

5 Port Solenoid Valve

Power Consumption
0.1 W
With Power Saving Circuit



- **Improved pilot valve**

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

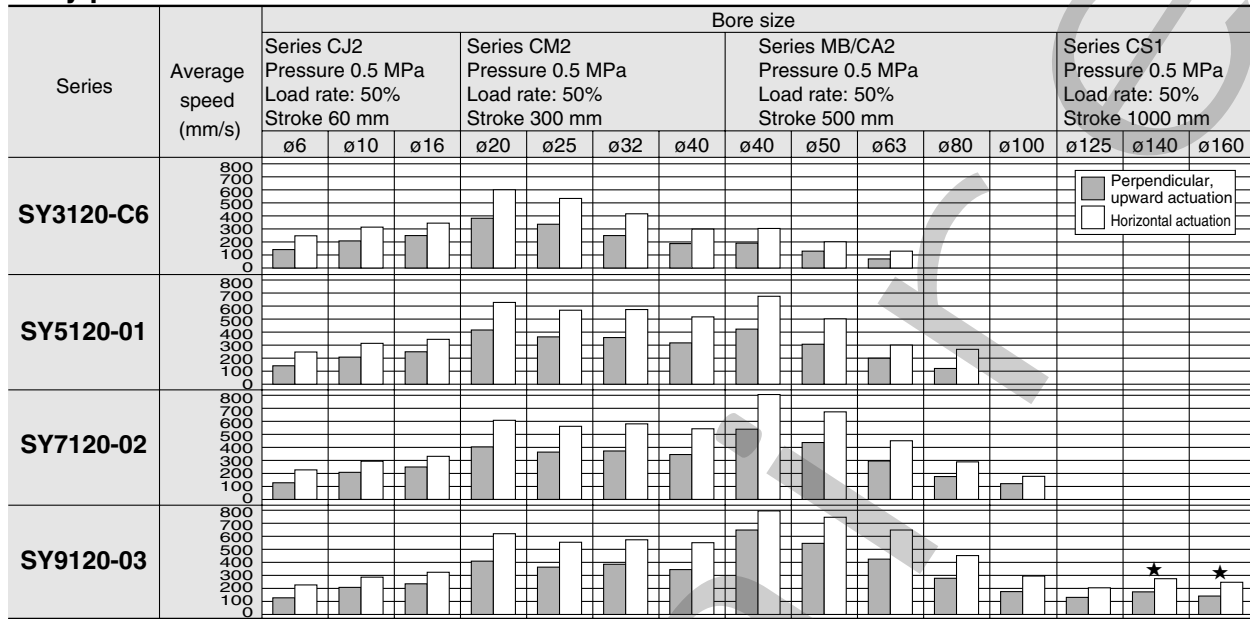
- **Flow Characteristics**

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

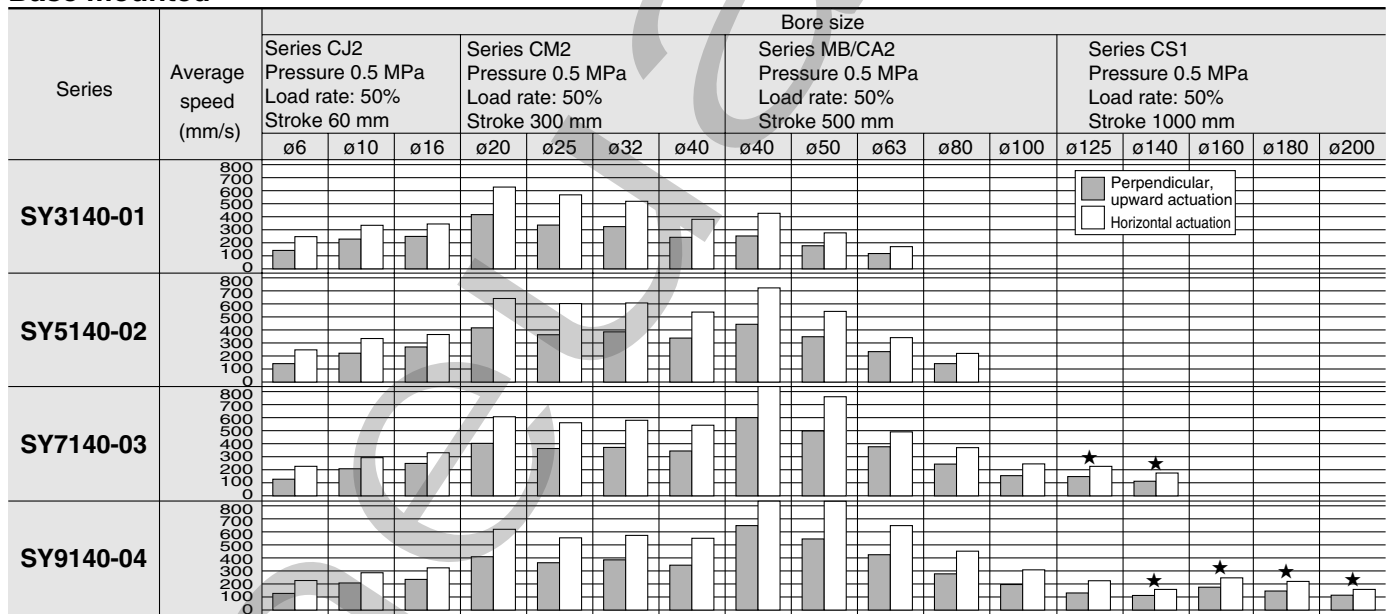
Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with P/A 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

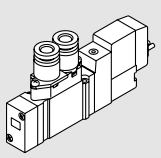
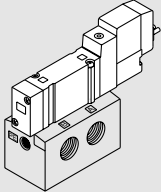
Conditions

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

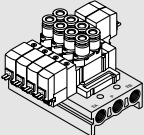
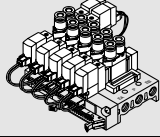
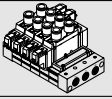
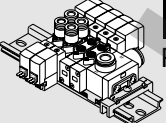


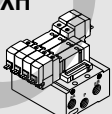
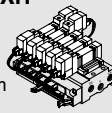

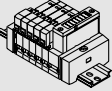


Valve Variations

	Series	Sonic conductance C [dm ³ /(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				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	Bracket	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	●	●	●	—	—	—	●	●	—	—	●	—	—	—	—	—	—	—	—	—	—	Sub-plate	—	External pilot	External pilot	External pilot	DIN terminal M8 connector	●	
	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	
			5 port											
Body ported	Bar stock type Individual wiring ■ Direct piping to the main unit of a valve. Combination of different fittings is possible.		Type 20 P. 37	SY3 <input type="checkbox"/> 20	●	—	—	—	—	—	—	—	—	—
				SY5 <input type="checkbox"/> 20	—	●	—	—	—	—	—	—	●	—
				SY7 <input type="checkbox"/> 20	—	—	—	—	—	—	—	—	—	—
	Bar stock type Flat ribbon cable ■ A 26 pins MIL connector permits One-touch wiring of external cables in a bundle.		Type 20P P. 47	SY3 <input type="checkbox"/> 20	—	●	—	—	—	—	—	—	—	●
				SY5 <input type="checkbox"/> 20	—	—	—	—	—	—	—	—	●	—
				SY7 <input type="checkbox"/> 20	—	—	—	—	—	—	—	—	—	—
	Stacking type Individual wiring ■ Manifold stations can be increased.		Type 23 P. 43	SY9 <input type="checkbox"/> 20	●	—	—	—	—	—	—	—	—	—
			Stacking type Flat ribbon cable ■ Manifold stations can be increased.	Type 23P P. 53	SY9 <input type="checkbox"/> 20	—	●	—	—	—	—	—	—	—
	Cassette type Individual wiring ■ Size and weight reduced by eliminating the manifold base			Type 60 P. 59	SY3 <input type="checkbox"/> 60	●	—	—	—	—	—	—	—	—
				SY5 <input type="checkbox"/> 60	●	—	—	—	—	—	—	—	—	—
			SY7 <input type="checkbox"/> 60	●	—	—	—	—	—	—	—	—	—	
Base mounted	Compact bar stock type Individual wiring ■ The base mounting facilitates maintenance after valves are changed.		Type 41 P. 79	SY3 <input type="checkbox"/> 40	●	—	—	—	—	—	—	—	—	
				SY5 <input type="checkbox"/> 40	—	●	—	—	—	—	—	—	—	
	Compact bar stock type Flat ribbon cable ■ A 26 pins MIL connector permits one-touch wiring of external cables in a bundle.		Type 41P P. 95	SY3 <input type="checkbox"/> 40	—	●	—	—	—	—	—	—	●	
				SY5 <input type="checkbox"/> 40	—	—	—	—	—	—	—	—	●	
	Bar stock type/Common External EXH Individual wiring ■ The base mounting facilitates maintenance after valves are changed. ■ Vacuum/low pressure combination system is possible.		Type 42 P. 79	SY3 <input type="checkbox"/> 40	●	—	—	—	—	—	—	—	—	
				SY5 <input type="checkbox"/> 40	—	—	—	—	—	—	—	—	—	
				SY7 <input type="checkbox"/> 40	—	—	—	—	—	—	—	—	—	
	Bar stock type/Common External EXH Flat ribbon cable ■ A 26 pins MIL connector permits one-touch wiring of external cables in a bundle. ■ Vacuum/low pressure combination system is possible.		Type 42P P. 95	SY3 <input type="checkbox"/> 40	—	●	—	—	—	—	—	—	●	
				SY5 <input type="checkbox"/> 40	—	—	—	—	—	—	—	—	●	
				SY7 <input type="checkbox"/> 40	—	—	—	—	—	—	—	—	—	
	Stacking type Individual wiring ■ Manifold stations can be increased.		Type 43 P. 89	SY9 <input type="checkbox"/> 40	●	—	—	—	—	—	—	—	—	
			Stacking type Flat ribbon cable ■ Manifold stations can be increased.	Type 43P P. 103	SY9 <input type="checkbox"/> 40	—	●	—	—	—	—	—	—	●
	Stacking type/DIN rail mounted Individual wiring ■ Stations can be increased on the DIN rail. Integral mounting of other electric parts is possible, too.			Type 45 P. 115	SY3 <input type="checkbox"/> 40	●	—	—	—	—	—	—	—	—
			SY5 <input type="checkbox"/> 40	—	—	—	—	—	—	—	—	—		
Stacking type/DIN rail mounted With connector box ■ Stations can be increased on the DIN rail. The provided connector box permits one-touch connection of electric cables.		Type 45^A_{NA} P. 127	SY3 <input type="checkbox"/> 40	—	—	●	—	—	●	—	●	●		
			SY5 <input type="checkbox"/> 40	—	—	—	—	—	●	—	●	●		
Stacking type/DIN rail mounted Plug-in type ■ Stations can be increased on the DIN rail. ■ A variety of centralized wiring methods are possible.		Type 45 P. 135	SY3 <input type="checkbox"/> 40	—	—	—	●	●	●	●	●	●		
			SY5 <input type="checkbox"/> 40	—	—	—	—	—	●	●	●	●		

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

5 Port Solenoid Valve

Series SY3000/5000/7000/9000

Body Ported

Single Unit



Refer to www.poweraire.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.

Rated voltage

For DC

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

For AC (50/60 Hz)

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

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

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
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
C10	One-touch fitting for ø10	SY7000
C8	One-touch fitting for ø8	SY7000
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 9/16"	SY5000
N9	One-touch fitting for ø 9/16"	SY7000
N11	One-touch fitting for ø 3/8"	SY7000
N9	One-touch fitting for ø 9/16"	SY9000
N11	One-touch fitting for ø 3/8"	SY9000

• Bracket

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

F2: With side bracket

* SY9000 has no bracket.

• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

• Manual override

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

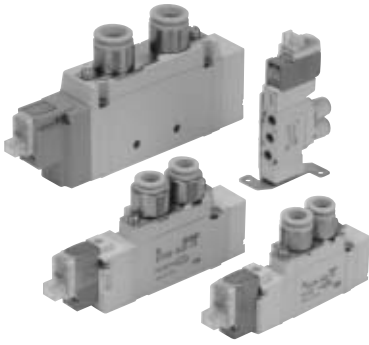
Electrical entry for D

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.)

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
	3 position		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))	b	Cv			
SY3□20 -□-M5	2 position Single Double	M5 x 0.8	M5 x 0.8	0.61 0.44 0.16			0.64 0.45 0.18			51	53	57
				0.48 0.46 0.13			0.47 0.43 0.13			71	76	84
	3 position Exhaust center Pressure center			0.47 0.42 0.13			0.47 (0.44) 0.41 (0.37) 0.13 (0.12)					
				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	M5 x 0.8	C4 One- touch fitting for ø4	0.72 0.29 0.18			0.64 0.34 0.17			60	63	67
				0.59 0.28 0.15			0.59 0.30 0.15			81	86	94
	3 position Exhaust center Pressure center			0.63 0.35 0.16			0.42 (0.41) 0.34 (0.37) 0.11 (0.11)					
				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	M5 x 0.8	C6 One- touch fitting for ø6	0.76 0.30 0.19			0.65 0.39 0.17			56	59	63
				0.76 0.55 0.24			0.60 0.33 0.16			77	82	90
	3 position Closed center Exhaust center Pressure center			0.65 0.32 0.16			0.64 (0.42) 0.31 (0.36) 0.17 (0.11)					
				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))	b	Cv				
SY7□20 -□-02	2 position Single Double	1/4	1/4	4.1 0.23 0.93			3.3 0.33 0.81			101	104	125	129
				2.9 0.31 0.70			2.4 0.38 0.63			128	133	175	183
	3 position Closed center Exhaust center Pressure center			2.5 0.39 0.65			3.4 (2.1) 0.35 (0.38) 0.82 (0.54)						
				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	1/4	C8 One- touch fitting for ø8	3.2 0.26 0.77			3.2 0.37 0.82			107	110	131	135
				2.6 0.24 0.63			2.4 0.31 0.62			134	140	182	190
	3 position Closed center Exhaust center Pressure center			2.4 0.25 0.57			2.6 (1.9) 0.42 (0.46) 0.70 (0.56)						
				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	1/4	C10 One- touch fitting for ø10	3.8 0.26 0.86			3.2 0.34 0.82			103	105	126	130
				2.8 0.27 0.67			2.4 0.21 0.59			130	135	177	185
	3 position Closed center Exhaust center Pressure center			2.5 0.25 0.59			2.7 (2.0) 0.38 (0.38) 0.70 (0.56)						
				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))	b	Cv				
SY5□20 -□-01	2 position Single Double	1/8	1/8	1.9 0.35 0.49			2.4 0.39 0.61			70	72	93	97
				1.7 0.43 0.45			1.8 0.35 0.46			93	98	140	148
	3 position Exhaust center Pressure center			1.5 0.44 0.41			2.5 (1.5) 0.32 (0.43) 0.59 (0.40)						
				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	1/8	C4 One- touch fitting for ø4	0.75 0.43 0.20			0.85 0.64 0.30			94	96	117	121
				0.74 0.40 0.19			0.84 0.57 0.28			117	122	164	172
	3 position Closed center Exhaust center Pressure center			0.75 0.36 0.19			0.84 (0.84) 0.64 (0.53) 0.30 (0.27)						
				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	1/8	C6 One- touch fitting for ø6	1.5 0.33 0.33			2.0 0.37 0.52			88	91	112	116
				1.3 0.31 0.33			1.6 0.32 0.39			111	116	158	166
	3 position Closed center Exhaust center Pressure center			1.3 0.33 0.33			1.8 (1.4) 0.35 (0.37) 0.44 (0.35)						
				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	1/8	C8 One- touch fitting for ø8	1.9 0.21 0.45			2.3 0.29 0.57			80	82	103	107
				1.6 0.29 0.39			1.7 0.38 0.46			103	108	150	158
	3 position Closed center Exhaust center Pressure center			1.4 0.38 0.39			2.0 (1.5) 0.37 (0.41) 0.52 (0.43)						
				2.2 (1.6) 0.32 (0.44) 0.56 (0.44) 1.8 0.41 0.50									

Note) [] : denotes normal position.

Series SY9000

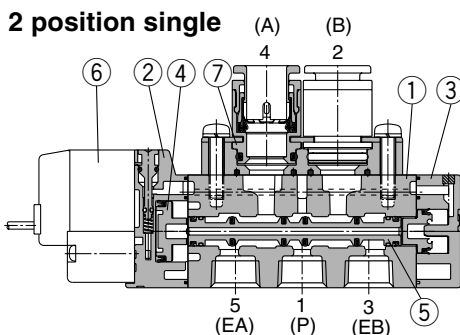
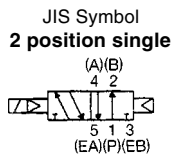
Valve model	Type of actuation	Port size		Flow characteristics						Weight (g)			
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Gro- mmet	L, M plug connector	DIN terminal	W M8 connector
				C (dm ³ (s-bar))	b	Cv	C (dm ³ (s-bar))	b	Cv				
SY9□20 -□-02	2 position Single Double	1/4	1/4	7.0 0.33 1.7			7.6 0.35 2.0			241	244	265	269
				6.7 0.37 1.7			6.4 0.34 1.6			284	290	332	340
	3 position Closed center Exhaust center Pressure center			6.4 0.36 1.6			8.3 (4.1) 0.41 (0.27) 2.2 (0.91)						
				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	3/8	3/8	8.0 0.29 1.9			8.0 0.33 2.0			236	239	260	264
				7.9 0.33 1.9			6.6 0.27 1.6			279	285	327	335
	3 position Closed center Exhaust center Pressure center			8.0 0.33 1.9			8.7 (8.3) 0.34 (0.40) 2.2 (2.3)						
				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	1/4	C8 One- touch fitting for ø8	4.3 0.28 0.96			7.1 0.32 1.7			293	296	317	321
				4.3 0.31 0.99			6.1 0.28 1.4			336	342	384	392
	3 position Closed center Exhaust center Pressure center			4.3 0.3 0.99			7.4 (3.8) 0.36 (0.29) 1.9 (0.86)						
				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	1/4	C10 One- touch fitting for ø10	6.1 0.28 1.4			7.9 0.33 1.9			279	282	303	307
				5.9 0.30 1.4			6.5 0.26 1.5			322	328	370	378
	3 position Closed center Exhaust center Pressure center			5.8 0.25 1.3			8.4 (4.1) 0.33 (0.27) 2.0 (0.93)						
				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	1/4	C12 One- touch fitting for ø12	7.0 0.25 1.6			8.6 0.41 2.2			265	268	289	293
				6.9 0.24 1.6			7.0 0.33 1.7			308	314	356	364
	3 position Closed center Exhaust center Pressure center			6.6 0.23 1.4			9.4 (4.5) 0.48 (0.32) 2.6 (1.0)						
				7.4 (3.2) 0.25 (0.34) 1.7 (0.74) 6.6 0.23 1.5									

Note) [] : denotes normal position.

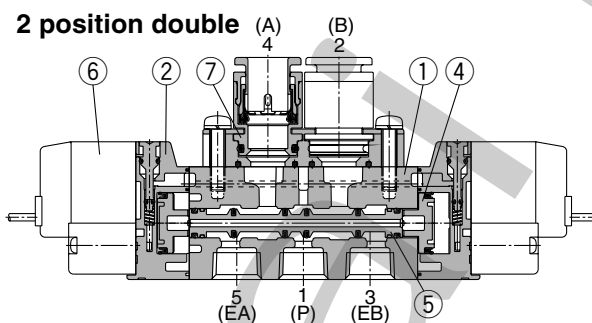
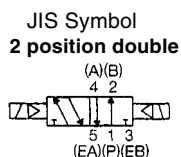
Construction

Series SY

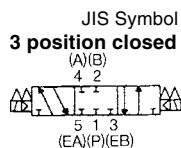
2 position single



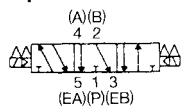
2 position double



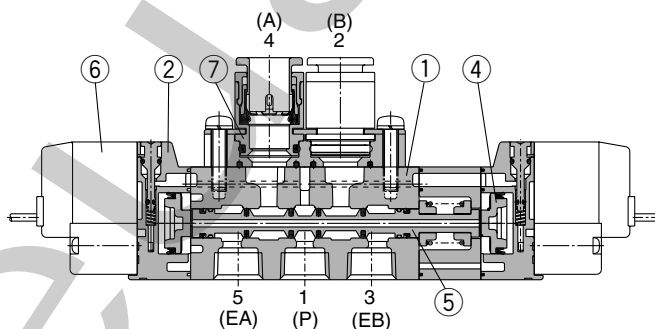
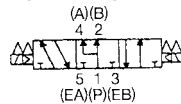
3 Position Closed center / Exhaust center / Pressure center



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.

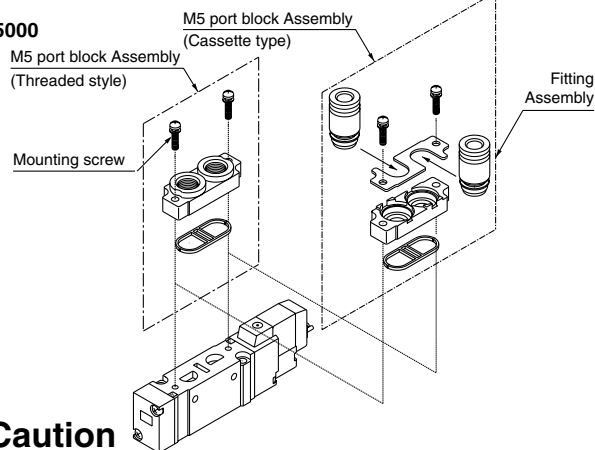
Description	No.
Bracket (For F1)	SX ³ 000-16-2A (with mounting screw)
Bracket (For F2)	SX ³ 000-16-1A (with mounting screw)

* 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

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	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	With connector
DO	terminal	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	

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	SY3000
C6	One-touch fitting for ø6	
C4	One-touch fitting for ø4	SY5000
C6	One-touch fitting for ø6	
C8	One-touch fitting for ø8	SY7000
C8	One-touch fitting for ø8	
C10	One-touch fitting for ø10	SY9000
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"	
N3	One-touch fitting for ø 5/32"	SY5000
N7	One-touch fitting for ø 1/4"	
N9	One-touch fitting for ø 5/16"	SY7000
N11	One-touch fitting for ø 3/8"	
N9	One-touch fitting for ø 5/16"	SY9000
N11	One-touch fitting for ø 3/8"	

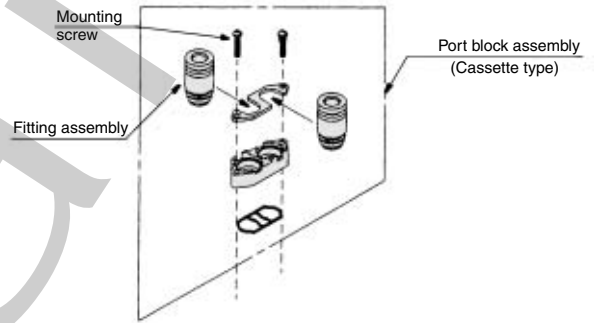
* Only replacement of the fittings assembly is possible.

