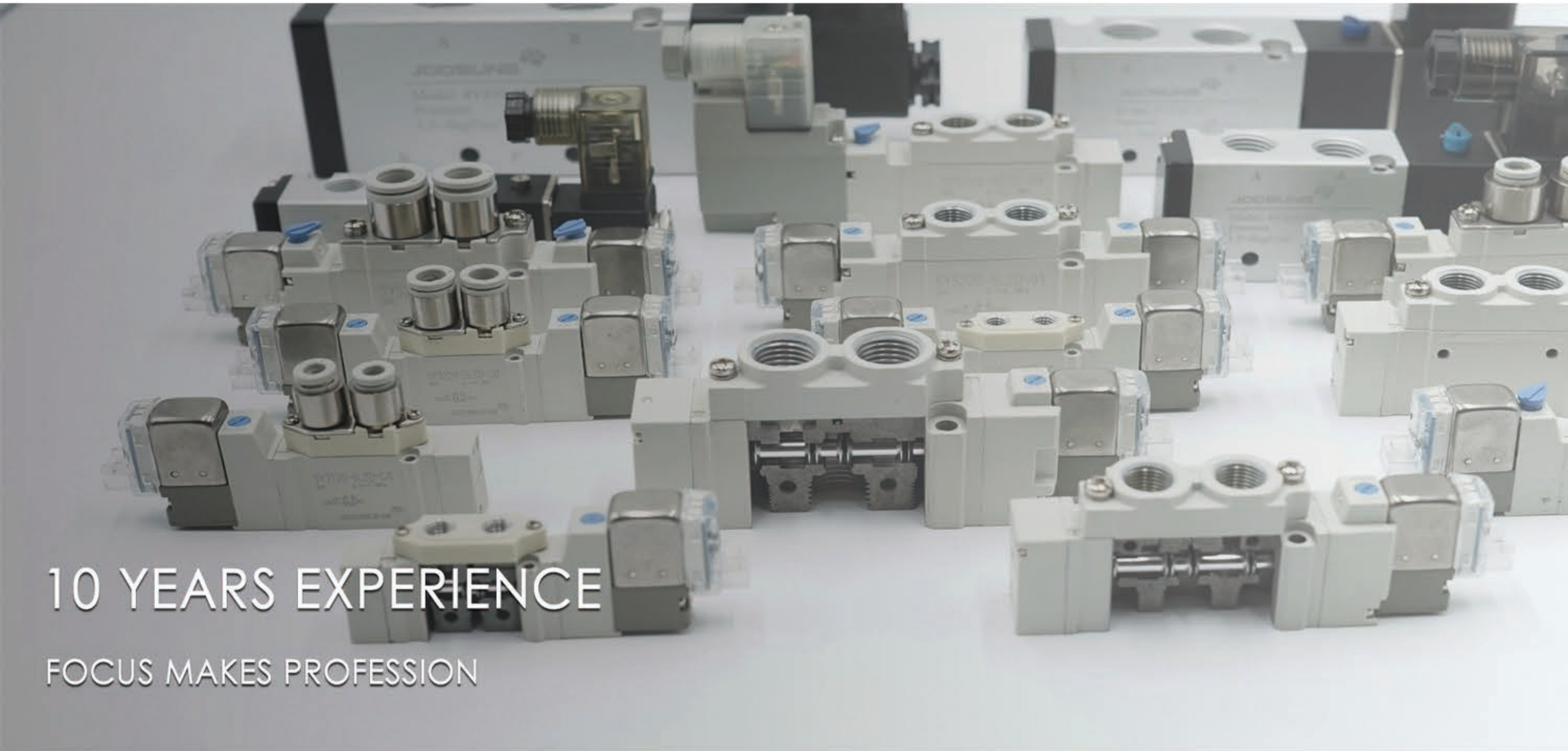


JOOSUNG 



10 YEARS EXPERIENCE

FOCUS MAKES PROFESSION

Wenzhou Qiaosen Pneumatic Co., Ltd

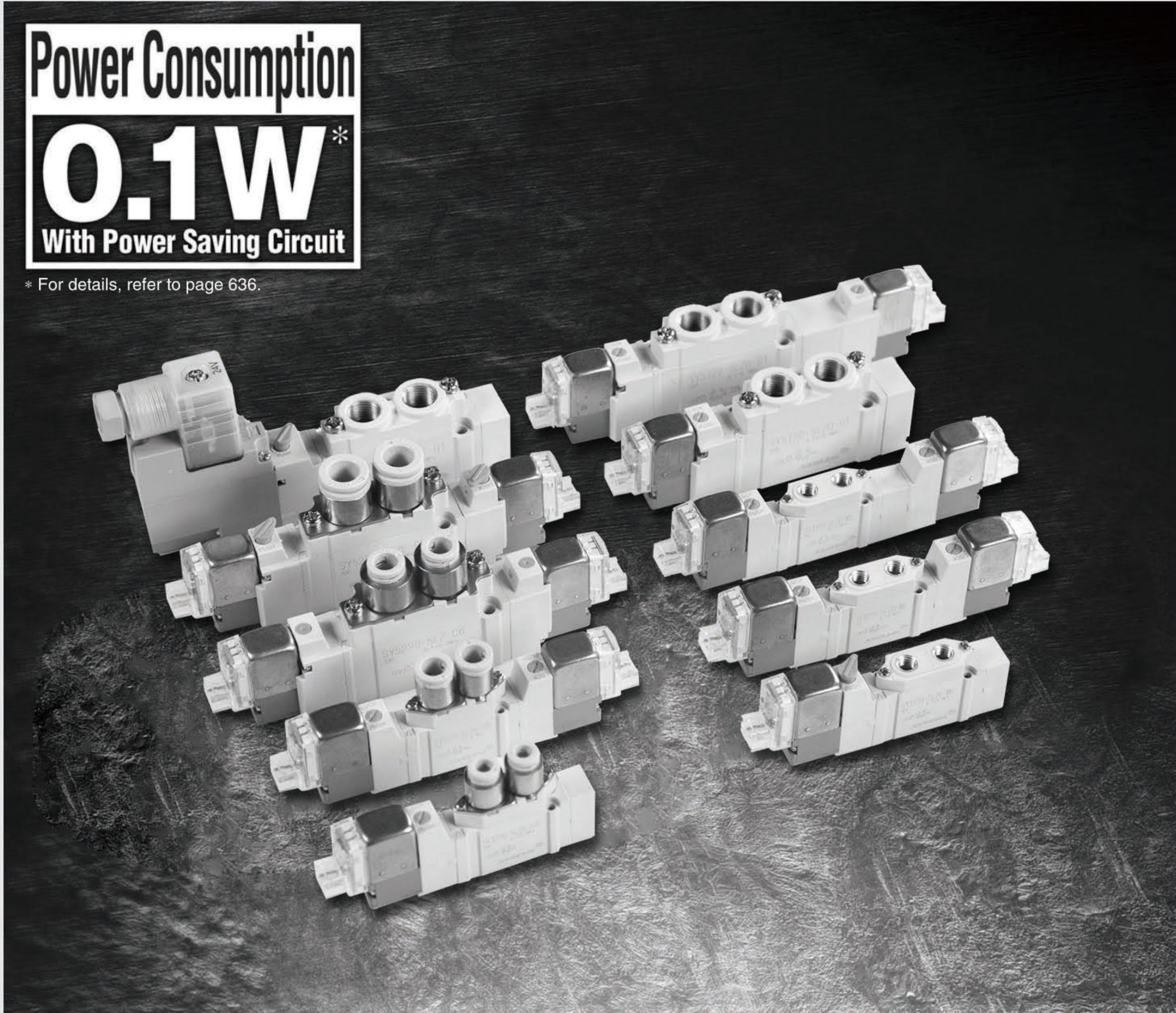
pneumatic Solenoid valve

5 Port Solenoid Valve

SY3000/5000/7000/9000 Series

Power Consumption
0.1W*
 With Power Saving Circuit

* For details, refer to page 636.



• **Flow Rate Characteristics**

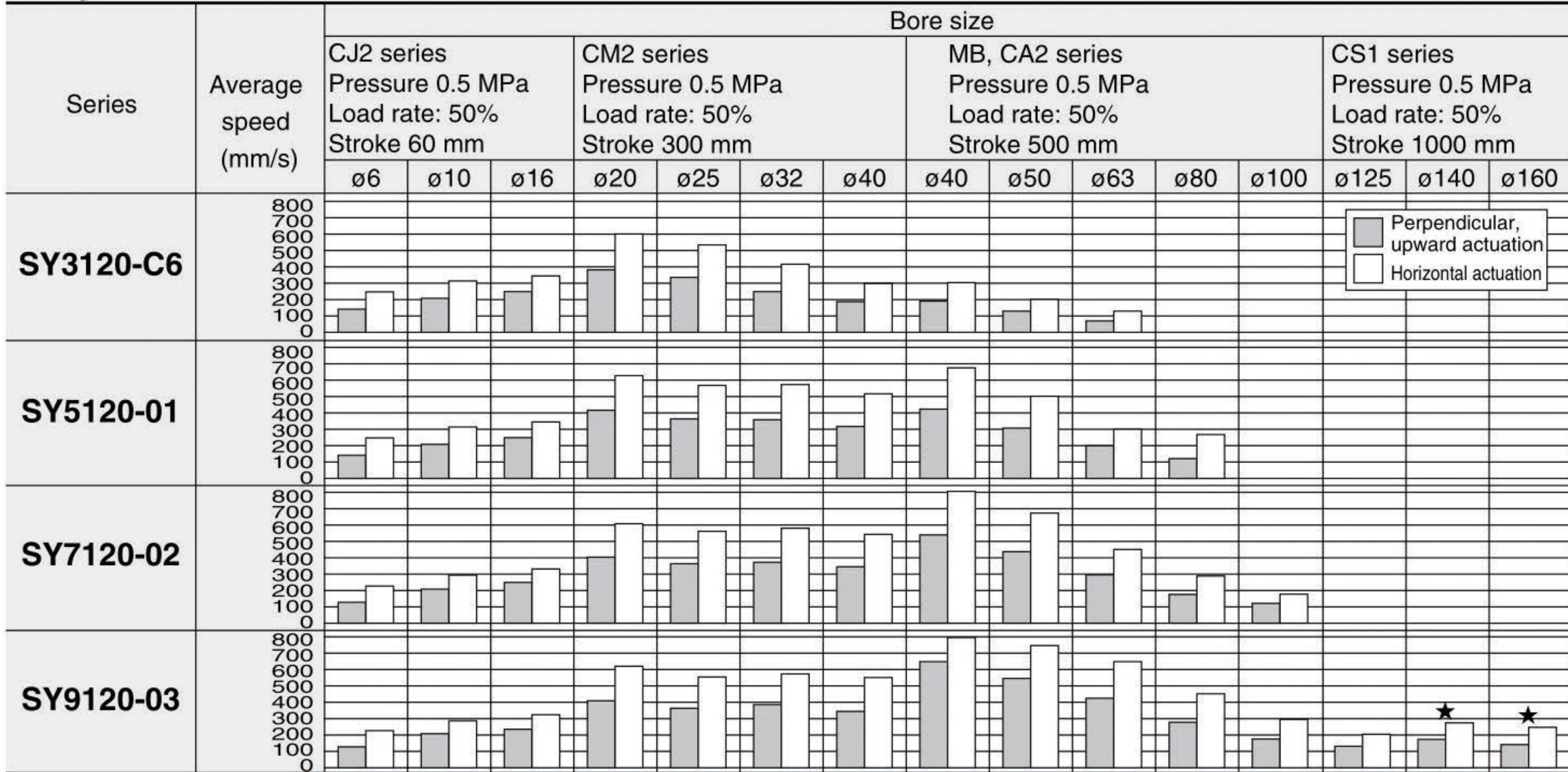
Series	Flow rate characteristics		
	C [dm ³ /(s·bar)]	b	Cv
SY3000	1.1	0.28	0.29
SY5000	2.8	0.37	0.90
SY7000	4.5	0.28	1.4
SY9000	10	0.29	2.5

• **Long service life**

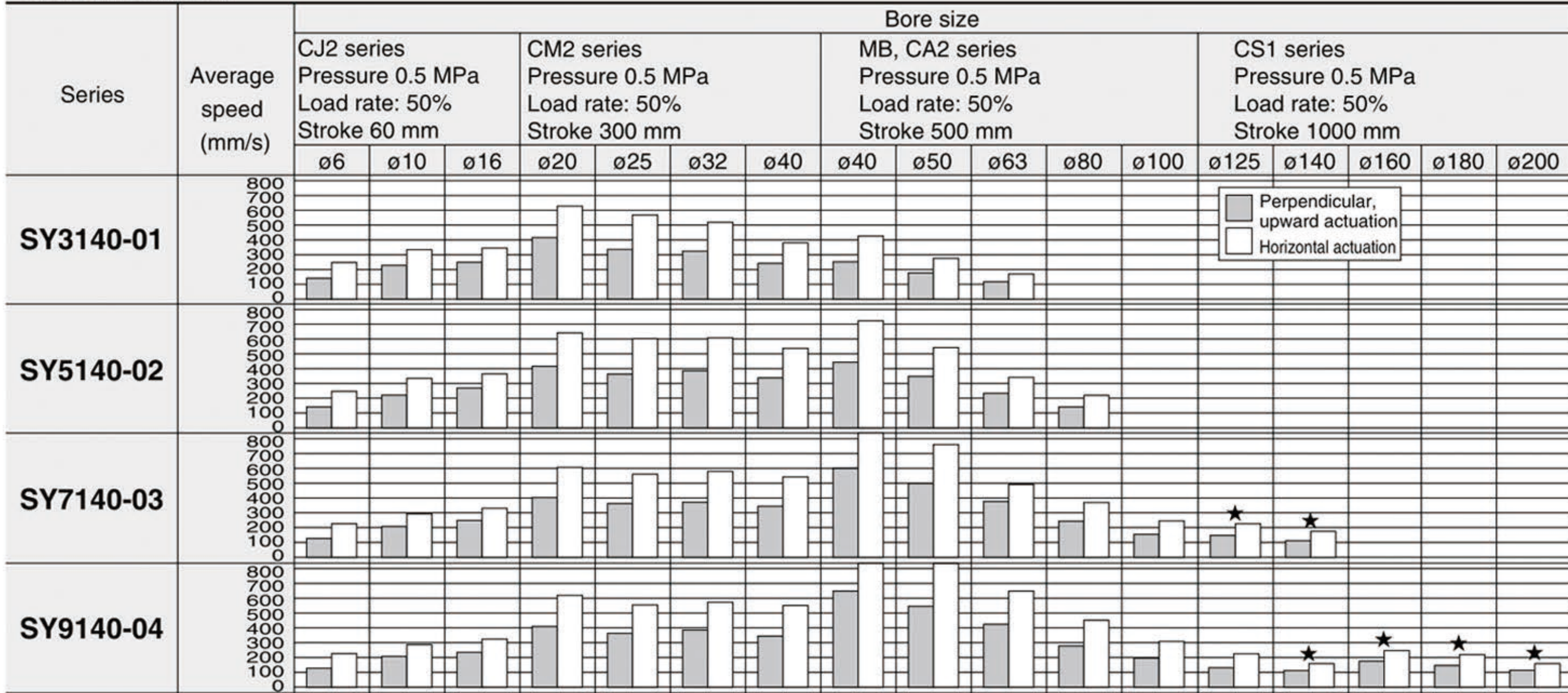
* Please contact Qiaosen if life test data is required.

Cylinder Speed Chart

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 mass x 9.8) / Theoretical force) x 100%
 * The histograms with ★ marked are the case when piping is done by using steel.

Conditions

Body ported	CJ2 series	CM2 series	MB, CA2 series	CS1 series
SY3120-C6	Tubing bore x Length	T0604 x 1 m		-
	Speed controller	AS2052F-06		-
	Silencer	AN120-M5		-
SY5120-01	Tubing bore x Length	T0604 x 1 m	T0806 x 1 m	-
	Speed controller	AS3002F-06	AS3002F-08	-
	Silencer	AN101-01		-
SY7120-02	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	-
	Speed controller	AS3002F-06	AS4002F-10	-
	Silencer	AN110-01		-
SY9120-03	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m
	Speed controller	AS3002F-06	AS4002F-10	AS4002F-12
	Silencer	AN20-02		AN202-02

Conditions

Base mounted	CJ2 series	CM2 series	MB, CA2 series	CS1 series
SY3140-01	Tubing bore x Length	T0604 x 1 m		-
	Speed controller	AS3002F-06		-
	Silencer	AN110-01		-
SY5140-02	Tubing bore x Length	T0604 x 1 m	T0806 x 1 m	-
	Speed controller	AS3002F-06	AS3002F-08	-
	Silencer	AN101-01		-
SY7140-03	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m
	Speed controller	AS3002F-06	AS4002F-10	-
	Silencer	AN20-02		-
SY9140-04	Tubing bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m
	Speed controller	AS3002F-06	AS4002F-10	AS4002F-12
	Silencer	AN20-02		-

Conditions [When using SGP (steel pipe)]

Body ported	CS1 series
SY9120-03	Tubing bore x Length
	SGP10A x 1 m
	Speed controller
	AS420-03
	Silencer
	AN20-02

Conditions [When using SGP (steel pipe)]

Base mounted	CS1 series
SY7140-03	Tubing bore x Length
	SGP10A x 1 m
	Speed controller
	AS420-03
	Silencer
	AN30-03
SY9140-04	Tubing bore x Length
	SGP15A x 1 m
	Speed controller
	AS420-04
	Silencer
	AN40-04

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

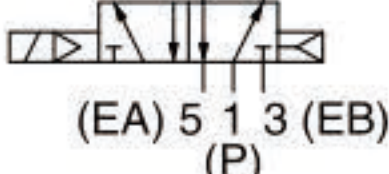
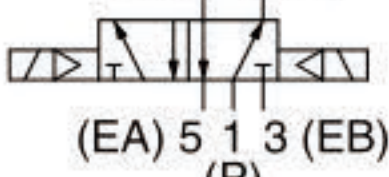
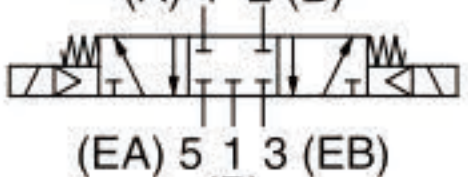
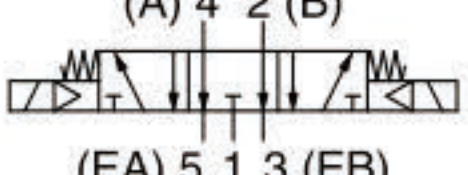
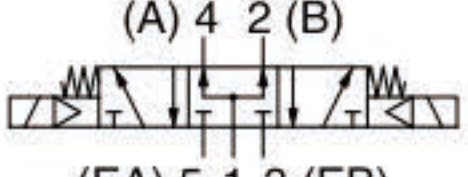
How to Order

SY 5 1 20 - 5 L - 01 -

Series

3	SY3000
5	SY5000
7	SY7000
9	SY9000

Type of actuation

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

For DC

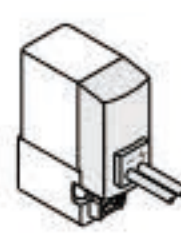
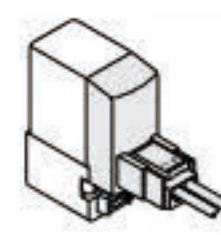
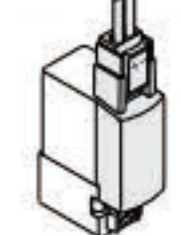
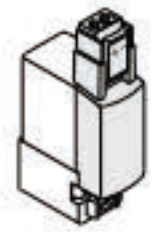
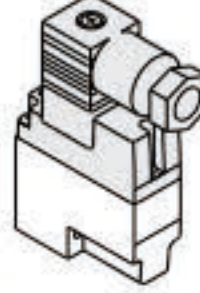
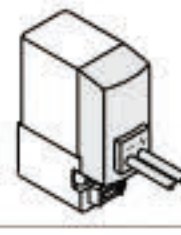
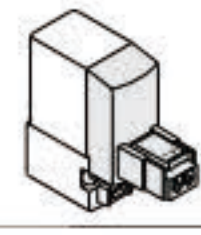
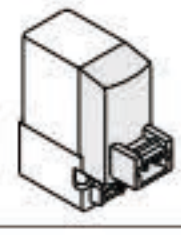
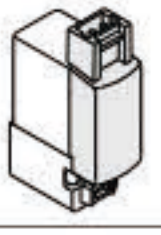
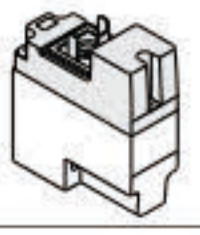
5	24 VDC
6	12 VDC

For AC (50/60 Hz)

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

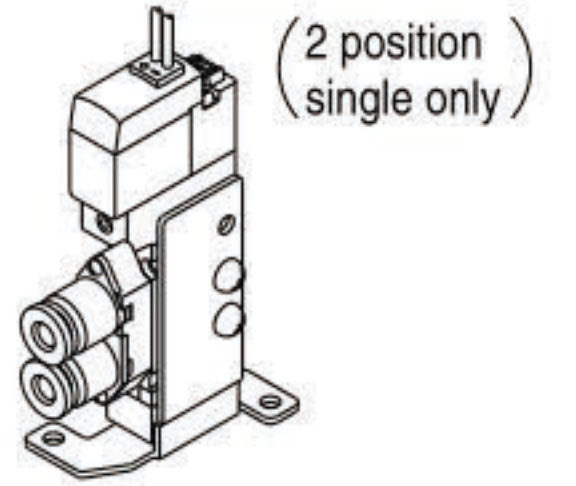
Rated voltage

Electrical entry

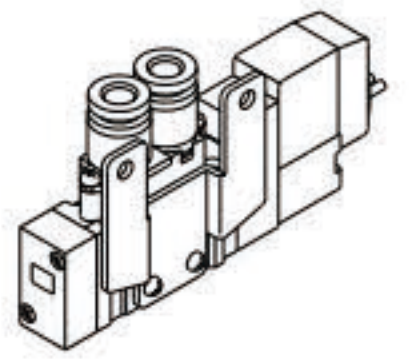
24, 12, 6, 5, 3 VDC/100, 110, 200, 220 VAC				24, 12 VDC/ 100, 110, 200, 220 VAC
Grommet	L plug connector	M plug connector		DIN terminal
G: Lead wire length 300 mm 	L: With lead wire (Length 300 mm) 	M: With lead wire (Length 300 mm) 	MN: Without lead wire 	D, Y: With connector 
H: Lead wire length 600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

Bracket

Nil: Without bracket
F1: With foot bracket



F2: With side bracket



* SY9000 has no bracket.

A, B port size Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	SY3000
01	1/8	SY5000
02	1/4	SY7000
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	
C12	One-touch fitting for ø12	

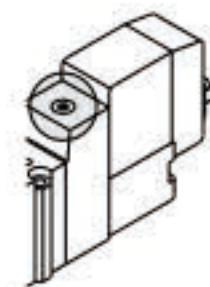
Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

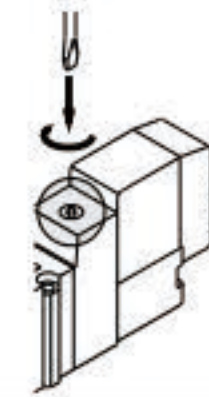
* Except for M5

Manual override

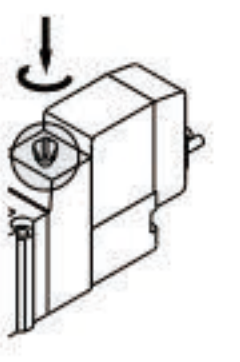
Nil: Non-locking push type



D: Push-turn locking slotted type



E: Push-turn locking lever type



Light/Surge voltage suppressor

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

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

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

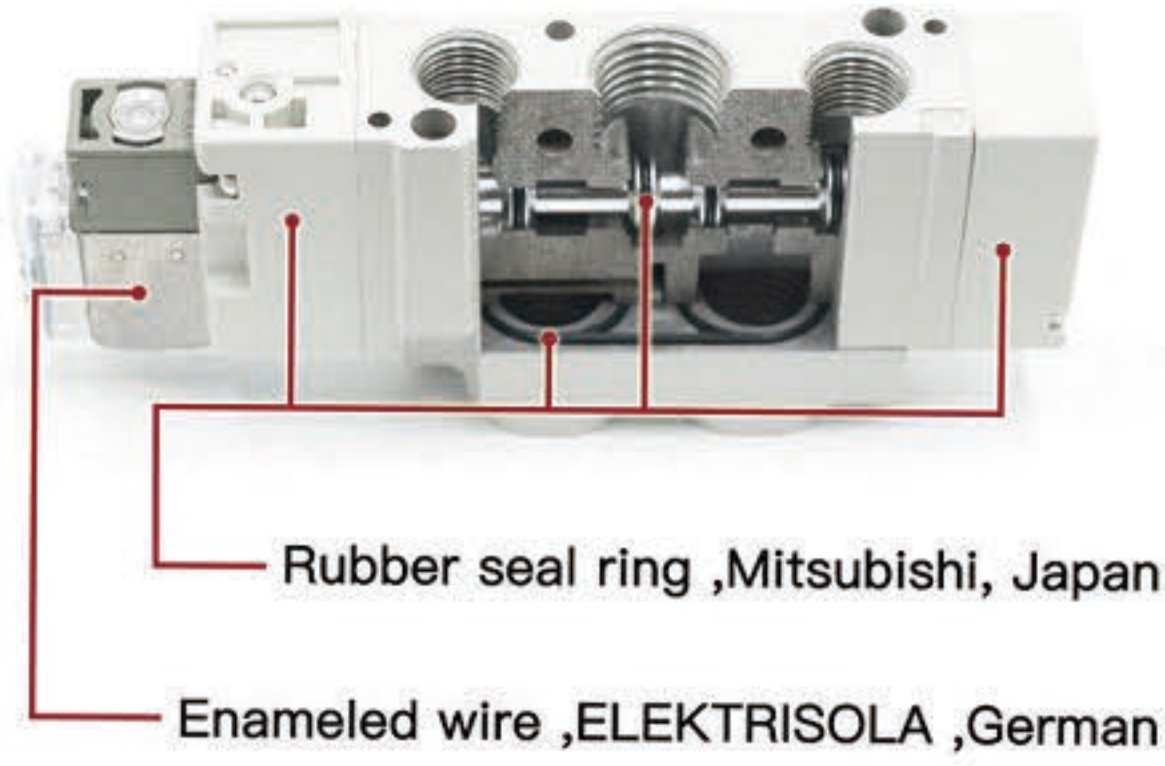
Electrical entry for D, Y

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

* DOZ and YOZ are 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 screw for manifold and gasket are not attached. Order them separately, if necessary.

Specifications



Series	SY3000	SY5000	SY7000	SY9000
Fluid	Air			
Internal pilot	2 position single			
Operating pressure range (MPa)	2 position double			
	3 position			
Ambient and fluid temperature (°C)	-10 to 50 (No freezing)			
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/s²)^{Note)}	150/30			
Enclosure	Dust proof (* DIN terminal and M8 connector: IP65)			

* Based on IEC60529

Note) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

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

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

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

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

Response Time

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

SY3000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	12 or less	15 or less	12 or less
2 position double	10 or less	13 or less	10 or less
3 position	15 or less	20 or less	16 or less

SY7000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	31 or less	38 or less	33 or less
2 position double	27 or less	30 or less	28 or less
3 position	50 or less	56 or less	50 or less

SY5000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	19 or less	26 or less	19 or less
2 position double	18 or less	22 or less	18 or less
3 position	32 or less	38 or less	32 or less

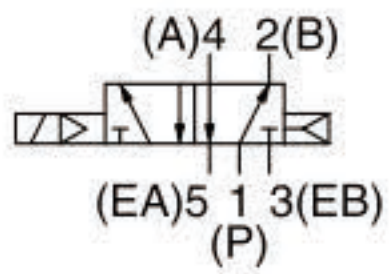
SY9000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	35 or less	41 or less	35 or less
2 position double	35 or less	41 or less	35 or less
3 position	62 or less	64 or less	62 or less

