

# 5 Port Solenoid Valve

New

## Increased Flow For The SY Series



**SY3000**

**ø32** [Conventional]

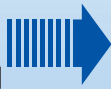


**Increased up to ø50** (300 mm/s)\*

**10 mm width can drive a ø50 cylinder.**

**SY5000**

**ø50** [Conventional]



**Increased up to ø63** (300 mm/s)\*

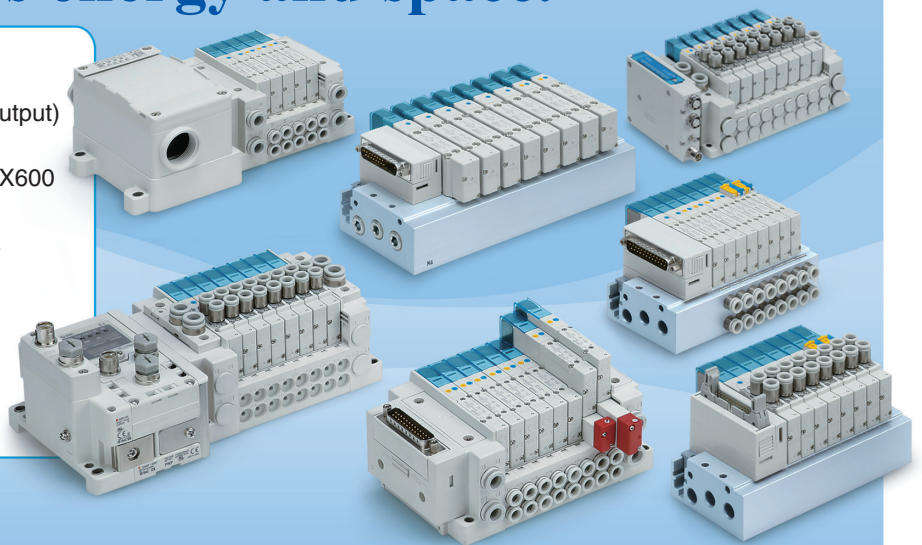
**15 mm width can drive a ø63 cylinder.**

\*Values based on comparison with the conventional SMC model. Refer to page 4 for common conditions.

**Thanks to the flow increase, valve size can be reduced. Saves energy and space.**

**New**

- Added the EX260 Integrated-type (For Output) Serial Transmission System.
- Added EtherNet/IP™, EtherCAT to the EX600 Integrated-type (For Input/Output) Serial Transmission System (Fieldbus System).
- Additional Options:  
Interface regulator assembly  
Individual SUP block assembly  
Individual EXH block assembly  
Dual flow fitting  
Name plate for manifolds



### Power Consumption

**0.1 w 0.35 w**

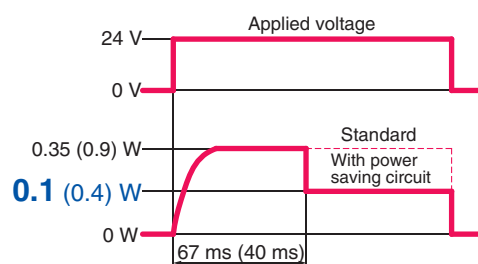
With power saving circuit

Standard

**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 67 ms at 24 VDC.) Refer to the electrical power waveform as shown on the right.

[Electrical power waveform with power saving circuit]



The value in ( ) are for the quick response and high pressure types.