Metric size

SY3000	One-touch fitting for ø4	VVQ1000-50A-C4
	One-touch fitting for ø6	VVQ1000-50A-C6
SY5000	One-touch fitting for ø4	VVQ1000-51A-C4
	One-touch fitting for ø6	VVQ1000-51A-C6
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
SY5000	One-touch fitting for ø 5/32"	VVQ1000-51A-N3
	One-touch fitting for ø 1/4"	VVQ1000-51A-N7
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



POWER
AIRE

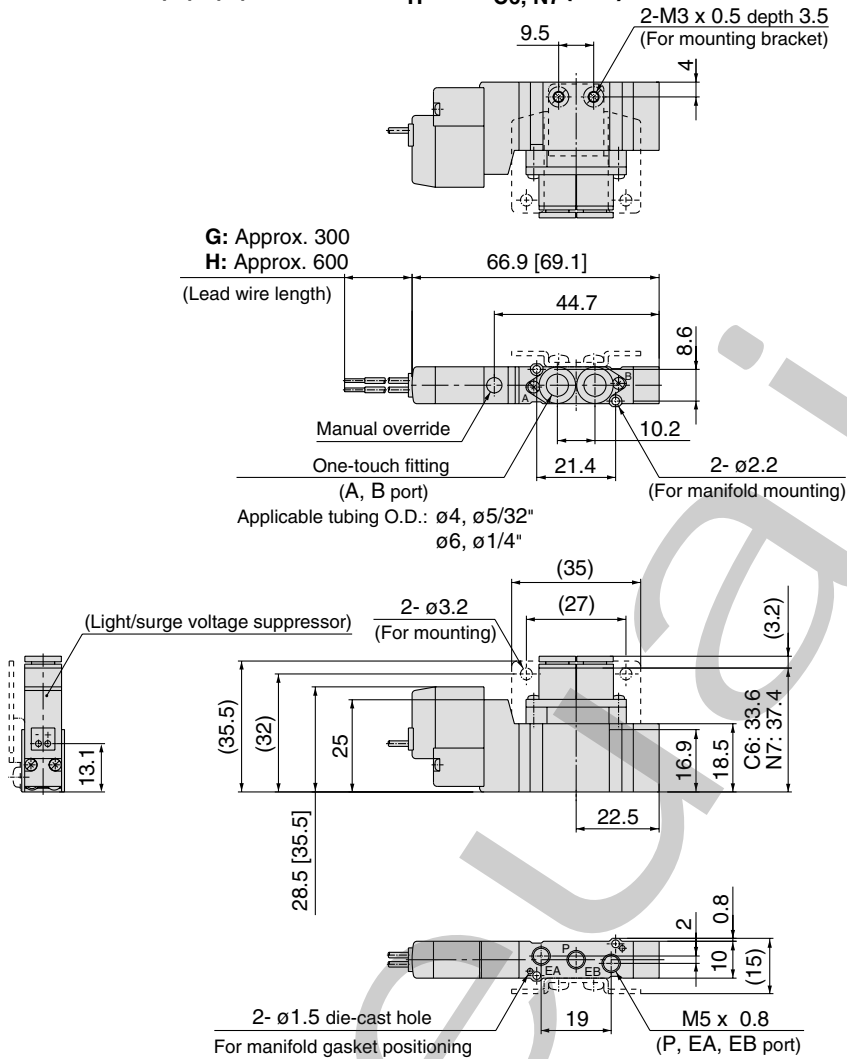
Body Ported

Dimensions: Series SY3000



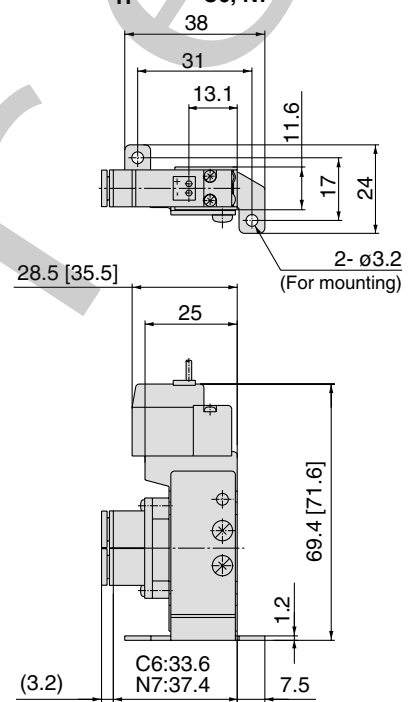
2 position single

Grommet (G), (H): SY3120-□_G□□-C4, N3
C6, N7 (-F2)

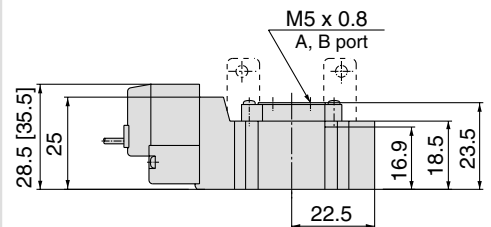


Foot bracket

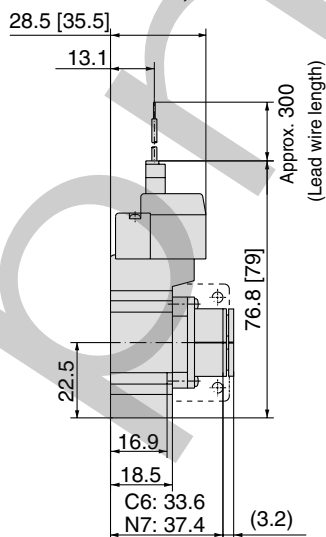
SY3120-□_G□□-C4, N3
C6, N7 -F1



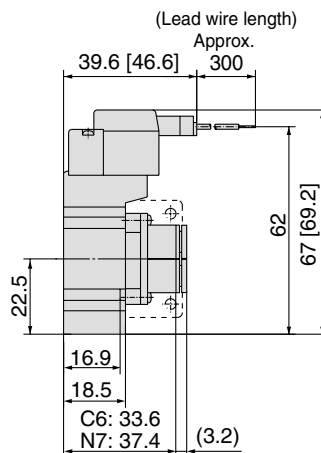
SY3120-□_G□□-M5(-F2)



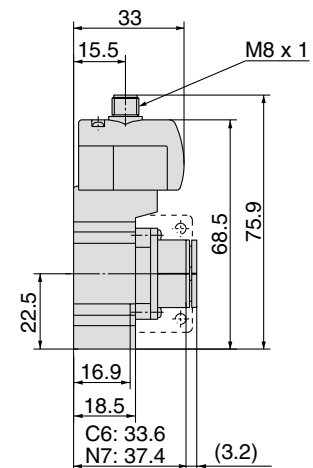
L plug connector (L): SY3120-□L□□-C4, N3 C6, N7 (-F1)



M plug connector (M): SY3120-□M□□-C4, N3 C6, N7 (-F1)



M8 connector (W0): SY3120-□W0□□-C4, N3 C6, N7 (-F1)



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

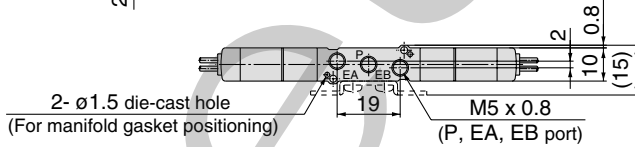
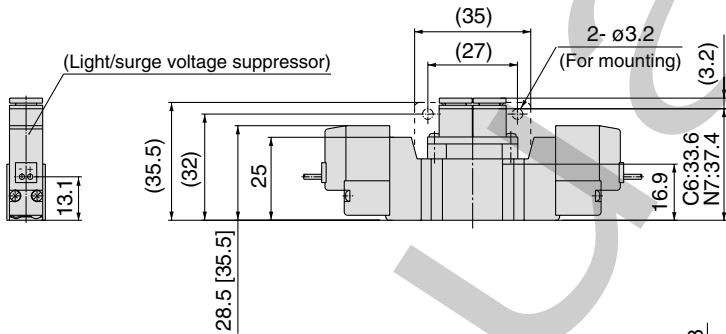
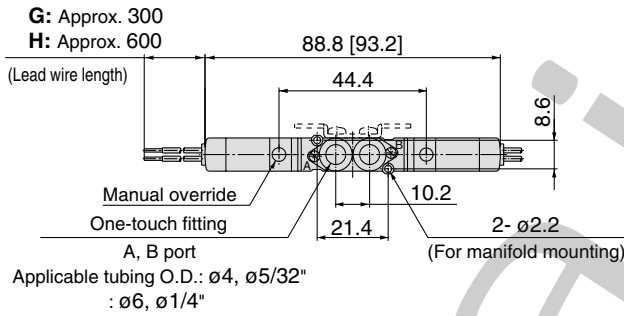
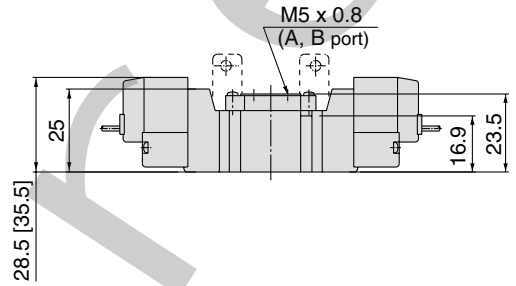
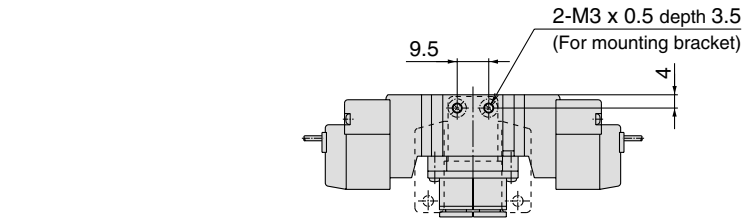
Dimensions: Series SY3000



2 position double

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

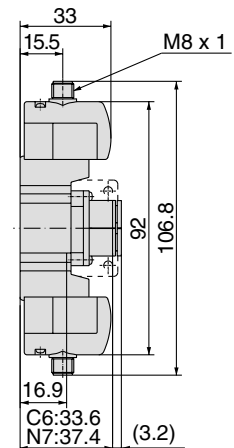
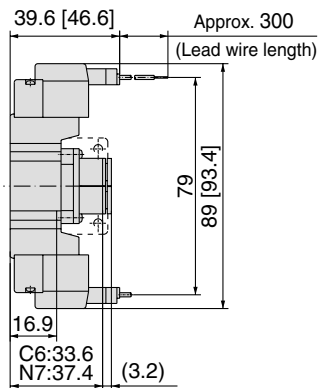
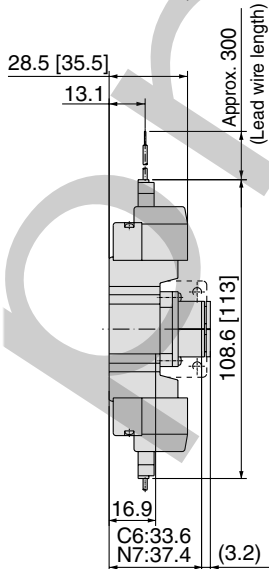
SY3220-□^G□□-M5(-F2)



L plug connector (L):
SY3220-□L□□-C4, N3
C6, N7(-F1)

M plug connector (M):
SY3220-□M□□-C4, N3
C6, N7(-F1)

M8 connector (W0):
SY3220-W0□□-C4, N3
C6, N7(-F1)



