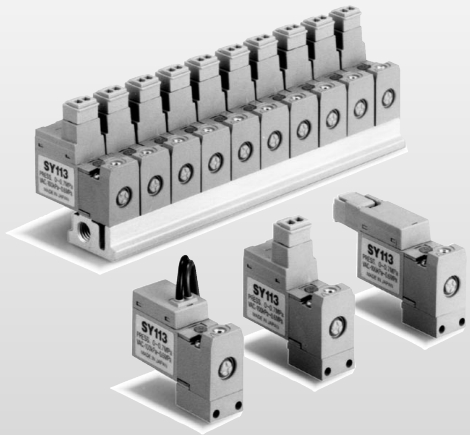
3 Port Solenoid Valve
Rubber Seal
Series SY100

Low power consumption: 0.5W (Standard, Without light) (Current draw: 21mA at 24V DC)

∗Large flow capacity style:0.75W (Current draw: 31mA at 24V DC)

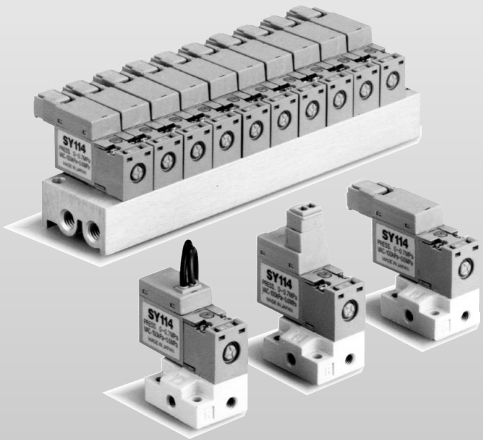
Body width: 10mm

Cv0.008 (Standard style)
Cv0.012 (Large flow capacity style)



Exceedingly long life

100 million cycles (By SMC life test data)



Vacuum Applications Possible

Can be used up to -100kPa

Copper free

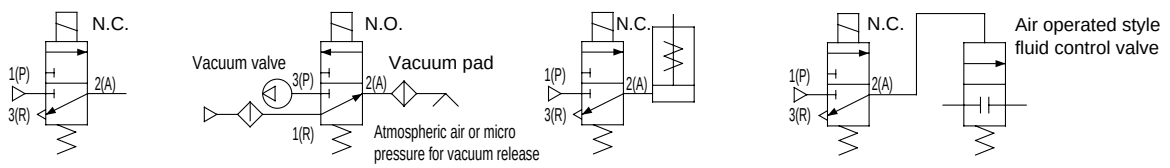
No copper used for sections in contact with fluids.

Bright color tone and "state of the art" design

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

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

①Valve for blow off ②Valve for vacuum ③Operation for single acting cylinder ④Operation for air operated style fluid control valve



Characteristics values indicated in this catalog are not guaranteed values but typical ones.

⚠Precautions

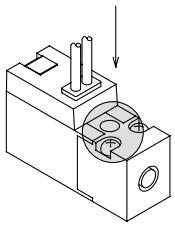
Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

⚠Warning

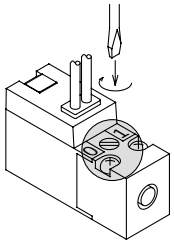
Operation of Manual Override

Make sure that there is no danger, since manual override operation can make any connected equipment operate.

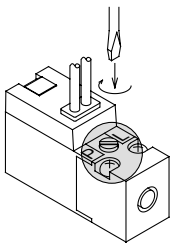
■Non-locking push style [Standard style]
Press in the direction of the arrow.



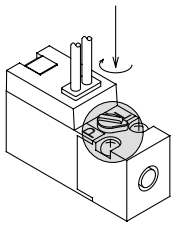
■Locking slotted style [B]
Turn in the direction of arrow.



■Push-locking slotted style [D]



■Push-locking lever style [E]



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 style.

⚠Caution
Gently operate locking manual override styles B, D using small screwdriver.
[Torque: 0.1Nm or less]

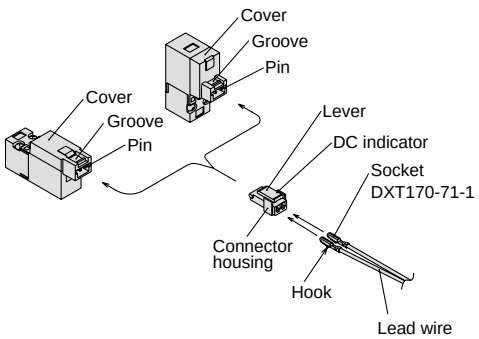
⚠Caution

How to Use Plug Connector

①Connection/Discnneciton of connector

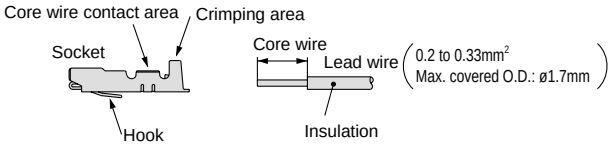
●Connection: Push the connector straight onto the pins of the solenoid, making sure the lip of the lever securely "locks" into the groove of the solenoid cover.

●Disconnecton: Press the lever against the connector housing and pull it outward from the solenoid.



②Crimping connection of lead wire and socket

Strip 3.2 to 3.7mm of the lead wire ends, insert each stripped wire into a socket and crimp contact it using special crimping tool. Be careful that the outer insulation of the lead wires does not interfere with the socket contact part. Use exclusive crimping tool for crimping.
(Contact SMC for special crimping tool.)



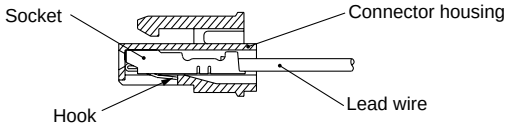
③Connection/Disconnection of socket with lead wire

●Connection

Insert lead wire and crimped socket into square holes (indicated as A, B, COM) of connector. Press the socket in fully until the hook of the socket locks into the groove of the connector housing. Confirm the locked position by lightly pulling on the lead wire.

●Disconnection

To remove the socket from the connector, pull out lead wire while depressing the hook of the socket with a fine screw driver (≅1mm). If the socket is to be re-used, reposition the hook again.



Plug Connector Lead Wire Length

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

How to Order Connector Assembly

For DC: **SY100－30－4A－**□
For 100V AC: **SY100－30－1A－**□
For 200V AC: **SY100－30－2A－**□
For other voltages of AC: **SY100－30－3A－**□
Without lead wire: **SY100－30－A**
(Only with a connector and two sockets.)

