3 Port Solenoid Valve

Reduced power consumption:

0.55 W [With power saving circuit]

1.55 W [Standard]

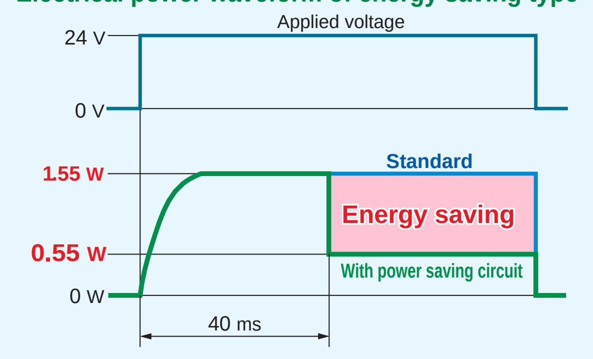
(Conventional: 2.0 W) ⁎ With DC light

Series VP300

Power consumption reduced by power saving circuit.

Power consumption is decreased by approx. 1/3 by reducing the wattage required to hold the valve in an energized state. (effective energizing time is over 40 ms at 24 VDC.) Refer to electrical power waveform as shown below.

Electrical power waveform of energy saving type



M Built-in full-wave rectifier (AC)

P Noise reduction

Noise is considerably reduced by changing it to DC mode via a full-wave rectifier.

P Reduced apparent power

Conventional: 5.6 VA Æ 1.55 VA

M Longer life expectancy: 50 million cycles or more

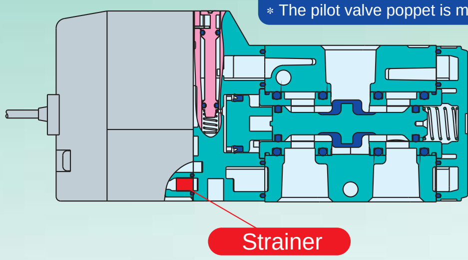
(Conventional: 20 million cycles) ⁎ Based on SMC test conditions

M Built-in strainer in the pilot valve

Unexpected troubles due to foreign matter can be prevented.

Note) Be sure to mount an air filter on the inlet side.

Rubber material: HNBR
Ozone-resistant specification
⁎ The pilot valve poppet is made of FKM.



Air Operated Valve

Series VPA300/500/700

Series VP300/500/700

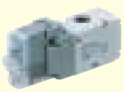
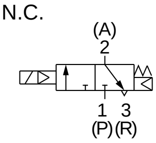
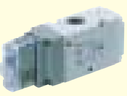
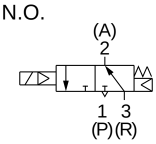
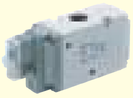
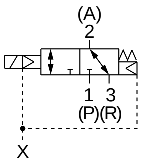
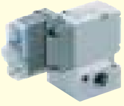
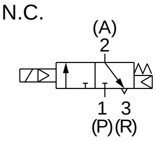
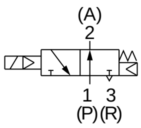
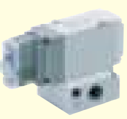
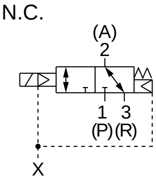
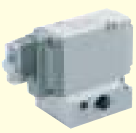
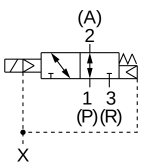
SMC

CAT.EUS11-97A-UK

Model Selection by Operating Conditions ①

Solenoid Valve: Single Unit

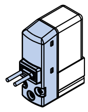
Solenoid valve

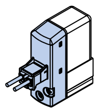
	Series	Sonic conductance C [dm³/(s·bar)]	Type of actuation	Port size
Body ported	VP300 	4.2	Internal pilot N.C. 	1/8 1/4
Body ported	VP500 	8.9	N.O. 	1/4 3/8
Body ported	VP700 	15.3	External pilot N.C./N.O. 	3/8 1/2
Base mounted	VP300 	3.8	Internal pilot N.C.  N.O. 	1/8 1/4
Base mounted	VP500 	8.8	External pilot N.C. 	1/4 3/8
Base mounted	VP700 	15.0	N.O. 	3/8 1/2

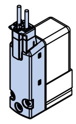
Voltage

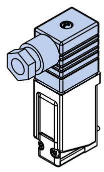
12 VDC
24 VDC
100 VAC
200 VAC
110 VAC
220 VAC
240 VAC
Note)

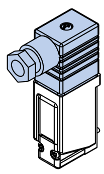
Electrical entry

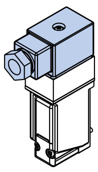
Grommet


L-type plug connector


M-type plug connector


DIN terminal


DIN (EN175301-803) terminal


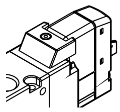
Conduit terminal


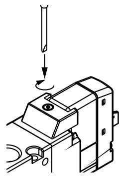
Light/surge voltage suppressor

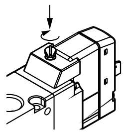
DC
- With surge voltage suppressor
- With light/surge voltage suppressor
- With surge voltage suppressor (Non-polar)
- With light/surge voltage suppressor (Non-polar)

AC
- With light/surge voltage suppressor

Manual override

Non-locking push type


Push-turn locking slotted type


Push-turn locking lever type


P. 1

P. 8

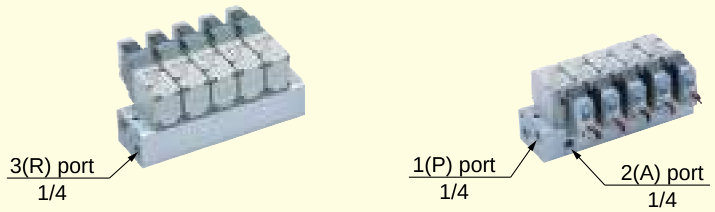
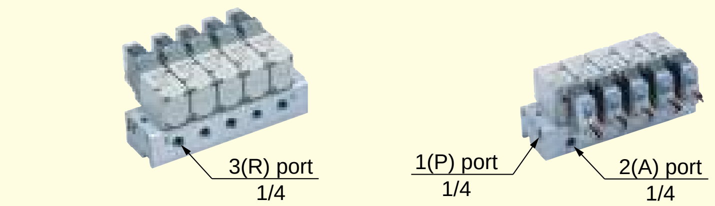
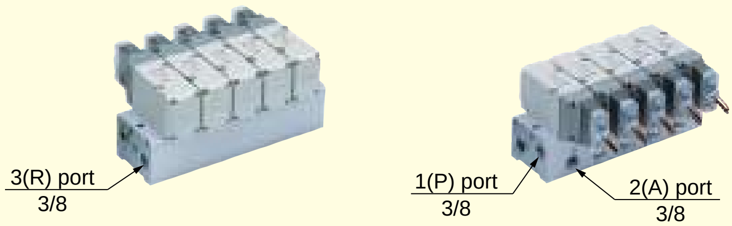
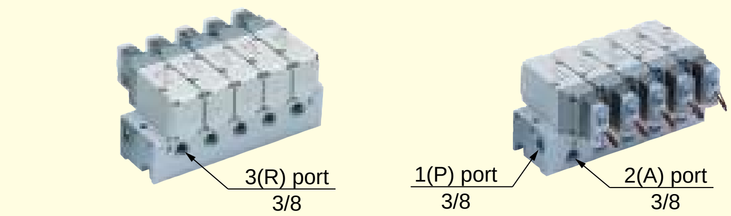
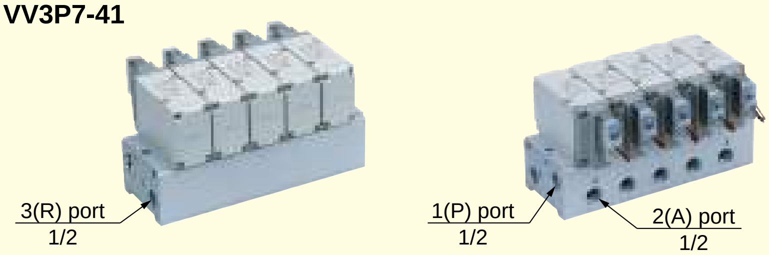
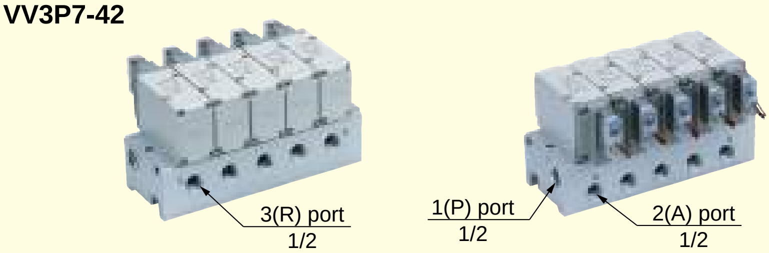
Note) Only DIN and conduit terminal types can be set for AC mode.

SMC

Model Selection by Operating Conditions ②

Solenoid Valve: Manifold

Solenoid valve — Base mounted

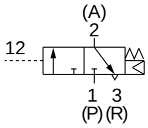
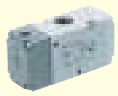
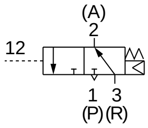
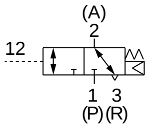
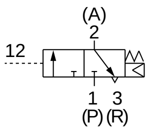
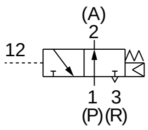
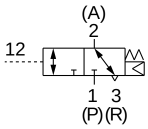
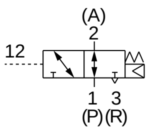
Series	EXH port type	Manifold base model	Applicable stations Note)
VP300	Common EXH	**VV3P3-41** 	2 to 20 stations
	Individual EXH	**VV3P3-42** 	
VP500	Common EXH	**VV3P5-41** 	2 to 20 stations
	Individual EXH	**VV3P5-42** 	
VP700	Common EXH	**VV3P7-41** 	2 to 20 stations
	Individual EXH	**VV3P7-42** 	