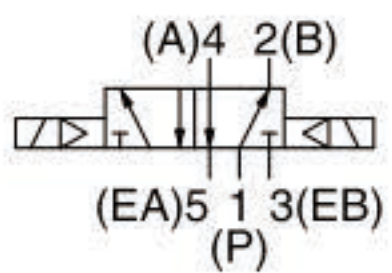
Construction

SY series

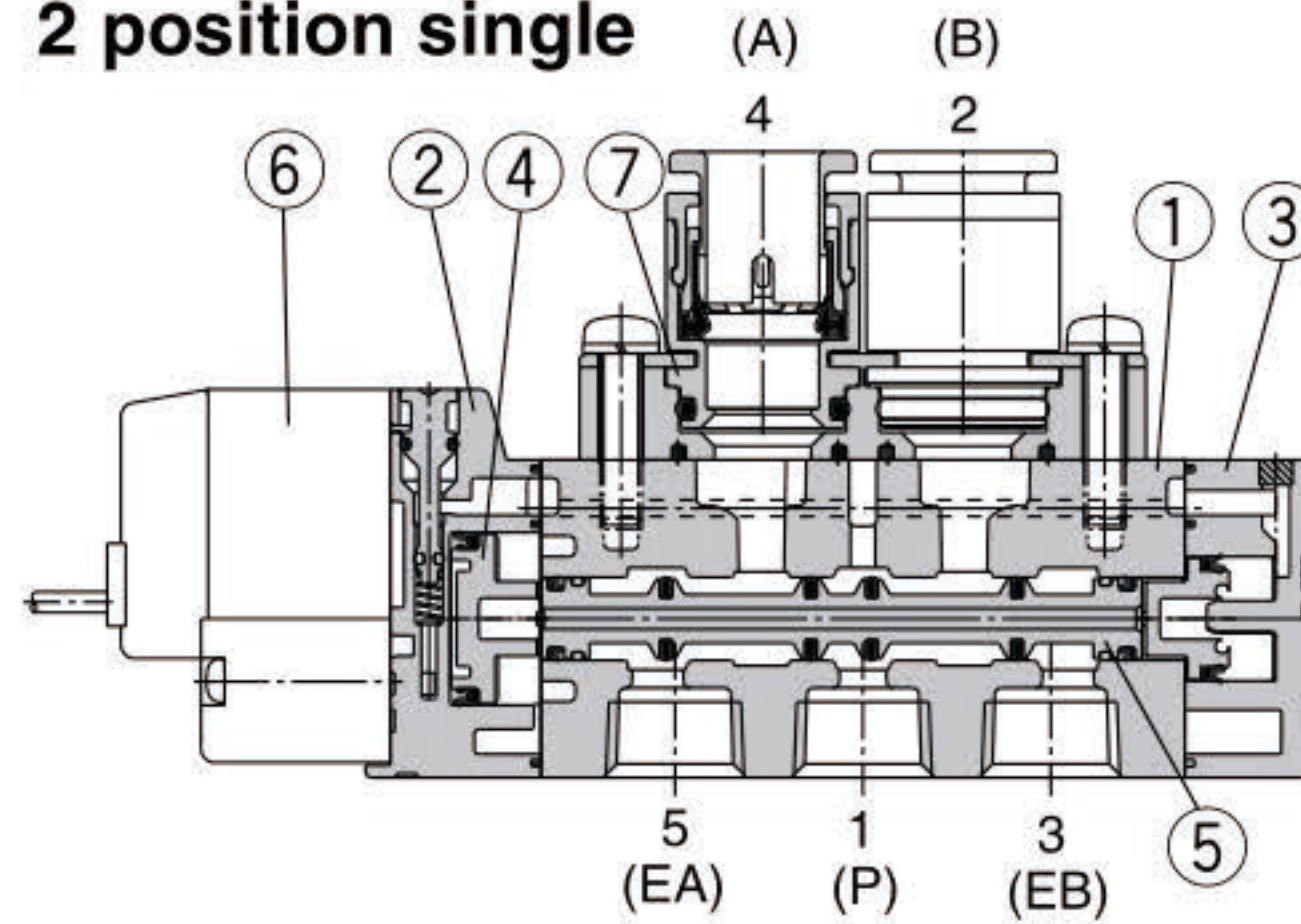
Symbol
2 position single



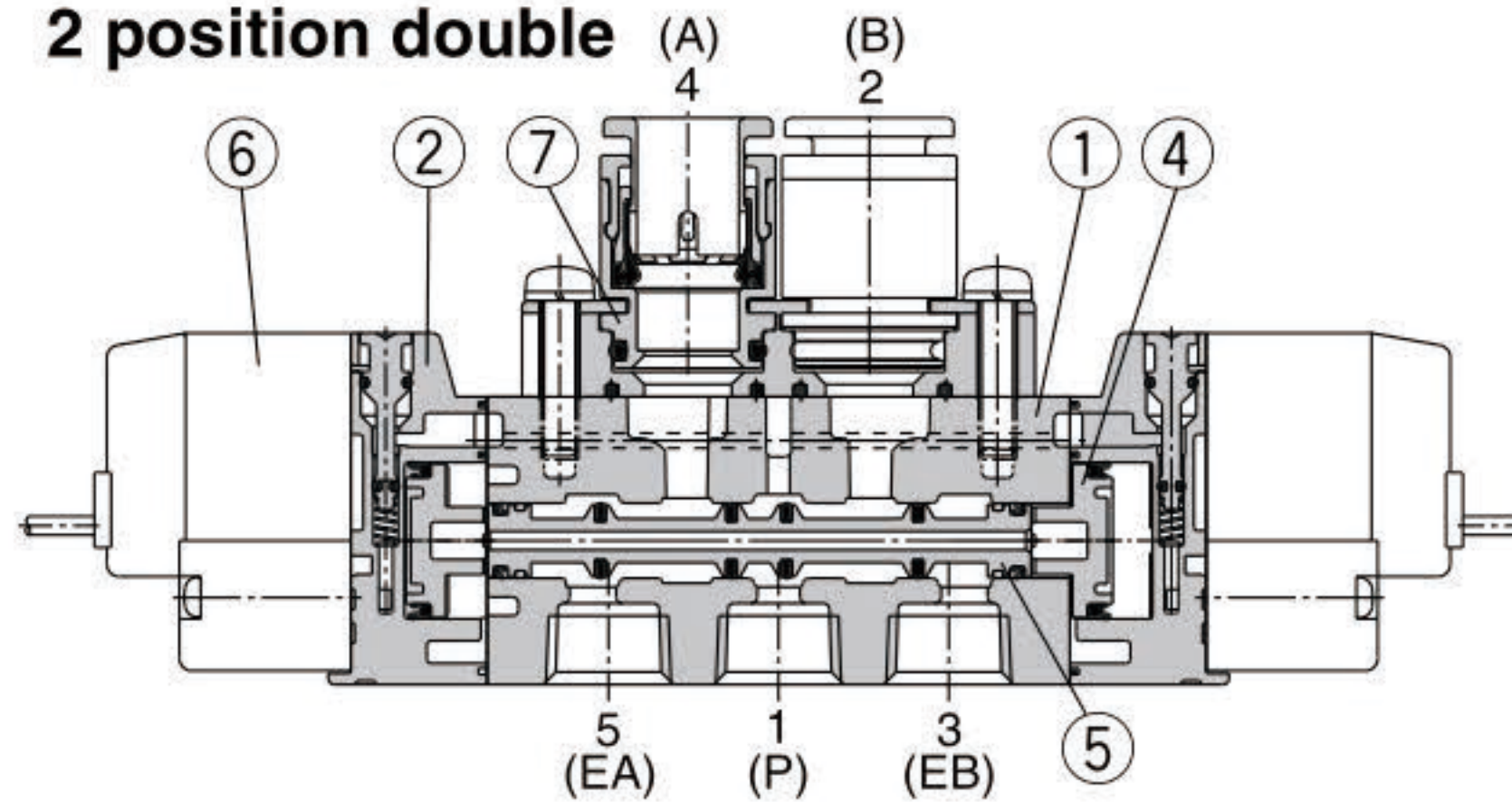
Symbol
2 position double



2 position single

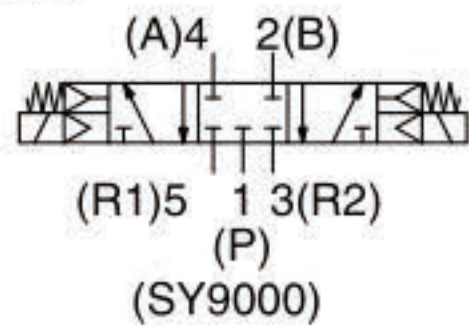
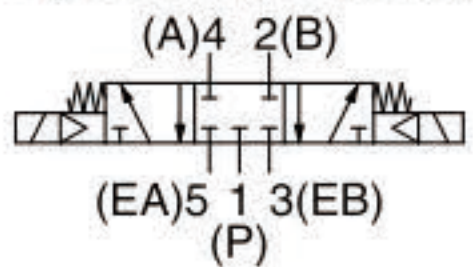


2 position double

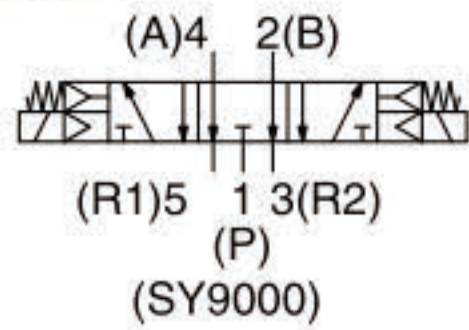
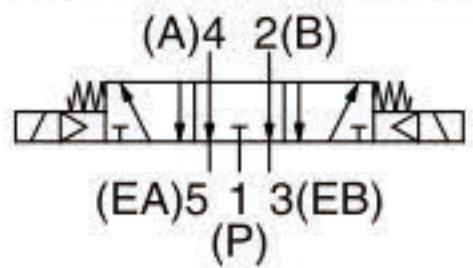


3 position closed center / exhaust center / pressure center

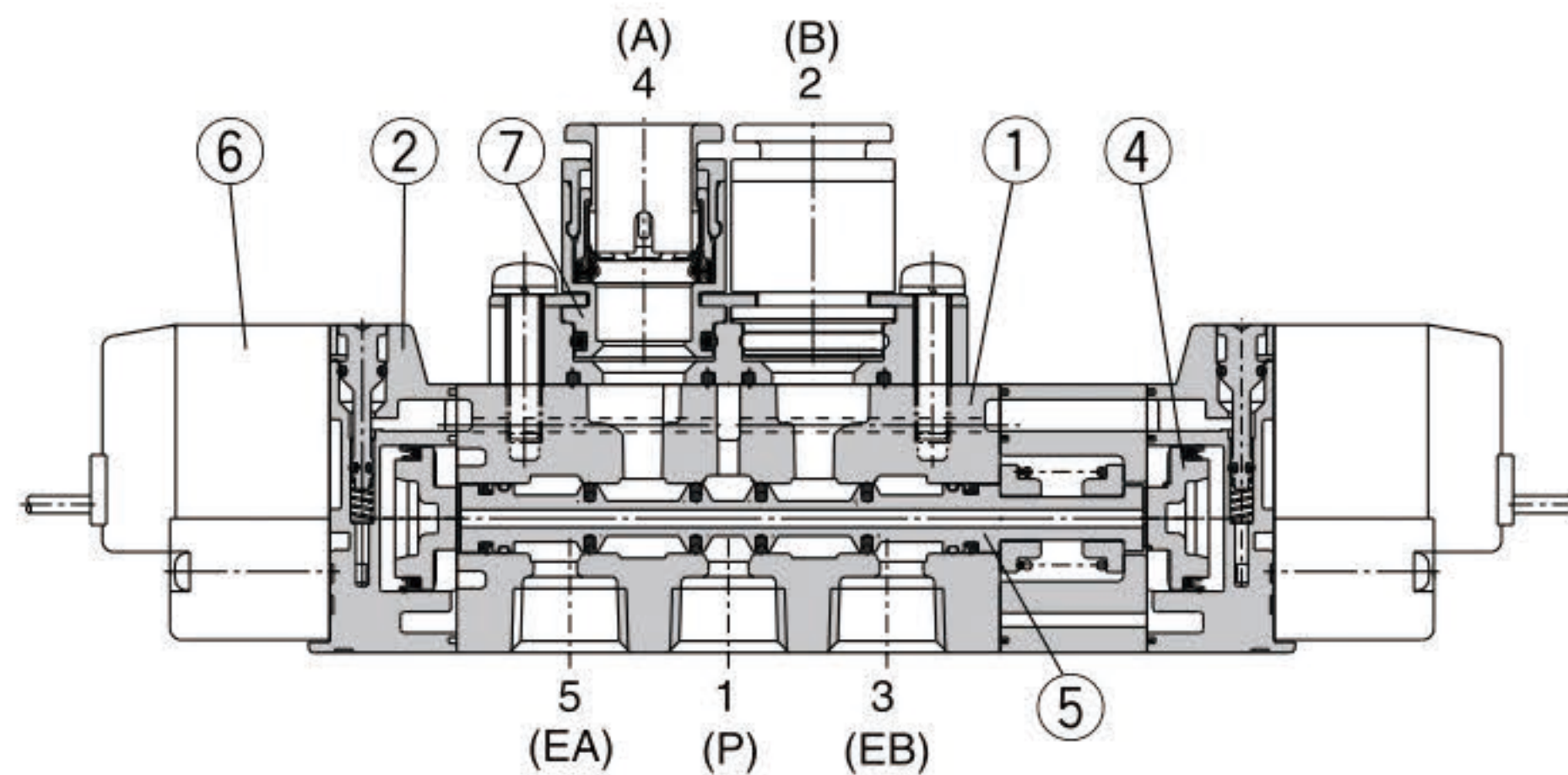
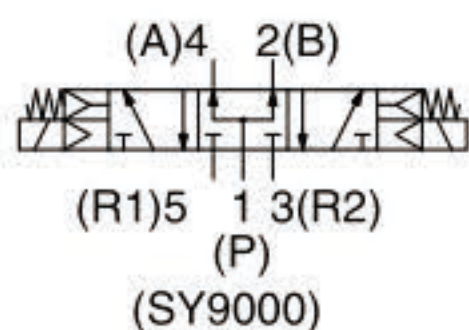
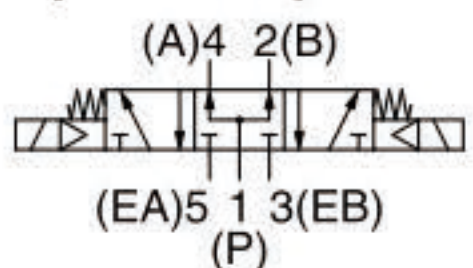
Symbol
3 position closed center



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, H-NBR	-

Replacement Parts

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

Bracket Assembly No.

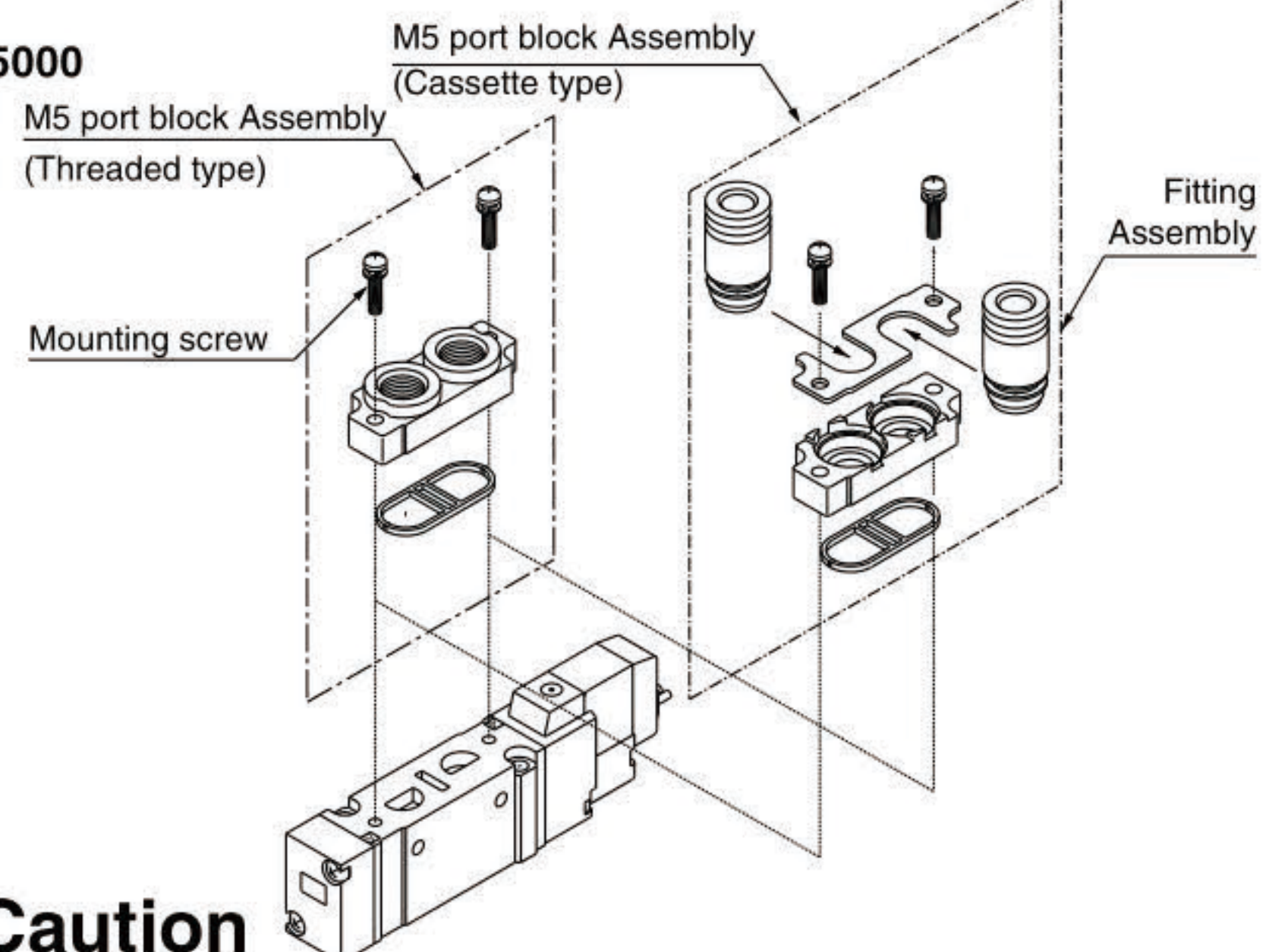
Description	Part no.
Bracket (For F1)	SX ³ 000-16-2A (with mounting screw)
Bracket (For F2)	SX ³ 000-16-1A (with mounting screw)

* SY9000 has no bracket.

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

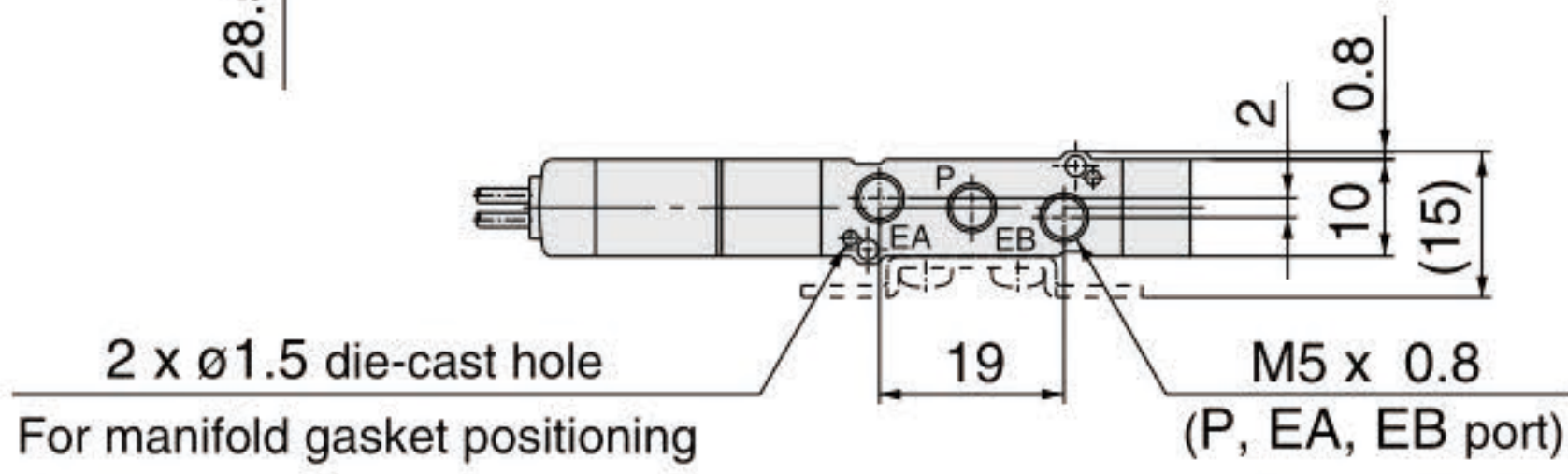
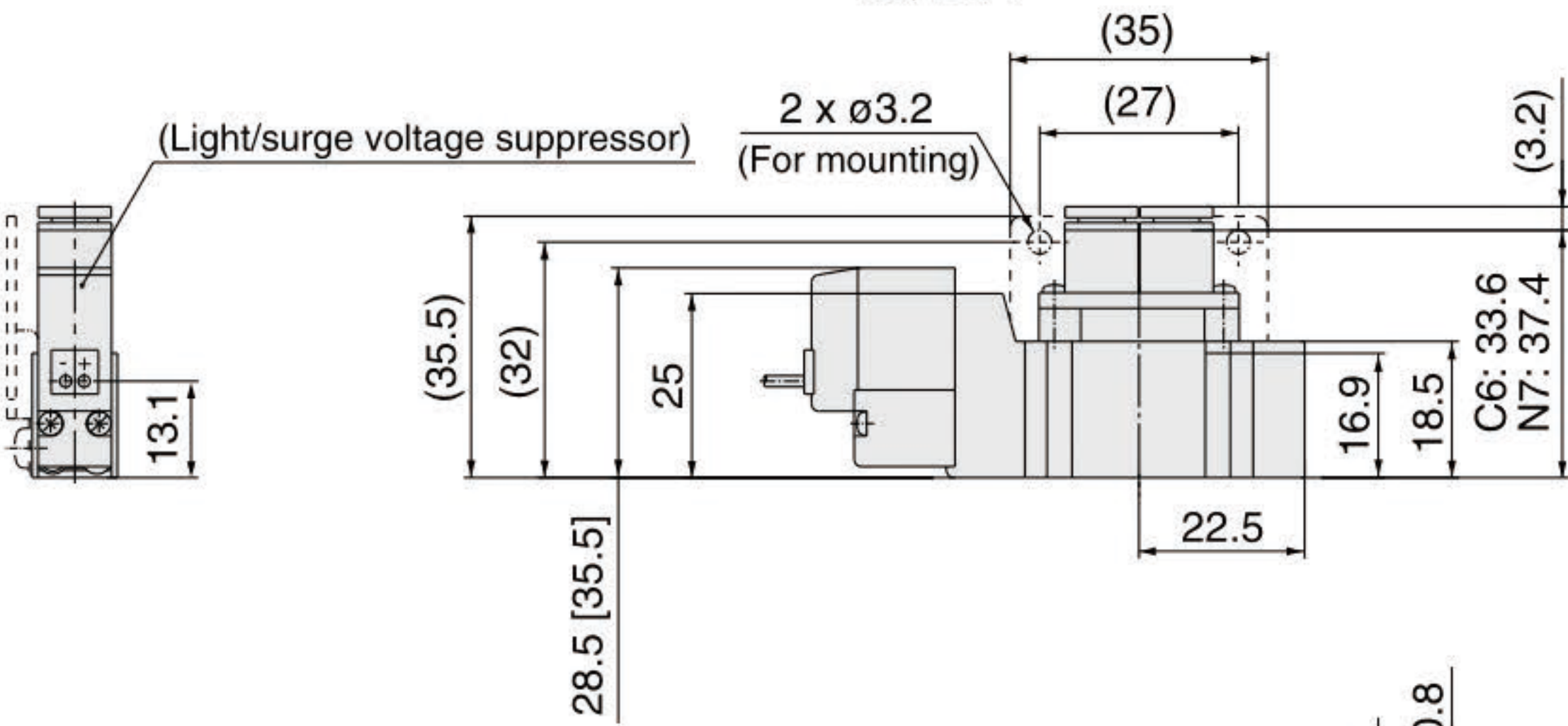
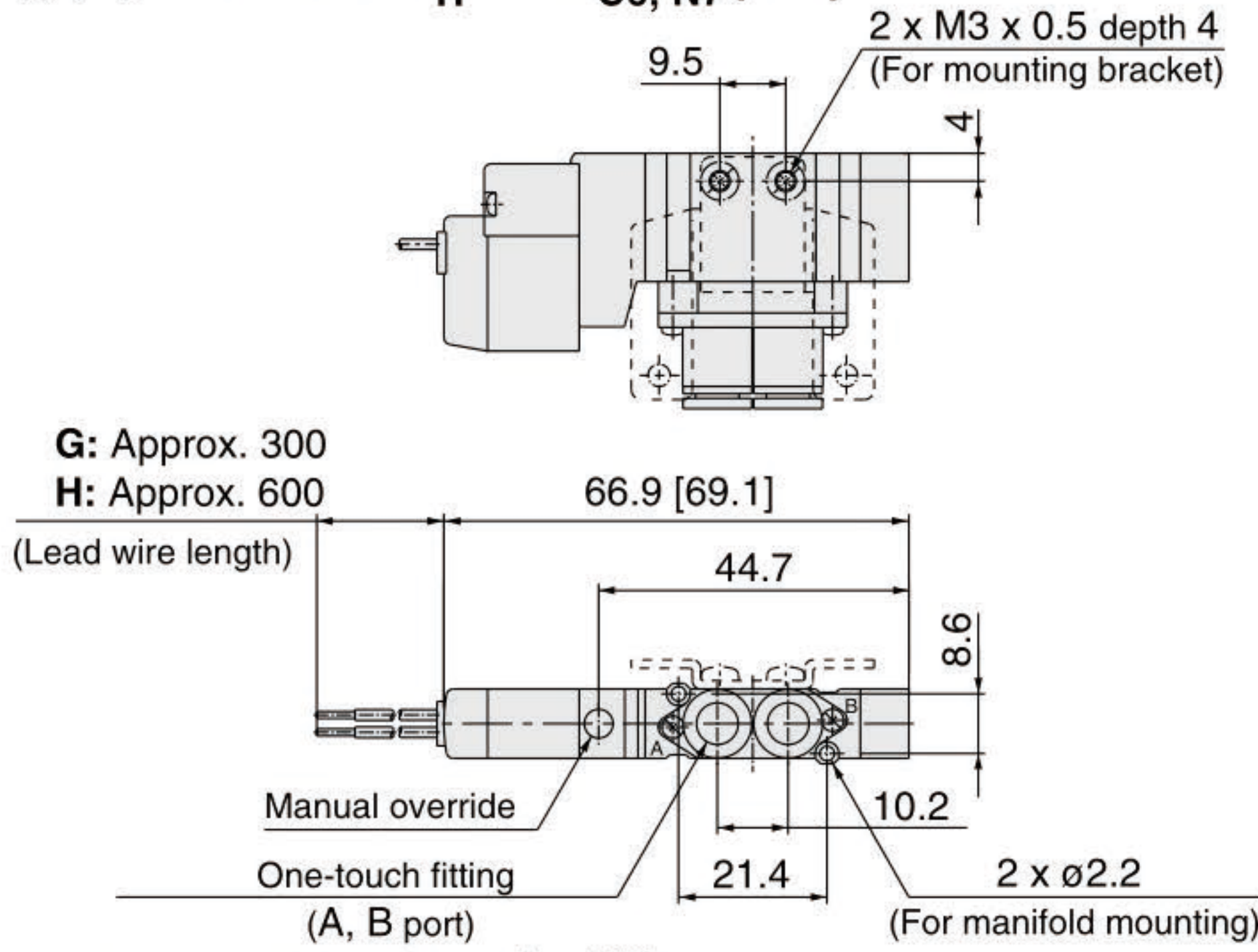
- SY3000 (M2): 0.12 N·m
- SY⁵000 (M3): 0.6 N·m
- SY9000 (M4): 1.4 N·m

Dimensions: SY3000 Series

[]: AC

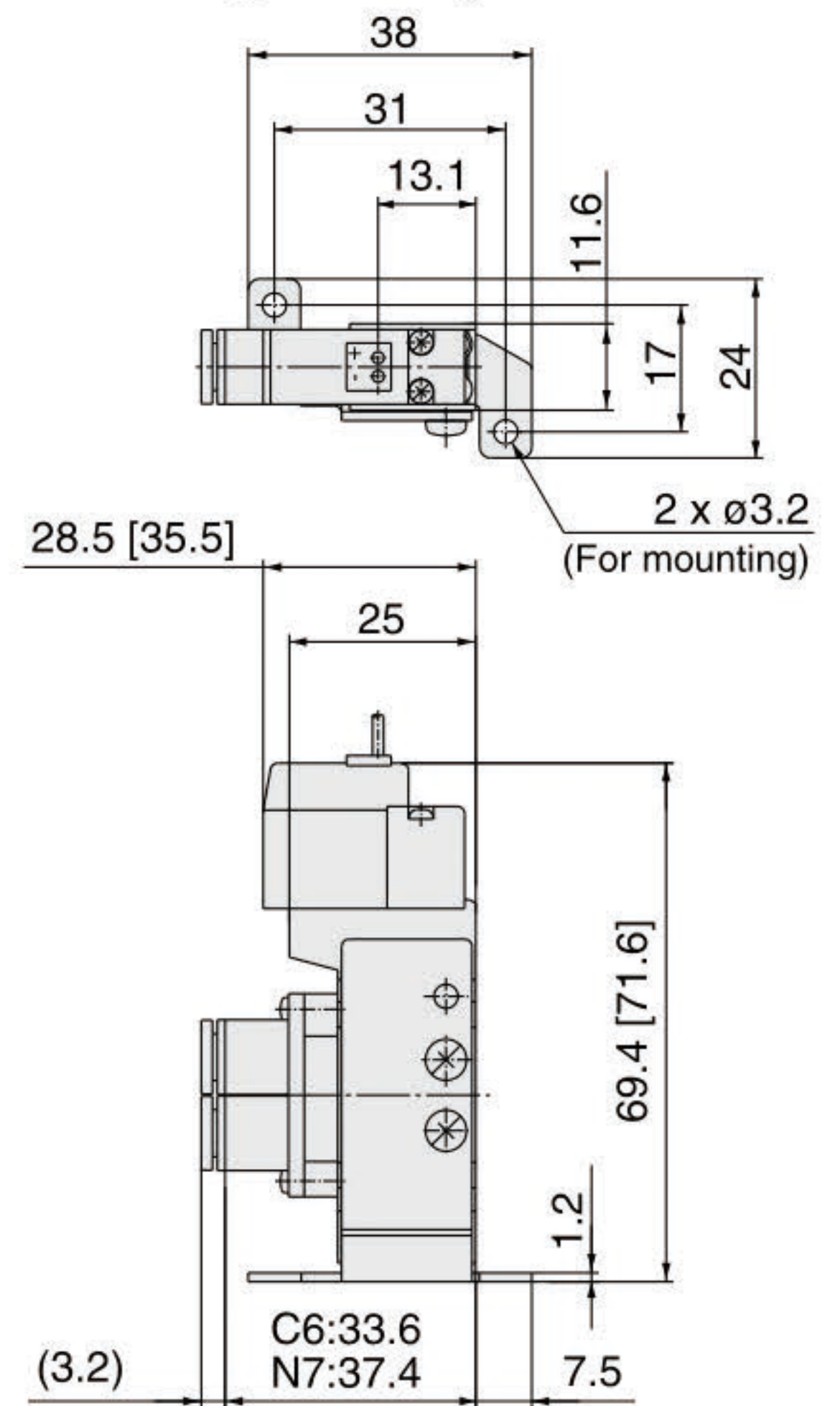
2 position single

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

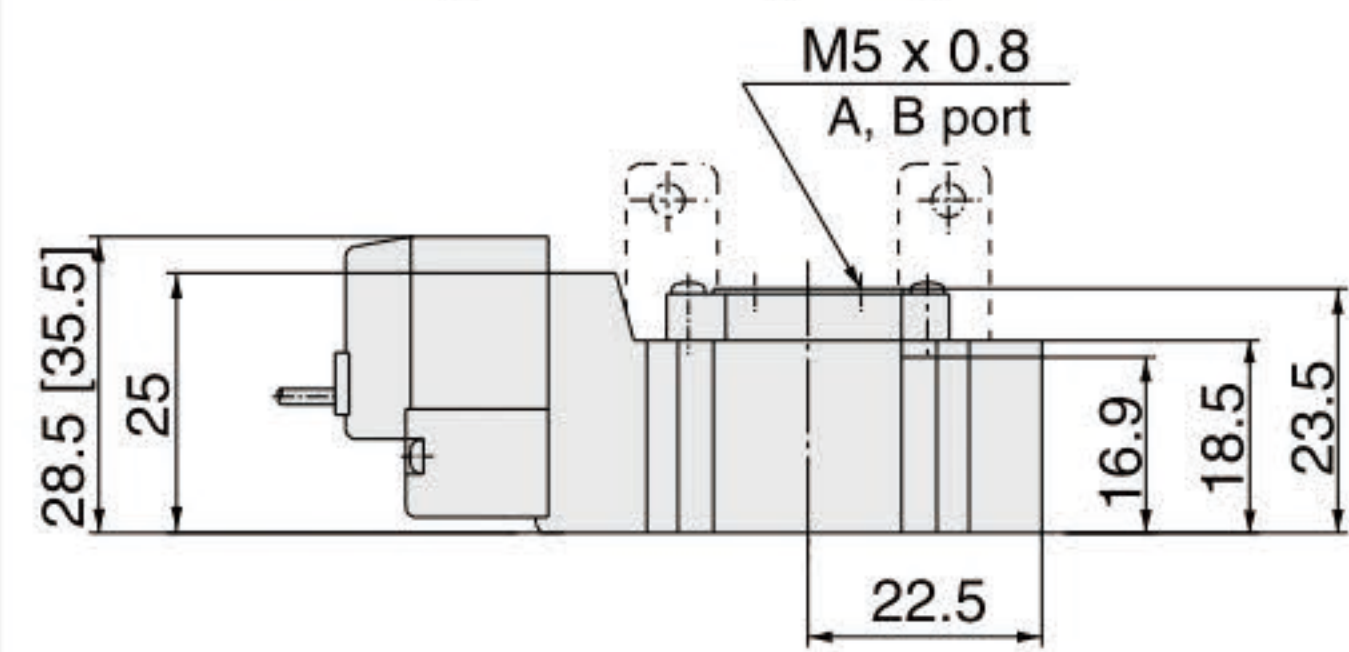


Foot bracket

SY3120-□_G□□-C4, N3
C6, N7 -F1

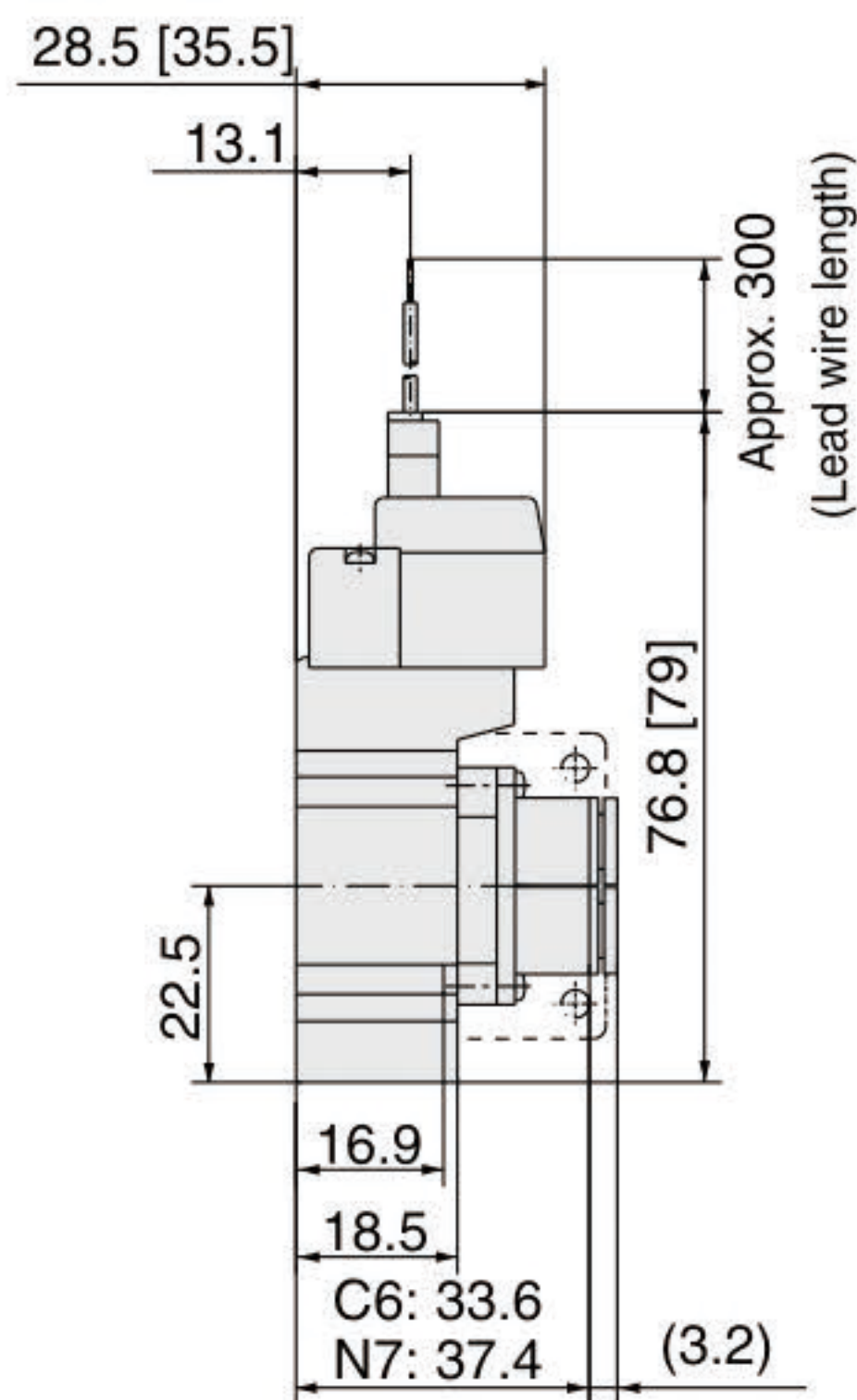


SY3120-□_G□□-M5(-F2)



