

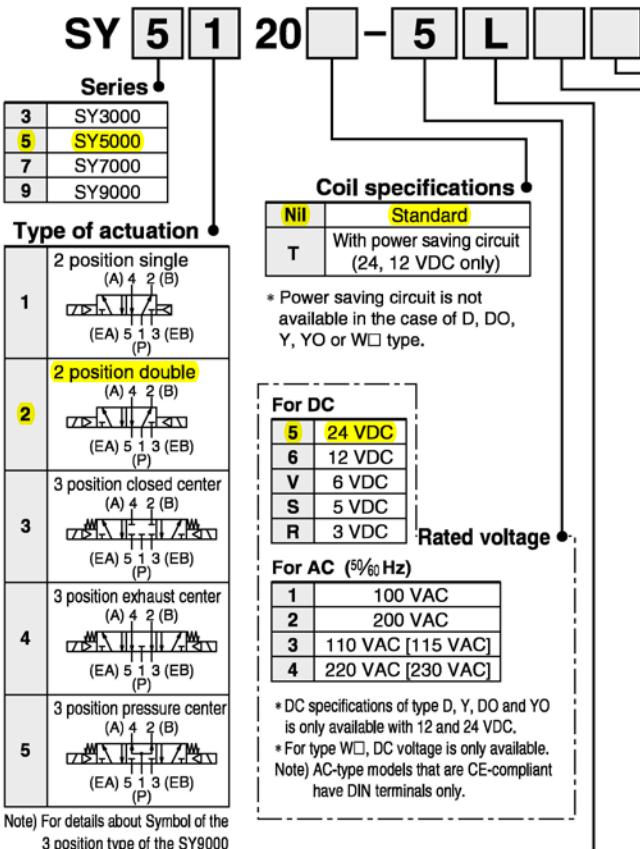
5 Port Solenoid Valve Body Ported/Single Unit SY3000/5000/7000/9000 Series



[Option]

Note) AC-type models that are CE-compliant have DIN terminals only.

How to Order



Note) For details about Symbol of the 3 position type of the SY9000 series, refer to page 407.

Electrical entry

		24, 12, 6, 5, 3 VDC/100, 110, 200, 220 VAC	24, 12 VDC/100, 110, 200, 220 VAC
Grommet	L plug connector	M plug connector	DIN terminal
G: Lead wire length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	D, Y: With connector
CE-compliant	DC	M	D, Y
AC	—	—	—

24, 12 VDC 6, 5, 3 VDC	* LN, MN type: with 2 sockets. * For DIN terminal of SY3000 series, refer to page 639.
M8 connector	* "Y" type is a DIN terminal conforming to EN-175301-803C (former DIN43650C). For details, refer to page 641. * For connector cable of M8 connector, refer to page 641. * M8 connector conforming to IEC60947-5-2 standard is also available. Refer to page 623 for details. * Refer to page 638 for the lead wire length of L and M plug connectors. * Refer to page 639 for the connector assembly with cover for L and M plug connectors.
WO: Without connector cable	Note)
W□: With connector cable	
CE-compliant	DC
AC	—

* LN, MN type: with 2 sockets.
* For DIN terminal of SY3000 series, refer to page 639.
* "Y" type is a DIN terminal conforming to EN-175301-803C (former DIN43650C). For details, refer to page 641.
* For connector cable of M8 connector, refer to page 641.
* M8 connector conforming to IEC60947-5-2 standard is also available. Refer to page 623 for details.
* Refer to page 638 for the lead wire length of L and M plug connectors.
* Refer to page 639 for the connector assembly with cover for L and M plug connectors.
Note) Enter the cable length symbols in □. Please be sure to fill in the blank referring to page 642.

Bracket

Nil: Without bracket
F1: With foot bracket (2 position single only)
F2: With side bracket

* SY9000 has no bracket.