**Rubber seal  
Metal seal**

**Life** \*

**70 million cycles**  
(Rubber seal)

**200 million cycles**  
(Metal seal)

\* According to SMC life test conditions

**Series SY3000/5000**



CAT.ES11-103B

# Series SY3000/5000

## Valve Specifications 1

### Valve Specifications

Valve type			Rubber seal	Metal seal
Fluid			Air	
Internal pilot operating pressure range (MPa)	2-position single		0.15 to 0.7	0.1 to 0.7 (High pressure type: 0.1 to 1)
	2-position double		0.1 to 0.7	
	3-position		0.2 to 0.7	
	4-position dual 3-port valve		0.15 to 0.7	—
External pilot operating pressure range (MPa)	Operating pressure range		–100 kPa to 0.7 (4-position: –100 kPa to 0.6)	–100 kPa to 0.7 (High pressure type: –100 kPa to 1)
	Pilot pressure range	2-position single	0.25 to 0.7	0.1 to 0.7 (High pressure type: 0.1 to 1)
		2-position double		
		3-position		
		4-position dual 3-port valve		Operating pressure + 0.1 or more (Min. 0.25) to 0.7
Ambient and fluid temperature (°C)			–10 to 50 (No freezing)	
Max. operating frequency (Hz)	2-position single/double		5	20 <sup>Note 1)</sup>
	4-position dual 3-port valve		3	10 <sup>Note 1)</sup>
	3-position			
Manual override			Non-locking push type	
			Push-turn locking slotted type	
			Slide locking type	
Pilot exhaust type	Internal pilot		Main/Pilot valve common exhaust	
	External pilot		Pilot valve individual exhaust	
Lubrication			Not required	
Mounting orientation			Unrestricted	Single: Unrestricted Double/3-position: Main valve is horizontal.
Impact/Vibration resistance <sup>Note 2)</sup> (m/s <sup>2</sup> )			150/30	
Enclosure			IP67 (Based on IEC60529)	
Coil rated voltage (DC)			24, 12 V	
Allowable voltage fluctuation (V)			±10% of rated voltage <sup>Note 3)</sup>	
Power consumption (W)	Standard		0.35 (With indicator light: 0.4)	
	High pressure type, Quick response type		0.9 (With indicator light: 0.95)	
	With power saving circuit		Standard: 0.1 (With indicator light only), High pressure type: 0.4 (With indicator light only)	
Surge voltage suppressor			Diode (Varistor for non-polar type)	
Indicator light			LED	

Note 1) Use below 5 Hz for with power saving circuit.

Note 2) 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 3) Due to voltage drops by the internal circuit in S/Z type and T type (with power saving circuit), use within the allowable voltage fluctuation as follows.

$$\begin{aligned} \text{S/Z type} & \begin{cases} 24 \text{ VDC: } -7\% \text{ to } +10\% \\ 12 \text{ VDC: } -4\% \text{ to } +10\% \end{cases} & \text{T type} & \begin{cases} 24 \text{ VDC: } -8\% \text{ to } +10\% \\ 12 \text{ VDC: } -6\% \text{ to } +10\% \end{cases} \end{aligned}$$

### Response Time

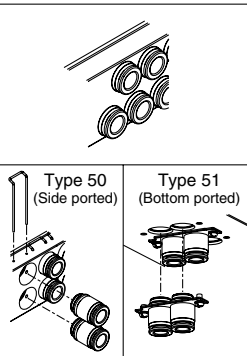
Series	Seal type	Model	Type of actuation	Response time (ms)					
				Standard			Quick response type		
				Without light/surge voltage suppressor	With light/surge voltage suppressor		Without light/surge voltage suppressor	With light/surge voltage suppressor	
SY3000	Rubber seal	SY31□0	2-position single	15 or less	S/Z type	R/U type	12 or less	S/Z type	R/U type
	Metal seal	SY31□1		15 or less	20 or less	15 or less	12 or less	15 or less	12 or less
	Rubber seal	SY32□0	2-position double	12 or less	15 or less	12 or less	10 or less	13 or less	10 or less
	Metal seal	SY32□1		12 or less	15 or less	12 or less	10 or less	13 or less	10 or less
	Rubber seal	SY33/4/5□0	3-position	18 or less	22 or less	18 or less	14 or less	18 or less	14 or less
	Metal seal	SY33/4/5□1		18 or less	22 or less	18 or less	14 or less	18 or less	14 or less
	Rubber seal	SY3A/B/C□0	4-position dual 3-port valve	18 or less	22 or less	18 or less	15 or less	19 or less	15 or less
SY5000	Rubber seal	SY51□0	2-position single	24 or less	31 or less	24 or less	18 or less	25 or less	18 or less
	Metal seal	SY51□1		24 or less	31 or less	24 or less	18 or less	25 or less	18 or less
	Rubber seal	SY52□0	2-position double	12 or less	15 or less	12 or less	10 or less	13 or less	10 or less
	Metal seal	SY52□1		12 or less	15 or less	12 or less	10 or less	13 or less	10 or less
	Rubber seal	SY53/4/5□0	3-position	30 or less	34 or less	30 or less	24 or less	28 or less	24 or less
	Metal seal	SY53/4/5□1		28 or less	30 or less	28 or less	23 or less	25 or less	23 or less
	Rubber seal	SY5A/B/C□0	4-position dual 3-port valve	35 or less	42 or less	35 or less	28 or less	35 or less	28 or less

## 8 A, B port size (Thread piping)

Symbol	A, B port	SY3000	SY5000
M5	M5 x 0.8	●	—
01	1/8	●	●
02	1/4	—	●

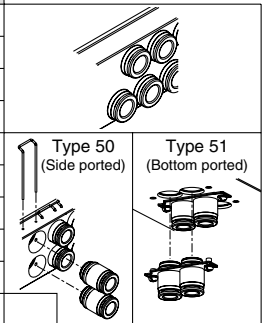
## A, B port size (Metric)

