

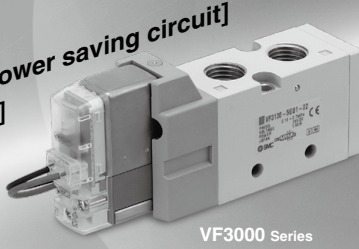
5 Port Solenoid Valve

VF1000/3000/5000 Series

Reduced power consumption:

0.55 W [With power saving circuit]
[Starting 1.55 w Holding 0.55 w]

1.55 W [Standard]
(Current: 2.0 W) * With DC light



VF3000 Series



Low wattage specification added
* VF1000/3000

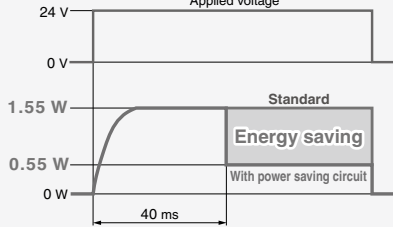
Power consumption **0.35 w** (Without light)
0.4 w (With light)



Power consumption is reduced by power saving circuit.

Power consumption is decreased by approx. 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 40 ms at 24 VDC.) Refer to electrical power waveform as shown below.

Electrical power waveform with power saving circuit



■ Built-in full-wave rectifier (AC)

● Noise reduction

Noise is considerably reduced by changing it to DC mode with a full-wave rectifier.

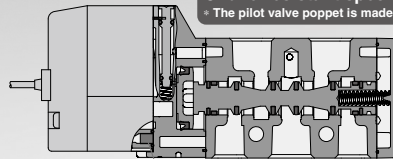
● Reduced apparent power

Current: 5.6 VA → 1.55 VA

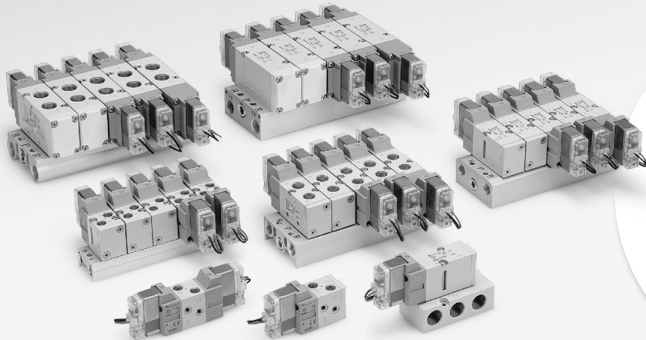
■ Built-in strainer in the pilot valve

Unexpected troubles due to foreign matter can be prevented. Note) Be sure to mount an air filter on the inlet side.

Rubber material: HNBR
Ozone-resistant specification
* The pilot valve poppet is made of FKM.



Strainer






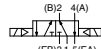


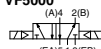


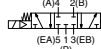
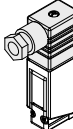

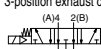

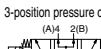
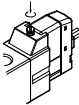

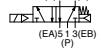


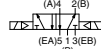
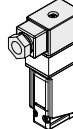
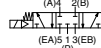
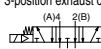
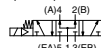
Air operated valve
VFA1000/3000/5000 P.1495



