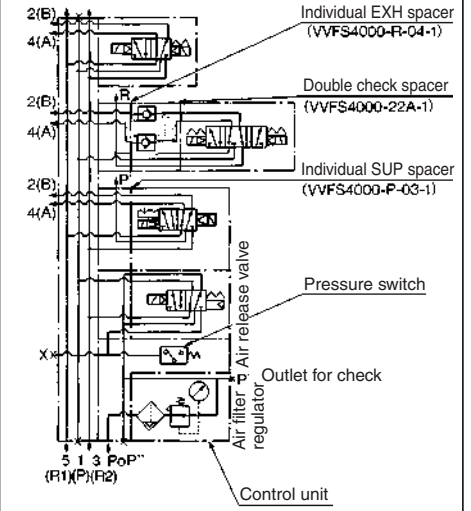
Series VFS4000

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

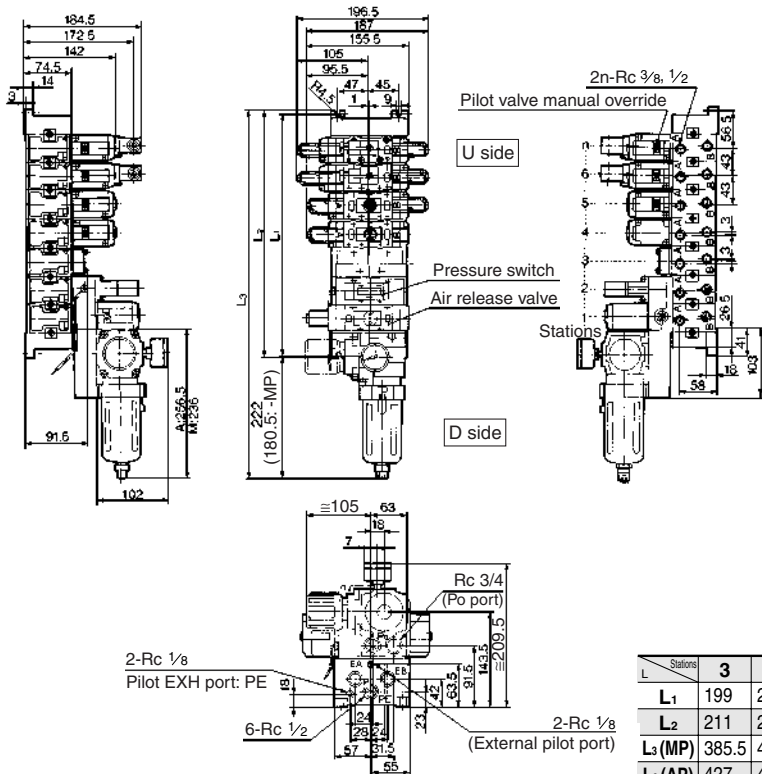
Plug-in type: VV5FS4-01T-Station 1- Port size -AP Voltage for release valve