A, B port size

Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	SY3000
01	1/8	SY5000
02	1/4	SY7000
03	3/8	SY9000

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	SY3000
C6	One-touch fitting for ø6	SY5000
C4	One-touch fitting for ø4	SY7000
C6	One-touch fitting for ø6	SY9000
C8	One-touch fitting for ø8	
C8	One-touch fitting for ø8	
C10	One-touch fitting for ø10	
C8	One-touch fitting for ø8	
C10	One-touch fitting for ø10	
C12	One-touch fitting for ø12	

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	SY3000
N7	One-touch fitting for ø 1/4"	SY5000
N3	One-touch fitting for ø 5/32"	SY7000
N7	One-touch fitting for ø 1/4"	SY9000
N9	One-touch fitting for ø 5/16"	
N9	One-touch fitting for ø 5/16"	
N11	One-touch fitting for ø 3/8"	
N9	One-touch fitting for ø 5/16"	
N11	One-touch fitting for ø 3/8"	

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

* Except for M5

Made to Order

Nil	—
X20	Body ported external pilot (Refer to page 624.)
X90	Main valve fluoro rubber (Refer to page 624.)

CE-compliant

Nil	—
Q	CE-compliant

Note) AC-type models that are CE-compliant have DIN terminals only.

Manual override

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

Light/Surge voltage suppressor

Electrical entry for G, H, L, M, W

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-in to the rectifier circuit.

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

* Power saving circuit is only available in the "Z" type.

Electrical entry for D, Y

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

* DOZ and YOZ are not available.

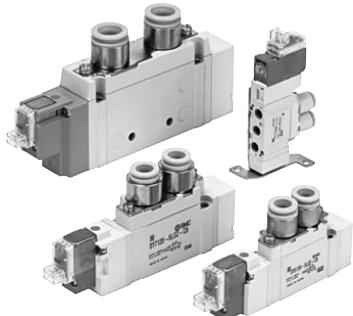
* For AC voltage valves there is no "S" option.

* It is already built-in to the rectifier circuit.

* Power saving circuit is only available in the "Z" type.

Note) When placing an order for body ported solenoid valve as a single unit, mounting screw for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to page 467.)

Specifications



Series	SY3000	SY5000	SY7000	SY9000
Fluid	Air			
Internal pilot	2 position single			
Operating pressure range (MPa)	0.15 to 0.7			
3 position	0.1 to 0.7			
Ambient and fluid temperature (°C)	0.2 to 0.7			
Max. operating frequency (Hz)	2 position single, double	10	5	5
	3 position	3	3	3
Manual override (Manual operation)	Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type			
Pilot exhaust method	Common exhaust type for main and pilot valve			
Lubrication	Not required			
Mounting orientation	Unrestricted			
Impact/Vibration resistance (m/s²) Note)	150/30			
Enclosure	Dust proof (* DIN terminal and M8 connector: IP65)			

SJ

SY

SY

S0700

S0700

* Based on IEC60529

Note) 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)



Made to Order

(For details, refer to pages 616 to 628.)

Solenoid Specifications

Electrical entry		Grommet (G), (H) L plug connector (L) M plug connector (M)		DIN terminal (D), (Y) M8 connector (W)
		G, H, L, M, W	D, Y	
Coil rated voltage (V)	DC	24, 12, 6, 5, 3		24, 12
	AC 50/60 Hz		100, 110, 200, 220	
Allowable voltage fluctuation				
Power consumption (W)	Standard	0.35 (With indicator light: 0.4 DIN terminal with indicator light: 0.45)		
	With power saving circuit	0.1 (With indicator light only) * [Starting 0.4, Holding 0.1]		
Apparent power (VA) *	DC	100 V	0.78 (With indicator light: 0.81)	0.78 (With indicator light: 0.87)
		110 V	0.86 (With indicator light: 0.89)	0.86 (With indicator light: 0.97)
		[115 V]	[0.94 (With indicator light: 0.97)]	[0.94 (With indicator light: 1.07)]
	AC	200 V	1.18 (With indicator light: 1.22)	1.15 (With indicator light: 1.30)
		220 V [230 V]	1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]	1.27 (With indicator light: 1.46) [1.39 (With indicator light: 1.60)]
Surge voltage suppressor		Diode (Varistor is for DIN terminal and Non-polar type.)		
Indicator light		LED (AC of DIN connector is neon light.)		

* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

* DIN terminal and M8 connector with power saving circuit are not available.

* For details, refer to page 636.

Response Time

Note) Based on dynamic performance test, JIS B 8419: 2010. (Coil temperature: 20°C, at rated voltage)

SY3000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor	Type S, Z	Type R, U
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 the pressure of 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor	Type S, Z	Type R, U
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 the pressure of 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor	Type S, Z	Type R, U
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 the pressure of 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor	Type S, Z	Type R, U
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	

SY3000/5000/7000/9000 Series

Flow Rate Characteristics/Weight

SY3000 series

Valve model	Type of actuation	Port size		Flow rate characteristics						Weight (g)		
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2 (P→A/B)		4/2→5/3 (A/B→EA/EB)		C (l/min) (s·bar)		Gro- met		L/M plug connector
SY3□20 -□-M5	2 position	Single	M5 x 0.8	0.61	0.44	0.16	0.64	0.45	0.18	51	53	57
		Double		0.48	0.46	0.13	0.47	0.43	0.13	68	74	82
	3 position	Closed center		0.47	0.42	0.13	0.47 (0.44)	0.41 (0.37)	0.13 (0.12)	71	76	84
		Exhaust center		0.50	0.48	0.15 (0.41)	0.47 (0.35)	0.43	0.13			
		Pressure center										
	M5 x 0.8	2 position	C4 (One-touch fitting for 04)	0.72	0.29	0.18	0.64	0.34	0.17	60	63	67
		Double		0.59	0.28	0.15	0.59	0.30	0.15	78	83	91
		Closed center		0.63	0.35	0.16	0.42 (0.41)	0.34 (0.37)	0.11 (0.11)	81	86	94
		Exhaust center		0.76	0.42	0.21 (0.46)	0.59 (0.34)	0.29	0.15			
		Pressure center										
SY3□20 -□-C4	2 position	Single	M5 x 0.8	0.76	0.30	0.19	0.65	0.39	0.17	56	59	63
		Double		0.76	0.55	0.24	0.60	0.33	0.16	74	79	87
	3 position	Closed center		0.65	0.32	0.16	0.64 (0.42)	0.31 (0.36)	0.17 (0.11)	77	82	90
		Exhaust center		0.77	0.34	0.21 (0.49)	0.61 (0.43)	0.34	0.16			
		Pressure center										
		2 position	C6 (One-touch fitting for 06)	0.76	0.55	0.24	0.60	0.33	0.16			
		Double		0.65	0.32	0.16	0.64 (0.42)	0.31 (0.36)	0.17 (0.11)			
		Closed center		0.77	0.34	0.21 (0.49)	0.61 (0.43)	0.34	0.16			
		Exhaust center										
		Pressure center										

Note) []: denotes normal position.