SV
SYJ
SZ
VF
VP4
VQ 1/2
VQ 4/5
VQC 1/2
VQC 4/5
VQZ
SQ
VFS
VFR
VQ7

Model Selection by Operating Conditions 1

Solenoid Valve: Single Unit

Series	Sonic conductance C [dm ³ /(s·bar)]	Type of actuation	Port size	Voltage	Electrical entry	Light/Surge voltage suppressor	Manual override
Body ported	VF1000 	2-position single VF1000  (B)2 4(A) (EB)3 1 5(EA) (P)	M5 x 0.8 1/8		Grommet 		
		2-position double VF1000  (B)2 4(A) (EB)3 1 5(EA) (P)			L-type plug connector 		
	VF3000 	2-position double VF3000  (A)4 2(B) (EA)5 1 3(EB) (P)	1/8 1/4		M-type plug connector 		
VF5000 	8.8	3-position closed center  (A)4 2(B) (EA)5 1 3(EB) (P)	1/4 3/8	12 VDC 24 VDC 24 VAC 100 VAC 200 VAC 110 VAC 220 VAC 240 VAC	DIN terminal 	DC ■ With surge voltage suppressor ■ With light/surge voltage suppressor	Non-locking push type 
3-position exhaust center  (A)4 2(B) (EA)5 1 3(EB) (P)				■ With surge voltage suppressor (Non-polar) ■ With light/surge voltage suppressor (Non-polar)	Push-turn locking slotted type 		
3-position pressure center  (A)4 2(B) (EA)5 1 3(EB) (P)				AC ■ With light/surge voltage suppressor	Push-turn locking lever type 		
Base mounted	VF3000 	2-position single  (A)4 2(B) (EA)5 1 3(EB) (P)	1/4 3/8		DIN (EN1753 01-803) terminal 		
	VF5000 	2-position double  (A)4 2(B) (EA)5 1 3(EB) (P)	1/4 3/8 1/2		Conduit terminal 		
		3-position closed center  (A)4 2(B) (EA)5 1 3(EB) (P)					
3-position exhaust center  (A)4 2(B) (EA)5 1 3(EB) (P)							
3-position pressure center  (A)4 2(B) (EA)5 1 3(EB) (P)							


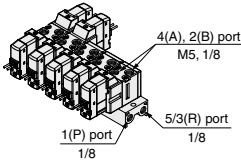
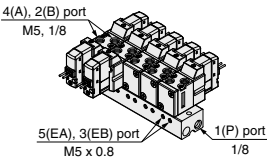

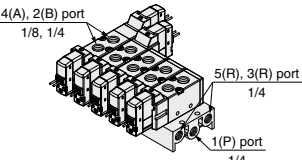
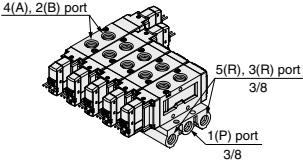

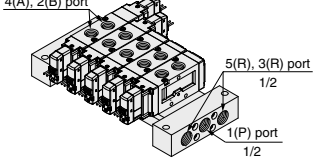
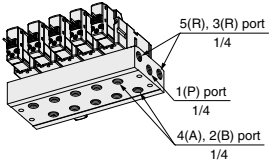

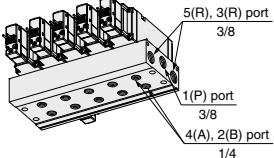
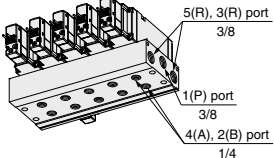
Page 298

Page 312

Low wattage specification page 323 Power consumption: 0.35 W (Without light) 0.4 W (With light)

Model Selection by Operating Conditions ②

Solenoid Valve: Manifold

Series	EXH port type	Manifold base model	Applicable valve	Applicable stations
VF1000 	Common EXH	VV5F1-30  <p>4(A), 2(B) port M5, 1/8 1(P) port 1/8 5/3(R) port 1/8</p>	VF1□30 VF1□33	2 to 20 stations
	Individual EXH	VV5F1-31  <p>4(A), 2(B) port M5, 1/8 5(EA), 3(EB) port M5 x 0.8 1(P) port 1/8</p>		
VF3000 	Common EXH	VV5F3-30  <p>4(A), 2(B) port 1/8, 1/4 5(R), 3(R) port 1/4 1(P) port 1/4</p>	VF3□30 VF3□33	2 to 20 stations
	Common EXH	VV5F5-20  <p>4(A), 2(B) port 5(R), 3(R) port 3/8 1(P) port 3/8</p>		
VF5000 	Common EXH	VV5F5-21  <p>4(A), 2(B) port 5(R), 3(R) port 1/2 1(P) port 1/2</p>	VF5□20 VF5□23	2 to 15 stations
	Common EXH	VV5F3-40  <p>5(R), 3(R) port 1/4 1(P) port 1/4 4(A), 2(B) port 1/4</p>		
VF3000 	Common EXH	VV5F5-40  <p>5(R), 3(R) port 3/8 1(P) port 3/8 4(A), 2(B) port 1/4</p>	VF5□44	2 to 10 stations
	Common EXH	VV5F3-40  <p>5(R), 3(R) port 1/4 1(P) port 1/4 4(A), 2(B) port 1/4</p>		

