5 Port Pilot Operated Solenoid Valve
Metal Seal, Plug-in/Non Plug-in *Series* *VFS3000*

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

* Option

Port size

Nil	Without sub-plate
02	Rc 1/4
03	Rc 3/8

* For bottom ported, Rc 1/4 is only available.

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Plug-in   VFS3 | 1 | 0 | 0 | | – | 1 | F | | | – | | 02 | |

Non plug-in   VFS3 | 2 | 1 | 1 | | – | 2 | D | | | – | | 02 | |

Option

Nil	None
Z	With light/surge voltage suppressor

Electrical entry

E: Grommet terminal   D: DIN terminal

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

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

Pilot type

Nil	Internal pilot
R*	External pilot

* Option

How to Order Pilot Valve Assembly

SF4 – | 1 | F | | – | 30 |

Coil rated voltage

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

* Option

Manual override

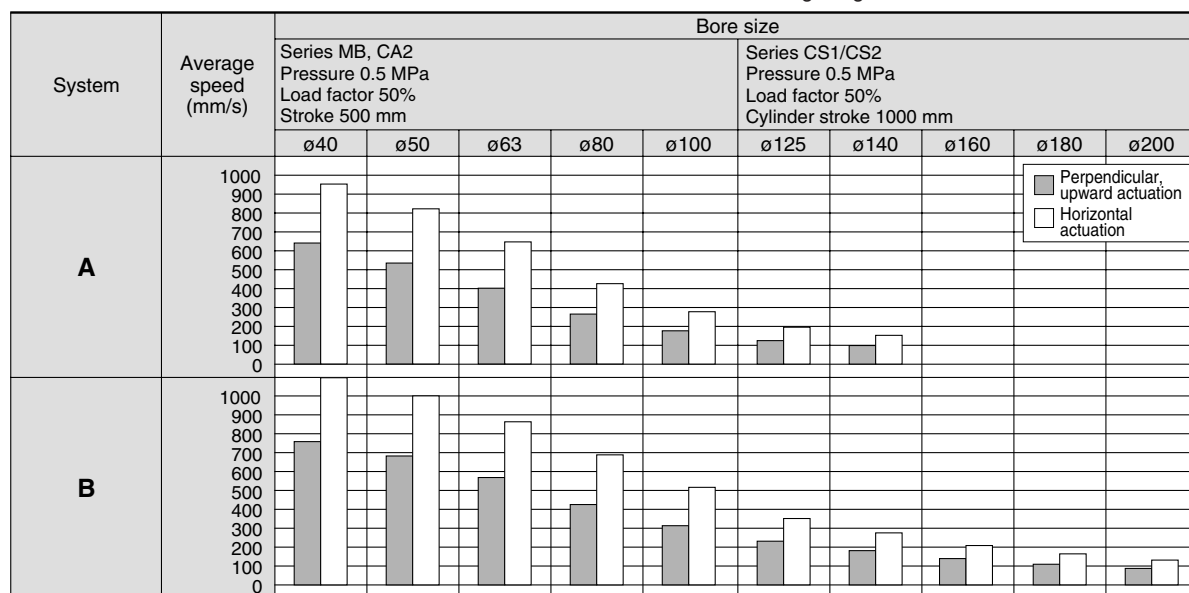| Symbol	Manual override
Nil	Non-locking push type (Flush)
A*	Non-locking push type (Extended)
B*	Locking type (Tool required)
C*	Locking type (Lever)

* Option

* Refer to page 1224 for voltage conversion.

Cylinder Speed Chart

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

System	Average speed (mm/s)	Bore size									
		Series MB, CA2 Pressure 0.5 MPa Load factor 50% Stroke 500 mm					Series CS1/CS2 Pressure 0.5 MPa Load factor 50% Cylinder stroke 1000 mm				
		ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø180	ø200

Legend:
- ■ Perpendicular, upward actuation
- □ Horizontal actuation

System Components

System	Solenoid valve	Speed controller	Silencer	SGP (Steel pipe) Port size x Length
A	Series VFS3000 Rc ¼	AS4000-02 (S = 24 mm²)	AN200-02 (S = 35 mm²)	6A x 1 m
B	Series VFS3000 Rc ⅜	AS420-03 (S = 73 mm²)	AN300-03 (S = 60 mm²)	10A x 1 m

* 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.
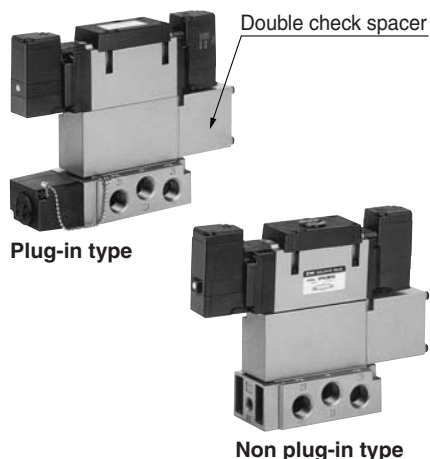* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.
* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

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.
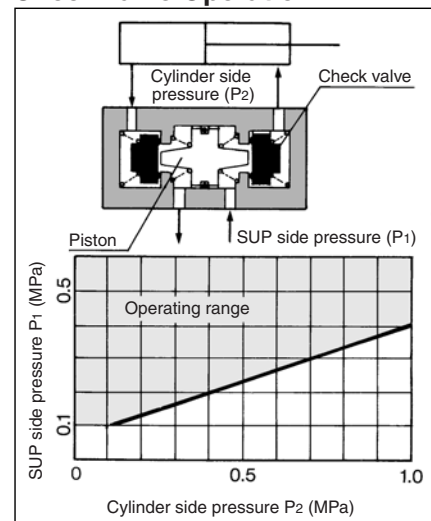

Plug-in type

Non plug-in type

Specifications

Double check spacer part no.	Plug-in type	Non plug-in type
	VVFS3000-22A-1	**VVFS3000-22A-2**
Applicable valve model	VFS3400-□F	VFS3410-□D VFS3410-□E

⚠ Caution

- In the case of 3 position double check valve (VFS36□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

- Cylinder side pressure (P2)
- Check valve
- Piston
- SUP side pressure (P1)

Operating range

SUP side pressure P1 (MPa) vs Cylinder side pressure P2 (MPa)

- The combination of VFS31⁰₁0, VFS32⁰₁0 and double check spacer can be used as prevention for falling at the stroke end but cannot hold the intermediate position of the cylinder.

SMC