

# 3 Port Direct Operated Solenoid Valve Rubber Seal

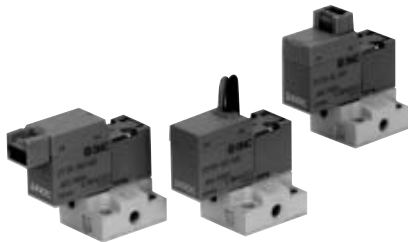
## Series SY100

### Specifications

Fluid	Air
Ambient and fluid temperature (°C)	-10 to 50°C (No freezing. Refer to page 4-18-4.)
Response time (ms) <sup>(1)</sup>	10 or less
Max. operating frequency (Hz)	20
Manual override	Non-locking push type, Locking slotted type Push-turn locking slotted type Push-turn locking lever type (SY1 $\frac{3}{4}$ , SY1 $\frac{3}{4}$ A only)
Lubrication	Not required
Mounting position	Unrestricted
Impact/Vibration resistance (m/s <sup>2</sup> ) <sup>(2)</sup>	150/30
Enclosure	Dustproof



Body ported



Base mounted



Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor.)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester 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

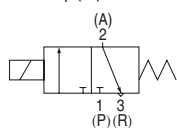
Series		SY1 $\frac{13}{24}$	SY1 $\frac{13}{24}$ A
Electrical entry		Grommet (G)/(H), L plug connector (L) M plug connector (M)	
Coil rated voltage (V)	DC	24, 12, 6, 5, 3	
	AC 50/60 Hz	100, 110, 200, 220	—
Allowable voltage fluctuation		-10 to +10%	
Power consumption (W)	DC	0.5 (With indicator light: 0.55)	0.75 W (With indicator light: 0.8 W)
Apparent power (VA)	AC	100 V	0.9 (With indicator light: 1.0)
		110 V	1.0 (With indicator light: 1.1)
		[115 V]	[1.1 (With indicator light: 1.2)]
		200 V	1.8 (With indicator light: 1.9)
		220 V	1.9 (With indicator light: 2.0)
	[230 V]	[2.2 (With indicator light: 2.3)]	
Surge voltage suppressor		Diode	
Indicator light		LED	



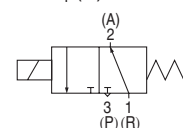
\* It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC. [Low wattage [0.45 W] is available, too. For details, refer to catalog on page 4-18-4.]

#### JIS Symbol

SY11 $\frac{3}{4}$  (A)



SY12 $\frac{3}{4}$  (A)



**Made to Order Specifications**  
(For details, refer to page 4-3-17.)

### Model

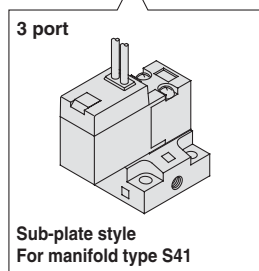
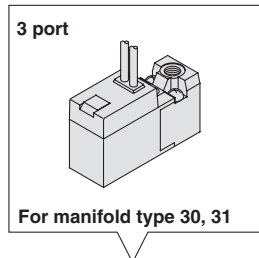
Function	Valve model	Type	Operating pressure range (MPa)	Vacuum specifications (MPa)		Port size		Effective area (mm <sup>2</sup> )	Weight (g) <sup>(2)</sup>	
				1(P) port	3(R) port	1(P), 3(R) port	2(A) port		Grommet	L plug connector, M plug connector
N.C.	SY11 $\frac{3}{4}$	Standard	0 to 0.7	-100 kPa to 0.6	-100 kPa to 0	M3 x 0.5	M3 x 0.5	0.14	SY1□3(A): 13 SY1□4(A): 24 (12)	SY1□3(A): 15 SY1□4(A): 26 (14)
N.C.	SY11 $\frac{3}{4}$ A	Large flow	0 to 0.7	-100 kPa to 0.6	-100 kPa to 0	M3 x 0.5	M3 x 0.5	0.22		
N.O.	SY12 $\frac{3}{4}$ <sup>(1)</sup>	Standard	0 to 0.7	-100 kPa to 0	-100 kPa to 0.6	M3 x 0.5	M3 x 0.5	0.14		
N.O.	SY12 $\frac{3}{4}$ A <sup>(1)</sup>	Large flow	0 to 0.7	-100 kPa to 0	-100 kPa to 0.6	M3 x 0.5	M3 x 0.5	0.22		



Note 1) SY123/SY124 $\frac{3}{4}$  and SY123/SY124 $\frac{3}{4}$ A: Supply pressure to 1(R) port and exhaust air from 3(P) port.  
Note 2) Value for DC. Add 1 g for AC. ( ): Without sub-plate.