Body ported

Base mounted

Page 327

Page 338

- SV
- SYJ
- SZ
- VF
- VP4
- VQ 1/2
- VQ 4/5
- VQC 1/2
- VQC 4/5
- VQZ
- SQ
- VFS
- VFR
- VQ7

Pilot Operated 5 Port Solenoid Valve

VF1000/3000/5000 Series

Body Ported

Single Unit



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



* See the table below.

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only. Only applies to X500 for made-to-order specifications.



How to Order Valve

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 (0.7 MPa)	UL-compliant
K	—	—

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
—	○	○

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 348 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	UL-compliant	AC (50/60 Hz) Note)	UL-compliant
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

Note) For triac output, refer to the made-to-order specifications (X600).

* Refer to "Made to Order" (Page 311) when piping to PE port is required.

Electrical entry

Grommet	L-type plug connector	M-type plug connector	DIN terminal (IP65 compatible)	DIN (EN175301-803) terminal (IP65 compatible)	Conduit terminal (IP65 compatible)
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)	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	
CE	DC	CE	CE	CE	CE
compliant	AC	compliant	compliant	compliant	compliant

* LN and MN types are with 2 sockets.

* Refer to page 346 when different length of lead wire for L/M-type plug connector is required.

* Refer to page 347 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.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

* M5 is available with Nil only.

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	UL-compliant
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 311.)
X600	TRIAC output specification (Refer to page 311.)

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-tum locking slotted type	E: Push-tum 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	○	—(Not)
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.

Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.



Pilot Operated 5 Port Solenoid Valve Body Ported/Single Unit **VF1000/3000/5000 Series**

Specifications



Model		VF1000	VF3000	VF5000
Fluid		Air		
Operating pressure range (MPa)	Standard	2-position single/3-position		0.15 to 0.7
	High-pressure type	2-position double		0.1 to 0.7
		2-position single/3-position		0.15 to 1.0
		2-position double		0.1 to 1.0
Ambient and fluid temperature (°C)		-10 to 50 (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/s²) (Note)		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.



Made to Order
(Refer to page 311 for details.)

Symbol	Specification
X500	Pilot exhaust port with piping thread (M3) specification
X600	TRIAC output specification

Solenoid Specifications

Electrical entry		Grommet (G), (H) L-type plug connector (L) M-type plug connector (M) G, H, L, M	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T) 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) 0.55 (Note) (With light only) (Starting 1.55 Holding 0.55)	1.5 (With light: 1.75) 0.75 (Note) (With light only) (Starting 1.75 Holding 0.75)
	AC	24 V 100 V 110 V [115 V] 200 V 220 V [230 V] 240 V	1.5 (With light: 1.55) 1.5 (With light: 1.75)
Apparent power (VA)*	DC	1.55 (With light: 1.65) 1.55 (With light: 1.7)	
	AC	1.55 (With light: 1.65) 1.55 (With light: 1.7)	
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%
Note) Refer to page 348 for details.

Response Time

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

Note) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage)

VF1000/3000/5000 Series

Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.



1 Body Ported Pilot Exhaust Port with Piping Thread (M3) Specification

In this specification, piping to the pilot exhaust port (PE port) is available when the valve is used in an environment where the exhaust from the pilot valve is not allowable, or intrusion of ambient dust should be prevented. Combination with low wattage specification is not possible.



How to Order Valve

VF 3 3 0 - - - - - 1 - - - - - - - X500

Series

1	VF1000
3	VF3000
5	VF5000

Type of actuation

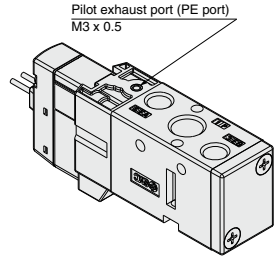
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

• Entry is the same as standard products. The specifications and performance are the same as those of standard products.