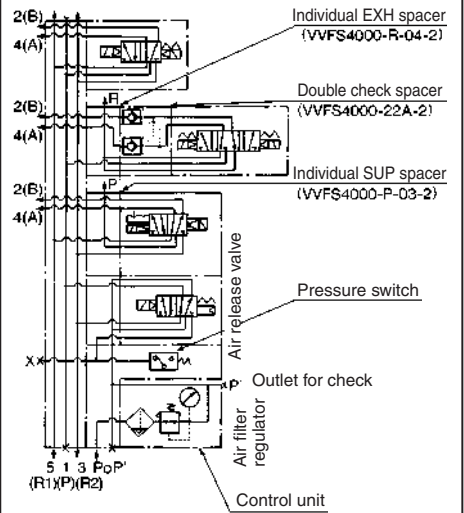
Example for manifold



Non plug-in type: VV5FS4-10-Station 1- Port size -AP Voltage for release valve



Example for manifold

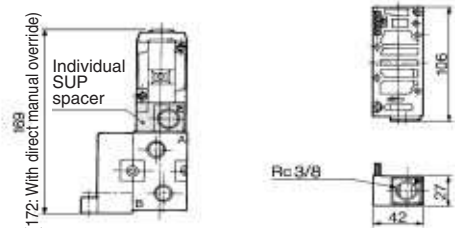


		n: Stations								
L	Stations	3	4	5	6	7	8	9	10	Formula
L ₁		199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70
L ₂		211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82
L ₃ (MP)		385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L ₃ = 43 x n + 256.5
L ₃ (AP)		427	470	513	556	599	642	685	728	L ₃ = 43 x n +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

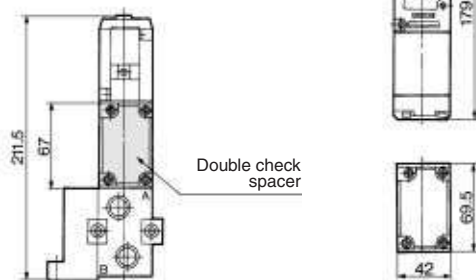
5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000

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

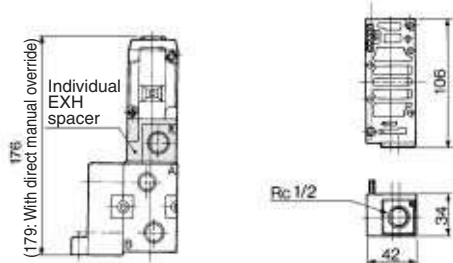
Individual SUP spacer:
 VVFS4000-P-03-1 (Plug-in type)
 VVFS4000-P-03-2 (Non plug-in type)



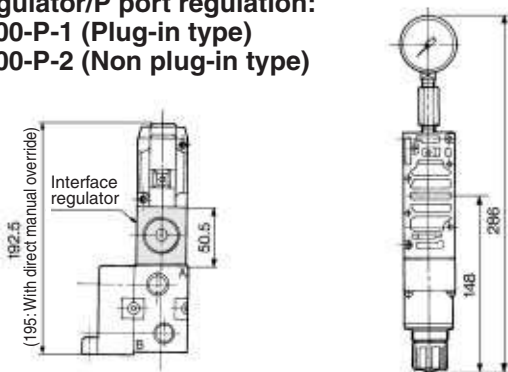
Double check spacer:
 VVFS4000-22A-1 (Plug-in type)
 VVFS4000-22A-2 (Non plug-in type)



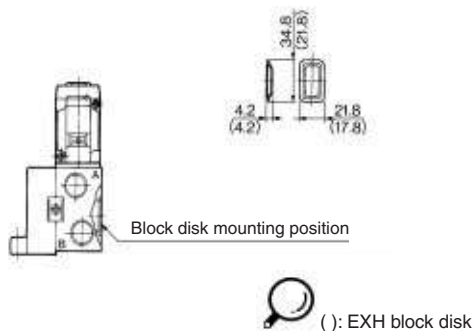
Individual EXH spacer:
 VVFS4000-R-04-1 (Plug-in type)
 VVFS4000-R-04-2 (Non plug-in type)



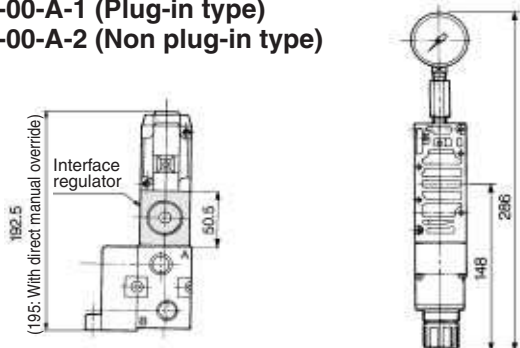
Interface regulator/P port regulation:
 ARBF4050-00-P-1 (Plug-in type)
 ARBF4050-00-P-2 (Non plug-in type)