How to Order
To order a valve with lead wire length of other than 300mm, indicate part numbers of the valve without connector and the required connector ass'y separately.
Example: 2000mm lead wire length

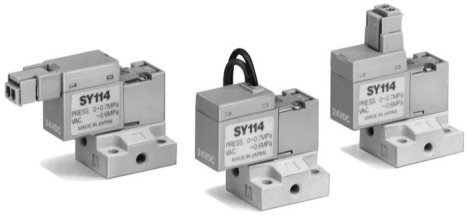
For DC	For AC
SY114-5LO	SY114-1LO
SY100-30-4A-20	SY100-30-1A-20

●Lead wire length

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

3 Port Direct Operated
Rubber Seal
Series SY100

Body ported



Base mounted

Model

Actuation	Model	Style	Operating pressure range (MPa)	Vacuum application (MPa)		Effective area (mm^2) (Cv)	Weight (g) (2)	
				P port	R port		Grommet style	L, M Plug connector
N.C.	**SY11$^{3}_{4}$**	Standard	0 to 0.7	–100kPa to 0.6	–100kPa to 0	0.14 (0.008)	SY1□3 (A): 13 SY1□4 (A): 24 (Without sub-plate 12)	SY1□3 (A): 15 SY1□4 (A): 26 (Without sub-plate 14)
N.C.	**SY11$^{3}_{4}$A**	Large flow capacity	0 to 0.7	–100kPa to 0.6	–100kPa to 0	0.22 (0.012)		
N.O.	**SY12$^{3}_{4}$** (1)	Standard	0 to 0.7	–100kPa to 0	–100kPa to 0.6	0.14 (0.008)		
N.O.	**SY12$^{3}_{4}$A** (1)	Large flow capacity	0 to 0.7	–100kPa to 0	–100kPa to 0.6	0.22 (0.012)		

Note 1) SY123/SY124 and SY123/SY124 A: Supply pressure to 1(R) port and exhaust air from 3(P) port.
Note 2) Value for DC. Add 1g for AC.

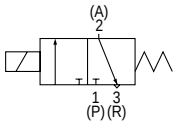
Specifications

Fluid	Air
Ambient and fluid temperature (°C)	Max. 50°C
Response time (ms) (1)	10ms or less
Max. operating frequency (Hz)	20
Manual override	Non-locking push, Locking slotted, Push-locking slotted, Push-locking lever
Lubrication	Not requited
Mounting position	Free
Impact/Vibration resistance (m/s2) (2)	150/30
Enclosure	Dust-proof

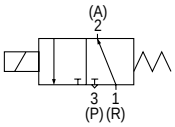
Note 1) According to dynamic performance test JIS B8374-1981 (Coil temperature 20°C, at rated voltage, without surge suppressor.)
Note 2) Impact resistance: No malfunction from tests using drop impact tester, to axis and right angle direction of main valve and armature, each one time when energized and de-energized. (Value in the initail stage)
Vibration resistance: No malfunction from tests with 8.3~2000Hz 1 sweep, to axis and right angle direction of main valve and armature, each one time when energized and de-enegized. (Value in the initial stage.)

JIS Symbol

SY11$^{3}_{4}$(A)



SY12$^{3}_{4}$(A)



Order Made P.2.1-15

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 50/60Hz		100, 110, 200, 220	–
Allowable voltage			–10 to +10%	
Power consumption (W) (1)	DC		0.5W (With light: 0.55W)	0.75W (With light: 0.8W)
Apparent power (VA) (1)	AC	100V	0.9 (With light: 1.0)	–
		110V [115V]	1.0 (With light: 1.1) [1.1 (With light: 1.2)]	
		200V	1.8 (With light: 1.9)	
		220V [230V]	1.9 (With light: 2.0) 2.2 (With light: 2.3)	
Surge voltage suppressor			Diode	
Indicator light			LED	

∗110VAC and 115VAC, 220VAC, and 230VAC are common.
Note 1) At rated voltage

How to Order

Standard (Cv0.008)

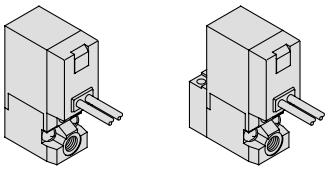
Light and surge voltage suppressor

—	Without light and surge voltage suppressor
S	With surge voltage suppressor
Z	With light and surge voltage suppressor
R	With surge voltage suppressor (Non-polar-style)
U	With light and surge voltage suppressor (Non-polar style)

∗"S" type does not apply to AC model because rectifier prevents voltage surge generation.
∗"R" and "U": DC only.

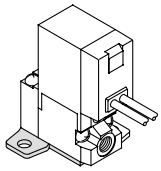
Piping

—: For manifold
P: For body ported style to P, R, A port



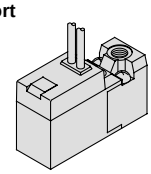
Bracket

—: Without bracket
F: With bracket



"P" piping specification only.

3 port



For manifold type 30, 31

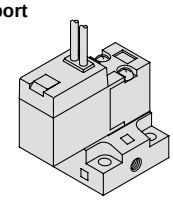
Actuation

1	Normally closed
2	Normally open

Standard (Cv: 0.008): Body ported SY1 [1] 3 — 5 [L] [ ] [ ] — [ ] M3 — [ ]

Standard (Cv: 0.008): Base mounted SY1 [1] 4 — 5 [M] [ ] [ ] — [ ]

3 port



Sub-plate style
For manifold type S41

Rated voltage

For DC

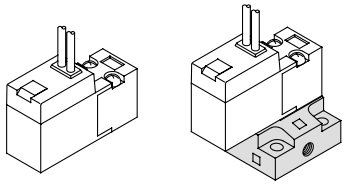
5	24V DC
6	12V DC
V	6V DC
S	5V DC
R	3V DC

For AC (50/60Hz)

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

Piping port

—: Without sub-plate
M3: With sub-plate

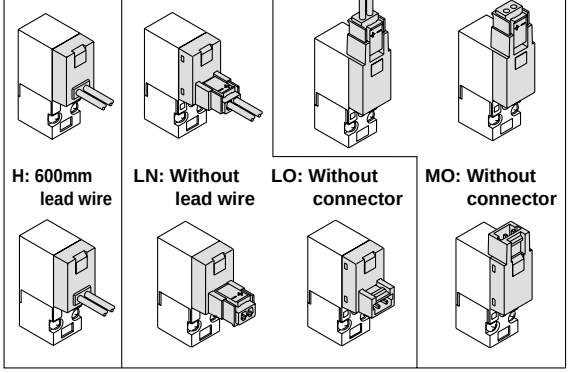


(With gasket and screw)

Electrical entry

24V, 12V, 6V, 5V, 3V DC/100V, 110V, 200V, 220V AC

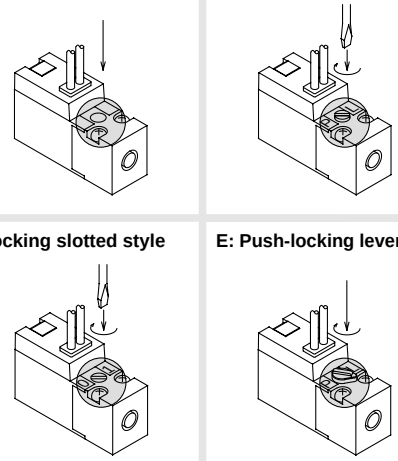
Grommet	L plug connector	M plug connector	
G: 300mm lead wire	L: 300mm lead wire	M: 300mm lead wire	MN: Without lead wire
H: 600mm lead wire	LN: Without lead wire	LO: Without connector	MO: Without connector



∗LN or MN option includes 2 sockets.

Manual override

—: Non-locking push style
D: Push-locking slotted style
B: Locking slotted style
E: Push-locking lever style



SY114/SY124, SY114A/SY124A only.