Symbol	A, B port	SY3000	SY5000
Fixed	C2 ø2 One-touch fitting	●	—
	C3 ø3.2 One-touch fitting	●	—
	C4 ø4 One-touch fitting	●	●
	C6 ø6 One-touch fitting	●	●
	C8 ø8 One-touch fitting	—	●
Replaceable	KC2 ø2 One-touch fitting	●	—
	KC3 ø3.2 One-touch fitting	●	—
	KC4 ø4 One-touch fitting	●	●
	KC6 ø6 One-touch fitting	●	●
	KC8 ø8 One-touch fitting	—	●
M*	Mixed sizes	●	●
P, E port size (Thread piping)		1/8	1/4



## A, B port size (Inch)

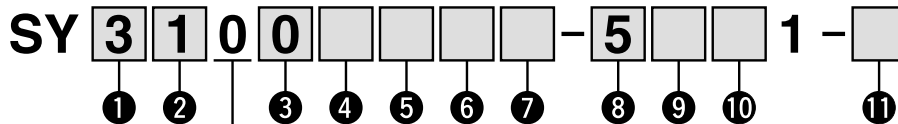
Symbol	A, B port	SY3000	SY5000
Fixed	N1 ø1/8" One-touch fitting	●	—
	N3 ø5/32" One-touch fitting	●	●
	N7 ø1/4" One-touch fitting	●	●
	N9 ø5/16" One-touch fitting	—	●
Replaceable	KN1 ø1/8" One-touch fitting	●	—
	KN3 ø5/32" One-touch fitting	●	●
	KN7 ø1/4" One-touch fitting	●	●
	KN9 ø5/16" One-touch fitting	—	●
M*	Mixed sizes	●	●
P, E port size (Thread piping)		1/8	1/4



\* When ports are mixed sizes, indicate the piping specifications on the manifold specification sheet.

## How to Order Valves (With two mounting screws)

Refer to page 8 for valve specifications.



### 1 Series

3	SY3000
5	SY5000

### 2 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
A*	4-position dual 3-port valve (N.C./N.C.)
B*	4-position dual 3-port valve (N.O./N.O.)
C*	4-position dual 3-port valve (N.C./N.O.)

\* Only rubber seal type is available for the 4-position dual 3-port valve.

### 3 Seal type

0	Rubber seal
1	Metal seal

### 4 Pilot type

Nil	Internal pilot
R	External pilot

### 5 Back pressure check valve (Built-in valve type)

Nil	None
H	Built-in

\* Only rubber seal type

\* The built-in valve type back pressure check valve is not available for the 3-position type.

### Base mounted

### 6 Pilot valve option

Nil	Standard (0.7 MPa)
B	Quick response type (0.7 MPa)
K*	High pressure type (1.0 MPa)

\* Only metal seal type is available for the high pressure type.

### 7 Coil type

Nil	Standard
T	With power saving circuit (Continuous duty type)

\* Be sure to select the power saving circuit type when the valve is continuously energized for long periods of time.

\* Note the specified energizing time when power saving circuit is selected. Refer to page 154.

### 8 Rated voltage

5	24 VDC
6	12 VDC

### 9 Light/surge voltage suppressor and common specification

Nil	Without light/surge voltage suppressor (Non-polar)
R	With surge voltage suppressor (Non-polar)
U	With light/surge voltage suppressor (Non-polar)
S	With surge voltage suppressor (Positive common)
Z	With light/surge voltage suppressor (Positive common)
NS	With surge voltage suppressor (Negative common)
NZ	With light/surge voltage suppressor (Negative common)

\* Only "Z" and "NZ" types are available for the product with power saving circuit.

### 10 Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type	F: Slide locking type
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### 11 Type of mounting screw

Nil	Round head combination screw
B	Hexagon socket head cap screw
K	Round head combination screw (Falling-out-prevention type)
H	Hexagon socket head cap screw (Falling-out-prevention type)

\* For "K" and "H", the valve body cover has a drop prevention construction to stop the mounting screws from falling out when the valve is removed for maintenance etc.

\* When ordering a valve individually, the base gasket is not included. Since the base gasket is attached to the manifold, please order the base gasket separately if it is needed for maintenance service. Refer to page 47 for part numbers of the base gasket and mounting screw.

\* "B" and "H" cannot be selected for the individual SUP/EXH spacer assembly or double check spacer assembly with residual pressure release valve.

