

Body Ported

# Pilot Operated 5 Port Solenoid Valve

## Series VF1000/3000/5000

### Single Unit

How to Order Valve



Note) Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.

RoHS

Body ported

VF 3 1 3 0 - 5 G 1 - 01

Series

1	VF1000
3	VF3000
5	VF5000

Type of actuation

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

\* Only 1 and 2 are available with the VF1000.

Body model

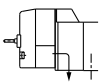
Symbol	VF1000	VF3000	VF5000
2	○	—	○
3	—	○	—

Pressure specifications

Nil	Standard (102 psi (0.7 MPa))
K	High-pressure type (145 psi (1 MPa))

Body option

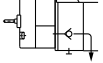
0: Pilot valve individual exhaust



PE port\* EA/EB port

VF1000	VF3000	VF5000
○	○	○

3: Main/Pilot valve common exhaust



PE port EA/EB port

VF1000	VF3000	VF5000
—	○	○

\* Refer to "Made to Order" (Page 14) when piping to PE port is required.

Coil specifications

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to page 51 for details.)

\* T type is available with DC mode only. When T is selected, only Z type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Rated voltage

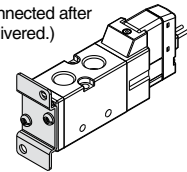
DC		AC (50/60 Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
		3	110 VAC [115 VAC]
		4	220 VAC [230 VAC]
		7	240 VAC
		B	24 VAC

Bracket

Nil	Without bracket
F	With bracket

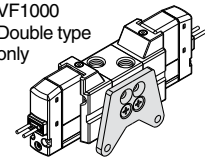
VF1000/3000

Single type  
(The bracket cannot be connected after delivered.)



VF1000

Double type only



\* Not available with the VF5000.

Made to Order

Nil	—
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 14.)
X600	TRIAC output specification (Refer to page 14.)

A, B port size

Symbol	Port size	VF1000	VF3000	VF5000
M5	M5 x 0.8	○	—	—
01	1/8	○	○	—
02	1/4	—	○	○
03	3/8	—	—	○

Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type	E: Push-turn locking lever type

Light/Surge voltage suppressor

Symbol	Light/Surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	— (Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) S type is not available with AC mode, since a rectifier prevents surge voltage generation.

\* In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

Electrical entry

Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	[IP65 compatible]	[IP65 compatible]	[IP65 compatible]
			D: With connector	Y: With connector	T: Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm DC Without light/surge voltage suppressor	LN: Without lead wire	MN: Without lead wire			
			DO: Without connector	YO: Without connector	
	LO: Without connector	MO: Without connector			
CE compliant	DC	CE	CE	CE	CE

\* LN and MN types are with 2 sockets.

\* Refer to page 49 when different length of lead wire for L/M-type plug connector is required.

\* Refer to page 50 for details on the DIN (EN175301-803) terminal.

Note 1) When using IP65, select the main/pilot valve common exhaust type. (Except VF1000)

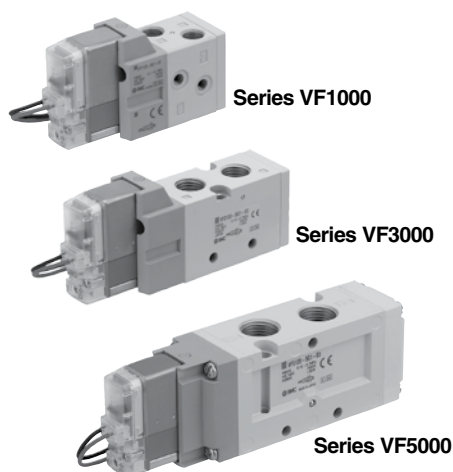
Note 2) With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.



Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 51 for details.