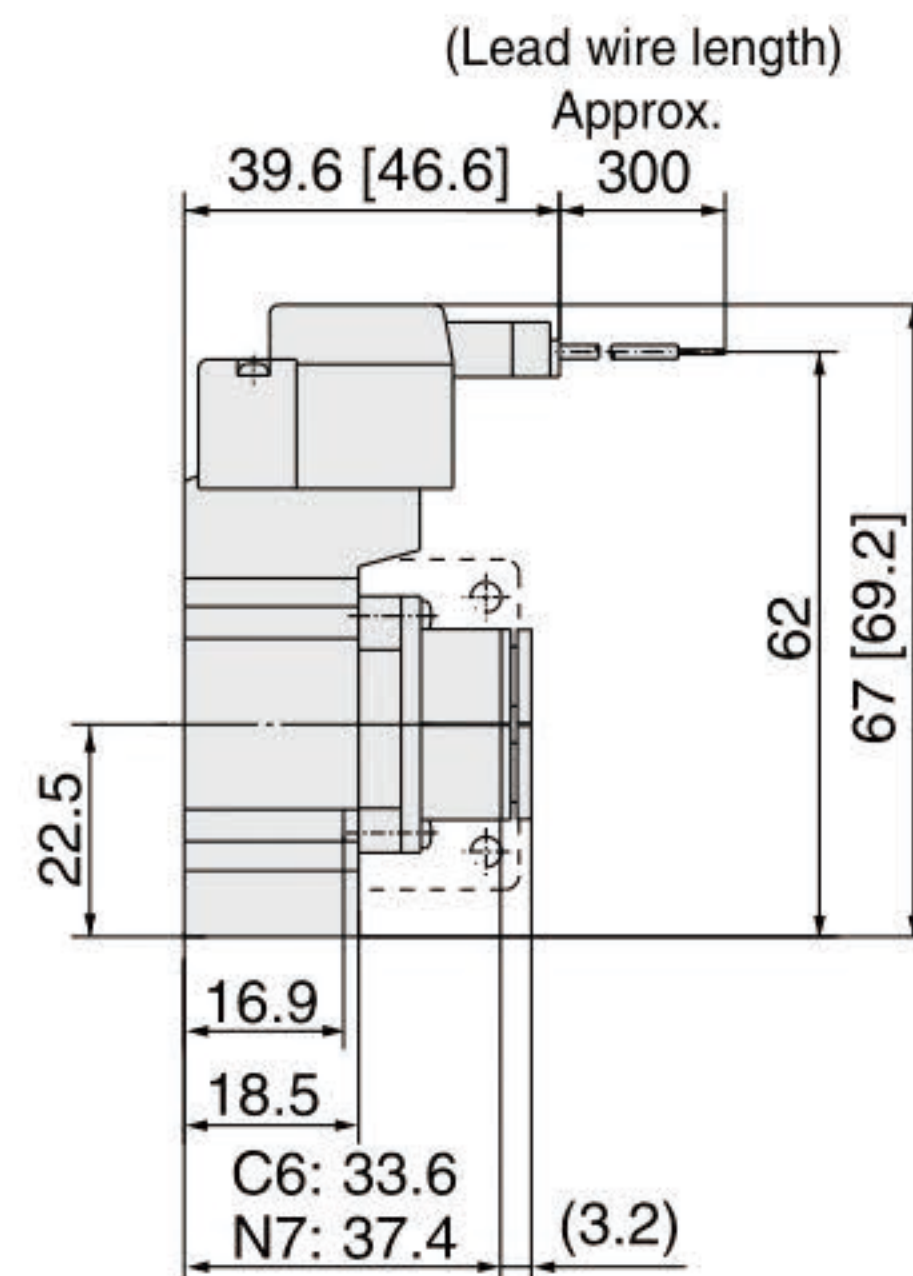
L plug connector (L):

SY3120-□L□□-C4, N3
C6, N7 (-F1)



M plug connector (M):

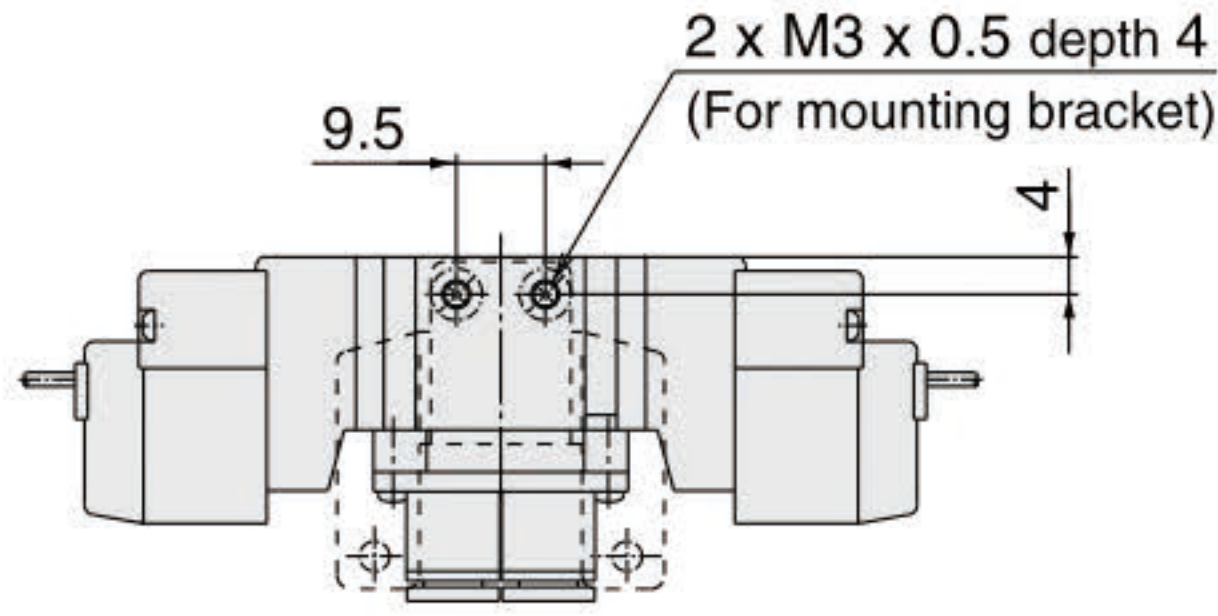
SY3120-□M□□-C4, N3
C6, N7 (-F1)



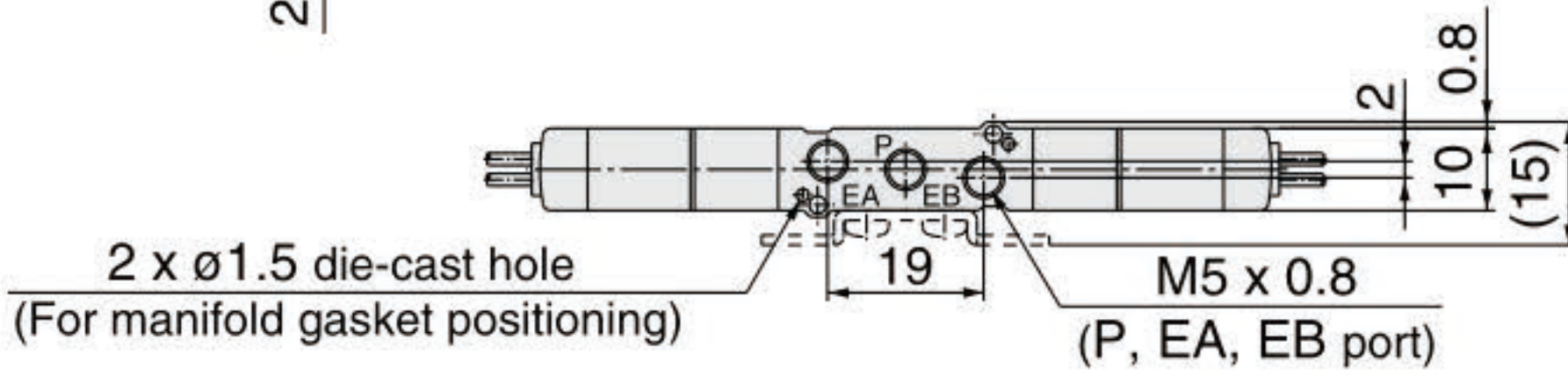
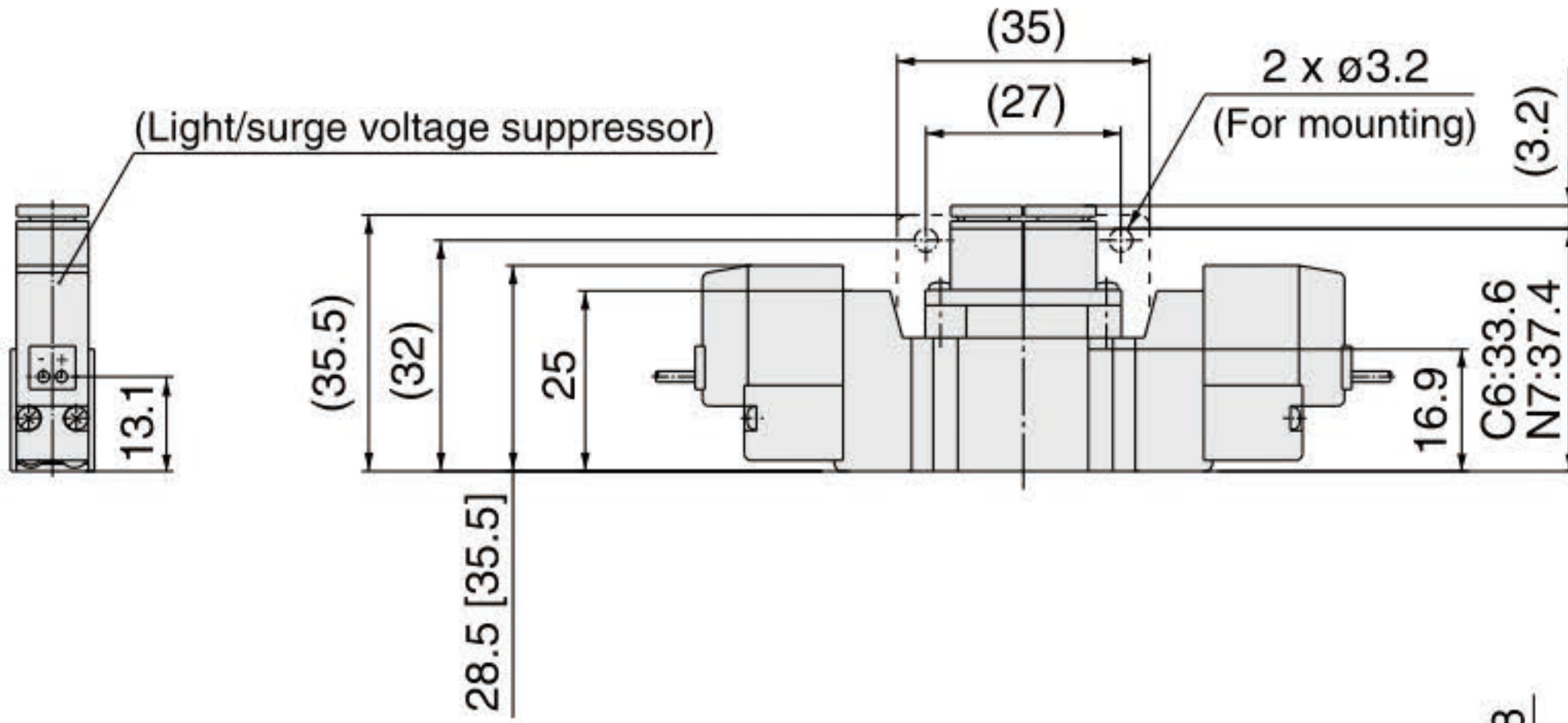
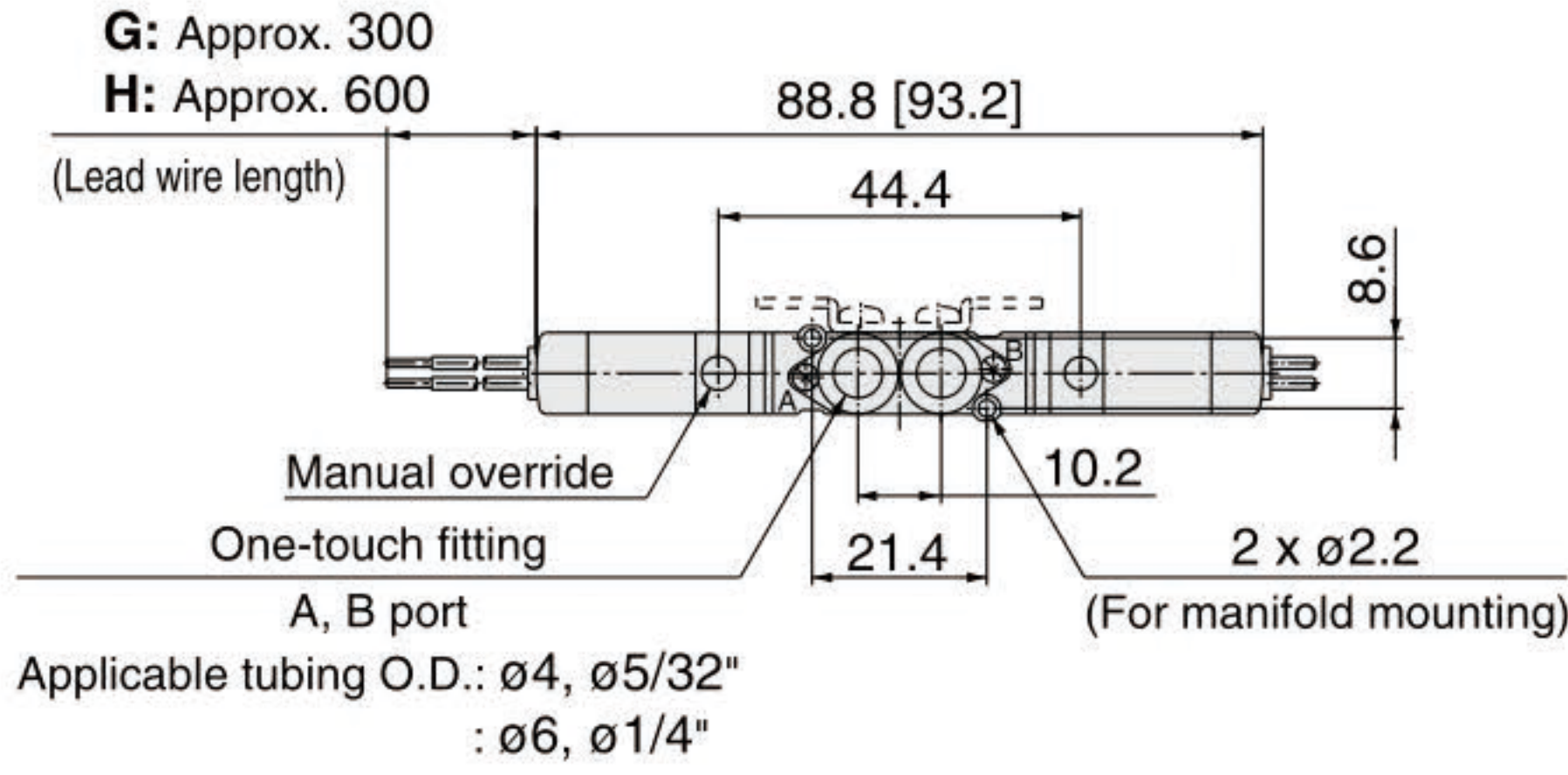
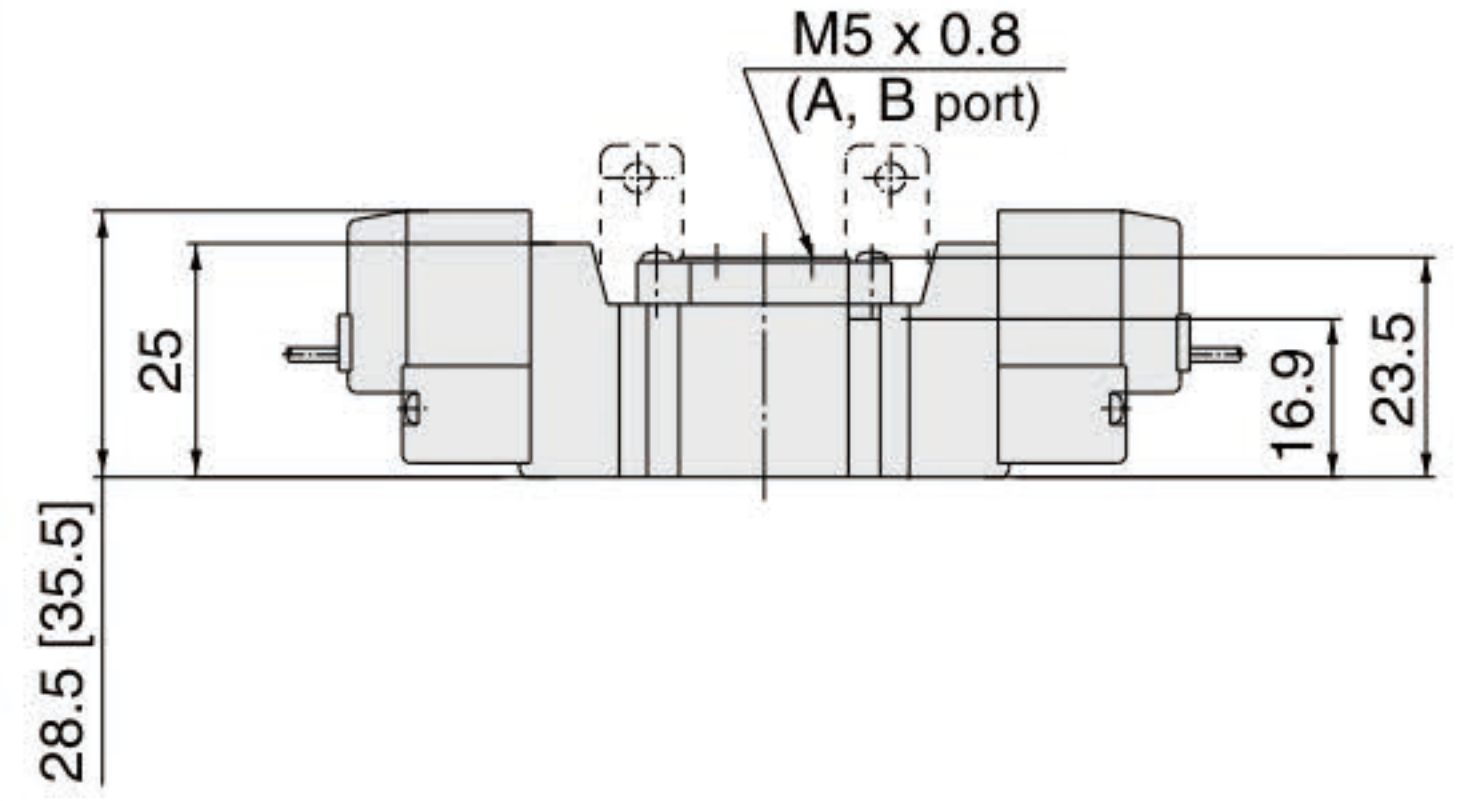
Dimensions: SY3000 Series

2 position double

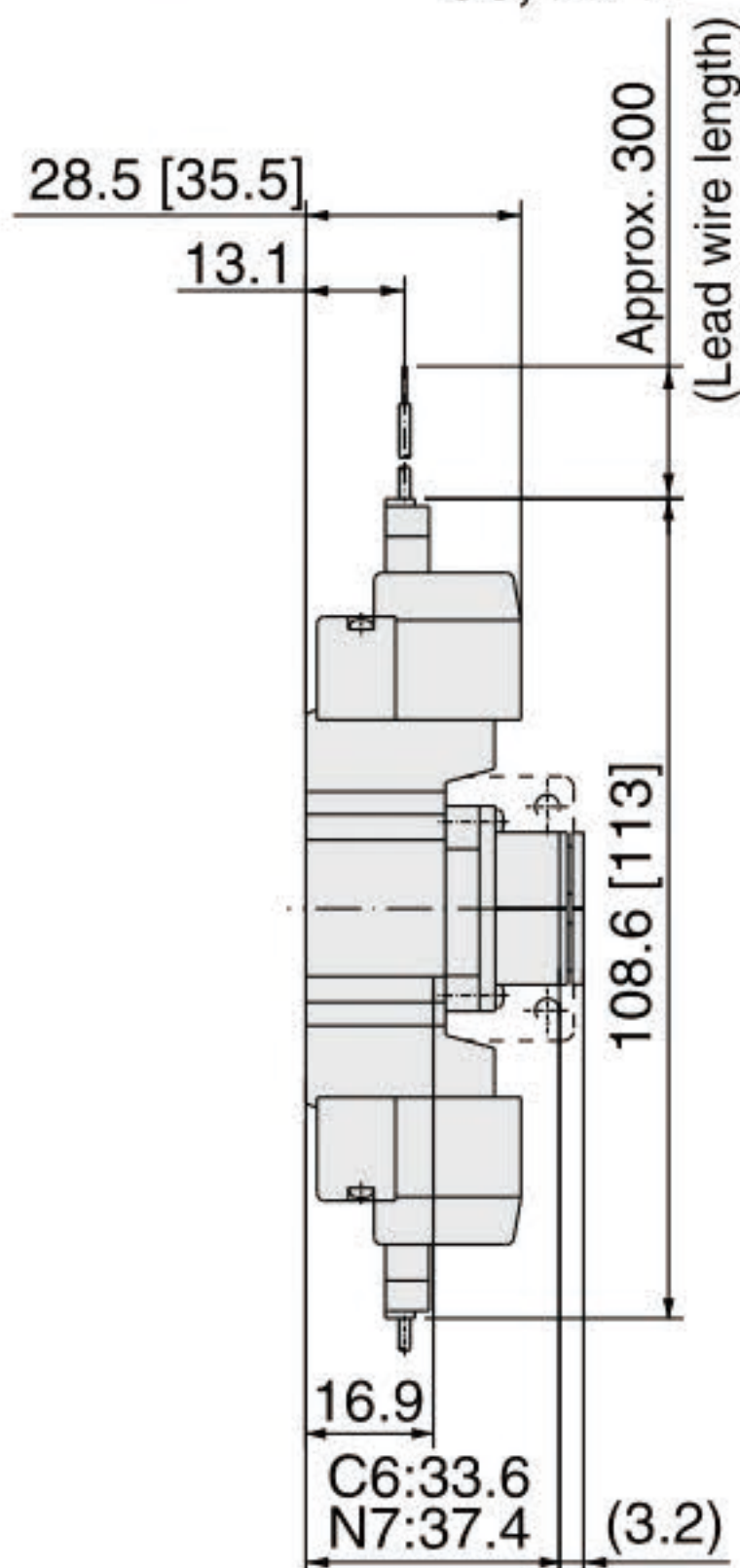
Grommet (G), (H): **SY3220-□_G□□-C4, N3(-F2)**
SY3220-□_H□□-C6, N7(-F2)



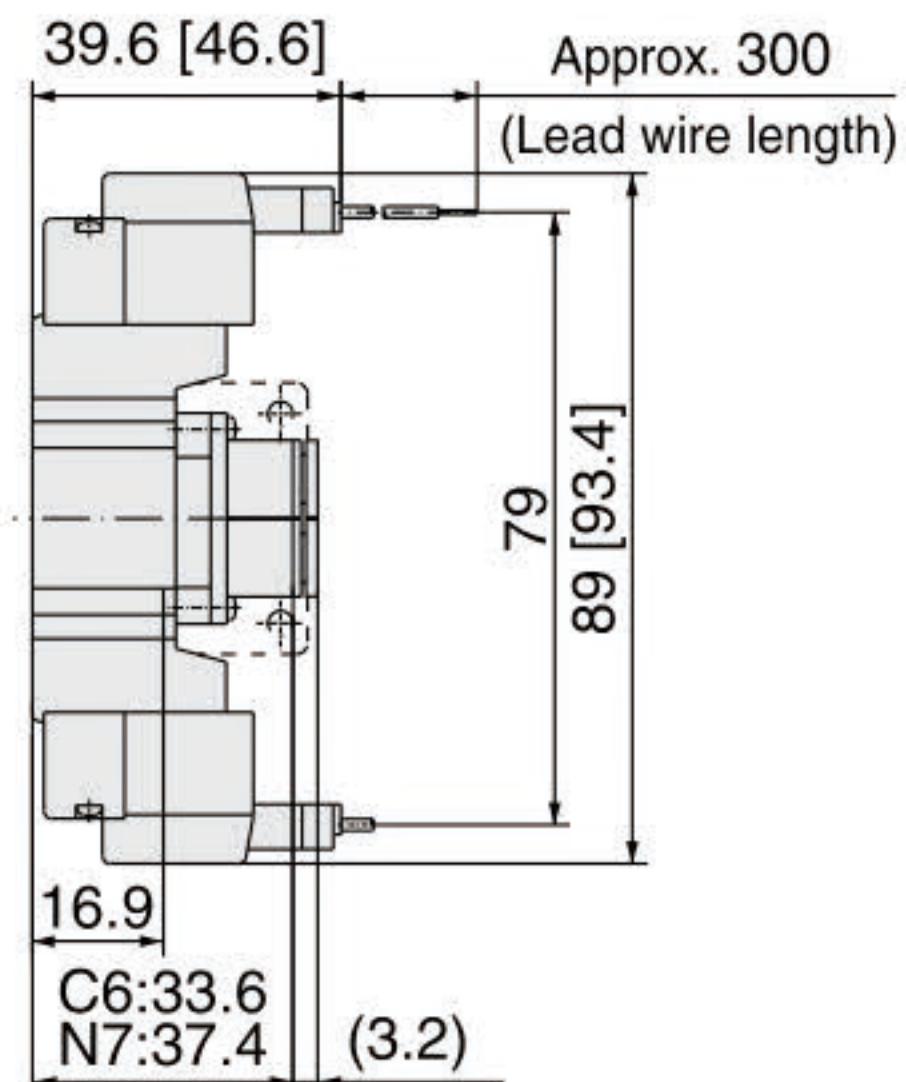
SY3220-□_G□□-M5(-F2)