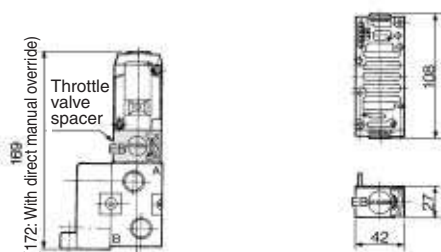
SUP block disk: AXT634-10A
EXH block disk: AXT634-11A



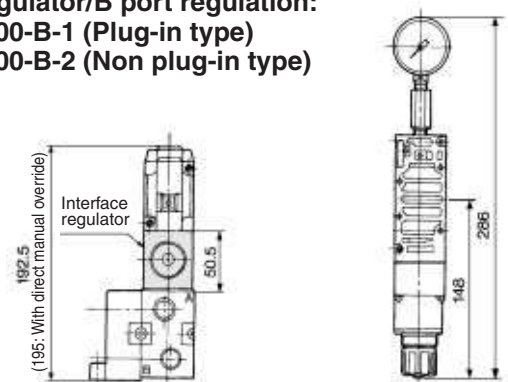
Interface regulator/A port regulation:
 ARBF4050-00-A-1 (Plug-in type)
 ARBF4050-00-A-2 (Non plug-in type)



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



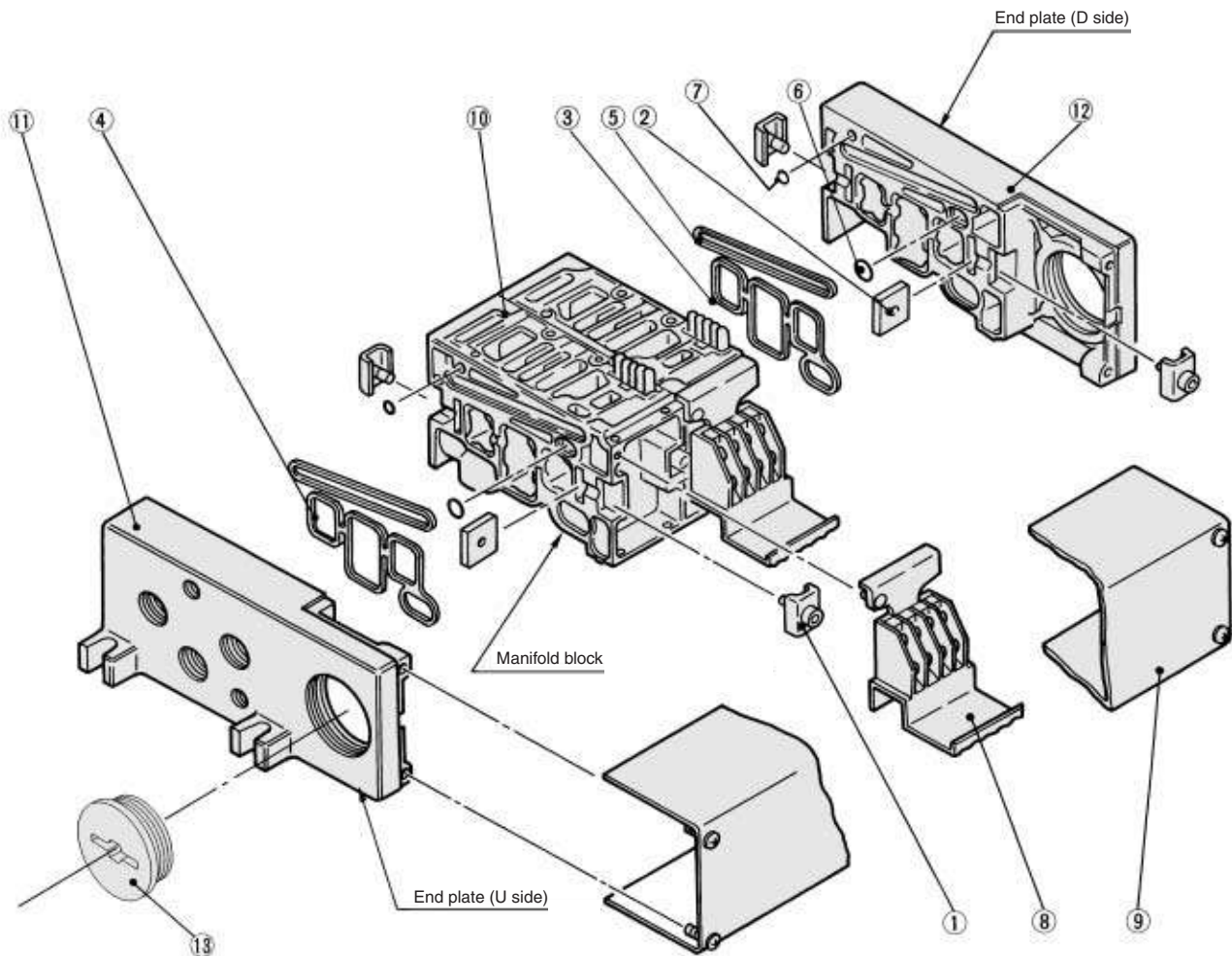
Interface regulator/B port regulation:
 ARBF4050-00-B-1 (Plug-in type)
 ARBF4050-00-B-2 (Non plug-in type)