## How to Order

### Standard type (Cv0.008)



**Type of actuation**

1	Normally closed
2	Normally open

**Rated voltage**

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

For AC (50/60 Hz)

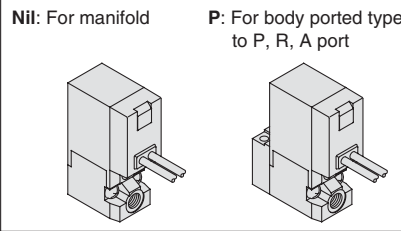
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

### Light/Surge voltage suppressor

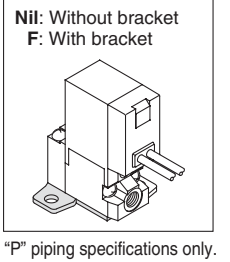
Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

\* For AC voltage valves there is no "S" option. It is already built into the rectifier circuit.  
\* For "R" and "U", DC voltage is only available.

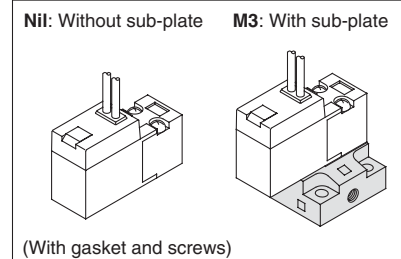
### Porting specifications



### Bracket



### Port size

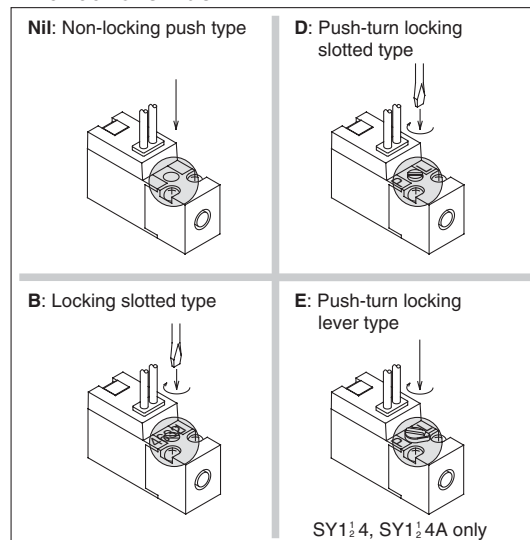


### Electrical entry

24 V, 12 V, 6 V, 5 V, 3 VDC/100 V, 110 V, 200 V, 220 VAC			
Grommet	L plug connector	M plug connector	
<b>G:</b> 300 mm lead wire	<b>L:</b> With lead wire (Length 300 mm)	<b>M:</b> With lead wire (Length 300 mm)	<b>MN:</b> Without lead wire
<b>H:</b> 600 mm lead wire	<b>LN:</b> Without lead wire	<b>LO:</b> Without connector	<b>MO:</b> Without connector

\* "LN" and "MN" types are with 2 sockets.

### Manual override



V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

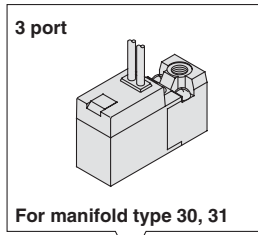
VZ

VS

VFN

## How to Order

### Large flow type (Cv: 0.012)

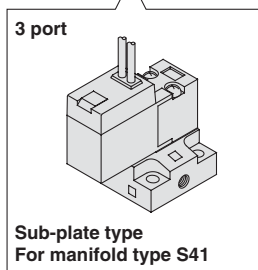


Large flow type  
(Cv: 0.012) : Body ported

SY1 1 3 A — 5 L [ ] [ ] [ ] M3 [ ]

