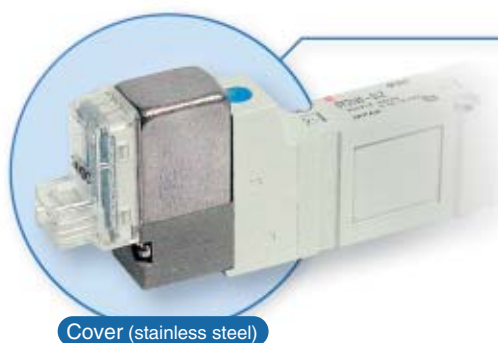


5 Port Solenoid Valve



Cover (stainless steel)

• Improved pilot valve

Pilot valve cover is stronger using stainless steel.
Mounting thread is also reinforced from size M1.7 to M2.

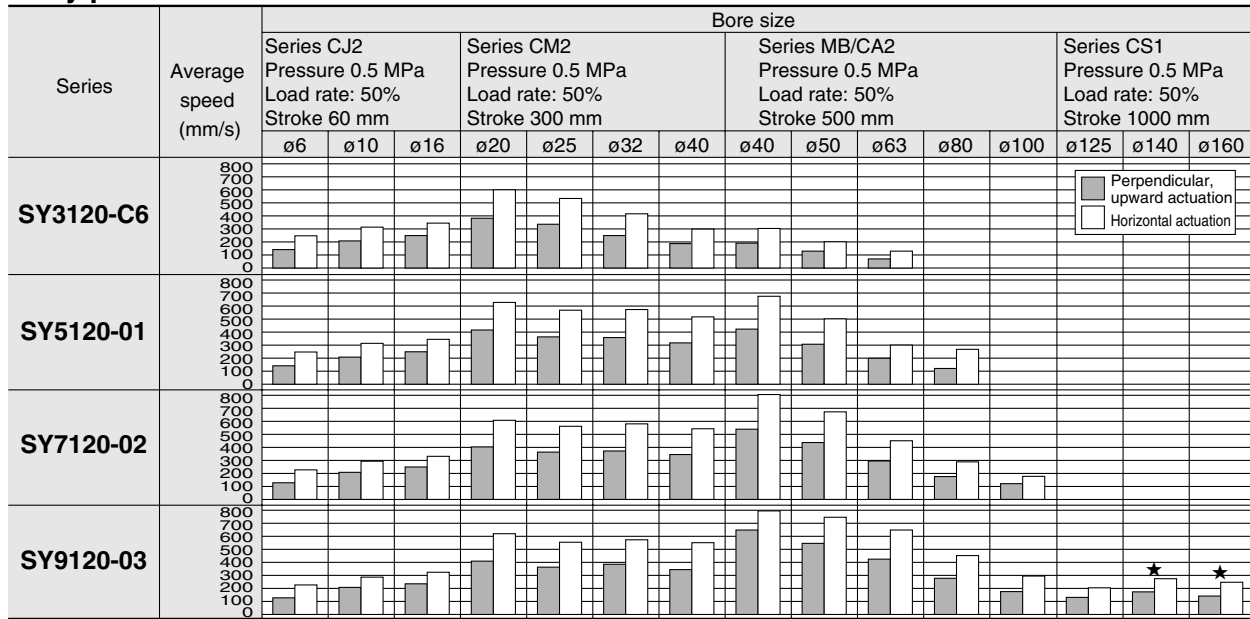
• Flow Characteristics

Series	Flow characteristics		
	C [dm ³ /(s·bar)]	b	Cv
SY3000	1.1	0.28	0.29
SY5000	2.8	0.37	0.90
SY7000	4.5	0.28	1.4
SY9000	10	0.29	2.5

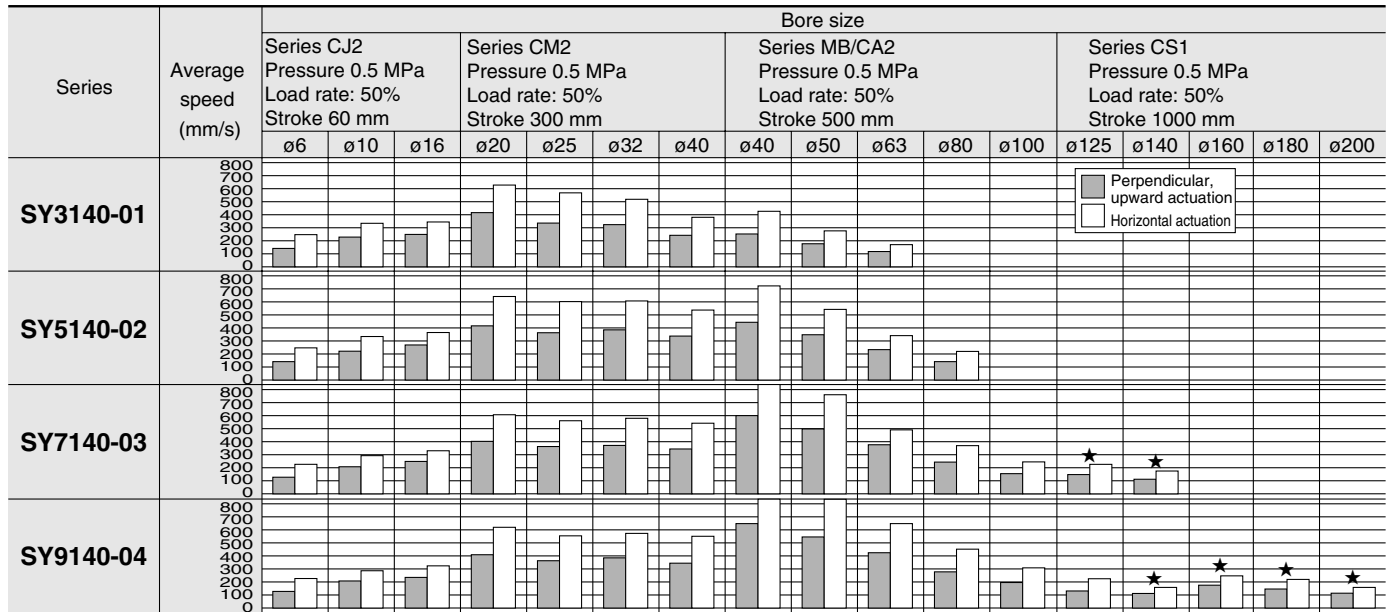
Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.

Body ported



Base mounted



* Cylinder is in extending. Speed controller is meter-out, which is directly connected with cylinder and its needle is fully opened.
 * Average speed of cylinder is obtained by dividing the full stroke time by the stroke.
 * Load factor: (Load weight x 9.8) / Theoretical force) x 100%
 * The histograms with ★ marked are the case when piping is done by using steel.

Conditions

Body ported		Series CJ2	Series CM2	Series MB/CA2	Series CS1
SY3120-C6	Tubing bore x Length	T0604 x 1 m			—
	Speed controller	AS2051F-06			—
	Silencer	AN120-M5			—
SY5120-01	Tubing bore x Length	T0604 x 1 m	T0806 x 1 m		—
	Speed controller	AS3001F-06	AS3001F-08		—
	Silencer	AN101-01			—
SY7120-02	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m		—
	Speed controller	AS3001F-06	AS4001F-10		—
	Silencer	AN110-01			—
SY9120-03	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12	
	Silencer	AN200-02			AN202-02

Conditions [When using SGP (steel pipe)]

Body ported		Series CS1
SY9120-03	Tubing bore x Length	SGP10A x 1 m
	Speed controller	AS420-03
	Silencer	AN200-02

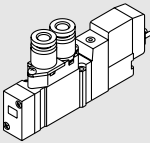
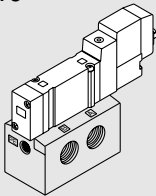
Conditions

Base mounted		Series CJ2	Series CM2	Series MB/CA2	Series CS1
SY3140-01	Tubing bore x Length	T0604 x 1 m			—
	Speed controller	AS3001F-06			—
	Silencer	AN110-01			—
SY5140-02	Tubing bore x Length	T0604 x 1 m	T0806 x 1 m		—
	Speed controller	AS3001F-06	AS3001F-08		—
	Silencer	AN101-01			—
SY7140-03	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	—
	Speed controller	AS3001F-06	AS4001F-10		—
	Silencer	AN200-02			—
SY9140-04	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12	
	Silencer	AN200-02			

Conditions [When using SGP (steel pipe)]

Base mounted		Series CS1
SY7140-03	Tubing bore x Length	SGP10A x 1 m
	Speed controller	AS420-03
	Silencer	AN300-03
SY9140-04	Tubing bore x Length	SGP15A x 1 m
	Speed controller	AS420-04
	Silencer	AN400-04

Valve Variations

Series			Sonic conductance C [dm³/(s·bar)] { 4/2→5/3 (A/B→EA/EB) }	Actuation					Voltage		Electrical entry					Note 1) Light/surge voltage suppressor
				2 position		3 position			DC 24 V 12 V 6 V 5 V 3 V	AC 100 V 50/60 Hz 110 V 50/60 Hz 200 V 50/60 Hz 220 V 50/60 Hz	Grommet	L plug connector	M plug connector	DIN terminal	M8 Connector	
				Single	Double	Closed center	Exhaust center	Pressure center								
Body ported 	P.1	SY3□20	0.65	●	●	●	●	●	●	●	●	●	●	—	●	●
		SY5□20	2.4	●	●	●	●	●	●	●	●	●	●	●	●	●
		SY7□20	3.3	●	●	●	●	●	●	●	●	●	●	●	●	●
		SY9□20	8.6	●	●	●	●	●	●	●	●	●	●	●	●	●
Base mounted 	P.19	SY3□40	1.1	●	●	●	●	●	●	●	●	●	●	—	●	●
		SY5□40	2.8	●	●	●	●	●	●	●	●	●	●	●	●	●
		SY7□40	4.5	●	●	●	●	●	●	●	●	●	●	●	●	●
		SY9□40	10	●	●	●	●	●	●	●	●	●	●	●	●	●

Series		Manual override			Bracket	P, EA, EB port size					A, B port size											Valve option													
		Non-locking push type	Push-turn locking slotted type	Push-turn locking lever type		M5	1/8	1/4	3/8	1/2	M5	1/8	1/4	3/8	1/2	One-touch fitting								Exhaust throttle	Oil resistant, Other than designated turbine oil	Vacuum specifications	Low pressure specifications	External pilot	Enclosure IP65	Interface regulator					
																C4	C6	C8	C10	C12	N3	N7	N9								N11				
Body ported	SY3□20	●	●	●	●	●	—	—	—	—	●	—	—	—	—	●	●	—	—	—	—	●	●	—	—	●	▲	▲	▲	▲	●	—			
	SY5□20	●	●	●	●	—	●	—	—	—	—	●	—	—	—	—	●	●	●	—	—	●	●	●	—										
	SY7□20	●	●	●	●	—	●	●	—	—	—	—	●	—	—	—	—	●	●	—	—	—	●	●	External Pilot (Note 2)								External Pilot (Note 2)	External Pilot (Note 2)	DIN terminal M8 connector
	SY9□20	●	●	●	—	—	—	●	—	—	—	—	●	●	—	—	—	●	●	●	—	—	●	●											
Base mounted	SY3□40	●	●	●	—	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	●	●	●	●	—				
	SY5□40	●	●	●	—	—	—	●	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—												
	SY7□40	●	●	●	—	—	—	●	●	—	—	—	●	●	—	—	—	—	—	—	—	—	—												
	SY9□40	●	●	●	—	—	—	—	●	●	—	—	—	—	●	●	—	—	—	—	—	—	—												

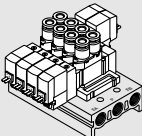
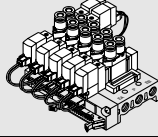
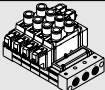
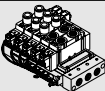
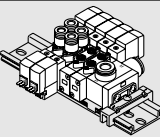
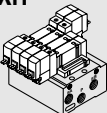
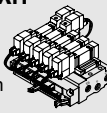
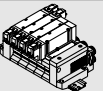
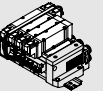


Note 1) All AC voltage models have built-in surge voltage suppressor.

Note 2) Body ported external pilot style (made to order) is not available for DIN terminal.

Note 3) Only available for DIN terminal and M8 connector.