SY
SYJ
VK
VZ
VT
VT
VP
VG
VP
VQ
VQZ
VZ
VS

How to Order

Large flow capacity (Cv0.012)

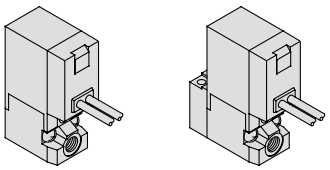
Light and surge voltage suppressor

—	Without light and surge voltage suppressor
S	With surge voltage suppressor
Z	With light and surge voltage suppressor
R	With surge voltage suppressor (Non-polar style)
U	With light and surge voltage suppressor (Non-polar style)

Piping

—: For manifold

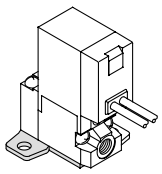
P: For body ported style to P, R, A port



Bracket

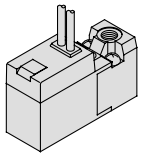
—: Without bracket

F: With bracket



"P" piping specification only.

3 port



For manifold type 30, 31

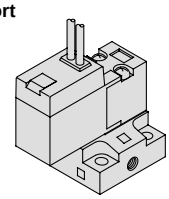
Actuation

1	Normally closed
2	Normally open

Large flow capacity : Body ported (Cv: 0.012) **SY1 1 3A – 5 L – M3 –**

Large flow capacity : Base mounted (Cv: 0.012) **SY1 1 4A – 5 M**

3 port



Sub-plate style

For manifold type S41

Rated voltage

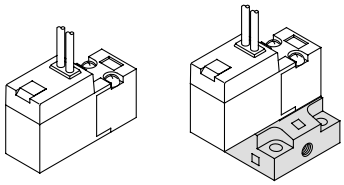
5	24V DC
6	12V DC
V	6V DC
S	5V DC
R	3V DC

Large flow capacity

Piping port

—: Without sub-plate

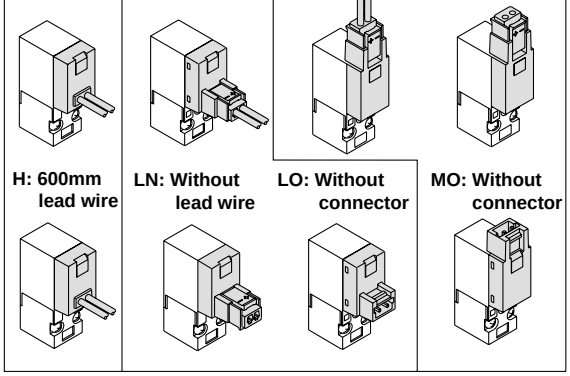
M3: With sub-plate



(With gasket and screw)

Electrical entry

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



∗LN or MN option includes 2 sockets.

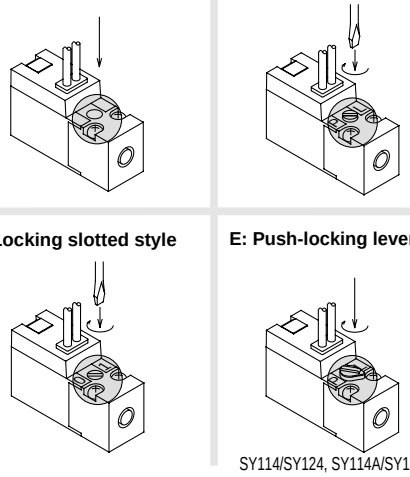
Manual override

—: Non-locking push style

D: Push-locking slotted style

B: Locking slotted style

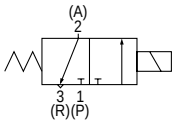
E: Push-locking lever style

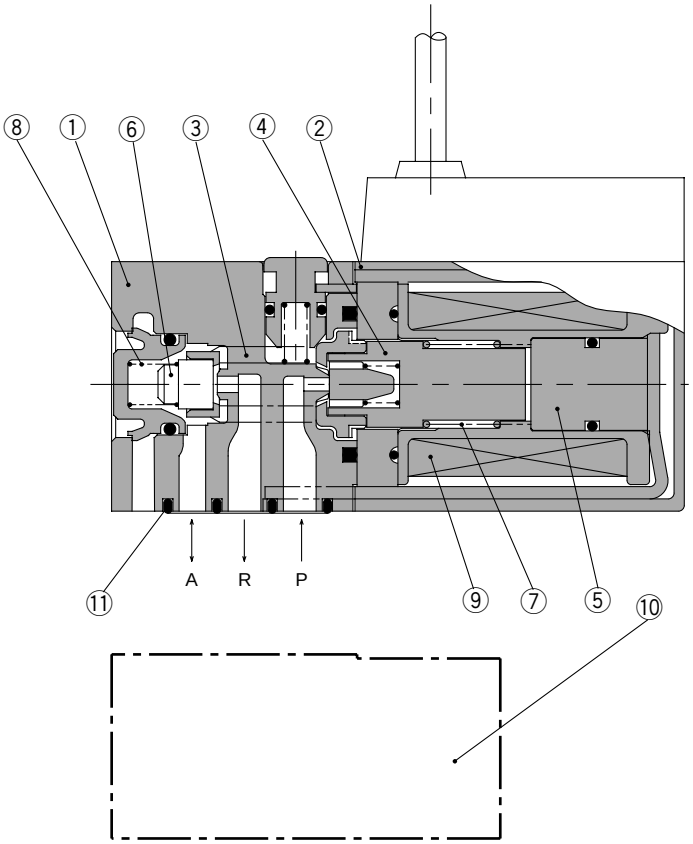


SY114/SY124, SY114A/SY124A only.

Construction

SY114, SY114A





Component Parts

No.	Description	Material	Notes
①	Body	Resin	Gray
②	Cover	Resin	Gray
③	Push rod	Resin	—
④	Armature ass'y	NBR/Stainless steel	—
⑤	Core	Stainless steel	—
⑥	Exhaust poppet	NBR	—
⑦	Return spring	Stainless steel	—
⑧	Poppet spring	Stainless steel	—
⑨	Coil ass'y	—	—

Replacement Parts

No.	Description	Part No.	Material
⑩	Sub-plate	SY100-74-1	Zinc die cast
⑪	Gasket	VJ100-6-1	NBR

How to Order Connector Assembly

For DC: **SY100 – 30 – 4A** □

For 100V AC: **SY100 – 30 – 1A** □

For 200V AC: **SY100 – 30 – 2A** □

For other voltages of AC: **SY100 – 30 – 3A** □

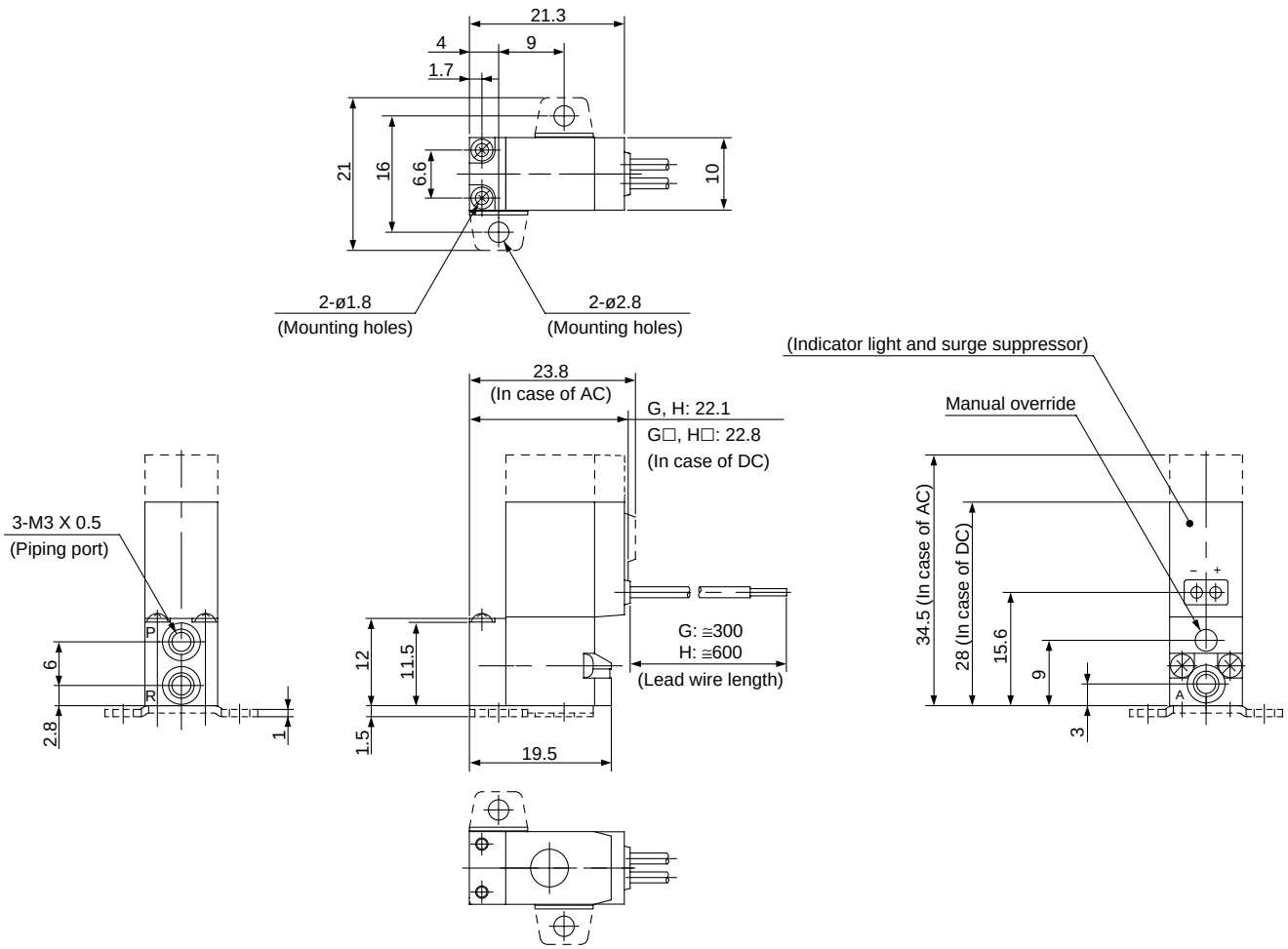
Without lead wire: **SY100 – 30 – A**
(Only with a connector and two sockets.)

Lead wire

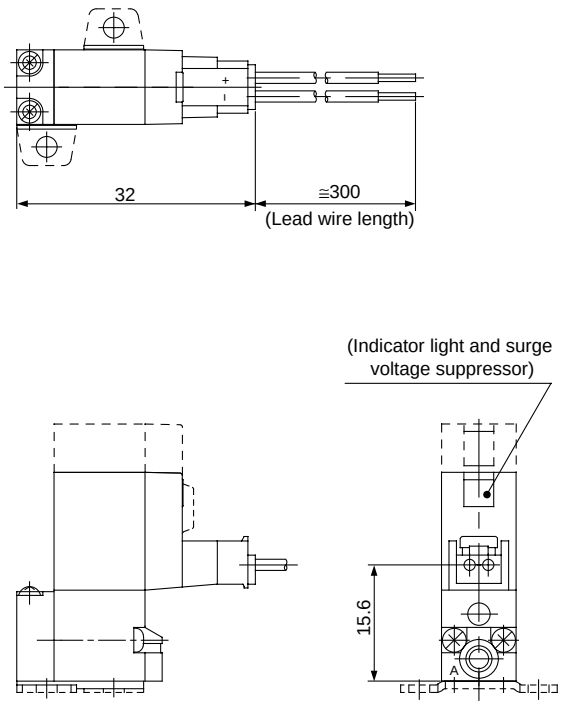
—	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

Body Ported

Grommet (G), (H): SY1$^{1}_{2}$3 (A)-□$^{G}_{H}$□□-PM3 (-F)

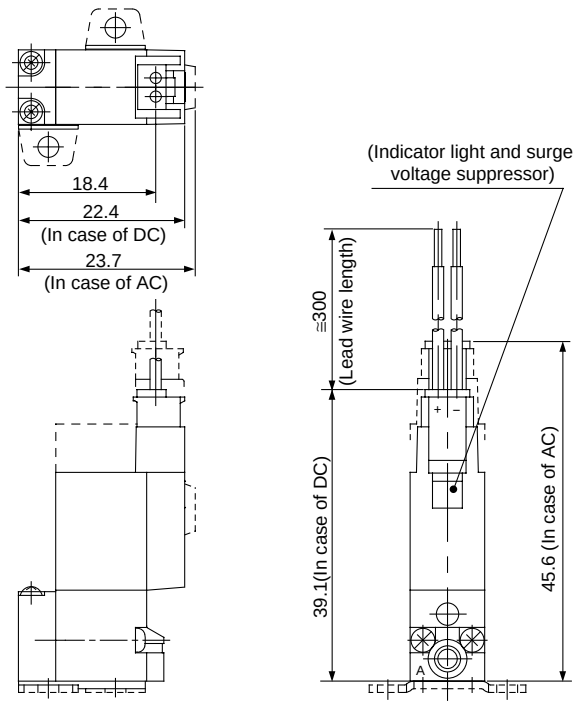


L plug connector (L): SY1$^{1}_{2}$3 (A)-□L□□-PM3 (F)



∗ Other dimensions are same as grommet style.