Large flow type  
(Cv: 0.012) : Base mounted

SY1 1 4 A — 5 M [ ] [ ] [ ]



#### Type of actuation

1	Normally closed
2	Normally open

#### Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

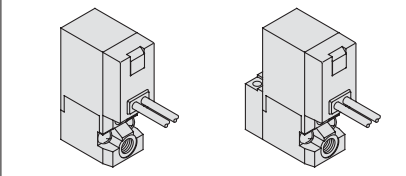
#### Large flow type

#### Light/Surge voltage suppressor

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

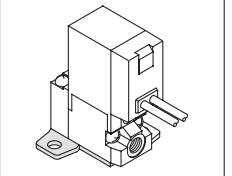
#### Porting specifications

Nil: For manifold P: For body ported type to P, R, A port



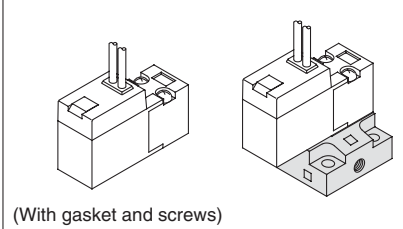
#### Bracket

Nil: Without bracket F: With bracket



#### Port size

Nil: Without sub-plate M3: With sub-plate



#### Electrical entry

24 V, 12 V, 6 V, 5 V, 3 VDC			
Grommet	L plug connector	M plug connector	
G: 300 mm lead wire	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire
H: 600 mm lead wire	LN: Without lead wire	LO: Without connector	MO: Without connector

\* "LN" and "MN" types are with 2 sockets.

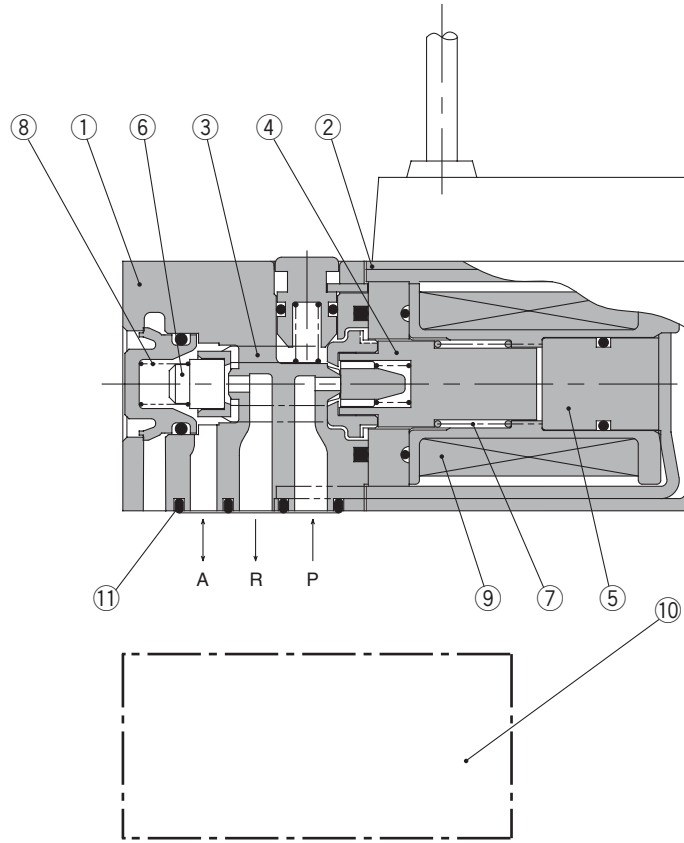
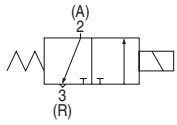
#### Manual override

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

SY1½ 4, SY1½ 4A only

## Construction

### SY114, SY114A



- V100
- SY**
- SYJ
- VK
- VZ
- VT
- VP
- VG
- VP
- S070
- VQ
- VKF
- VQZ
- VZ
- VS
- VFN

### Component Parts

No.	Description	Material	Note
①	Body	Resin	Gray
②	Cover	Resin	Gray
③	Push rod	Resin	—
④	Movable iron core assembly	HNBR/Stainless steel	—
⑤	Fixed iron core	Stainless steel	—
⑥	Exhaust poppet	HNBR	—
⑦	Return spring	Stainless steel	—
⑧	Poppet spring	Stainless steel	—
⑨	Coil assembly	—	—

