

3 Port Solenoid Valve Rubber Seal Series SY100

**Low power consumption: 0.5 W (Standard, Without indicator light)
(Current draw: 21 mA at 24 VDC)**

* Large flow type: 0.75 W (Current draw: 31 mA at 24 VDC)

[Energy saving type [0.22 W] is available, too. For details, refer to catalog on page 4-3-15.]

[Low wattage [0.45 W] is available, too. For details, refer to catalog on page 4-3-15.]

Body width: 10 mm

Effective area 0.14 mm² (Standard type)
Effective area 0.22 mm² (Large flow type)

High reliability

100 million cycles or more (By SMC life test data)

Available in vacuum applications

(Up to -100 kPa)

Copper-free

No copper used for sections in contact with fluids.

Bright color tone and neat design

A bright gray concept has been adopted for this product to compliment the surrounding operational environment.

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

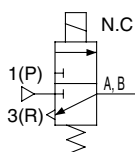
VZ

VS

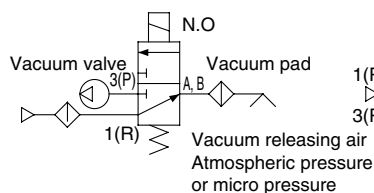
VFN

SY100/Application Example (Pneumatic JIS symbols shown are typical examples.)

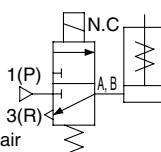
1. For blowing off



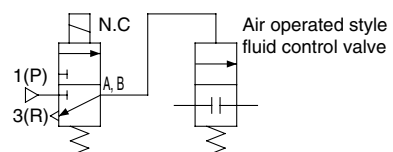
2. For vacuum control



3. For driving single acting cylinders



4. For driving air operated valves for fluid control



The characteristic values shown in the catalog are representative values, not warranting the performance.

⚠ Precautions

Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 4-18-2.

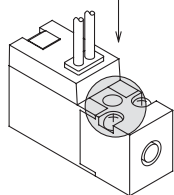
Manual Override Operation

⚠ Warning

Since connected equipment will be actuated when the manual override is operated, first confirm that conditions are safe.

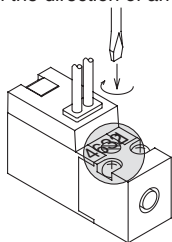
■ Non-locking push type [Standard type]

Press in the direction of the arrow

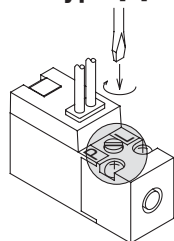


■ Locking slotted type [B]

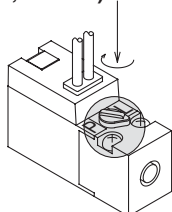
Turn in the direction of arrow.



■ Push-turn locking slotted type [D]



■ Push-turn locking lever type [E] (SY1½4, SY1¼4A)



(Pressing makes the valve operate. The valve can be locked in the manual override position by turning it to the direction that the arrow shows while keeping it pressed. If it is not turned, it can be used as a non-locking push type.)

(Pressing makes the valve operate. The valve can be locked in the manual override position by turning it to the direction that the arrow shows while keeping it pressed. If it is not turned, it can be used as a non-locking push type.)

⚠ Caution

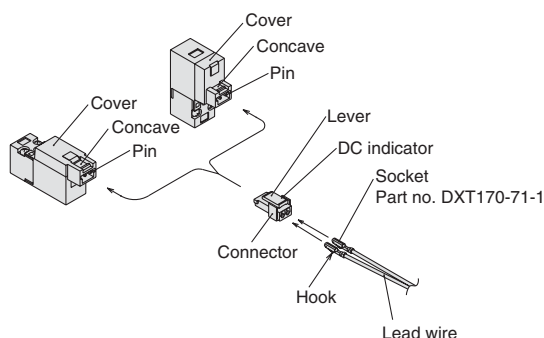
When operating the lock with the driver, use a watchmakers' screwdriver and turn lightly. [Torque: 0.1 N·m or less]

How to Use Plug Connector

⚠ Caution

1. Attaching and detaching connectors

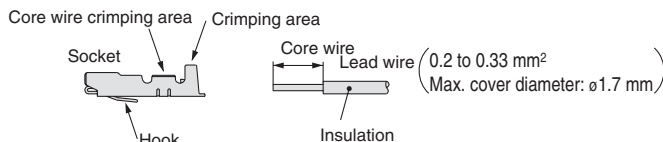
- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



2. Crimping of lead wires and sockets

Peel 3.2 to 3.7 mm of the tip of lead wire, enter the core wires neatly into a socket and crimp it with a special crimp tool. Be careful so that the cover of lead wire does not enter into the crimping part.

(For special crimping tool, please contact SMC.)



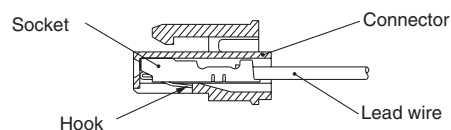
3. Attaching and detaching lead wires with sockets

● Attaching

Insert the sockets into the square holes of the connector (with ⊕ and ⊖ indication) and, continue to push the sockets all the way in until the lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

● Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.



Plug Connector Lead Wire Length

Standard length is 300 mm, but the following length is also available.

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)

How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector. <Example> Lead wire length 2000 mm

For DC (+COM)

SY114-5LO

SY100-30-4A-20

For AC

SY114-1LO

SY100-30-1A-20

● Lead wire length

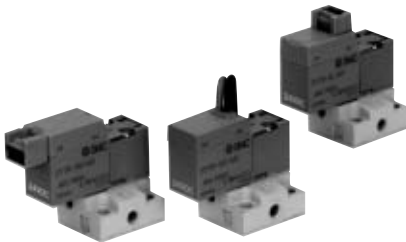
Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

3 Port Direct Operated Solenoid Valve Rubber Seal

Series SY100



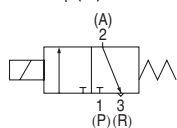
Body ported



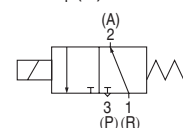
Base mounted

JIS Symbol

SY11³₄ (A)



SY12³₄ (A)



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

Specifications

Fluid	Air
Ambient and fluid temperature (°C)	-10 to 50°C (No freezing. Refer to page 4-18-4.)
Response time (ms) ⁽¹⁾	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 ¹ ₂ 4, SY1 ¹ ₂ 4A only)
Lubrication	Not required
Mounting position	Unrestricted
Impact/Vibration resistance (m/s ²) ⁽²⁾	150/30
Enclosure	Dustproof



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 ¹³ ₂₄	SY1 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 [115 V]	1.0 (With indicator light: 1.1) [1.1 (With indicator light: 1.2)]
		200 V	1.8 (With indicator light: 1.9)
		220 V [230 V]	1.9 (With indicator light: 2.0) [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.]

Model

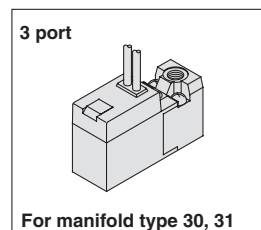
Function	Valve model	Type	Operating pressure range (MPa)	Vacuum specifications (MPa)		Port size		Effective area (mm ²)	Weight (g) ⁽²⁾	
				1(P) port	3(R) port	1(P), 3(R) port	2(A) port		Grommet	L plug connector, M plug connector
N.C.	SY11 ³ ₄	Standard	0 to 0.7	-100 kPa to 0.6	-100 kPa to 0	M3 x 0.5	M3 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 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 ³ ₄ ⁽¹⁾	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 ³ ₄ A ⁽¹⁾	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/SY124³ and SY123/SY124³A: 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)

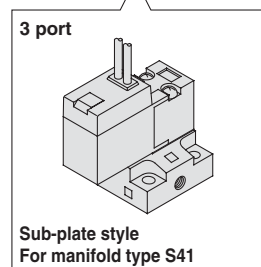


Standard type
(Cv: 0.008) : Body ported

SY1 1 3 5 L M3

Standard type
(Cv: 0.008) : Base mounted

SY1 1 4 5 M



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

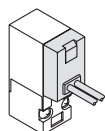
For AC (50/60 Hz)

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

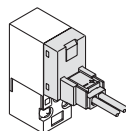
Electrical entry

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

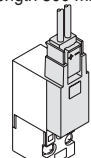
G: 300 mm lead wire



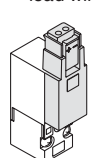
L: With lead wire (Length 300 mm)



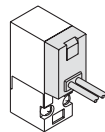
M: With lead wire (Length 300 mm)



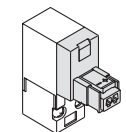
MN: Without lead wire



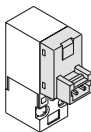
H: 600 mm lead wire



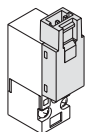
LN: Without lead wire



LO: Without connector



MO: Without connector



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

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)



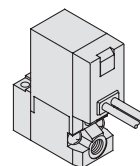
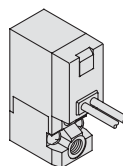
* For AC voltage valves there is no "S" option. It is already built into the rectifier circuit.

* For "R" and "U", DC voltage is only available.

Porting specifications

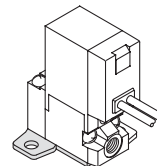
Nil: For manifold

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



Bracket

Nil: Without bracket
F: With bracket

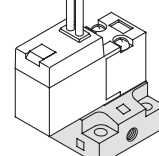
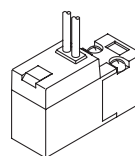


"P" piping specifications only.

Port size

Nil: Without sub-plate

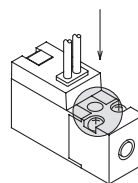
M3: With sub-plate



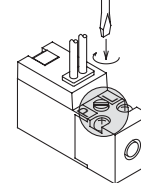
(With gasket and screws)

Manual override

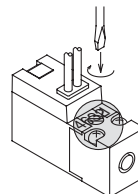
Nil: Non-locking push type



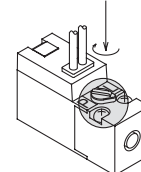
D: Push-turn locking slotted type



B: Locking slotted type



E: Push-turn locking lever type



SY1½ 4, SY1½ 4A only

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

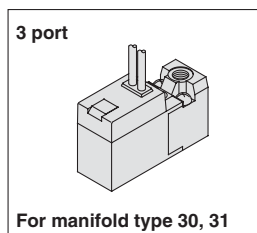
VZ

VS

VFN

How to Order

Large flow type (Cv: 0.012)

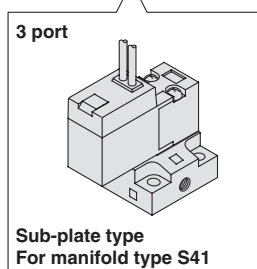


Large flow type
(Cv: 0.012) : Body ported

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

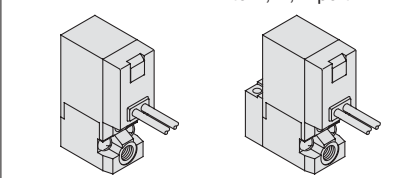
Large flow type

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)

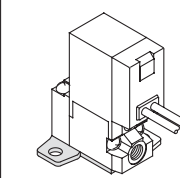
Porting specifications

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



Bracket

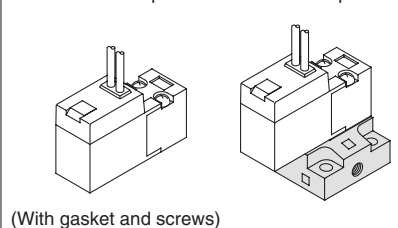
Nil: Without bracket F: With bracket



"P" piping specifications only.

Port size

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



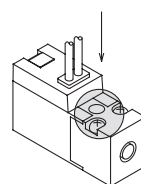
Electrical entry

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

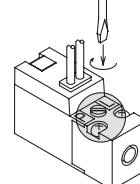
* "LN" and "MN" types are with 2 sockets.

Manual override

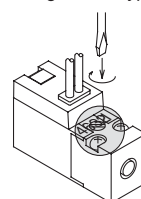
Nil: Non-locking push type



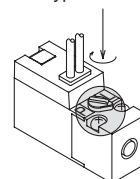
D: Push-turn locking slotted type



B: Locking slotted type



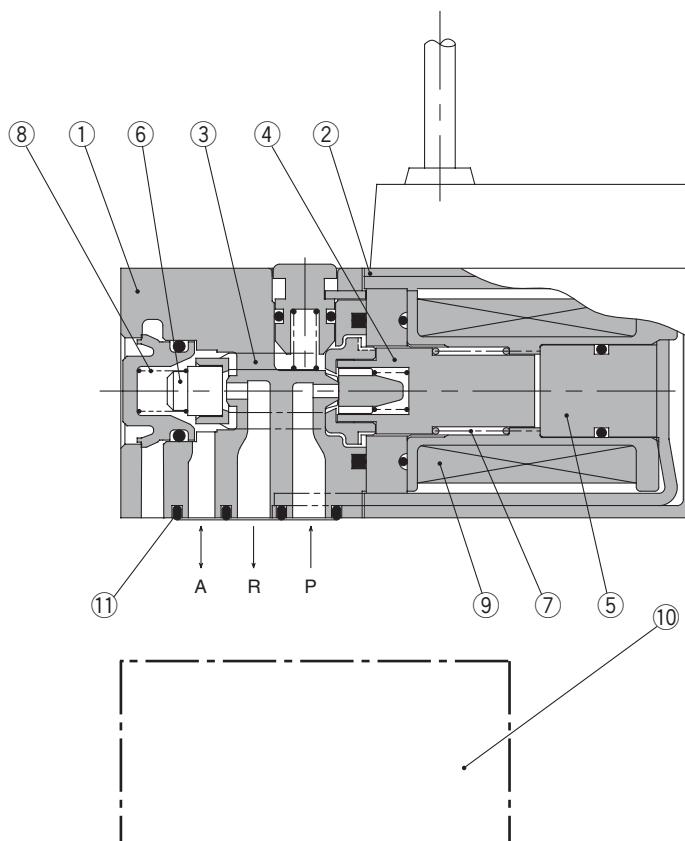
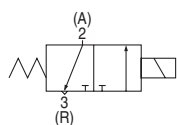
E: Push-turn locking lever type



SY1 1/2 4, SY1 1/2 4A only

Construction

SY114, SY114A



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

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

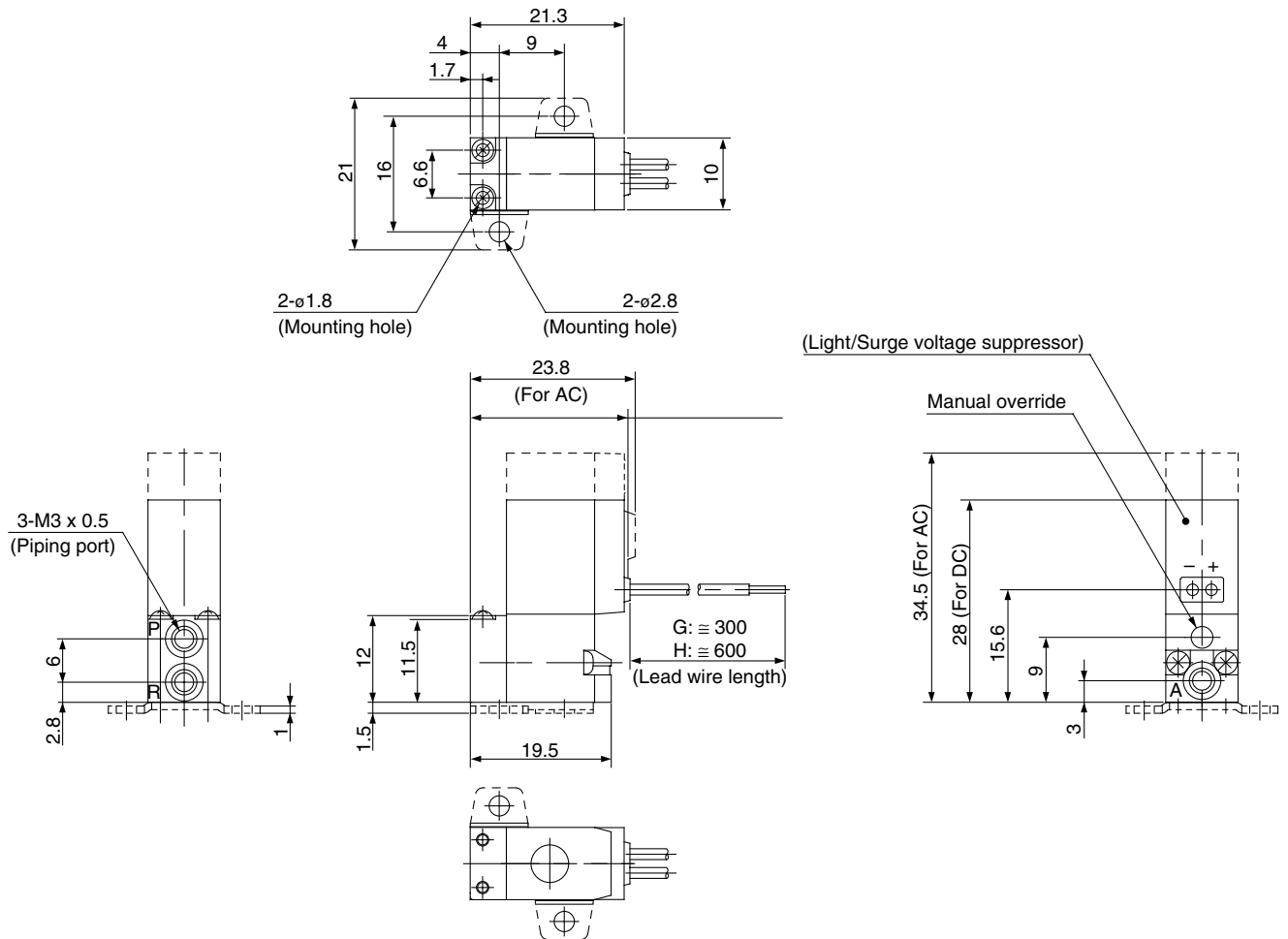
VS

VFN

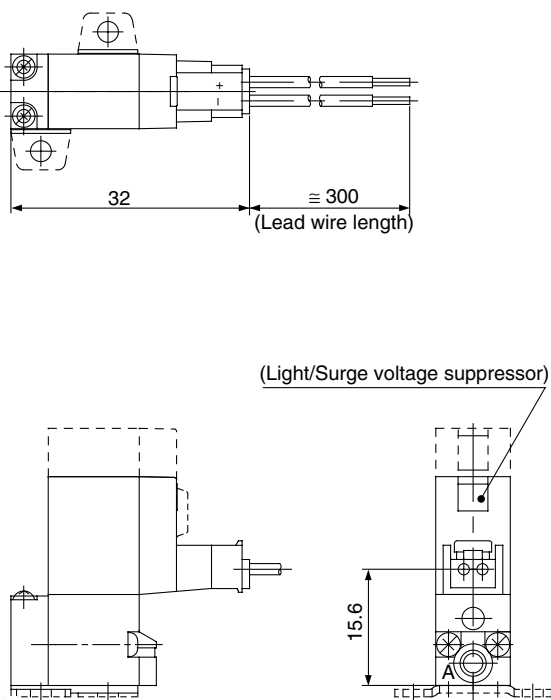
Series SY100

Body Ported

Grommet (G), (H): SY1₂¹3 (A)-□^G_H□□-PM3(-F)

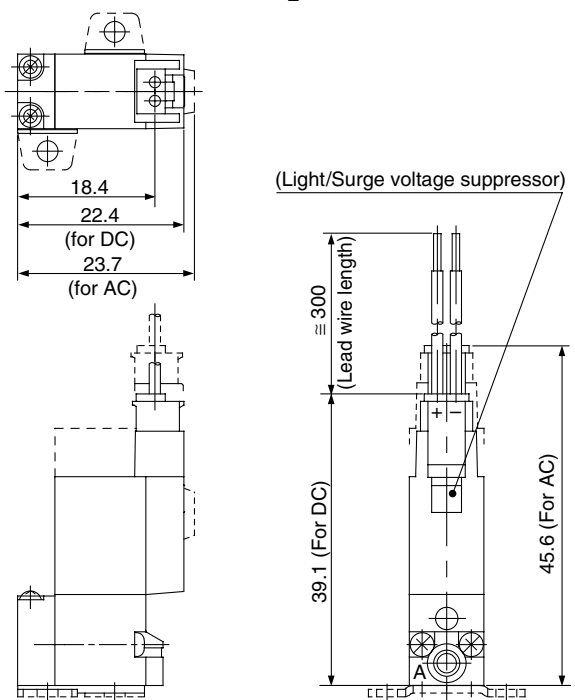


L plug connector (L): SY1₂¹3(A)-□L□□-PM3(F)



* Other dimensions are same as grommet type.

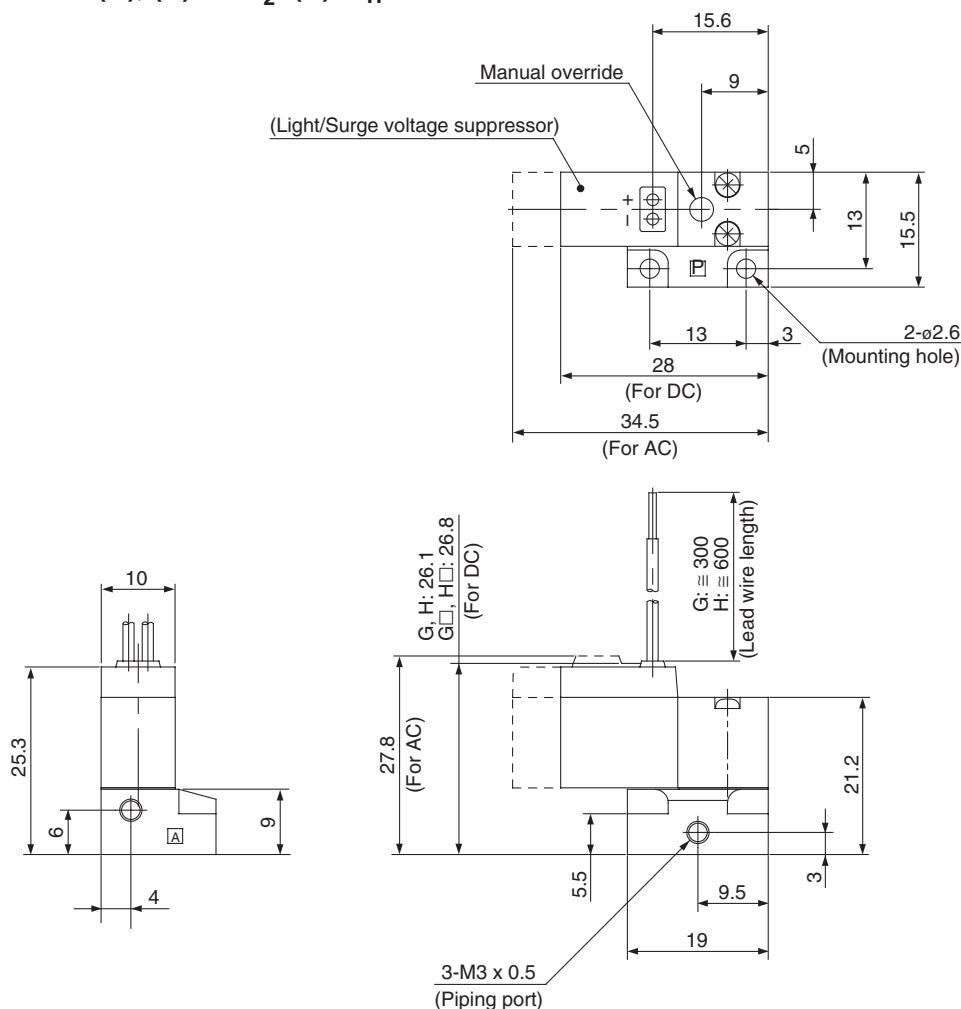
M plug connector (M): SY1₂¹3(A)-□M□□-PM3(-F)



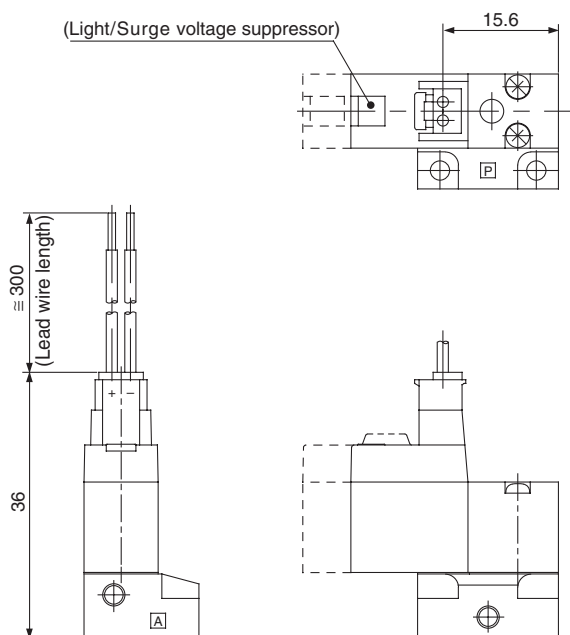
* Other dimensions are same as grommet type.

Base Mounted (With sub-plate)

Grommet (G), (H): SY1¹/₂4(A)-□^G_H□□-M3

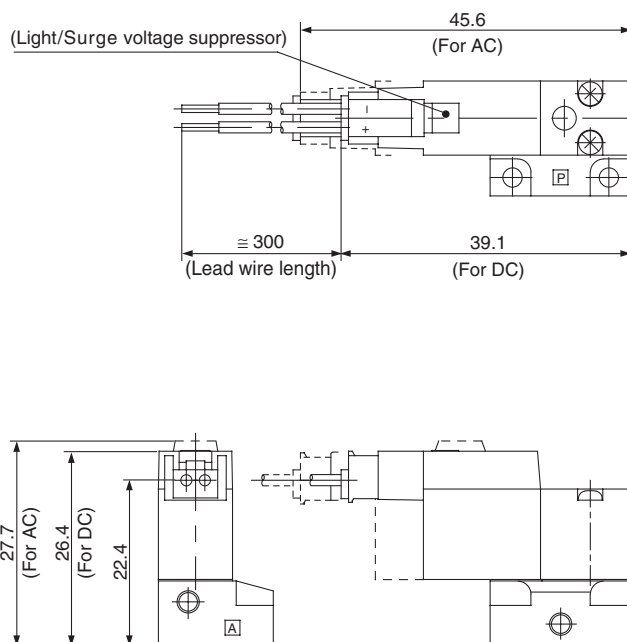


L plug connector (L): SY1¹/₂4(A)-□L□□-M3



* Other dimensions are same as grommet type.

M plug connector (M): SY1¹/₂4(A)-□M□□-M3



* Other dimensions are same as grommet type.

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

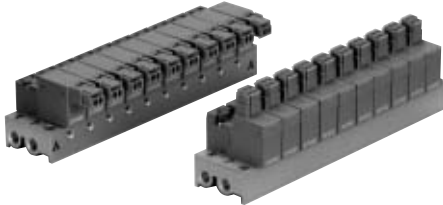
VQZ

VZ

VS

VFN

Manifold Specifications



Manifold Specifications

Model		Type 30 ⁽³⁾	Type 31	Type S41
Manifold		Single base/B mount		
P(SUP)/R(EXH)		Common SUP/Common EXH		
Valve stations		2 to 10 stations	2 to 20 stations	
A port porting specifications	Position	Valve		Base
	Direction	Top		Side
Port size	P, R ports	M5 x 0.8		
	A port	M3 x 0.5		M3 x 0.5, M5 x 0.8



Note 1) SY114(A) and SY124(A) can not be mounted on the same manifold.

Note 2) Supply to R port and exhaust from P port for SY124(A).

Note 3) 30 Type is applicable only for SY113 and SY113A. Piping to exhaust port is not possible.

Flow Characteristics

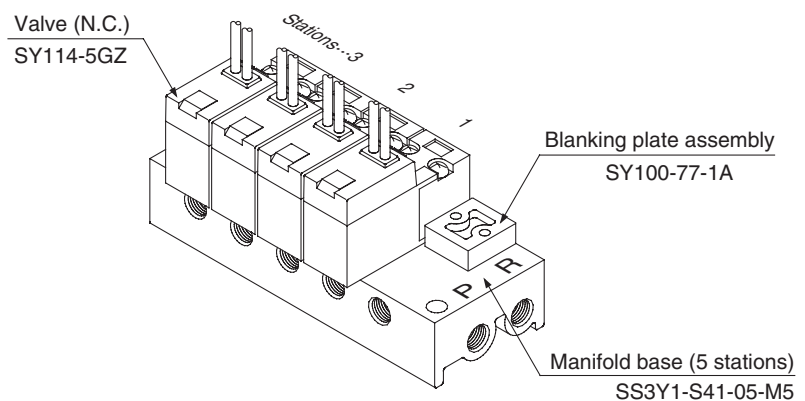
Manifold		Port size		Effective area (mm ²)
		1(P), 3(R) port	2(A) port	
SS3Y1-30	SY1□3	M5 x 0.8	M3 x 0.5	0.14
	SY1□3(A)			0.21
SS3Y1-31	SY1□3	M5 x 0.8	M3 x 0.5	0.14
	SY1□3(A)			0.21
SS3Y1-S41	SY1□4	M5 x 0.8	M3 x 0.5	0.14
	SY1□4(A)			0.21
	SY1□4	M5 x 0.8	M5 x 0.8	0.14
	SY1□4(A)			0.21



Note) Value at manifold base mounted

How to Order Valve Manifold Assembly

Example



SS3Y1-S41-05-M5..... 1 set (Type S41, 5 station manifold part number)

* SY100-77-1A..... 1 set (Blanking plate assembly part number)

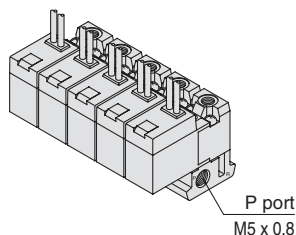
* SY114-5GZ..... 4 sets (Valve)

→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

List part numbers of the installed valve and option in required station location separately under manifold part no.

Common SUP/Common EXH

Type 30



How to Order

SS3Y1-30-05-F

Stations

02	2 stations
⋮	⋮
10	10 stations

Applicable solenoid valve

SY113-□□□□-M3
SY113A-□□□□-M3

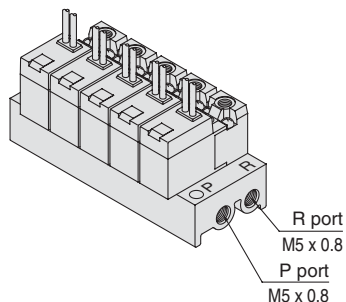
Applicable blanking plate assembly

SY100-77-1A



Note) Piping to exhaust port not possible.

Type 31



How to Order

SS3Y1-31-05

Stations

02	2 stations
⋮	⋮
20	20 stations

Applicable solenoid valve Note)

SY113-□□□□-M3
SY113A-□□□□-M3
SY123-□□□□-M3
SY123A-□□□□-M3

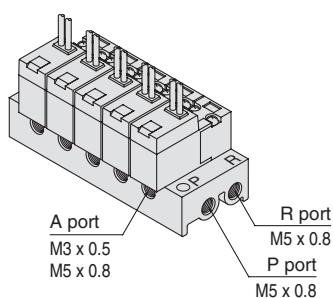
Applicable blanking plate assembly

SY100-77-1A



Note) SY113(A) and SY123(A) cannot be mounted on the same manifold.

Type S41



How to Order

SS3Y1-S41-05-M3

Stations

02	2 stations
⋮	⋮
20	20 stations

A port side

M3	M3 x 0.5
M5	M5 x 0.8

Applicable solenoid valve Note)

SY114-□□□□
SY114A-□□□□
SY124-□□□□
SY124A-□□□□

Applicable blanking plate assembly

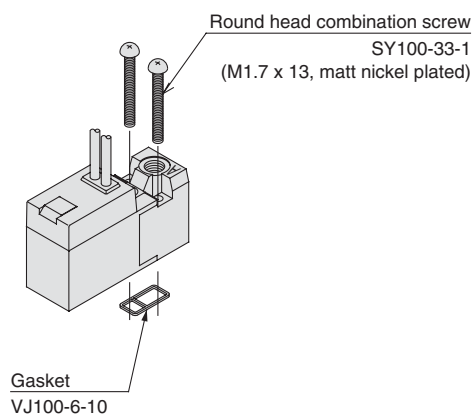
SY100-77-1A



Note) SY114(A) and SY124(A) cannot be mounted on the same manifold.

Combination with Solenoid Valve and Gasket Manifold Base

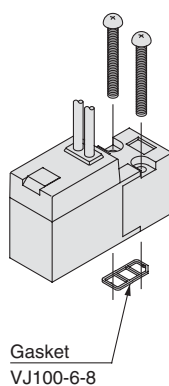
Body ported



Applicable base

- Sub-plate (For body ported type)
- SS3Y1-30 type | Manifold
- SS3Y1-31 type | base

Base mounted

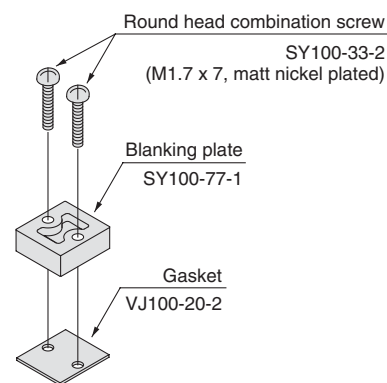


Applicable base

- Sub-plate
- Type SS3Y1- S41
- Manifold base

Blanking Plate Assembly

Part no.: SY100-77-1A



Applicable base

- Sub-plate
 - Type SS3Y1-30
 - Type SS3Y1-31
 - Type SS3Y1-S41
- Manifold base

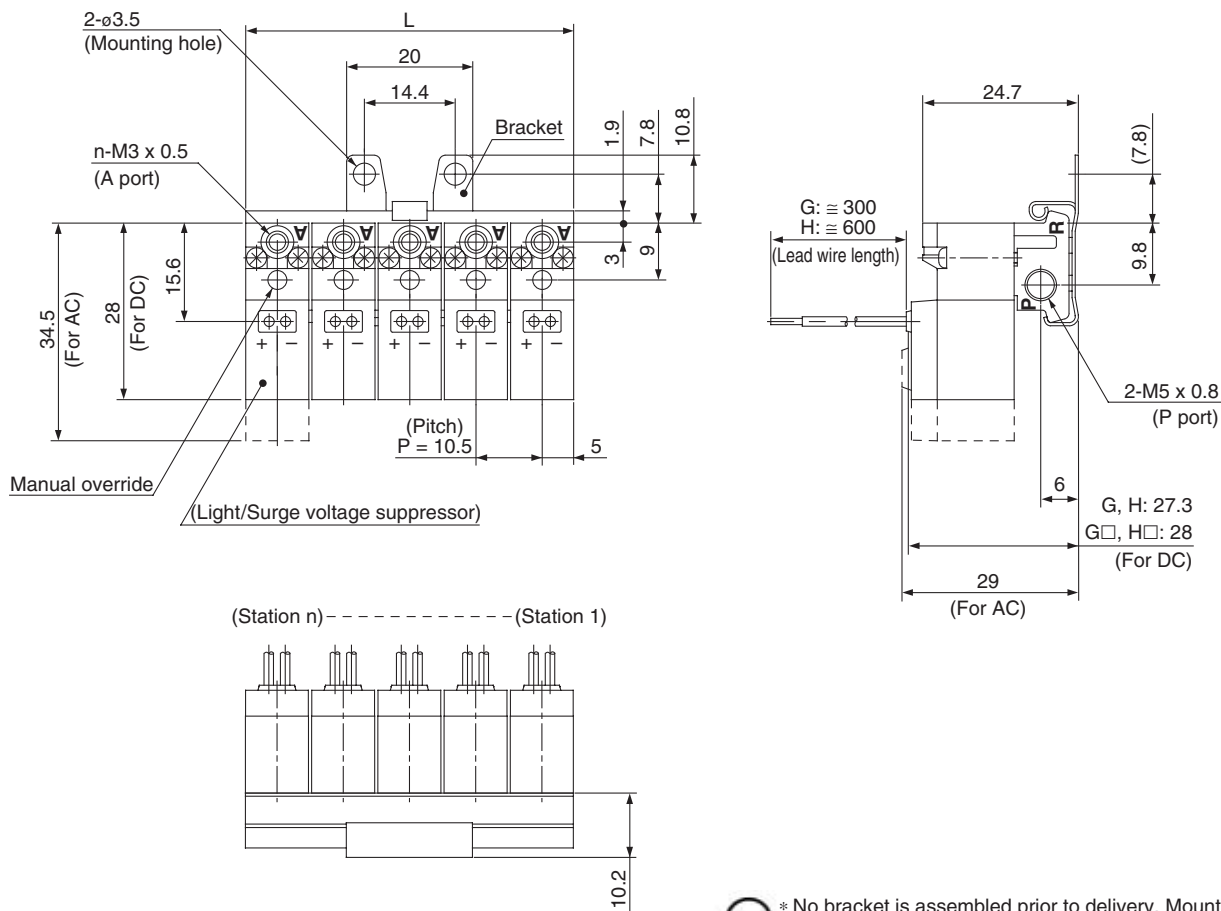
Caution

Mounting Screw Tightening Torques M1.7: 0.12 N·m

Series SY100

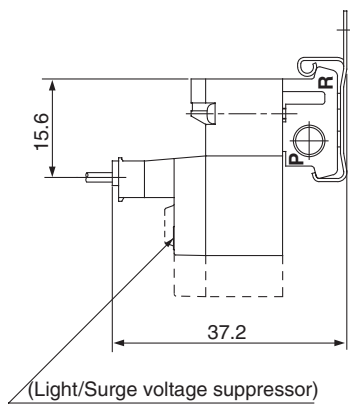
Type 30 Manifold: Top Ported/SS3Y1-30-Stations-F

Grommet (G), (H)



* No bracket is assembled prior to delivery. Mount one to the appropriate position.
(Attach two brackets if more than five stations.)

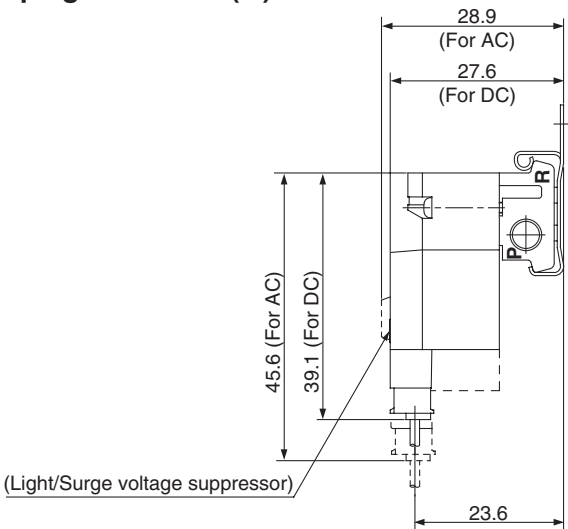
L plug connector (L)



* Other dimensions are same as grommet type.

Station	2	3	4	5	6	7	8	9	10
L	20.5	31	41.5	52	62.5	73	83.5	94	104.5

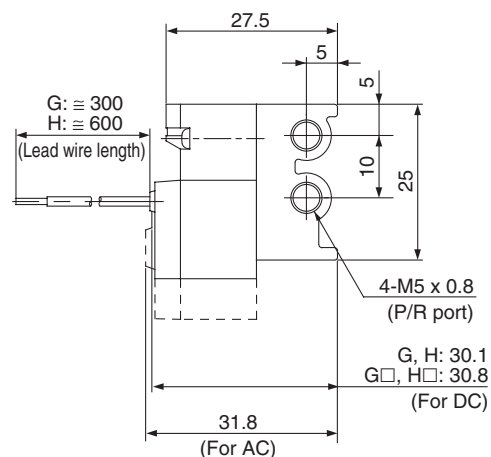
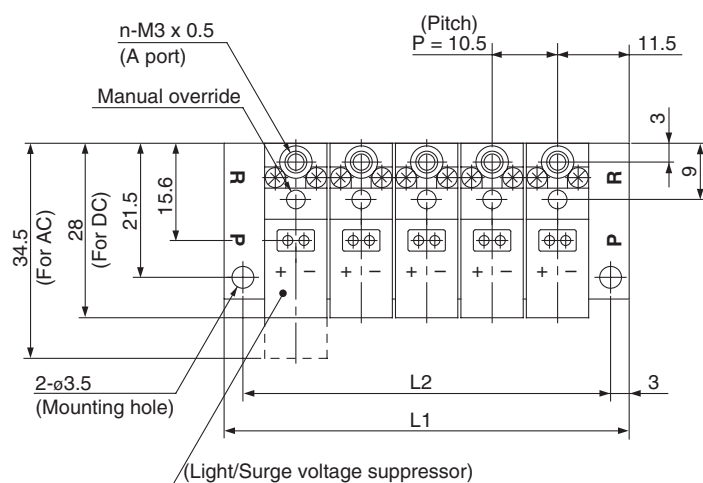
M plug connector (M)



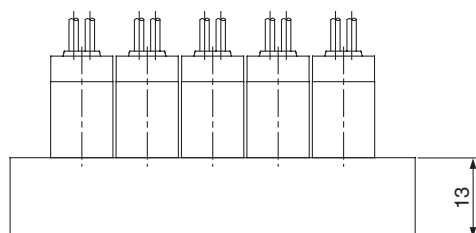
* Other dimensions are same as grommet type.

Type 31 Manifold: Top Ported/SS3Y1-31- Stations

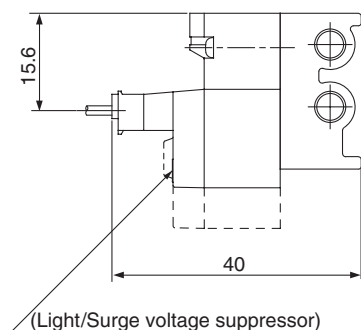
Grommet (G), (H)



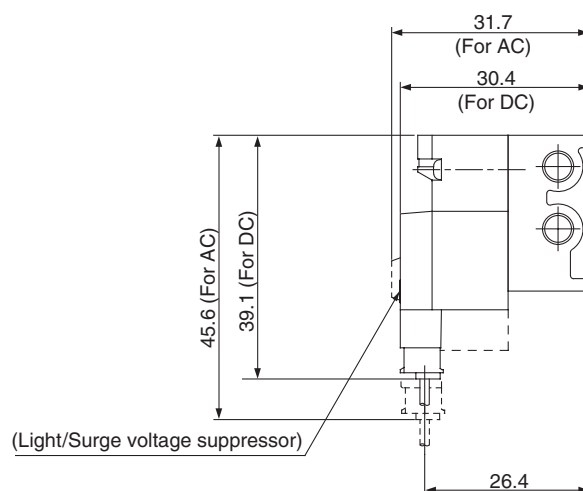
(Station n) ----- (Station 1)



L plug connector (L)



M plug connector (M)



* Other dimensions are same as grommet type.



* Other dimensions are same as grommet type.

Station	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L ₁	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5
L ₂	27.5	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

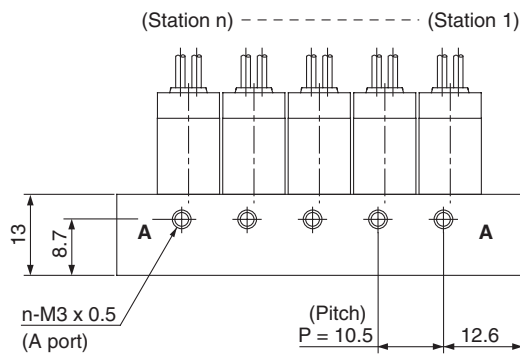
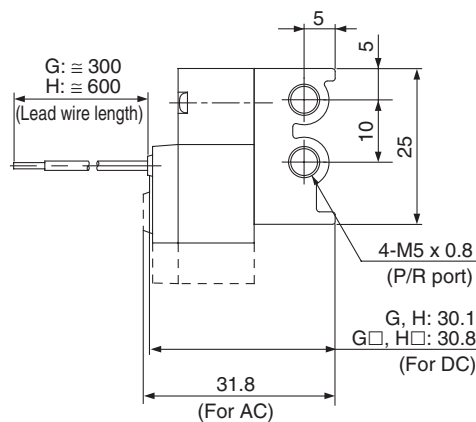
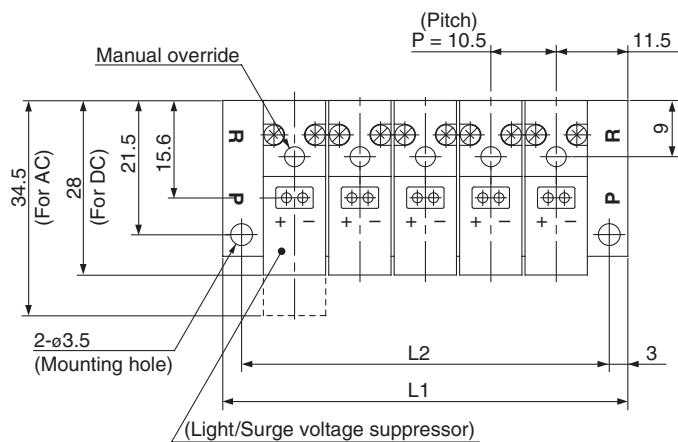
VS

VFN

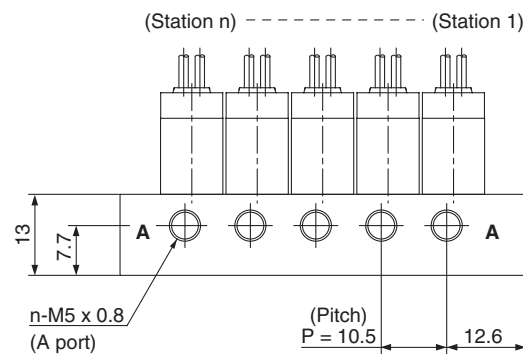
Series SY100

Type S41 Manifold: Side Ported/SS3Y1-S41- Stations -M3/M5

Grommet (G), (H)

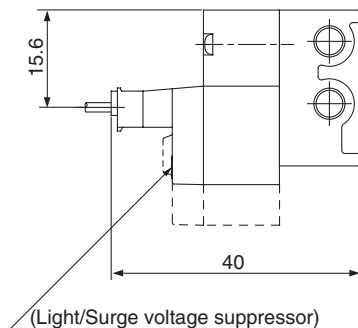


M3



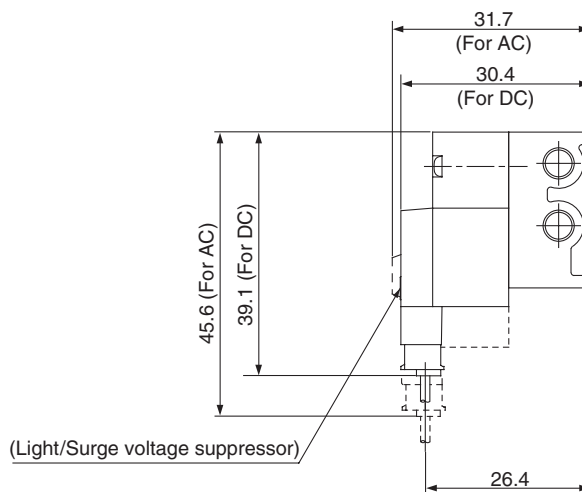
M5

L plug connector (L)



* Other dimensions are same as grommet type.

M plug connector (M)



* Other dimensions are same as grommet type.

Station	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L ₁	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5
L ₂	27.5	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5

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		SY ¹ ₂ ³ ₄ T	SY ¹ ₂ ³ ₄ 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

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

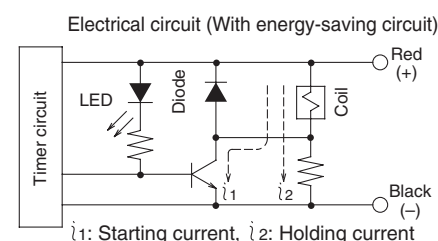
Rated voltage ●

5	24 VDC
6	12 VDC

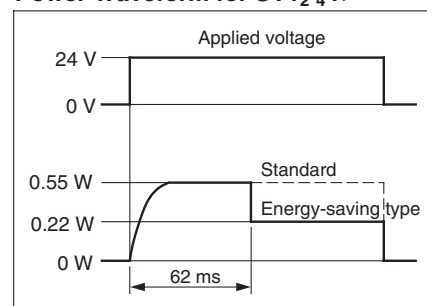
- **Entry is the same as standard products.**

Working Principle

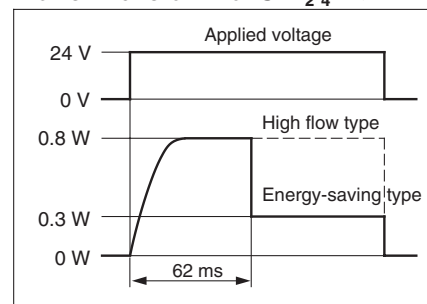
The circuit shown below reduces current consumption at holding which reduces the overall power consumption.
Refer to electrical power waveform as shown below.



**<Energy-saving Type, Electrical
Power Waveform for SY1₂^{1 3}T>**



<Energy-saving Type, Electrical Power Waveform for SY1₂^{1 3}₄AT>



Low Wattage Specifications (0.45 W)

How to Order

SY1 - - **X200**

- **Entry is the same as standard products.**