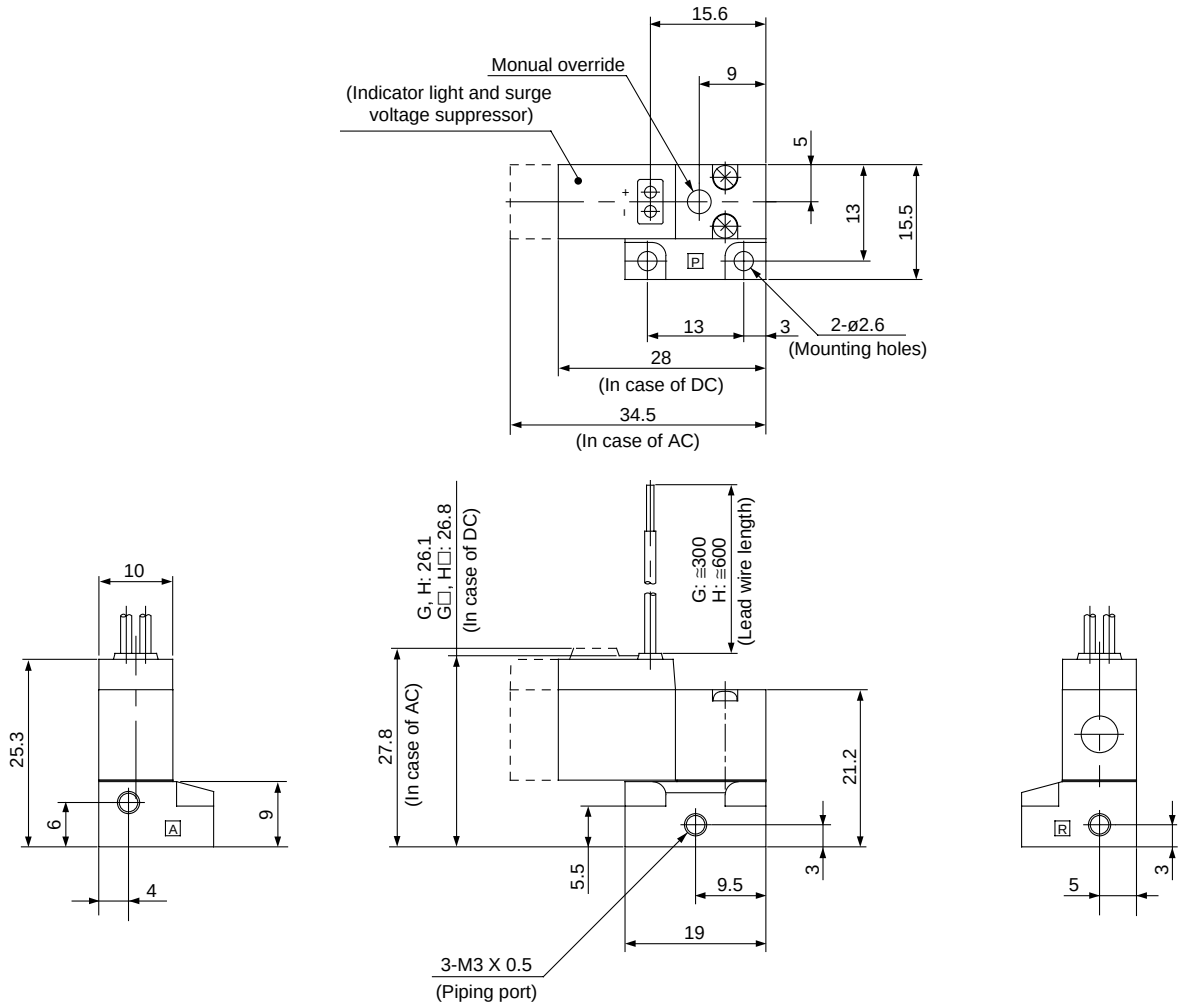
M plug connector (M): SY1$^{1}_{2}$3 (A)-□M□□-PM3 (-F)



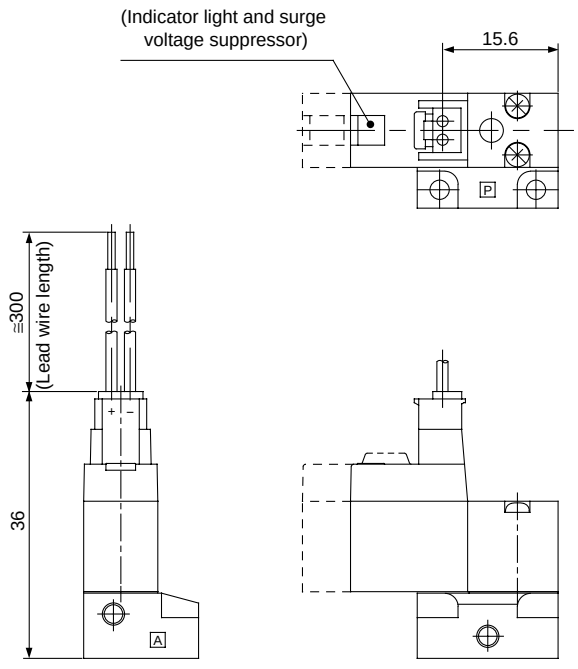
∗ Other dimensions are same as grommet style.

Base Mounted (With Sub-plate)

Grommet (G), (H): SY1$^{1}_{2}$4 (A)-□$^{G}_{H}$□□-M3

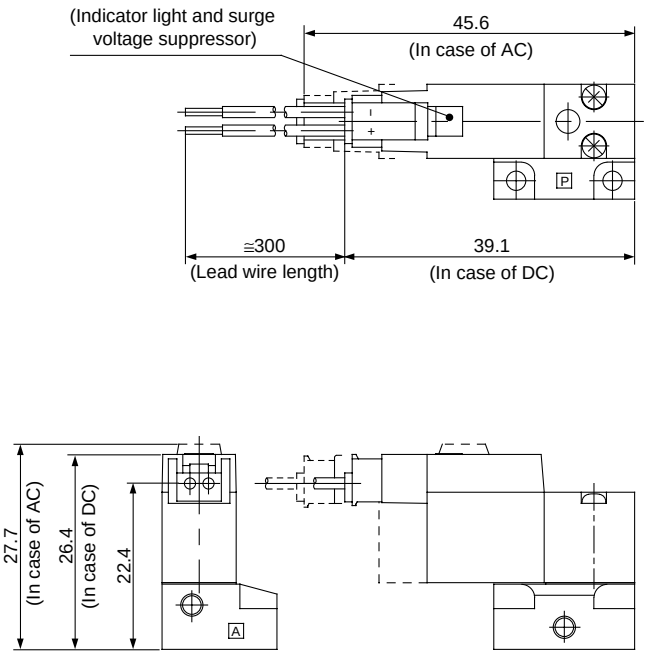


L plug connector (L): SY1$^{1}_{2}$4 (A)-□L□□-M3



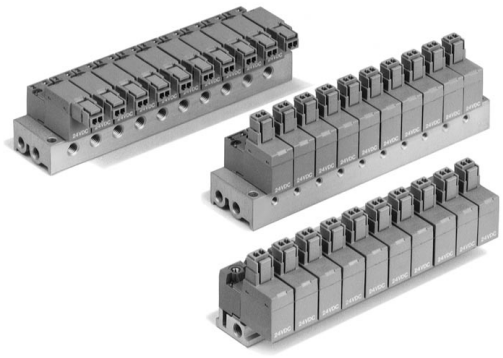
∗ Other dimensions are same as grommet style.

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



∗ Other dimensions are same as grommet style.

Series SY100
Manifold



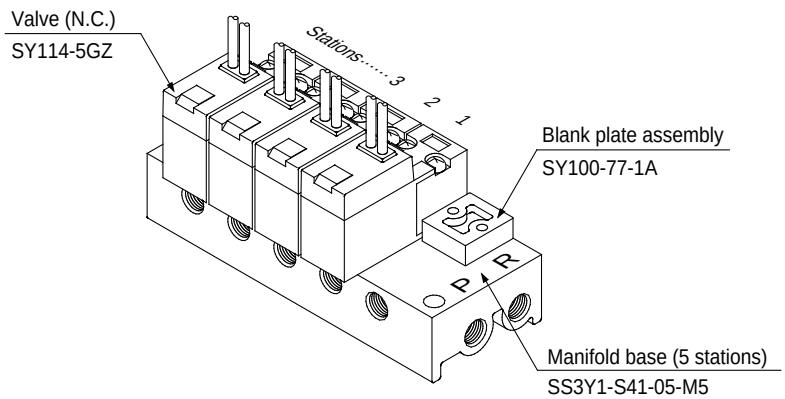
Specifications

Type		30 (4)	31	S41
Manifold style		Single base style, B mount		
P (SUP)/R (EXH) style		Common SUP/Common EXH		
Valve stations		2 to 10 stations	2 to 20 stations	
A porting	Location	Valve		Base
	Direction	Top		Side
Port size	P, R port	M5 X 0.8		
	A port	M3 X 0.5		M3 X 0.5, M5 X 0.8
Valve effective area mm² (Cv factor)(1)	SY1□3	0.14 (0.008)		—
	SY1□3A	0.21 (0.012)		—
	SY1□4	—		0.13 (0.007)
	SY1□4A	—		0.2 (0.011)

Note 1) When mounted on manifold base
Note 2) SY114 (A) and SY124 (A) can not be mounted on the same manifold.
Note 3) Supply to R port and exhaust from P port for SY124 (A).
Note 4) 30 Type is applicable only for SY113 and SY113A. Piping to exhaust port is not possible.