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

Series VFS4000

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



Replacement Parts

No.	Description	Material	Part no.
①	Connection fitting A	Steel plate	VVF4000-5-1A
②	Connection fitting B	Steel plate	VVF4000-5-2
③	Gasket	NBR	VVF4000-7 (End plate)
④	Gasket	NBR	VVF4000-7-1 (Manifold block)
⑤	Gasket	NBR	VVF4000-8
⑥	O-ring	NBR	AS568-011
⑦	O-ring	NBR	P-3
⑧	Terminal assembly	—	VVF4000-6A
⑨	Junction cover assembly	For 01T	VVF4000-4A- <small>[Stations]</small>
		For 01SU	AZ738-30A- <small>[Stations]</small>
⑬	Rubber plug	NBR	AXT336-9

- For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly ⑩. For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.

Replacement Parts: Sub Assembly

No.	Description	Assembly part no.	Component parts	Applicable manifold base
⑩	Manifold block assembly	VVF4000-1A-1- <small>03</small> / <small>04</small>	Manifold block ⑩, Terminal ⑧, Metal joint ①, ②, Gasket ④, Receptacle assembly	Plug-in type
		VVF4000-1A-2- <small>03</small> / <small>04</small>	Manifold block ⑩, Metal joint ①, ②, Gasket ④	Non plug-in type
⑪	End plate (U side) assembly	VVF4000-2A-1	End plate (U) ⑪, Metal joint ①, ②	Plug-in type
		VVF4000-2A-2	End plate (U) ⑪, Metal joint ①, ②	Non plug-in type
⑫	End plate (D side) assembly	VVF4000-3A-1	End plate (D) ⑫, Metal joint ①, ②, Gasket ③, ⑤, O-ring ⑥, ⑦	Plug-in type
		VVF4000-3A-2	End plate (D) ⑫, Metal joint ①, ②, Gasket ③, ⑤, O-ring ⑤, ⑥	Non plug-in type

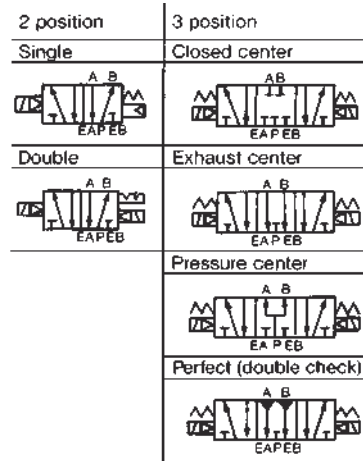


Note) Manifold Base/Construction: Plug-in type with terminal block.

