

Rubber Seal 3 Port/Pilot Poppet Type Base Mounted/Single Unit Series VP300/500/700

How to Order



Note) Only DIN and conduit terminal types are available for AC mode. Refer to the electrical entry for details.

Base mounted VP 3 4 4 [] [] [] - 5 G [] [] 1 - [] [] A - []

Series

3	VP300
5	VP500
7	VP700

Pilot type

Nil	Internal pilot
R	External pilot

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1.0 MPa)

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for a long time. (Refer to back page 5 for details.)
* T type is only available for DC mode. When T is selected, only Z type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

Type of actuation

A	N.C. (Normally closed)
B	N.O. (Normally open)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Made to Order

Nil	—
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 24).

Port size (Sub-plate)

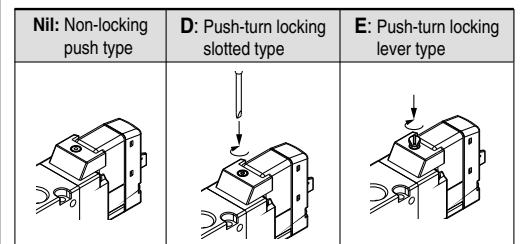
Symbol	Port size	VP300	VP500	VP700
Nil	Without sub-plate*			
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

* With a gasket and two mounting bolts.

Electrical entry

Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm) M: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	D: With connector	Y: With connector	T: Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm DC Without light/surge voltage suppressor	LN: Without lead wire	MN: Without lead wire	DO: Without connector	YO: Without connector	
G: Lead wire length 300 mm H: Lead wire length 600 mm DC Without light/surge voltage suppressor	LO: Without connector	MO: Without connector	DO: Without connector	YO: Without connector	
CE compliant	DC AC [Note]	CE	CE	CE	CE
		—	—	—	—

Manual override



Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	— [Note]
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.
* In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.


Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 5 for details.

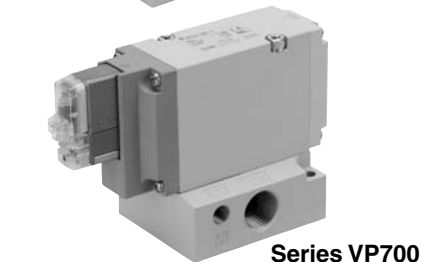
* LN and MN types are with 2 sockets.
* Refer to back page 2 when different length of lead wire for L/M-type plug connector is required.
* Refer to back page 3 for details on the DIN (EN175301-803) terminal.
Note) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

Series VP300/500/700

Low power consumption 1.5 W (DC)
Possible to use as either a selector or divider valve
Possible to change from N.C. to N.O.

 Refer to back page 6 for changing the type of actuation.

Possible to use in vacuum applications
Up to -100 kPa



External Pilot

Use external pilot type in the following cases:

- For vacuum or for low pressure 0.2 MPa or less
- Please consult with SMC for use in a vacuum hold application.
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower
- If manifold, external pilot piping can be centralized in manifold base.



Made to Order
(Refer to page 24 for details.)

X500	Pilot exhaust port with piping thread (M3) specification
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Specifications

Fluid		Air
Type of actuation		N.C. or N.O. (Convertible)
Internal pilot Operating pressure range (MPa)	Standard	0.2 to 0.7
	High-pressure type	0.2 to 1.0
External pilot Operating pressure range (MPa)	Standard	-100 kPa to 0.7
	High-pressure type	-100 kPa to 1.0
	Pilot pressure range	Same as operating pressure (Min. 0.2 MPa)
Ambient and fluid temperature (°C)		-10 to 50 (No freezing)
Max. operating frequency (Hz)		5
Manual override		Non-locking push type Push-turn locking slotted type Push-turn locking lever type
Pilot exhaust type		Individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s ²) ^{Note)}		300/50
Enclosure		Dust-tight (IP65 for D, Y, T)

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)		DIN terminal (D)	
	L-type plug connector (L)		DIN (EN175301-803) terminal (Y)	
	M-type plug connector (M)		Conduit terminal (T)	
	G, H, L, M		D, Y, T	
Coil rated voltage (V)	DC	24, 12		
	AC (50/60 Hz)	24, 100, 110, 200, 220, 240		
Allowable voltage fluctuation		±10% of rated voltage*		
Power consumption (W)	DC	Standard	1.5 (With light: 1.55)	
		With power saving circuit	0.55 (With light only)	
Apparent power (VA)*	AC	24 V	1.5 (With light: 1.55)	
		100 V	1.55 (With light: 1.65)	
		110 V		1.55 (With light: 1.7)
		[115 V]		
		200 V		
		220 V		
[230 V]				
240 V				
Surge voltage suppressor		Diode (Non-polar type: Varistor)		
Indicator light		LED (Neon bulb is used for AC mode of D, Y, T.)		