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



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

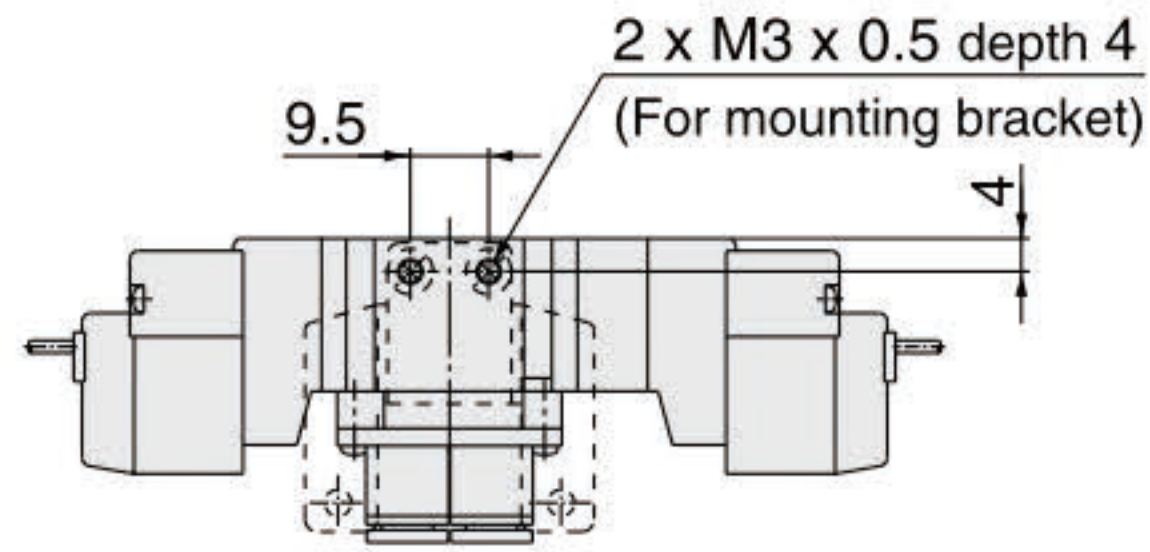


Dimensions: SY3000 Series

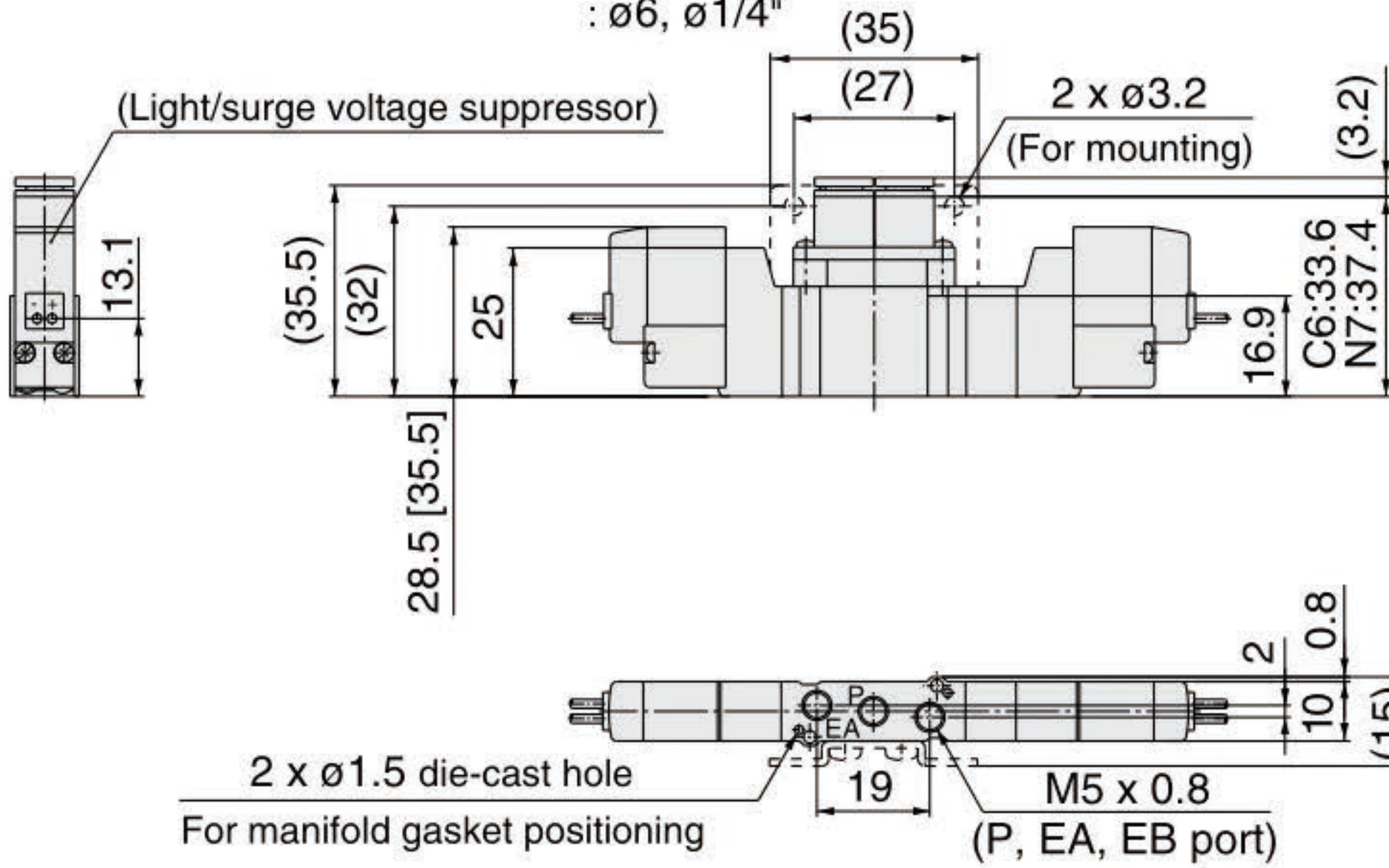
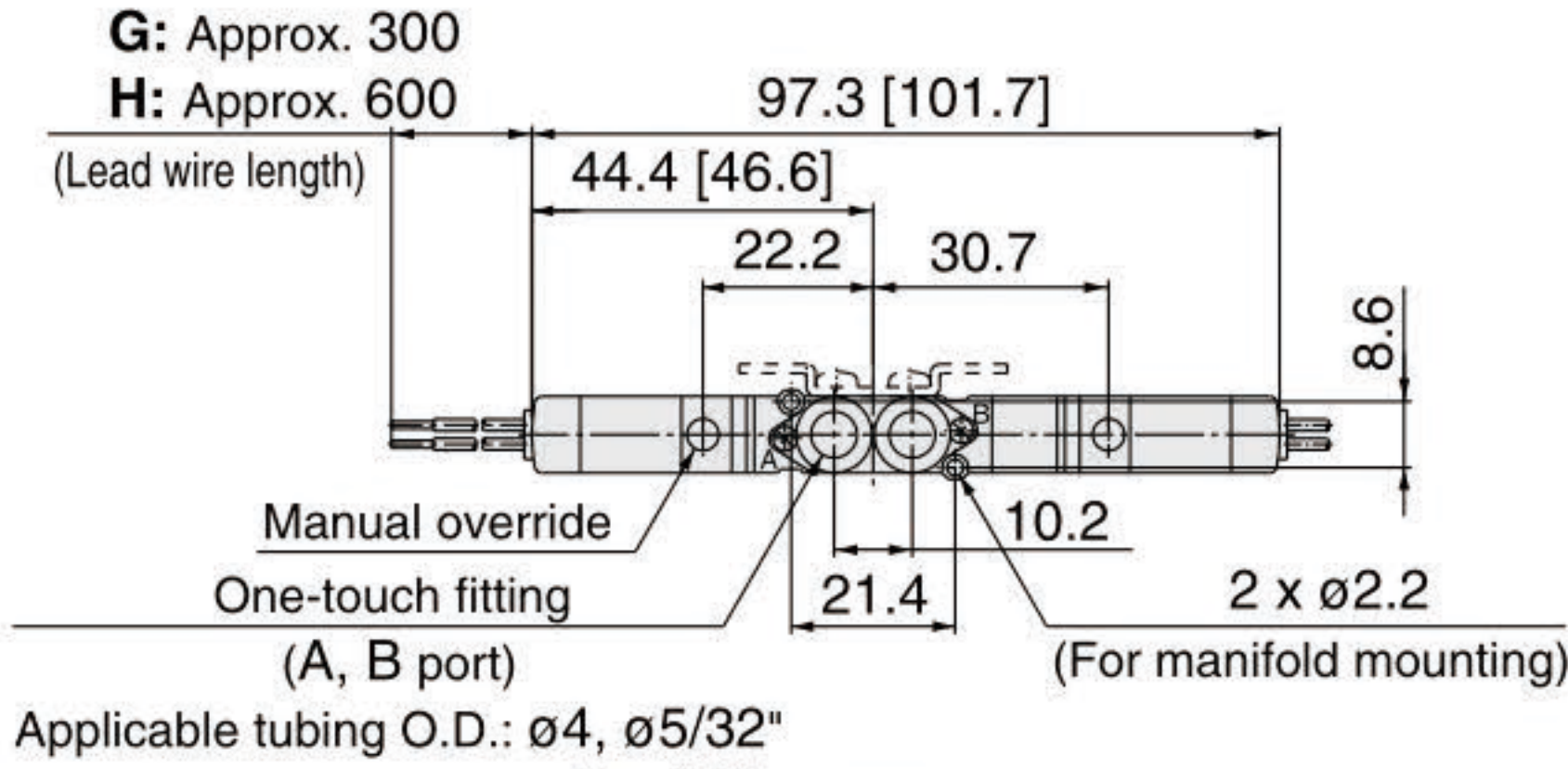
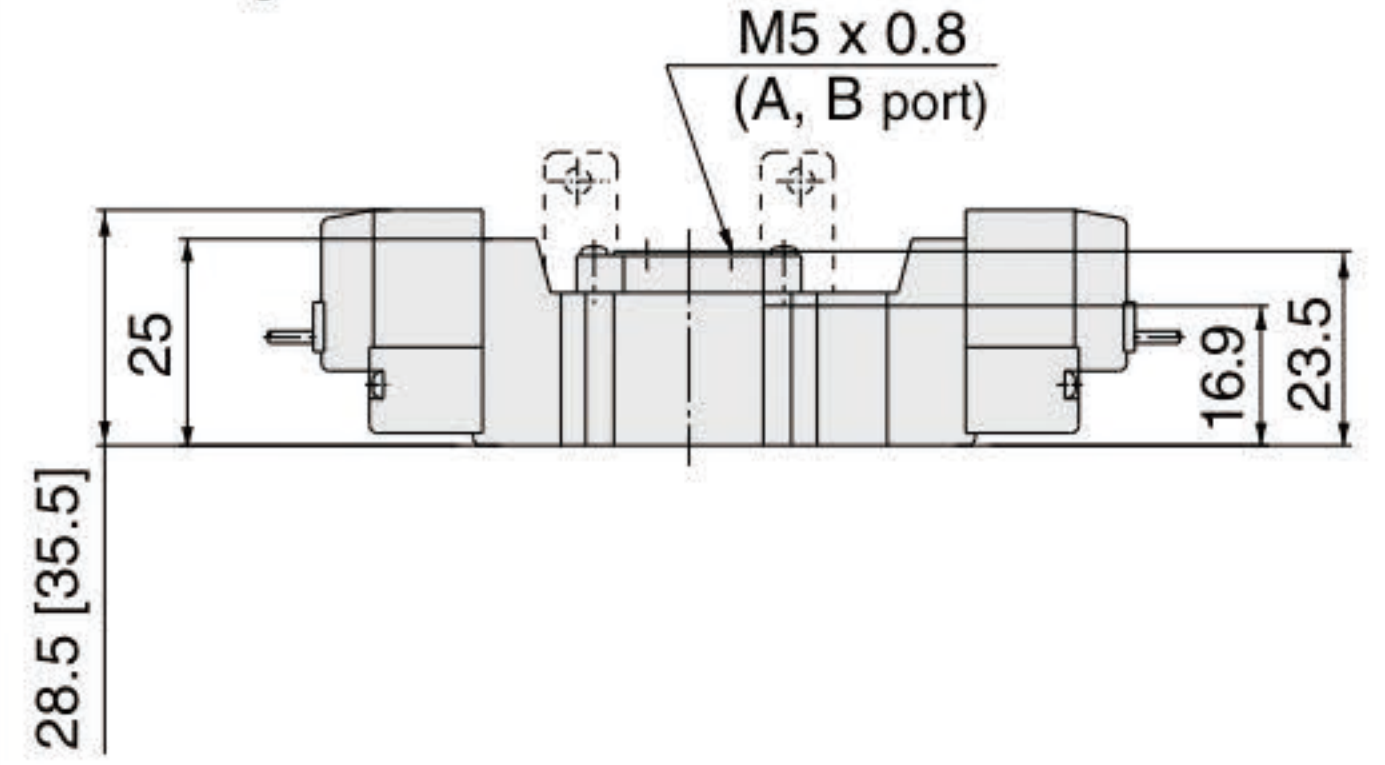
[]: AC

3 position closed center / exhaust center / pressure center

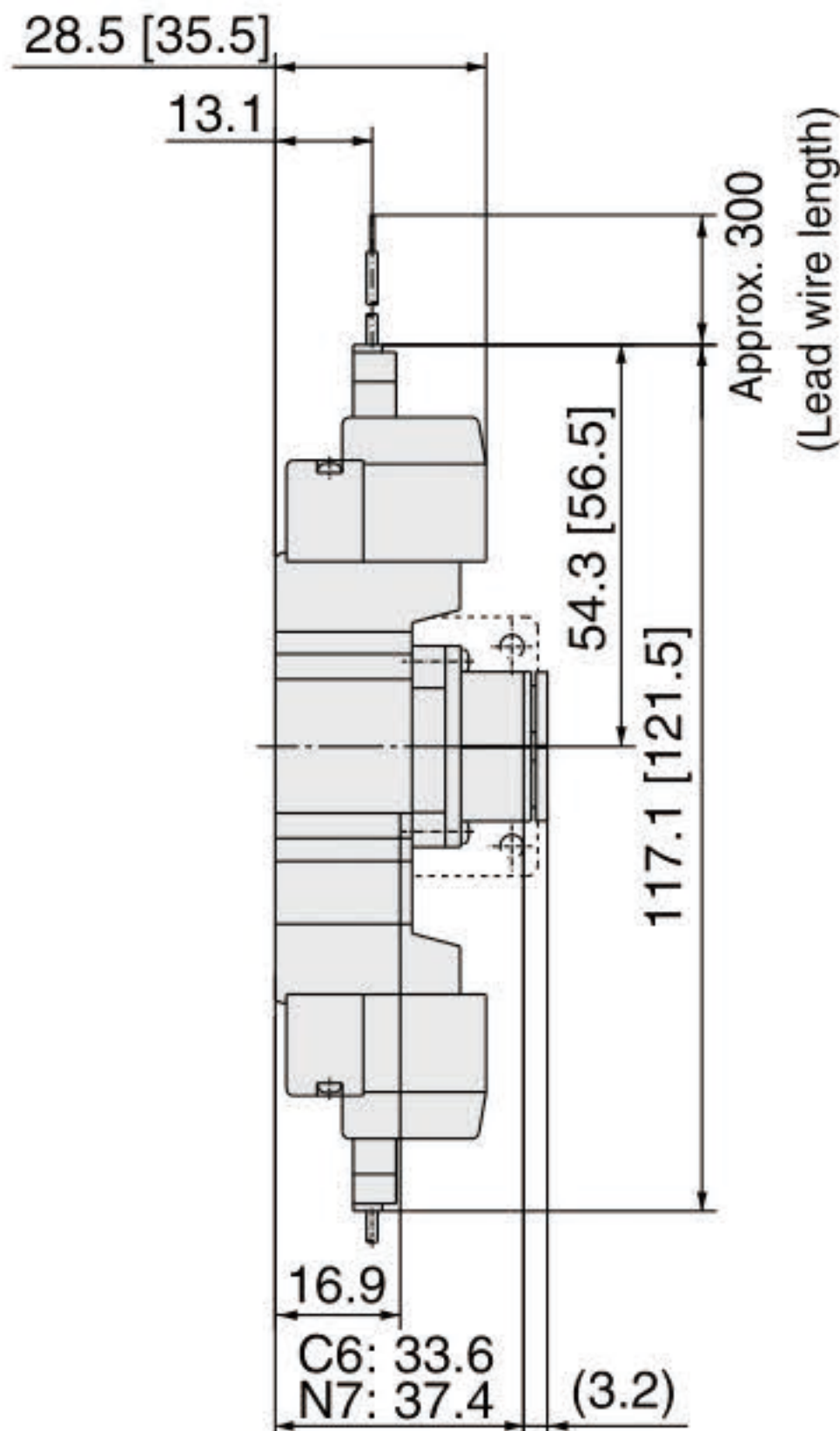
Grommet (G), (H): SY3³/₄20-□^G□□-C₄, N₃(-F2)
C₆, N₇(-F2)



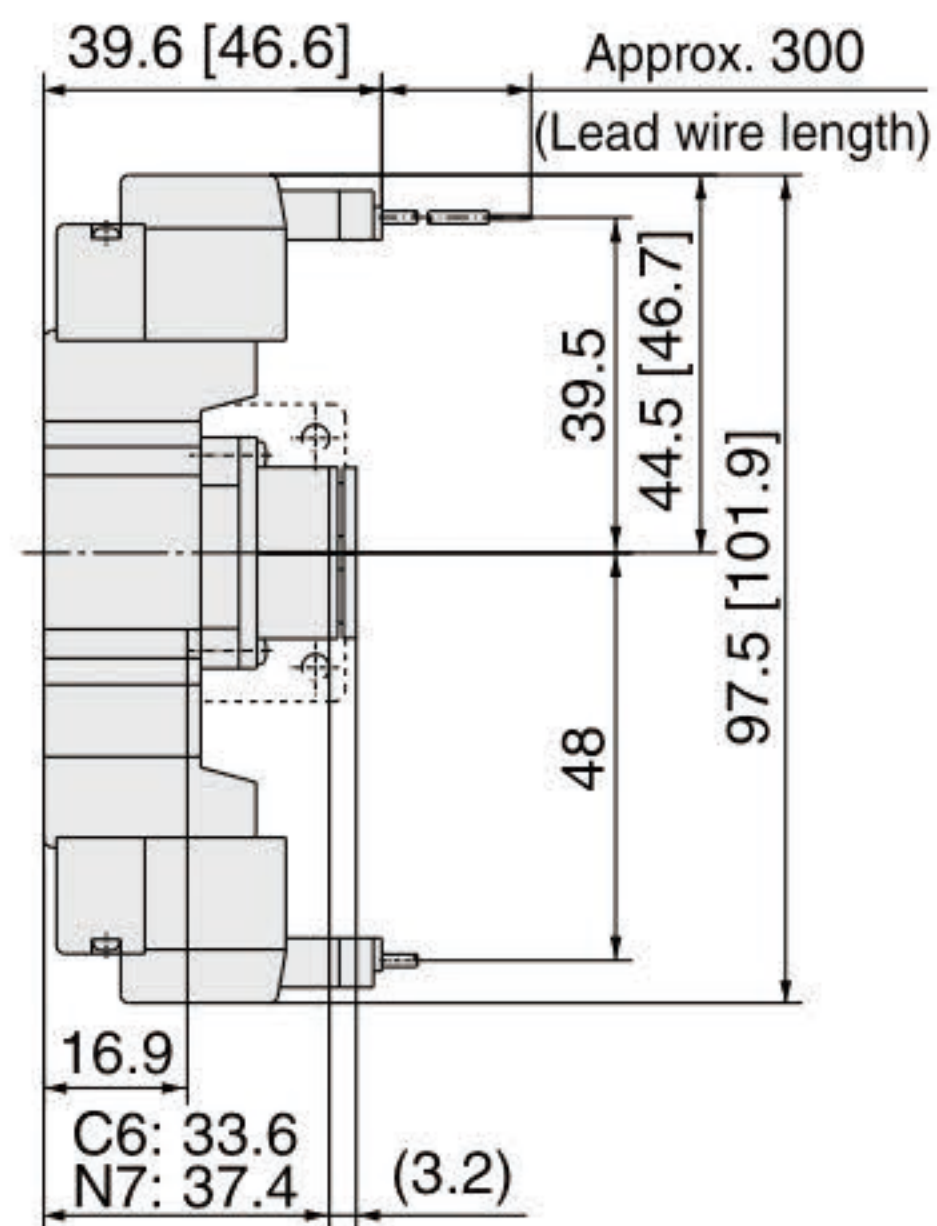
SY3³/₄20-□^G□□-M5(-F2)



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



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

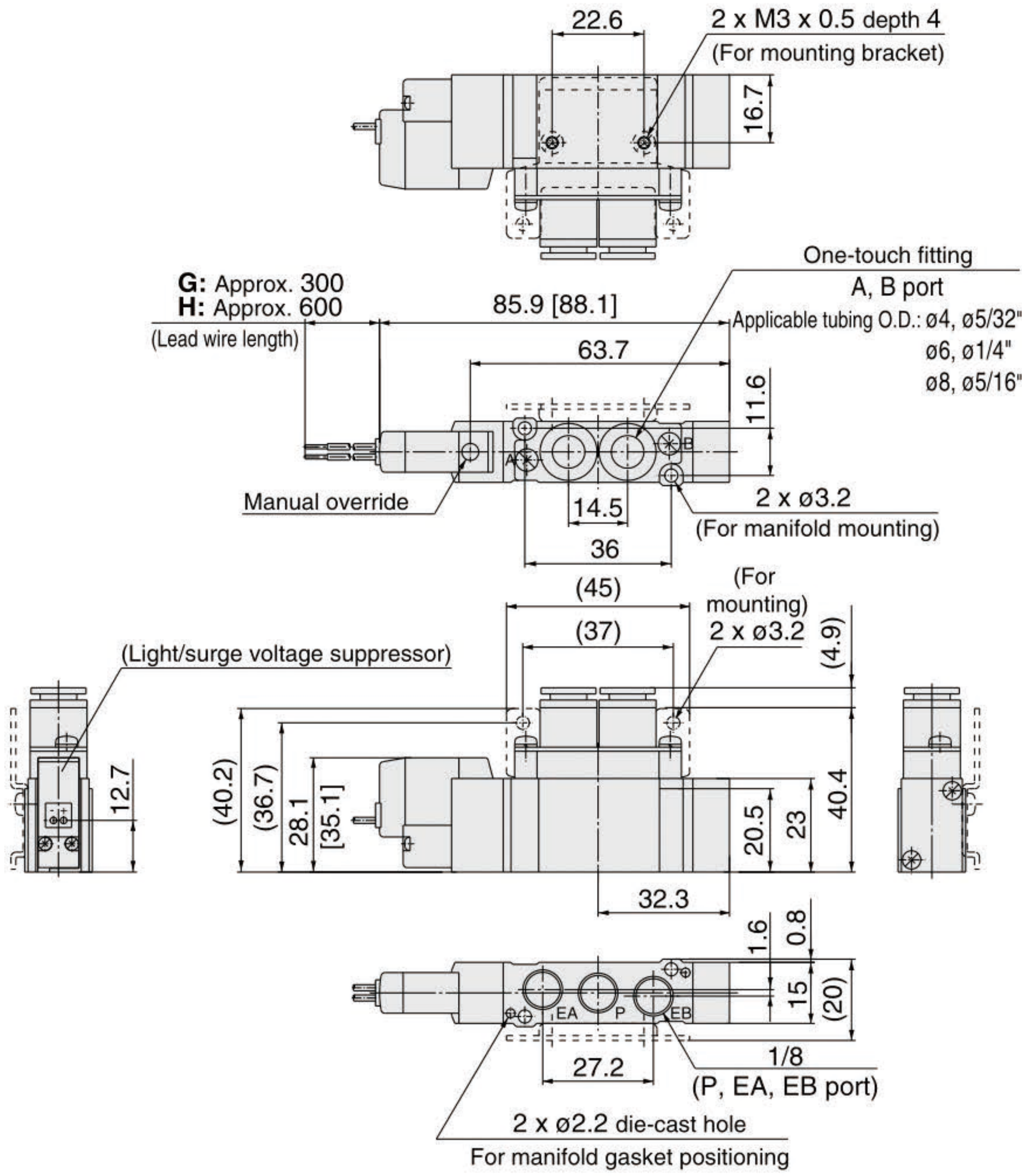


Dimensions: SY5000 Series

[]: AC

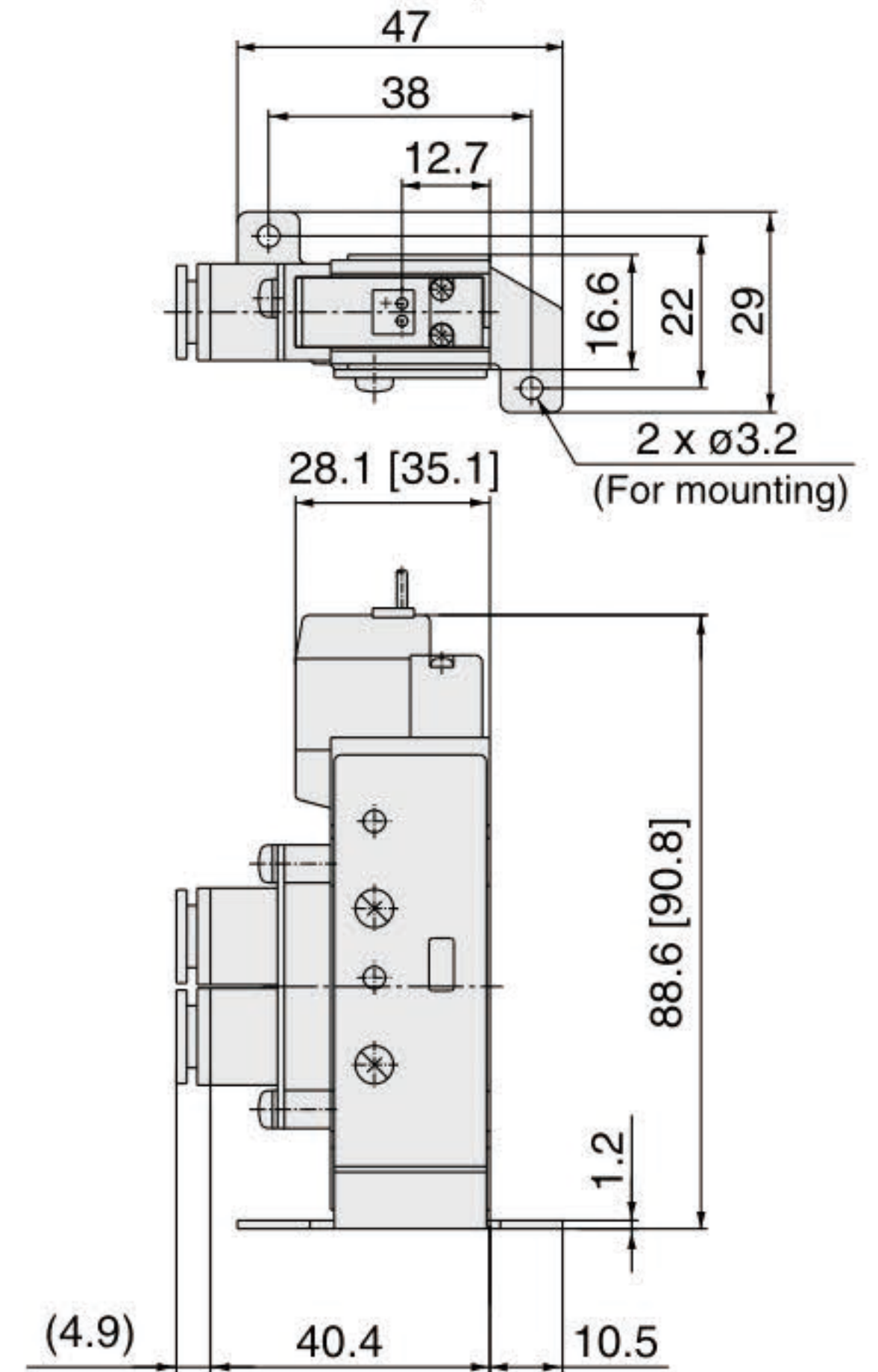
2 position single

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

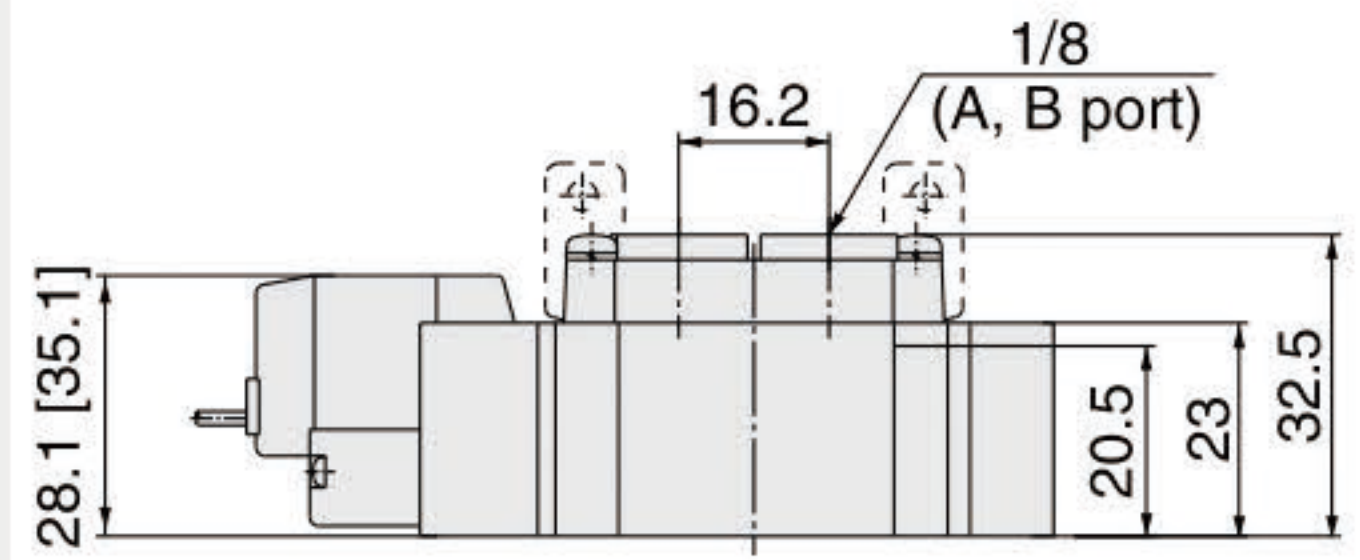


Foot bracket

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



SY5120-□_G□□-01□(-F₂)



L plug connector (L):