Manifold Variations

Manifold Variations				Valve Series	Wiring									
					Connection								Common specifications	
					Individual wiring	Flat ribbon cable (26 pins)	Flat ribbon cable (20 pins) connector box	Plug-in type D-sub connector (25 pins)	Plug-in type flat ribbon cable (26, 20, 10 pins)	Plug-in type terminal block (9, 18 pins)	PC Wiring	Serial transmission unit	Positive common	Negative common
Body ported	Bar stock type Individual wiring		Type 20 P. 37	5 port	SY3	●	—	—	—	—	—	—	—	—
				SY5	—	●	—	—	—	—	—	—	●	—
				SY7	—	—	—	—	—	—	—	—	—	—
	Bar stock type Flat ribbon cable		Type 20P P. 47	5 port	SY3	—	●	—	—	—	—	—	●	—
				SY5	—	—	—	—	—	—	—	—	—	—
				SY7	—	—	—	—	—	—	—	—	—	—
	Stacking type Individual wiring		Type 23 P. 43	5 port	SY9	●	—	—	—	—	—	—	—	—
				SY9	—	●	—	—	—	—	—	—	●	—
	Stacking type Flat ribbon cable		Type 23P P. 53	5 port	SY9	—	●	—	—	—	—	—	●	—
				SY9	—	—	—	—	—	—	—	—	—	—
	Cassette type Individual wiring		Type 60 P. 59	5 port	SY3	●	—	—	—	—	—	—	—	—
				SY5	●	—	—	—	—	—	—	—	—	—
				SY7	●	—	—	—	—	—	—	—	—	—
Base mounted	Compact bar stock type Individual wiring		Type 41 P. 79	5 port	SY3	●	—	—	—	—	—	—	—	—
				SY5	—	●	—	—	—	—	—	—	●	—
	Compact bar stock type Flat ribbon cable		Type 41P P. 95	5 port	SY3	—	●	—	—	—	—	—	●	—
				SY5	—	—	—	—	—	—	—	—	—	—
	Bar stock type/Common External EXH Individual wiring		Type 42 P. 79	5 port	SY3	●	—	—	—	—	—	—	—	—
				SY5	—	●	—	—	—	—	—	—	—	—
				SY7	—	—	—	—	—	—	—	—	—	—
	Bar stock type/Common External EXH Flat ribbon cable		Type 42P P. 95	5 port	SY3	—	●	—	—	—	—	—	●	—
				SY5	—	—	—	—	—	—	—	—	—	—
				SY7	—	—	—	—	—	—	—	—	—	—
	Stacking type Individual wiring		Type 43 P. 89	5 port	SY9	●	—	—	—	—	—	—	—	—
				SY9	—	●	—	—	—	—	—	—	●	—
	Stacking type Flat ribbon cable		Type 43P P. 103	5 port	SY9	—	●	—	—	—	—	—	●	—
				SY9	—	—	—	—	—	—	—	—	—	—
	Stacking type/DIN rail mounted Individual wiring		Type 45 P. 115	5 port	SY3	●	—	—	—	—	—	—	—	—
				SY5	—	●	—	—	—	—	—	—	—	—
	Stacking type/DIN rail mounted With connector box		Type 45A NA P. 127	5 port	SY3	—	—	●	—	—	●	—	●	●
				SY5	—	—	—	—	—	—	—	—	—	—
	Stacking type/DIN rail mounted Plug-in type		Type 45 P. 135	5 port	SY3	—	—	—	●	●	●	●	●	●
				SY5	—	—	—	—	—	—	—	—	—	—

● Standard ● Option ▲ Made to order (Refer to page "Made to Order".)

Manifold Variations

Manifold Option								A, B port size																Valve option											
Blanking plate	Individual SUP spacer	Individual EXH spacer	SUP block disk	EXH block disk	Label for block disk	Silencer for One-touch fitting	Built-in silencer	M5	1/8	1/4	3/8	One-touch fitting								Mixed mounting SY3000 SY5000	Oil resistant (Other than designated turbine oil)	Vacuum specifications	Low pressure specifications	Different pressure	External pilot	Exhaust throttle	Bundle wiring	Mixed fitting sizes	IP65 enclosure	Interface regulator					
												C4	C6	C8	C10	C12	N3	N7	N9												N11				

Note) When using DIN terminal or M8 connector.

There is no DIN terminal available for SY3000. **Features 4**

5 Port Solenoid Valve

Series SY3000/5000/7000/9000

Body Ported

Single Unit



Refer to www.smcworld.com for details of products compatible with overseas standards.

How to Order

SY 5 1 20 5 L 01

Series

3	SY3000
5	SY5000
7	SY7000
9	SY9000

Type of actuation

1	2 position single (A)(B) 4 2 (EA)(P)(EB)
2	2 position double (A)(B) 4 2 (EA)(P)(EB)
3	3 position closed center (A)(B) 4 2 (EA)(P)(EB)
4	3 position exhaust center (A)(B) 4 2 (EA)(P)(EB)
5	3 position pressure center (A)(B) 4 2 (EA)(P)(EB)

Coil specifications

Nil	Standard
T	With power saving circuit (24, 12 VDC only)

* Power saving circuit is not available in the case of D, DO or W□ type.

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]

* DC specifications of type D and DO is only available with 12 and 24 VDC.
* For type W□, DC voltage is only available.

Rated voltage

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	D: With connector
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector

24, 12, 6, 5, 3 VDC

M8 connector

WO: Without connector cable



* LN, MN type: with 2 sockets.
* For DIN terminal of SY3000 series, refer to page 223.
* DIN connector "Type Y" conforming to DIN 43650C is available, too. For details, refer to catalog on page 212.
* For connector cable of M8 connector, refer to page 225.

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
02	1/4	SY9000
03	3/8	SY9000

One-touch fitting (Metric size)

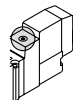
Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	SY3000
C6	One-touch fitting for ø6	SY3000
C4	One-touch fitting for ø4	SY5000
C6	One-touch fitting for ø6	SY5000
C8	One-touch fitting for ø8	SY5000
C8	One-touch fitting for ø8	SY7000
C10	One-touch fitting for ø10	SY7000
C8	One-touch fitting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

One-touch fitting (Inch size)

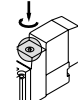
Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	SY3000
N7	One-touch fitting for ø 1/4"	SY3000
N3	One-touch fitting for ø 5/32"	SY5000
N7	One-touch fitting for ø 1/4"	SY5000
N9	One-touch fitting for ø 5/16"	SY5000
N9	One-touch fitting for ø 5/16"	SY7000
N11	One-touch fitting for ø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

Manual override

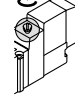
Nil: Non-locking push type



D: Push-turn locking slotted type

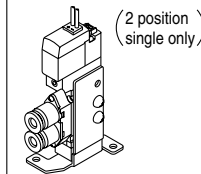


E: Push-turn locking lever type

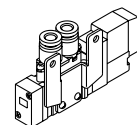


Bracket

Nil: Without bracket
F1: With foot bracket



F2: With side bracket



* SY9000 has no bracket.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

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

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

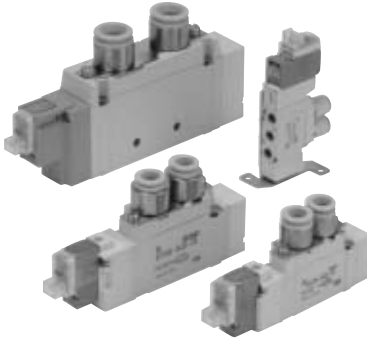
* DOZ is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.



Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to catalog on page 56.)

SY3000/5000/7000/9000 Body Ported

Specifications



Series		SY3000	SY5000	SY7000	SY9000
Fluid		Air			
Internal pilot	2 position single	0.15 to 0.7			
Operating pressure range (MPa)	2 position double	0.1 to 0.7			
	3 position	0.2 to 0.7			
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 216.)			
Max. operating frequency (Hz)	2 Position single, Double	10	5	5	5
	3 position	3	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/s ²) Note)		150/30			
Enclosure		Dust proof (* DIN terminal and M8 connector: IP65)			



* Based on IEC529)

Note) 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)



Made to Order

(For details, refer to pages 199 through 213.)

Solenoid Specifications

Electrical entry			Grommet (G), (H) L plug connector (L) M plug connector (M)	DIN terminal (D) M8 connector (W)
Coil rated voltage (V)	DC		24, 12, 6, 5, 3	
	AC 50/60 Hz		*100, 110, 200, 220	
Allowable voltage fluctuation (%)			±10% of rated voltage	
Power consumption (W)	DC	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)	
Apparent power (VA)	AC	100V	1.4 (With indicator light: 1.5)	
		110V	1.6 (With indicator light: 1.7)	
		[115V]	[1.7 (With indicator light: 1.8)]	
		200V	2.3 (With indicator light: 2.4)	
		220 V [230 V]	2.5 (With indicator light: 2.6) [2.7 (With indicator light: 2.8)]	
Surge voltage suppressor			Diode (DIN connector is ZNR. G, L or M (Non-polar) is zener diode.)	
Indicator light			LED	



* 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.

Response Time



Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

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

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

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

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

Body Ported

Flow Characteristics/Weight

Series SY3000

Valve model	Type of actuation	Port size		Flow 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)		Gro- mmet	L, M plug connector	W M8 connector		
				C (dm ³ /s-bar)	b	Cv	C (dm ³ /s-bar)					
SY3□20 -□-M5	2 position	Single Double Closed center Exhaust center Pressure center	M5 x 0.8	0.61	0.44	0.16	0.64	0.45	0.18	51	53	57
	3 position			0.48	0.46	0.13	0.47	0.43	0.13	68	74	82
	3 position			0.47	0.42	0.13	0.47 (0.44)	0.41 (0.37)	0.13 (0.12)	71	76	84
	3 position			0.50 (0.41)	0.48 (0.35)	0.15 (0.11)	0.47	0.43	0.13			
SY3□20 -□-C4	2 position	Single Double Closed center Exhaust center Pressure center	M5 x 0.8	0.72	0.29	0.18	0.64	0.34	0.17	60	63	67
	3 position			0.59	0.28	0.15	0.59	0.30	0.15	78	83	101
	3 position			0.63	0.35	0.16	0.42 (0.41)	0.34 (0.37)	0.11 (0.11)	81	86	94
	3 position			0.76 (0.46)	0.42 (0.34)	0.21 (0.12)	0.59	0.29	0.15			
SY3□20 -□-C6	2 position	Single Double Closed center Exhaust center Pressure center	M5 x 0.8	0.76	0.30	0.19	0.65	0.39	0.17	56	59	63
	3 position			0.76	0.55	0.24	0.60	0.33	0.16	74	79	87
	3 position			0.65	0.32	0.16	0.64 (0.42)	0.31 (0.36)	0.17 (0.11)	77	82	90
	3 position			0.77 (0.49)	0.34 (0.43)	0.21 (0.15)	0.61	0.34	0.16			

Note) [] : denotes normal position.

Series SY7000

Valve model	Type of actuation	Port size		Flow 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)		Gro- mmet	L, M plug connector	DIN terminal	W M8 connector		
				C (dm ³ /s-bar)	b	Cv	C (dm ³ /s-bar)						
SY7□20 -□-02	2 position	Single Double Closed center Exhaust center Pressure center	1/4	4.1	0.23	0.93	3.3	0.33	0.81	101	104	125	129
	3 position			2.9	0.31	0.70	2.4	0.38	0.63	128	133	175	183
	3 position			2.5	0.39	0.65	3.4 (2.1)	0.35 (0.38)	0.82 (0.54)				
	3 position			4.3 (2.4)	0.23 (0.32)	0.97 (0.61)	2.2	0.39	0.58				
SY7□20 -□-C8	2 position	Single Double Closed center Exhaust center Pressure center	1/4	3.2	0.26	0.77	3.2	0.37	0.82	107	110	131	135
	3 position			2.6	0.24	0.63	2.4	0.31	0.62	126	132	174	182
	3 position			2.4	0.25	0.57	2.6 (1.9)	0.42 (0.46)	0.70 (0.56)	134	140	182	190
	3 position			3.3 (2.4)	0.28 (0.22)	0.78 (0.57)	2.2	0.34	0.60				
SY7□20 -□-C10	2 position	Single Double Closed center Exhaust center Pressure center	1/4	3.8	0.26	0.86	3.2	0.34	0.82	103	105	126	130
	3 position			2.8	0.27	0.67	2.4	0.21	0.59	122	127	169	177
	3 position			2.5	0.25	0.59	2.7 (2.0)	0.38 (0.38)	0.70 (0.56)	130	135	177	185
	3 position			3.8 (2.4)	0.25 (0.31)	0.89 (0.61)	2.3	0.38	0.61				

Note) [] : denotes normal position.

Series SY5000

Valve model	Type of actuation	Port size		Flow 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)		Gro- mmet	L, M plug connector	DIN terminal	W M8 connector		
				C (dm ³ /s-bar)	b	Cv	C (dm ³ /s-bar)						
SY5□20 -□-01	2 position	Single Double Closed center Exhaust center Pressure center	1/8	1.9	0.35	0.49	2.4	0.39	0.61	70	72	93	97
	3 position			1.7	0.43	0.45	1.8	0.35	0.46	88	93	135	143
	3 position			1.5	0.44	0.41	2.5 (1.5)	0.32 (0.43)	0.59 (0.40)	93	98	140	148
	3 position			2.2 (0.91)	0.46 (0.58)	0.61 (0.28)	1.8	0.38	0.46				
SY5□20 -□-C4	2 position	Single Double Closed center Exhaust center Pressure center	1/8	0.75	0.43	0.20	0.85	0.64	0.30	94	96	117	121
	3 position			0.74	0.40	0.19	0.84	0.57	0.28	111	117	159	167
	3 position			0.75	0.36	0.19	0.84 (0.84)	0.64 (0.53)	0.30 (0.27)	117	122	164	172
	3 position			0.78 (0.71)	0.44 (0.37)	0.21 (0.18)	0.84	0.57	0.27				
SY5□20 -□-C6	2 position	Single Double Closed center Exhaust center Pressure center	1/8	1.5	0.33	0.33	2.0	0.37	0.52	88	91	112	116
	3 position			1.3	0.31	0.33	1.6	0.32	0.39	106	111	153	161
	3 position			1.3	0.33	0.33	1.8 (1.4)	0.35 (0.37)	0.44 (0.35)	111	116	158	166
	3 position			1.7 (0.80)	0.31 (0.47)	0.42 (0.23)	1.7	0.33	0.44				
SY5□20 -□-C8	2 position	Single Double Closed center Exhaust center Pressure center	1/8	1.9	0.21	0.45	2.3	0.29	0.57	80	82	103	107
	3 position			1.6	0.29	0.39	1.7	0.38	0.46	98	103	145	153
	3 position			1.4	0.38	0.39	2.0 (1.5)	0.37 (0.41)	0.52 (0.43)	103	108	150	158
	3 position			2.2 (1.6)	0.32 (0.44)	0.56 (0.44)	1.8	0.41	0.50				

Note) [] : denotes normal position.