* It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* Allowable voltage fluctuation is -15% to +5% of the rated voltage for 115 VAC or 230 VAC.

* Since voltage drops due to the internal circuit in S, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.

24 VDC: -7% to +10%

12 VDC: -4% to +10%

Response Time

Model	Pressure specifications	Response time ms (at 0.5 MPa)			
		Without light/surge voltage suppressor	With light/surge voltage suppressor		AC
			S, Z type	R, U type	
VP344	Standard (0.2 to 0.7)	13 or less	38 or less	16 or less	38 or less
	High-pressure type (0.2 to 1.0)	17 or less	42 or less	20 or less	42 or less
VP544	Standard (0.2 to 0.7)	14 or less	39 or less	17 or less	39 or less
	High-pressure type (0.2 to 1.0)	18 or less	43 or less	21 or less	43 or less
VP744	Standard (0.2 to 0.7)	19 or less	44 or less	22 or less	44 or less
	High-pressure type (0.2 to 1.0)	22 or less	47 or less	25 or less	47 or less

Note) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage)

Pilot Poppet Type Base Mounted/Single Unit *Series VP300/500/700*

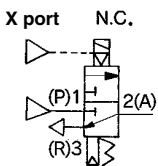
Flow Characteristics/Weight

Model	Port size	1 ↔ 2 (P ↔ A)			2 ↔ 3 (A ↔ R)			Weight (g) ^{Note)}	
		C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	Grommet	DIN terminal
VP344	1/8	3.6	0.22	0.8	3.5	0.24	0.8	216 (149)	252 (185)
	1/4	3.9	0.22	0.9	3.8	0.14	0.9	211 (149)	247 (185)
VP544	1/4	7.5	0.16	1.7	7.3	0.20	1.7	370 (245)	406 (281)
	3/8	8.8	0.07	2.0	8.8	0.13	2.0	362 (245)	398 (281)
VP744	3/8	12.9	0.10	2.9	13.3	0.24	3.1	676 (459)	712 (495)
	1/2	14.7	0.05	3.3	15.0	0.17	3.4	658 (459)	694 (495)

Note) (): Values without sub-plate

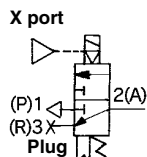
Application Example

(1) Blow-off valve



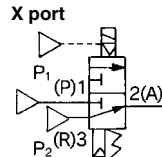
External pilot

(2) Pressure release valve



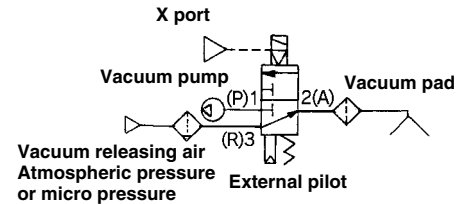
External pilot

(3) Selector valve



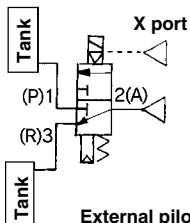
External pilot

(4) Valve for vacuum



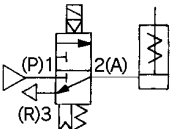
Vacuum releasing air
Atmospheric pressure
or micro pressure

(5) Divider valve

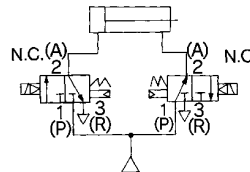


External pilot

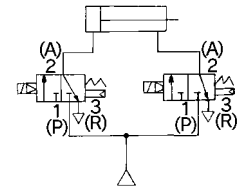
(6) Single-acting cylinder drive



(7) Double-acting cylinder drive



(8) Double-acting cylinder drive (Exhaust center)

