

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

## Specifications



Model		VF1000	VF3000	VF5000
<b>Fluid</b>		Air		
<b>Operating pressure range (MPa)</b>	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	
<b>Ambient and fluid temperature (°C)</b>		-10 to 50 (No freezing)		
<b>Max. operating frequency (Hz)</b>	2-position single/double	10	10	5
	3-position	—	3	3
<b>Manual override</b>		Non-locking push type Push-turn locking slotted type Push-turn locking lever type		
<b>Pilot exhaust type</b>		Individual exhaust, Main/Pilot valve common exhaust (Except VF1000)		
<b>Lubrication</b>		Not required		
<b>Mounting orientation</b>		Unrestricted		
<b>Impact/Vibration resistance (m/s<sup>2</sup>)</b> <small>Note 1)</small>		300/50		
<b>Enclosure</b>		Dustproof (IP65 <small>Note 2)</small> for D, Y, T)		

Note 1) 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)

Note 2) Based on IEC60529. When using with IP65, select the main/pilot valve common exhaust type.



**Made to Order**  
(Refer to page 14 for details.)

<b>X500</b>	Pilot exhaust port with piping thread (M3) specification
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## Solenoid Specifications

<b>Electrical entry</b>		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
<b>Coil rated voltage (V)</b>	<b>DC</b>	24, 12	
	<b>AC (50/60 Hz)</b>	—	24, 100, 110, 200, 220, 240
<b>Allowable voltage fluctuation</b>		±10% <small>Note 1,2,3)</small> of rated voltage	
<b>Power consumption (W)</b>	<b>DC</b>	<b>Standard</b>	1.5 (With light: 1.55)
		<small>With power saving circuit</small>	0.55 (With light only)
<b>Apparent power (VA)</b> <small>Note 1,2,3)</small>	<b>AC</b>	100 V	1.5 (With light: 1.75)
		110 V [115 V]	1.55 (With light: 1.7)
		200 V	
		220 V [230 V]	
		240 V	
<b>Surge voltage suppressor</b>		Diode (Non-polar type: Varistor)	
<b>Indicator light</b>		LED (Neon bulb is used for AC mode)	

Note 1) It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

Note 2) Allowable voltage fluctuation is -15% to +5% of the rated voltage for 115 VAC or 230 VAC.

Note 3) 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 specification	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	Single	Standard	0.15 to 0.7	20	45	23	45
		Double		0.1 to 0.7	12	12	12	
		Single	High-pressure type	0.15 to 1.0	23	48	26	48
		Double		0.1 to 1.0	15	15	15	
VF3000	2-position	Single	Standard	0.15 to 0.7	20	45	23	45
		Double		0.1 to 0.7	12	12	12	
	3-position		High-pressure type	0.15 to 0.7	30	55	33	55
	2-position	Single		0.15 to 1.0	23	48	26	
		Double	0.1 to 1.0	15	15	15		
	3-position		High-pressure type	0.15 to 1.0	33	58	36	58
VF5000	2-position	Single		Standard	0.15 to 0.7	30	55	
		Double	0.1 to 0.7		15	15	15	
	3-position		High-pressure type	0.15 to 0.7	50	75	53	75
	2-position	Single		0.15 to 1.0	33	58	36	
Double		0.1 to 1.0	18	18	18			
3-position		High-pressure type	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)

# Series VF1000/3000/5000

## Flow-rate Characteristics/Weight

Valve model	Type of actuation		Port size		Flow-rate characteristics <small>Note 1)</small>								Weight (g) <small>Note 2)</small>	
			1, 4, 2 (P, A, B)	5, 3 (EA, EB)	1 → 4/2 (P → A/B)				4/2 → 5/3 (A/B → EA/EB)					
					C [dm <sup>3</sup> / (s/bar)]	b	Cv	Q [l/min] (ANR) <small>Note 3)</small>	C [dm <sup>3</sup> / (s/bar)]	b	Cv	Q [l/min] (ANR) <small>Note 3)</small>	Grommet	DIN terminal
VF1□20-M5	2- position	Single	M5 x 0.8		0.49	0.40	0.13	133	0.52	0.35	0.13	137	140	176
		Double			0.49	0.40	0.13	133	0.52	0.35	0.13	137	200	272
VF1□20-01	2- position	Single	1/8	M5 x 0.8	0.76	0.22	0.17	184	0.53	0.28	0.13	133	136	172
		Double			0.76	0.22	0.17	185	0.53	0.28	0.13	133	196	268
VF3□30-01	2- position	Single	1/8		3.0	0.38	0.78	805	2.8	0.30	0.67	712	182	218
		Double			3.0	0.38	0.78	805	2.8	0.30	0.67	712	243	315
	3- position	Closed centre			2.4	0.31	0.64	614	1.8	0.37	0.46	479	260	332
		Exhaust centre			2.6	0.37	0.70	692	3.0	0.32	0.76	773	260	332
		Pressure centre			3.0	0.42	0.83	828	2.4	0.27	0.59	599	260	332
VF3□30-02	2- position	Single	1/4	1/8	4.0	0.36	1.0	1058	3.1	0.32	0.75	798	178	214
		Double			4.0	0.36	1.0	1058	3.1	0.32	0.75	798	239	311
	3- position	Closed centre			2.4	0.45	0.68	678	1.9	0.37	0.47	506	256	328
		Exhaust centre			3.0	0.42	0.82	828	3.1	0.36	0.79	820	256	328
		Pressure centre			5.5	0.37	1.4	1465	2.6	0.32	0.64	670	256	328
VF5□20-02	2- position	Single	1/4		7.1	0.46	1.9	2021	7.7	0.51	2.2	2282	313	349
		Double			7.1	0.46	1.9	2021	7.7	0.51	2.2	2282	368	440
	3- position	Closed centre			6.7	0.46	1.8	1907	6.6	0.41	1.8	188	406	478
		Exhaust centre			7.1	0.42	1.9	1960	8.0	0.45	2.2	2259	406	478
		Pressure centre			6.8	0.51	2.0	2016	5.7	0.37	1.4	1518	406	478
VF5□20-03	2- position	Single	3/8		8.8	0.44	2.4	2466	10.0	0.49	2.9	2915	299	335
		Double			8.8	0.44	2.4	2466	10.0	0.49	2.9	2915	354	426
	3- position	Closed centre			7.5	0.43	2.0	2086	7.5	0.38	1.9	2011	391	463
		Exhaust centre			8.3	0.40	2.2	2258	10.0	0.48	3.0	2892	391	463
		Pressure centre			9.2	0.50	2.6	2704	6.1	0.35	1.6	1603	391	463

Note 1) [ ]: Normal position

Note 2) Values without bracket

Note 3) These valves have been calculated according to ISO6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.