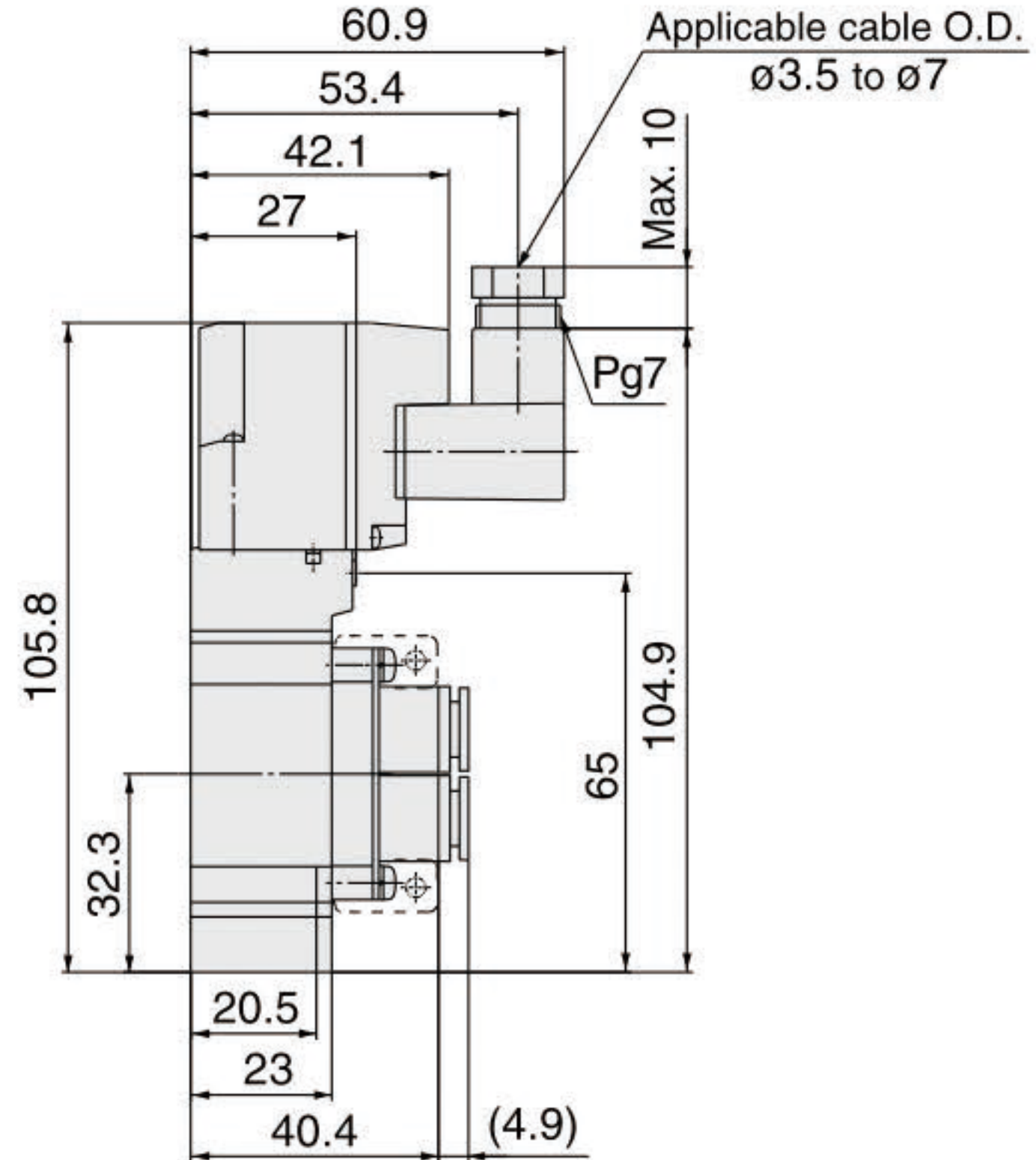
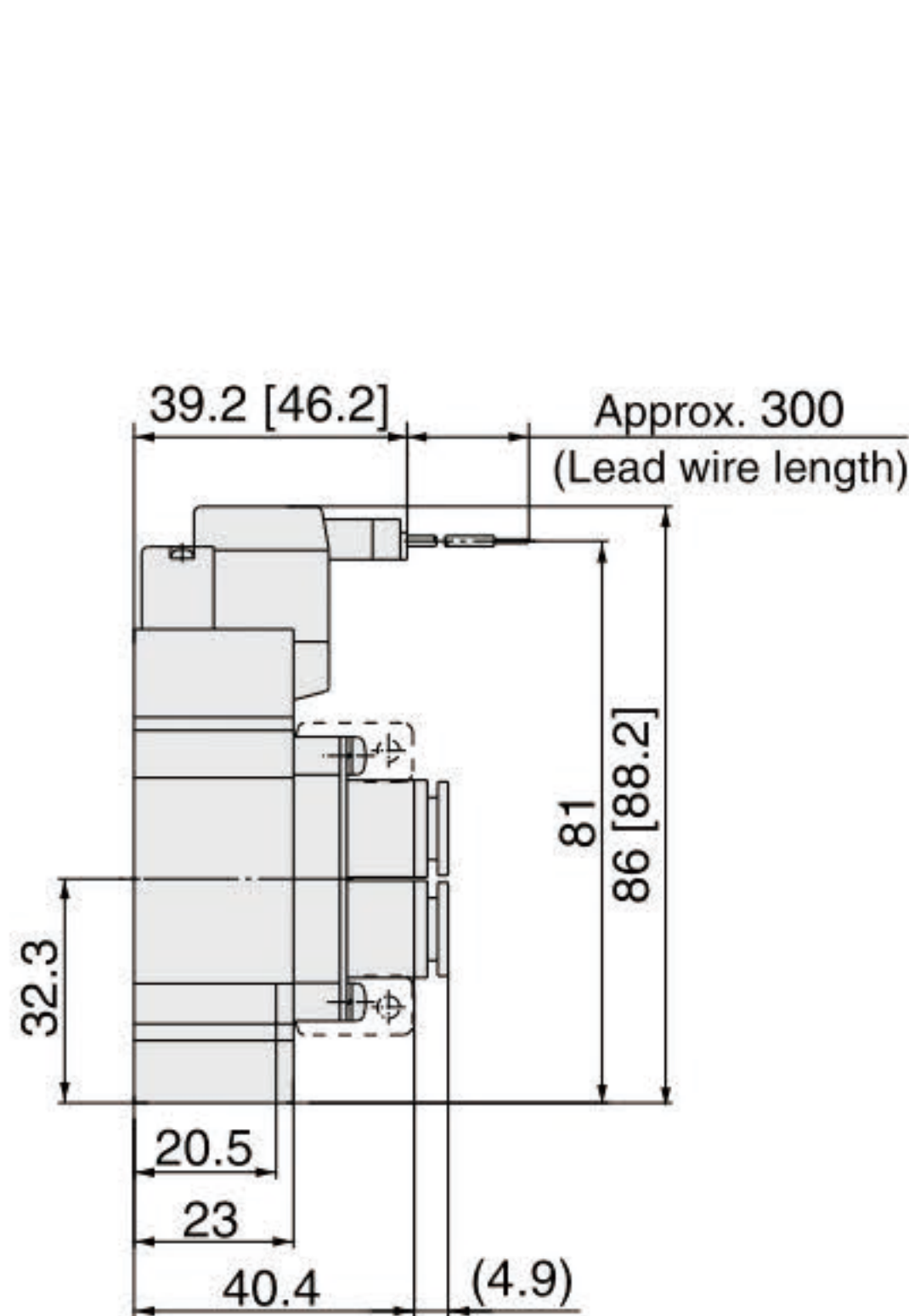
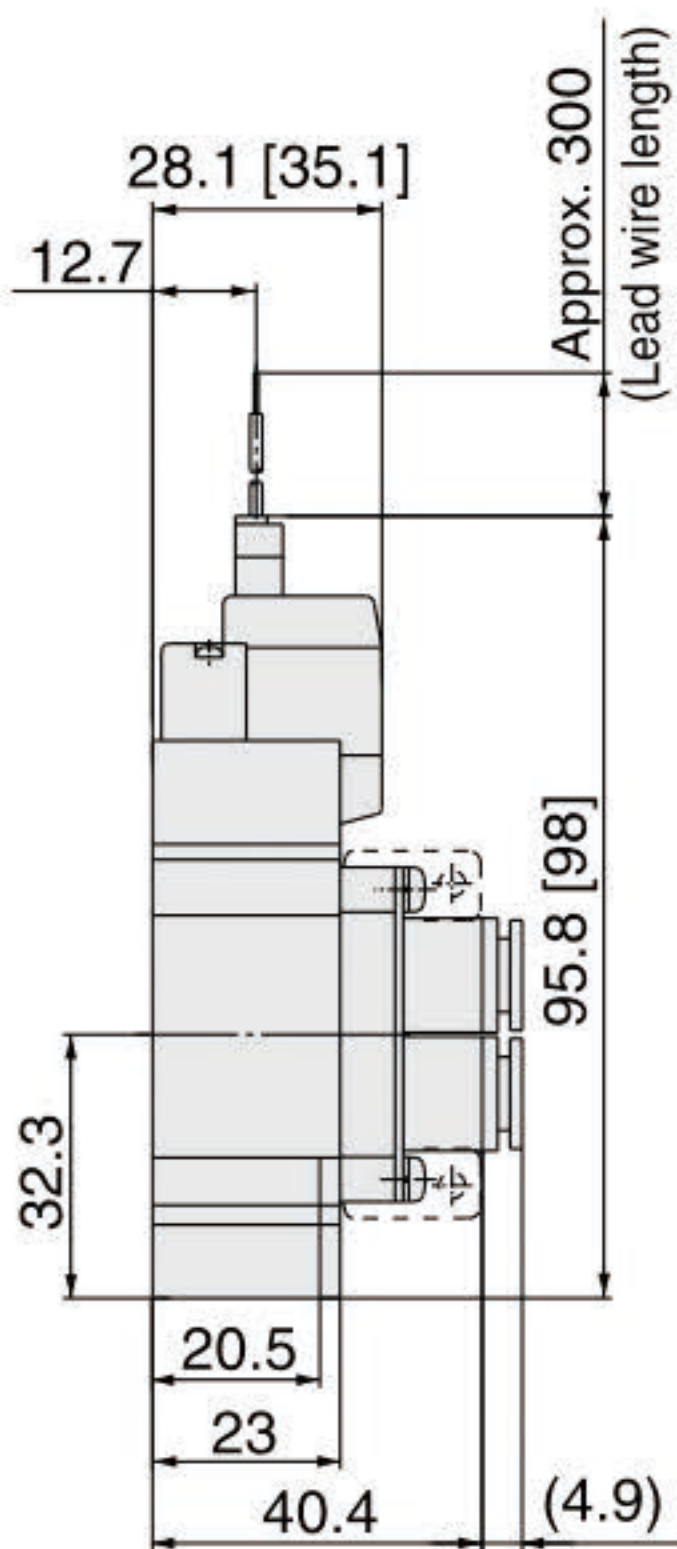
SY5120-□_L□□-^{C4, N3}_{C6, N7}□□(-F₂)
^{C8, N9}

M plug connector (M):

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

DIN terminal (D, Y):

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



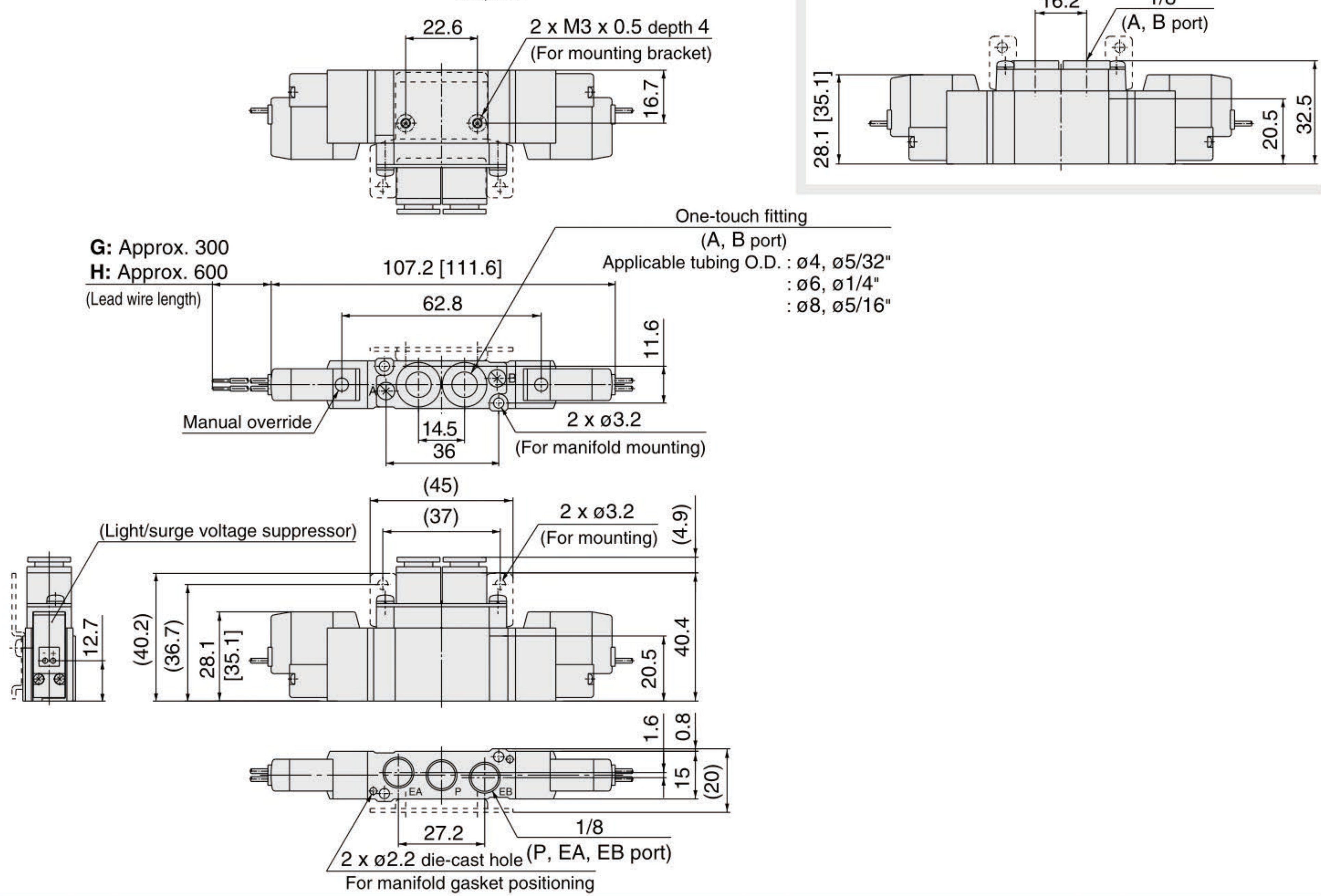
Dimensions: SY5000 Series

[]: AC

2 position double

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

SY5220-□_G□□-01□(-F2)



L plug connector (L):

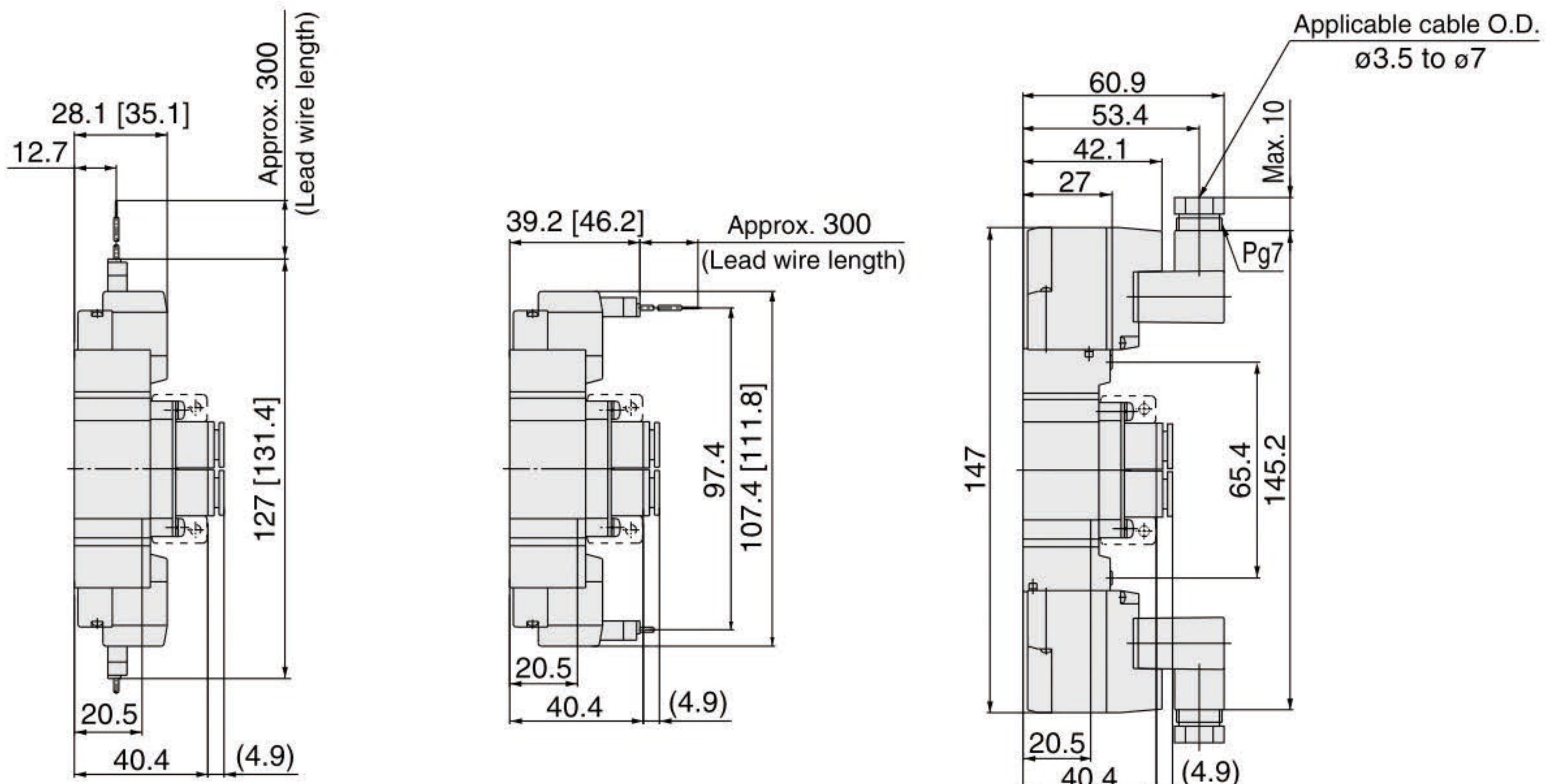
SY5220-□_L□□-C4, N3
C6, N7□(-F2)
C8, N9

M plug connector (M):

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

DIN terminal (D, Y):

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



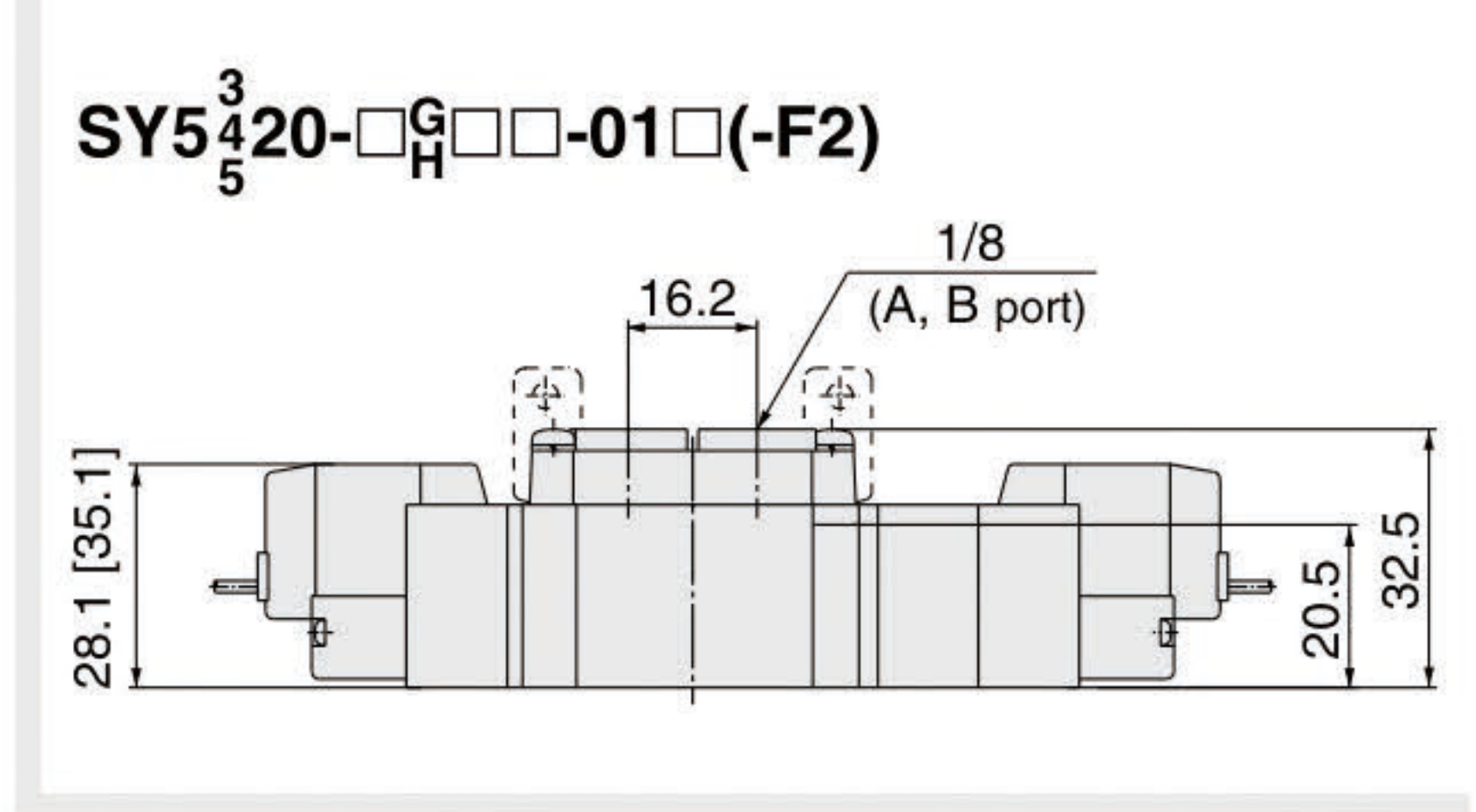
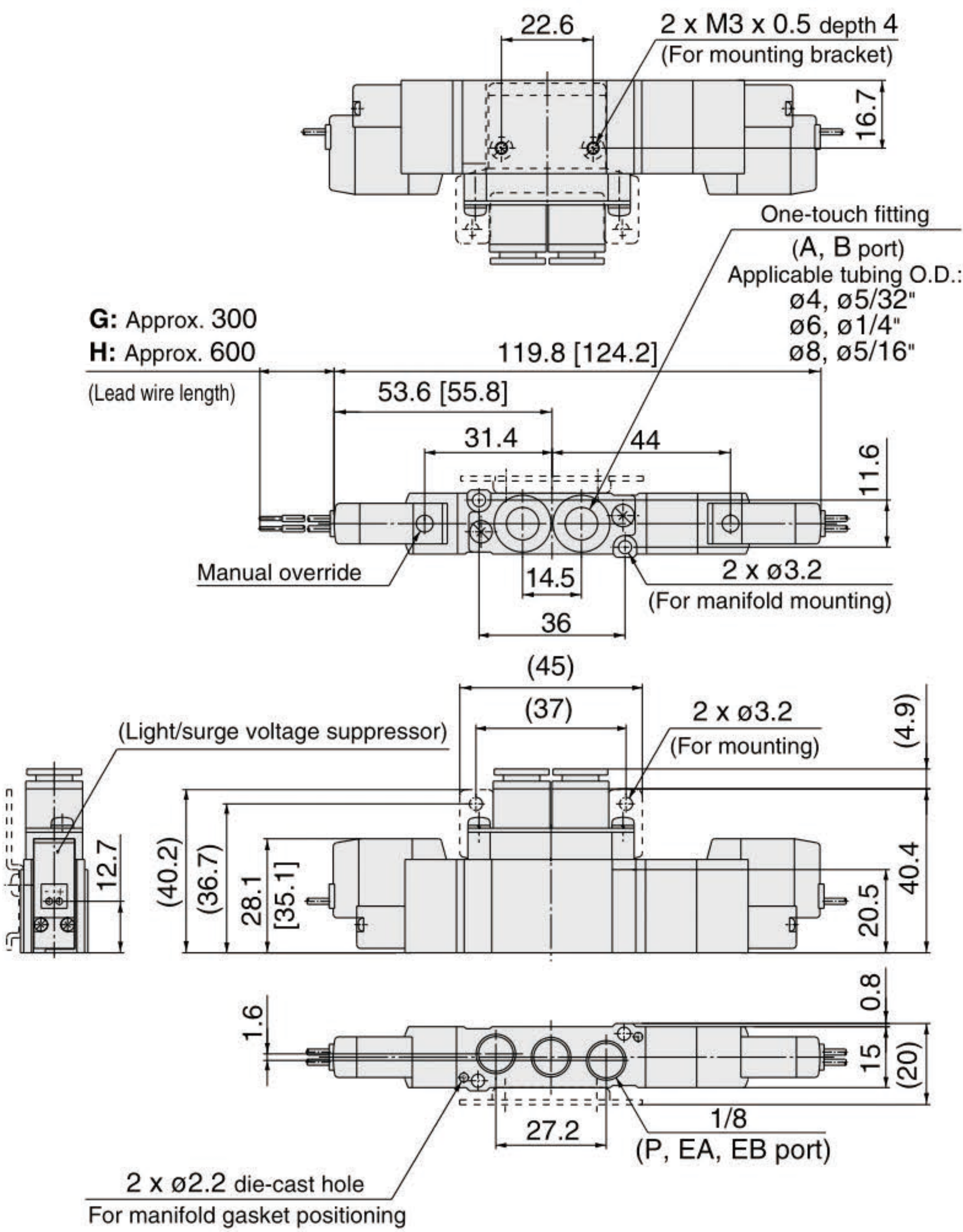
Dimensions: SY5000 Series

[] : AC

3 position closed center / exhaust center / pressure center

Grommet (G), (H): SY5³₅420-□^G□□-C_{4, N3}-C_{6, N7}□□(-F2)
C_{8, N9}

SY5³₅420-□^G□□-01□(-F2)



L plug connector (L):

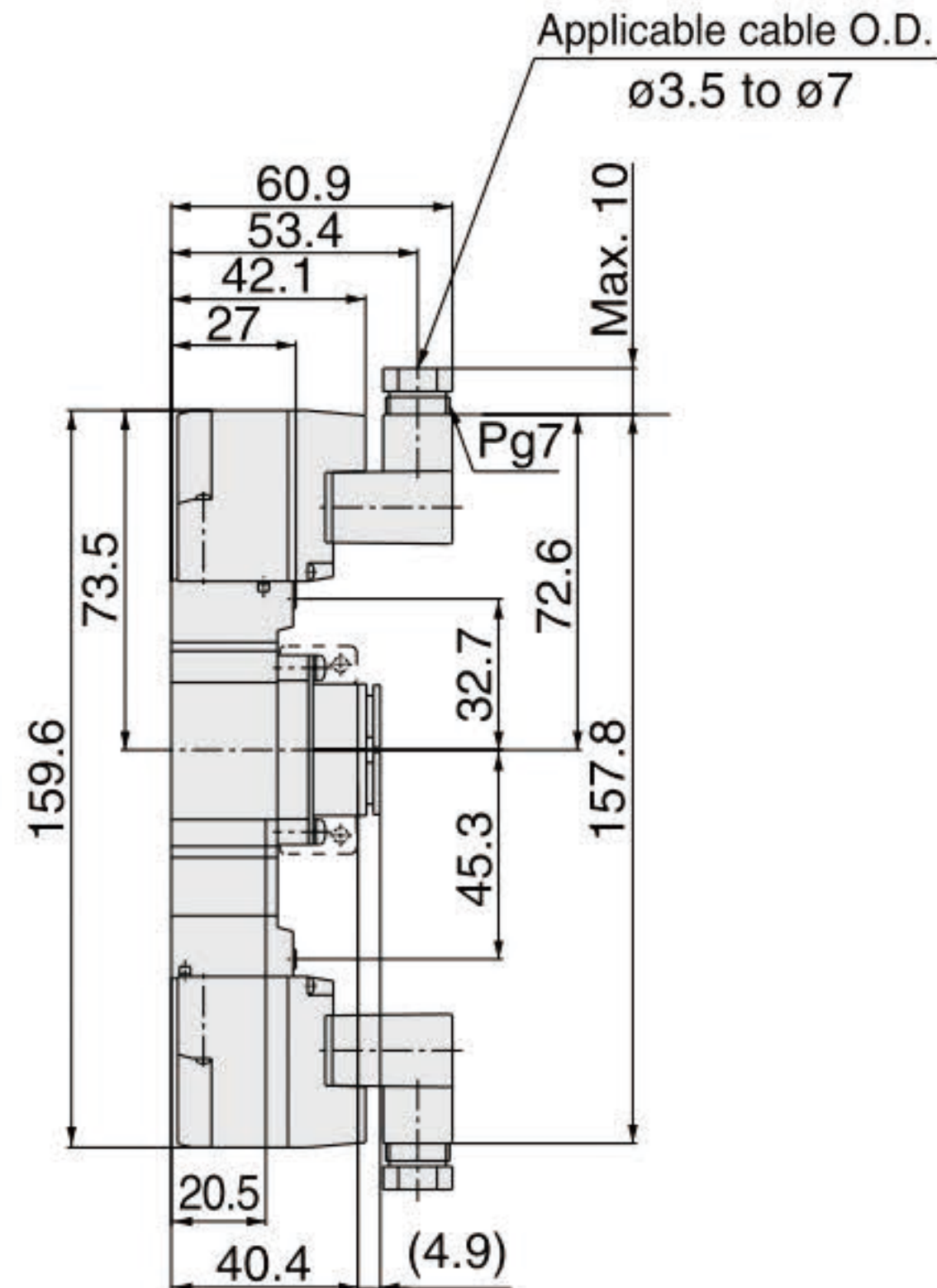
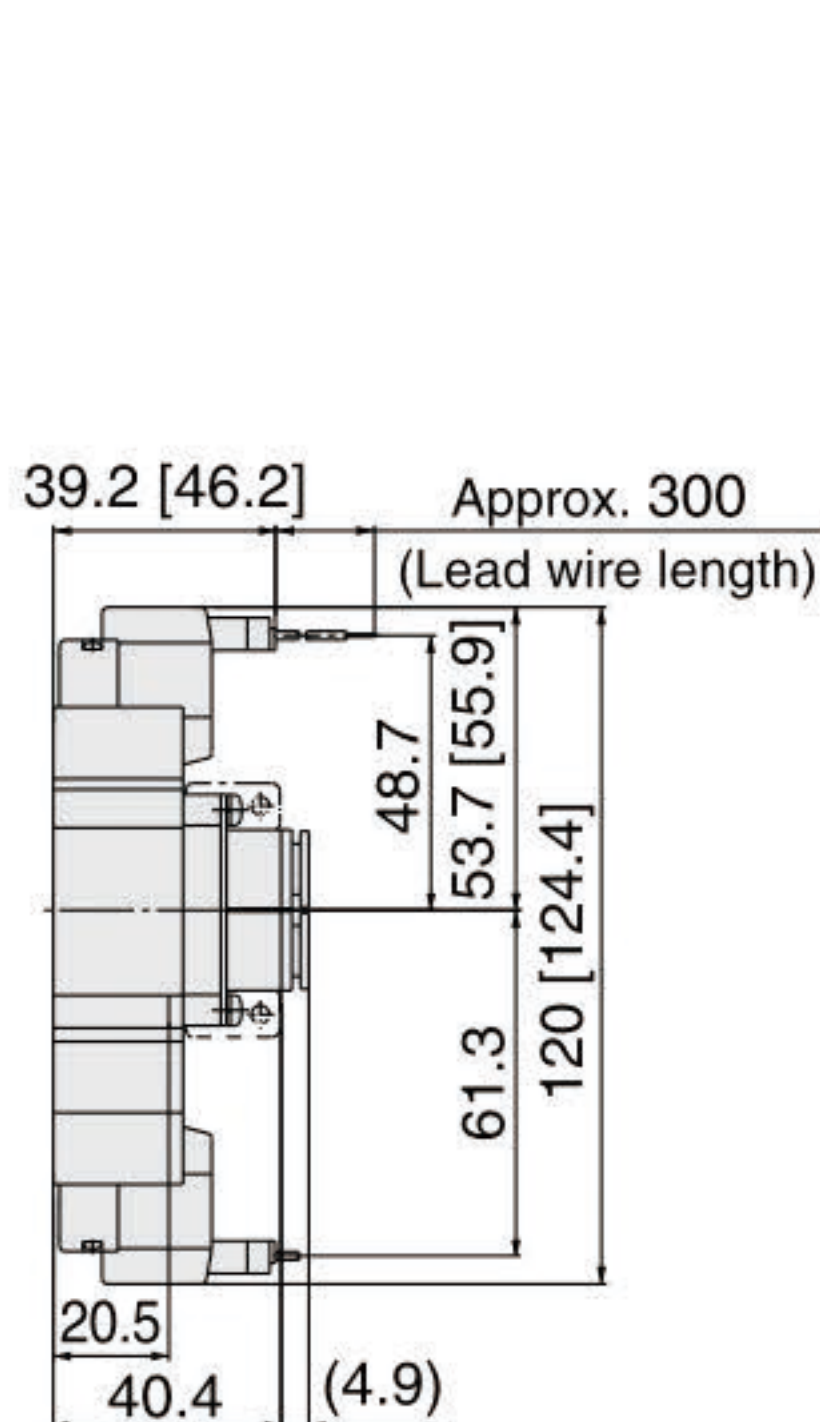
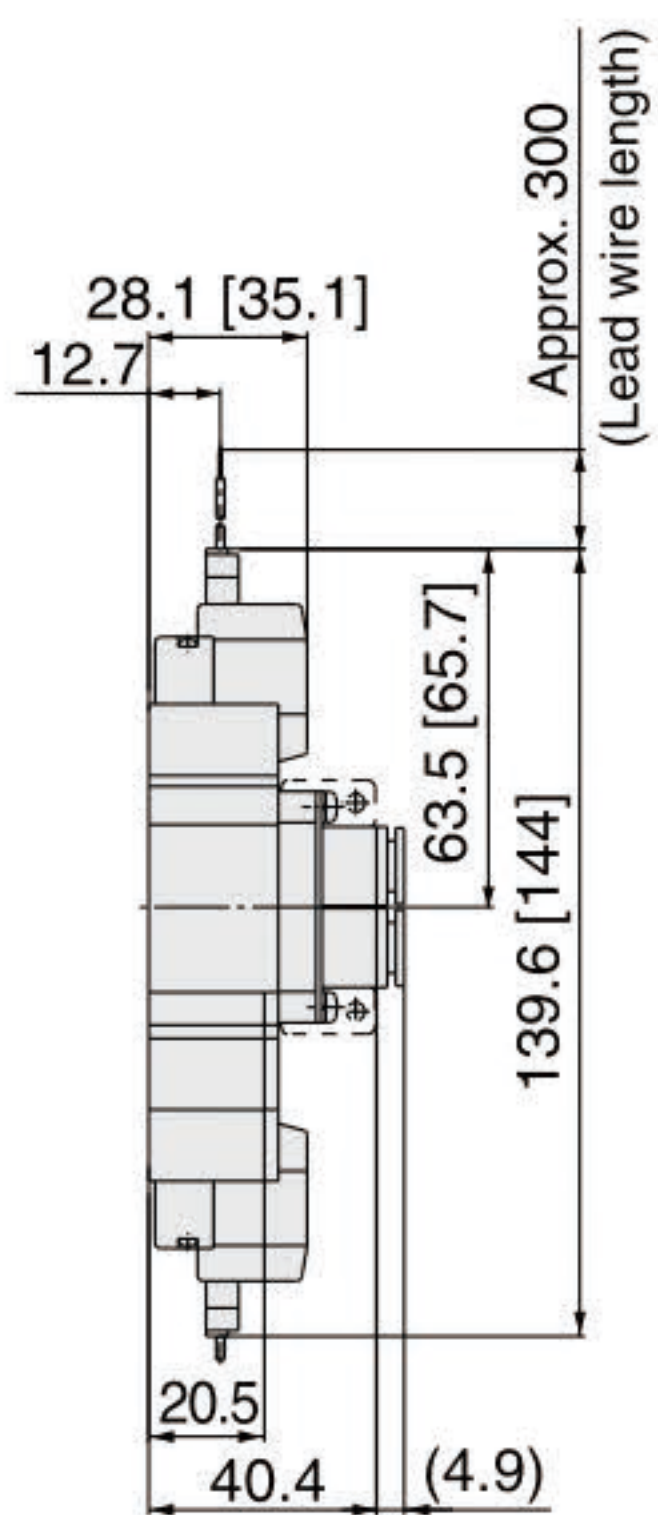
SY5³₅420-□^L□□-C_{4, N3}-C_{6, N7}□□(-F2)
C_{8, N9}