How to Order Manifold Base (Ordering Example)

Example

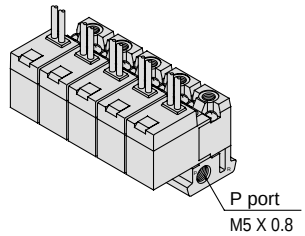


SS3Y1-S41-05-M5·····1set (S41 type 5-station manifold part number)
＊ **SY100-77-1A** ·····1set (Blank plate assembly part number)
＊**SY114-5GZ**·····4set (Valve)
→ ＊: Assembly symbolprefix "＊" mark to the installed solenoid valve part number.

List part numbers of the installed valve and option in required station location separately under manifold part number.

Common SUP/Common EXH

30 Type



How to Order

SS3Y1 − 30 − 05 − F

Stations

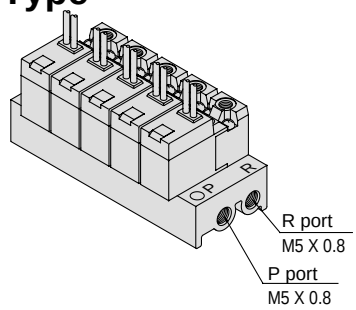
02	2 stations
⋮	⋮
10	10 stations

Applicable solenoid valve (1)
SY113-□□□□-M3
SY113A-□□□□-M3

Applicable blank plate assembly
SY100-77-1A

Note 1) Piping to exhaust port not possible.

31 Type



How to Order

SS3Y1 − 31 − 05

Stations

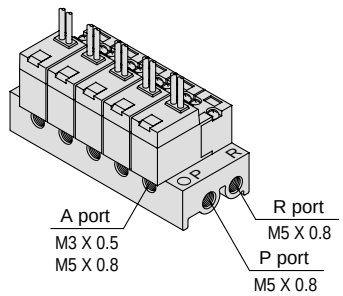
02	2 stations
⋮	⋮
20	20 stations

Applicable solenoid valve (1)
SY113-□□□□-M3
SY113A-□□□□-M3
SY123-□□□□-M3
SY123A-□□□□-M3

Applicable blank plate assembly
SY100-77-1A

Note 1) SY113 (A) and SY123 (A) cannot be mounted on the same manifold.

S41 Type



How to Order

SS3Y1 − S41 − 05 − M3

Stations

02	2 stations
⋮	⋮
20	20 stations

A port size

M3	M3 X 0.5
M5	M5 X 0.8

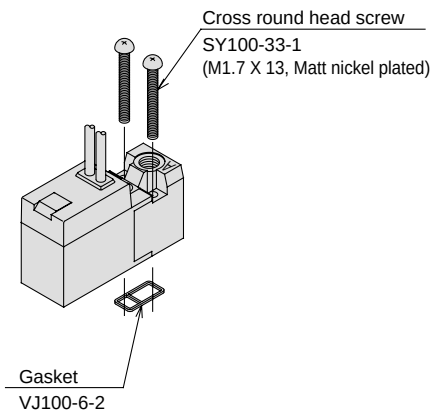
Applicable solenoid valve (1)
SY114-□□□□
SY114A-□□□□
SY124-□□□□
SY124A-□□□□

Applicable blank plate assenbly
SY100-77-1A

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

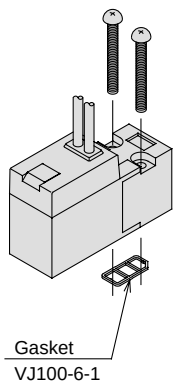
Combination with Solenoid Valve and Gasket Manifold Base

Body ported



Applicable base
Sub-plate (For body ported style)
SS3Y1-30 type
SS3Y1-31 type
} Manifold base

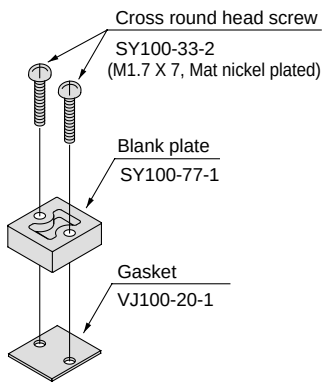
Base mounted



Applicable base
Sub-plate
SS3Y1-S41 type manifold base

Blank Plate Assembly

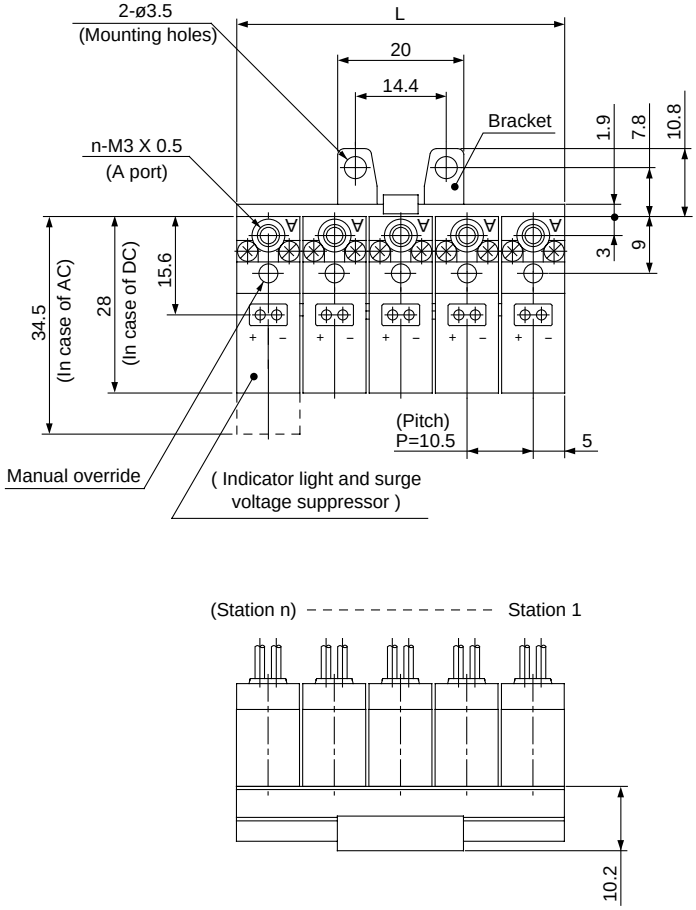
Parts No.: SY100-77-1A

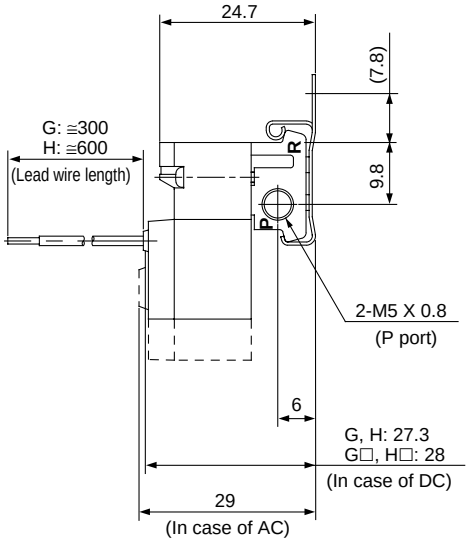


Applicable base
Sub-plate
SS3Y1- 30 type
SS3Y1- 31 type
SS3Y1- S41 type
} Manifold base

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

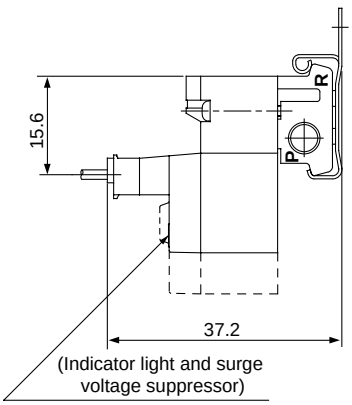
Grommet (G), (H)





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

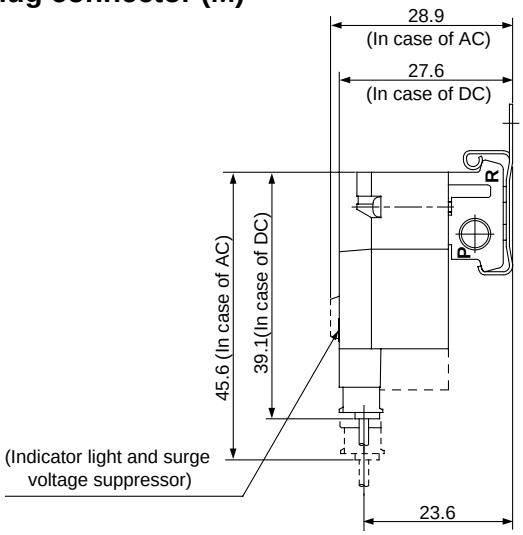
L plug connector (L)



＊ Other dimensions are same as grommet style.

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

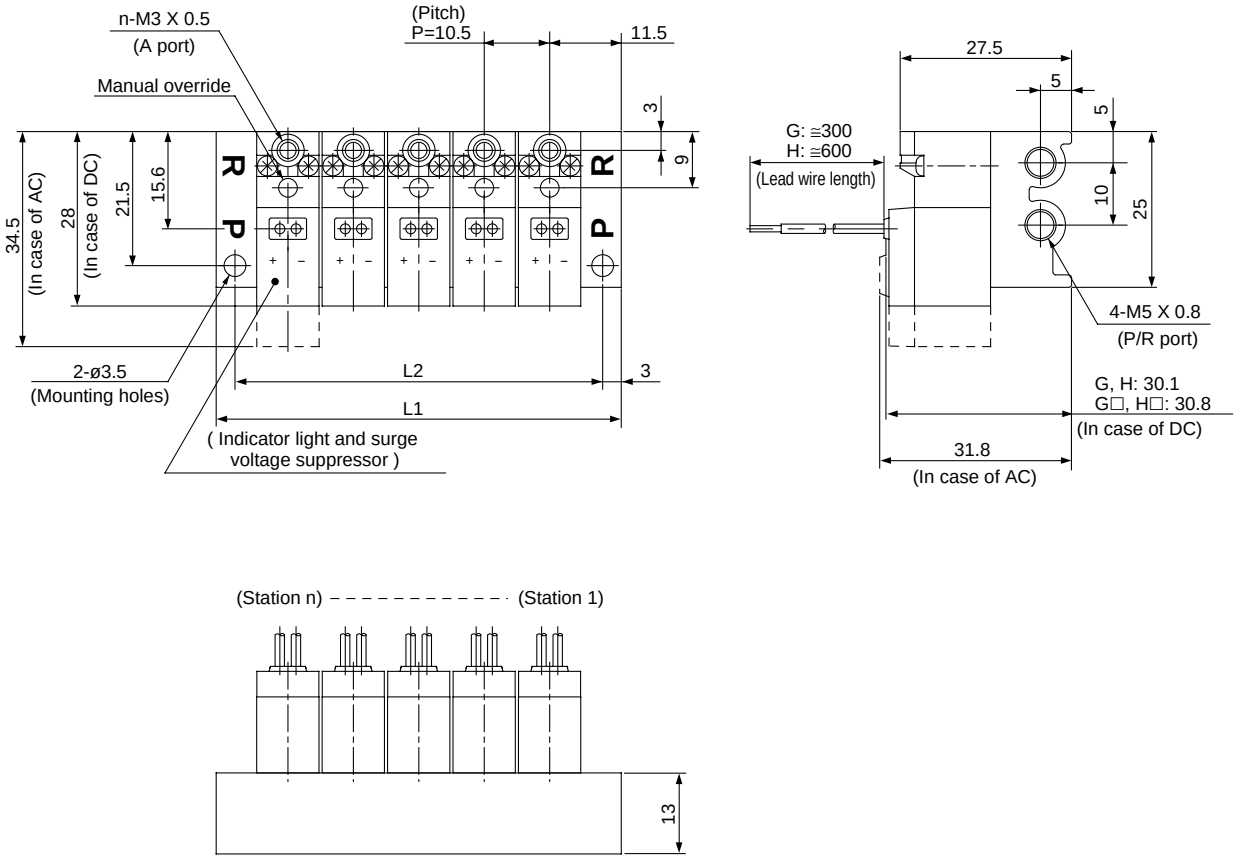
M plug connector (M)



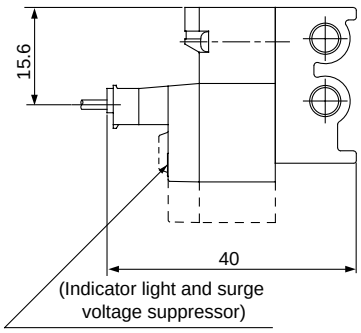
＊ Other dimensions are same as grommet style.

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

Grommet (G), (H)

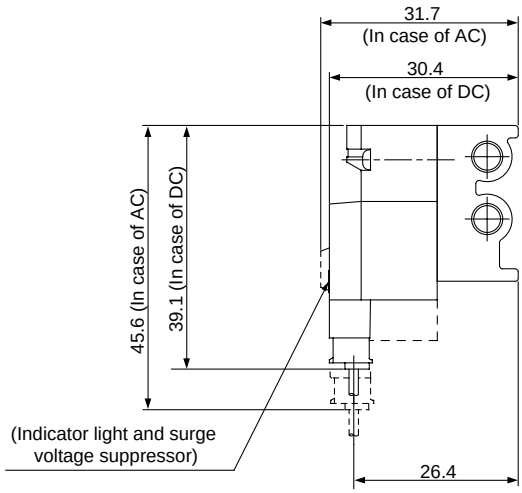


L plug connector (L)



∗ Other dimensions are same as grommet style.