P. 15

Note) Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

Model Selection by Operating Conditions ③

Air Operated Valve: Single Unit

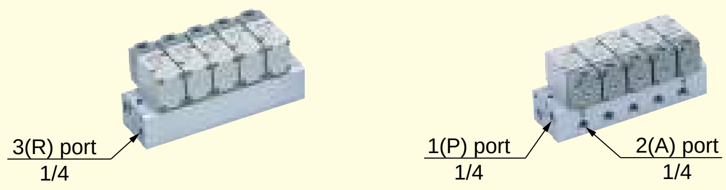
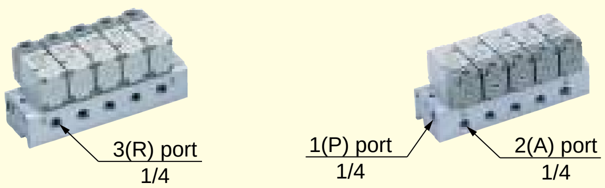
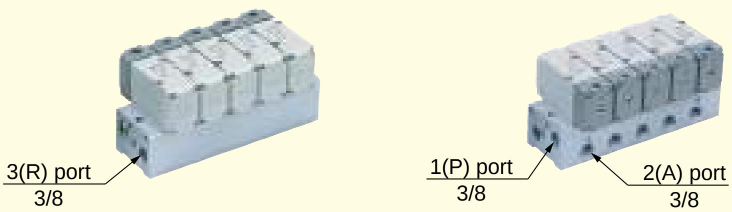
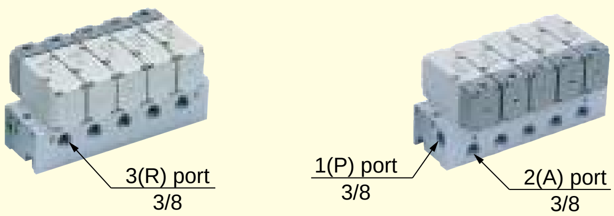
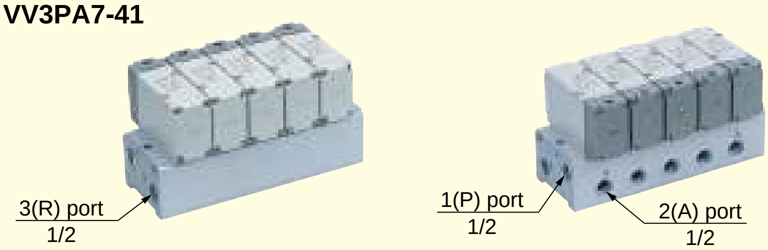
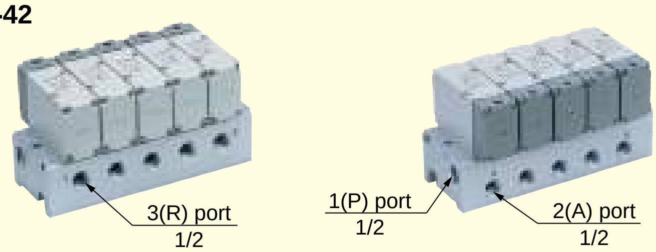
		Series	Sonic conductance C [dm³/(s·bar)]	Type of actuation	Port size	Voltage	Electrical entry	Light/surge voltage suppressor	Manual override	
Air operated valve	Body ported	**VPA300** 	4.2	N.C. 	1/8 1/4	—	—	—	—	P. 25
		VPA500 	8.9	N.O. 	1/4 3/8					
		VPA700 	15.3	For vacuum N.C./N.O. 	3/8 1/2					
	Base mounted	**VPA300** 	3.8	N.C.  N.O. 	1/8 1/4					P. 30
		VPA500 	8.8	For vacuum N.C. 	1/4 3/8					
		VPA700 	15.0	N.O. 	3/8 1/2					

SMC

Model Selection by Operating Conditions ④

Air Operated Valve: Manifold

Air operated valve / Base mounted

Series	EXH port type	Manifold base model	Applicable stations Note)
VPA300	Common EXH	**VV3PA3-41** 	2 to 20 stations
	Individual EXH	**VV3PA3-42** 	
VPA500	Common EXH	**VV3PA5-41** 	2 to 20 stations
	Individual EXH	**VV3PA5-42** 	
VPA700	Common EXH	**VV3PA7-41** 	2 to 20 stations
	Individual EXH	**VV3PA7-42** 	

P. 35

Note) Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

Rubber Seal
3 Port/Pilot Poppet Type
Body Ported/Single Unit
VP300/500/700 Series

How to Order

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

∗ See the table below.

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only
Only applies to X500 and X505 for made-to-order specifications

Body ported VP [3] 4 2 [ ] [ ] [ ] − [5] [G] [ ] [ ] 1 − [01] [ ] [A] − [ ] − [ ]

Series

3	VP300
5	VP500
7	VP700

Pilot type

		UL-compliant
Nil	Internal pilot	●
R	External pilot	●

Pressure specification

		UL-compliant
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 page 1296 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		UL-compliant
5	24 VDC	●
6	12 VDC	●

AC (50/60 Hz) Note)		UL-compliant
1	100 VAC	—
2	200 VAC	—
3	110 VAC [115 VAC]	—
4	220 VAC [230 VAC]	—
7	240 VAC	—
B	24 VAC	●

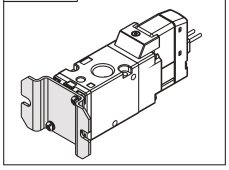
Note) For triac output, refer to the made-to-order specifications (X600).

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Bracket

Nil	Without bracket
F	With bracket



Type of actuation

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

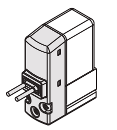
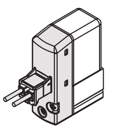
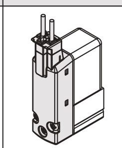
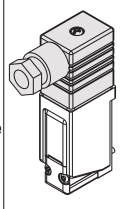
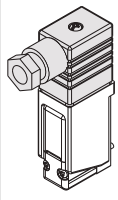
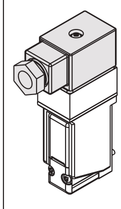
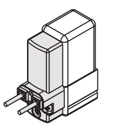
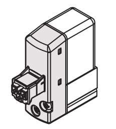
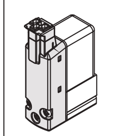
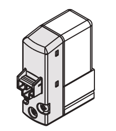
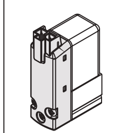
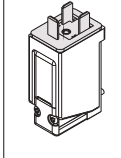
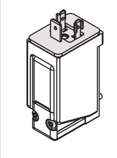
Port size

Symbol	Port size	VP300	VP500	VP700
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

Made to Order

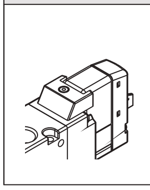
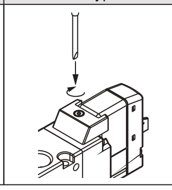
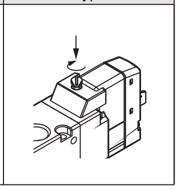
		UL-compliant
Nil	—	●
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 24).	●
X505	Interchangeable specification with the previous valve mounting hole pitch type (Refer to page 24).	●
X600	Triac output specification (Refer to page 24).	—

Electrical entry

	Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
				[IP65 compatible]	[IP65 compatible]	[IP65 compatible]
	 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)	 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			
		 LO: Without connector	 MO: Without connector	 DO: Without connector	 YO: Without connector	
CE/UKCA compliant DC	●	●	●	●	●	●
CE/UKCA compliant AC Note)	—	—	—	●	●	●

∗ LN and MN types are with 2 sockets.
∗ Refer to page 4 when different length of lead wire for L/M-type plug connector is required.
∗ Refer to page 5 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/UKCA marking compliant.

Manual override

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

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 page 1300 for details.

Low power consumption 1.5 W (DC)

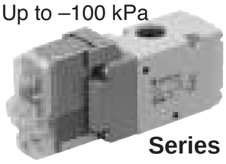
Possible to use as either a selector or divider valve

Possible to change from N.C. to N.O.

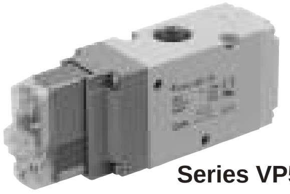
• Refer to back page 8 for changing the type of actuation.

Possible to use in vacuum applications

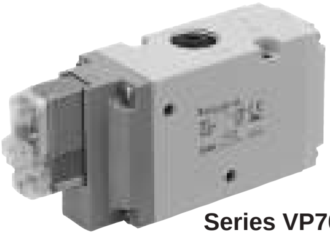
Up to –100 kPa



Series VP300



Series VP500



Series VP700

External Pilot

Use external pilot type in the following cases:

- For vacuum or for low pressure 0.2 MPa or less
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower

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

X500	Pilot exhaust port with piping thread (M3) specification

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) L-type plug connector (L) M-type plug connector (M)	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T)
			G, H, L, M	D, Y, T
Coil rated voltage (V)	**DC**		24, 12	
	AC (50/60 Hz)		100, 110, 200, 220, 240	
Allowable voltage fluctuation			10% of rated voltage*	
Power consumption (W)	**DC**	**Standard**	1.5 (With light: 1.55)	1.5 (With light: 1.75)
		With power saving circuit	0.55 (With light only)	0.75 (With light only)
Apparent power (VA) Note 1)	**AC**	**100 V** **110 V** **[115 V]** **200 V** **220 V** **[230 V]** **240 V**	1.55 (With light: 1.65)	1.55 (With light: 1.7)
Surge voltage suppressor			Diode (Non-polar type: Varistor)	
Indicator light			LED (Neon bulb is used for AC mode of D, Y, T.)	

Note 1) It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
Note 2) Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.
Note 3) 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	
VP342	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
VP542	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
VP742	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 8375-1981. (Coil temperature: 20C, at rated voltage)

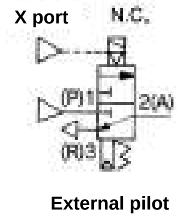
Flow Characteristics/Mass

Model	Port size	1 ↔ 2 (P ↔ A)				2 ↔ 3 (A ↔ R)				Mass (g) Note 1)	
		C [dm³/(s·bar)]	b	Cv	Q [ℓ/min] (ANR)Note 2)	C [dm³/(s·bar)]	b	Cv	Q [ℓ/min] (ANR)Note 2)	Grommet	DIN terminal
VP342	1/8	3.5	0.26	0.8	868	3.6	0.26	0.9	893	149	185
	1/4	4.2	0.22	1.0	1018	4.2	0.23	1.0	1023	145	181
VP542	1/4	7.9	0.21	1.8	1903	7.2	0.27	1.8	1797	249	285
	3/8	8.9	0.16	2.2	2085	8.9	0.20	2.1	2132	241	277
VP742	3/8	11.9	0.21	2.7	2867	11.8	0.20	2.7	2826	484	520
	1/2	15.1	0.21	3.6	3637	15.3	0.22	3.7	3707	467	503

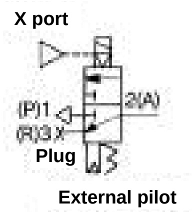
Note 1) Values without bracket
Note 2) These valves have been calculated according to ISO6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Application Example

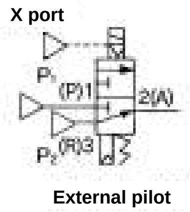
(1) Blow-off valve



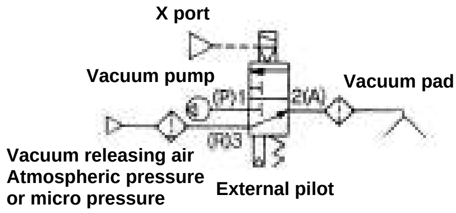
(2) Pressure release valve



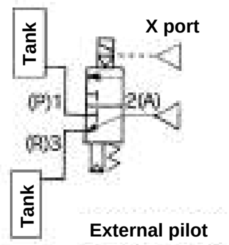
(3) Selector valve



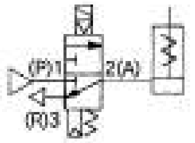
(4) Valve for vacuum



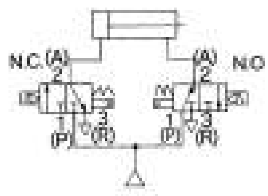
(5) Divider valve



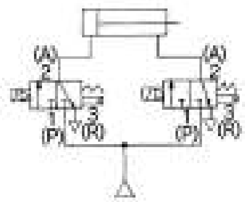
(6) Single-acting cylinder drive



(7) Double-acting cylinder drive



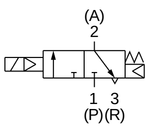
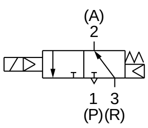
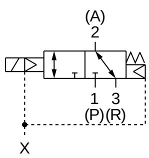
(8) Double-acting cylinder drive (Exhaust centre)

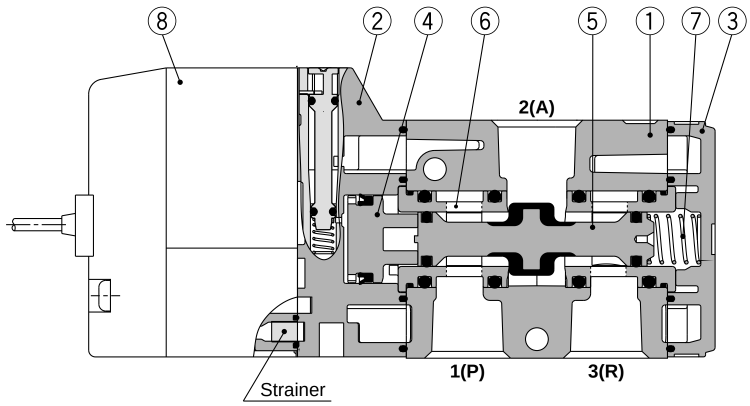


Construction

Body ported

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	Grey
3	**End plate**	Resin	White
4	**Piston**	Resin	
5	**Spool valve**	Aluminum/HNBR	
6	**Retainer**	Resin	
7	**Spring**	Stainless steel	

Bracket Assembly Part No.