M plug connector (M):

SY5³₅420-□^M□□-C_{4, N3}-C_{6, N7}□□(-F2)
C_{8, N9}

DIN terminal (D, Y):

SY5³₅420-□^D□□-C_{4, N3}-C_{6, N7}□□(-F2)
C_{8, N9}



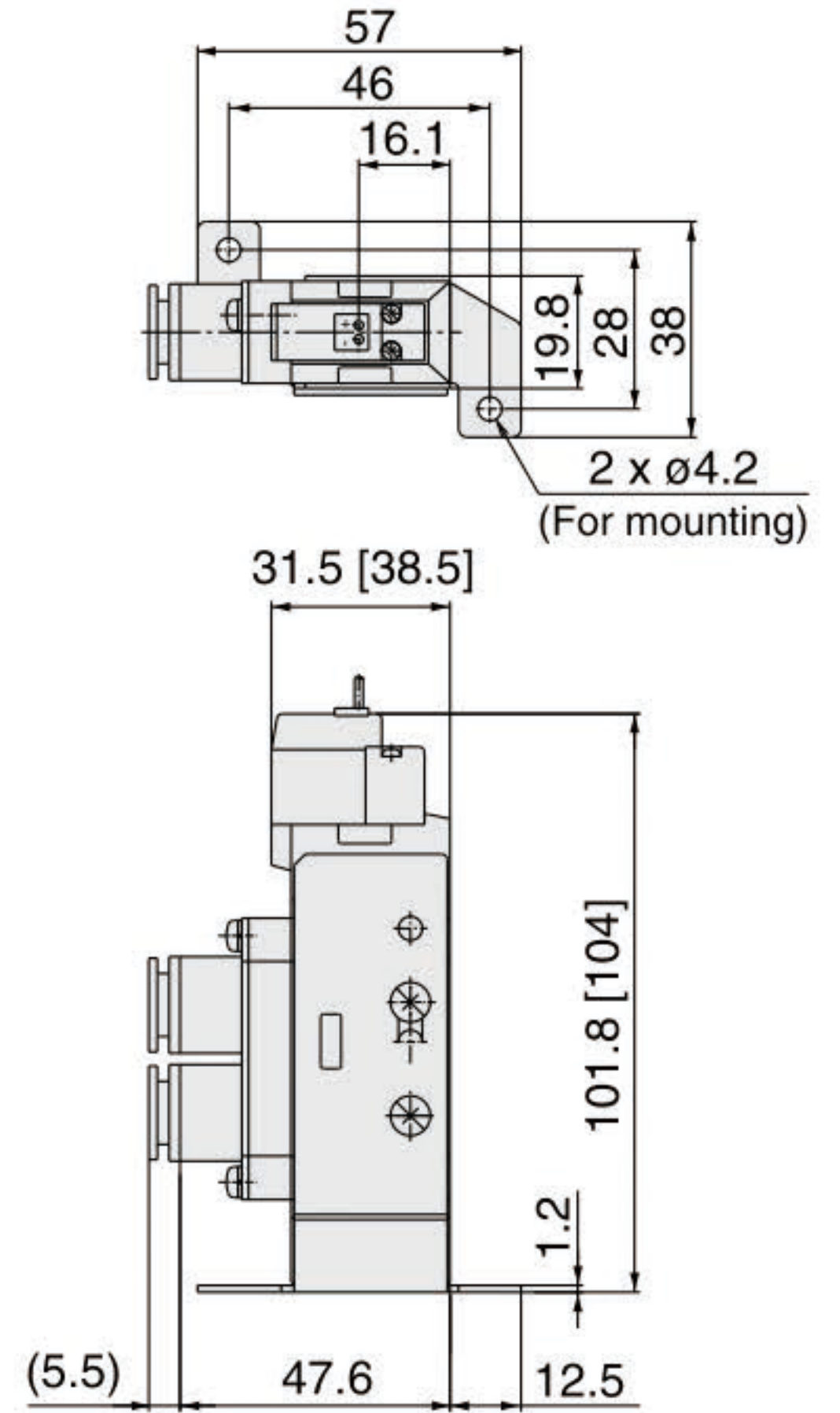
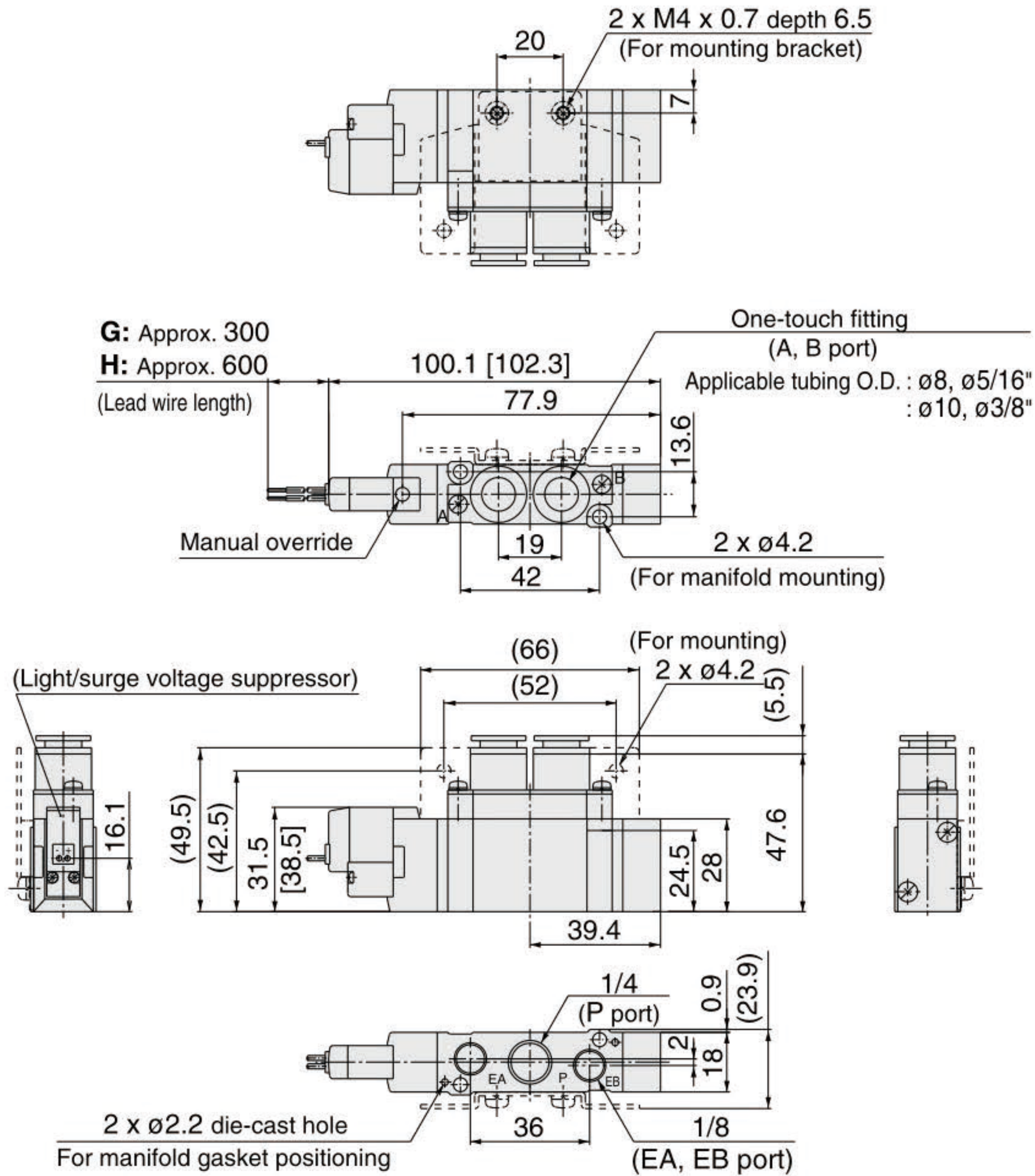
Dimensions: SY7000 Series

[]: AC

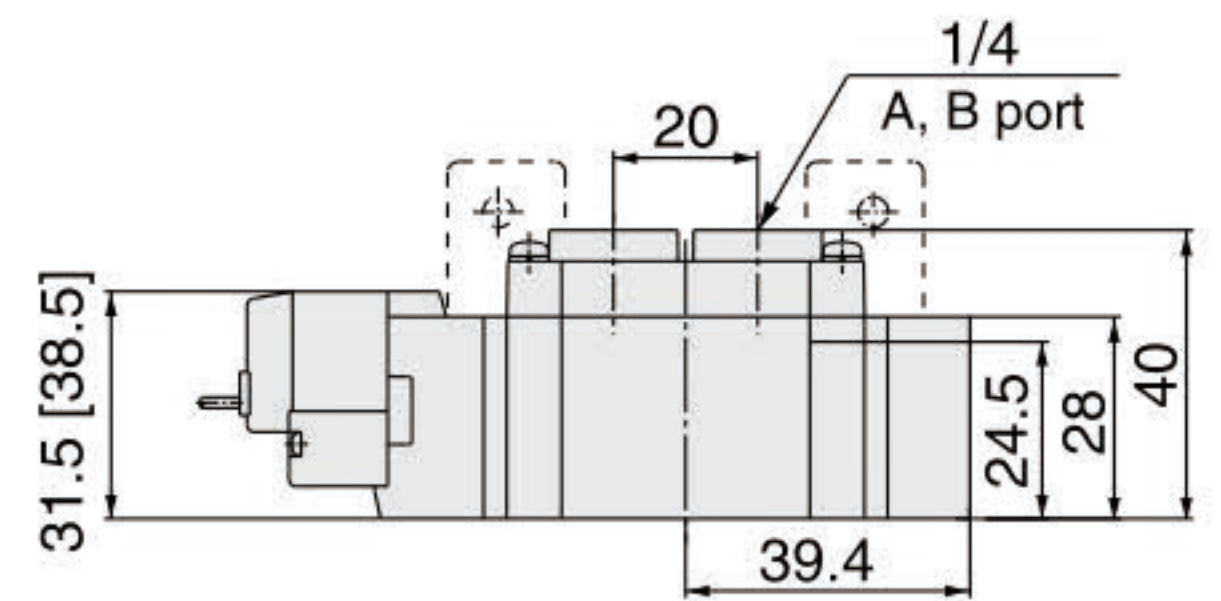
2 position single

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

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



SY7120-□_G□_H□-02□(-F2)



L plug connector (L):

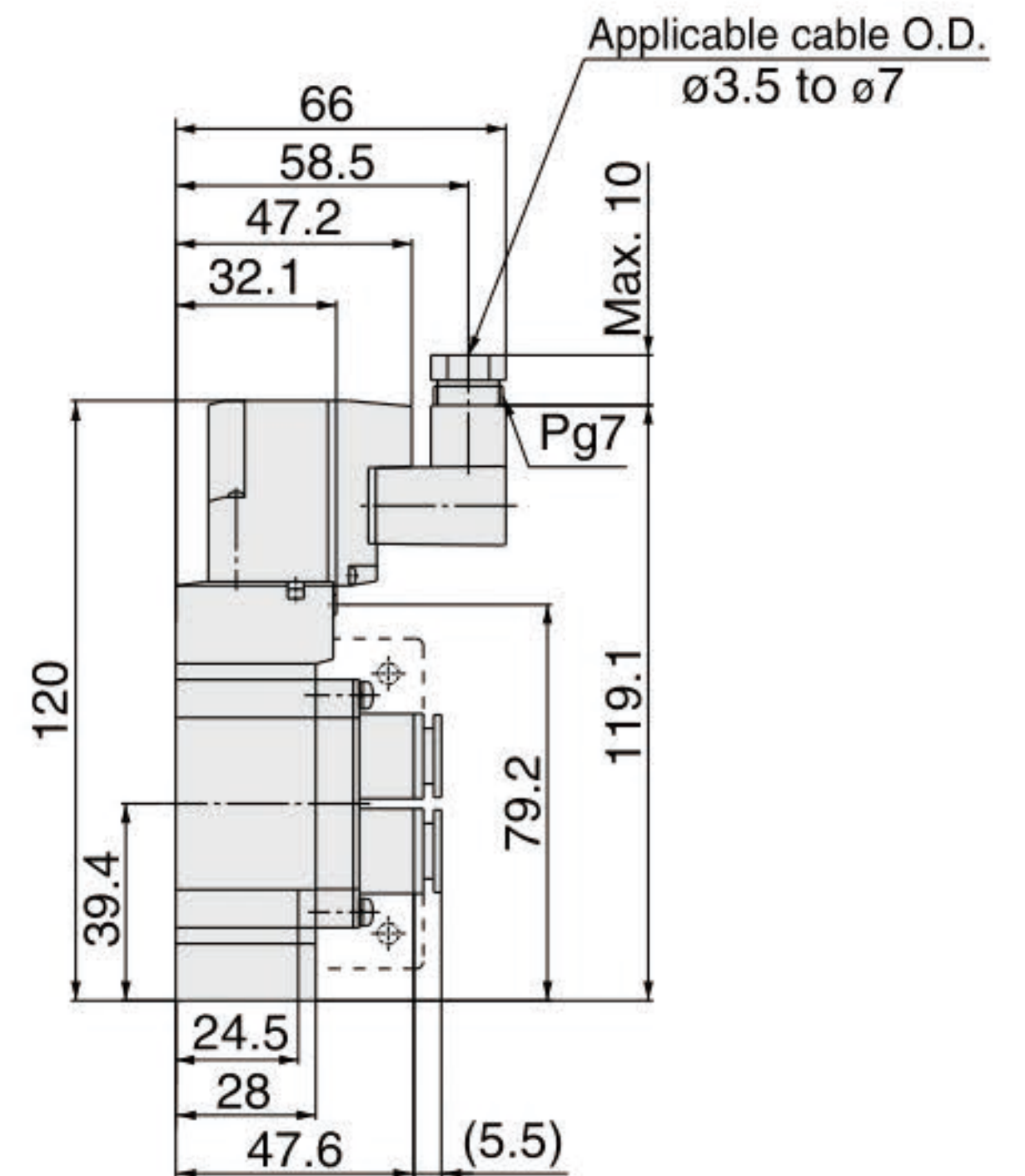
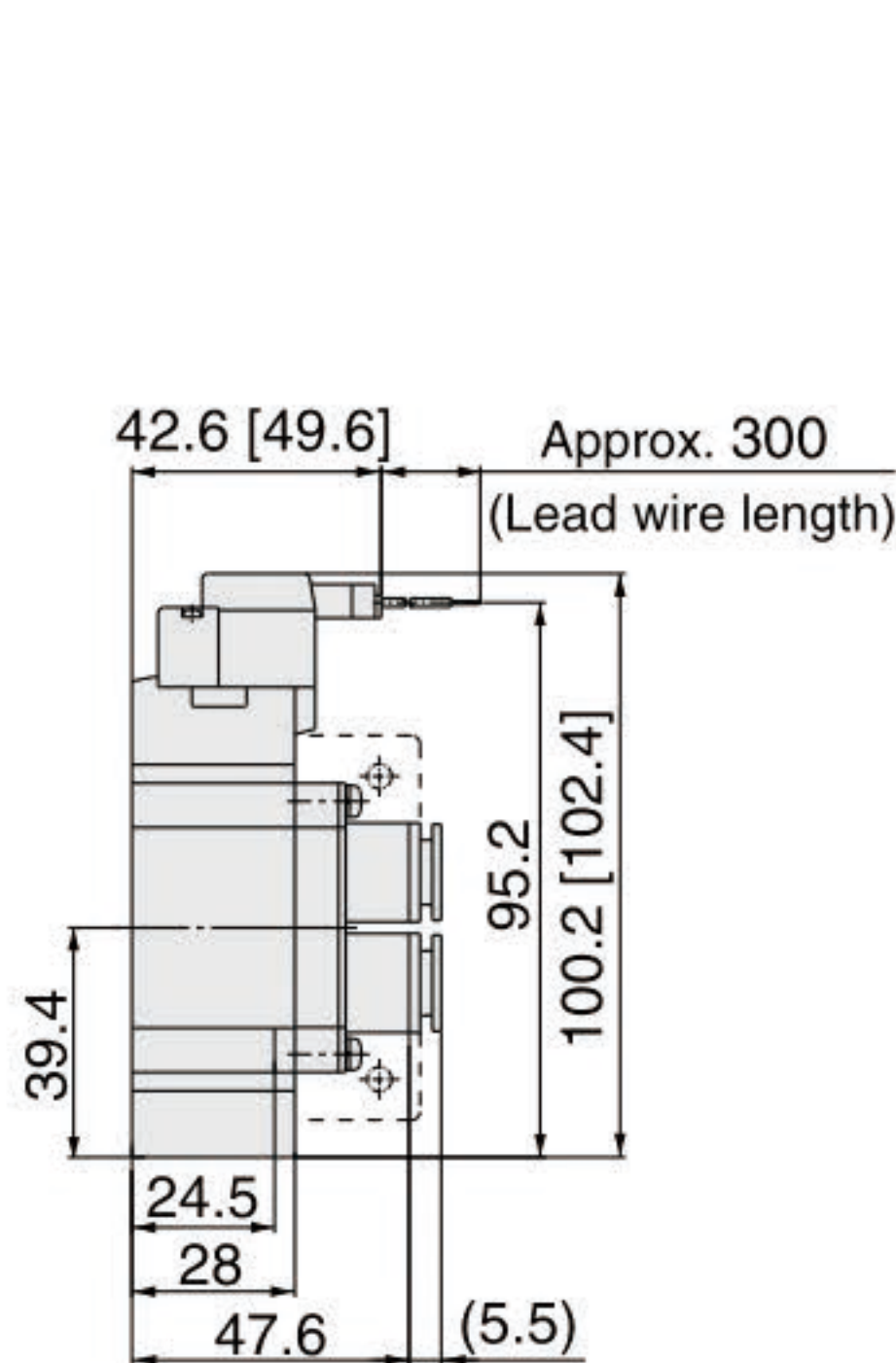
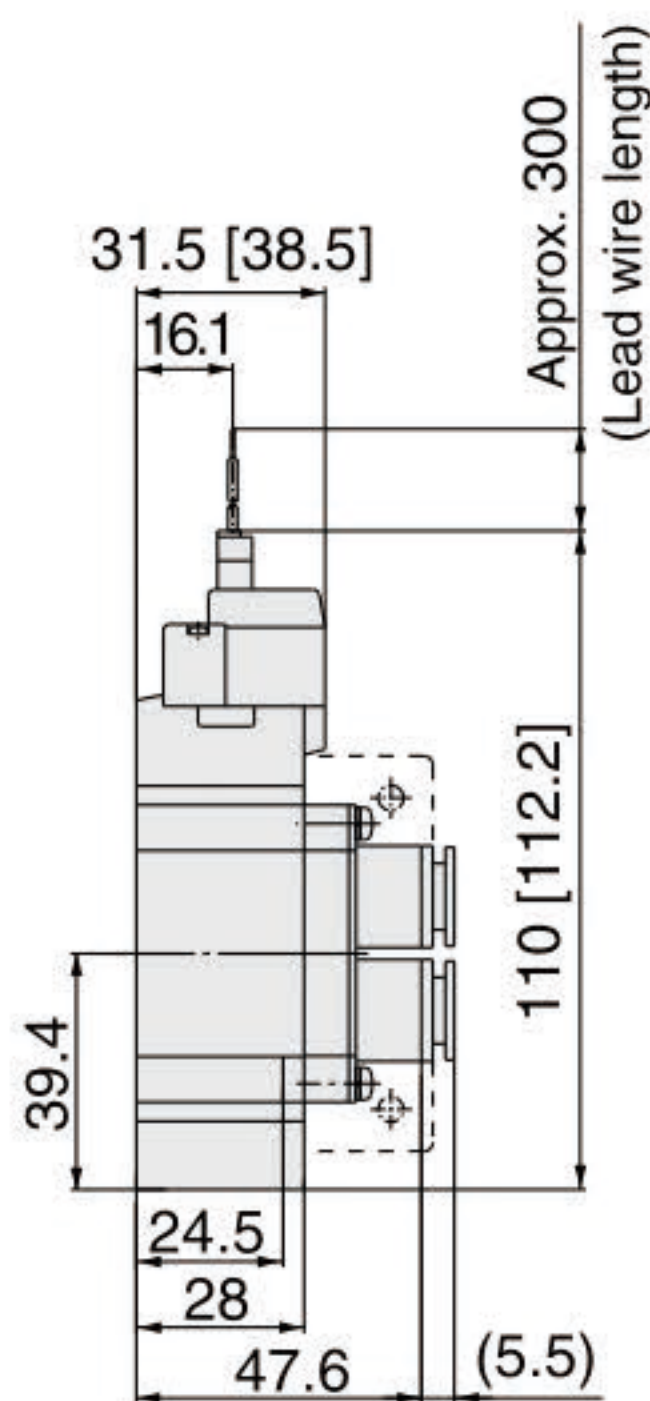
SY7120-□L□□_{C8, N9}□_{C10, N11}□(-F₂¹)

M plug connector (M):

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

DIN terminal (D, Y):

SY7120-□_D□_Y□□_{C8, N9}□_{C10, N11}□(-F₂¹)



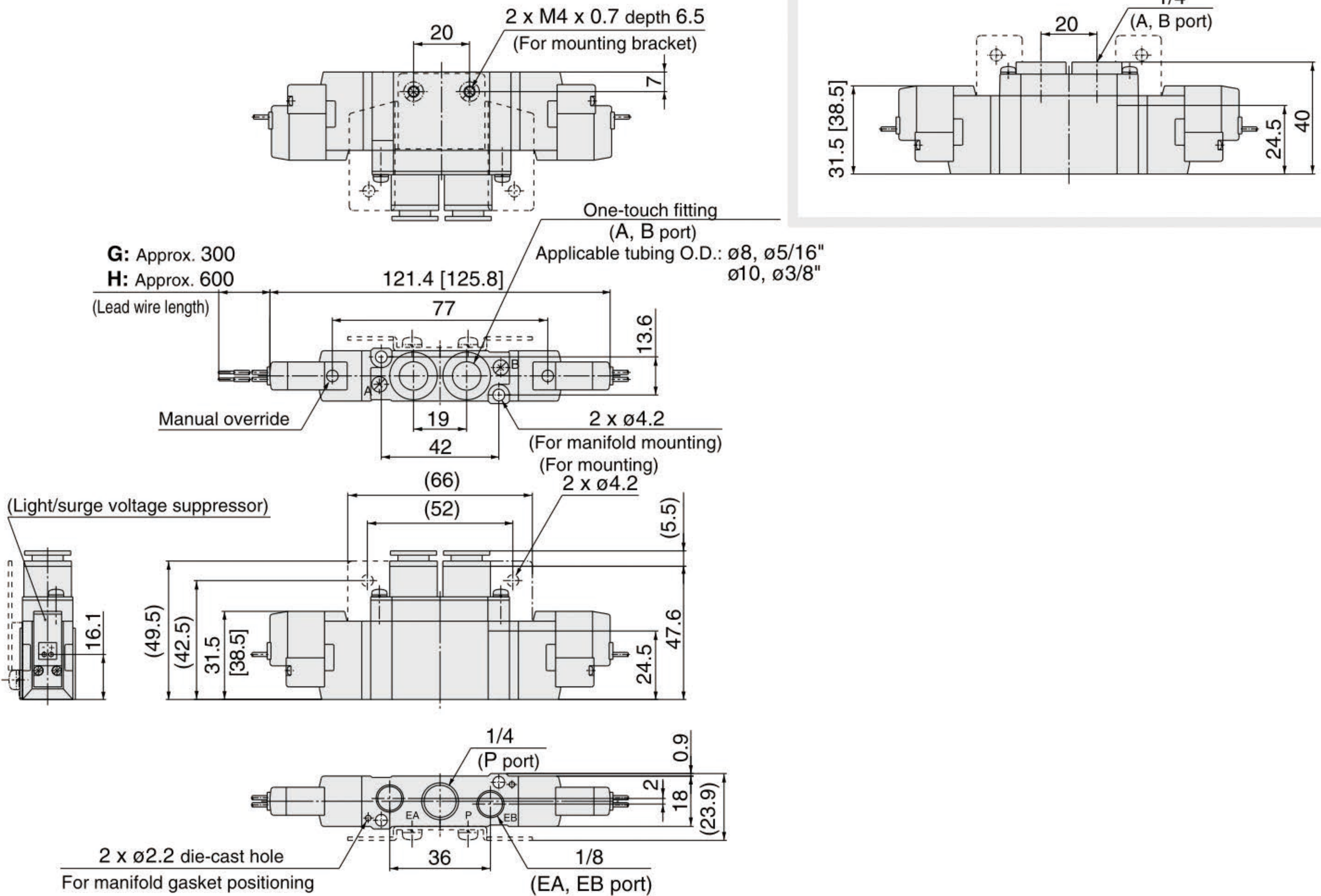
Dimensions: SY7000 Series

[]: AC

2 position double

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

SY7220-□_G□□-02□(-F2)



L plug connector (L):

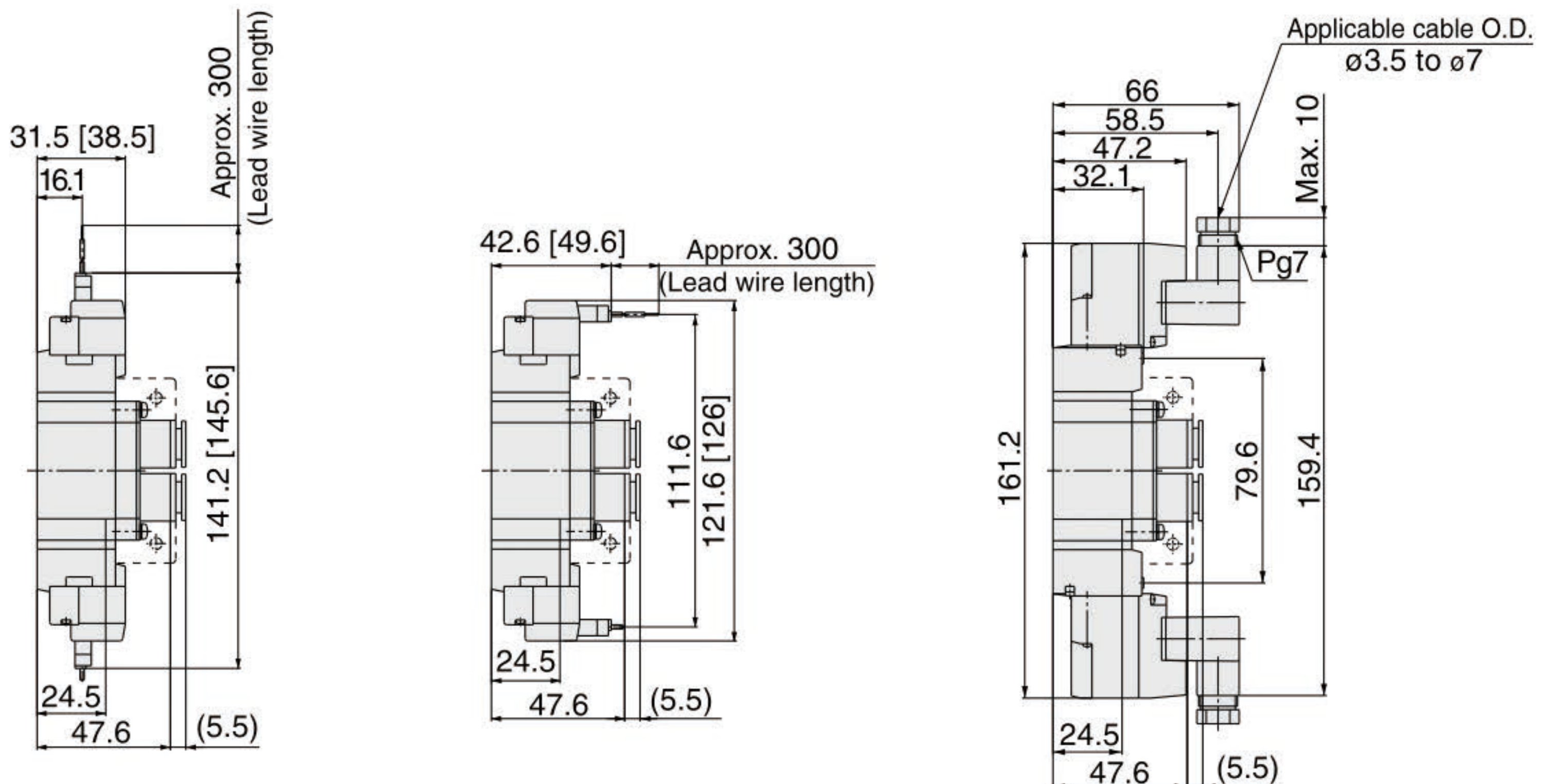
SY7220-□_L□□-C8, N9 □(-F2)
C10, N11 □

M plug connector (M):

SY7220-□_M□□-C8, N9 □(-F2)
C10, N11 □

DIN terminal (D, Y):