Series SY9000

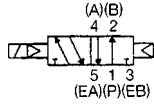
Valve model	Type of actuation	Port size		Flow characteristics						Weight (g)			
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2 (P→A/B)		4/2→5/3 (A/B→EA/EB)		Gro- mmet	L, M plug connector	DIN terminal	W M8 connector		
				C (dm ³ /s-bar)	b	Cv	C (dm ³ /s-bar)						
SY9□20 -□-02	2 position	Single Double Closed center Exhaust center Pressure center	1/4	7.0	0.33	1.7	7.6	0.35	2.0	241	244	265	269
	3 position			6.7	0.37	1.7	6.4	0.34	1.6	260	266	308	316
	3 position			6.4	0.36	1.6	8.3 (4.1)	0.41 (0.27)	2.2 (0.91)	284	290	332	340
	3 position			8.0 (3.2)	0.27 (0.34)	1.8 (0.76)	6.5	0.22	1.4				
SY9□20 -□-03	2 position	Single Double Closed center Exhaust center Pressure center	3/8	8.0	0.29	1.9	8.0	0.33	2.0	236	239	260	264
	3 position			7.9	0.33	1.9	6.6	0.27	1.6	255	261	303	311
	3 position			8.0	0.33	1.9	8.7 (8.3)	0.34 (0.40)	2.2 (2.3)	279	285	327	335
	3 position			8.9 (3.3)	0.34 (0.40)	2.2 (0.82)	6.5	0.25	1.5				
SY9□20 -□-C8	2 position	Single Double Closed center Exhaust center Pressure center	1/4	4.3	0.28	0.96	7.1	0.32	1.7	293	296	317	321
	3 position			4.3	0.31	0.99	6.1	0.28	1.4	312	318	360	368
	3 position			4.3	0.3	0.99	7.4 (3.8)	0.36 (0.29)	1.9 (0.86)	336	342	384	392
	3 position			4.4 (3.2)	0.35 (0.26)	1.0 (0.71)	2.1	0.41	0.53				
SY9□20 -□-C10	2 position	Single Double Closed center Exhaust center Pressure center	1/4	6.1	0.28	1.4	7.9	0.33	1.9	279	282	303	307
	3 position			5.9	0.30	1.4	6.5	0.26	1.5	298	304	346	354
	3 position			5.8	0.25	1.3	8.4 (4.1)	0.33 (0.27)	2.0 (0.93)	322	328	370	378
	3 position			6.3 (3.2)	0.29 (0.29)	1.5 (0.72)	6.4	0.25	1.5				
SY9□20 -□-C12	2 position	Single Double Closed center Exhaust center Pressure center	1/4	7.0	0.25	1.6	8.6	0.41	2.2	265	268	289	293
	3 position			6.9	0.24	1.6	7.0	0.33	1.7	284	290	332	340
	3 position			6.6	0.23	1.4	9.4 (4.5)	0.48 (0.32)	2.6 (1.0)	308	314	356	364
	3 position			7.4 (3.2)	0.25 (0.34)	1.7 (0.74)	6.6	0.23	1.5				

Note) [] : denotes normal position.

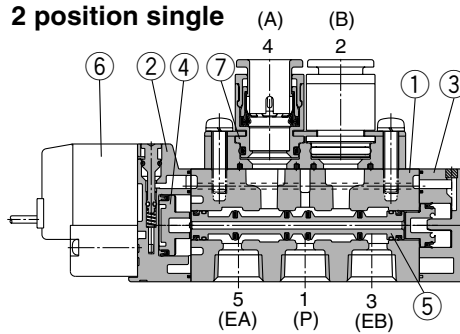
Construction

Series SY

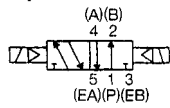
JIS Symbol 2 position single



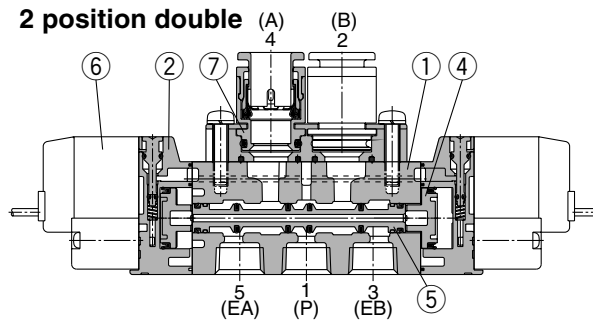
2 position single



JIS Symbol 2 position double

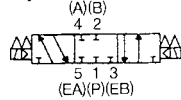


2 position double

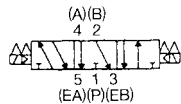


3 Position Closed center / Exhaust center / Pressure center

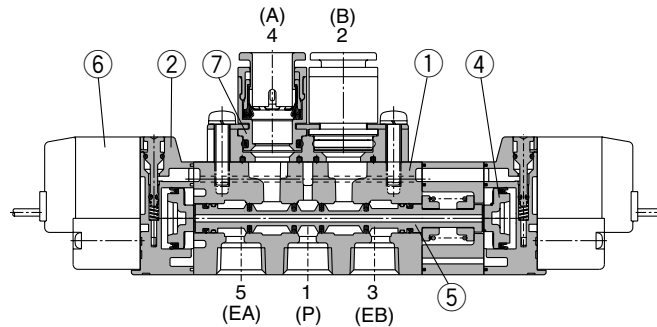
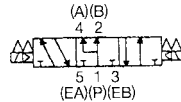
JIS Symbol 3 position closed center



3 position exhaust center



3 position pressure center



(This figure shows a closed center type.)

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, HNBR	—

Replacement Parts

No.	Description	No.
6	Pilot valve assembly	Refer to "How to Order Pilot Valve Assembly" on page 5.
7	M5 port block assembly	Refer to "How to Order Port Block Assembly" on page 6.

Bracket Assembly No.

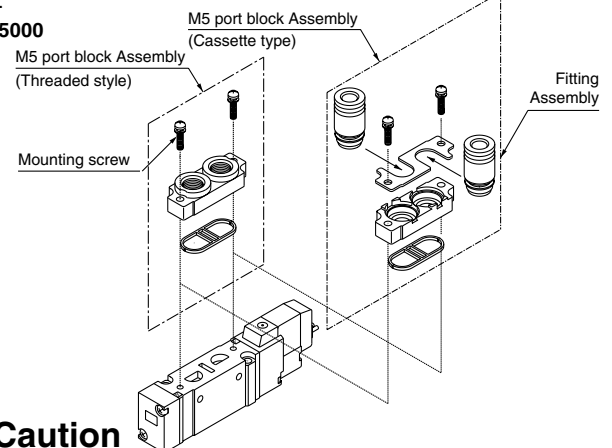
Description	No.
Bracket (For F1)	SX ³ 000-16-2A (with mounting screw)
Bracket (For F2)	SX ³ 000-16-1A (with mounting screw)

* SY9000 has no bracket.

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 6 for part no.

Body Ported

How to Order Pilot Valve Assembly

V111 — 5 — G —

Coil specifications

Nil	Standard: DC specifications
A	Standard: AC specifications
T	With power saving circuit (24 VDC, 12 VDC only)

* Power saving circuit is not available in the case of D, DO or W□ type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VDC ^{50/60} Hz
2	200 VAC ^{50/60} Hz
3	110 VAC ^{50/60} Hz [115 VAC ^{50/60} Hz]
4	220 VAC ^{50/60} Hz [230 VAC ^{50/60} Hz]

* For type W□, DC voltage is only available.

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-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

G	Grommet, 300 mm lead wire
H	Grommet, 600 mm lead wire
L	L plug connector
LN	With lead wire
LO	Without lead wire
M	M plug connector
MN	With lead wire
MO	Without lead wire
WO	Without connector
W0	M8 connector
	Without connector cable

Note) For connector cable of M8 connector, refer to page 225.

How to Order Connector Assembly for L and M Plug Connector

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 of sockets only)

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

DIN Terminal Type

V115 — 5 — D —

Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC ^{50/60} Hz
2	200 VAC ^{50/60} Hz
3	110 VAC ^{50/60} Hz [115 VAC ^{50/60} Hz]
4	220 VAC ^{50/60} Hz [230 VAC ^{50/60} Hz]

* DC specifications of type D and DO is only available with 12 and 24 VDC.

Light/surge voltage suppressor

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

* DOZ is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

D	DIN terminal
DO	With connector
	Without connector

Note) Do not replace V111 (G, H, L, M) to V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

How to Order M8 Connector Cable

Straight type

V100-49-1 —

Cable length

1	300 mm
2	500 mm
3	1000 mm
4	2000 mm
7	5000 mm

How to Order Port Block Assembly

SY 000—6A—

Series

3	SY3000
5	SY5000
7	SY7000
9	SY9000

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

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
02	1/4	SY9000
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	SY3000
C4	One-touch fitting for ø4	SY5000
C6	One-touch fitting for ø6	SY5000
C8	One-touch fitting for ø8	SY5000
C8	One-touch fitting for ø8	SY7000
C10	One-touch fitting for ø10	SY7000
C8	One-touch fitting for ø8	SY9000
C10	One-touch fitting for ø10	SY9000
C12	One-touch fitting for ø12	SY9000

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

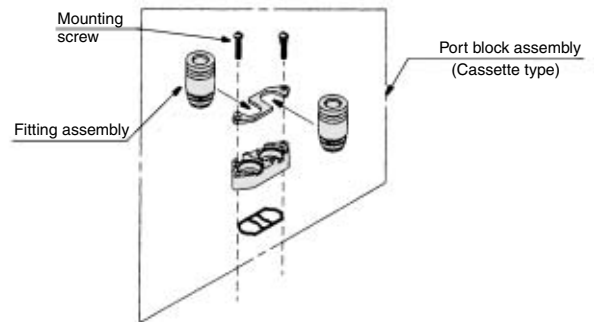
* Only replacement of the fittings assembly is possible.

Metric size

SY3000	One-touch fitting for ø4	VVQ1000-50A-C4
	One-touch fitting for ø6	VVQ1000-50A-C6
	One-touch fitting for ø4	VVQ1000-51A-C4
SY5000	One-touch fitting for ø6	VVQ1000-51A-C6
	One-touch fitting for ø8	VVQ1000-51A-C8
SY7000	One-touch fitting for ø8	VVQ2000-51A-C8
	One-touch fitting for ø10	VVQ2000-51A-C10
SY9000	One-touch fitting for ø8	VVQ4000-50B-C8
	One-touch fitting for ø10	VVQ4000-50B-C10
	One-touch fitting for ø12	VVQ4000-50B-C12

Inch size

SY3000	One-touch fitting for ø 5/32"	VVQ1000-50A-N3
	One-touch fitting for ø 1/4"	VVQ1000-50A-N7
	One-touch fitting for ø 5/32"	VVQ1000-51A-N3
SY5000	One-touch fitting for ø 1/4"	VVQ1000-51A-N7
	One-touch fitting for ø 5/16"	VVQ1000-51A-N9
SY7000	One-touch fitting for ø 5/16"	VVQ2000-51A-N9
	One-touch fitting for ø 3/8"	VVQ2000-51A-N11
SY9000	One-touch fitting for ø 5/16"	VVQ4000-50B-N9
	One-touch fitting for ø 3/8"	VVQ4000-50B-N11



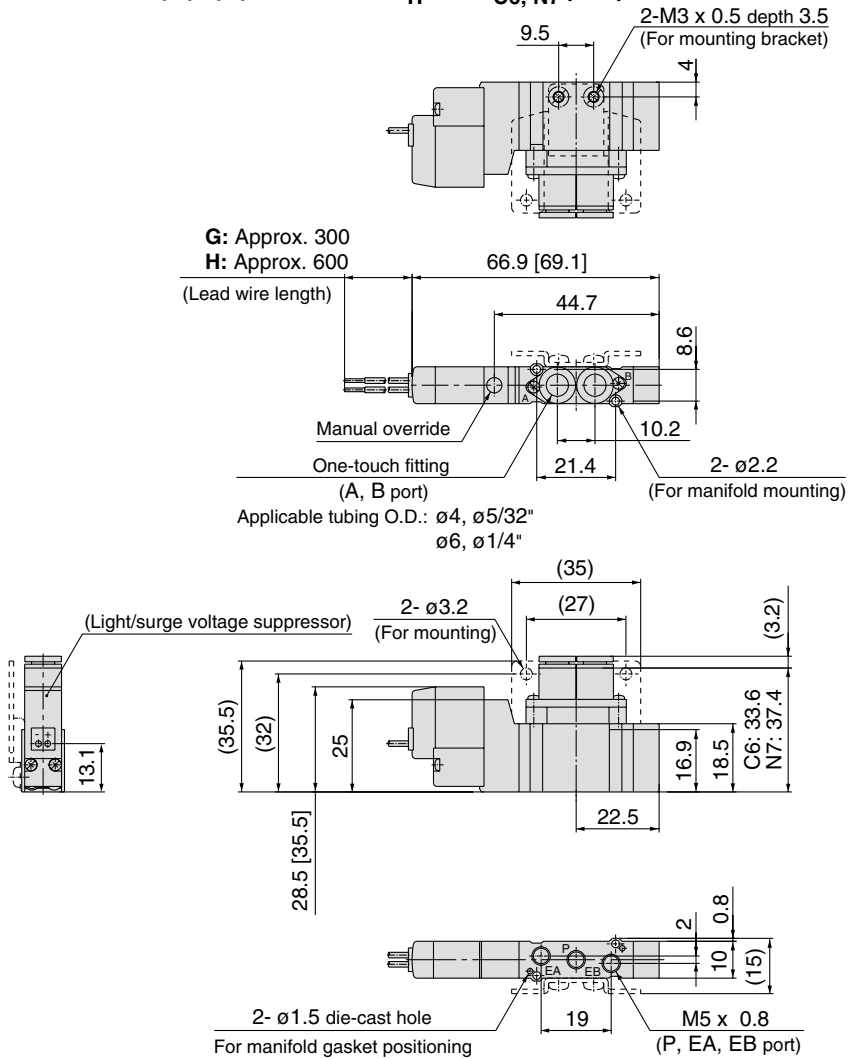
Body Ported

Dimensions: Series SY3000



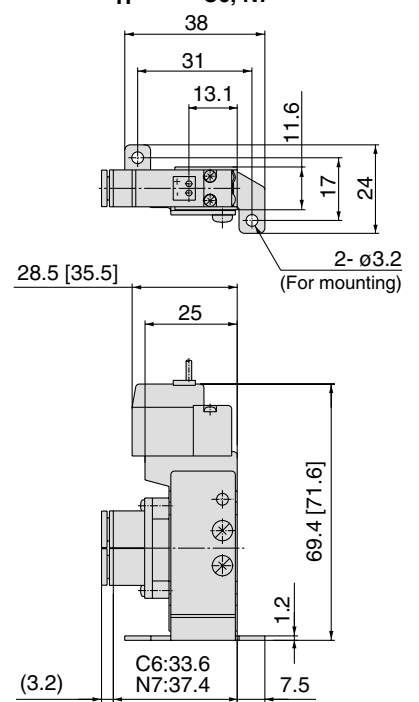
2 position single

Grommet (G), (H): SY3120- $\square_{\text{H}}^{\text{G}}$ $\square\square$ - $\begin{smallmatrix} \text{C4, N3} \\ \text{C6, N7} \end{smallmatrix}$ (-F2)

