

3 Port Solenoid Valve

Reduced power consumption:

0.55 W

[With power saving circuit]

1.55 W

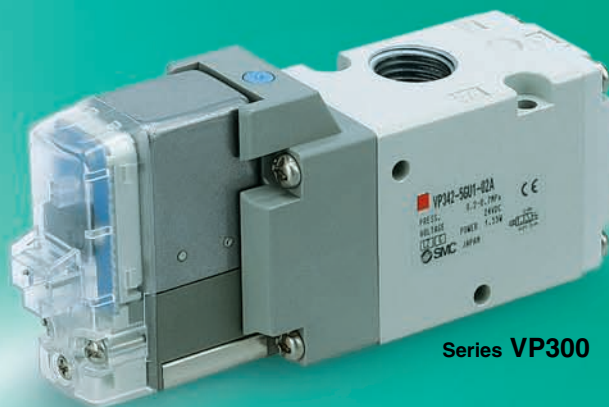
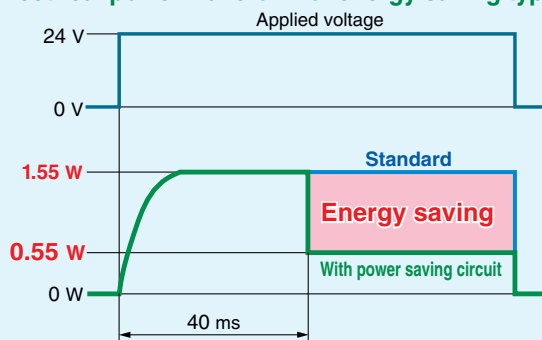
[Standard]

(Conventional: 2.0 W) * With DC 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 of energy saving type



Series VP300

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

Conventional: 5.6 VA → **1.55 VA**

Longer life expectancy: 50 million cycles or more

(Conventional: 20 million cycles) * Based on SMC test conditions

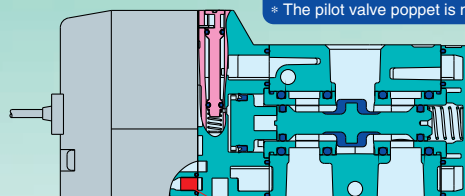
Built-in strainer in the pilot valve

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

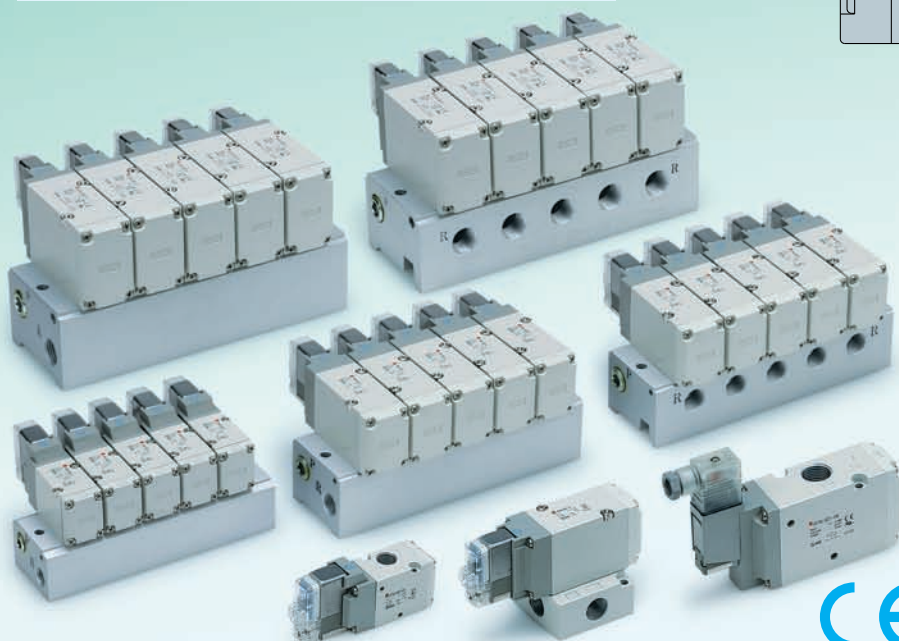
* The pilot valve poppet is made of FKM.