Description	Model	Part no.
Bracket (With 2 screws)	VP342	VP300-227-1A
	VP542	VP500-227-1A
	VP742	VP700-227-1A

Replacement Parts

No.	Description	Part no.	Note
8	**Pilot valve assembly**	Refer to "How to Order Pilot Valve Assembly" on page 4.	Built-in strainer

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.

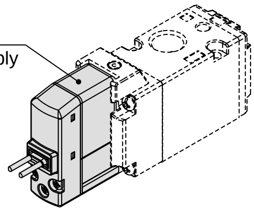
Valve model: VP□□□ □□−5GZ□1−□□□

Note) Select from the below in accordance with the valve used.

■ Grommet or L/M-type

V 2 1 1 □□−5GZ

V211
Pilot valve assembly



Light/surge voltage suppressor

		DC	AC
—	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 7 for details.

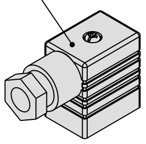
Electrical entry

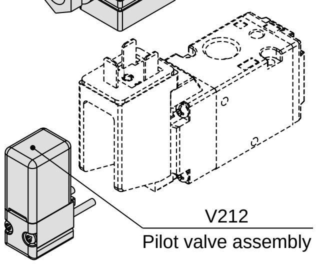
G	Grommet (Lead wire length 300 mm)	
H	Grommet (Lead wire length 600 mm)	
L	L-type plug connector	With lead wire
LN		Without lead wire
LO		Without connector
M	M-type plug connector	With lead wire
MN		Without lead wire
MO		Without connector

Note 1) LN and MN types are with 2 sockets.
Note 2) Refer to back page 4 when different length of lead wire for L/M-type plug connector is required.

■ DIN or Conduit type

DIN connector
(Refer to back page 5.)





V212
Pilot valve assembly

V 2 1 2 □□−5

Pressure specification

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

Coil specification

—	Standard
T	With power saving circuit (DC only)

Note) 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

⚠ Caution

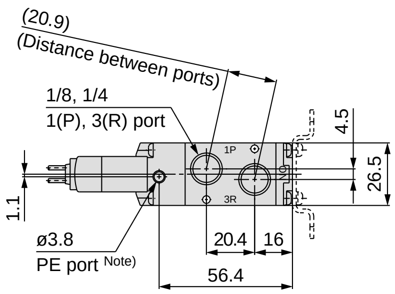
For V212 (DIN or Conduit type), the coil specification and voltage (including light/surge voltage suppressor) cannot be changed by changing the pilot valve assembly.

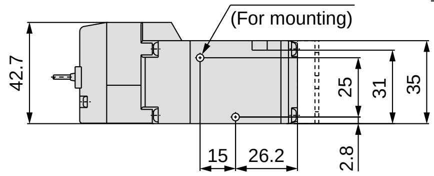
⚠ Caution

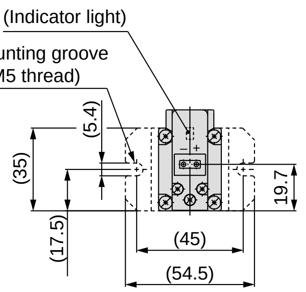
Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N·m

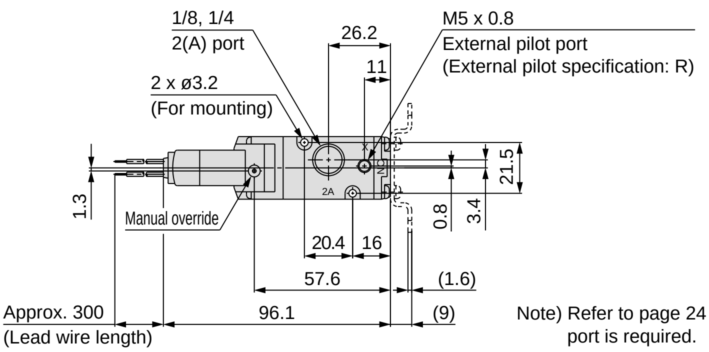
Series VP300/Body Ported/Dimensions

Grommet (G)



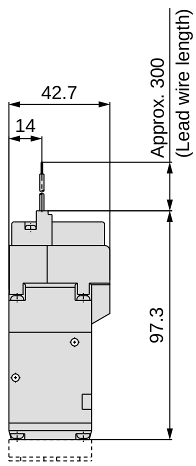




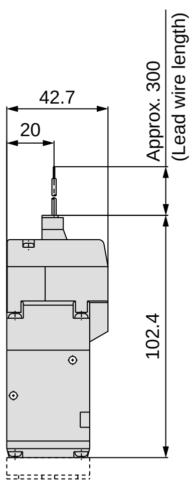


Note) Refer to page 24 when piping to PE port is required.

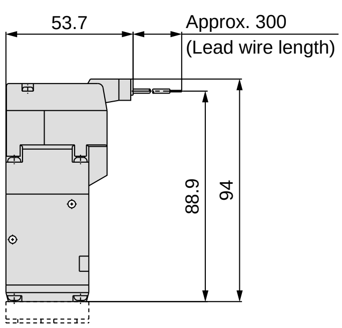
Grommet (G)
DC without light/surge voltage suppressor



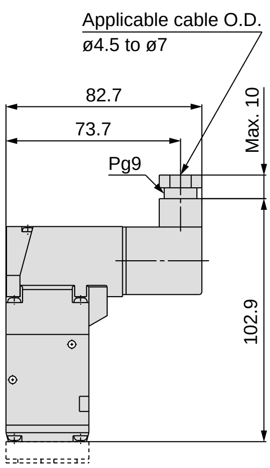
L-type plug connector (L)



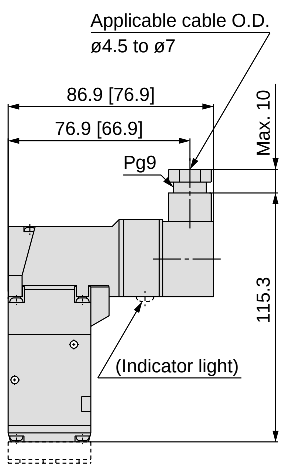
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

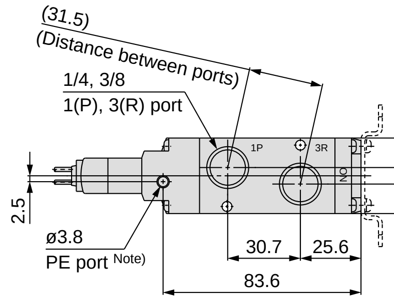


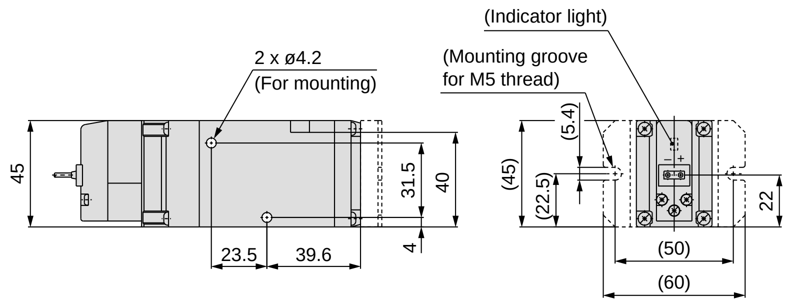
[ ] valves: Without indicator light

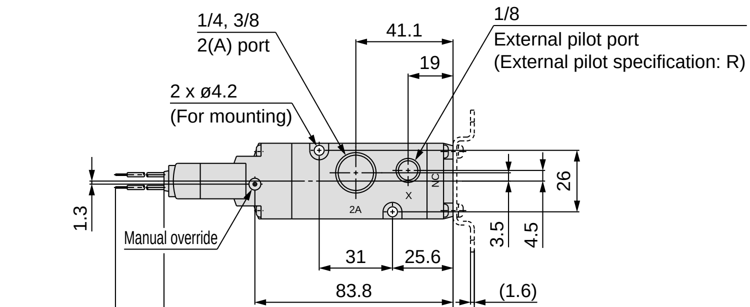
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VP500/Body Ported/Dimensions

Grommet (G)

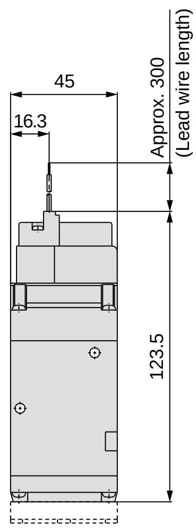




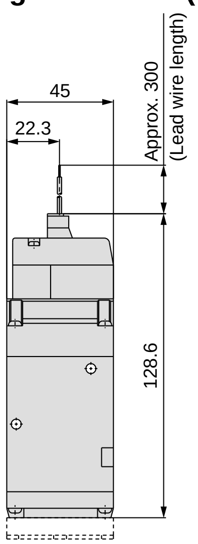


Note) Refer to page 24 when piping to PE port is required.

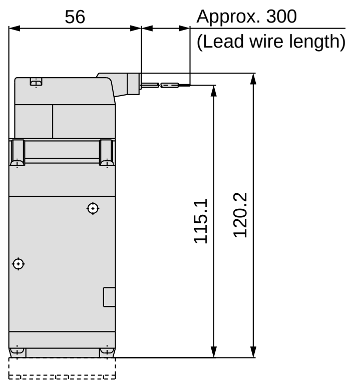
Grommet (G)
DC without light/surge voltage suppressor



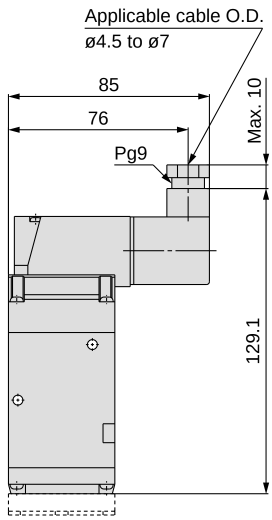
L-type plug connector (L)



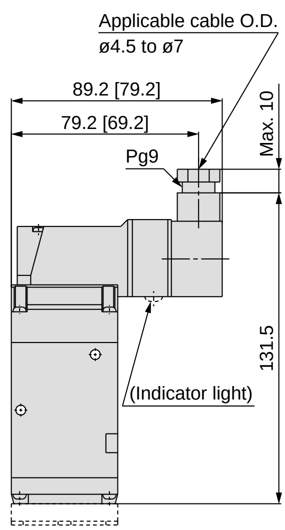
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

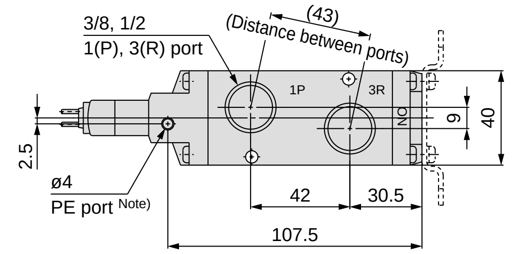


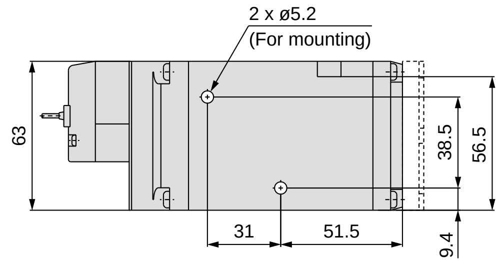
[ ] valves: Without indicator light

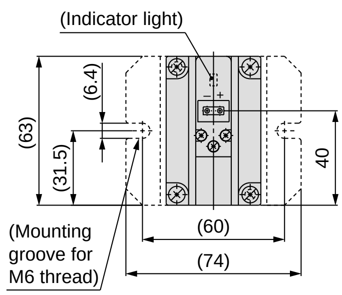
Unless otherwise indicated, dimensions are the same as Grommet (G).