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

Body Ported

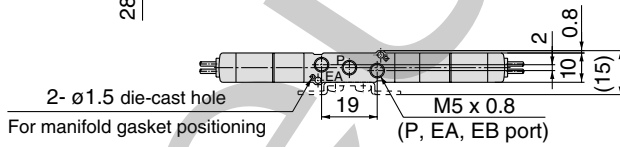
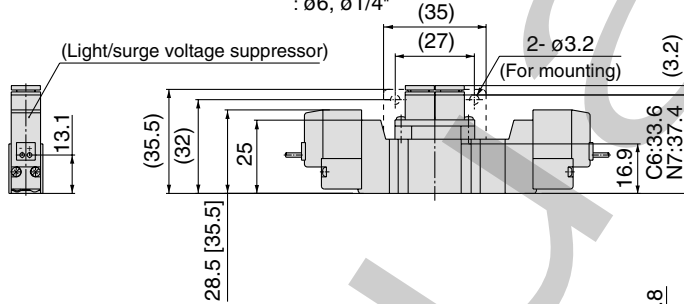
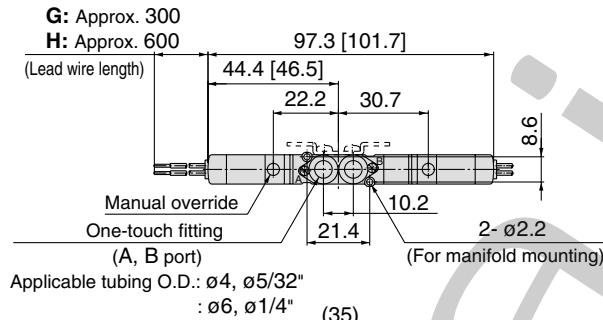
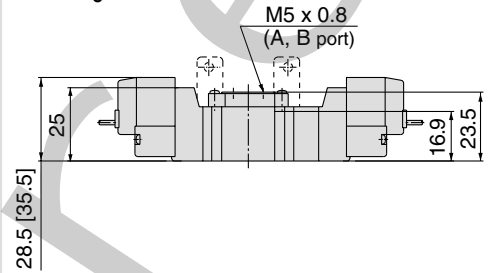
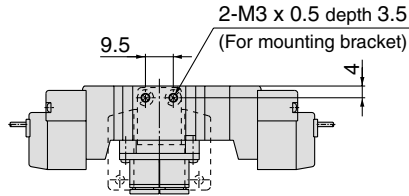
Dimensions: Series SY3000



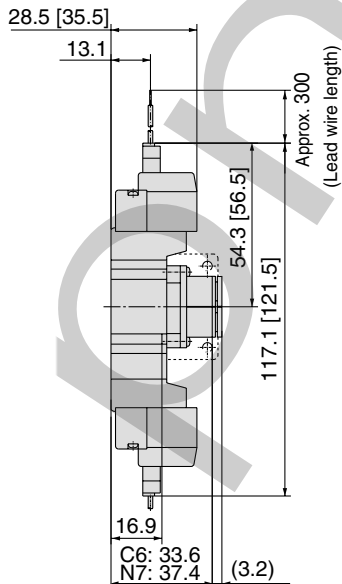
3 Position Closed center / Exhaust center / Pressure center

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

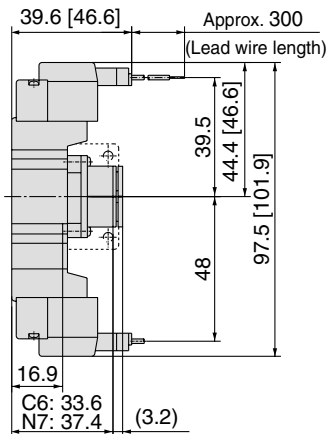
SY3³/₄20-□^H□□-M5(-F2)



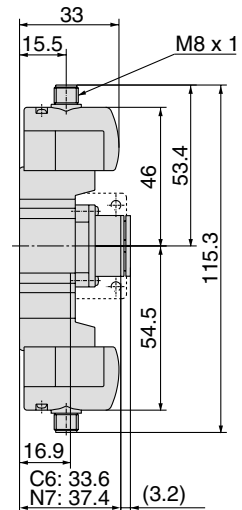
L plug connector (L):
SY3³/₄20-□L□□-C₄, N₃(-F2)
C₆, N₇



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



M8 connector (W0):
SY3³/₄20-□W0□□-C₄, N₃(-F2)
C₆, N₇



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

Dimensions: Series SY5000

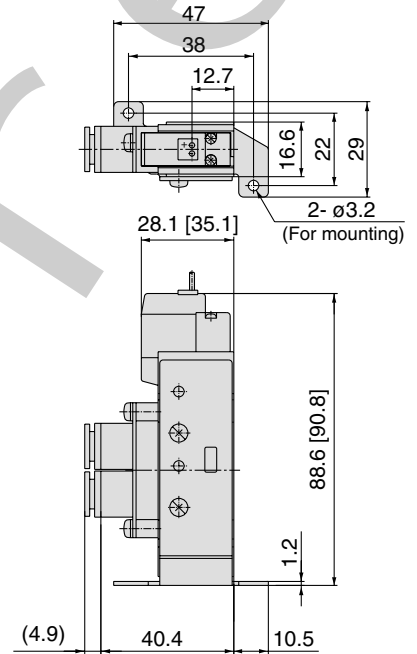
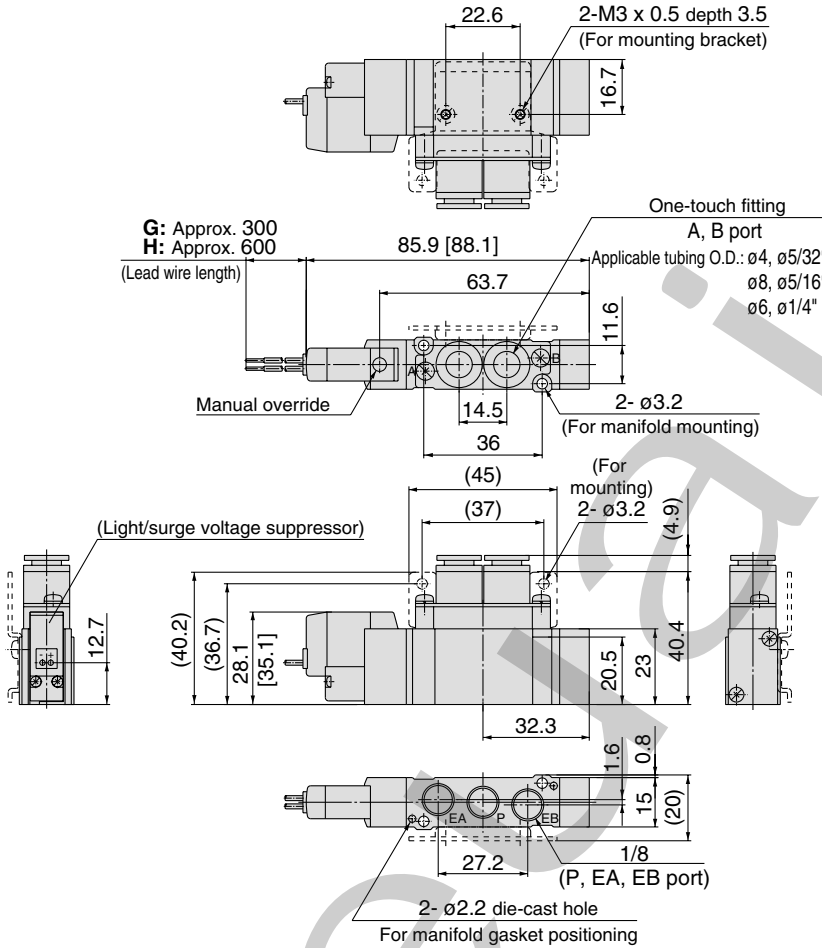


2 position single

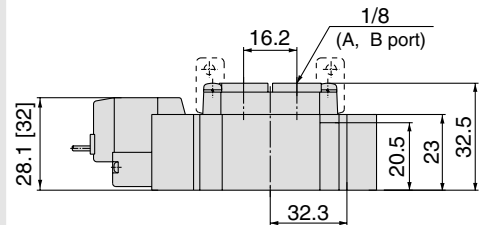
Grommet (G), (H): SY5120-□^G□□-^{C4, N3}_{C6, N7}□□(-F₂)
^{C8, N9}

Foot bracket

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



SY5120-□^G□□-01□(-F₂)
^H



L plug connector: L

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

M plug connector: M

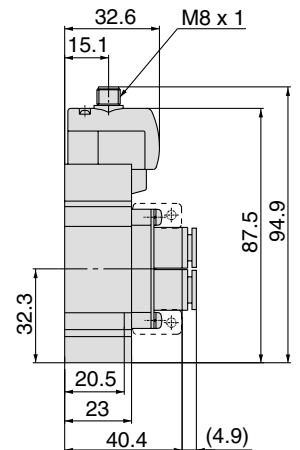
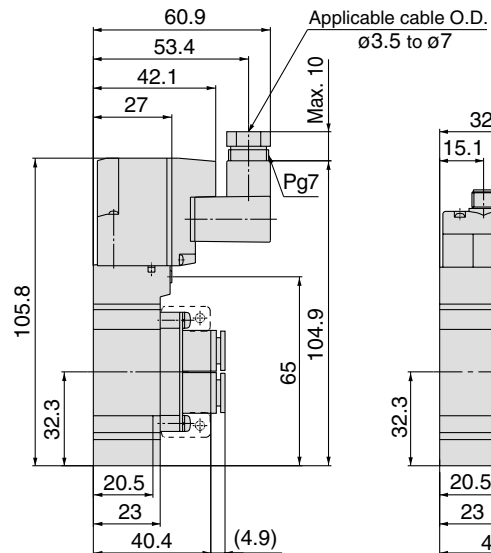
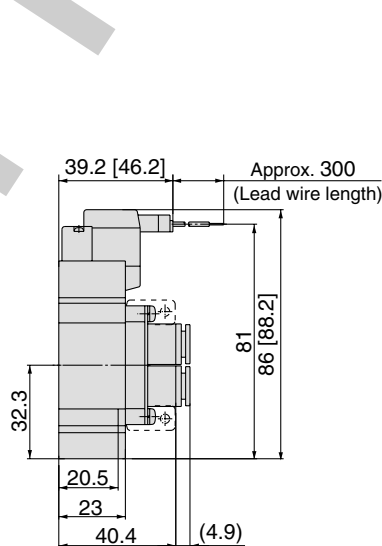
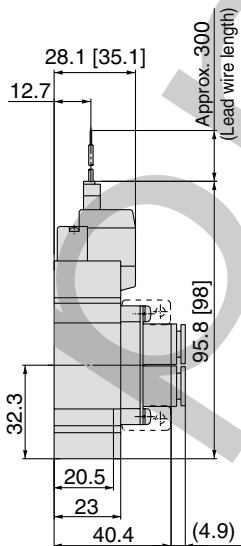
SY5120-□^M□□-^{C4, N3}_{C6, N7}□□(-F₂)
^{C8, N9}