SY7220-□_D□□-C8, N9 □(-F2)
C10, N11 □



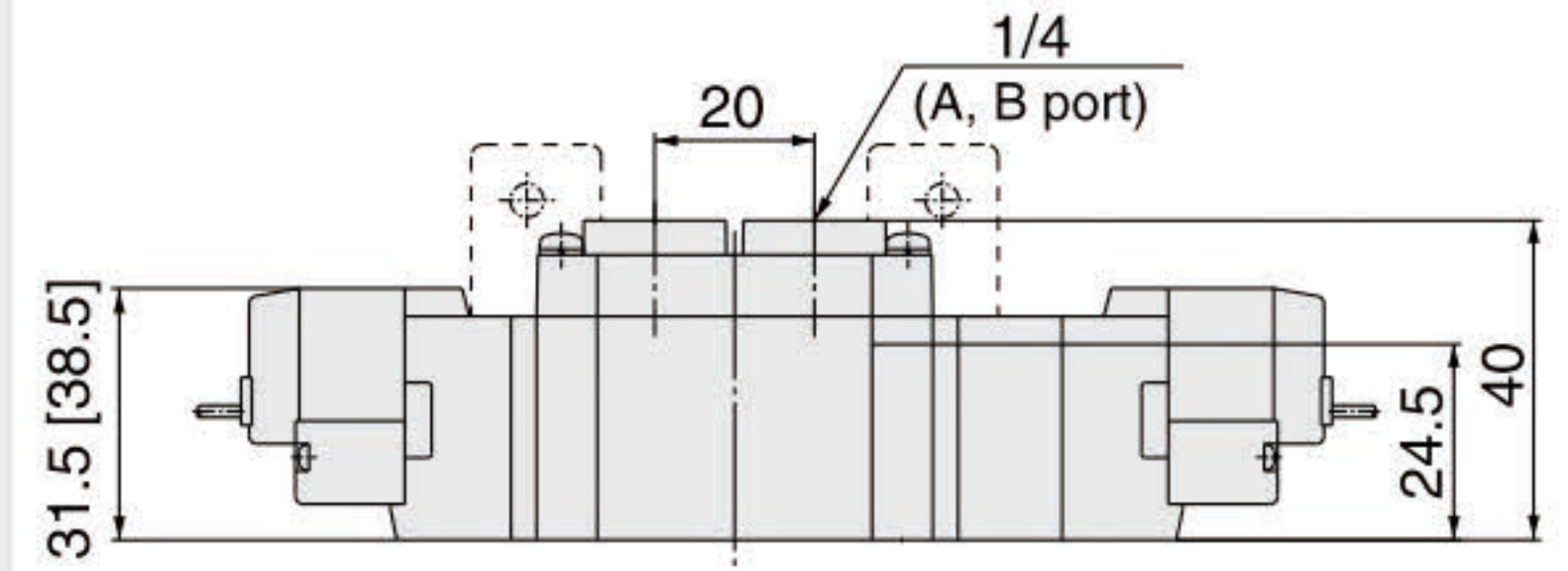
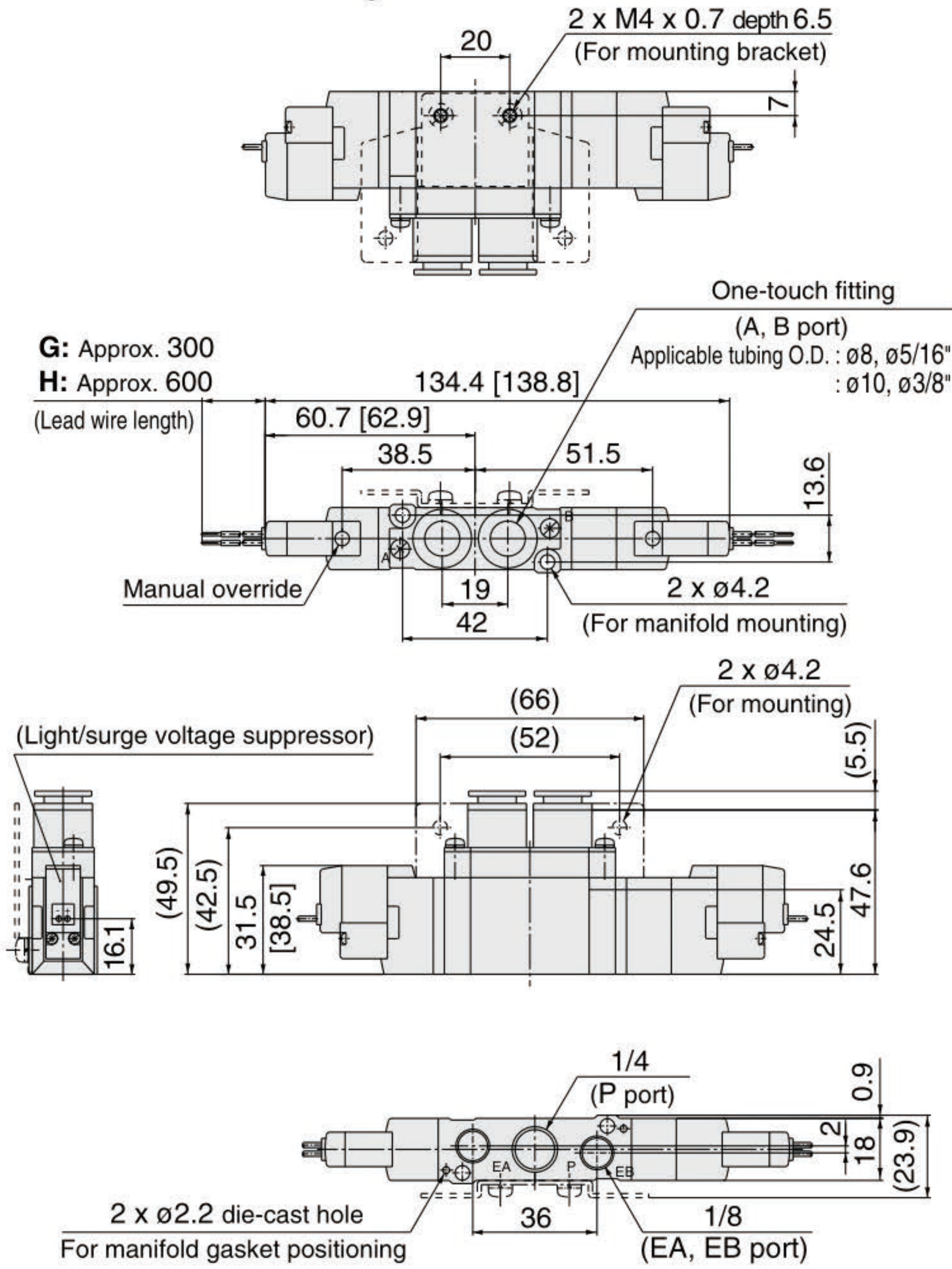
Dimensions: SY7000 Series

[]: AC

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):

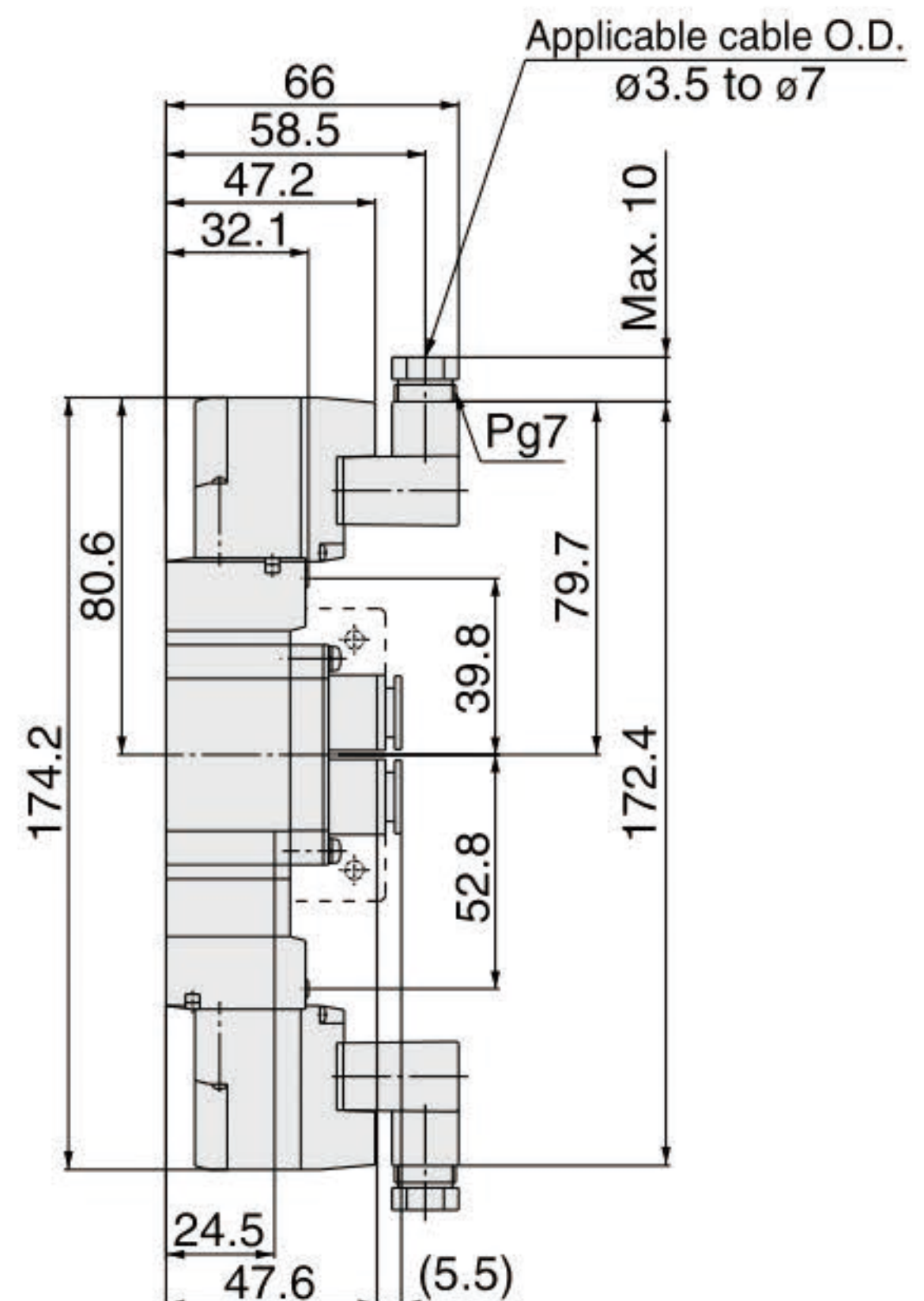
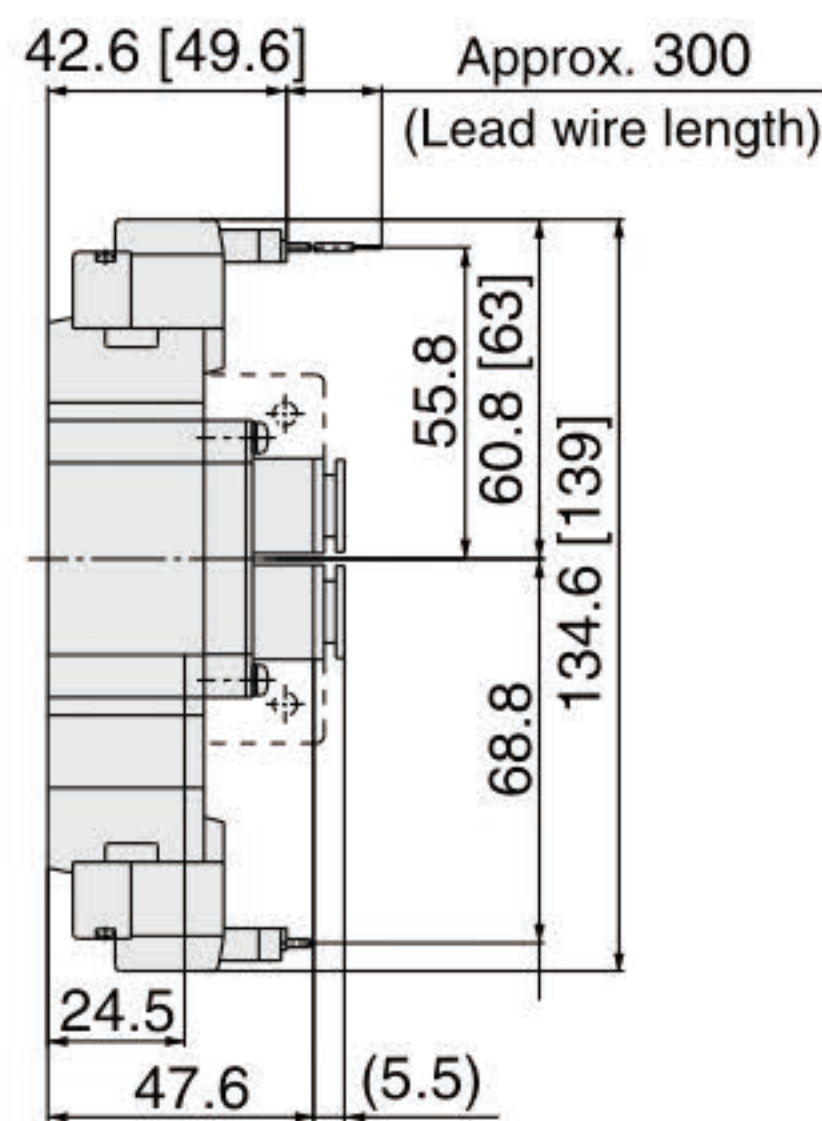
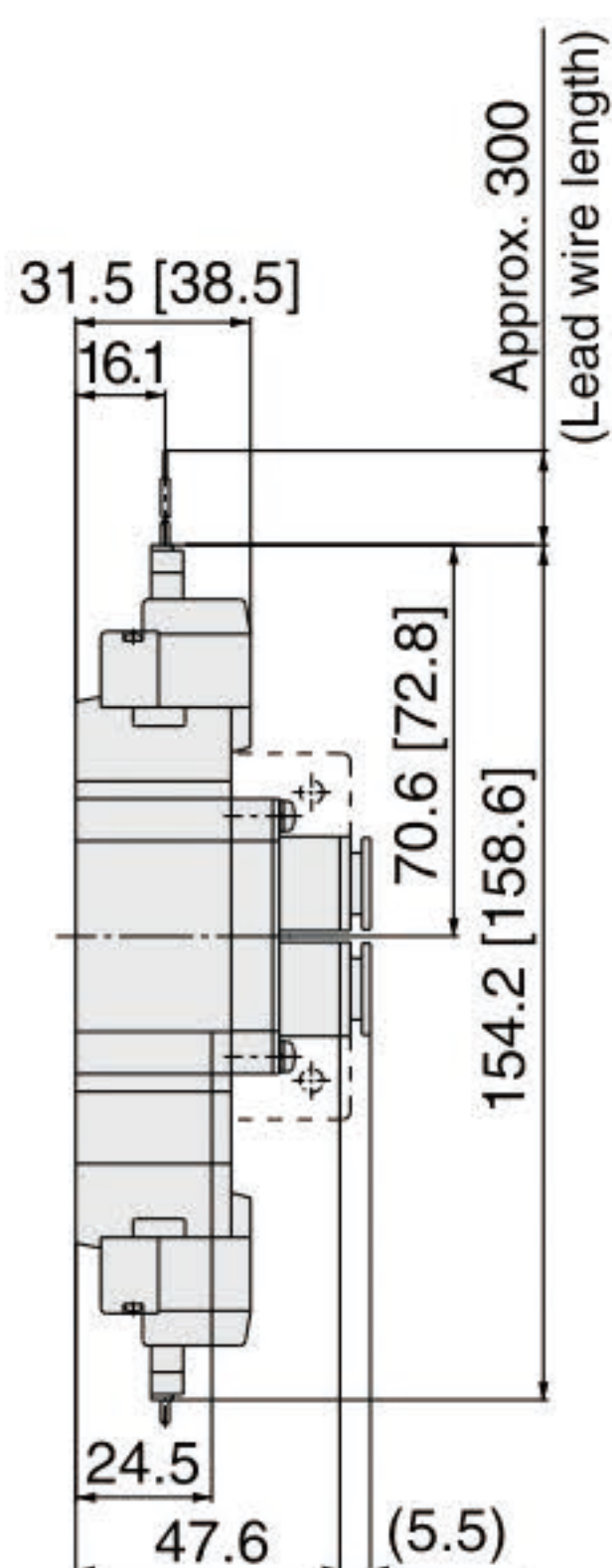
SY7³/₅20-□^L□□-C8, N9□(-F2)
C10, N11□(-F2)

M plug connector (M):

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

DIN terminal (D, Y):

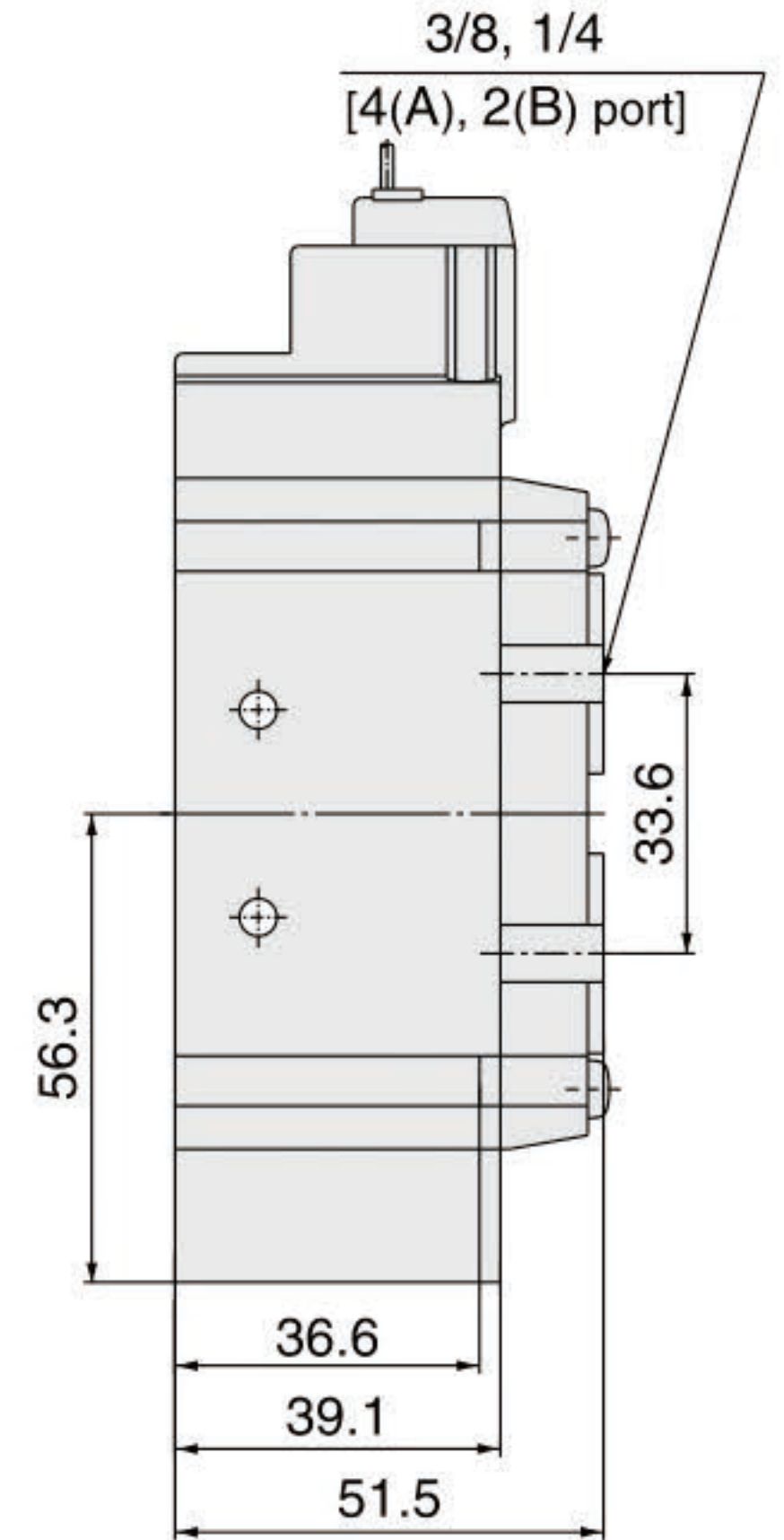
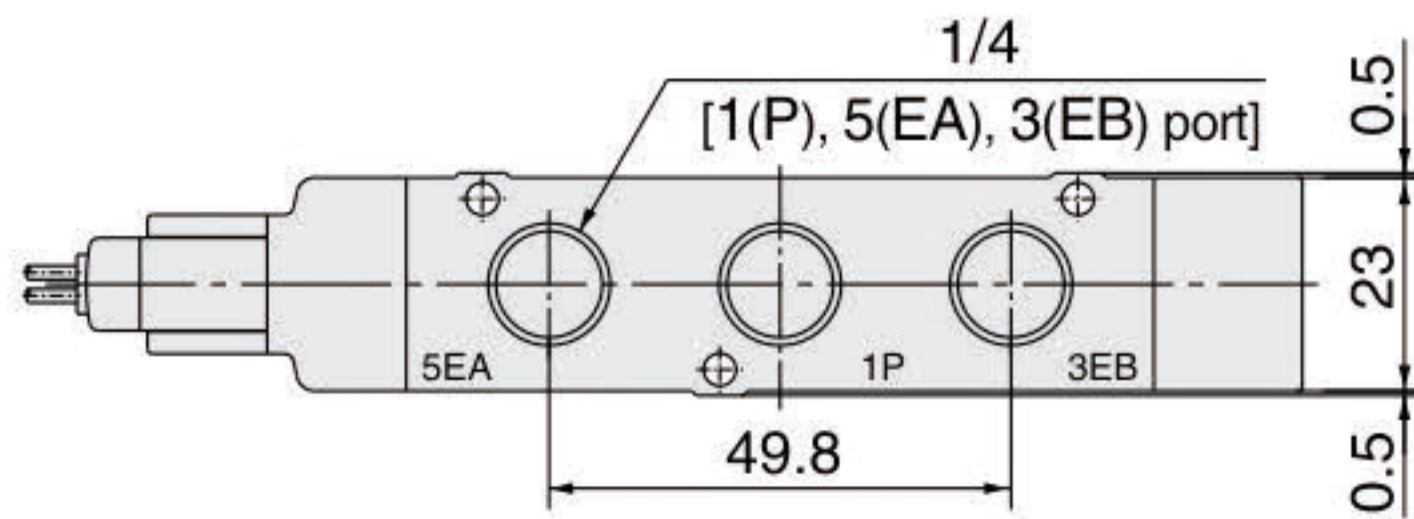
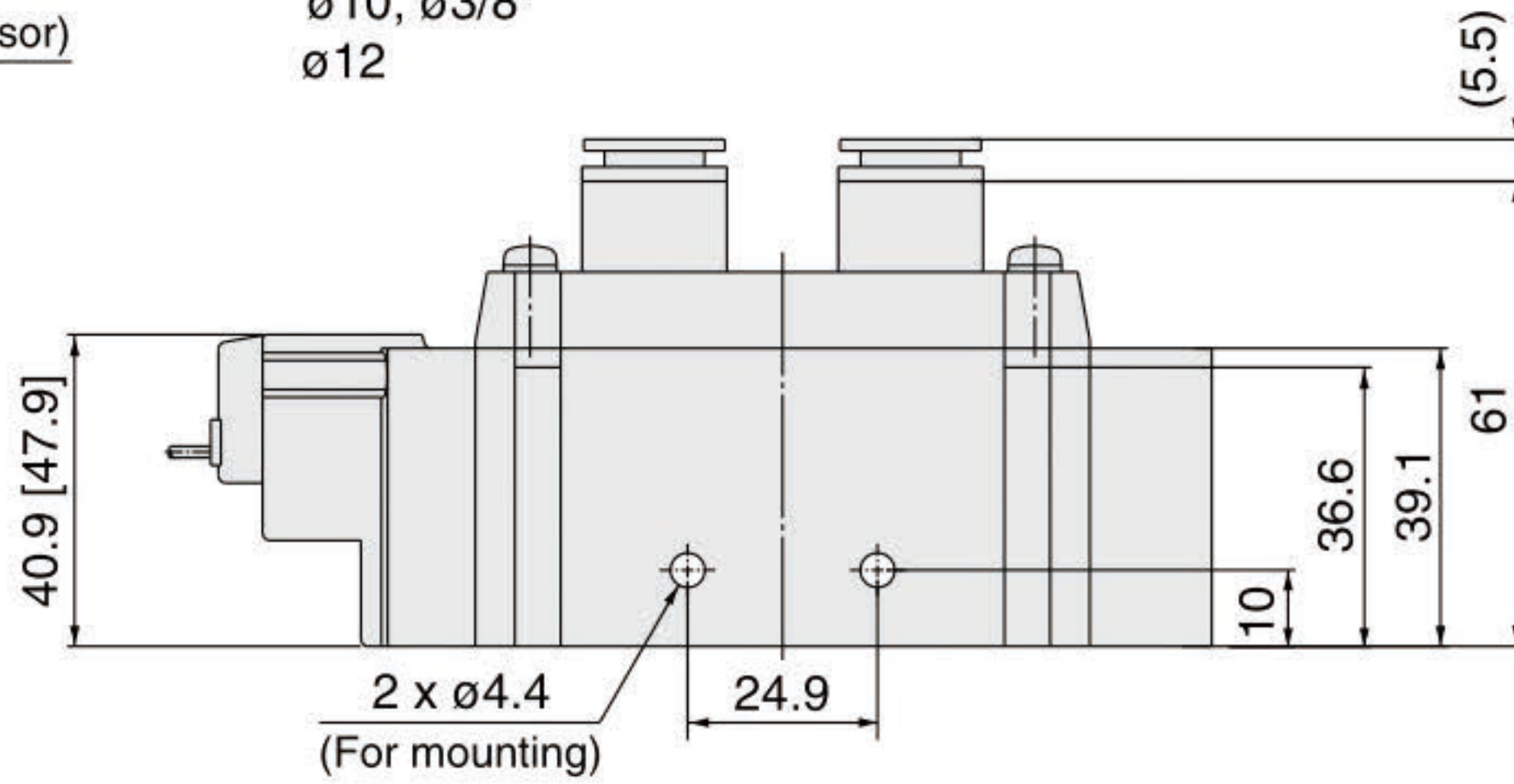
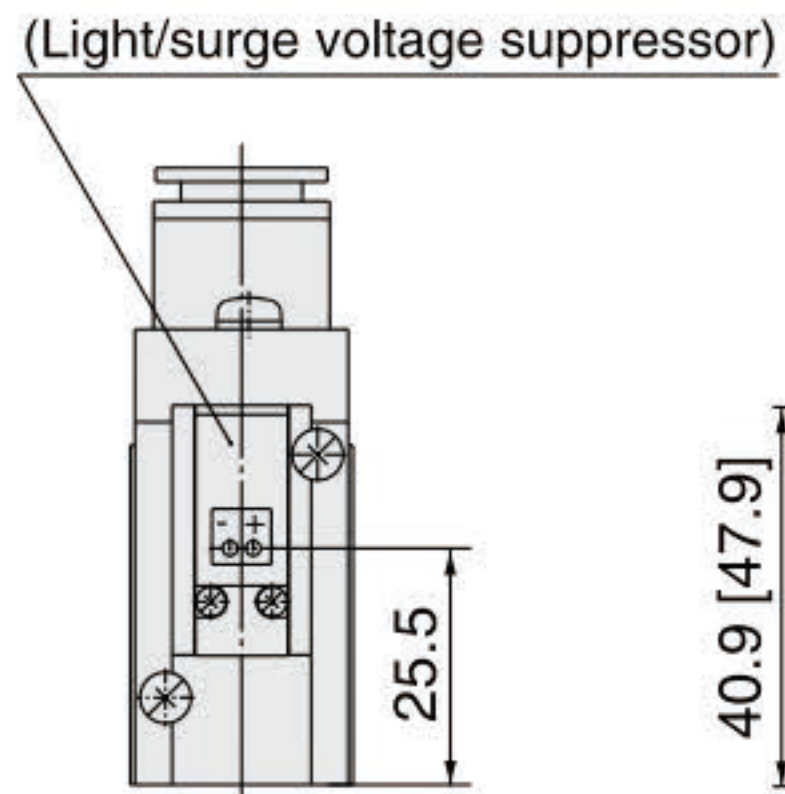
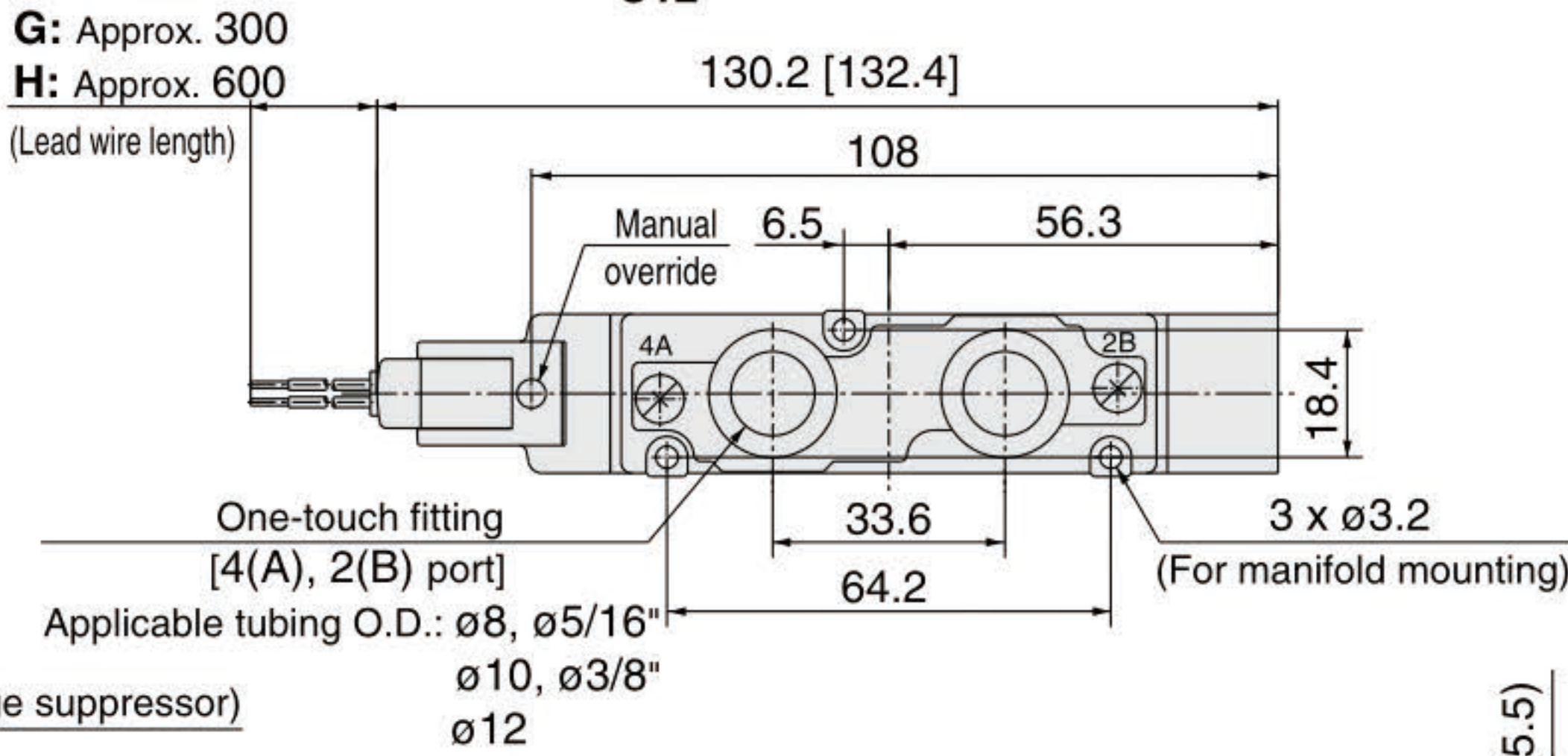
SY7³/₅20-□^D□□-C8, N9□(-F2)
C10, N11□(-F2)