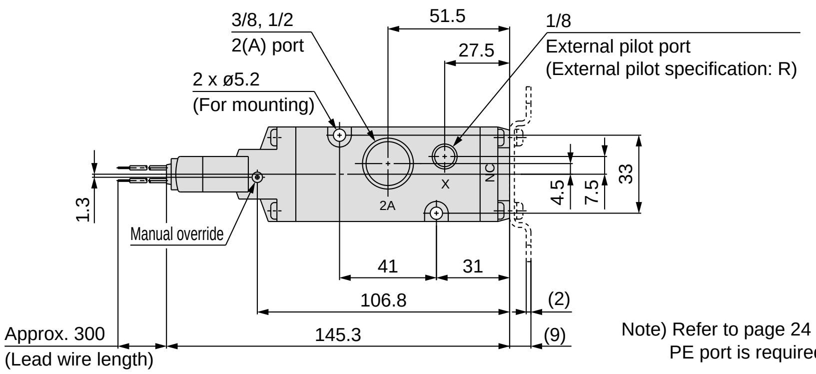
Series VP700/Body Ported/Dimensions

Grommet (G)



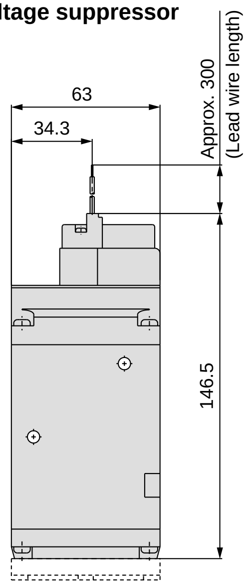




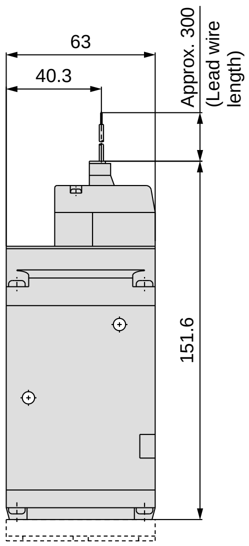


Note) Refer to page 24 when piping to PE port is required.

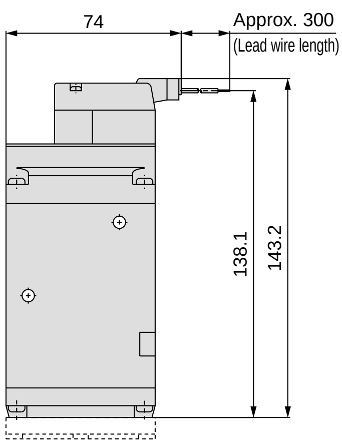
Grommet (G)
DC without light/surge voltage suppressor



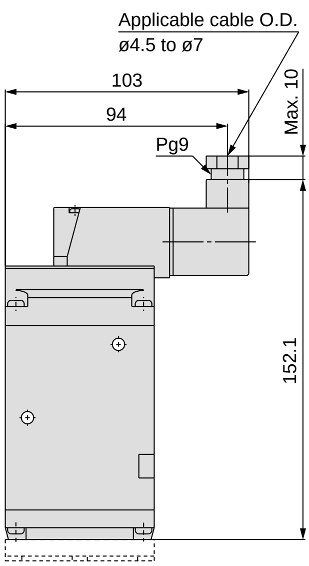
L-type plug connector (L)



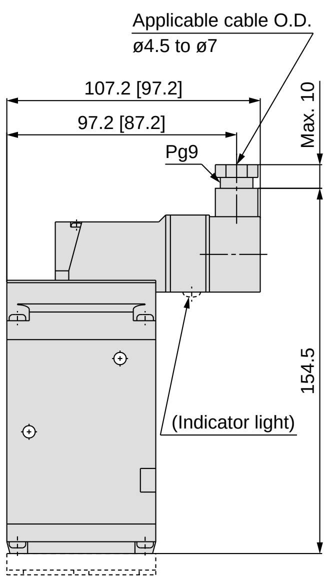
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



[ ] valves: Without indicator light

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

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

How to Order

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

* See the table below.

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only
Only applies to X500 and X505 for made-to-order specifications

Base mounted

VP 3 4 4 [ ] [ ] [ ] – 5 G [ ] [ ] 1 – [ ] [ ] A – [ ]

Series

3	VP300
5	VP500
7	VP700

Pilot type

		UL-compliant
Nil	Internal pilot	●
R	External pilot	●

Pressure specification

		UL-compliant
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 page 1296 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		UL-compliant
5	24 VDC	●
6	12 VDC	●

AC (50/60 Hz) Note)		UL-compliant
1	100 VAC	—
2	200 VAC	—
3	110 VAC [115 VAC]	—
4	220 VAC [230 VAC]	—
7	240 VAC	—
B	24 VAC	●

Note) For triac output, refer to the made-to-order specifications (X600).

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

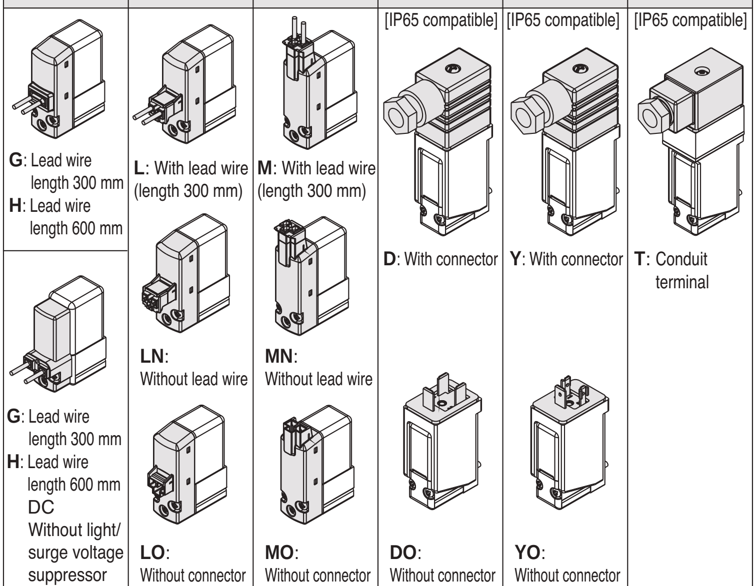
		UL-compliant
Nil	—	●
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 24).	●
X600	Triac output specification (Refer to page 24).	—

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



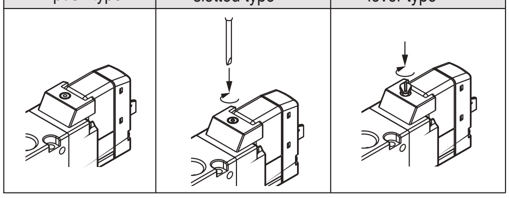
Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
			[IP65 compatible]	[IP65 compatible]	[IP65 compatible]
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	D: With connector	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			
	LO: Without connector	MO: Without connector	DO: Without connector	YO: Without connector	

CE/UKCA compliant	Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
DC	●	●	●	●	●	●
AC Note)	—	—	—	●	●	●

* LN and MN types are with 2 sockets.
* Refer to page 4 when different length of lead wire for L/M-type plug connector is required.
* Refer to page 5 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/UKCA marking compliant.

Manual override



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

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 page 1300 for details.

Series VP300/500/700

Low power consumption 1.5 W (DC)

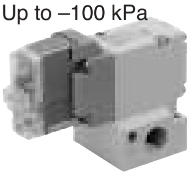
Possible to use as either a selector or divider valve

Possible to change from N.C. to N.O.

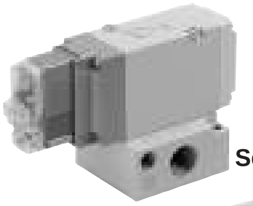
• Refer to back page 8 for changing the type of actuation.

Possible to use in vacuum applications

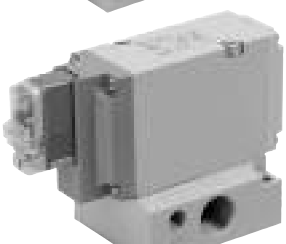
Up to –100 kPa



Series VP300



Series VP500



Series VP700

External Pilot

Use external pilot type in the following cases:

- For vacuum or for low pressure 0.2 MPa or less
- 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

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/s²) Note)		300/50
Enclosure		Dust-tight (IP65 for D, Y, T)

Note) Impact resistance: No malfunction occurred when tested in both the axial and right angle directions of main valve and armature (tested in both energized and de-energized states). (Values at the initial period).
Vibration resistance: No malfunction occurred when tested in a one-sweep test between 45 and 2000 Hz, in both the axial and right angle directions of main valve and armature (tested in both energized and de-energized states). (Values at the initial period).

Solenoid Specifications

Electrical entry			Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T)
			G, H, L, M	D, Y, T
Coil rated voltage (V)	DC		24, 12	
	AC (50/60 Hz)		100, 110, 200, 220, 240	
Allowable voltage fluctuation			10% of rated voltage Notes)	
Power consumption (W)	DC	Standard	1.5 (With light: 1.55)	1.5 (With light: 1.75)
		With power saving circuit	0.55 (With light only)	0.75 (With light only)
Apparent power (VA) Notes)	AC	100 V 110 V [115 V] 200 V 220 V [230 V] 240 V	1.55 (With light: 1.65)	1.55 (With light: 1.7)
Surge voltage suppressor			Diode (Non-polar type: Varistor)	
Indicator light			LED (Neon bulb is used for AC mode of D, Y, T.)	