## Specifications



Model			VF1000	VF3000	VF5000
Fluid			Air		
Operating pressure range	Standard	2-position single/3-position	22 to 102 psi (0.15 to 0.7 MPa)		
		2-position double	15 to 102 psi (0.1 to 0.7 MPa)		
	High-pressure type	2-position single/3-position	22 to 145 psi (0.15 to 1.0 MPa)		
		2-position double	15 to 145 psi (0.1 to 1.0 MPa)		
Ambient and fluid temperature			14 to 122°F (−10 to 50°C) (No freezing)		
Max. operating frequency (Hz)		2-position single/double	10	10	5
		3-position	—	3	3
Manual override			Non-locking push type Push-turn locking slotted type Push-turn locking lever type		
Pilot exhaust type			Individual exhaust, Main/Pilot valve common exhaust (Except VF1000)		
Lubrication			Not required		
Mounting orientation			Unrestricted		
Impact/Vibration resistance (m/s <sup>2</sup> ) <small>Note)</small>			300/50		
Enclosure			Dustproof (IP65* for D, Y, T)		

Note) Impact resistance: No malfunction occurred when it is tested 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)

\* Based on IEC 60529. When using IP65, select the main/pilot valve common exhaust type.

## Solenoid Specifications

Electrical entry		Grommet (G), (H)		DIN terminal (D)	
		L-type plug connector (L)		DIN (EN175301-803) terminal (Y)	
		M-type plug connector (M)		Conduit terminal (T)	
		G, H, L, M		D, Y, T	
Coil rated voltage (V)	DC	24, 12			
	AC (50/60 Hz)	24, 100, 110, 200, 220, 240			
Allowable voltage fluctuation		±10% of rated voltage*			
Power consumption (W)	DC	Standard	1.5 (With light: 1.55)	1.5 (With light: 1.75)	
		With power saving circuit	0.55 (With light only)	0.75 (With light only)	
Apparent power (VA)*	AC	24 V	1.5 (With light: 1.55)	1.5 (With light: 1.75)	
		100 V	1.55 (With light: 1.65)	1.55 (With light: 1.7)	
		110 V [115 V]			
		200 V			
		220 V [230 V]			
		240 V			
Surge voltage suppressor		Diode (Non-polar type: Varistor)			
Indicator light		LED (Neon light is used for AC mode of D, Y, T.)			

\* It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

\* Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.

\* Since voltage drops due to the internal circuit in S, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.

24 VDC: –7% to +10%    12 VDC: –4% to +10%

## Response Time

Series	Type of actuation		Pressure specifications	Operating pressure range   psi (MPa)	Response time (ms) (at 73 psi (0.5 MPa))			
					Without light/surge voltage suppressor	With light/surge voltage suppressor		AC
						S, Z type	R, U type	
VF1000	2-position	Single	Standard	22 to 102 (0.15 to 0.7)	20	45	23	45
		Double		15 to 102 (0.1 to 0.7)	12	12	12	12
		Single	High-pressure type	22 to 145 (0.15 to 1.0)	23	48	26	48
		Double		15 to 145 (0.1 to 1.0)	15	15	15	15
VF3000	2-position	Single	Standard	22 to 102 (0.15 to 0.7)	20	45	23	45
		Double		15 to 102 (0.1 to 0.7)	12	12	12	12
	3-position			22 to 102 (0.15 to 0.7)	30	55	33	55
	2-position	Single	High-pressure type	22 to 145 (0.15 to 1.0)	23	48	26	48
		Double		15 to 145 (0.1 to 1.0)	15	15	15	15
	3-position			22 to 145 (0.15 to 1.0)	33	58	36	58
VF5000	2-position	Single	Standard	22 to 102 (0.15 to 0.7)	30	55	33	55
		Double		15 to 102 (0.1 to 0.7)	15	15	15	15
	3-position			22 to 102 (0.15 to 0.7)	50	75	53	75
	2-position	Single	High-pressure type	22 to 145 (0.15 to 1.0)	33	58	36	58
		Double		15 to 145 (0.1 to 1.0)	18	18	18	18
	3-position			22 to 145 (0.15 to 1.0)	53	78	56	78

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 68°F (20°C), at rated voltage)