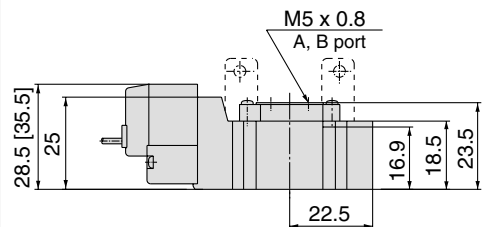


Foot bracket

SY3120- $\square$ _G $\square$ $\square$ - $\begin{smallmatrix} \text{C4, N3} \\ \text{C6, N7} \end{smallmatrix}$ -F1

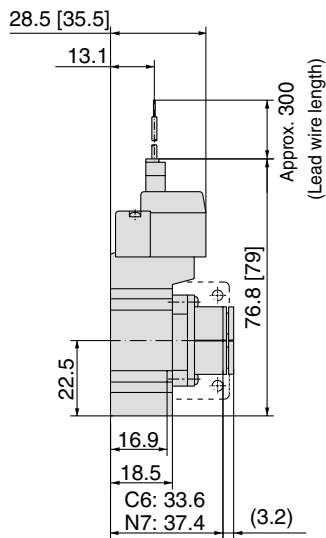


SY3120- $\square_{\text{H}}^{\text{G}}$ $\square\square$ -M5(-F2)



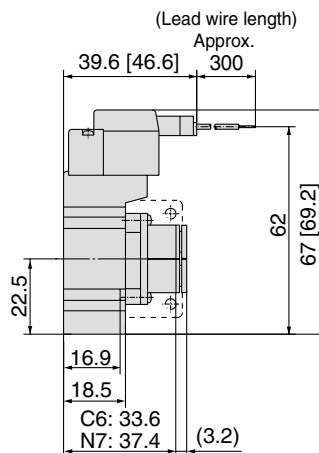
L plug connector (L):

SY3120-□L□□- $\begin{smallmatrix} \text{C}^4, \text{N}^3 \\ \text{C}^6, \text{N}^7 \end{smallmatrix} (-\text{F}_2^1)$



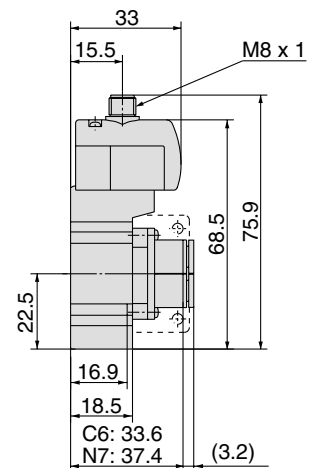
M plug connector (M):

SY3120-□M□□-C₆⁴, N₇³(-F₂¹)



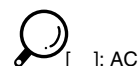
M8 connector (W0):

SY3120-□W0□□- $\frac{C_4}{C_6}, \frac{N_3}{N_7}(-F_2^1)$



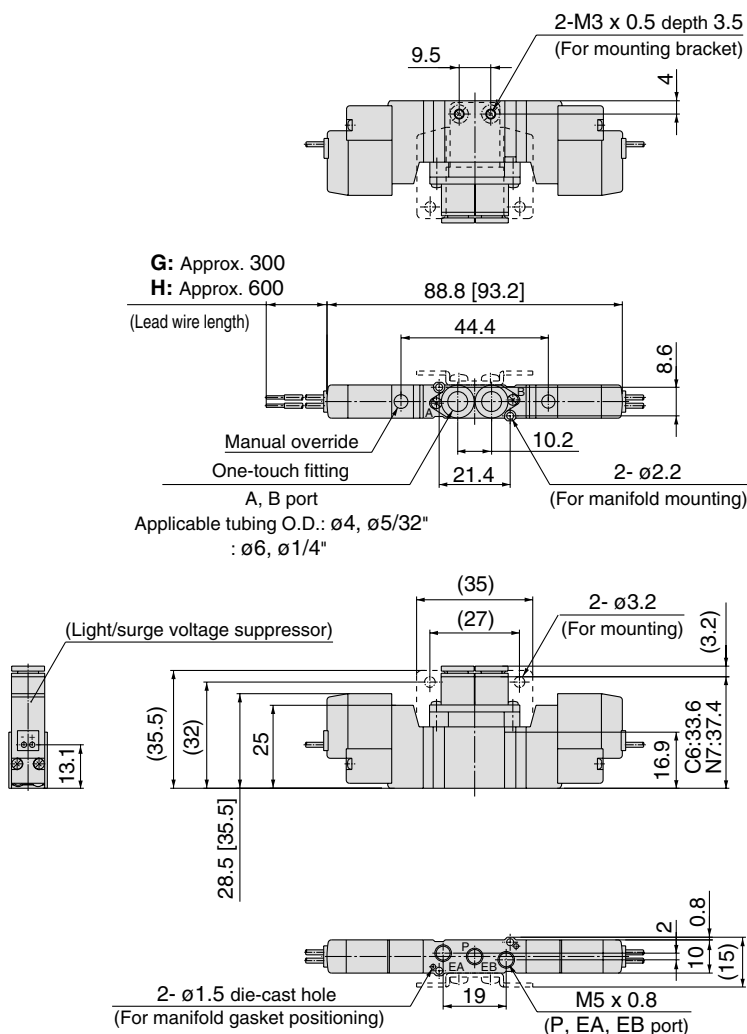
Note) Refer to the page 226 for dimensions of connector types.

Dimensions: Series SY3000

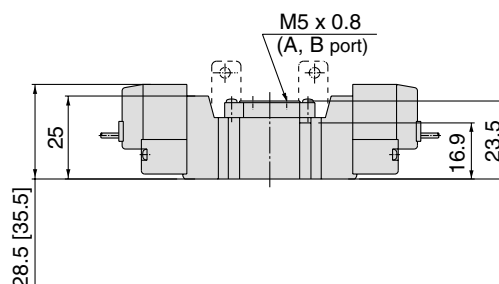


2 position double

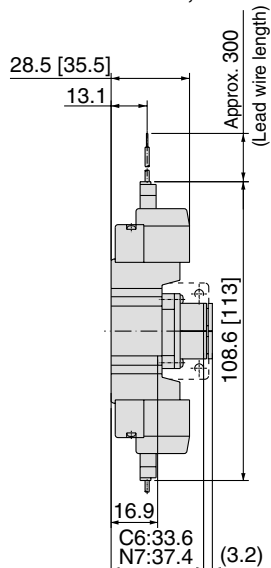
Grommet (G), (H): SY3220-□^G□□-C₄, N₃
C₆, N₇(-F₂)



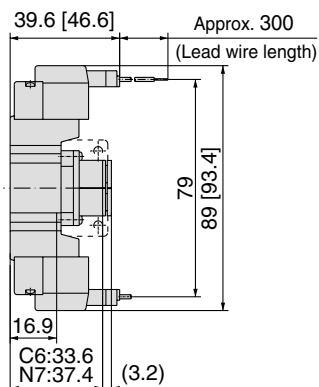
SY3220-□^G□□-M5(-F₂)



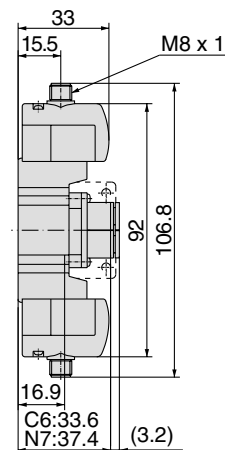
L plug connector (L):
SY3220-□^L□□-C₄, N₃
C₆, N₇(-F₂)



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



M8 connector (W0):
SY3220-W0□□-C₄, N₃
C₆, N₇(-F₂)



Note) Refer to the page 226 for dimensions of connector types.

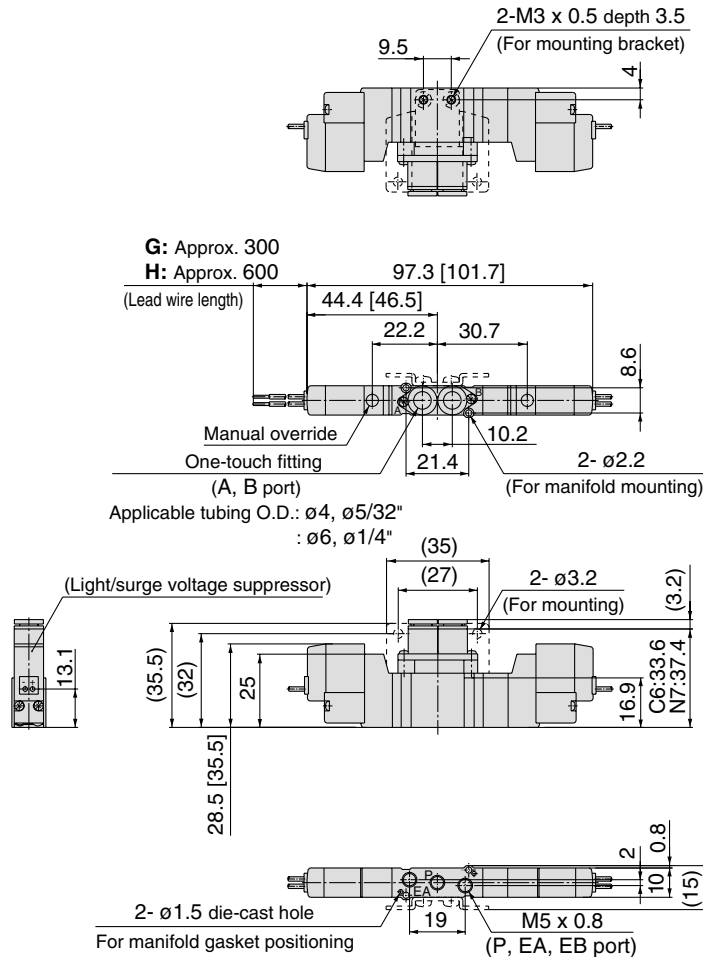
Body Ported

Dimensions: Series SY3000

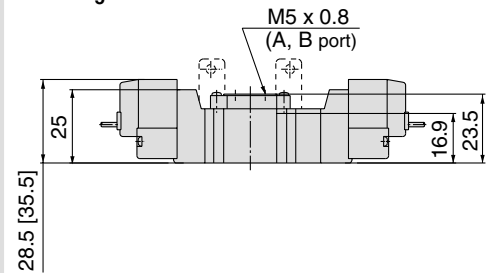


3 Position Closed center / Exhaust center / Pressure center

Grommet (G), (H): SY3³/₄20-□G□□-C₄, N₃
C₆, N₇ (-F2)

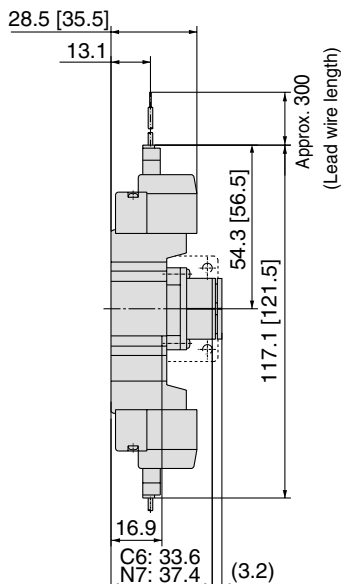


SY3³/₄20-□H□□-M5(-F2)



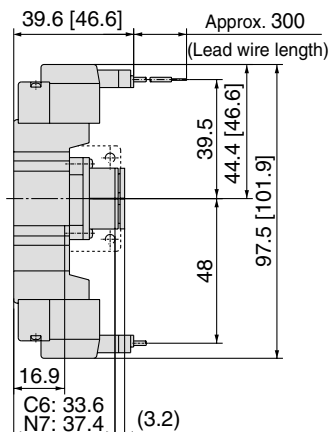
L plug connector (L):

SY3³/₄20-□L□□-C₄, N₃
C₆, N₇ (-F2)



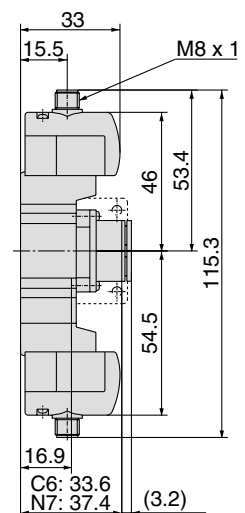
M plug connector (M):

SY3220-□M□□-C₄, N₃
C₆, N₇ (-F2)



M8 connector (W0):

SY3³/₄20-□W0□□-C₄, N₃
C₆, N₇ (-F2)