Note 1) It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
Note 2) Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.
Note 3) 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 8375-1981. (Coil temperature: 20C, at rated voltage)

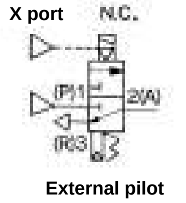
Flow Characteristics/Mass

Model	Port size	1 ↔ 2 (P ↔ A)				2 ↔ 3 (A ↔ R)				Mass (g) Note 1)	
		C [dm³/(s·bar)]	b	Cv	Q [l/min] (ANR) Note 2)	C [dm³/(s·bar)]	b	Cv	Q [l/min] (ANR) Note 2)	Grommet	DIN terminal
VP344	1/8	3.6	0.22	0.8	872	3.5	0.24	0.8	858	216 (149)	252 (185)
	1/4	3.9	0.22	0.9	945	3.8	0.14	0.9	881	211 (149)	247 (185)
VP544	1/4	7.5	0.16	1.7	1757	7.3	0.20	1.7	1749	370 (245)	406 (281)
	3/8	8.8	0.07	2.0	1967	8.8	0.13	2.0	2029	362 (245)	398 (281)
VP744	3/8	12.9	0.10	2.9	2929	13.3	0.24	3.1	3260	676 (459)	712 (495)
	1/2	14.7	0.05	3.3	3256	15.0	0.17	3.4	3534	658 (459)	694 (495)

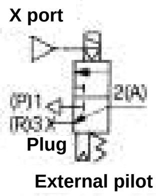
Note 1) ( ) valves: Values without sub-plate
Note 2) These valves have been calculated according to ISO6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Application Example

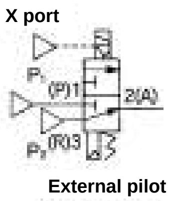
(1) Blow-off valve



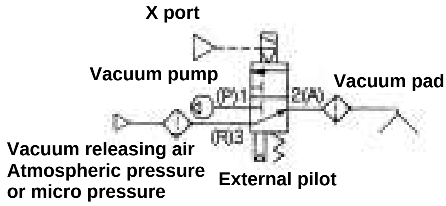
(2) Pressure release valve



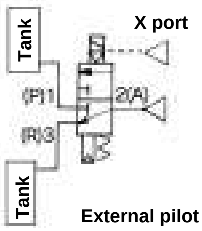
(3) Selector valve



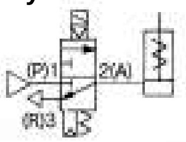
(4) Valve for vacuum



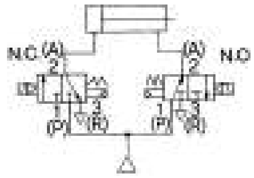
(5) Divider valve



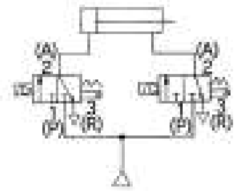
(6) Single-acting cylinder drive



(7) Double-acting cylinder drive



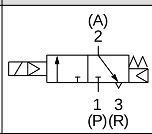
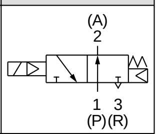
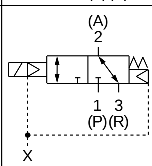
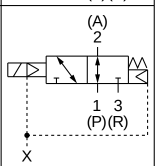
(8) Double-acting cylinder drive (Exhaust centre)

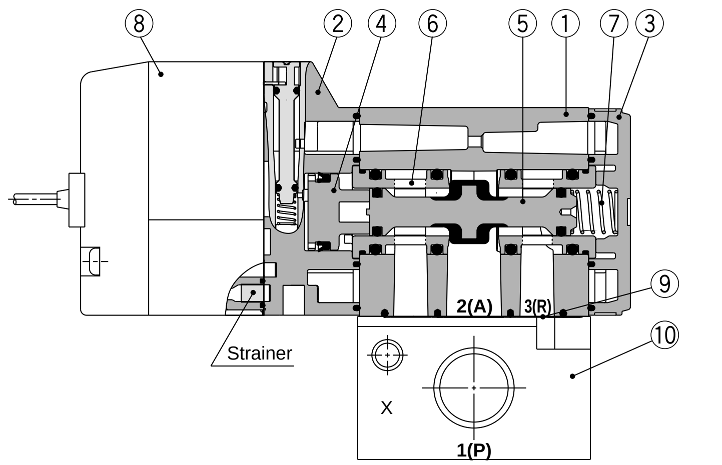


Construction

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	Grey
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

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.

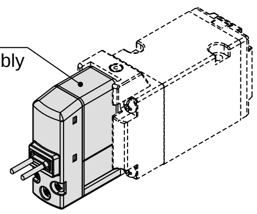
Valve model: VP□□□ □□–5GZ□1–□□□

Note) Select from the below in accordance with the valve used.

■ **Grommet or L/M-type**

V 2 1 1 □□–5GZ

V211
Pilot valve assembly



Light/surge voltage suppressor

		DC	AC
—	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 7 for details.

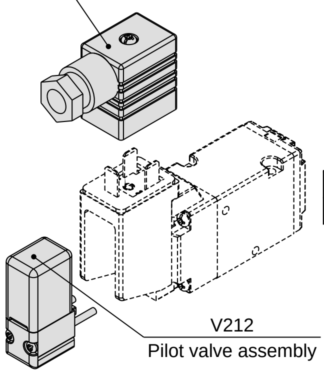
Electrical entry

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

Note 1) LN and MN types are with 2 sockets.
Note 2) Refer to back page 4 when different length of lead wire for L/M-type plug connector is required.

■ **DIN or Conduit type**

DIN connector
(Refer to back page 5.)



V212
Pilot valve assembly

V 2 1 2 □□–5

Pressure specification

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

Coil specification

—	Standard
T	With power saving circuit (DC only)

Note) 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

⚠ Caution

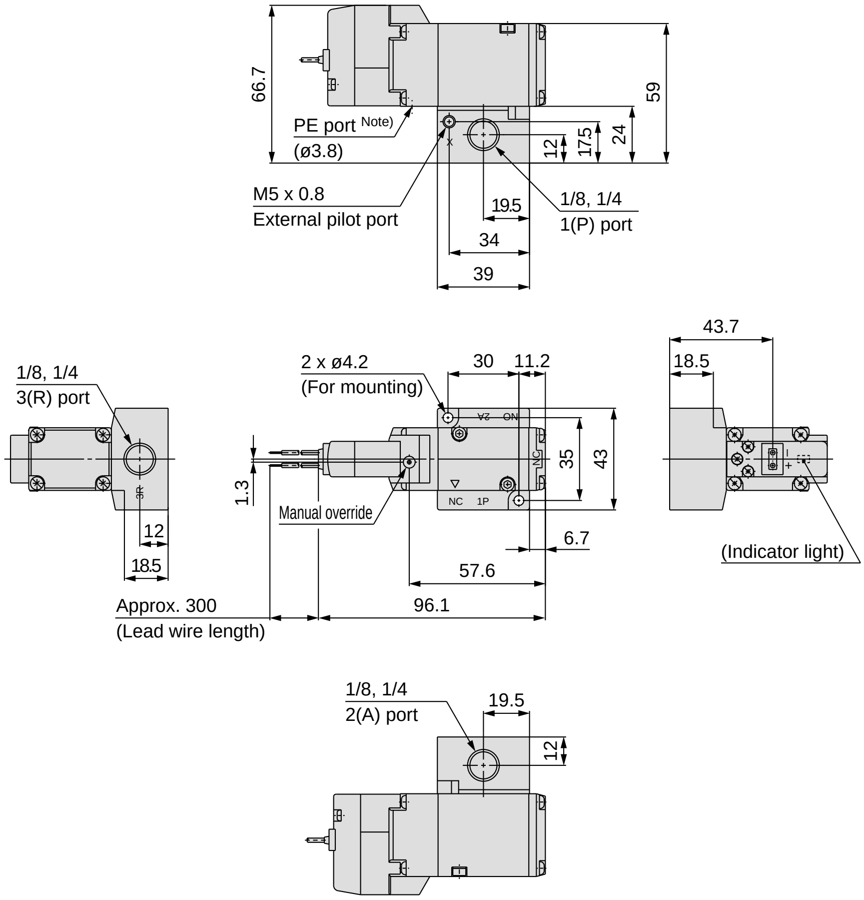
For V212 (DIN or Conduit type), the coil specification and voltage (including light/surge voltage suppressor) cannot be changed by changing the pilot valve assembly.

⚠ Caution

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

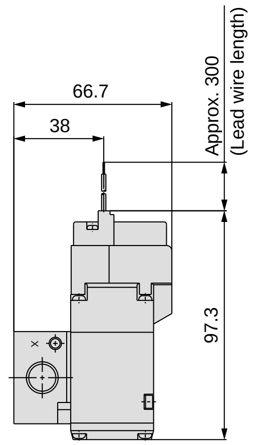
Series VP300/Base Mounted/Dimensions

Grommet (G)

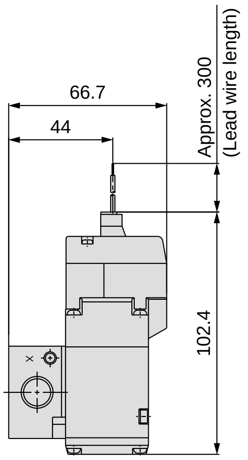


Note) Refer to page 24 when piping to PE port is required.

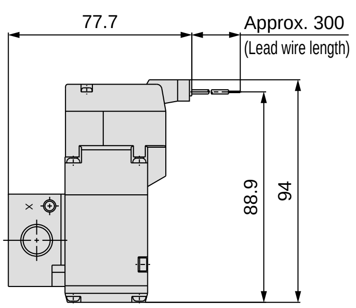
Grommet (G)
DC without light/surge voltage suppressor



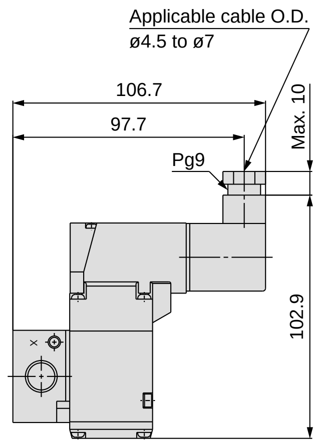
L-type plug connector (L)



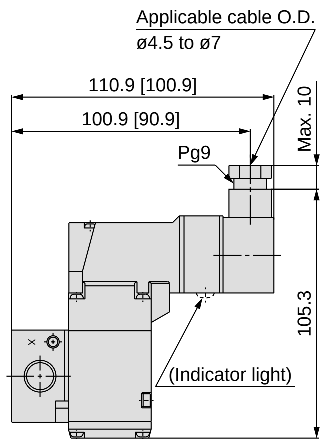
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

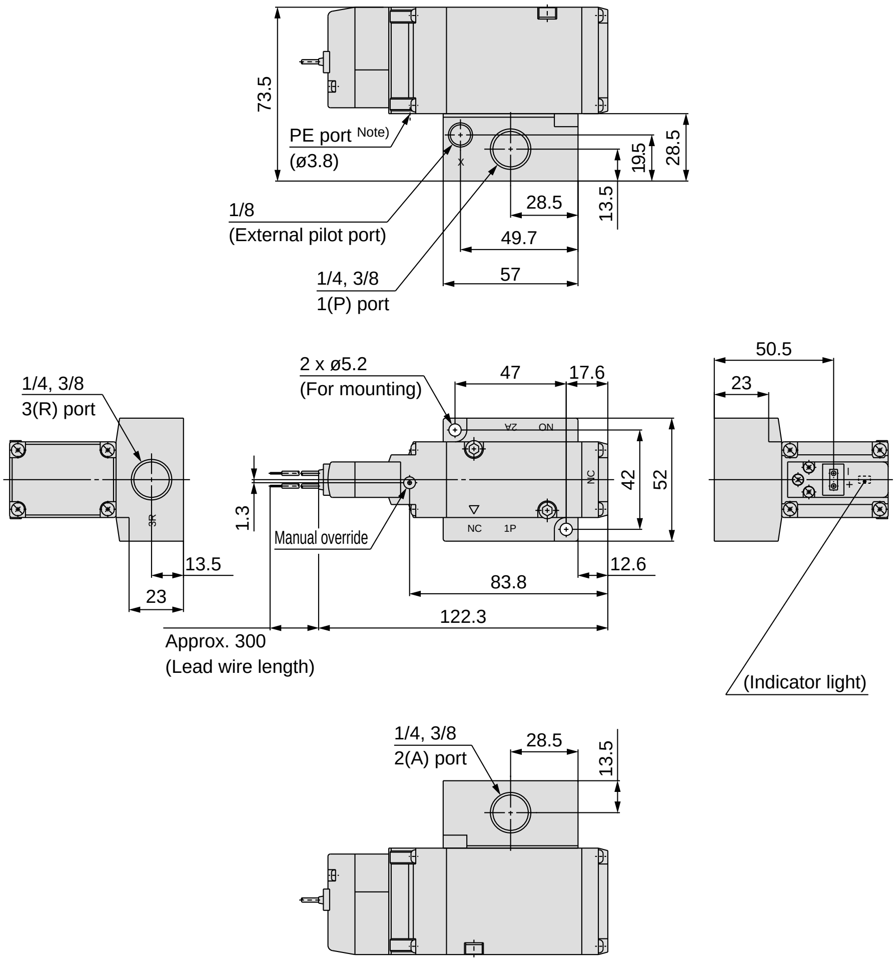


[ ] valves: Without indicator light

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

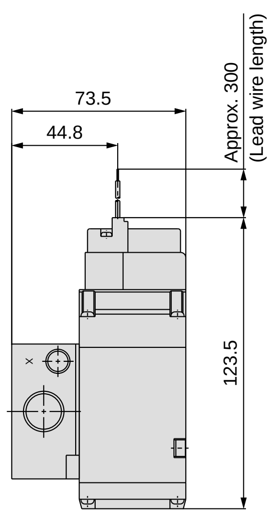
Series VP500/Base Mounted/Dimensions

Grommet (G)