SY7000 series

Valve model	Type of actuation	Port size		Flow rate characteristics						Weight (g)					
		1, 5, 3 (EA, EB)		4, 2 (A, B)		1→4/2 (P→A/B)		4/2→5/3 (A/B→EA/EB)		Gro- mmet		L/M plug connector	DIN termina- tion	W M8 connec- tor	
		C (dm ³ / s·bar)	b	C (dm ³ / s·bar)	b	C (dm ³ / s·bar)	b	C (dm ³ / s·bar)	b	101	104	125	125	167	133
SY7□20 -□-02	2 position	Single	1/4	4.1	0.23	0.93	3.3	0.33	0.81	101	104	125	125	167	133
		Double		2.9	0.31	0.70	2.4	0.38	0.63	120	125	125	125	167	133
	3 position	Closed center		2.5	0.39	0.65	3.4 (2.1)	0.35 (0.38)	0.82 (0.54)	128	133	133	133	175	141
		Exhaust center		4.3 (2.4)	0.23 (0.32)	0.97 (0.61)	2.2	0.39	0.58						
	2 position	Pressure center		3.2	0.26	0.77	3.2	0.37	0.82	107	110	131	131	174	140
		Double		2.6	0.24	0.63	2.4	0.31	0.62	126	132	132	132	174	140
	3 position	Closed center		2.4	0.25	0.57	2.6 (1.9)	0.42 (0.46)	0.70 (0.56)	134	140	140	140	182	148
		Exhaust center		3.3 (2.4)	0.28 (0.22)	0.78 (0.57)	2.2	0.34	0.60						
SY7□20 -□-C8	2 position	Pressure center		3.8	0.26	0.86	3.2	0.34	0.82	103	105	126	126	174	140
		Double		2.8	0.27	0.67	2.4	0.21	0.59	122	127	127	127	169	135
	3 position	Closed center		2.5	0.25	0.59	2.7 (2.0)	0.38 (0.38)	0.70 (0.56)	130	135	135	135	177	143
		Exhaust center		3.8 (2.4)	0.25 (0.31)	0.89 (0.61)	2.3	0.38	0.61						
	2 position	Pressure center		3.8	0.26	0.86	3.2	0.34	0.82	103	105	126	126	174	140
		Double		2.8	0.27	0.67	2.4	0.21	0.59	122	127	127	127	169	135
SY7□20 -□-C10	3 position	Closed center		2.5	0.25	0.59	2.7 (2.0)	0.38 (0.38)	0.70 (0.56)	130	135	135	135	177	143
		Exhaust center		3.8 (2.4)	0.25 (0.31)	0.89 (0.61)	2.3	0.38	0.61						

Note) []: denotes normal position.

SY5000 series

Valve model	Type of actuation	Port size		Flow rate characteristics						Weight (g)				
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2 (P→A/B)		4/2→5/3 (A/B)→EA/EB		C (dm ³ /s) (bar)		Grommet		L/M plug connector	DIN terminal	W M8 connector
SY5□20 -□-01	2 position	Single	1/8	1.9	0.35	0.49	2.4	0.39	0.61	70	72	93	76	
		Double								88	93	135	101	
		Closed center		1.7	0.43	0.45	1.8	0.35	0.46	93	98	140	106	
		Exhaust center		1.5	0.44	0.41	2.5 (1.5)	0.32 (0.43)	0.59 (0.40)					
		Pressure center		2.2	0.46 (0.91)	0.61 (0.58)	1.8	0.38	0.46					
	3 position	Single	C4 (One touch fitting for 04)	0.75	0.43	0.20	0.85	0.64	0.30	94	96	117	100	
		Double		0.74	0.40	0.19	0.84	0.57	0.28	117	122	164	130	
		Closed center		0.75	0.36	0.19	0.84 (0.84)	0.64 (0.53)	0.30 (0.27)					
		Exhaust center		0.78	0.44 (0.71)	0.21 (0.37)	0.84	0.57	0.27					
		Pressure center		1.5	0.33	0.33	2.0	0.37	0.52	88	91	112	95	
SY5□20 -□-C4	2 position	Single	1/8	1.3	0.31	0.33	1.6	0.32	0.39	106	111	153	119	
		Double		1.3	0.33	0.33	1.8 (1.4)	0.35 (0.37)	0.44 (0.35)					
		Closed center		1.7	0.31 (0.80)	0.42 (0.47)	1.7	0.33	0.44					
		Exhaust center		1.9	0.21	0.45	2.3	0.29	0.57	80	82	103	86	
		Pressure center		1.6	0.29	0.39	1.7	0.38	0.46	98	103	145	111	
	3 position	Single	C6 (One touch fitting for 06)	1.4	0.38	0.39	2.0 (1.5)	0.37 (0.41)	0.52 (0.43)					
		Double		2.2	0.32 (1.6)	0.56 (0.44)	1.8	0.41	0.50					
		Closed center		1.0	0.25	0.35	1.6	0.33	0.48					
		Exhaust center		1.2	0.28	0.38	1.8	0.36	0.51					
		Pressure center		1.8	0.30	0.40	2.0	0.38	0.53					
SY5□20 -□-C6	2 position	Single	C8 (One touch fitting for 08)	1.9	0.21	0.45	2.3	0.29	0.57	80	82	103	86	
		Double		1.6	0.29	0.39	1.7	0.38	0.46	103	108	150	116	
		Closed center		1.4	0.38	0.39	2.0 (1.5)	0.37 (0.41)	0.52 (0.43)					
		Exhaust center		2.2	0.32 (1.6)	0.56 (0.44)	1.8	0.41	0.50					
		Pressure center		1.0	0.25	0.35	1.6	0.33	0.48					
	3 position	Single		1.2	0.28	0.38	1.8	0.36	0.51	98	103	145	111	
		Double		1.8	0.30	0.40	2.0	0.38	0.53					
		Closed center		1.5	0.31	0.33	1.8	0.35	0.52					
		Exhaust center		1.7	0.31	0.33	1.8	0.35	0.52					
		Pressure center		2.0	0.32	0.42	2.0	0.38	0.54					