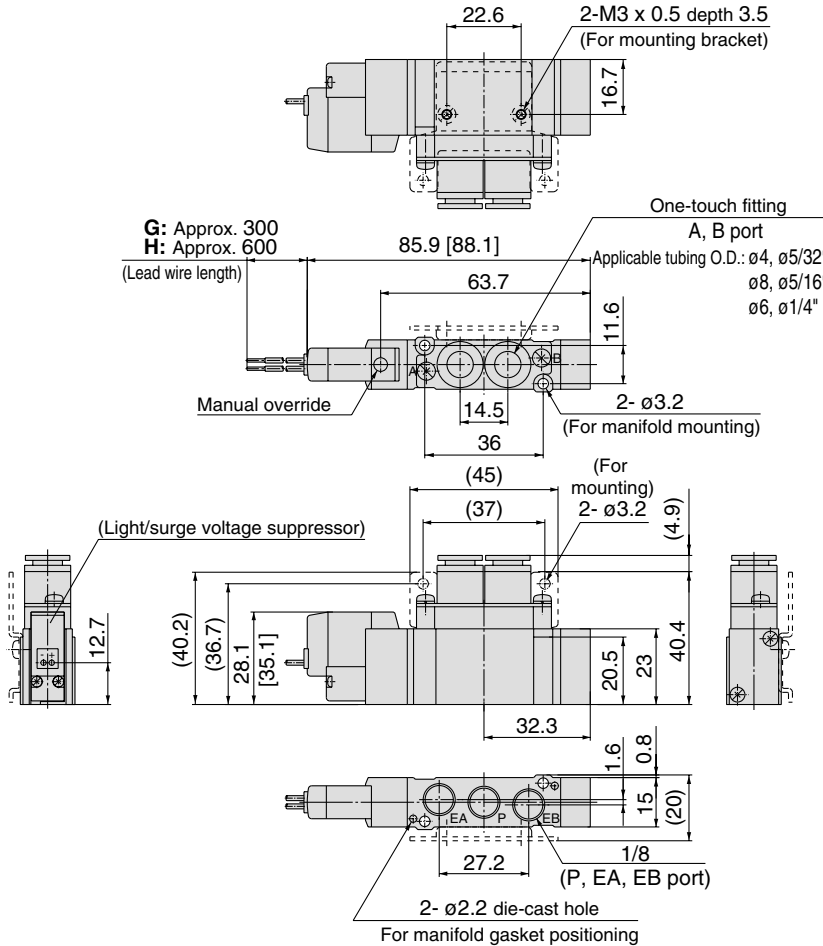
Note) Refer to the page 226 for dimensions of connector types.

Dimensions: Series SY5000



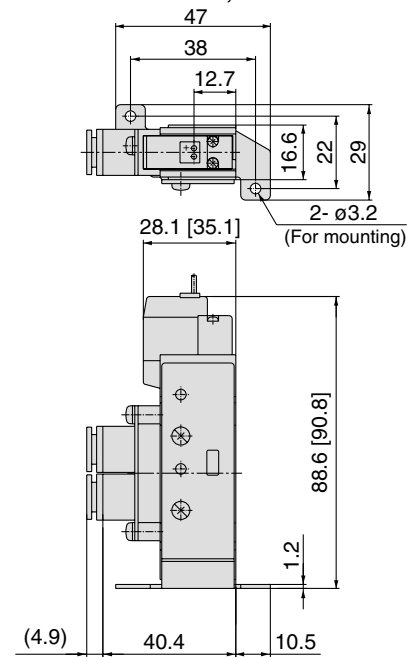
2 position single

Grommet (G), (H): SY5120-□_G□□-_{C4, N3}
_{C6, N7}□□(-F₂)
_{C8, N9}

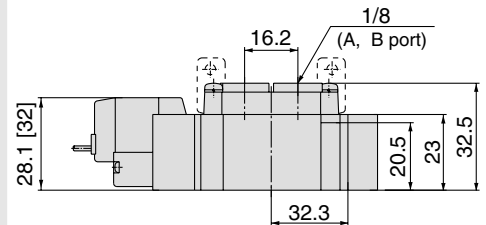


Foot bracket

SY5120-□_G□□-_{C4, N3}
_{C6, N7}□□(-F₁)
_{C8, N9}

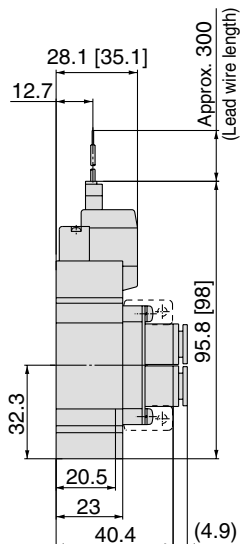


SY5120-□_G□□-01□(-F₂)



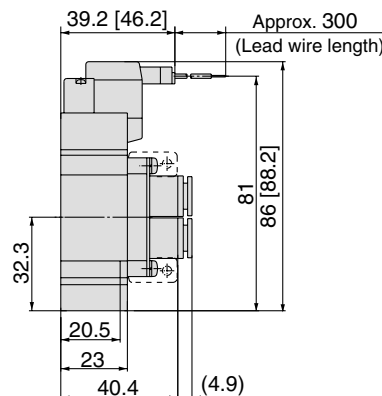
L plug connector: L

SY5120-□_L□□-_{C4, N3}
_{C6, N7}□□(-F₂)
_{C8, N9}



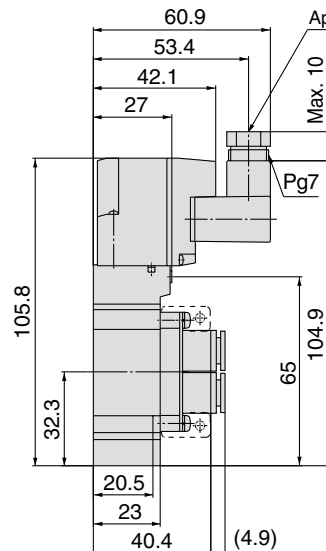
M plug connector: M

SY5120-□_M□□-_{C4, N3}
_{C6, N7}□□(-F₂)
_{C8, N9}



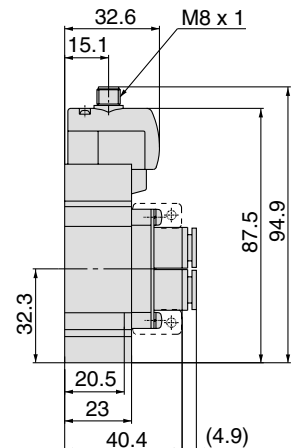
DIN terminal (D):

SY5120-□_D□□-_{C4, N3}
_{C6, N7}□□(-F₂)
_{C8, N9}



M8 connector (W0):

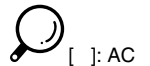
SY5120-□_{W0}□□-_{C4, N3}
_{C6, N7}□□(-F₂)
_{C8, N9}



Note) Refer to the page 226 for dimensions of connector types.

Body Ported

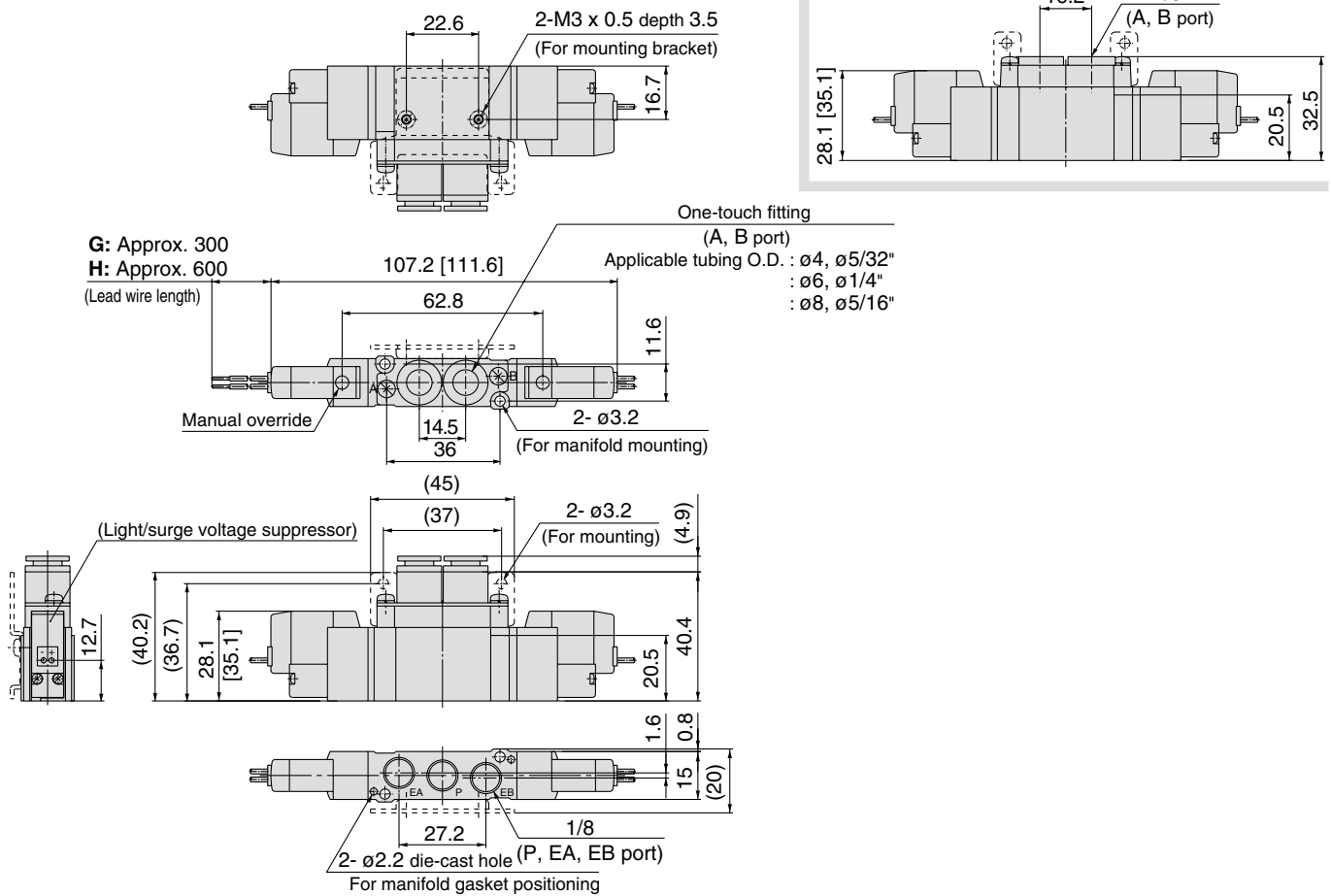
Dimensions: Series SY5000



2 position double

Grommet (G), (H): SY5220-□^G□□-C4, N3
C6, N7□(-F2)
C8, N9

SY5220-□^G□□-01□(-F2)



L plug connector: L

SY5220-□L□□-C4, N3
C6, N7□(-F2)
C8, N9

M plug connector: M

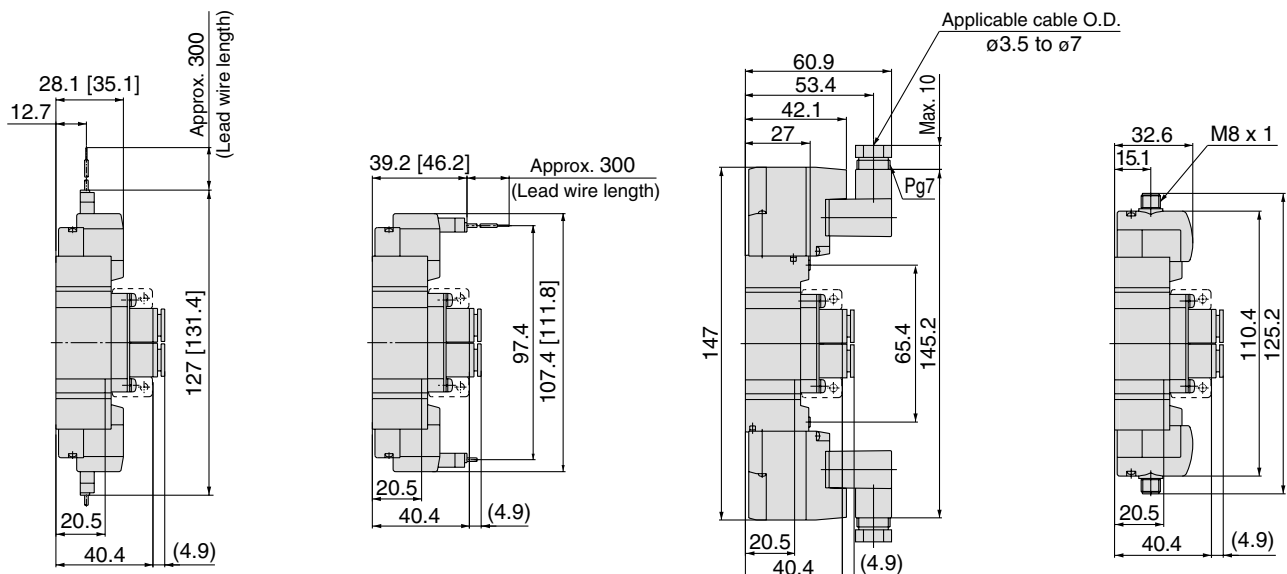
SY5220-□M□□-C4, N3
C6, N7□(-F2)
C8, N9

DIN terminal (D):

SY5220-□D□□-C4, N3
C6, N7□(-F2)
C8, N9

M8 connector (W0):

SY5220-□W0□□-C4, N3
C6, N7□(-F2)
C8, N9



Note) Refer to the page 226 for dimensions of connector types.