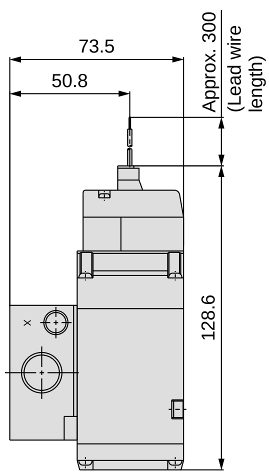


Note) Refer to page 24 when piping to PE port is required.

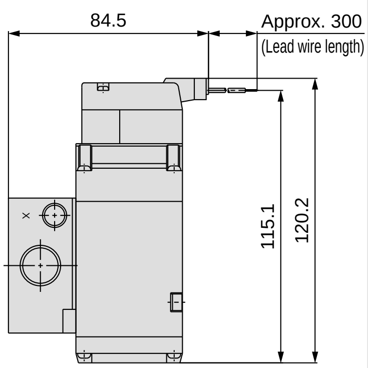
Grommet (G)
DC without light/surge voltage suppressor



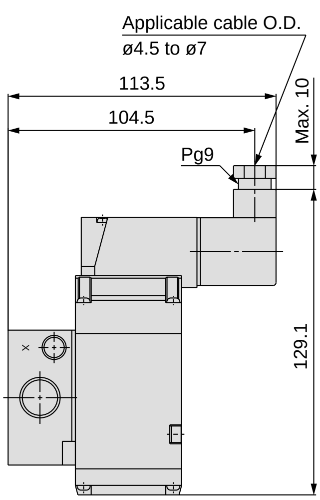
L-type plug connector (L)



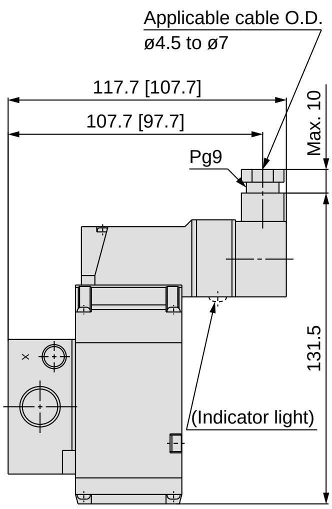
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

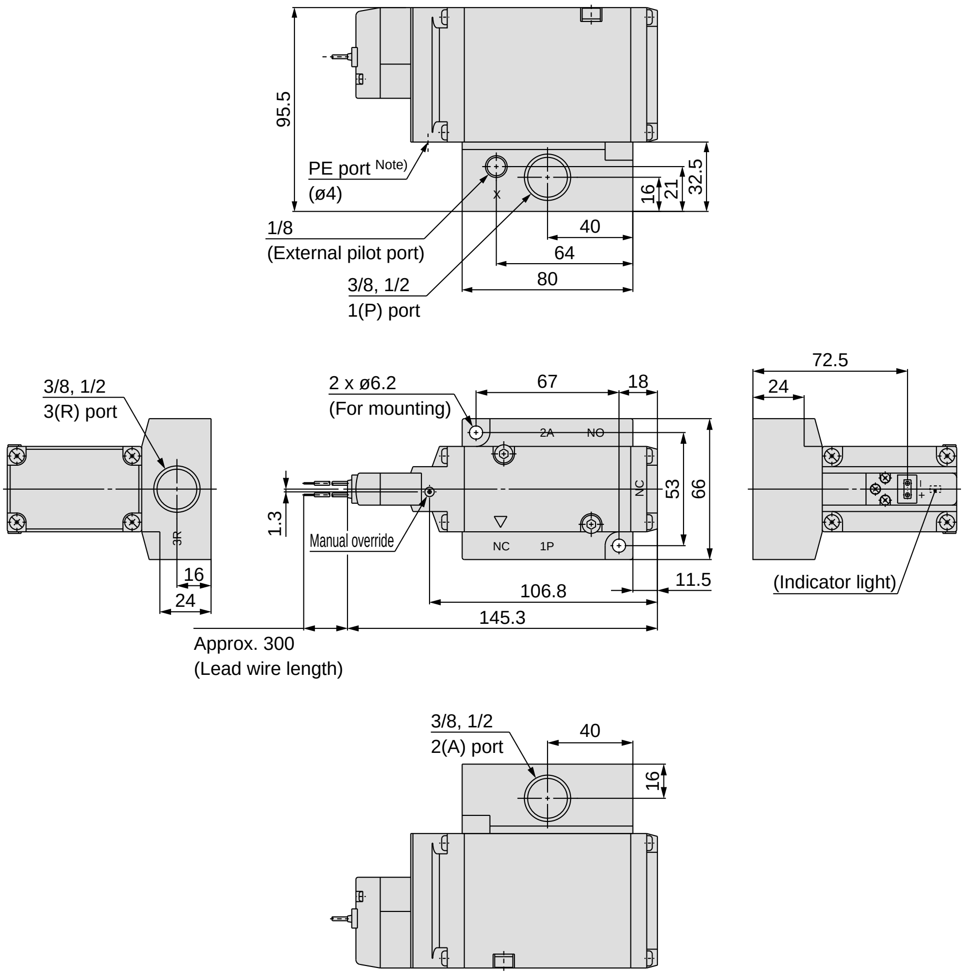


[ ] valves: Without indicator light

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

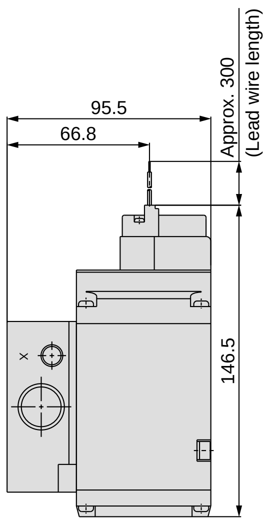
Series VP700/Base Mounted/Dimensions

Grommet (G)

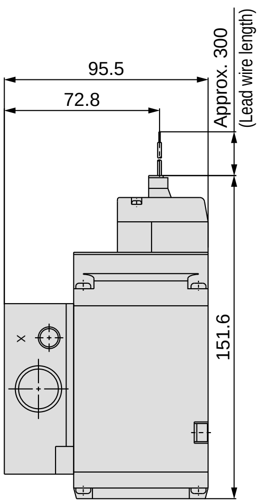


Note) Refer to page 24 when piping to PE port is required.

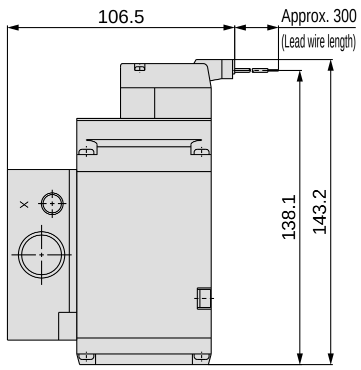
Grommet (G)
DC without light/surge voltage suppressor



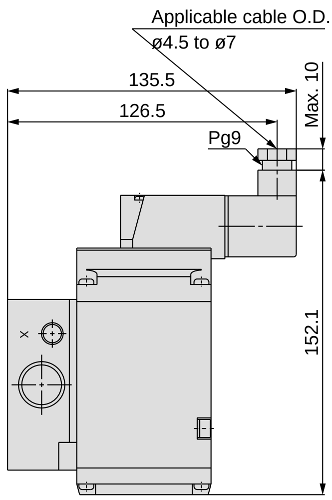
L-type plug connector (L)



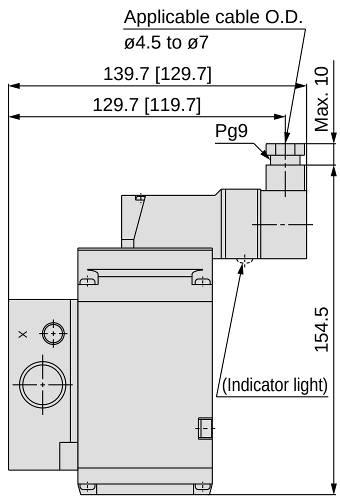
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



[ ] valves: Without indicator light

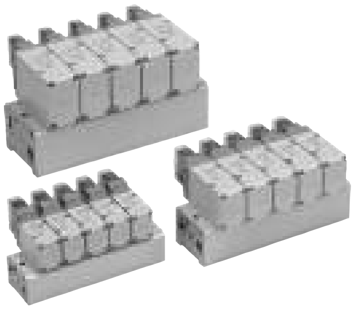
Unless otherwise indicated, dimensions are the same as Grommet (G).

Rubber Seal/3 Port/Pilot Poppet Type Manifold
Common Exhaust Type 41 / Individual Exhaust Type 42
Series VP300/500/700

How to Order Manifold

Type 41/Common exhaust

VV3P 3 – 41 ☐ – 04 1 – 02 ☐



Series

3	VP300
5	VP500
7	VP700

Pilot type

—	Internal pilot
R	External pilot

Note) When the external pilot type manifold is selected, external pilot type valves are mounted.

Stations

02	2 stations
⋮	⋮
20	20 stations

Port size

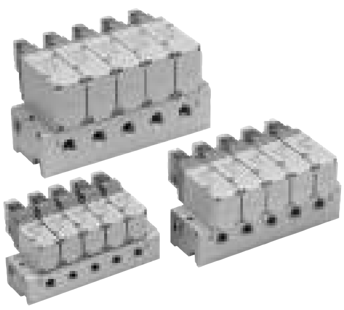
Symbol	Port size	Applicable series
02	1/4	VP300
03	3/8	VP500
04	1/2	VP700

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Type 42/Individual exhaust

VV3P 3 – 42 ☐ – 04 3 – 02 ☐



Series

3	VP300
5	VP500
7	VP700

Pilot type

—	Internal pilot
R	External pilot

Note) When the external pilot type manifold is selected, external pilot type valves are mounted.

Stations

02	2 stations
⋮	⋮
20	20 stations

Port size

Symbol	Port size	Applicable series
02	1/4	VP300
03	3/8	VP500
04	1/2	VP700

Thread type

—	Rc
F	G
N	NPT
T	NPTF

How to Order Valve
(With a gasket and two mounting bolts)

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

∗ See the table below.