### Replacement Parts

No.	Description	Part no.	Material
⑩	Sub-plate	SY100-74-1	Zinc die-casted
⑪	Gasket	VJ100-6-8	HNBR

### How to Order Connector Assembly

- For DC: **SY100-30-4A**
- For 100 VAC: **SY100-30-1A**
- For 200 VAC: **SY100-30-2A**
- For other voltages of AC: **SY100-30-3A**

Without lead wire: **SY100-30-A**  
 (With connector and 2 pcs. of socket)

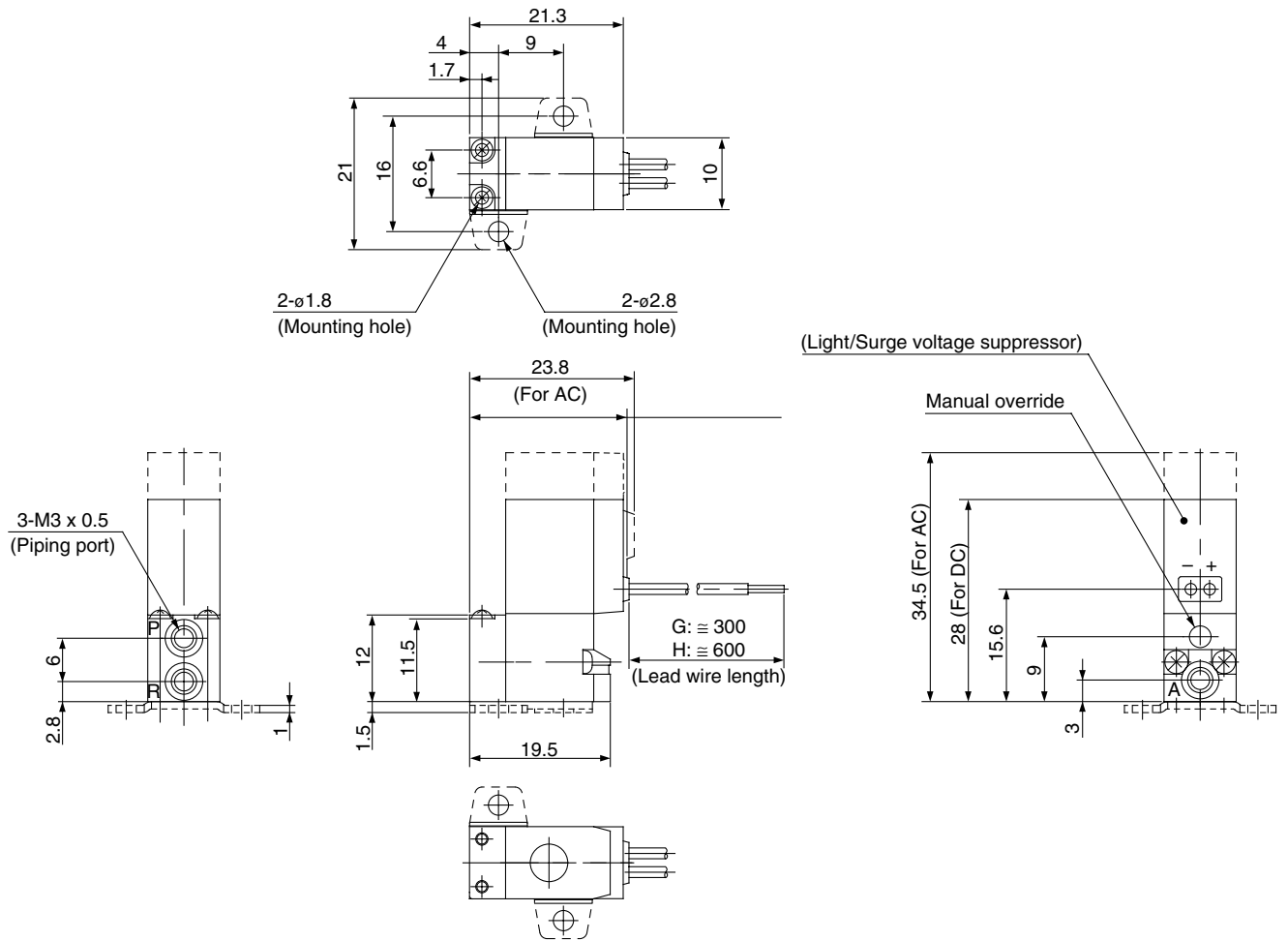