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

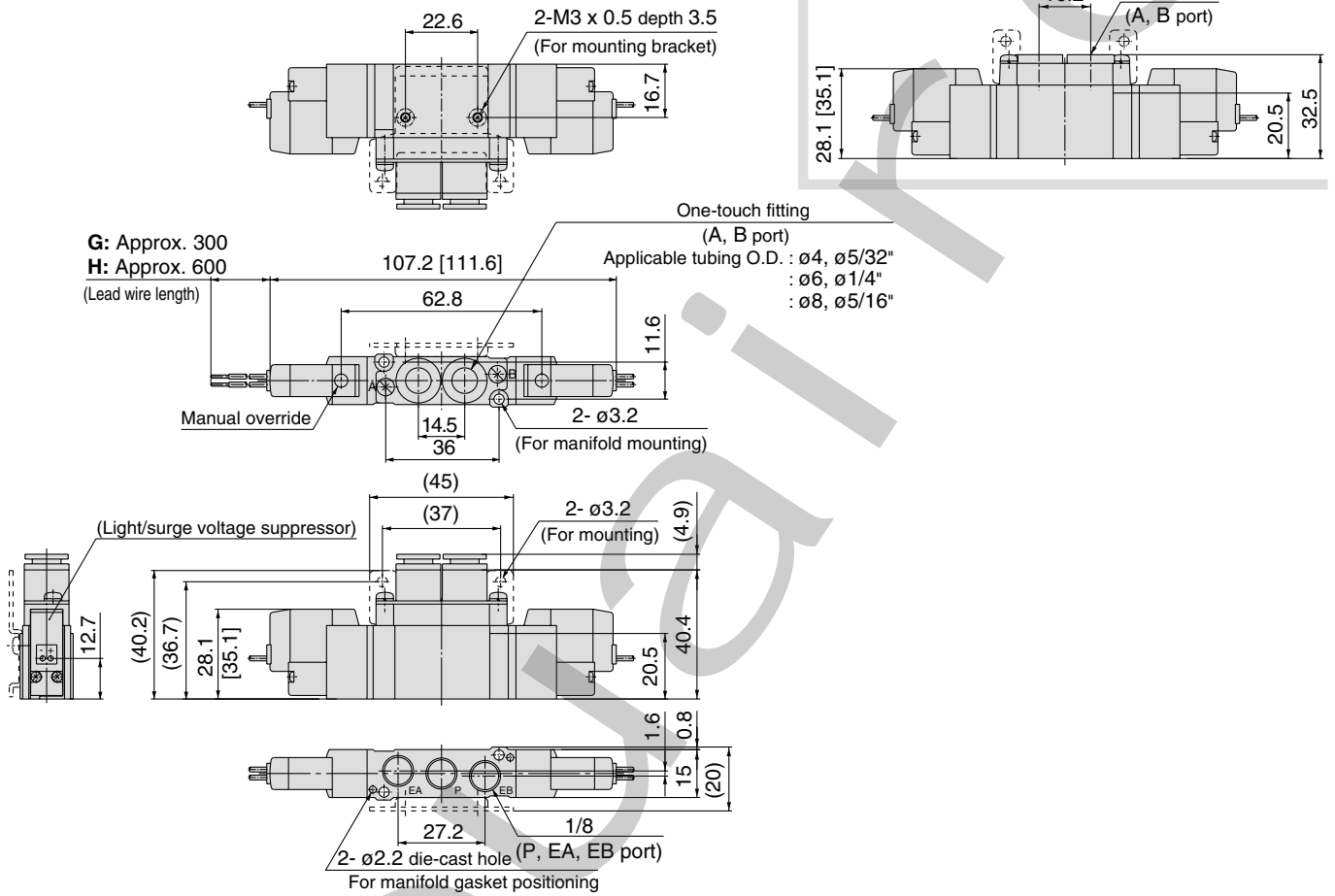
Dimensions: Series SY5000



2 position double

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

SY5220-□^G□^H□^{C4, N3}□^{C6, N7}□^{C8, N9}-01□(-F2)



L plug connector: L

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

M plug connector: M

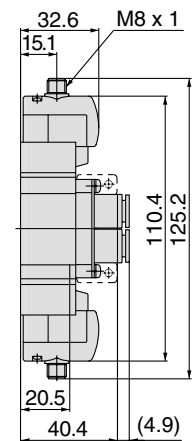
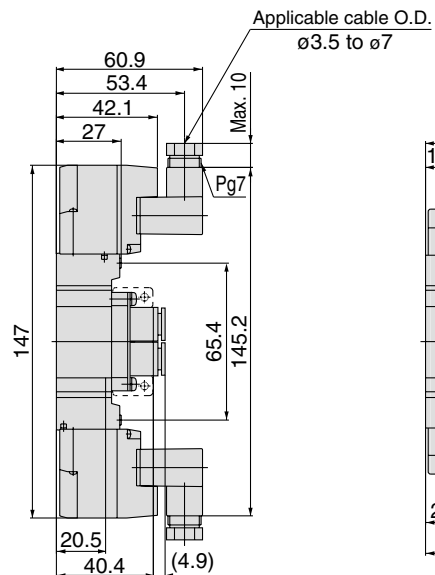
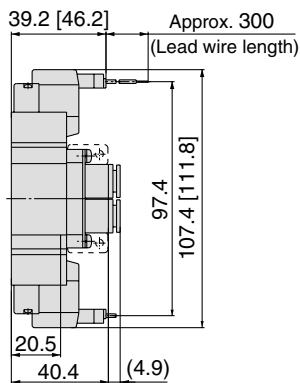
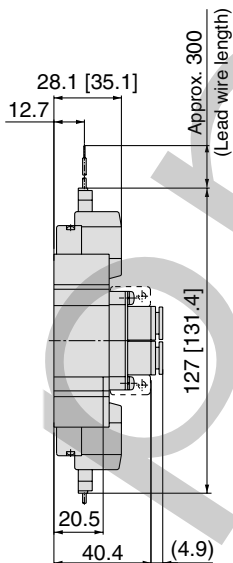
SY5220-□M□^{C4, N3}□^{C6, N7}□^{C8, N9}(-F2)

DIN terminal (D):

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

M8 connector (W0):

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



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

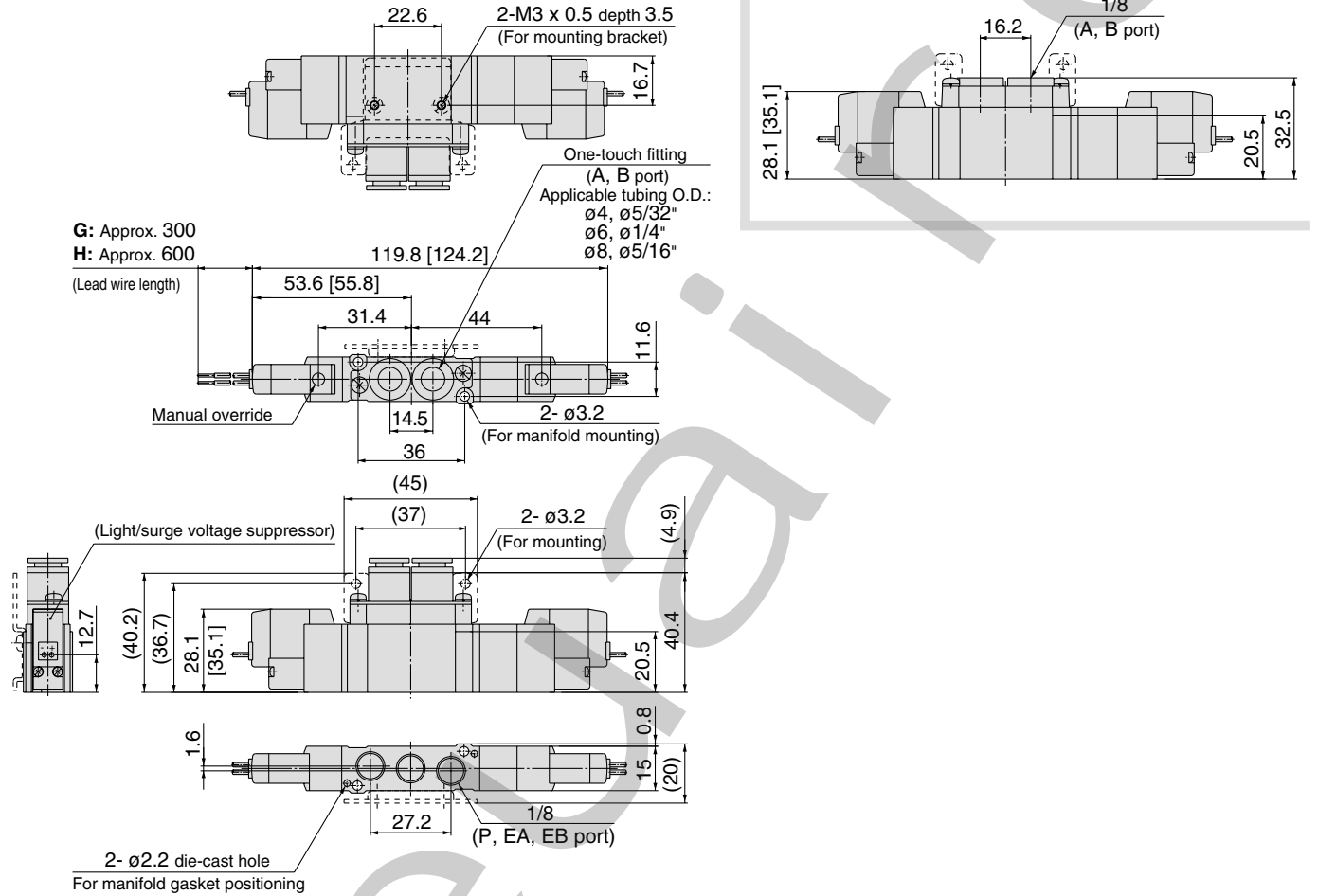
Dimensions: Series SY5000



3 Position closed center / Exhaust center / Pressure center

Grommet (G), (H): SY5³/₅420-□³/₄□□-C4, N3
C6, N7 □(-F2)
C8, N9

SY5³/₅420-□³/₄□□-01□(-F2)



L plug connector: L

SY5³/₅420-□L□□-C4, N3
C6, N7 □(-F2)
C8, N9

M plug connector: M

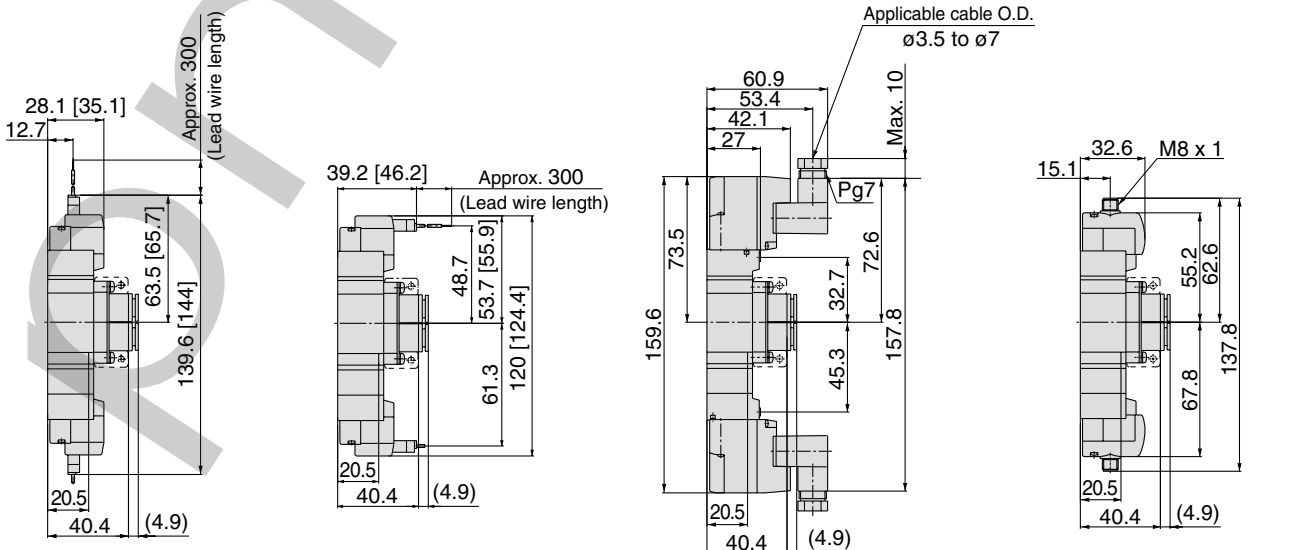
SY5³/₅420-□M□□-C4, N3
C6, N7 □(-F2)
C8, N9

DIN terminal (D):

SY5³/₅420-□D□□-C4, N3
C6, N7 □(-F2)
C8, N9

M8 connector (W0):