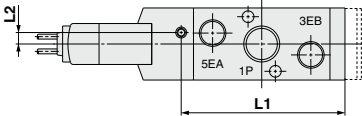
• Body model

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

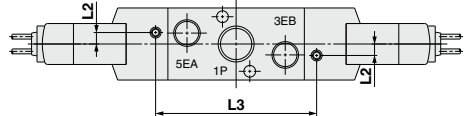
Note) Not available for the base mounted type.



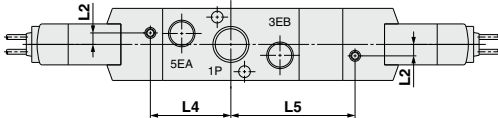
• 2-position single



• 2-position double



• 3-position closed center/exhaust center/pressure center



Series	L1	L2	L3	L4	L5
VF1000	34.5	4.2	33.4	—	—
VF3000	60	4.2	59	29.5	45.5
VF5000	95	3.45	89	44.5	63.5

2 TRIAC Output Specification

For AC type valve, use this specification when the pilot valve is not recovered even though valve power supply is turned OFF at the equipment using output unit with large leakage voltage over 8% of the rated voltage (TRIAC output such as PLC or SSR, etc.). Combination with low wattage specification is not possible. In addition, the -X600 is not compliant with UL standards.

How to Order Valve

VF 3 - - - - - - - - - - 1 - - - - - - - X600

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

• Entry is the same as standard products.
Note) Rated voltage: AC type only

Pilot Operated 5 Port Solenoid Valve

VF3000/5000 Series

Base Mounted

Single Unit



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



* See the table below.

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only. In addition, made-to-order specifications are not compliant with UL standards.



How to Order Valve

Base mounted (VF1000: Not available) **VF 3 1 4 0 K T - 5 G Z D 1 - 02** -

Series

3	VF3000
5	VF5000

* Not available with the VF1000.

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

Body model

Body option

0: Pilot valve individual exhaust

VF3000	VF5000
<input type="checkbox"/>	<input type="checkbox"/>

3: Main/Pilot valve common exhaust

VF3000	VF5000
<input type="checkbox"/>	<input type="checkbox"/>

4: Pilot valve base exhaust

VF3000	VF5000
<input type="checkbox"/>	<input type="checkbox"/>

Pressure specifications

Nil	Standard (0.7 MPa)	<input type="checkbox"/>
K	High-pressure type (1 MPa)	<input type="checkbox"/>

Coil specifications

Nil	Standard	<input type="checkbox"/>
T	With power saving circuit (DC only)	<input type="checkbox"/>

Note) Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to page 348 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) Note)
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

Note) For triac output, refer to the made-to-order specifications (X600).

Made to Order

Nil	<input type="checkbox"/>	<input checked="" type="checkbox"/>
X600	TRiac output specification (Refer to page 311.)	<input type="checkbox"/>

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size (Sub-plate)

Symbol	Port size	VF3000	VF5000
Nil	Without sub-plate	<input type="checkbox"/>	<input type="checkbox"/>
02	1/4	<input type="checkbox"/>	<input type="checkbox"/>
03	3/8	<input type="checkbox"/>	<input type="checkbox"/>
04	1/2	<input type="checkbox"/>	<input type="checkbox"/>

* Without the sub-plate, two mounting screws and a gasket are included.

Manual override

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

Light/Surge voltage suppressor

Symbol	Light/Surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	<input type="checkbox"/>	<input type="checkbox"/>
S	With surge voltage suppressor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Z	With light/surge voltage suppressor	<input type="checkbox"/>	<input type="checkbox"/>
R	With surge voltage suppressor (Non-polar)	<input type="checkbox"/>	<input type="checkbox"/>
U	With light/surge voltage suppressor (Non-polar)	<input type="checkbox"/>	<input type="checkbox"/>

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.

Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.

Electrical entry

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

* LN and MN types are with 2 sockets.

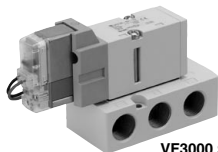
* Refer to page 346 when different length of lead wire for L/M-type plug connector is required.

* Refer to page 347 for details on the DIN (EN175301-803) terminal. Note 1) When using IP65, select the main/pilot valve common exhaust type or pilot valve base exhaust type.