#### ●Lead wire length

Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

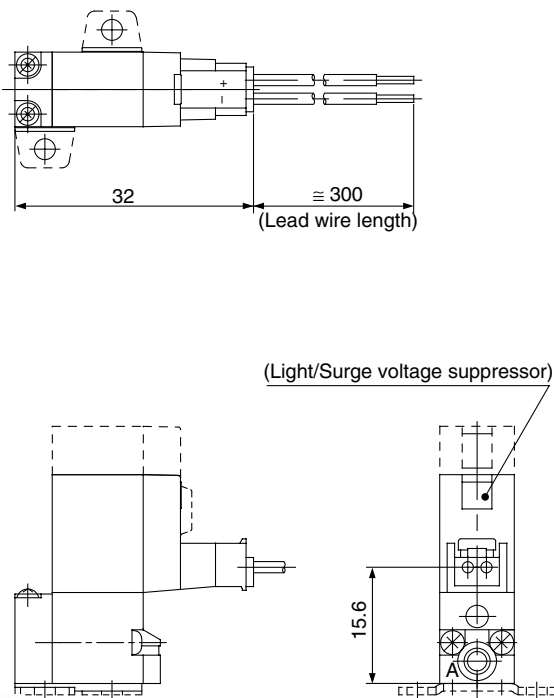
# Series SY100

## Body Ported

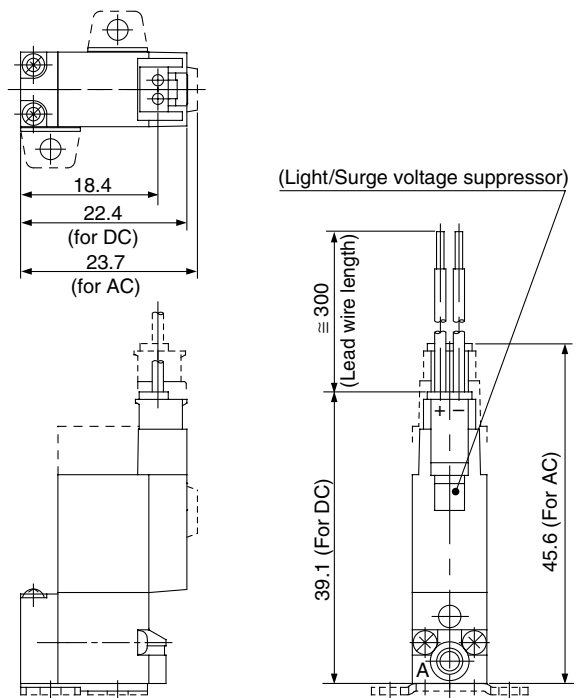
Grommet (G), (H): SY1<sub>2</sub><sup>1</sup>3 (A)-□<sub>H</sub>□□-PM3(-F)



L plug connector (L): SY1<sub>2</sub><sup>1</sup>3(A)-□L□□-PM3(F)



M plug connector (M): SY1<sub>2</sub><sup>1</sup>3(A)-□M□□-PM3(-F)