SY5³/₅420-□W0□□-C4, N3
C6, N7 □(-F2)
C8, N9



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

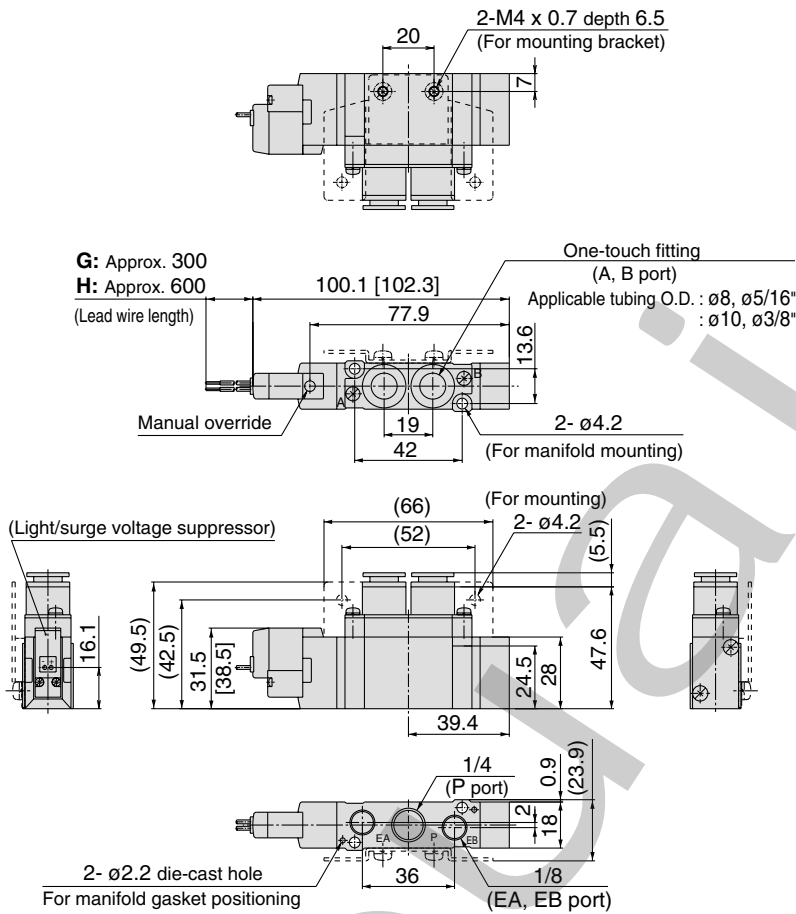
Body Ported

Dimensions: Series SY7000

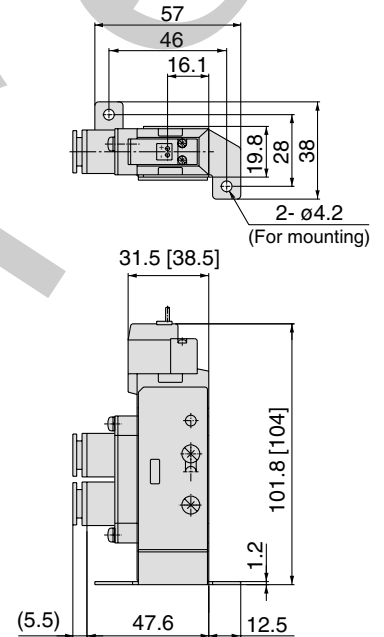


2 position single

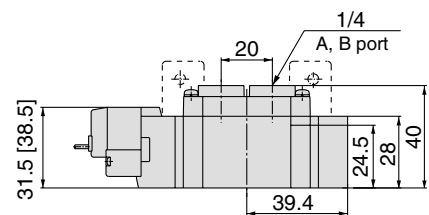
Grommet (G), (H): SY7120-□_G□_H□_{C8, N9}□_{C10, N11}□(-F₂)



SY7120-□_G□_H□_{C8, N9}□_{C10, N11}□(-F₁)



SY7120-□_G□_H□_{C8, N9}□_{C10, N11}□(-F₂)



L plug connector (L):

SY7120-□_L□_{C8, N9}□_{C10, N11}□(-F₂)

M plug connector (M):

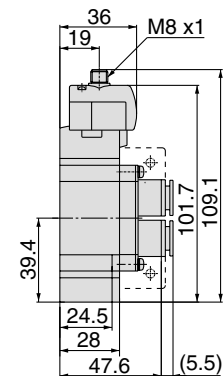
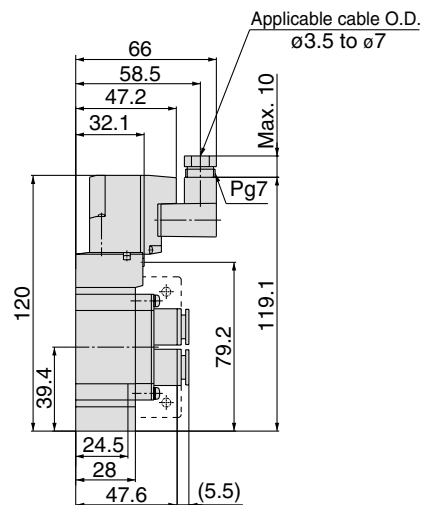
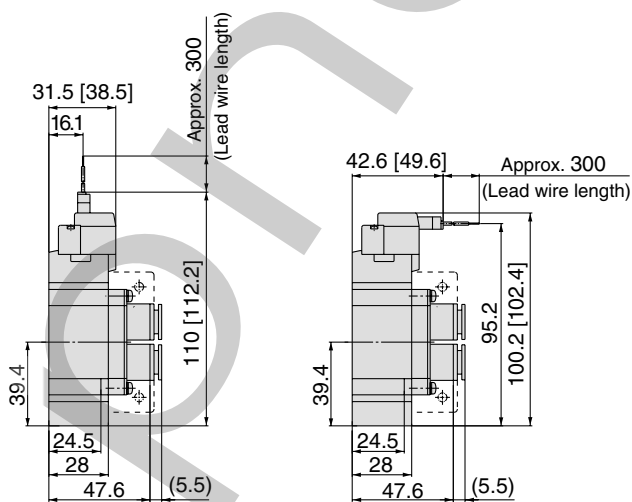
SY7120-□_M□_{C8, N9}□_{C10, N11}□(-F₂)

DIN terminal (D):

SY7120-□_D□_{C8, N9}□_{C10, N11}□(-F₂)

M8 connector (W0):

SY7120-□_{W0}□_{C8, N9}□_{C10, N11}□(-F₂)



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

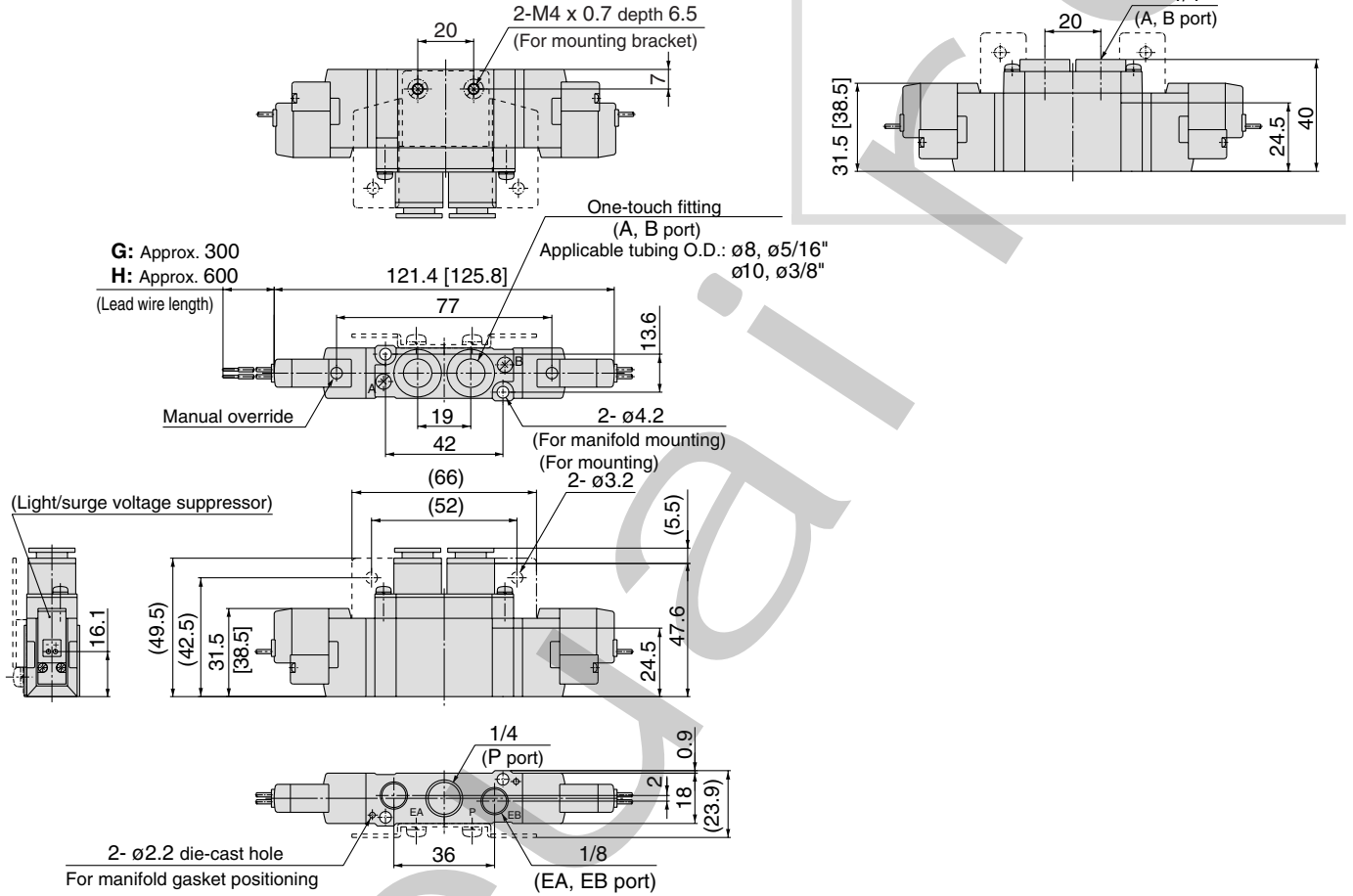
Dimensions: Series SY7000



2 position double

Grommet (G), (H): SY7220-□G□□-C8, N9 □(-F2)
C10, N11

SY7220-□G□□-02□(-F2)



L plug connector (L):

SY7220-□L□□-C8, N9 □(-F2)
C10, N11

M plug connector (M):

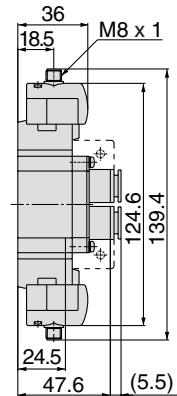
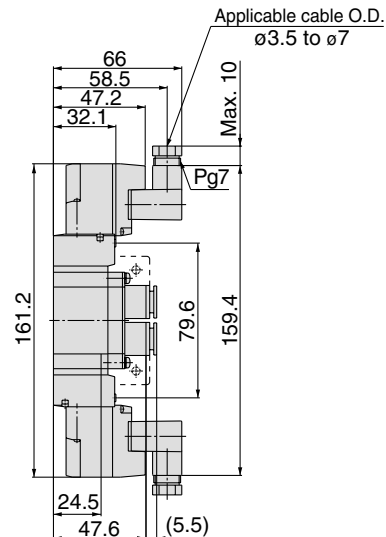
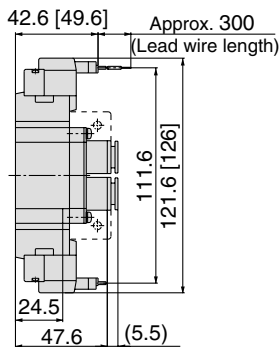
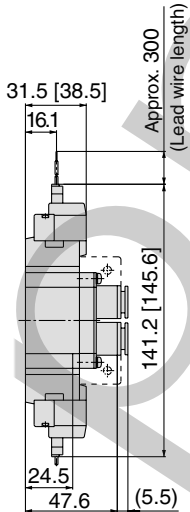
SY7220-□M□□-C8, N9 □(-F2)
C10, N11

DIN terminal (D):

SY7220-□D□□-C8, N9 □(-F2)
C10, N11

M8 connector (W0):