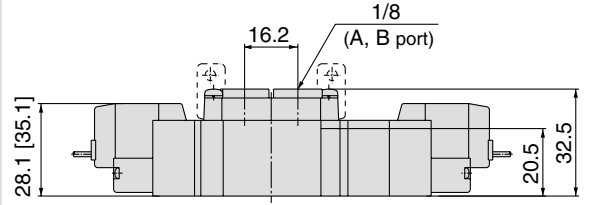
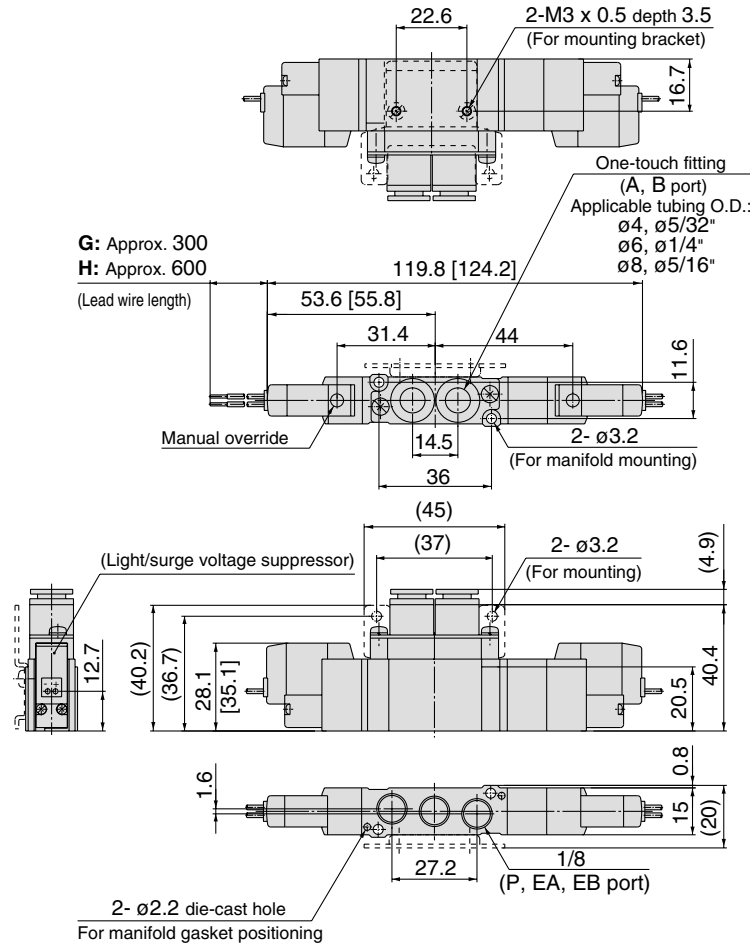
Dimensions: Series SY5000



3 Position closed center / Exhaust center / Pressure center

Grommet (G), (H): SY5³₄20-□³₅□□-□□^{C4, N3}_{C6, N7}□□(-F2)^{C8, N9}

SY5³₄20-□³₅□□-01□(-F2)



L plug connector: L

SY5³₄20-□L□□-□□^{C4, N3}_{C6, N7}□□(-F2)^{C8, N9}

M plug connector: M

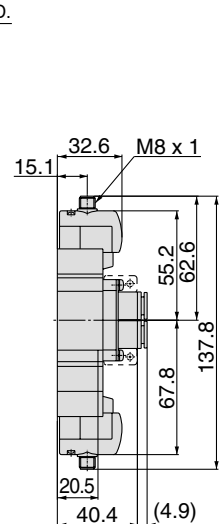
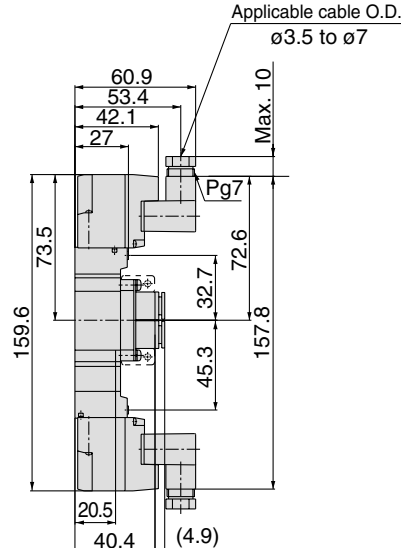
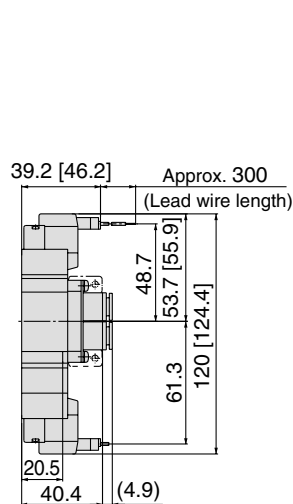
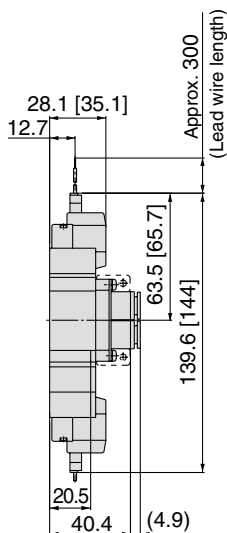
SY5³₄20-□M□□-□□^{C4, N3}_{C6, N7}□□(-F2)^{C8, N9}

DIN terminal (D):

SY5³₄20-□D□□-□□^{C4, N3}_{C6, N7}□□(-F2)^{C8, N9}

M8 connector (W0):

SY5³₄20-□W0□□-□□^{C4, N3}_{C6, N7}□□(-F2)^{C8, N9}



Note) Refer to the page 226 for dimensions of connector types.

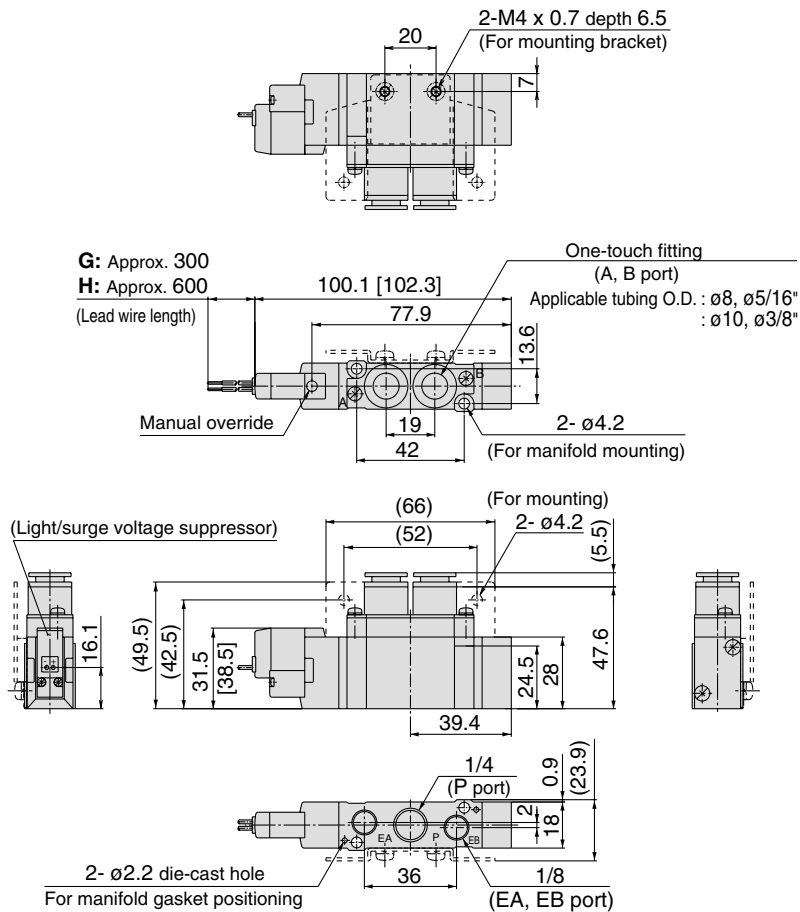
Body Ported

Dimensions: Series SY7000

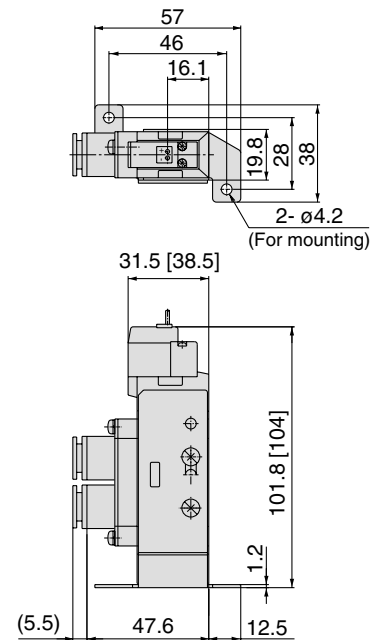


2 position single

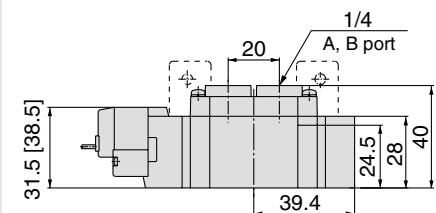
Grommet (G), (H): SY7120-□G□□-C8, N9 C10, N11 □(-F2)



SY7120-□G□□-C8, N9 C10, N11 □(-F1)



SY7120-□G□□-02□(-F2)



L plug connector (L) :

SY7120-□L□□-C8, N9 C10, N11 □(-F₂¹)

M plug connector (M):

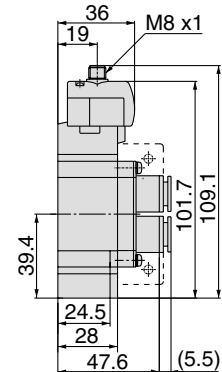
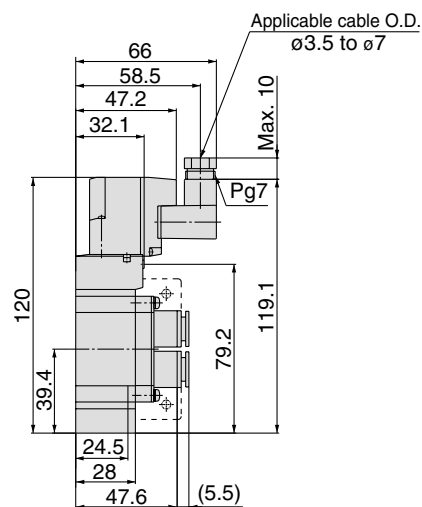
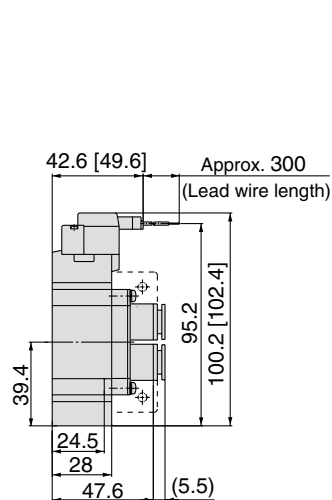
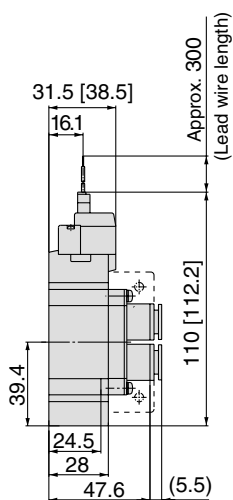
SY7120-□M□□-C8, N9 C10, N11 □(-F₂¹)

DIN terminal (D):

SY7120-□D□□-C8, N9 C10, N11 □(-F₂¹)

M8 connector (W0):

SY7120-□W0□□-C8, N9 C10, N11 □(-F₂¹)



Note) Refer to the page 226 for dimensions of connector types.

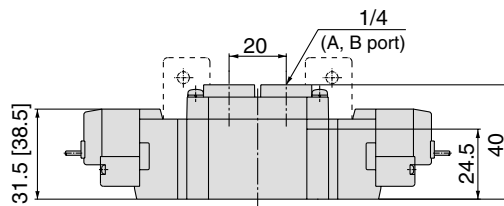
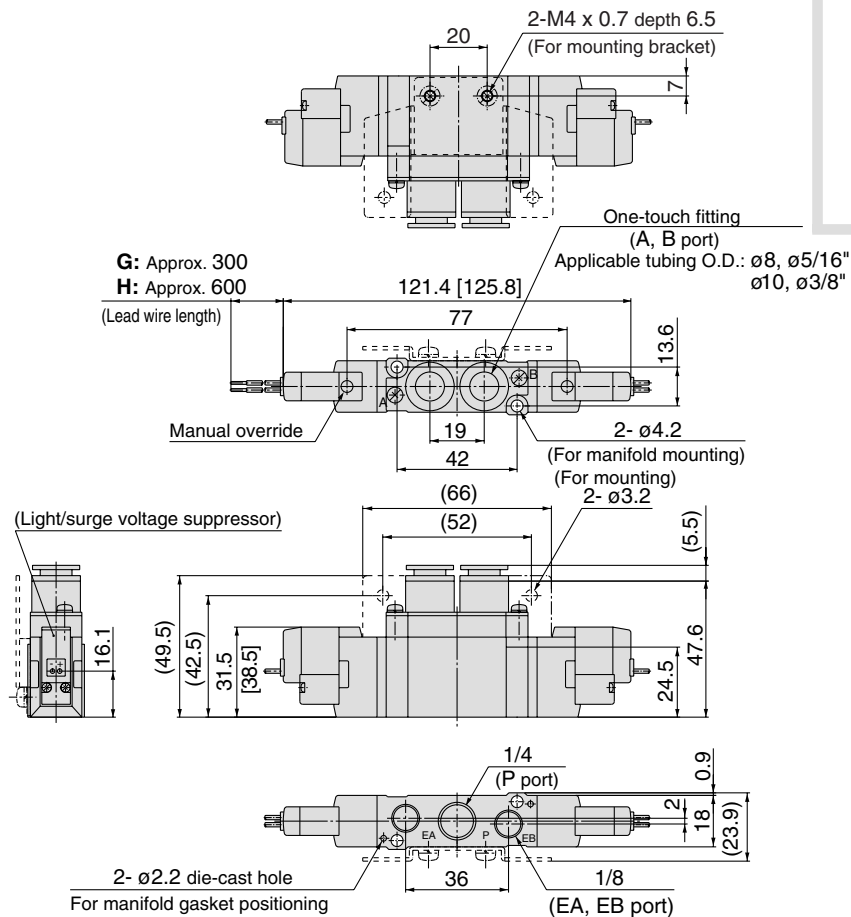
***SY3000/5000/7000/9000* Body Ported**