Dimensions: SY9000 Series

2 position single
Grommet (G), (H): SY9120-□_G□□-C10, N11□
 C8, N9
 C12

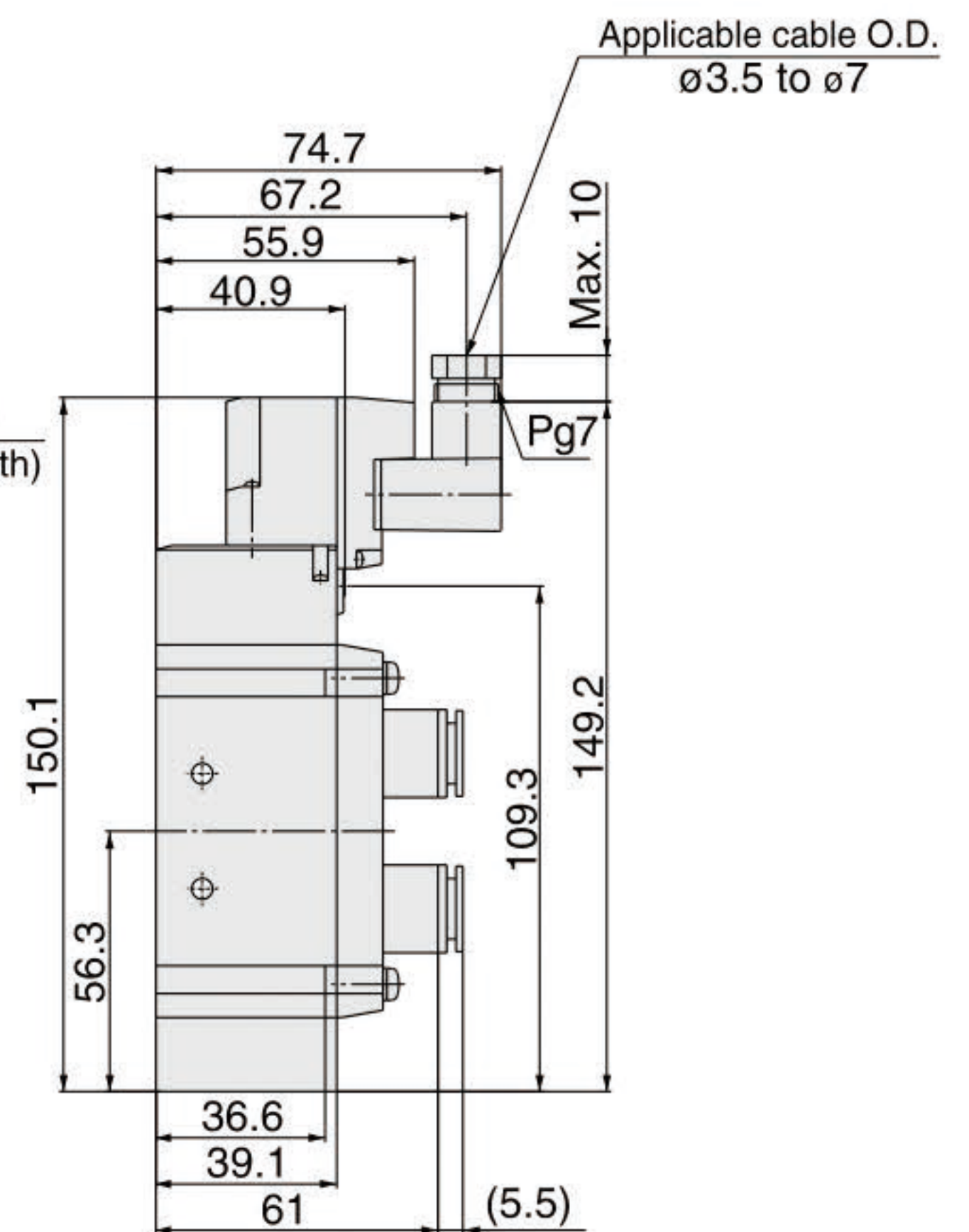
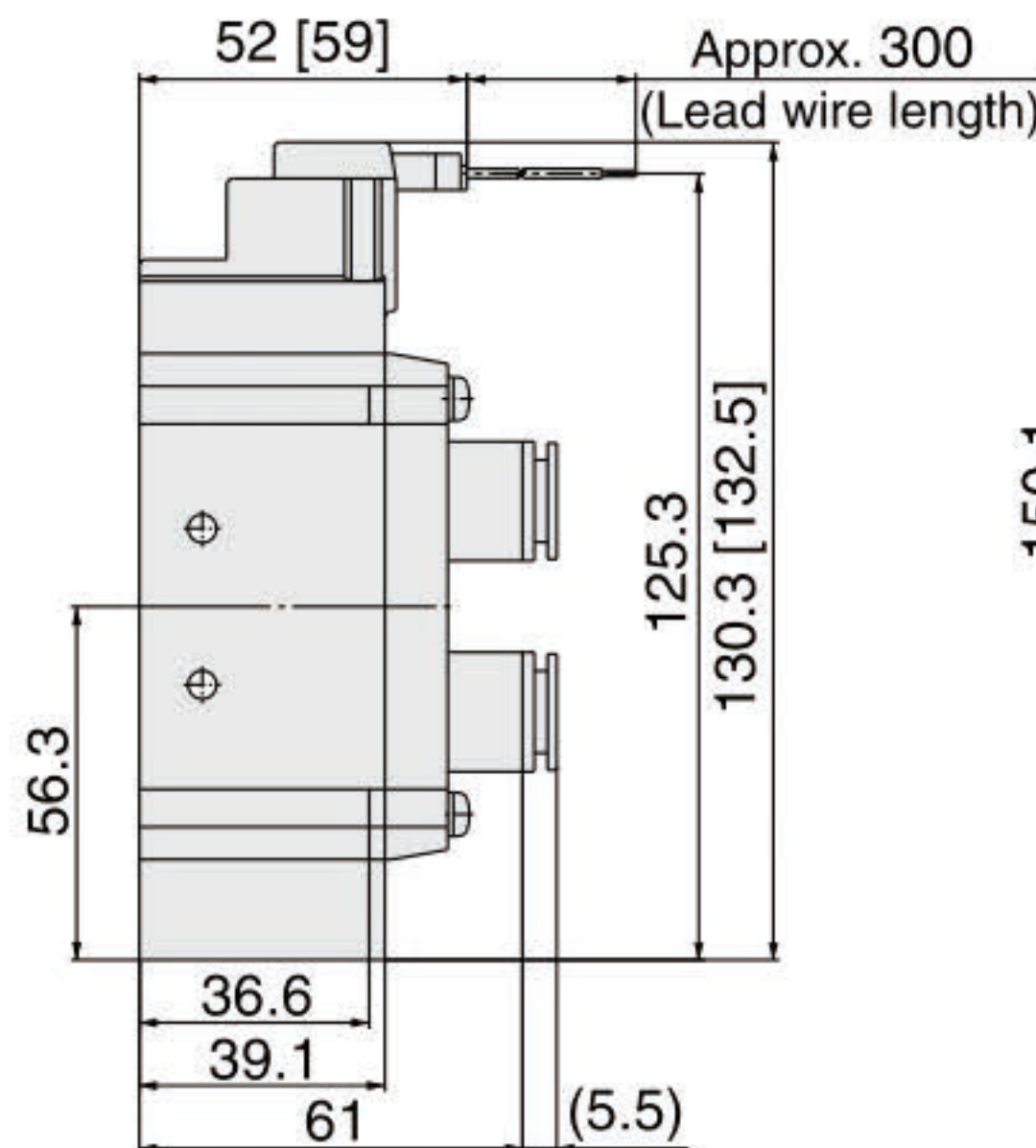
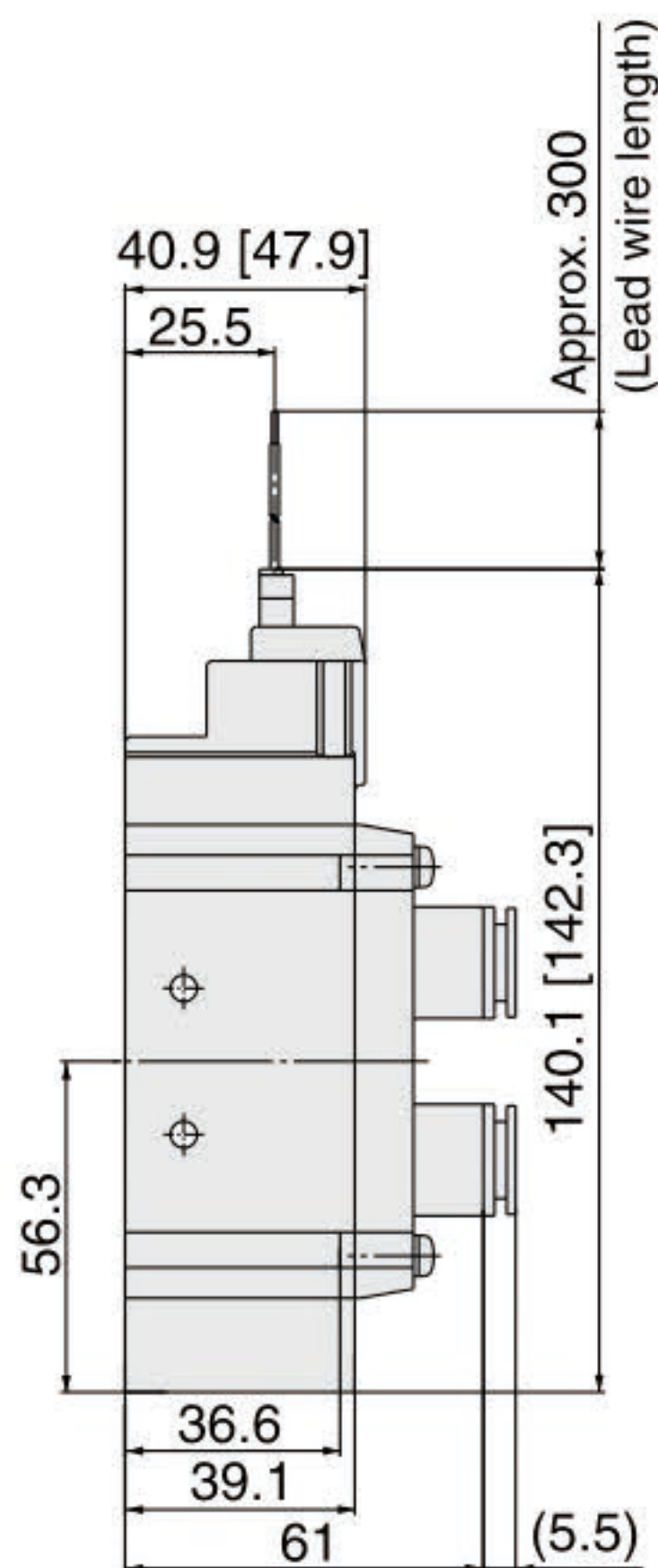
SY9120-□_G□□-02□
 03□



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

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

DIN terminal (D, Y):
SY9120-□D□□-C8, N9
 C10, N11□
 C12



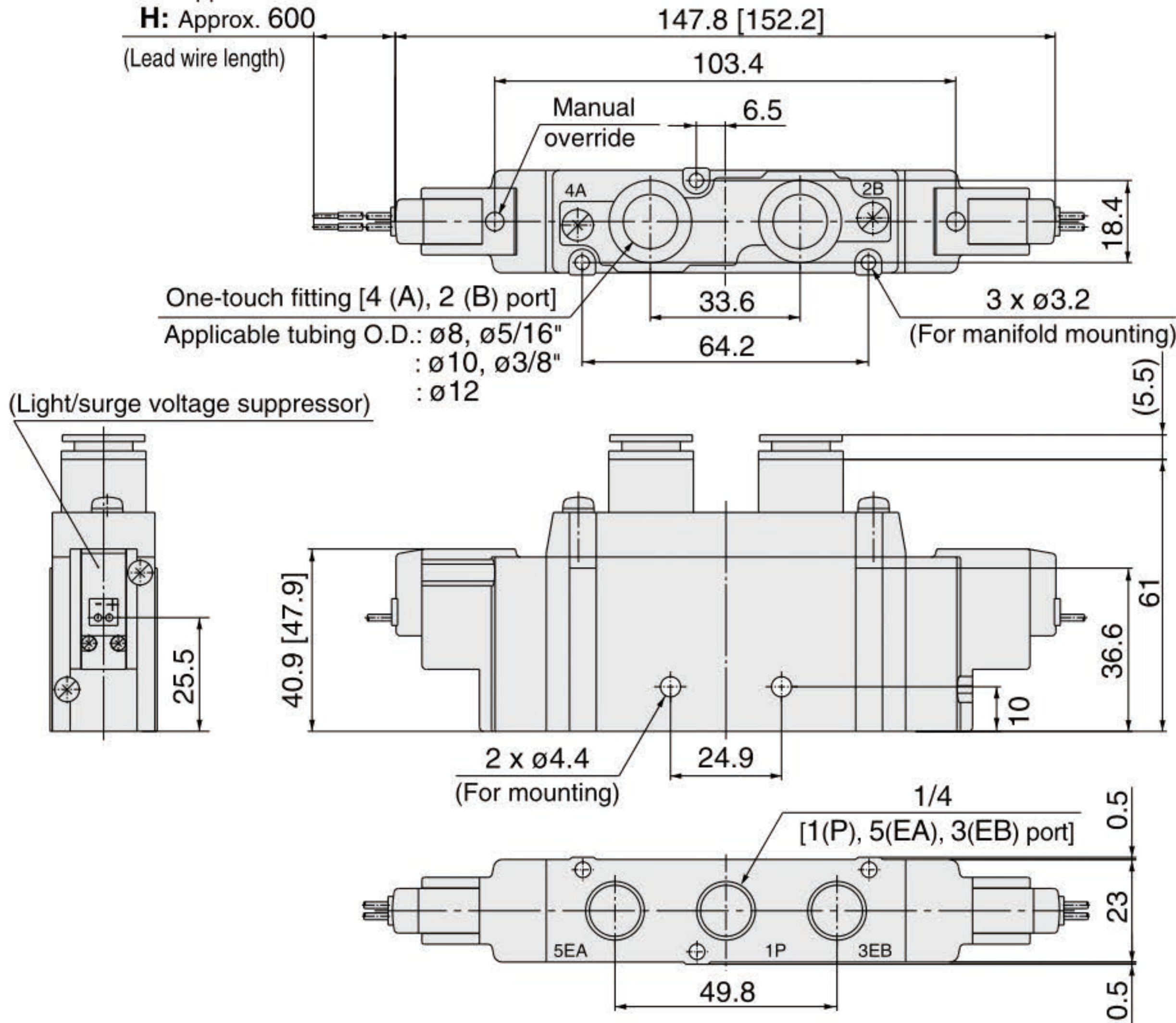
Dimensions: SY9000 Series

[]: AC

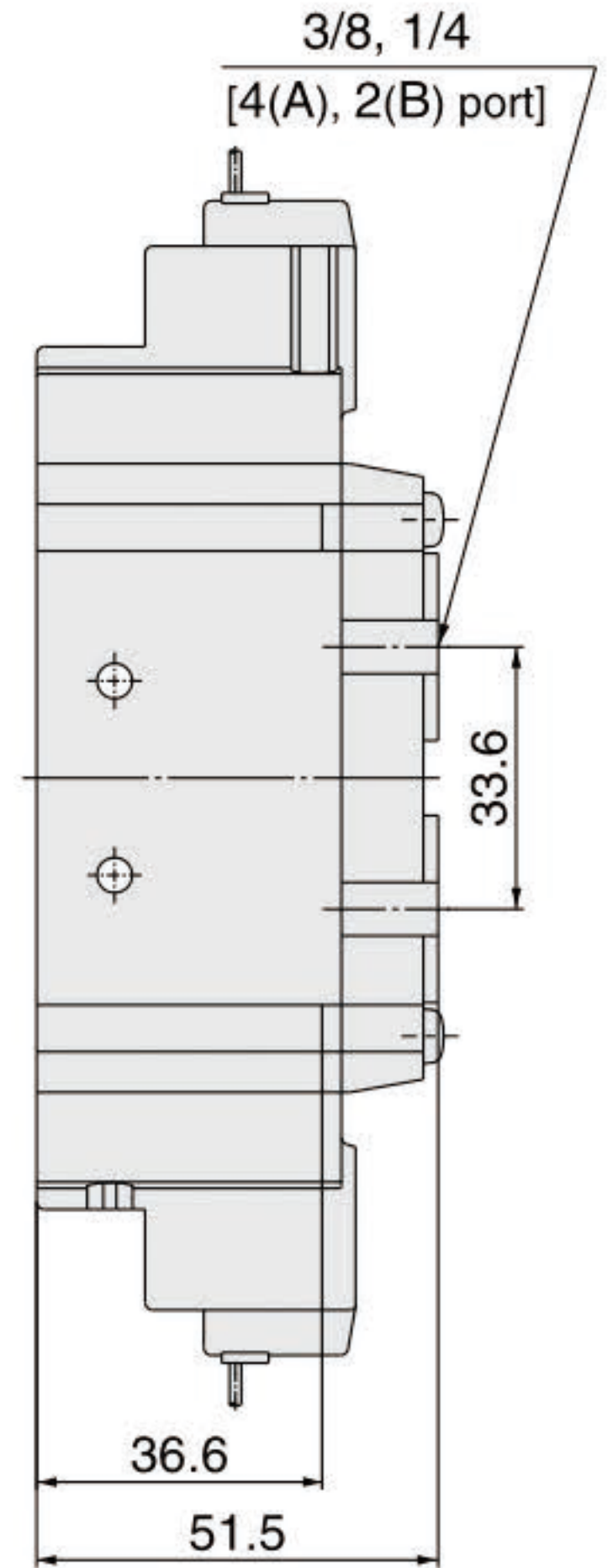
2 position double

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

G: Approx. 300
H: Approx. 600

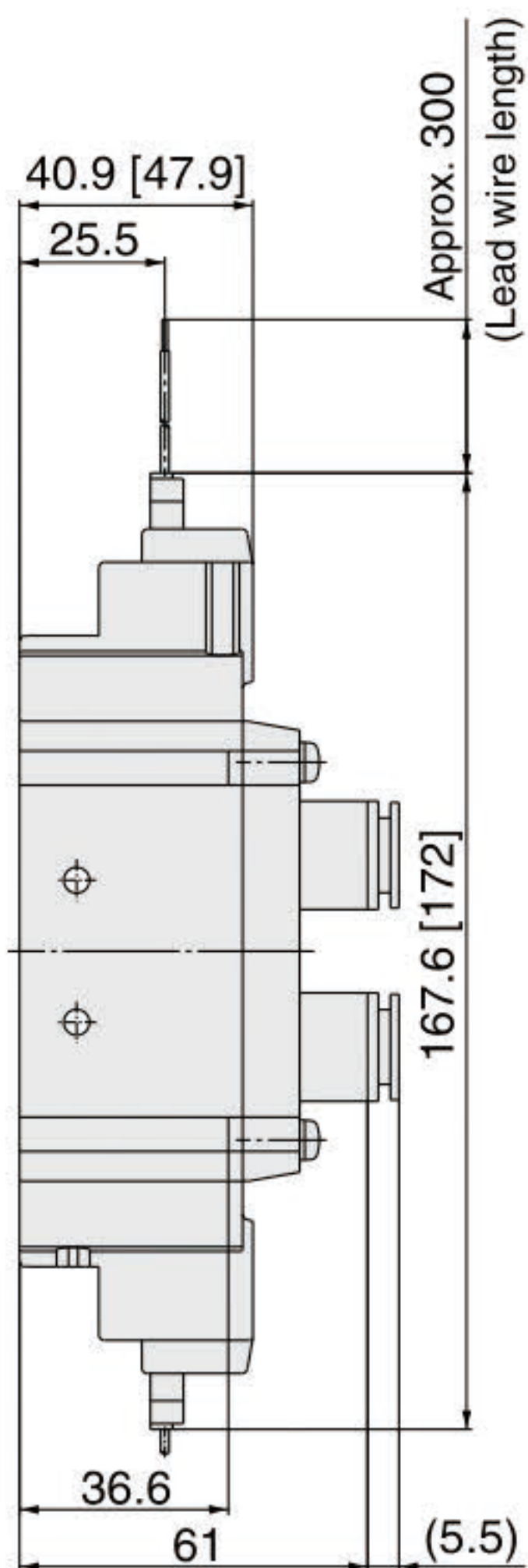


SY9220-□^G□□-02□
03□



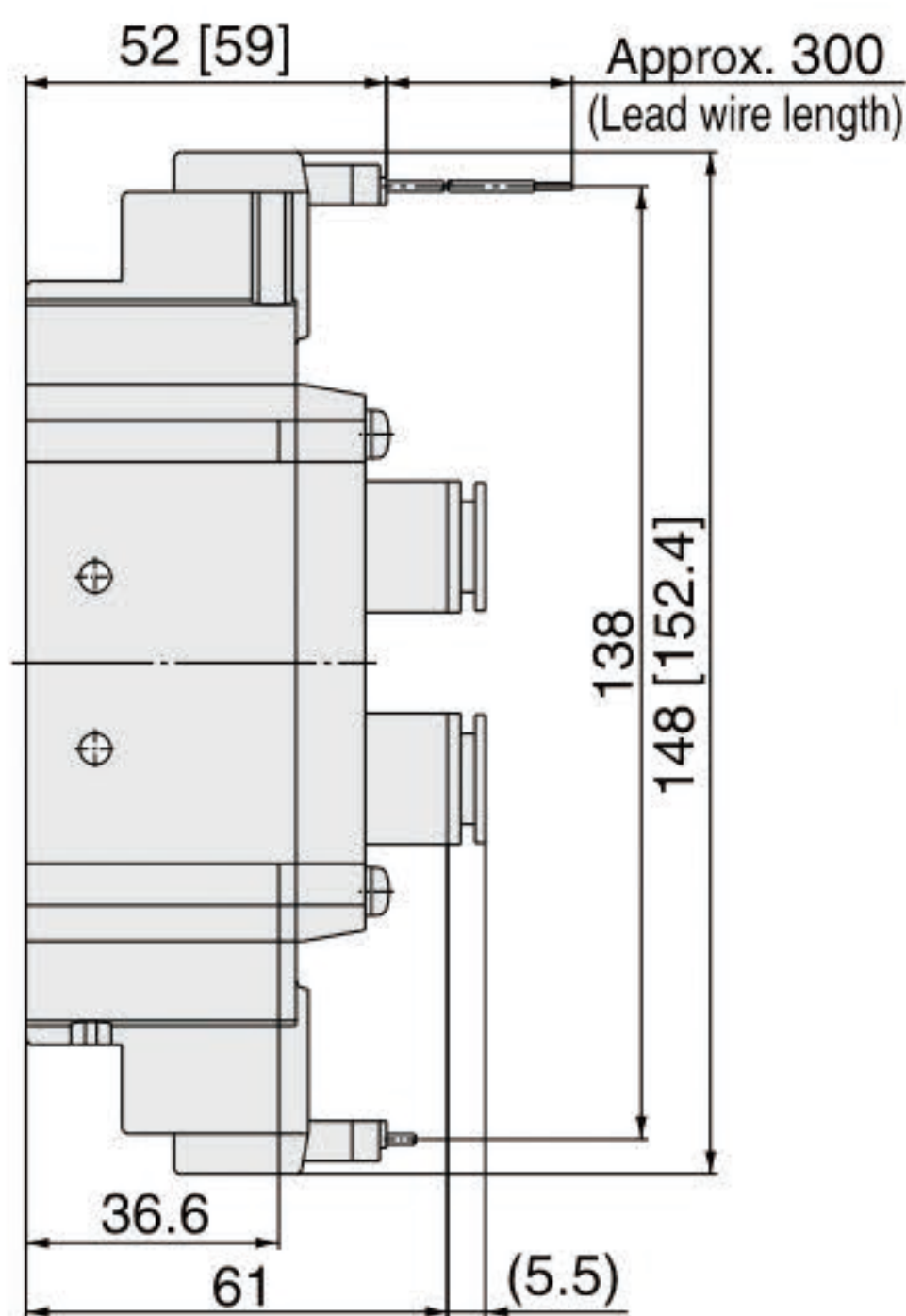
L plug connector (L):

SY9220-□L□□-C8, N9
C10, N11□
C12



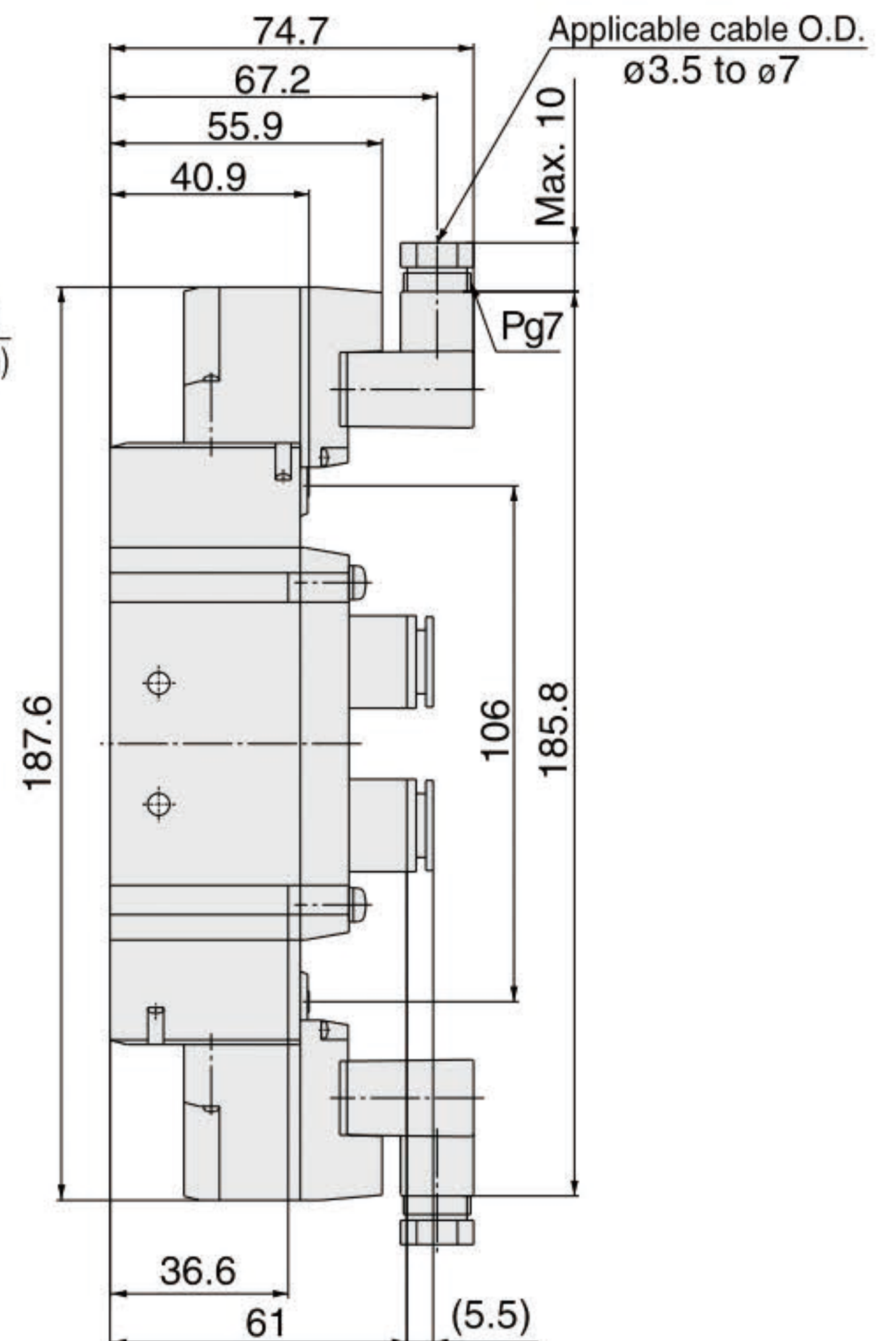
M plug connector (M):

SY9220-□M□□-C8, N9
C10, N11□
C12



DIN terminal (D, Y):

SY9220-□D□□-C8, N9
C10, N11□
C12

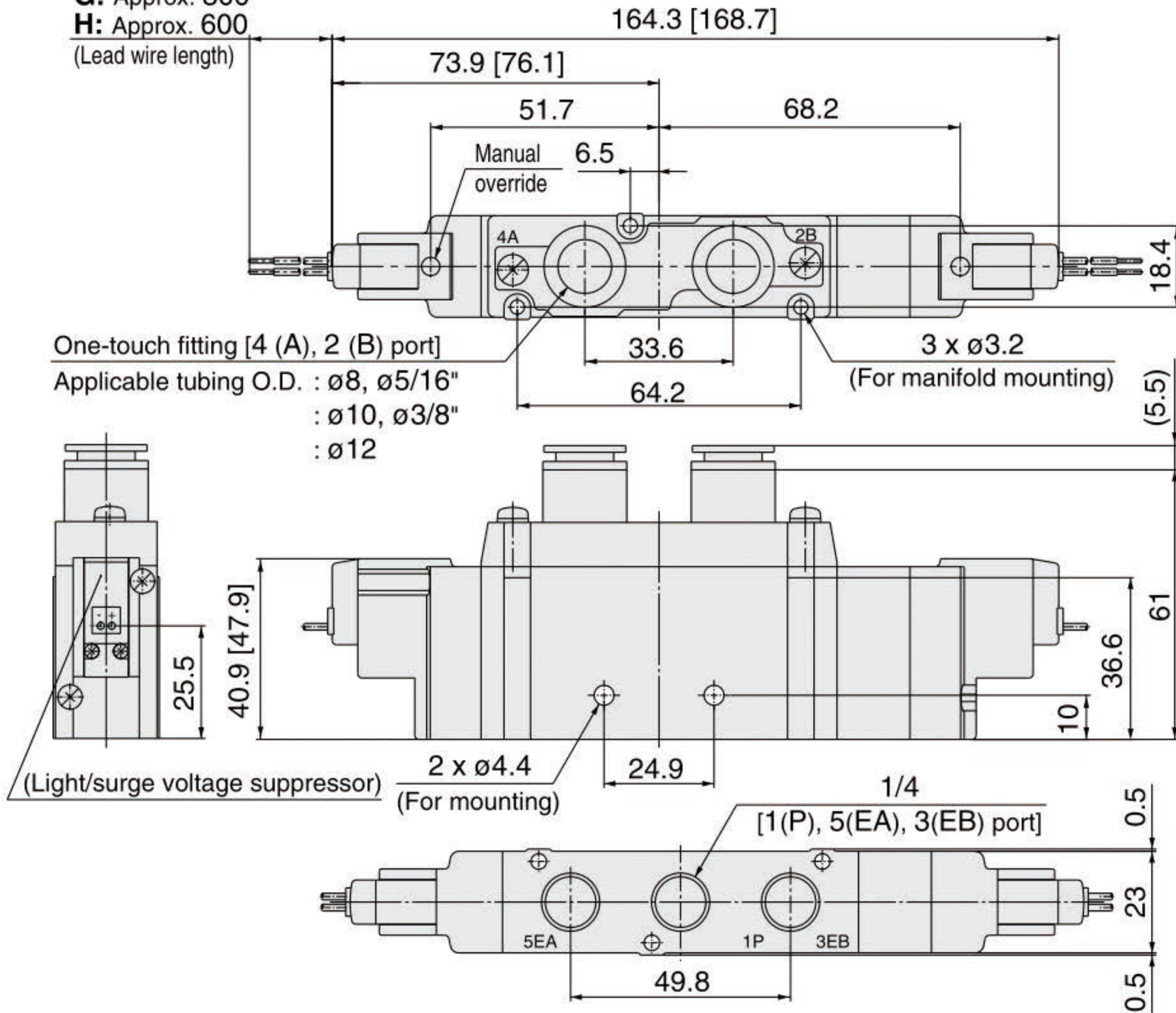


Dimensions: SY9000 Series

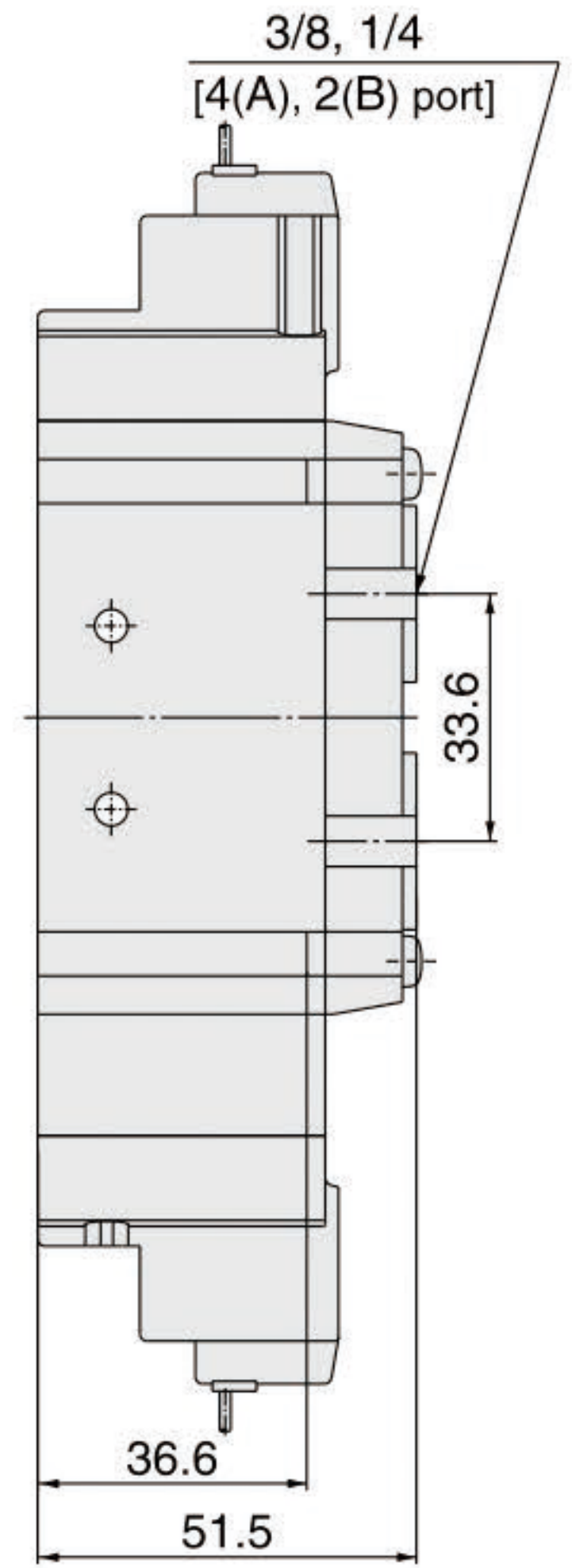
3 position closed center / exhaust center / pressure center

Grommet (G), (H): SY9³/₅20-□^G□□-^{C8, N9}□□-^{C10, N11}□□^{C12}

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



SY9³/₅20-□^G□□-⁰²□□⁰³□



L plug connector (L):

SY9³/₅20-□^L□□-^{C8, N9}□□-^{C10, N11}□□^{C12}

M plug connector (M):

SY9³/₅20-□^M□□-^{C8, N9}□□-^{C10, N11}□□^{C12}

DIN terminal (D, Y):

SY9³/₅20-□^D□□-^{C8, N9}□□-^{C10, N11}□□^{C12}