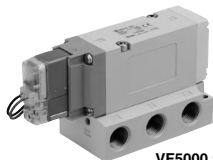
Note 2) With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.

Pilot Operated 5 Port Solenoid Valve Base Mounted/Single Unit **VF3000/5000 Series**

Specifications



VF3000 Series



VF5000 Series



Made to Order
(Refer to page 311 for details.)

Symbol	Specification
X600	TRIAC output specification

Model		VF3000	VF5000
Fluid		Air	
Operating pressure range (MPa)	Standard	2-position single/3-position	0.15 to 0.7
		2-position double	0.1 to 0.7
	High-pressure type	2-position single/3-position	0.15 to 1.0
		2-position double	0.1 to 1.0
Ambient and fluid temperature (°C)		-10 to 50 (No freezing)	
Max. operating frequency (Hz)	2-position single/double	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	Pilot valve base exhaust
Lubrication		Not required	
Mounting orientation		Unrestricted	
Impact/Vibration resistance (m/s ²) <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 or pilot valve base exhaust type.

Solenoid Specifications

Electrical entry		Grommet (G), (H) L-type plug connector (L) M-type plug connector (M) G, H, L, M	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T) D, Y, T
Coil rated voltage (V)	DC AC (50/60 Hz)	24, 12	
Allowable voltage fluctuation		±10% of rated voltage*	
Power consumption (W)	DC	Standard 1.5 (With light: 1.55) 0.55 ^{Note)} (With light only) [Starting 1.55 Holding 0.55]	1.5 (With light: 1.75) 0.75 ^{Note)} (With light only) [Starting 1.75 Holding 0.75]
	DC With power saving circuit	1.5 (With light: 1.55)	1.5 (With light: 1.75)
Apparent power (VA)*	AC	24 V	1.55 (With light: 1.65)
	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%

Note) Refer to page 348 for details.

Response Time

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

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

SV

SYJ

SZ

VF

VP4

VQ

1/2

VQ

4/5

VQC

1/2

VQC

4/5

VQZ

SQ

VFS

VFR

VQ7

Pilot Operated 5 Port Solenoid Valve VF1000/3000/5000 Series Manifold

Body Ported

How to Order Manifold



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



Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only. Only applies to X500 for made-to-order specifications.

Common exhaust

VV5F 1 - 30 - 04 1 -

Series

1	VF1000
3	VF3000
5	VF5000

Manifold model

Symbol	P, R port size	VF1000	VF3000	VF5000
30	1/8	○	—	—
	1/4	—	○	—
20	3/8	—	—	○
21	1/2	—	—	○

Stations

02	2 stations
10	10 stations
20	20 stations

* Up to 10 stations for VV5F5-20, and up to 15 stations for VV5F5-21.

Individual exhaust (VF1000 only)

VV5F1 - 31 - 04 3 -

Series

1	VF1000
3	VF3000
5	VF5000

Manifold model

Symbol	P, R port size	EA, EB port size
31	1/8	M5

Stations

02	2 stations
10	10 stations
20	20 stations

Thread type

	Nil	Rc
00F	G	
00N	NPT	
00T	NPTF	

* The A and B ports are made on the top.

Note) When placing an order for body ported valve as a single unit, mounting screws for manifold and gasket are not attached. Order them separately, if necessary. (Refer to page 329 for details.)

How to Order Valve

* For low wattage specification, refer to "How to Order Valve" on page 323.

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.

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 348 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.)

Pressure specifications

	Nil	Standard (0.7 MPa)	K
		●	○
		○	●

Rated voltage

DC	AC (50/60 Hz)
5 24 VDC (compliant)	1 100 VAC (compliant) 4 220 VAC (230 VAC) (compliant)
6 12 VDC (compliant)	2 200 VAC (compliant) 7 240 VAC (compliant)
	3 110 VAC (115 VAC) (compliant) 8 24 VAC (compliant)

Note) For triac output, refer to the made-to-order specifications (X600).

Made to order

Refer to page 311 for details. In addition, the -X600 is not compliant with UL standards.