SY7220-□W0□□-C8, N9 □(-F2)
C10, N11



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

Body Ported

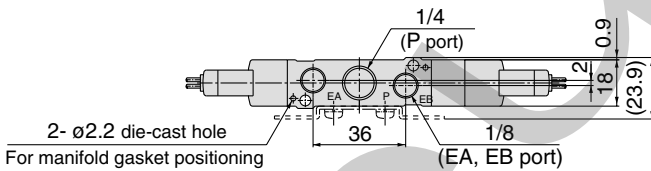
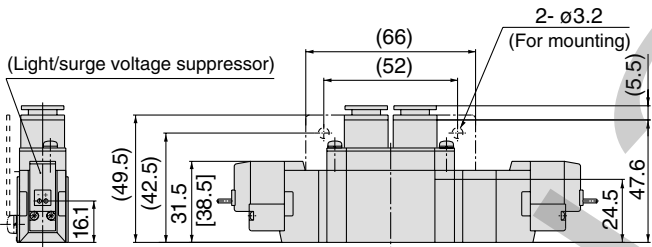
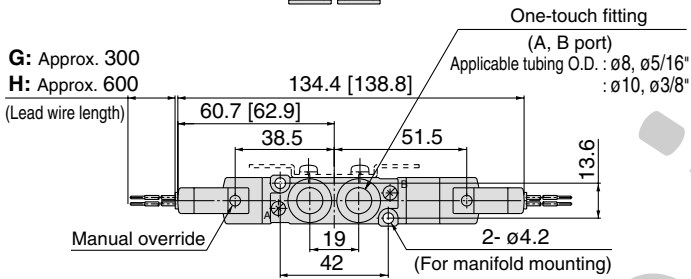
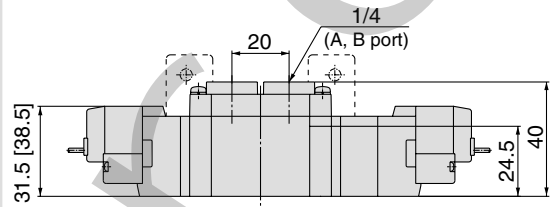
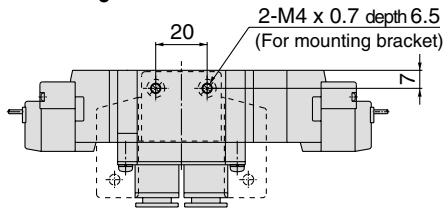
Dimensions: Series SY7000



3 Position closed center / Exhaust center / Pressure center

Grommet (G), (H): SY7³/₅20-□G□□□-C8, N9 (-F2)
C10, N11□□□(-F2)

SY7³/₅20-□G□□□-02□(-F2)



L plug connector (L):

SY7³/₅20-□L□□□-C8, N9 (-F2)
C10, N11□□□(-F2)

M plug connector (M):

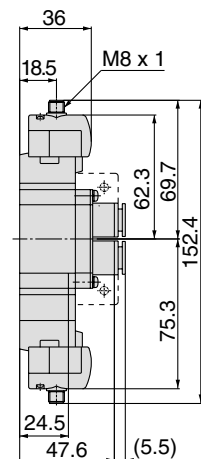
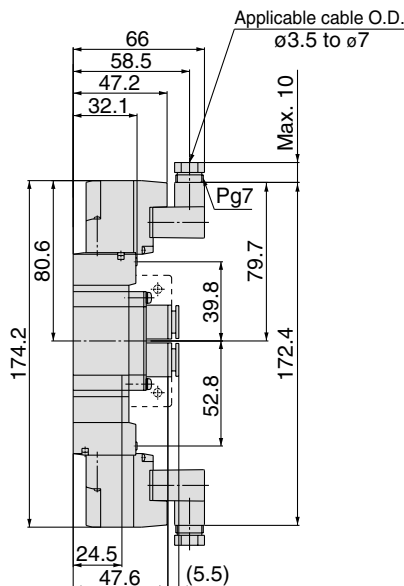
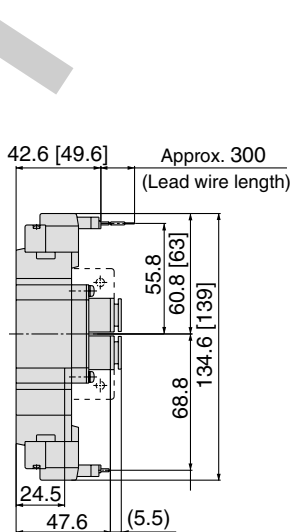
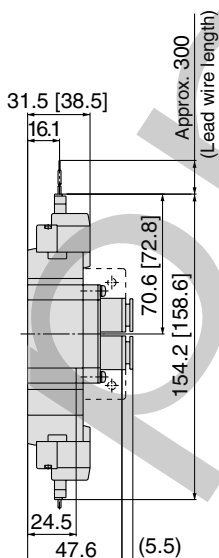
SY7³/₅20-□M□□□-C8, N9 (-F2)
C10, N11□□□(-F2)

DIN terminal (D):

SY7³/₅20-□D□□□-C8, N9 (-F2)
C10, N11□□□(-F2)

M8 connector (W0):

SY7³/₅20-□W0□□□-C8, N9 (-F2)
C10, N11□□□(-F2)



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

Dimensions: Series SY9000

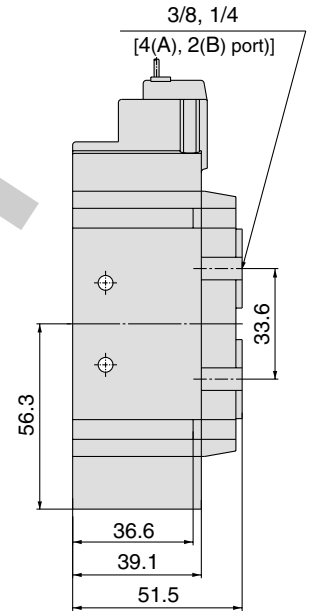
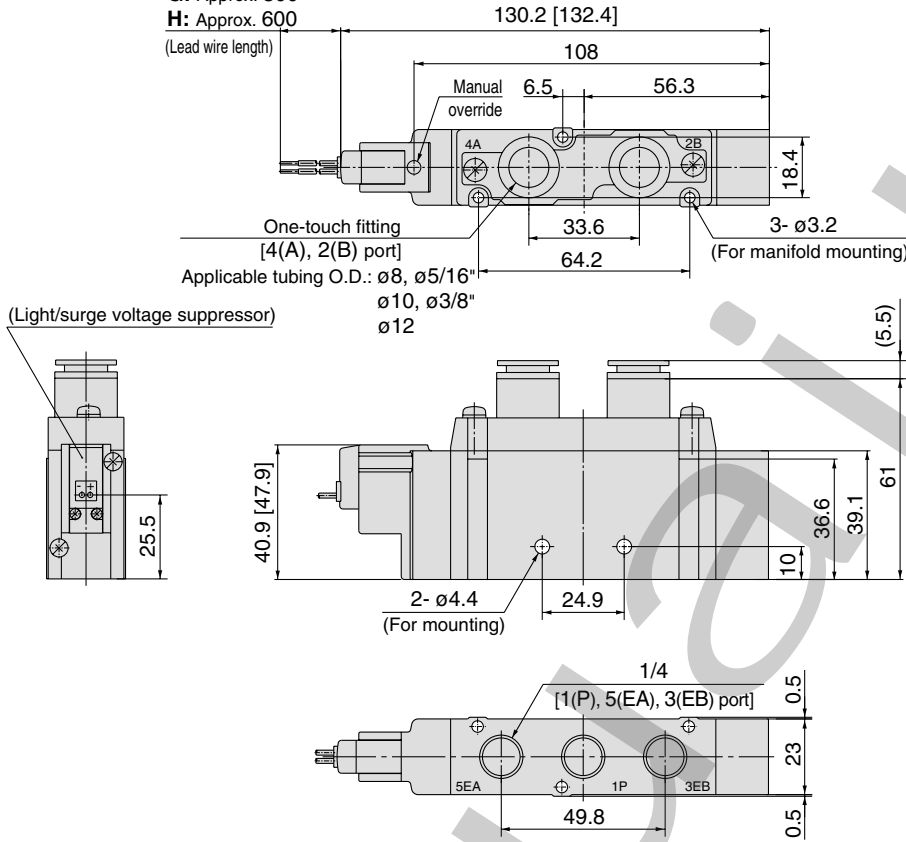


2 position single

Grommet (G), (H): SY9120-□_G□_H□_{C8, N9}□_{C10, N11}□_{C12}

SY9120-□_G□_H□₀₂□₀₃

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

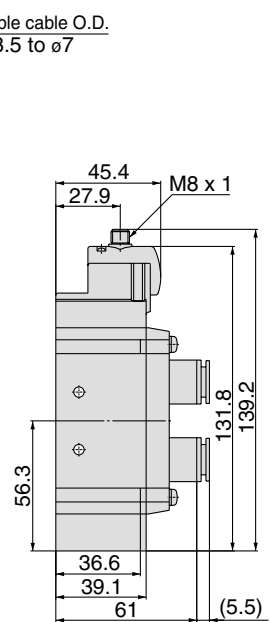
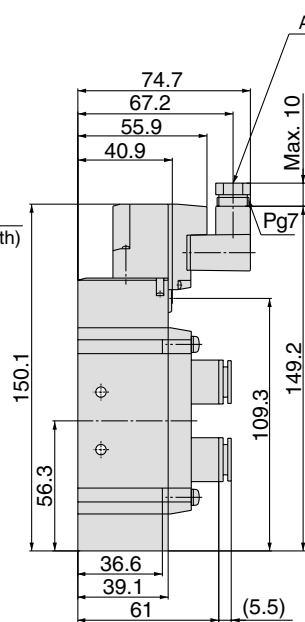
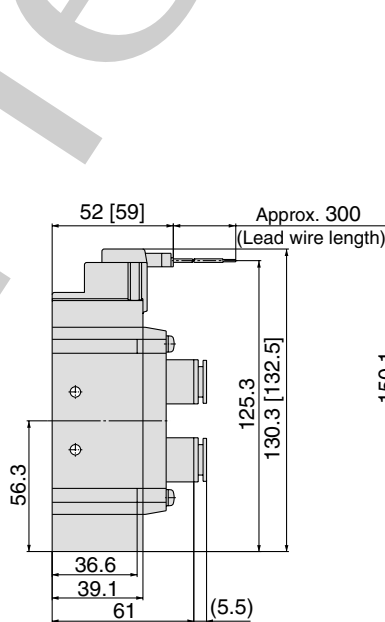
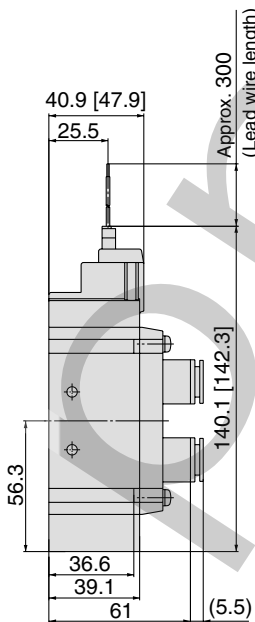