Strainer

Air Operated Valve

Series **VPA300/500/700**



Series **VP300/500/700**



RoHS compliant



CAT.ES11-97B

Rubber Seal 3 Port/Pilot Poppet Type Body Ported/Single Unit Series **VP300/500/700**

How to Order



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

Body ported

VP 3 4 2 **5 G** **1-01** **A**

Series

3	VP300
5	VP500
7	VP700

Pilot type

Nil	Internal pilot
R	External pilot

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1.0 MPa)

Coil specification

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 a long time.
(Refer to back page 5 for details.)

* T type is only available for DC mode.
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

5	24 VDC
6	12 VDC

AC (50/60 Hz)

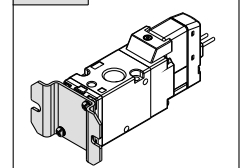
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Bracket

Nil	Without bracket
F	With bracket



Type of actuation

A	N.C. (Normally closed)
B	N.O. (Normally open)

Port size

Symbol	Port size	VP300	VP500	VP700
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

Made to Order

Nil	—
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 24).
X505	Interchangeable specification with the previous valve mounting hole pitch type (Refer to page 24).

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) LN: Without lead wire	M: With lead wire (length 300 mm) MN: Without lead wire	D: With connector DO: Without connector	Y: With connector YO: Without connector	T: Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm DC Without light/surge voltage suppressor	LO: Without connector	MO: Without connector			
CE compliant	DC	CE	CE	CE	CE

Manual override

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

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) There is no S option for 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 back page 5 for details.

* LN and MN types are with 2 sockets.

* Refer to back page 2 when different length of lead wire for L/M-type plug connector is required.

* Refer to back page 3 for details on the DIN (EN175301-803) terminal.

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

Pilot Poppet Type Body Ported/Single Unit **Series VP300/500/700**

Low power consumption 1.5 W (DC)
Possible to use as either a selector or divider valve
Possible to change from N.C. to N.O.



• Refer to back page 6 for changing the type of actuation.

Possible to use in vacuum applications

Up to -100 kPa



Series VP300



Series VP500



Series VP700

External Pilot

Use external pilot type in the following cases:

- For vacuum or for low pressure 0.2 MPa or less
- Please consult with SMC for use in a vacuum hold application.
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower



Made to Order
(Refer to page 24 for details.)

X500	Pilot exhaust port with piping thread (M3) specification
X505	Interchangeable specification with the previous valve mounting hole pitch type

Specifications

Fluid		Air
Type of actuation		N.C. or N.O. (Convertible)
Internal pilot	Standard	0.2 to 0.7
	High-pressure type	0.2 to 1.0
External pilot	Standard	-100 kPa to 0.7
	High-pressure type	-100 kPa to 1.0
	Pilot pressure range	Same as operating pressure (Min. 0.2 MPa)
Ambient and fluid temperature (°C)		-10 to 50 (No freezing)
Max. operating frequency (Hz)		5
Manual override		Non-locking push type Push-turn locking slotted type Push-turn locking lever type
Pilot exhaust type		Individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s²) (Note)		300/50
Enclosure		Dust-tight (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)

Solenoid Specifications

Electrical entry		Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)		DIN terminal (D) DIN (EN175301-803) terminal (Y) 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 bulb 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

Model	Pressure specifications	Response time ms (at 0.5 MPa)			
		Without light/surge voltage suppressor	With light/surge voltage suppressor		AC
			S, Z type	R, U type	
VP342	Standard (0.2 to 0.7)	13 or less	38 or less	16 or less	38 or less
	High-pressure type (0.2 to 1.0)	17 or less	42 or less	20 or less	42 or less
VP542	Standard (0.2 to 0.7)	14 or less	39 or less	17 or less	39 or less
	High-pressure type (0.2 to 1.0)	18 or less	43 or less	21 or less	43 or less
VP742	Standard (0.2 to 0.7)	19 or less	44 or less	22 or less	44 or less
	High-pressure type (0.2 to 1.0)	22 or less	47 or less	25 or less	47 or less

Note) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage)