

# High Capacity & Simple Choices

## 5 Port Solenoid Valves

### SY3000/5000/7000/9000

#### Low power consumption: 0.5W

(Current value: 21mA at 24VDC)

Low power consumption enables direct operation by a PLC, and cost savings are realized through the use of a smaller power supply and switching elements and the elimination of relay cards.

[An energy saving type [0.22W] is also available. Refer to page 1.2-177 for details.]

#### Compact design with high flow capacity of 1668.6 to 2944.5 N/min with the same body width

The same size cylinder can be driven with a valve one physical size smaller than a conventional type, contributing greatly to both space and cost savings.

Valves to drive cylinders of sizes ø6 to ø200

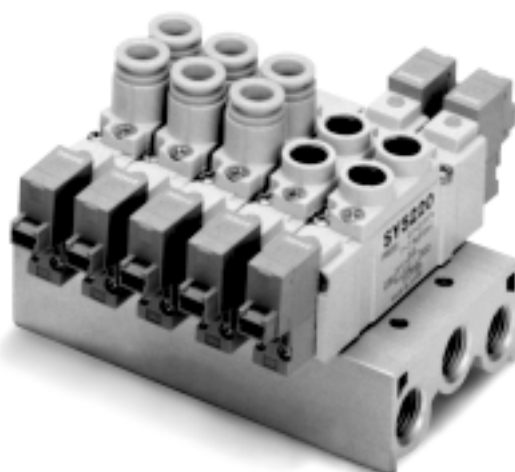
Pressure: 0.5MPa, Load factor: 50%

Base mounted (sub-plate)	Nl/min	Cylinder speed mm/s	Cylinder bore size mm																
			Series CJ2				Series CM2				Series MB/CA1				Series CS1				
			ø6	ø10	ø16	ø20	ø25	ø32	ø40	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø180	ø200
SY3000	294.5	150																	
		300																	
		450																	
		600																	
		750																	
SY5000	687	150																	
		300																	
		450																	
		600																	
		750																	
SY7000	1177.8	150												*	*				
		300											*	*					
		450										*	*						
		600										*	*						
		750								*	*								
SY9000	2748.2	150												*	*	*			
		300											*	*	*				
		450										*	*	*					
		600									*	*	*						
		750								*	*								

The speed of CJ2 and CM2 cylinders is controlled by a fixed orifice built into the cylinder.

\* Cylinder speeds are for extension of the cylinder.

\* The "\*" symbol indicates conditions with SGP (steel piping).



#### Long life exceeding 50 million cycles

(Based on SMC life test conditions.)

Long life is achieved by a new pilot design, guide rings that prevent main valve eccentricity, and a stronger return force.

# SY3000/5000/7000/9000 Base Mounted Type Single Valve

## How to Order

SY 5 2 40 5 L Q

### Series

3	SY3000
5	SY5000
7	SY7000
9	SY9000

### Type of actuation

1	2 position single 
2	2 position double 
3	3 position closed centre 
4	3 position exhaust centre 
5	3 position pressure centre 

### Pilot type

Nil	Internal pilot
R	External pilot

### Rated voltage

DC specifications	
5	24VDC
6	12VDC
V	6VDC
S	5VDC
R	3VDC
9	Less than 50 VDC

### AC specifications (50/60Hz)

1	100VAC
2	200VAC
3	110VAC [115VAC]
4	220VAC [230VAC]
9	Less than 250 VAC

Note 1) "D", "DO", "Y" and "YO" are only available in 24VDC and 12VDC in case of DC.  
Note 2) "D", "DO", "Y" and "YO" are not



Contact SMC for other voltages (9)



Protective class class I (Mark: )..... DIN terminal type



Protective class class III (Mark: )..... Grommet, L and M plug connector

### Port size

Symbol	Port size	Applicable series
Nil	Without sub-plate	
01	1/8 With sub-plate	SY3000
02	1/4 With sub-plate	SY5000 SY7000
03	3/8 With sub-plate	SY7000 SY9000
04	1/2 With sub-plate	SY9000

### Thread

	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

### Manual override

Nil: Non-locking push type



D: Push-turn locking slotted type



E: Push-turn locking lever type



### Indicator light/Surge voltage suppressor

For electrical entry G, H, L, M

Nil	Without indicator light/surge voltage suppressor
S	With surge voltage suppressor
Z	With indicator light/surge voltage suppressor
U	With indicator light/surge voltage suppressor (non-polar type)

Note 1) "U" are available for DC only.

For electrical entry D

Nil	Without indicator light/surge voltage suppressor
S	With surge voltage suppressor (non-polar type)
Z	With indicator light/surge voltage suppressor (non-polar type)

Note 1) "DOZ" is not available.  
Note 2) For AC, there is no "S" specification, since it is integrated with the rectifier.

### Electrical entry

24V, 12V, 6V, 5V, 3VDC				24V, 12VDC 100V, 110V, 200V, 220VAC
Grommet	L type plug connector	M type plug connector		DIN terminal
G: Lead wire length 300mm 	L: With lead wire (length 300mm) 	M: With lead wire (length 300mm) 	MN: Without lead wire 	(Except SY3000) D: With connector Y: With connector (DIN 43650C) 
H: Lead wire length 600mm 	LN: Without lead wire 	LO: Without connector 	MO: Without connector 	DO: Without connector YO: Without connector (DIN 43650C) 



Note 1) "LN" and "MN" include 2 sockets  
Note 2) "D", "DO", "Y", "YO" are not available for SY3000.



Pages 1.2-168 to 1.2-177

## Specifications

Series			SY3000	SY5000	SY7000	SY9000
Fluid			Air			
Internal pilot operating pressure range MPa	2 position single		0.15 to 0.7			
	2 position double		0.1 to 0.7			
	3 position		0.2 to 0.7			
External pilot operating pressure range MPa	Operating pressure range		-100kPa to 0.7			
	Pilot pressure range	2 position single	0.25 to 0.7			
		2 position double	0.25 to 0.7			
		3 position	0.25 to 0.7			
Ambient and fluid temperature °C			Maximum 50			
Maximum operating frequency Hz	2 position single, double		10	5	5	5
	3 position		3	3	3	3
Manual override			Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type			
Pilot exhaust type	Internal pilot		Common exhaust for main and pilot valves			
	External pilot		Separate exhaust for pilot valve			
Lubrication			Not required			
Mounting orientation			Unrestricted			
Impact resistance/Vibration resistance m/s <sup>2</sup> <small>Note)</small>			150/30			
Enclosure			Dust proof (IP65 for DIN terminal*)			



\* In compliance with IEC529 standard.

(Note) **Impact resistance:** No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energized and de-energized states. (Value in the initial stage)

**Vibration resistance:** No malfunction occurred in a one-sweep test between 8.3 and 2000Hz. Test was performed for both energized and de-energized states in the axial and right angle directions of the main valve and armature. (Value in the initial stage)

## Solenoid specifications

Electrical entry			Grommet (G)/(H), L type plug connector (L), M type plug connector (M), DIN terminal (D) <sup>Note 1)</sup>
Rated coil voltage V	DC		24, 12, 6, 5, 3
	AC 50/60Hz		100, 110, 200, 220 <sup>Note 2)</sup>
Allowable voltage fluctuation			±10% of rated voltage
Current consumption W	DC		0.5 [With indicator light: 0.55 (0.6 for DIN terminal with indicator light)] <sup>Note 3)</sup>
Apparent power VA	AC	100V	0.9 (With indicator light: 1.0)
		110V	1.0 (With indicator light: 1.1)
		[115V]	[1.1 (With indicator light: 1.2)]
		200V	1.8 (With indicator light: 1.9)
		220V	1.9 (With indicator light: 2.0)
		[230V]	[2.2 (With indicator light: 2.3)]
Surge voltage suppressor			Diodes (ZNR for DIN terminal, Zener diode for G, L or M non-polar type)
Indicator light			LED (Neon bulb for AC type DIN terminal)



Note 1) DIN terminal (D) is not available for SY3000.

Note 2) 110 and 115VAC are common, as are 220 and 230VAC.

Note 3) Energy saving [0.22W] type is also available. Refer to page 1.2-177 for details.

Note 4) AC specifications are only for the DIN terminal type.

## Response time



(Note) Based on dynamic performance test JISB8375-1981 (at coil temperature of 20°C with rated voltage)

### SY3000

Type of actuation	Response time ms (at 0.5MPa)			
	Without indicator light/surge voltage suppressor	With indicator light/surge voltage suppressor		
		S, Z types	U types	
2 position single	12 or less	15 or less	12 or less	
2 position double	10 or less	13 or less	10 or less	
3 position	15 or less	20 or less	16 or less	

### SY7000

Type of actuation	Response time ms (at 0.5MPa)			
	Without indicator light/surge voltage suppressor	With indicator light/surge voltage suppressor		
		S, Z types	U types	
2 position single	31 or less	38 or less	33 or less	
2 position double	27 or less	30 or less	28 or less	
3 position	50 or less	56 or less	50 or less	

### SY5000

Type of actuation	Response time ms (at 0.5MPa)			
	Without indicator light/surge voltage suppressor	With indicator light/surge voltage suppressor		
		S, Z types	U types	
2 position single	19 or less	26 or less	19 or less	
2 position double	18 or less	22 or less	18 or less	
3 position	32 or less	38 or less	32 or less	

### SY9000

Type of actuation	Response time ms (at 0.5MPa)			
	Without indicator light/surge voltage suppressor	With indicator light/surge voltage suppressor		
		S, Z types	U types	
2 position single	35 or less	41 or less	35 or less	
2 position double	35 or less	41 or less	35 or less	
3 position	62 or less	64 or less	62 or less	

SV

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VQC

SQ

VQ

VQ4

VQ5

VQZ

VQD

VFS

VS

VS7

VQ7