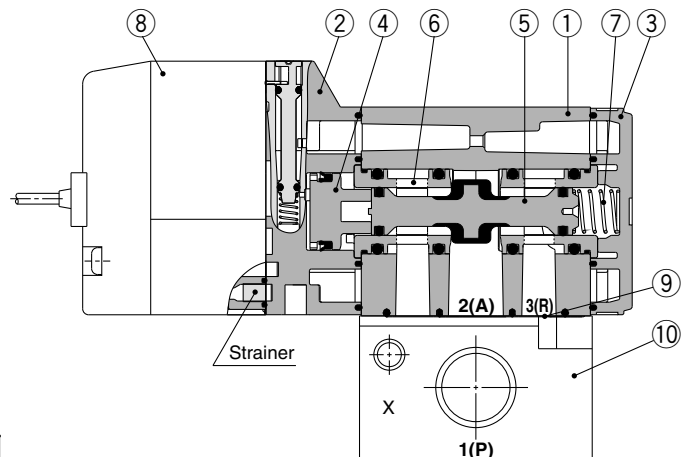


Construction

Base mounted

JIS symbol

Pilot type	N.C.	N.O.
Internal pilot		
External pilot		



Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	White
2	Adapter plate	Resin	Gray
3	End plate	Resin	White
4	Piston	Resin	
5	Spool valve	Aluminum/HNBR	
6	Retainer	Resin	
7	Spring	Stainless steel	

Replacement Parts

No.	Description	Part no.			Note
		VP344	VP544	VP744	
8	Pilot valve assembly	Refer to "How to Order Pilot Valve Assembly" on page 11.			Built-in strainer
9	Gasket	VP300-217-1	VP500-217-1	VP700-217-1	HNBR
10	Sub-plate	VP300-202-□	VP500-202-□	VP700-202-□	Aluminum die-casted
—	Hexagon socket head bolt (1 pc.)	VP300-224-1 (M3 x 36)	VP500-224-1 (M4 x 46)	VP700-224-1 (M5 x 66)	For valve mounting

How to Order Sub-plate

VP 3 00 - 202 - 1

Series

3	VP344
5	VP544
7	VP744

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	VP344	VP544	VP744
1	1/8	1/4	3/8
2	1/4	3/8	1/2

Caution

Tightening Torque of Mounting Screw

M3: 0.8 N·m
M4: 1.4 N·m
M5: 2.9 N·m

Series VP300/500/700

How to Order Pilot Valve Assembly

⚠ Caution

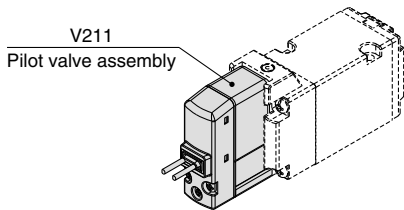
When only the pilot valve assembly is replaced, it is not possible to change from V211 (Grommet or L/M-type) to V212 (DIN or Conduit type), or vice versa.

Valve model: VP□□□ □□ - 5 G Z □ 1 - □□□

* Select from the below in accordance with the valve used.

■ Grommet or L/M-type

V 2 1 1 □□ - 5 G Z



● Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	— ^(Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation. When T is selected, only Z type of light/surge voltage suppressor is available.

⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 5 for details.

● Electrical entry

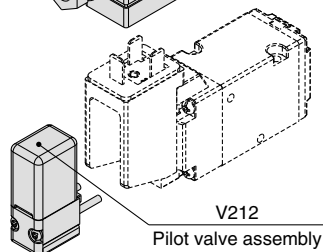
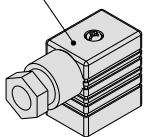
G	Grommet (Lead wire length 300 mm)	
H	Grommet (Lead wire length 600 mm)	
L	L-type plug connector	With lead wire
LN		Without lead wire
LO		Without connector
M	M-type plug connector	With lead wire
MN		Without lead wire
MO		Without connector

* LN and MN types are with 2 sockets.

* Refer to back page 2 when different length of lead wire for L/M-type plug connector is required.

■ DIN or Conduit type

DIN connector
(Refer to back page 3.)



V 2 1 2 □□ - 5

● Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1.0 MPa)

● Coil specification

Nil	Standard
T	With power saving circuit (DC only)

* T type is only available for DC mode.

● Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

⚠ Caution

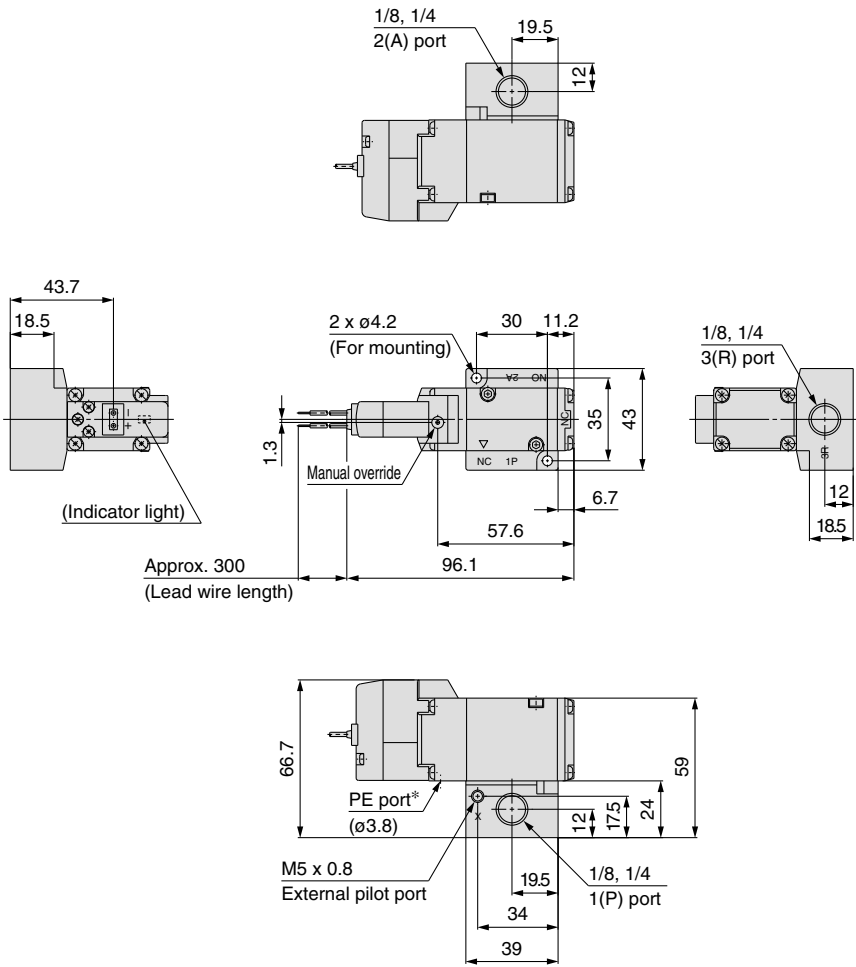
For V212 (DIN or Conduit type), the coil specification and voltage (including light/surge voltage suppressor) cannot be changed by changing the pilot valve assembly.

⚠ Caution

Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N·m

Series VP300/Base Mounted/Dimensions

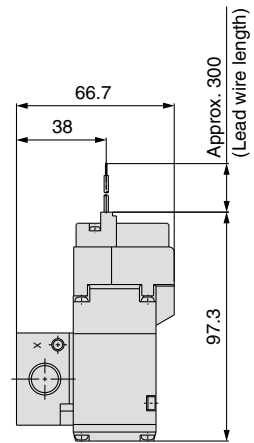
Grommet (G)



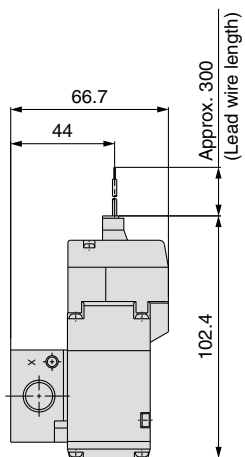
* Refer to page 24 separately when piping to PE port is required.

Grommet (G)

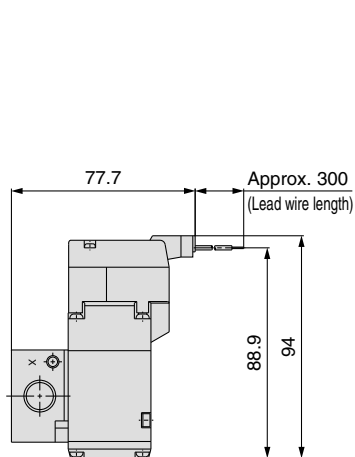
DC without light/surge voltage suppressor