A, B port size

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

Thread type

	Nil	Rc
F	G	
N	NPT	
T	NPTF	

* M5 is available with Nil only.

Manual override

Light/Surge voltage suppressor

Symbol	Light/Surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	⊗ (NPTF)
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.

Manual override

Nil: Non-locking push type

D: Push-turn locking slotted type

E: Push-turn locking lever type

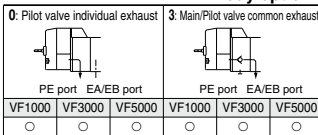
Note) Manifold only.

Note) For triac output, refer to the made-to-order specifications (X600).

Body model

Symbol	VF1000	VF3000	VF5000
2	—	—	○
3	○ (Note)	—	—

Body option



		Grommet	L-type plug connector	M-type plug connector	DIN terminal (IP65 compatible)	DIN (EN175301-803) terminal (IP65 compatible)	Conduit terminal (IP65 compatible)
G	Lead wire length 300 mm						
H	Lead wire length 600 mm						
L	With lead wire (length 300 mm)						
LN	Without lead wire						
M	With lead wire (length 300 mm)						
MN	Without lead wire						
LO	Without connector						
MO	Without connector						
CE	DC compliant	—	—	—	—	—	—
DC	—	—	—	—	—	—	—
CE	—	—	—	—	—	—	—
DC	—	—	—	—	—	—	—

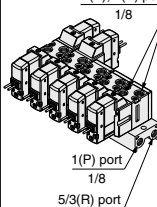
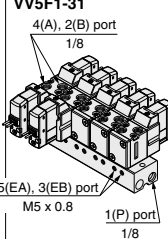
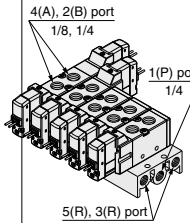
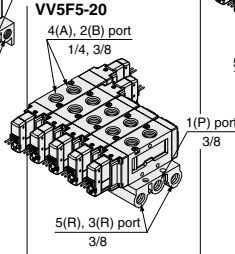
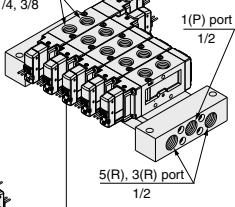
* LN and MN types are with 2 sockets. * Refer to page 346 when different length of lead wire for LM-type plug connector is required.
* Refer to page 347 for details on the DIN (EN175301-803) terminal.
Note 1) When using IP65, select the main/pilot valve common exhaust type.
Note 2) With the same specifications 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 348 for details.

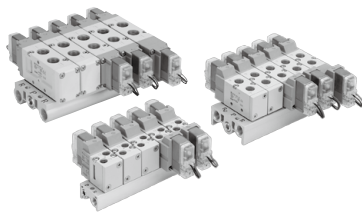
VF1000/3000/5000 Series

Manifold Specifications

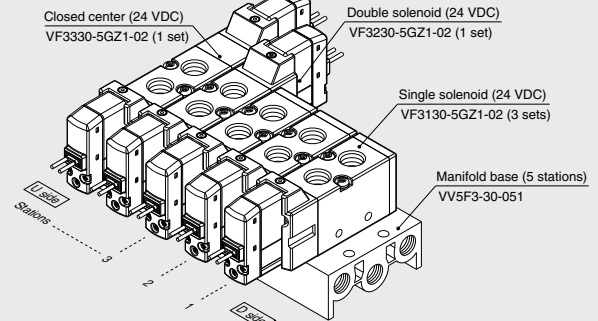
Series	VF1000		VF3000	VF5000	
Manifold base model	VV5F1-30 	VV5F1-31 	VV5F3-30 	VV5F5-20 	VV5F5-21 
	EXH port type	Common EXH	Individual EXH	Common EXH	Common EXH
Applicable valve model	VF1□30 VF1□33		VF3□30 VF3□33	VF5□20 VF5□23	
Applicable stations	2 to 20 stations		2 to 20 stations	2 to 10 stations	2 to 15 stations
Manifold base Weight: W [g] Stations: n	W = 29n + 21	W = 51n + 35	W = 63n + 64	W = 97n + 80	W = 139n + 550

Note) Supply pressure to 1(P) ports and exhaust pressure from R ports on both sides for 10 stations or more (5 stations or more for the VF5000).

How to Order Manifold Assembly



Example (VV5F3-30)



VV5F3-30-051 1 set (Type 30, 5-station manifold base part no.)
 * **VF3130-5GZ1-02** 3 sets (Single solenoid part no.)
 * **VF3230-5GZ1-02** 1 set (Double solenoid part no.)
 * **VF3330-5GZ1-02** 1 set (Closed center part no.)
 ↳ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Under the manifold base part number, state the valves to be mounted in order from the 1st station as shown in the figure above. If the arrangement becomes complicated, specify on the manifold specification sheet.

Pilot Operated 5 Port Solenoid Valve

VF3000/5000 Series

Manifold

Base Mounted

How to Order Manifold



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



Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only

* See the table below.

Common exhaust **VF3000-40-052-02F**

Symbol	Series	P, R port size	A, B port size
3	VF3000	1/4	1/4
5	VF5000	3/8	1/4

* The A and B ports are made on the bottom.

Stations	
02	2 stations
:	:
20	20 stations

* Up to 10 stations for VF5F5.

Thread type	
Nil	Rc
F	G
N	NPT
T	NPTF

How to Order Valve (With a gasket and two mounting screws)

* For low wattage specification, refer to "How to Order Valve" on page 323.

VF3140-5G1-

Series	Type of actuation
3	VF3000
5	VF5000
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

* Not available with the VF1000.

Body model

Body option

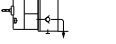
0: Pilot valve individual exhaust



PE port EA/EB port

VF3000	VF5000
○	○

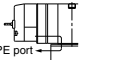
3: Main/Pilot valve common exhaust



PE port EA/EB port

VF3000	VF5000
○	○

4: Pilot valve base exhaust



PE port

VF3000	VF5000
○	○

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 348 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.)

Pressure specifications		Compliant
Nil	Standard (0.7 MPa)	●
K	High-pressure type (1 MPa)	—

Rated voltage

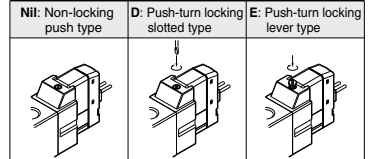
DC		Compliant	AC (50/60 Hz)		Note)	Compliant
5	24 VDC	●	1	100 VAC	—	—
6	12 VDC	●	2	200 VAC	—	—
			3	110 VAC [115 VAC]	—	—
			4	220 VAC [230 VAC]	—	—
			7	240 VAC	—	—
			B	24 VAC	●	—

Note) For triac output, refer to the made-to-order specifications (X600).

Made to Order

Made-to-order specifications are not compliant with UL standards.

Manual override



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.

Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 348 for details.

Electrical entry

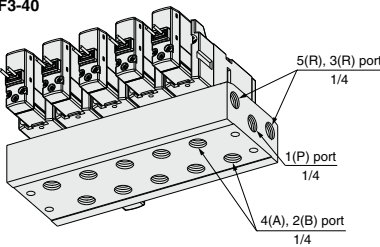
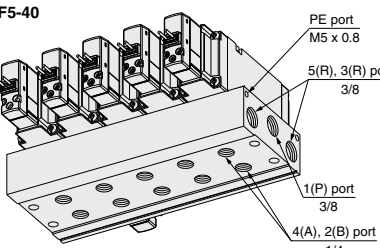
Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
G: Lead wire length 300 mm	G: Lead wire length 300 mm	M: With lead wire (length 300 mm)	(IP65 compatible)	(IP65 compatible)	(IP65 compatible)
H: Lead wire length 600 mm	H: Lead wire length 600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

* LN and MN types are with 2 sockets. * Refer to page 348 when different length of lead wire for L-M type plug connector is required.
* Refer to page 347 for details on the DIN (EN175301-803) terminal.

Note 1) When using IP65, select the main/pilot valve common exhaust or pilot valve base exhaust type.