Note) Pressure specifications: 0.7 MPa, DC or 24 VAC only. Only applies to X500 and X505 for made-to-order specifications

RoHS

VP 3 4 4 □ □ □ – 5 G □ □ 1 – A – □

Series

3	VP300
5	VP500
7	VP700

Pilot type

		UL-compliant
Nil	Internal pilot	●
R	External pilot	●

Pressure specification

		UL-compliant
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 page 1296 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

		UL-compliant
5	24 VDC	●
6	12 VDC	●

AC (50/60 Hz) Note)

		UL-compliant
1	100 VAC	—
2	200 VAC	—
3	110 VAC [115 VAC]	—
4	220 VAC [230 VAC]	—
7	240 VAC	—
B	24 VAC	●

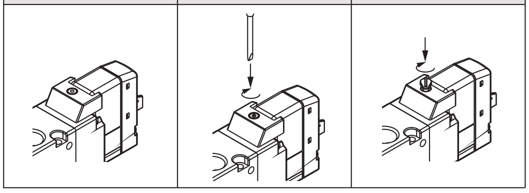
Note) For triac output, refer to the made-to-order specifications (X600).

Type of actuation

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

Manual override

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



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.

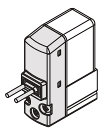
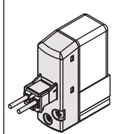
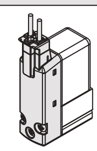
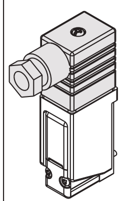
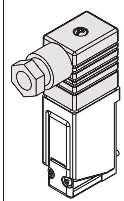
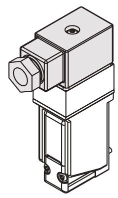
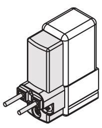
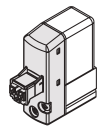
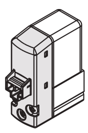
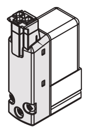
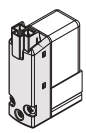
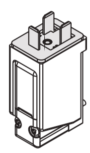
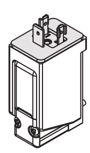
⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to page 1300 for details.

Made to Order

		UL-compliant
Nil	—	●
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 24).	●
X600	Triac output specification (Refer to page 24).	—

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)	[IP65 compatible]  **D**: With connector	[IP65 compatible]  **Y**: With connector	[IP65 compatible]  **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  **LO**: Without connector	 **MN**: Without lead wire  **MO**: Without connector	 **DO**: Without connector	 **YO**: Without connector	

CE/UKCA compliant		Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
	DC	●	●	●	●	●	●
	AC Note)	—	—	—	●	●	●

∗ LN and MN types are with 2 sockets.
∗ Refer to page 4 when different length of lead wire for L/M-type plug connector is required.
∗ Refer to page 5 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/UKCA marking compliant.

Piping is concentrated on the base side.

All external pilots are gathered in the base.

Common external pilot port allows one piping.

2 types of exhaust ports

Common or individual exhaust type are available. For individual exhaust type, exhaust can be restricted.

Easy to change between N.C. and N.O.

Type of actuation can be easily changed from normally closed to normally open by only changing the direction of a valve and end-plate 180°.

• Refer to back page 8 for changing the type of actuation.

VV3P3-41-051-02

VV3P5-42-053-03

Manifold Specifications

Series	Base model	Piping specifications			Applicable valve	Applicable stations Note)	Manifold base Mass: W [g] Stations: n
		1P (SUP) port type	3R (EXH) port type	Port size			
VP300	**VV3P3-41**	Common	Common	1/4	VP344	2 to 20 stations	W = 110n + 90
	VV3P3-42		Individual				
VP500	**VV3P5-41**		Common	3/8	VP544	2 to 20 stations	W = 190n + 150
	VV3P5-42		Individual				
VP700	**VV3P7-41**		Common	1/2	VP744	2 to 20 stations	W = 410n + 380
	VV3P7-42		Individual				

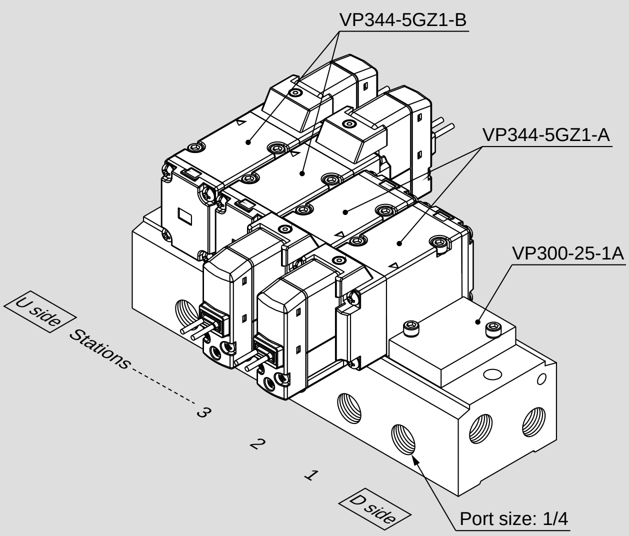
Note) Supply pressure to 1(P) ports and exhaust pressure from 3(R) ports on both sides for 10 stations or more.

Manifold Option

Description	Part no.	Applicable manifold base model
Blanking plate assembly (With a gasket and two mounting bolts)	VP300-25-1A	VV3P3
	VP500-25-1A	VV3P5
	VP700-25-1A	VV3P7

How to Order Manifold Assembly (Example)

Ordering example (VV3P3-41)



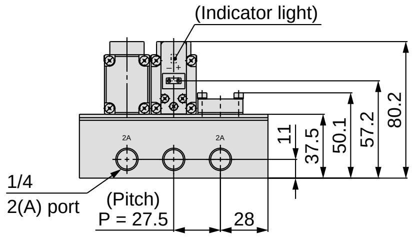
VV3P3-41-051-02 ····················· **1 set (Type 41, 5-station manifold base part no.)**
∗ VP300-25-1A ······················· **1 set (Blanking plate assembly part no.)**
∗ VP344-5GZ1-A ····················· **2 sets (N.C. type part no.)**
∗ VP344-5GZ1-B ····················· **2 sets (N.O. type part no.)**

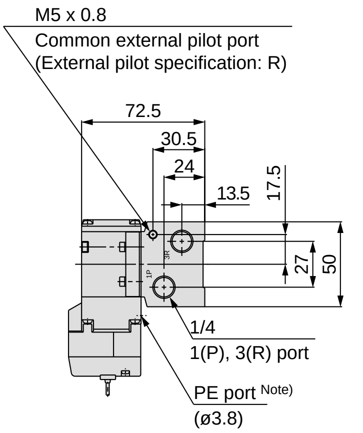
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

• Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing.

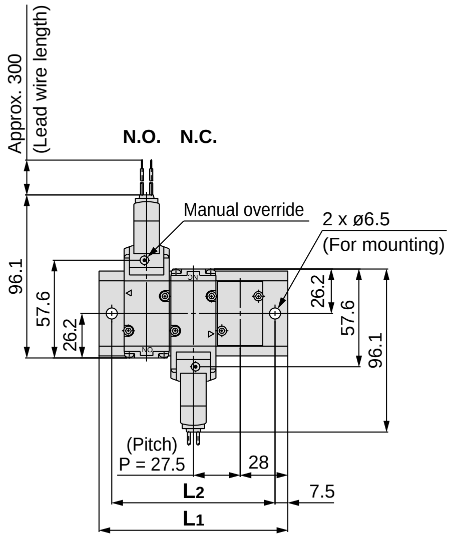
Series VP300/Dimensions

Type 41/Common exhaust: VV3P3-41□-Stations 1-02
Grommet (G)





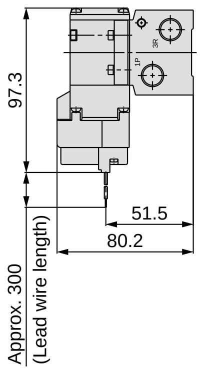
Note) Refer to page 24 when piping to PE port is required.



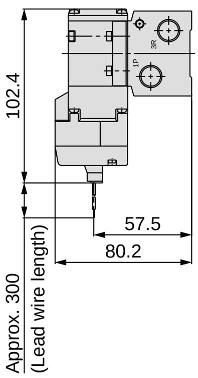
(Station n) ------- (Station 1)

Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L2	68.5	96	123.5	151	178.5	206	233.5	261	288.5	316	343.5	371	398.5	426	453.5	481	508.5	536	563.5

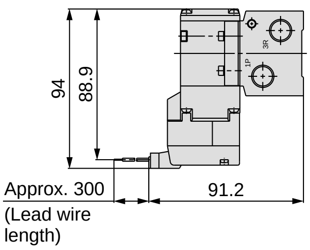
Grommet (G)
DC without light/surge voltage suppressor



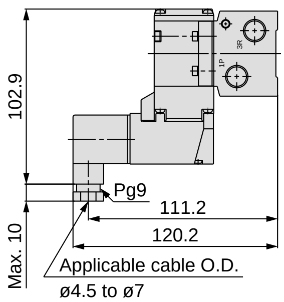
L-type plug connector (L)



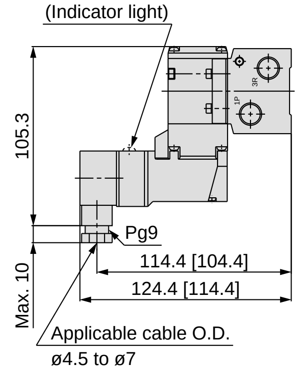
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

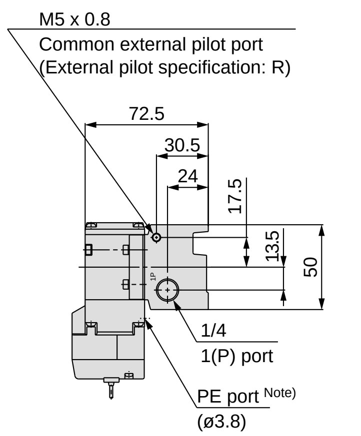


[ ] valves: Without indicator light

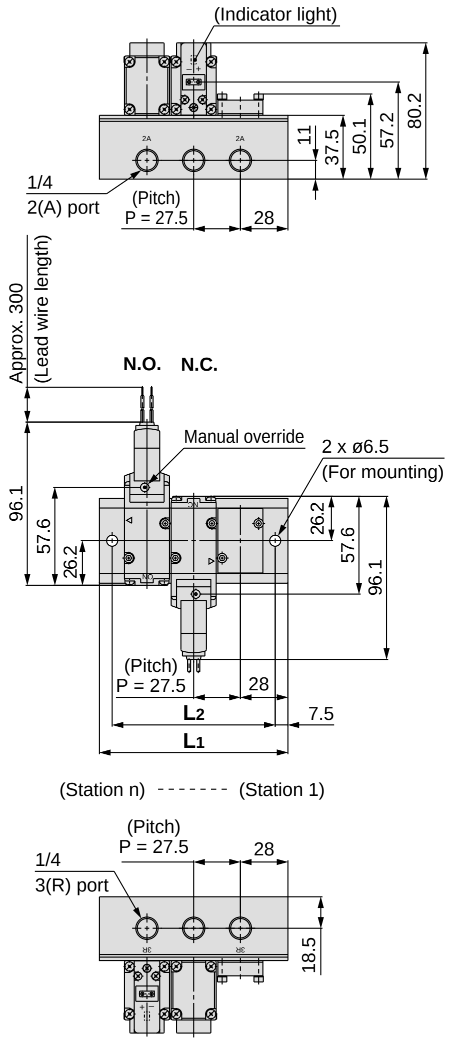
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VP300/Dimensions

Type 42/Individual exhaust: VV3P3-42□-Stations 3-02
Grommet (G)

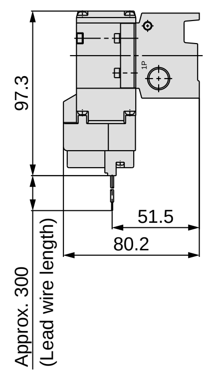


Note) Refer to page 24 when piping to PE port is required.