Note) []: denotes normal position.

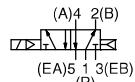
SY9000 series

Note) []: denotes normal position.

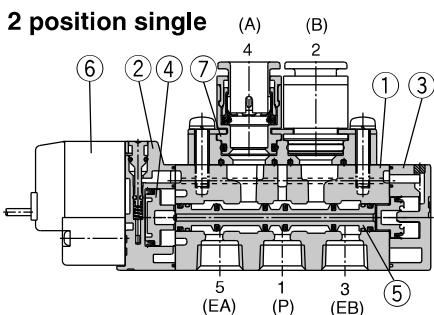
Construction

SY series

Symbol 2 position single

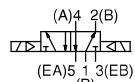


2 position single

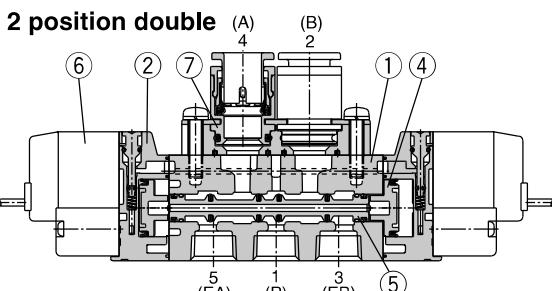


SJ
SY
SY
S0700
S0700

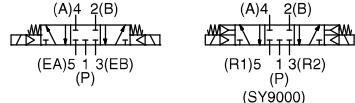
Symbol 2 position double



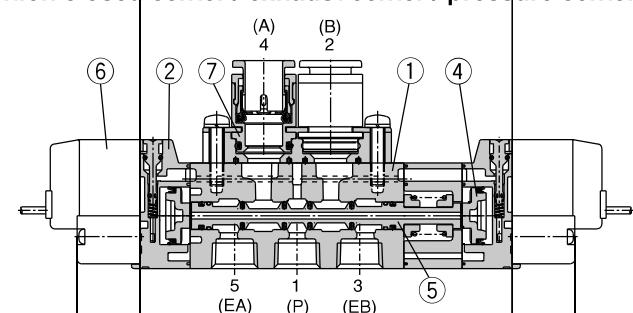
2 position double



Symbol 3 position closed center



3 position closed center / exhaust center / pressure center

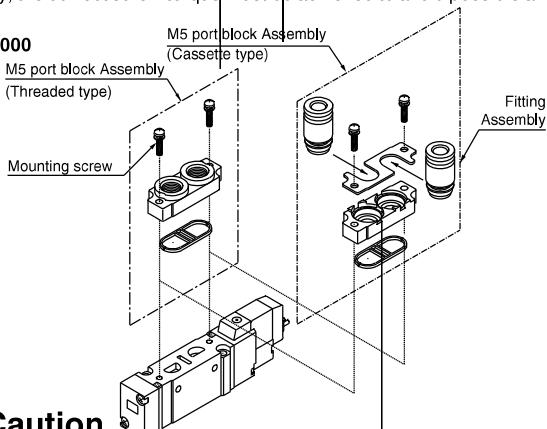


(This figure shows a closed center type.)