L plug connector (L):
SY9120-□_L□_{C8, N9}□_{C10, N11}□_{C12}

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



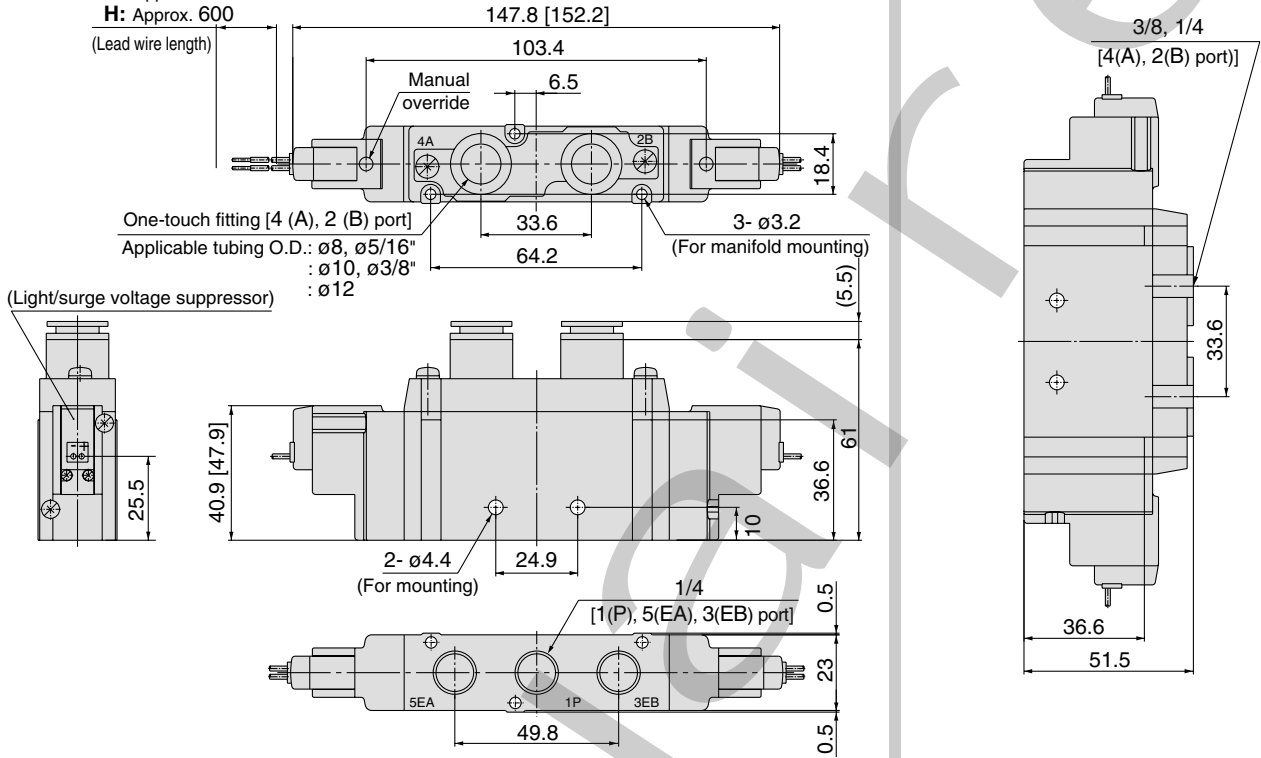
2 position double

Grommet (G), (H): SYJ9220-□_G□□_H-C8, N9
C10, N11□
C12

SY9220-□_G□□_H-02□
03

G: Approx. 300

H: Approx. 600



L plug connector (L):

SY9220-□L□□_{C8, N9}
□□_{C10, N11}
□□_{C12}

M plug connector (M):

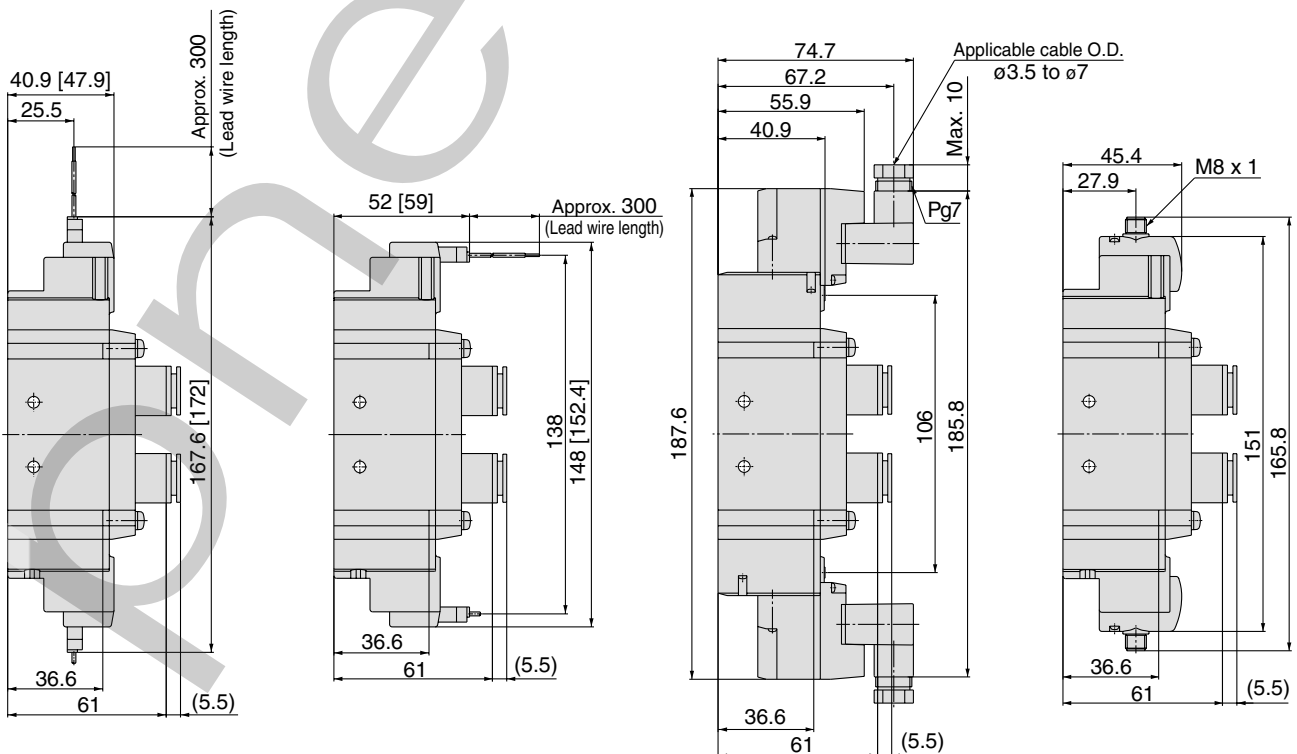
SY9220-□M□□_{C8, N9}
□□_{C10, N11}
□□_{C12}

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

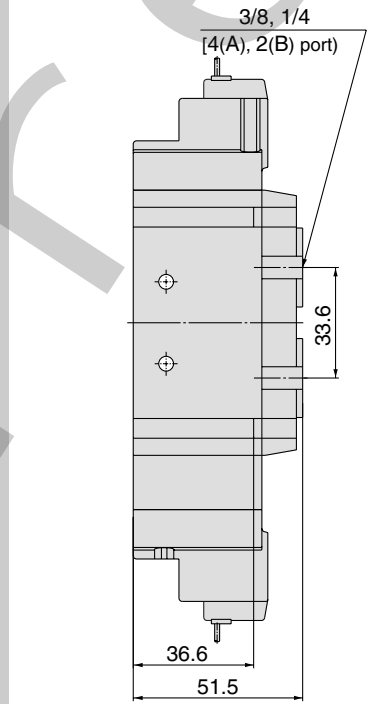
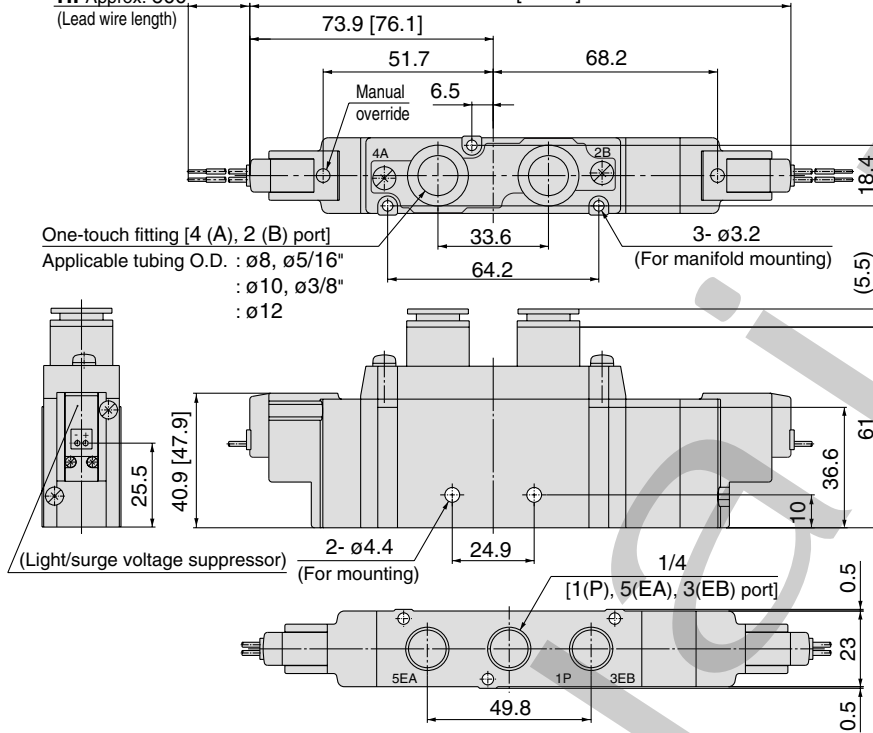


3 Position closed center / Exhaust center / Pressure

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

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

SY9³/₅420-□^G□□-02□
□^H□□-03□

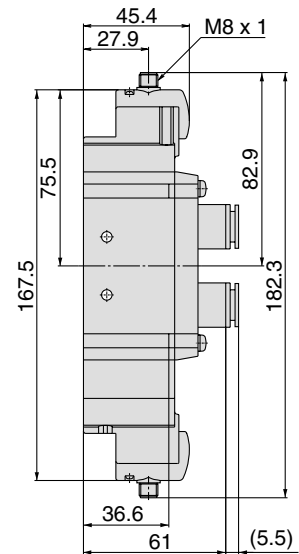
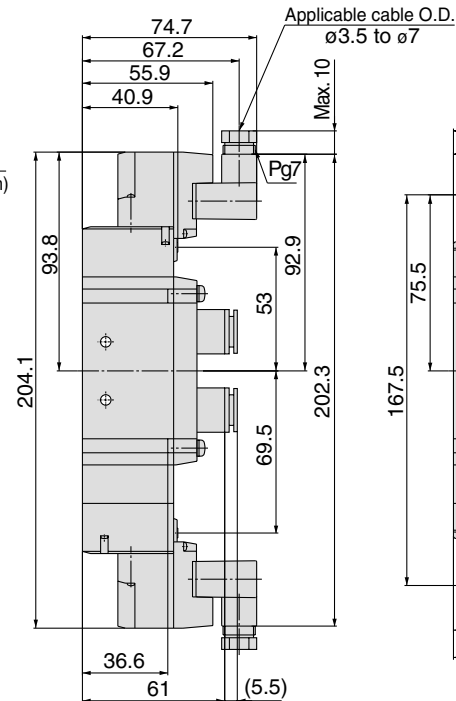
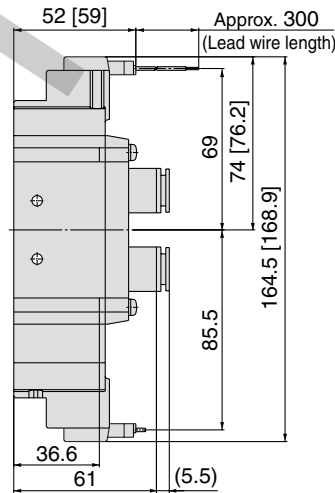
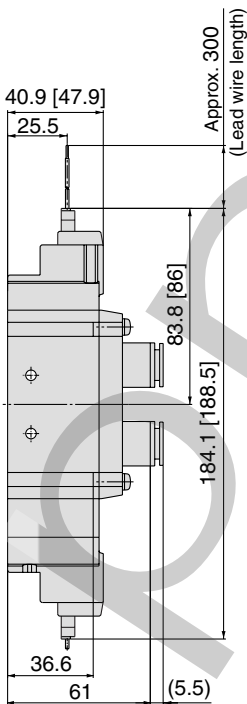


L plug connector (L):
SY9³/₅420-□L□□-C8, N9
C10, N11
C12

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.