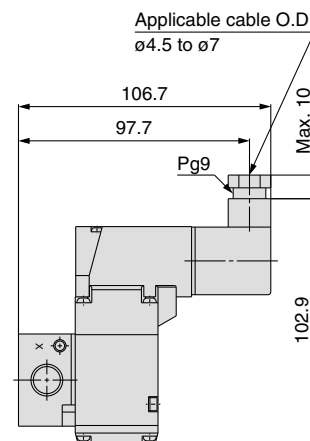
L-type plug connector (L)



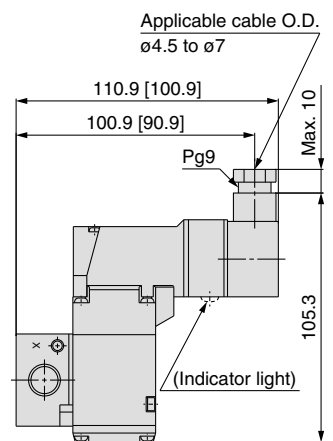
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



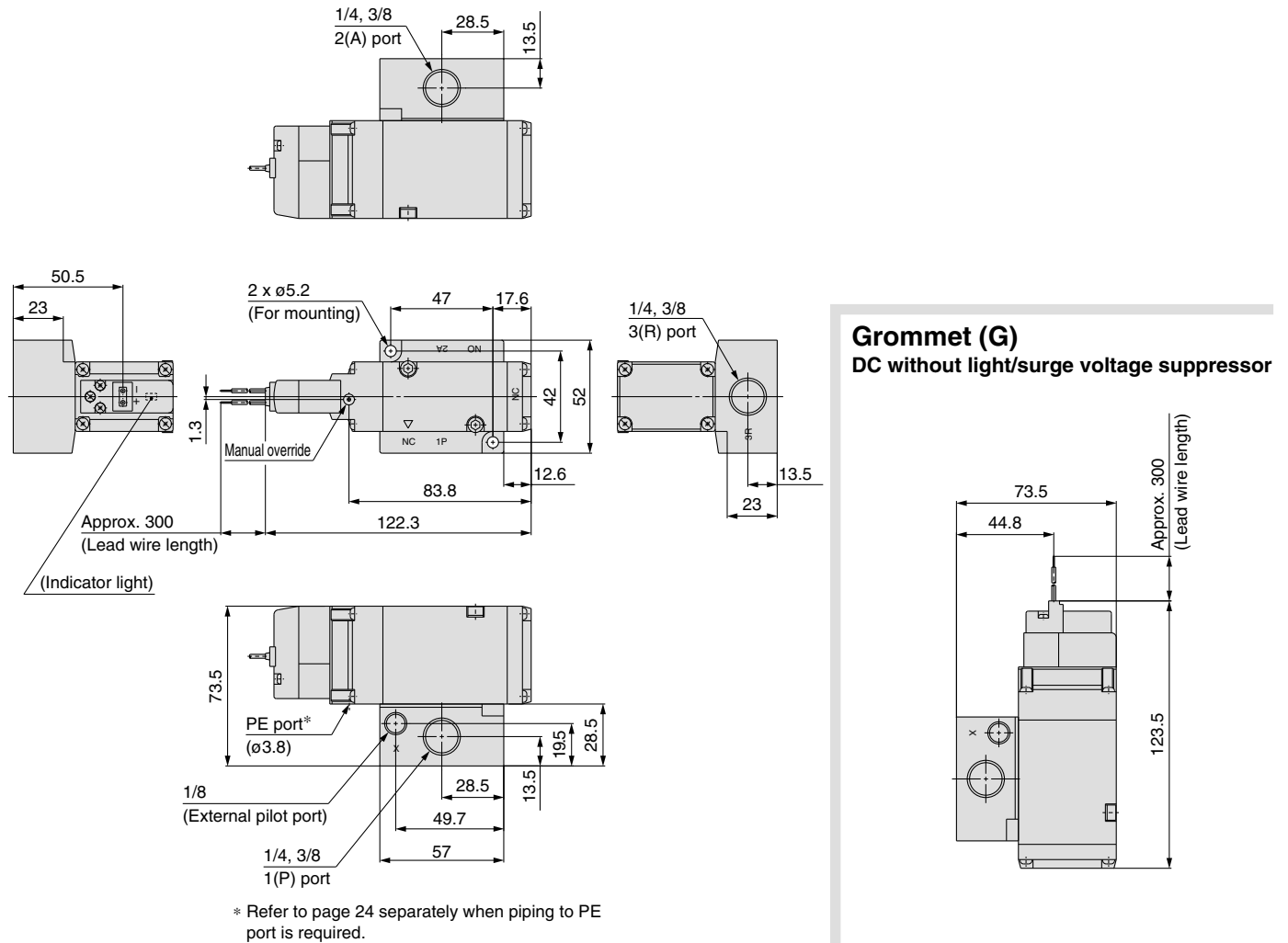
[]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