How to Change Port Block Assembly

If using body port type, both A and B port sizes can be changed by replacing the port block assembly mounted on the body. When changing this block assembly, the correct screw torque must be achieved to avoid possible air leakage.

For SY5000



Caution

Mounting screw tightening torques

SY3000 (M2): 0.12 N·m
SY5000 (M3): 0.6 N·m
SY9000 (M4): 1.4 N·m

* Refer to "How to Order Port Block Assembly" on page 629 for part no.

Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted (SY3000: Zinc die-casted)	White
2	Adapter plate	Resin	White (SY9000: Gray)
3	End plate	Resin	White
4	Piston	Resin	—
5	Spool valve assembly	Aluminum, H-NBR	—

Replacement Parts

No.	Description	Part no.
6	Pilot valve assembly	Refer to "How to Order Pilot Valve Assembly" on page 629.
7	M5 port block assembly	Refer to "How to Order Port Block Assembly" on page 629.

Bracket Assembly No.

Description	Part no.
Bracket (For F1)	SX ³ 000-16-2A (with mounting screw)
Bracket (For F2)	SX ³ 000-16-1A (with mounting screw)

* SY9000 has no bracket.

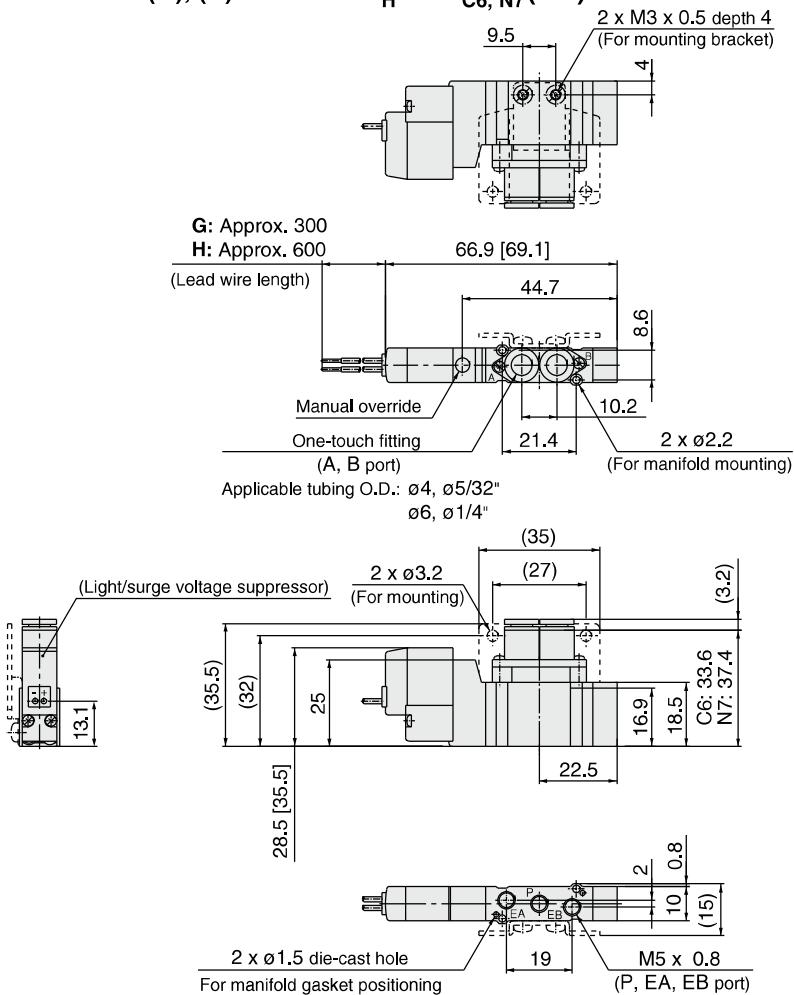
SY3000/5000/7000/9000 Series

Dimensions: SY3000 Series

[]: AC

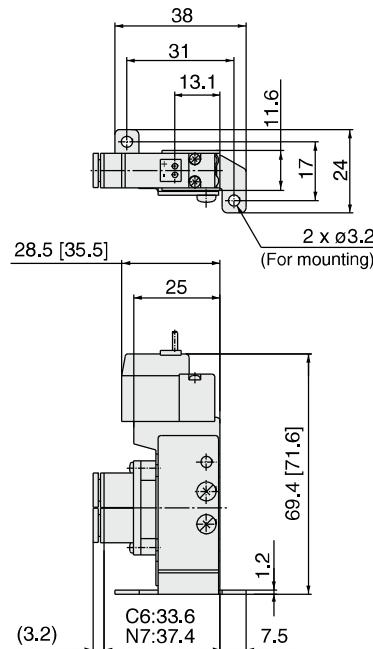
2 position single

Grommet (G), (H): SY3120-□_G □□-C_{4, N₃}-F₂)

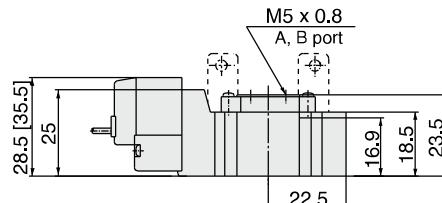


Foot bracket

SY3120-□_G □□-C_{4, N₃}-F₁

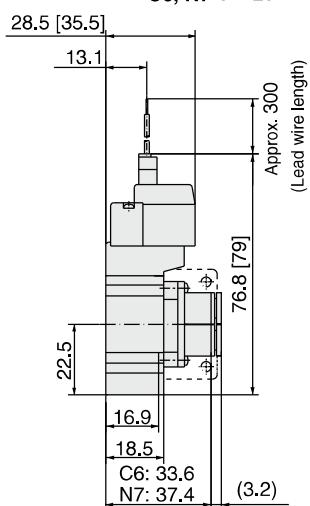


SY3120-□_G □□-M5(-F₂)



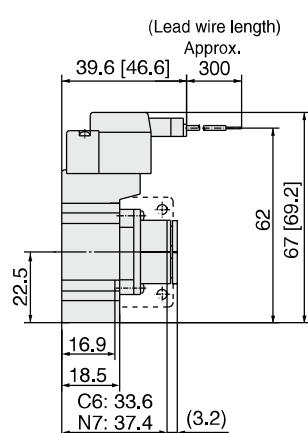
L plug connector (L):

SY3120-□L□□-C_{4, N₃}-F₁



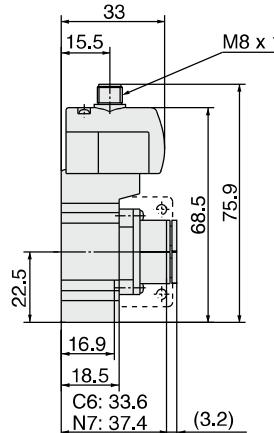
M plug connector (M):

SY3120-□M□□-C_{4, N₃}-F₁



M8 connector (WO):