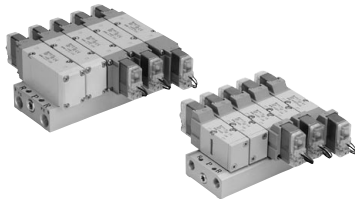
Note 2) With the same specifications as the DC type, all electrical entries for the 24 VAC type are CE marking compliant.

Manifold Specifications

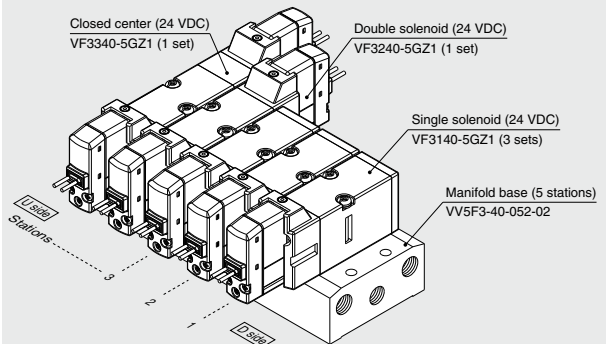
Series	Manifold base model	EXH port type	Applicable valve model	Applicable stations	Manifold base Weight: W [g] Stations: n
VF3000		Common EXH	VF3□40 VF3□43	2 to 20 stations	W = 110n + 116
VF5000		Common EXH	VF5□44	2 to 10 stations	W = 161n + 128

Note) Supply pressure to 1(P) ports and exhaust pressure from R ports on both sides for 10 stations or more (5 stations or more for the VF5000).

How to Order Manifold Assembly



Example (VV5F3-40)



- VV5F3-40-052-02 1 set (Type 40, 5-station manifold base part no.)
- * VF3140-5GZ1 3 sets (Single solenoid part no.)
- * VF3240-5GZ1 1 set (Double solenoid part no.)
- * VF3340-5GZ1 1 set (Closed center part no.)

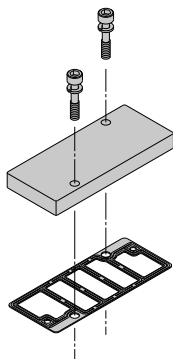
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Under the manifold base part number, state the valves to be mounted in order from the 1st station as shown in the figure above. If the arrangement becomes complicated, specify on the manifold specification sheet.

VF3000/5000 Series

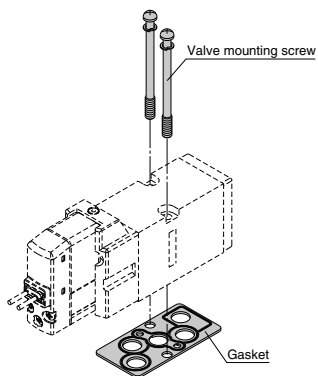
Manifold Options

■ For base mounted Blanking plate assembly



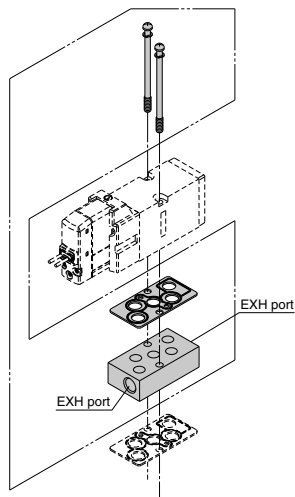
Series	Blanking plate assembly part no.
VF3000	DXT031-38-5A
VF5000	VF5000-70-2A

■ Mounting screw, gasket part no.



Series	Valve mounting screw (1 pc.)	Gasket
VF3000	Round head combination screw DXT031-44-1 (M4 x 39.5, With spring washer)	DXT031-30-11
VF5000	Hexagon socket head cap screw AXT620-32-1 (M4 x 48, With spring washer)	DXT156-9-8

■ Individual EXH spacer assembly



⚠ Caution

Tightening Torque for Mounting Screw

M4: 1.4 N·m

⚠ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., the mounting orientation is already decided. If mounted in a wrong direction, the equipment to be connected may result in a malfunction. Refer to the dimensions for mounting.

VF **3** 000-75-2 **A**

Series

Symbol	Series	Port size
3	VF3000	1/8
5	VF5000	1/4

Thread type

NII	Rc
F	G
N	NPT
T	NPTF