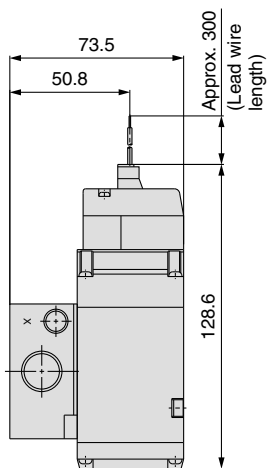
Series VP300/500/700

Series VP500/Base Mounted/Dimensions

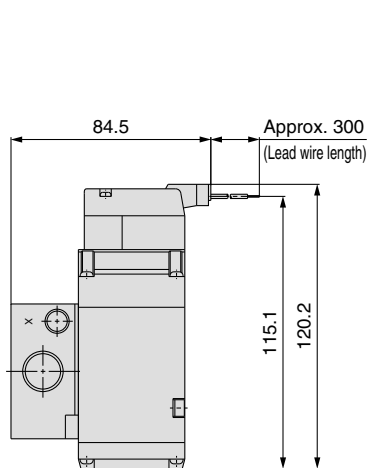
Grommet (G)



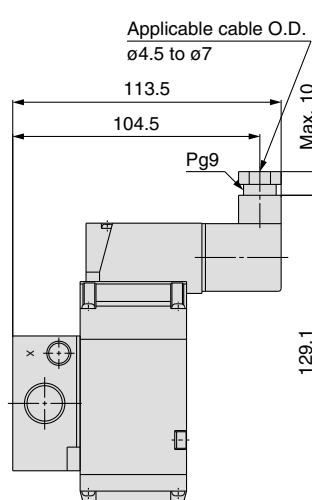
L-type plug connector (L)



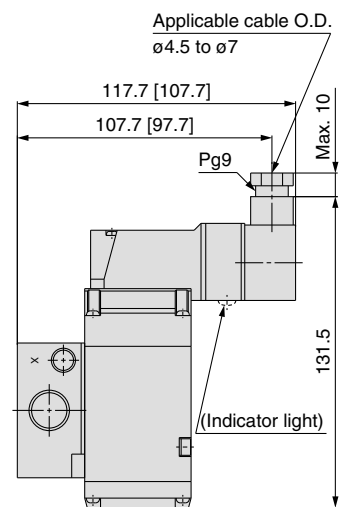
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