MODEL
NVFS4000

Position	Number Of Solenoid	Type Plug-In	Port Size (NPTF)	Cv Factor	Response Time (ms)
2 Position	Single	NVFS4100	3/8	3.3	40 or less
			1/2	6	
	Double	NVFS4200	3/8	3.3	15 or less
			1/2	3.6	
3 Position	Closed Center	NVFS4300	3/8	2.8	50 or less
			1/2	3	
	Exhaust Center	NVFS4400	3/8	2.8	50 or less
			1/2	3	
	Pressure Center	NVFS4500	3/8	3.2	50 or less
			1/2	3.4	
Perfect (Double Check)	NVFS4600	3/8	1.7	55 or less	
		1/2	1.8		

SYMBOLS



TECHNICAL
SPECIFICATIONS
STANDARD

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

Note 1) Use Dry Air at Low Temperature
 Note 2) Use Turbine Oil No 1 (ISOVG32), if lubricated

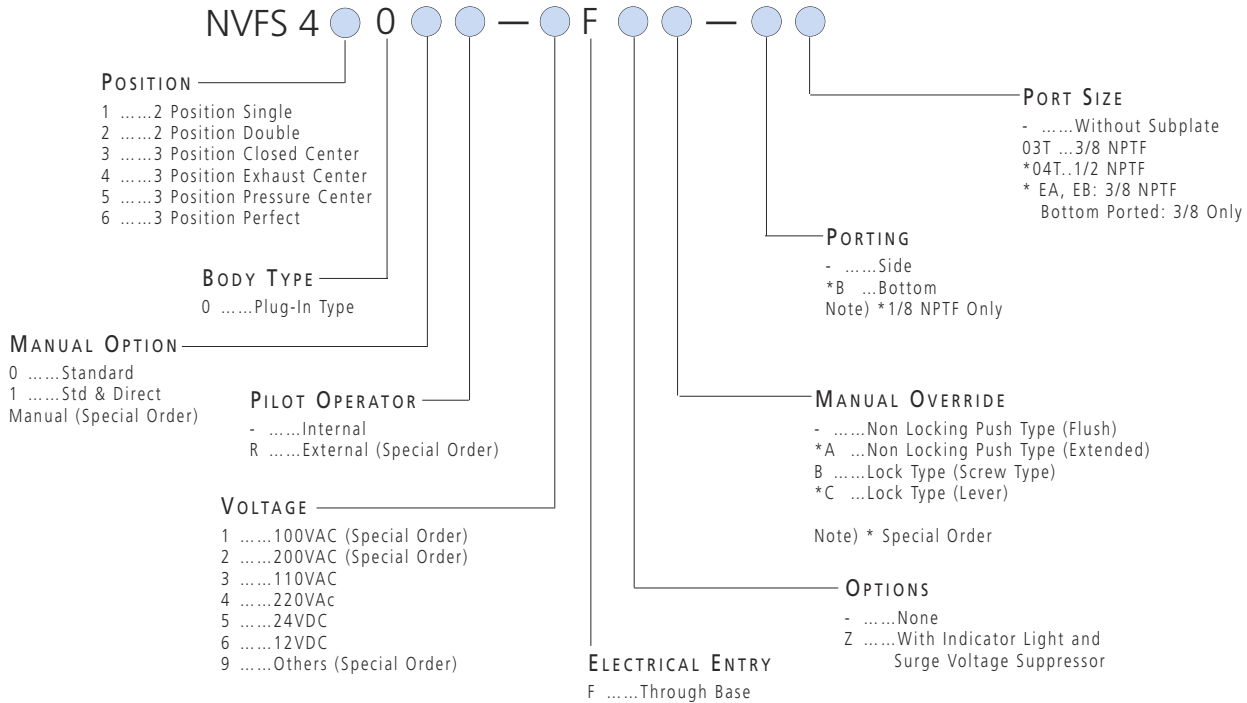
TECHNICAL
SPECIFICATIONS
OPTIONAL

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



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

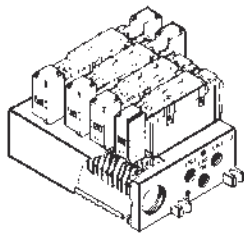
**HOW TO
ORDER
NVFS4000**



**HOW TO
ORDER
MANIFOLD**

Plug-in Type: With Terminal Block

● 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.



NV5FS4-01T-061-03T

Series NVFS4000
Manifold valve

Plug-in type
With terminal block

Stations

02	2 stations
⋮	⋮
10	10 stations

● Port size

Suffix	P, EA, EB	A, B
03T		3/8 NPTF
04T	1/2 NPTF	1/2 NPTF

* Bottom ported 3/8NPTF only.

● Symbol

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

● Special order.

SEE INSIDE FRONT COVER FOR
DETAILS OF YOUR LOCAL SALES OFFICE



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**HOW TO
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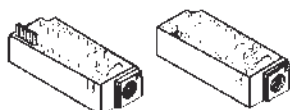
MANIFOLD / OPTION PARTS ASSEMBLY

Manifold / Option Parts

SUP Relocation spacer

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