SY3120-□WO□□-C_{4, N₃}-F₁



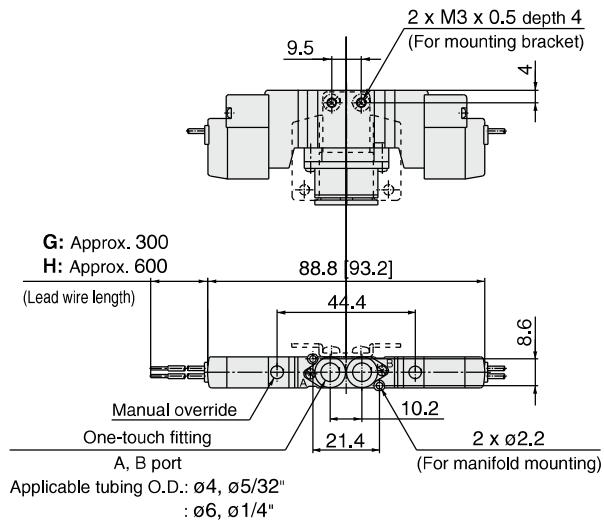
Note) Refer to page 642 for dimensions of connector types.

Dimensions: SY3000 Series

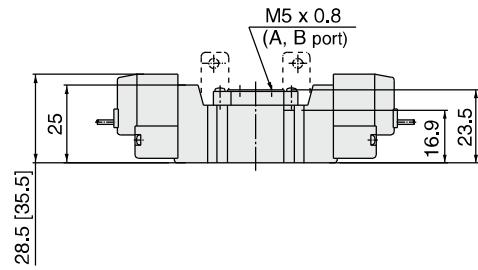
[]: AC

2 position double

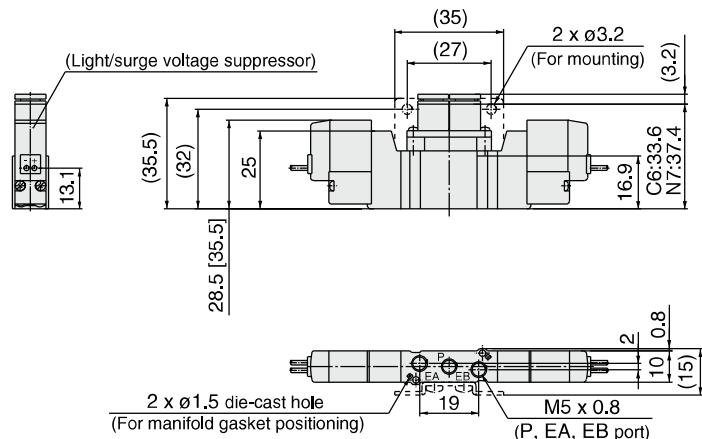
Grommet (G), (H): **SY3220-□G□□-C4, N3(-F2)**



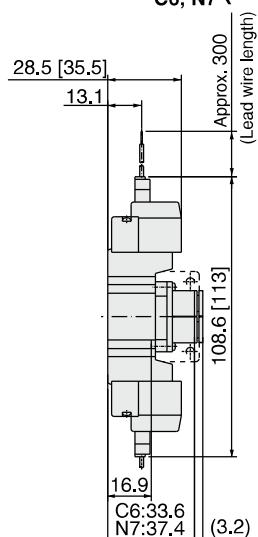
SY3220-□G□□-M5(-F2)



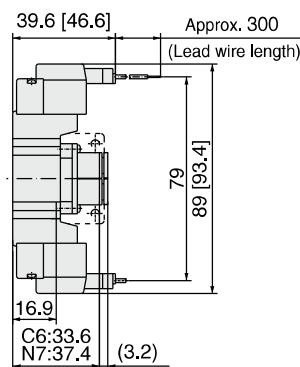
SJ
SY
SY
S0700
S0700



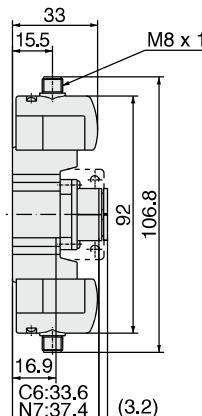
L plug connector (L):
SY3220-□L□□-C4, N3
C6, N7 (-F2)



M plug connector (M):
SY3220-□M□□-C4, N3
C6, N7 (-F2)



M8 connector (WO):
SY3220-WO□□-C4, N3
C6, N7 (-F2)



Note) Refer to page 642 for dimensions of connector types.