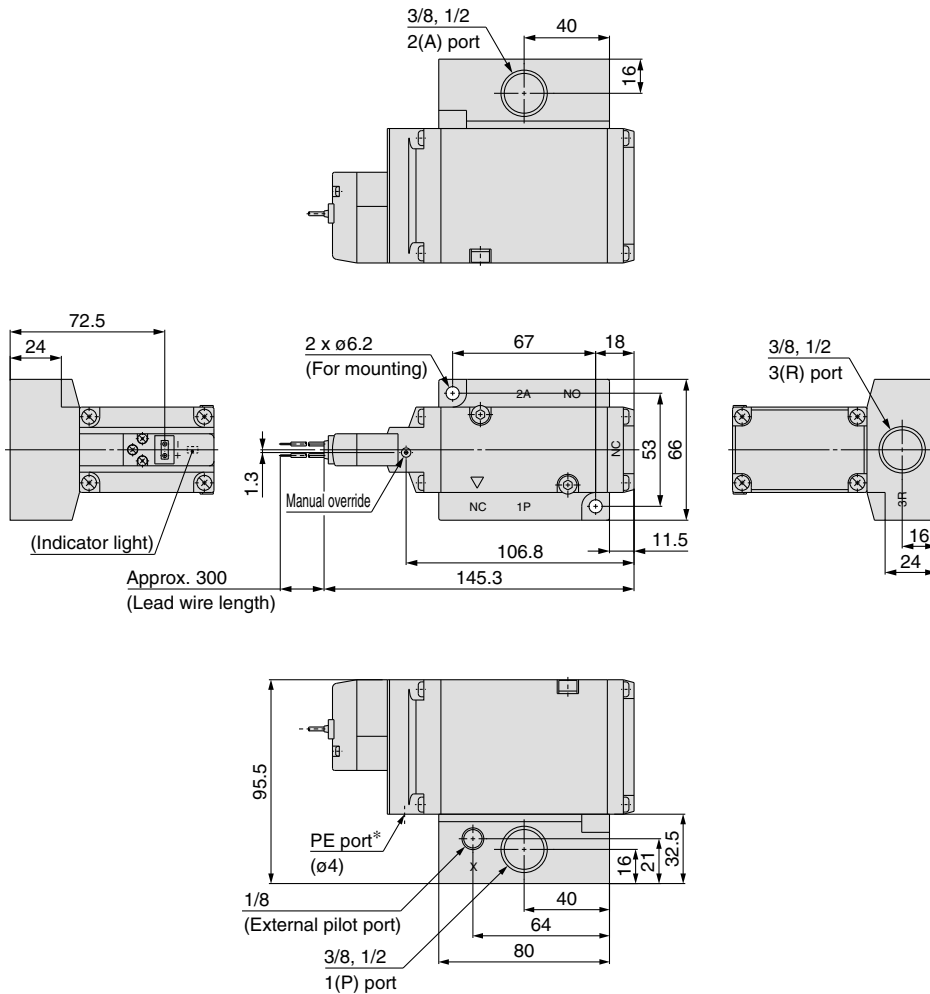


[] : Without indicator light

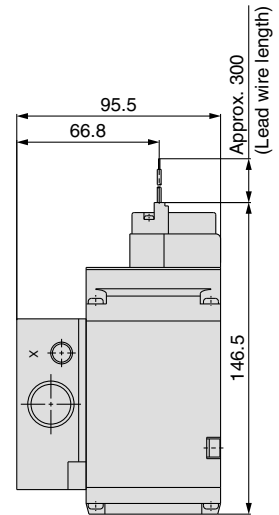
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VP700/Base Mounted/Dimensions

Grommet (G)

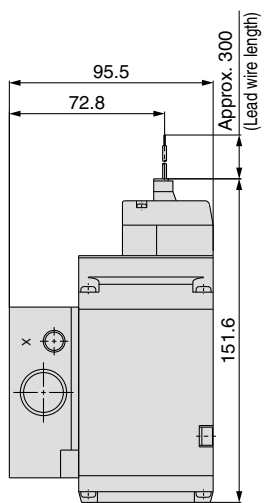


Grommet (G)
DC without light/surge voltage suppressor

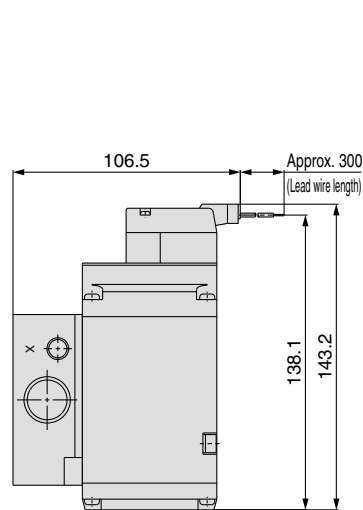


* Refer to page 24 separately when piping to PE port is required.

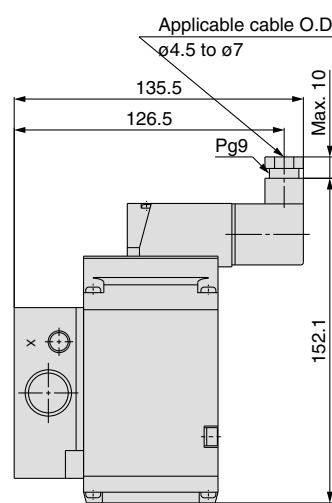
L-type plug connector (L)



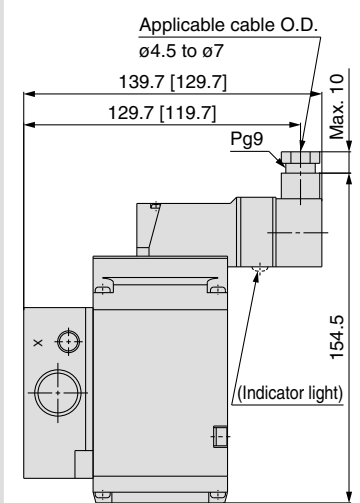
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



[]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).