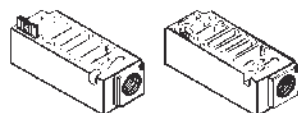
Body type	Plug-in type
Part No.	NVVFS4000-P-03T-1



EXH Relocation spacer

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

Body type	Plug-in type
Part No.	NVVFS4000-R-04T-1



SUP gallery block disc

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

Body type	Plug-in type
Part No.	AXT634-10A



SUP block disc

EXH gallery block disc

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

Body type	Plug-in type
Parts No.	AXT634-11A

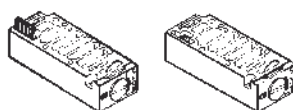


EXH block disc

Interface speed control

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

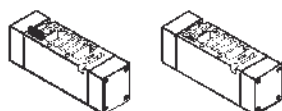
Body type	Plug-in type
Part No.	NVVFS4000-20A-1



Double Check "Perfect" spacer

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

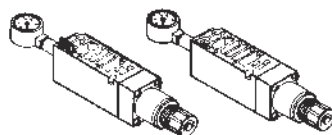
Body type	Plug-in type
Part No.	NVVFS4000-22A-1



Interface regulator

Spacer type regulating valve on manifold block can regulate the pressure to the valve. With std. gauge.

Body type	Plug-in type
Pressure Regulation P	NARBF4000-N0-P-1
Pressure Regulation A	NARBF4000-N0-A-1
Pressure Regulation B	NARBF4000-N0-B-1



Blank plate: VVFS4000-10A

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

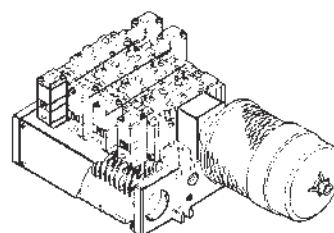
Body type	Plug-in type
Part No.	VVFS4000-10A

Manifold Options

With exhaust cleaner unit

Plug-in type

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

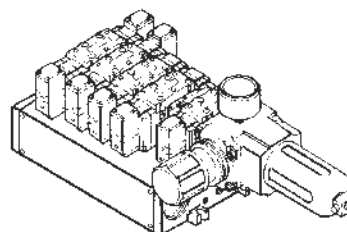


For more information,
refer to catalog N233

With Control Unit

Plug-in type

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



For more information,
refer to catalog N233



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