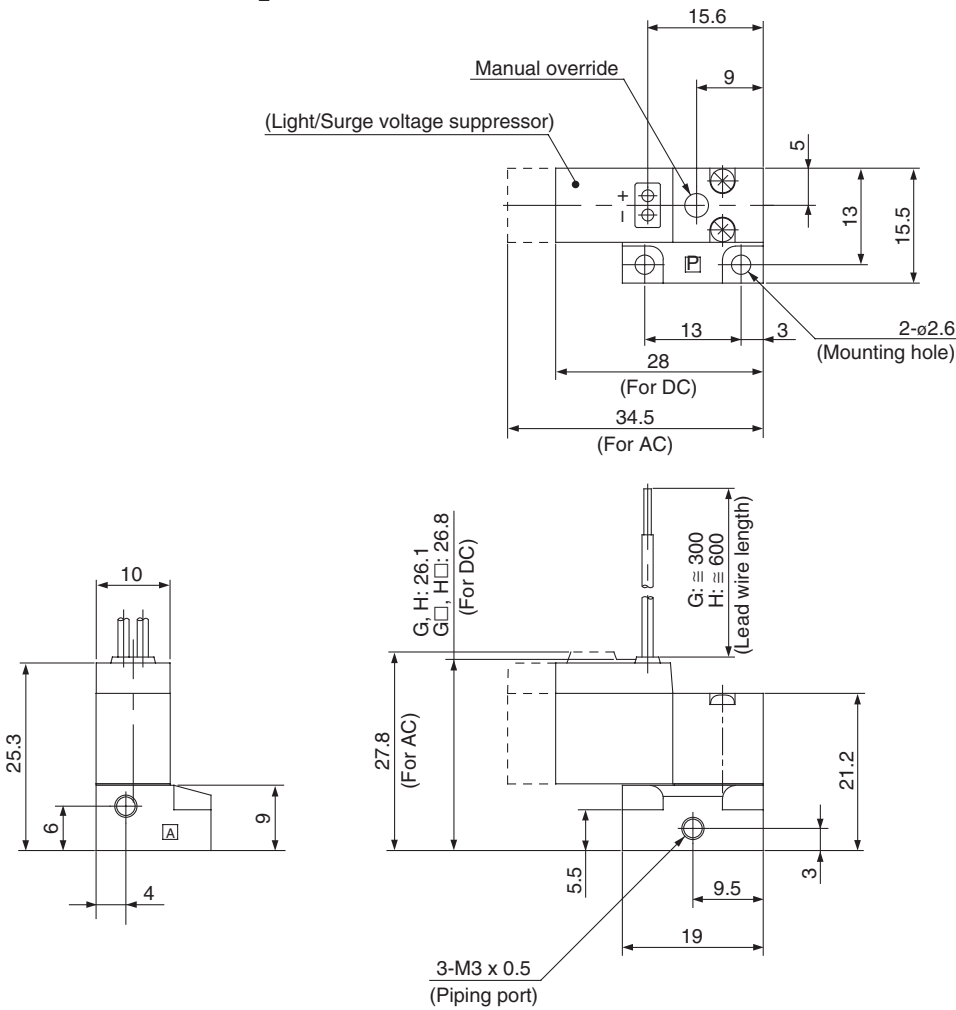


\* Other dimensions are same as grommet type.

\* Other dimensions are same as grommet type.