M plug connector (M)

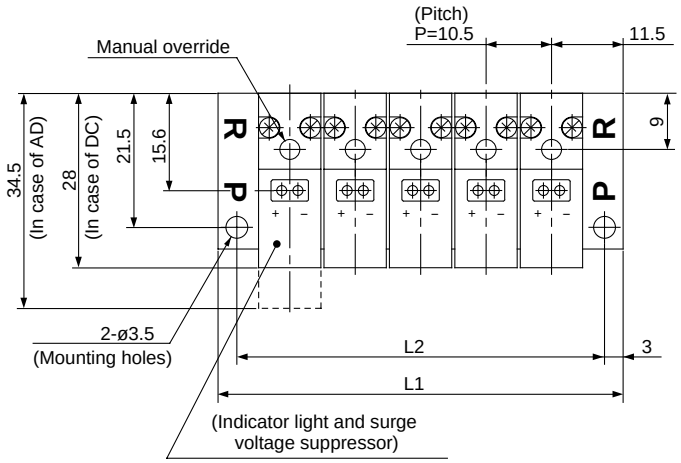


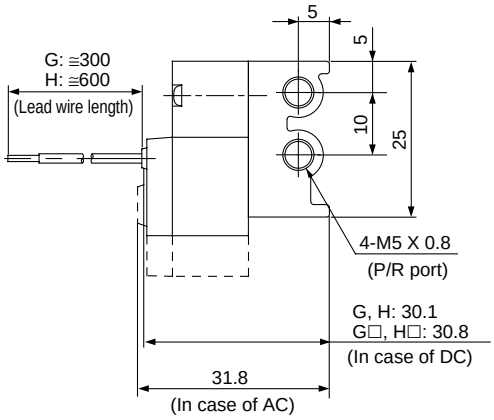
∗ Other dimensions are same as grommet style.

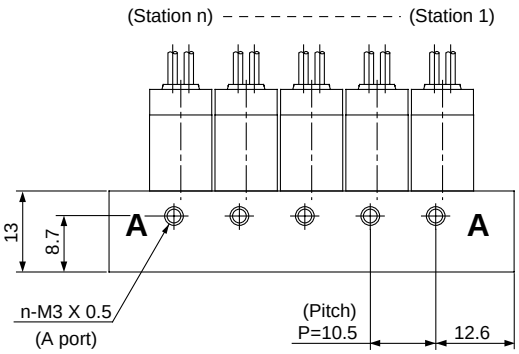
Station	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5
L_2	27.5	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5

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

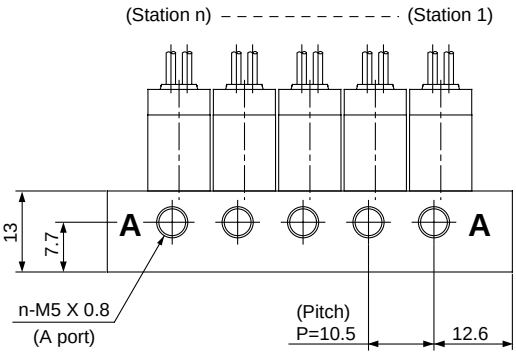
Grommet (G), (H)





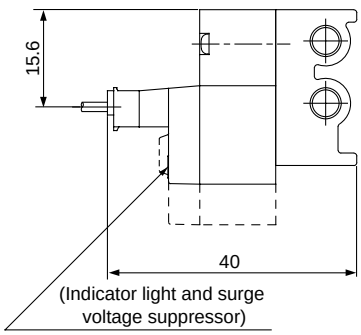


In case of M3



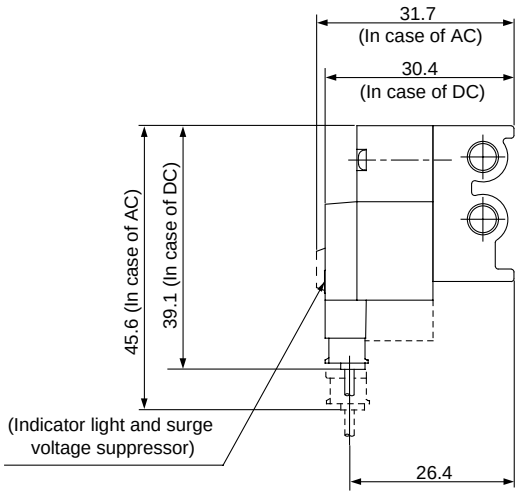
In case of M5

L plug connector (L)



∗ Other dimensions are same as grommet style.

M plug connector (M)



∗ Other dimensions are same as grommet style.

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

Series SY
Made to Order
(Contact SMC for further specifications, dimensions and delivery lead time.)

Order Made

Power Saver

Power consumption is decreased by 1/3 of standard product by reducing electrical power at holding. (This is effective when energizing time exceeds 62ms at rated voltage of 24V DC.)

Specifications

Series		$SY1^{1\,3}_{2\,4}T$	$SY1^{1\,3}_{2\,4}AT$
Coil rated voltage (V)		24, 12V DC	
Power consumption (W)	Inrush	0.55	0.8
	Holding	0.22	0.3

Specifications except those mentioned above are same at standard.

How to Order

Body ported SY1 [1] 3 [ ] T– [5] [L] Z [ ] – [ ] M3– [ ]

Base mounted SY1 [1] 4 [ ] T– [5] [M] Z [ ] – [ ]

Actuation

1	Normally closed
2	Nomally open

Option

—	Standard
A	Large flow capacity style

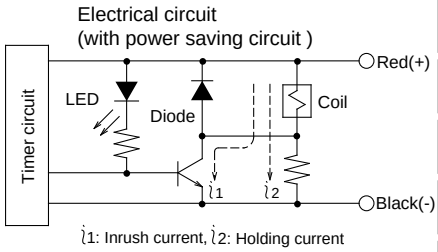
Rated voltage

5	24V DC
6	12V DC

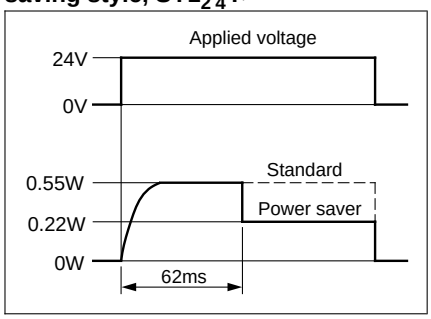
Enter in the same way as standard models.

Operating principle

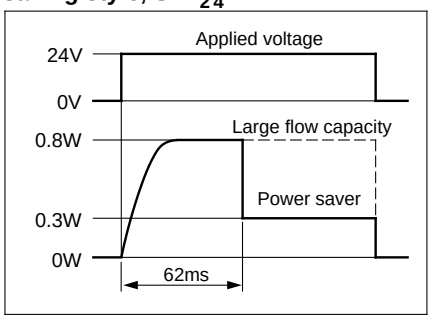
Power consumption at holding is decreased with the below indicated circuit, for energy savings. Refer to electrical power wave form shown below.



<Electrical wave form of power saving style, $SY1^{1\,3}_{2\,4}T$>



<Electrical wave from of power saving style, $SY1^{1\,3}_{2\,4}AT$>



SY
SYJ
VK
VZ
VT
VT
VP
VG
VP
VQ
VQZ
VZ
VS