Dimensions: Series SY7000



2 position double

Grommet (G), (H): SY7220- $\square_{\text{H}}^{\text{G}}\square\square$ - $\begin{smallmatrix} \text{C8, N9} \\ \text{C10, N11} \end{smallmatrix}\square(-\text{F2})$

SY7220- $\square_{\text{H}}^{\text{G}}$ $\square\square$ -02 $\square$ (-F2)

L plug connector (L):

SY7220-□L□□-C8, N9 □
C10, N11 □

M plug connector (M):

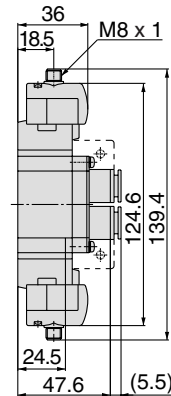
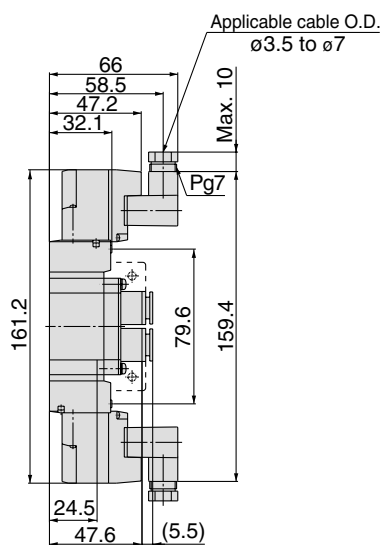
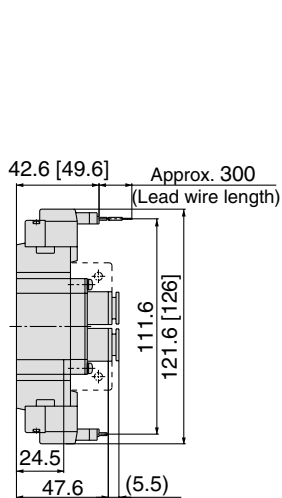
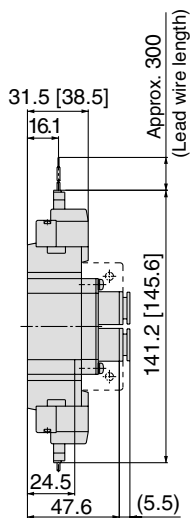
**SY7220-□M□□-C8,N9
C10,N11□(-F2)**

DIN terminal (D):

**SY7220-□D□□-C8, N9
C10, N11**

M8 connector (W0):

SY7220-□W0□□-^{C8, N9}_{C10, N11}□(-F2)



Note) Refer to the page 226 for dimensions of connector types.

Body Ported

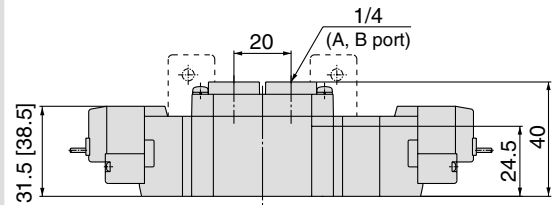
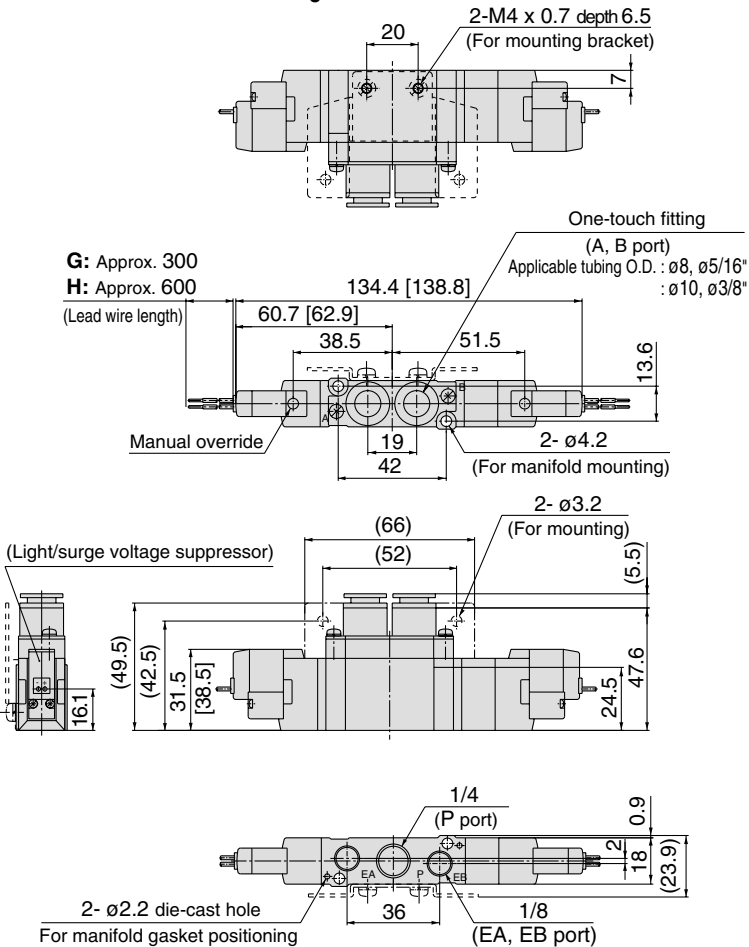
Dimensions: Series SY7000



3 Position closed center / Exhaust center / Pressure center

Grommet (G), (H): SY7³₄20-□^G□□^{C8, N9}□(-F2)
C10, N11

SY7³₄20-□^G□□^{C8, N9}-02□(-F2)
C10, N11



L plug connector (L):

SY7³₄20-□^L□□^{C8, N9}□(-F2)
C10, N11

M plug connector (M):

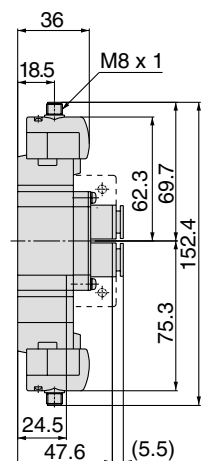
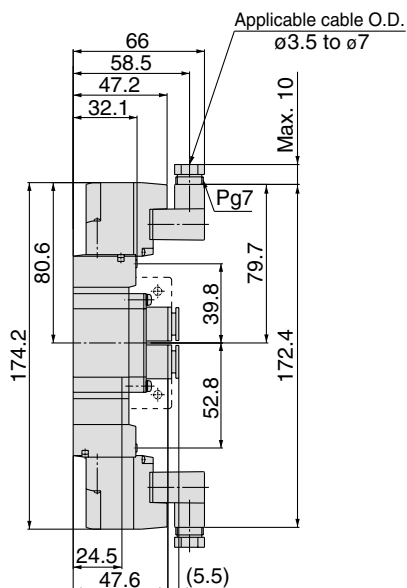
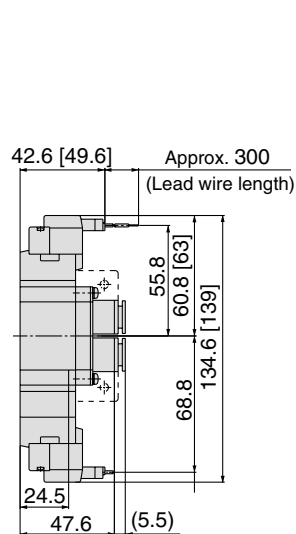
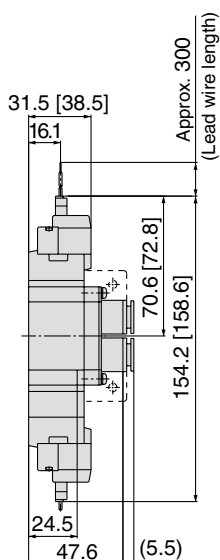
SY7³₄20-□^M□□^{C8, N9}□(-F2)
C10, N11

DIN terminal (D):

SY7³₄20-□^D□□^{C8, N9}□(-F2)
C10, N11

M8 connector (W0):

SY7³₄20-□^{W0}□□^{C8, N9}□(-F2)
C10, N11



Note) Refer to the page 226 for dimensions of connector types.

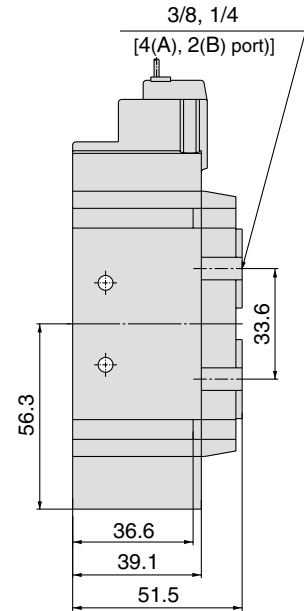
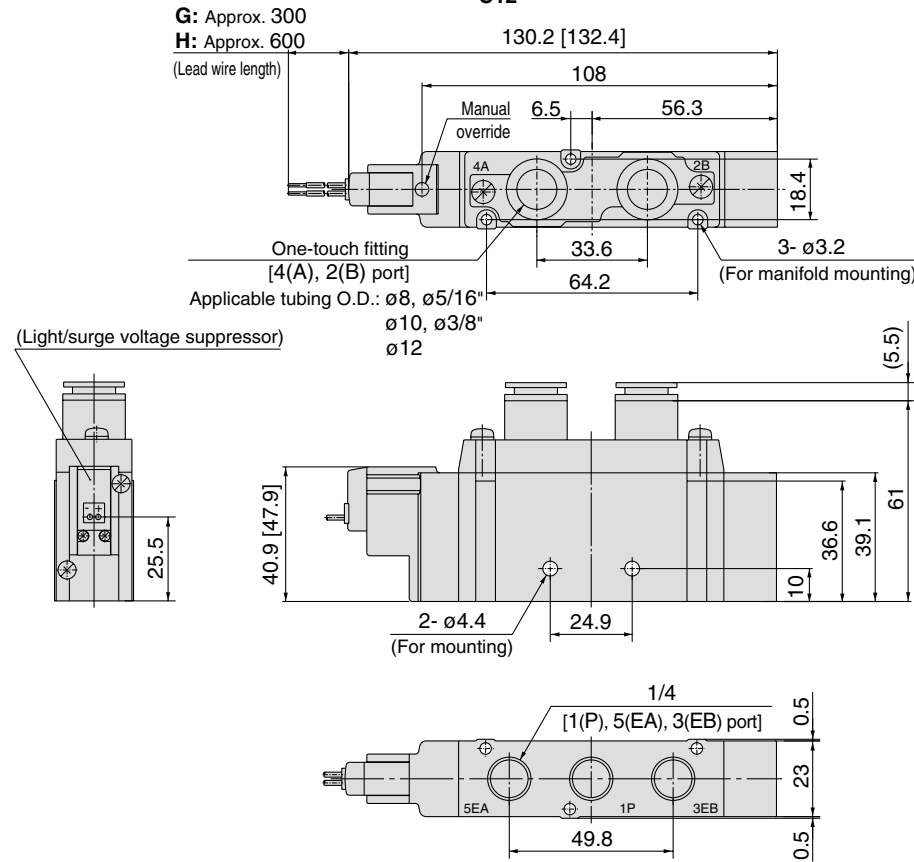
Dimensions: Series SY9000



2 position single

Grommet (G), (H): SYJ9120-□^G□^H□^{C8, N9}□^{C10, N11}□^{C12}

SY9120-□^G□^H□⁰²□⁰³

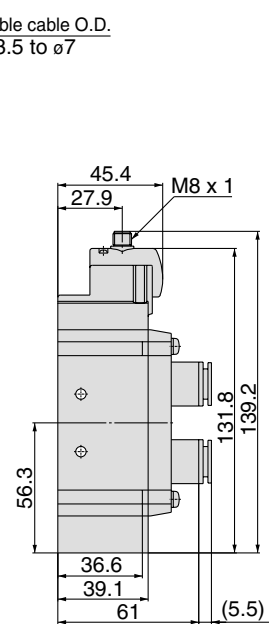
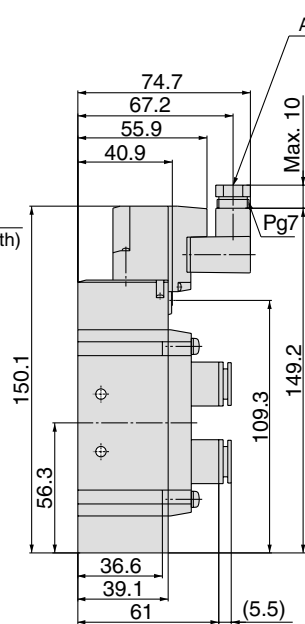
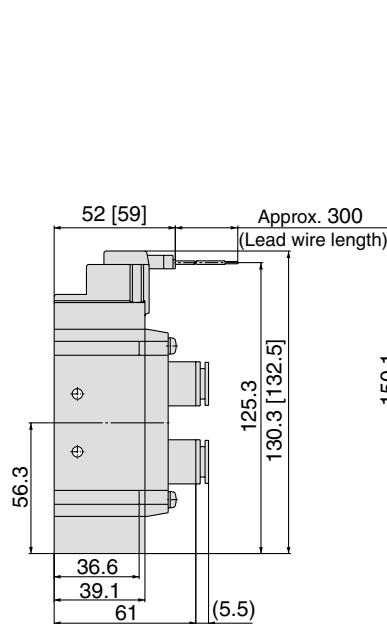
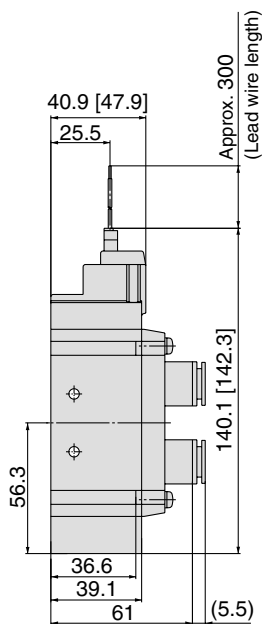


L plug connector (L):
SY9120-□^L□^{C8, N9}□^{C10, N11}□^{C12}

M plug connector (M):
SY9120-□^M□^{C8, N9}□^{C10, N11}□^{C12}

DIN plug connector (D):
SY9120-□^D□^{C8, N9}□^{C10, N11}□^{C12}

M8 connector (W0):
SY9120-□^{W0}□^{C8, N9}□^{C10, N11}□^{C12}



Note) Refer to the page 226 for dimensions of connector types.

Body Ported

Dimensions: Series SY9000

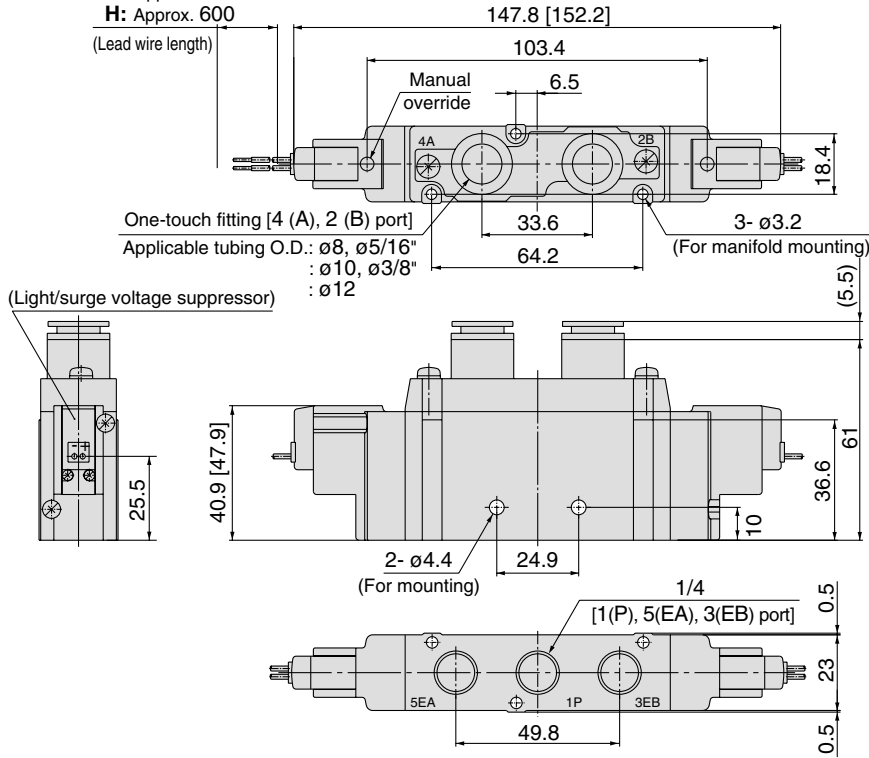


2 position double

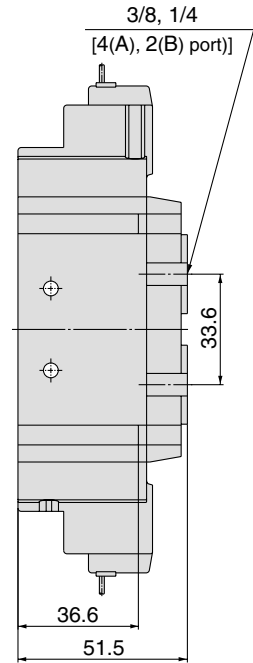
Grommet (G), (H): SY9220-☐G☐H☐-C8, N9
C10, N11
C12

G: Approx. 300

H: Approx. 600



SY9220-☐G☐H☐-02
03



L plug connector (L):

SY9220-☐L☐-C8, N9
C10, N11
C12

M plug connector (M):

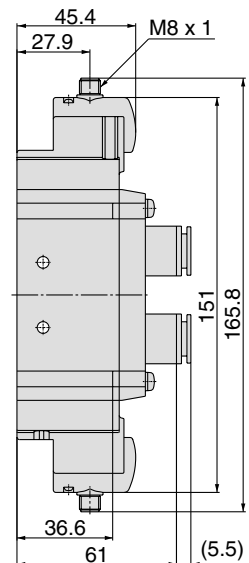
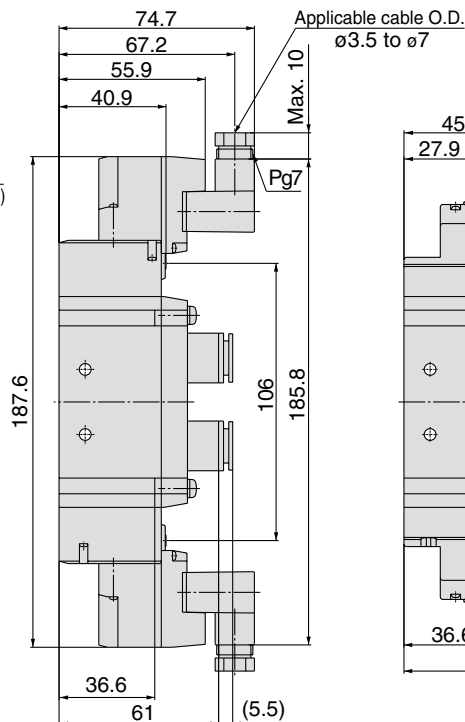
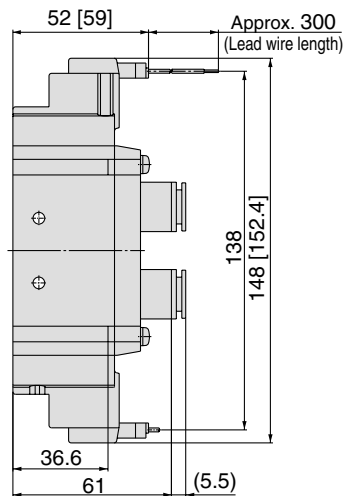
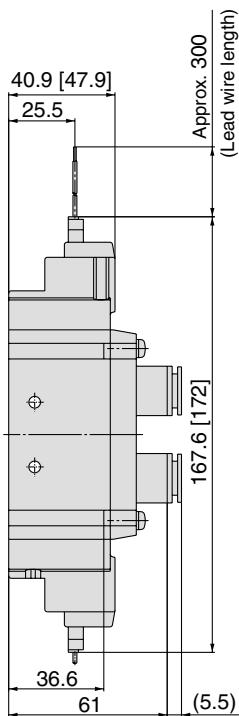
SY9220-☐M☐-C8, N9
C10, N11
C12

DIN plug connector (D):

SY9220-☐D☐-C8, N9
C10, N11
C12

M8 connector (W0):

SY9220-☐W0☐-C8, N9
C10, N11
C12



Note) Refer to the page 226 for dimensions of connector types.

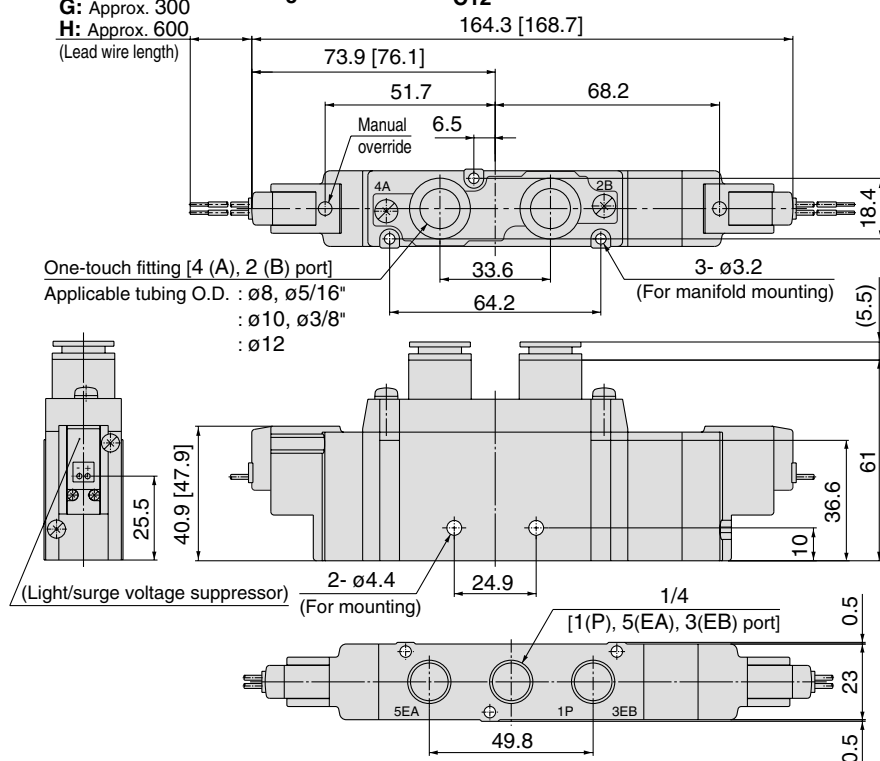
Dimensions: Series SY9000



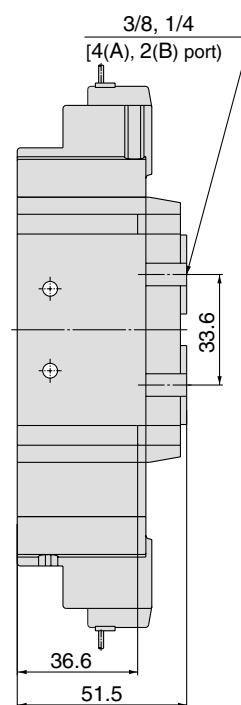
3 Position closed center / Exhaust center / Pressure

Grommet (G), (H): SY9³/₅420-□^G□□-C8, N9
C10, N11□
C12

G: Approx. 300
H: Approx. 600
(Lead wire length)

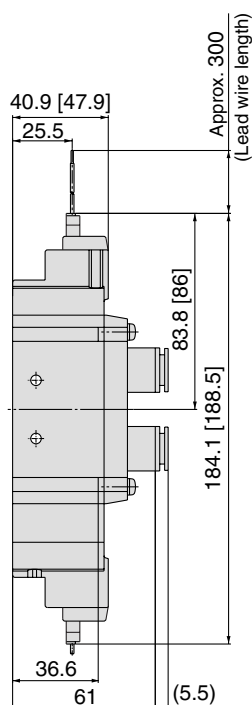


SY9³/₅420-□^G□□-02□
03□



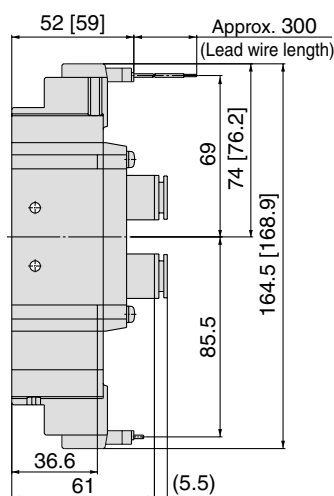
L plug connector (L):

SY9³/₅420-□^L□□-C8, N9
C10, N11□
C12



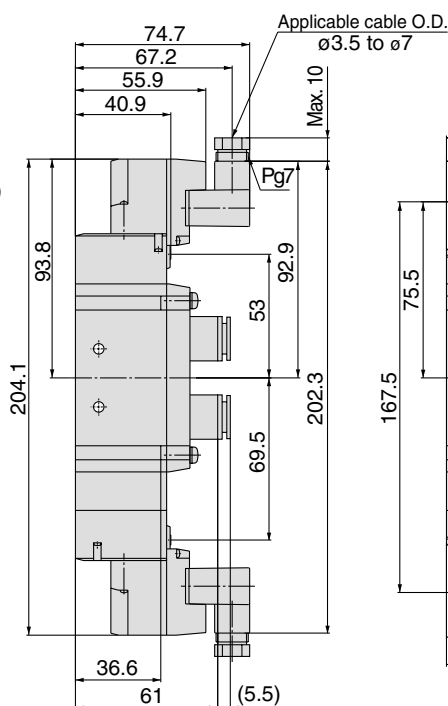
M plug connector (M):

SY9³/₅420-□^M□□-C8, N9
C10, N11□
C12



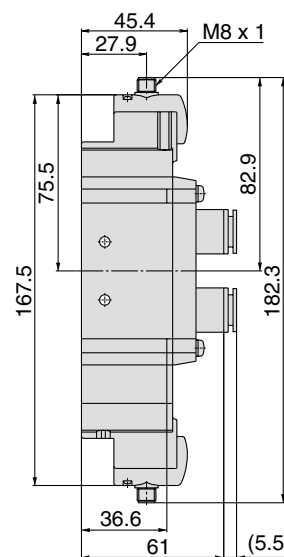
DIN plug connector (D):

SY9³/₅420-□^D□□-C8, N9
C10, N11□
C12



M8 connector (W0):

SY9³/₅420-□^{W0}□□-C8, N9
C10, N11□
C12



Note) Refer to the page 226 for dimensions of connector types.