## Base Mounted (With sub-plate)

Grommet (G), (H): SY1 $\frac{1}{2}$ 4(A)-□<sup>G</sup><sub>H</sub>□□-M3



V100

**SY**

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

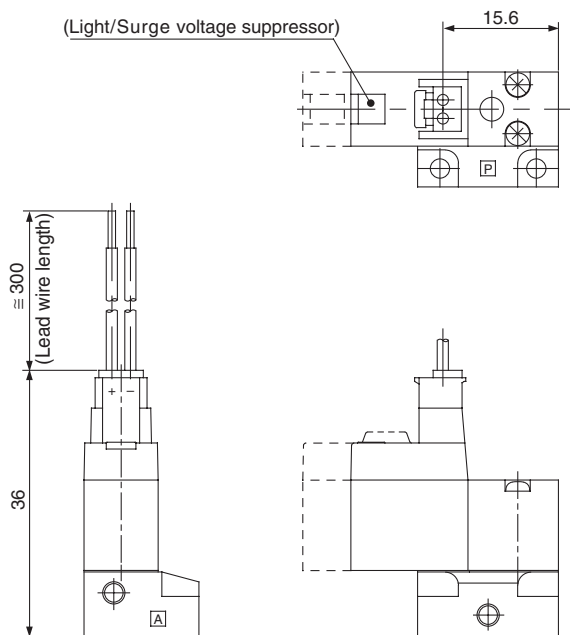
VQZ

VZ

VS

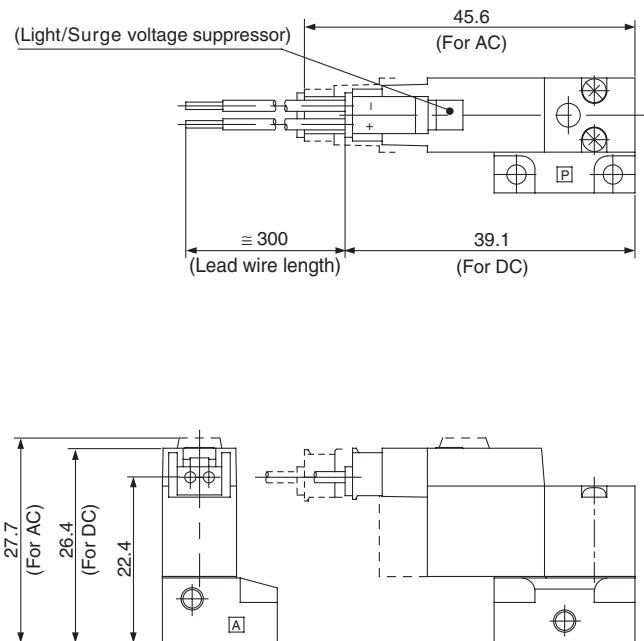
VFN

L plug connector (L): SY1 $\frac{1}{2}$ 4(A)-□L□□-M3



\* Other dimensions are same as grommet type.

M plug connector (M): SY1 $\frac{1}{2}$ 4(A)-□M□□-M3



\* Other dimensions are same as grommet type.

# Series SY

# Made to Order Specifications:

Please contact SMC for detailed specifications, delivery and pricing.

## Energy-saving Type

Power consumption is decreased by 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 62 ms at 24 VDC.)

### Specifications

Series		SY1 <sup>1</sup> <sub>2</sub> <sup>3</sup> <sub>4</sub> T	SY1 <sup>1</sup> <sub>2</sub> <sup>3</sup> <sub>4</sub> AT
Coil rated voltage (V)		24 DC, 12 DC	
Power consumption (W)	Inrush	0.55	0.8
	Holding	0.22	0.3

Specifications other than above are the same as standard models.

### How to Order

**Body ported** SY1  1  3  T-5 L Z   M3

**Base mounted** SY1  1  4  T-5 M Z

**Type of actuation**

1	Normally closed
2	Normally open

**Body option**

Nil	Standard
A	Large flow capacity

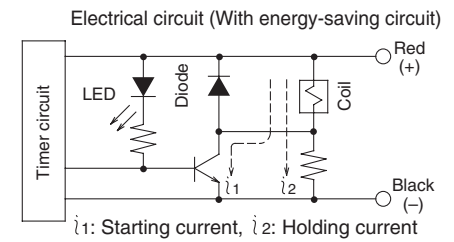
**Rated voltage**

5	24 VDC
6	12 VDC

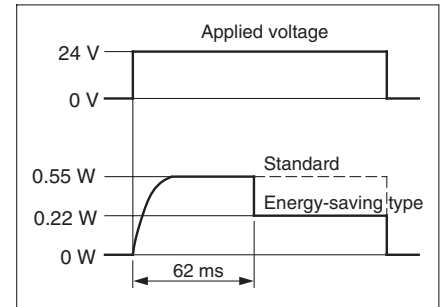
• Entry is the same as standard products.

### Working Principle

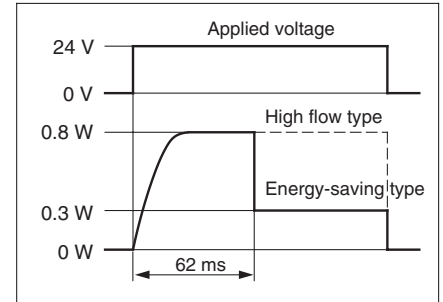
The circuit shown below reduces current consumption at holding which reduces the overall power consumption. Refer to electrical power waveform as shown below.



<Energy-saving Type, Electrical Power Waveform for SY1<sup>1</sup><sub>2</sub><sup>3</sup><sub>4</sub>T>



<Energy-saving Type, Electrical Power Waveform for SY1<sup>1</sup><sub>2</sub><sup>3</sup><sub>4</sub>AT>



## Low Wattage Specifications (0.45 W)

### How to Order

SY1   -     - X200

• Entry is the same as standard products.

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

VS

VFN