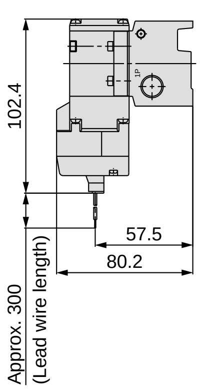


Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L2	68.5	96	123.5	151	178.5	206	233.5	261	288.5	316	343.5	371	398.5	426	453.5	481	508.5	536	563.5

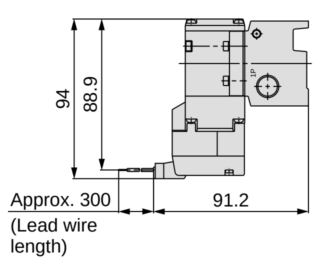
Grommet (G)
DC without light/surge voltage suppressor



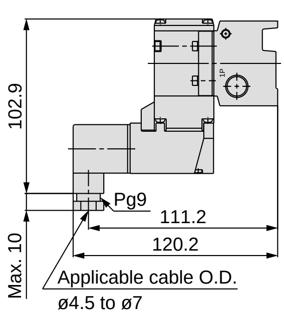
L-type plug connector (L)



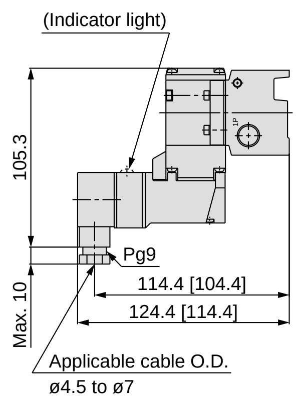
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

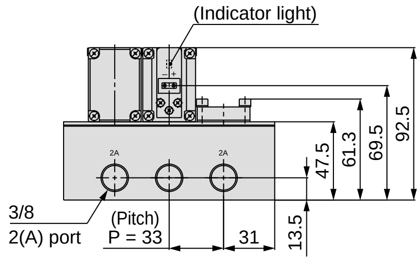


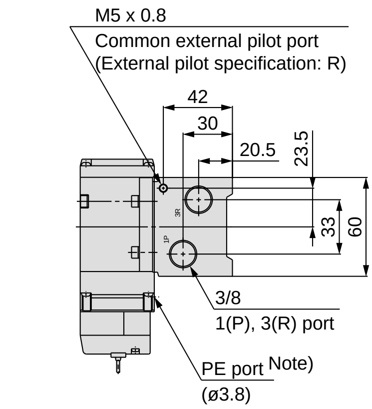
[ ] valves: Without indicator light

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

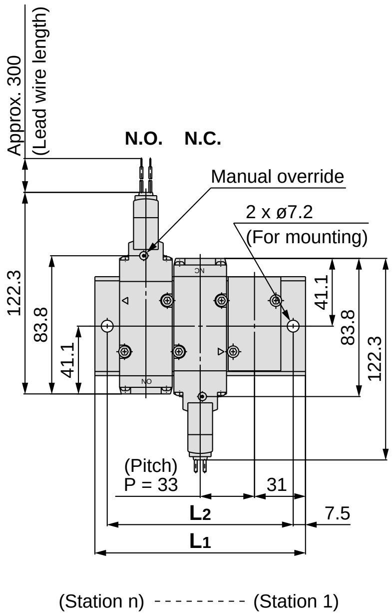
Series VP500/Dimensions

Type 41/Common exhaust: VV3P5-41□-Stations 1-03
Grommet (G)



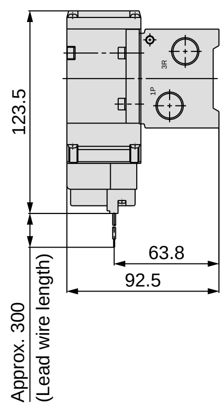


Note) Refer to page 24 when piping to PE port is required.

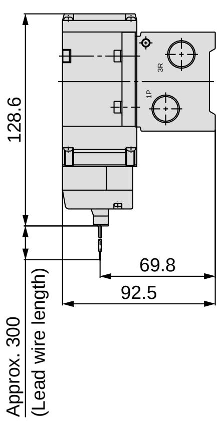


Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	95	128	161	194	227	260	293	326	359	392	425	458	491	524	557	590	623	656	689
L2	80	113	146	179	212	245	278	311	344	377	410	443	476	509	542	575	608	641	674

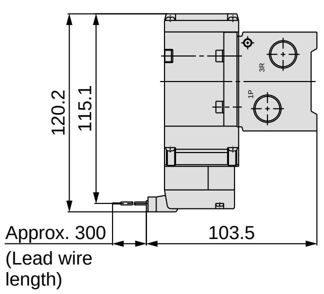
Grommet (G)
DC without light/surge voltage suppressor



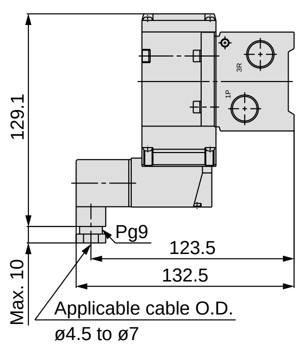
L-type plug connector (L)



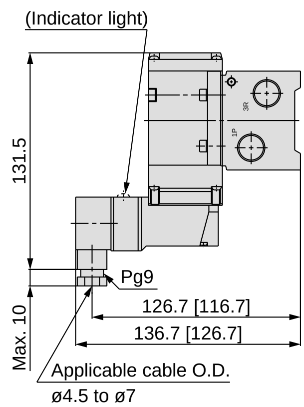
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

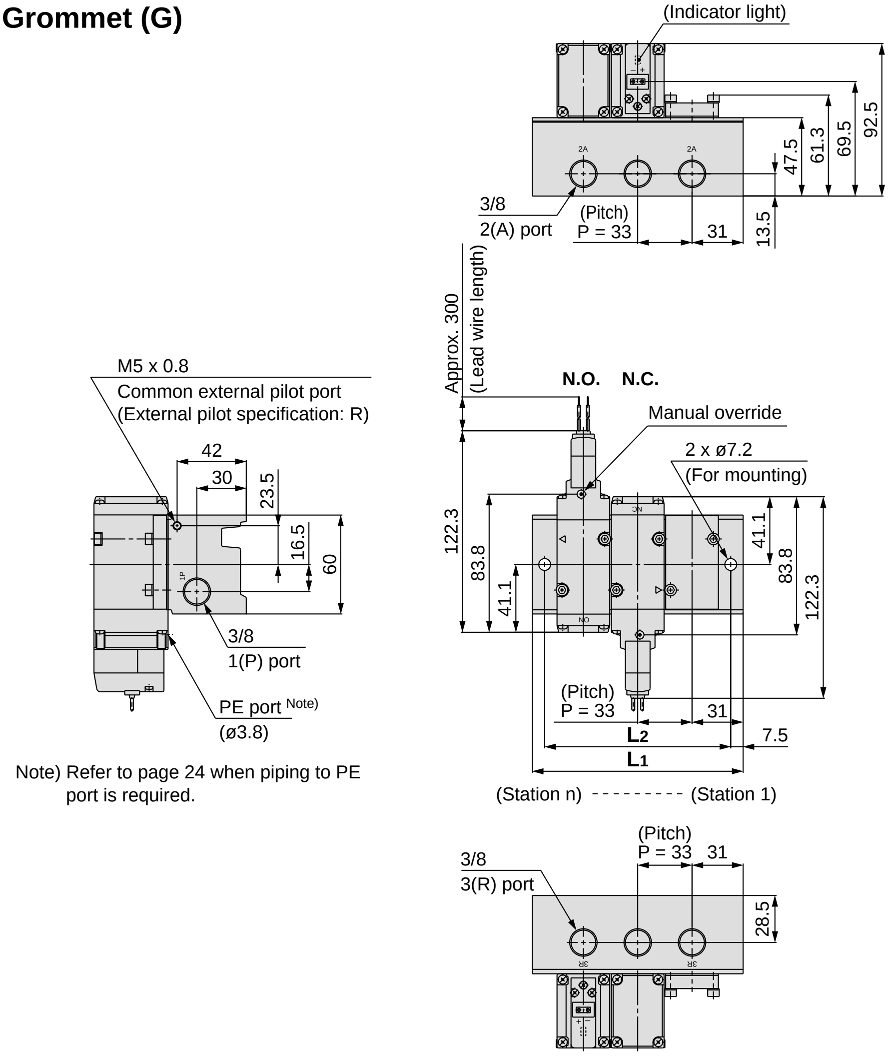


[ ] valves: Without indicator light

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

Series VP500/Dimensions

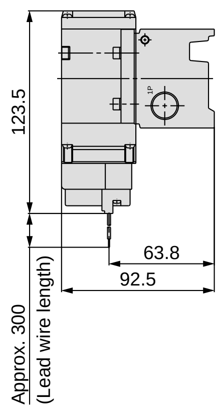
Type 42/Individual exhaust: VV3P5-42□-Stations 3-03
Grommet (G)



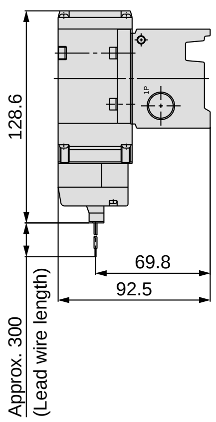
Note) Refer to page 24 when piping to PE port is required.

Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	95	128	161	194	227	260	293	326	359	392	425	458	491	524	557	590	623	656	689
L2	80	113	146	179	212	245	278	311	344	377	410	443	476	509	542	575	608	641	674

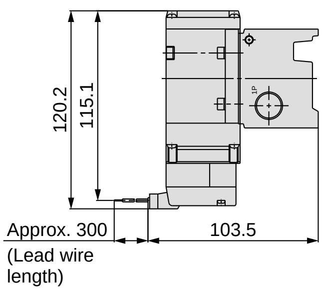
Grommet (G)
DC without light/surge voltage suppressor



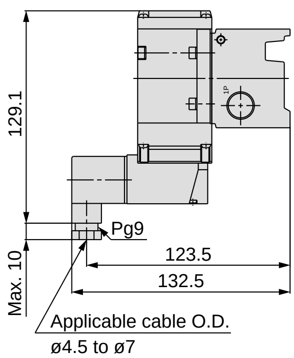
L-type plug connector (L)



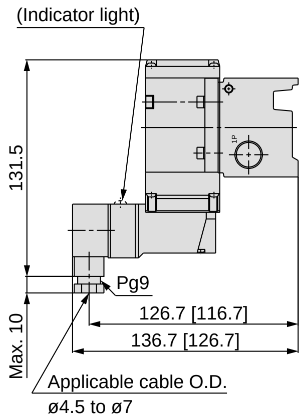
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

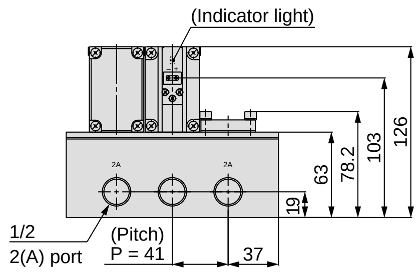


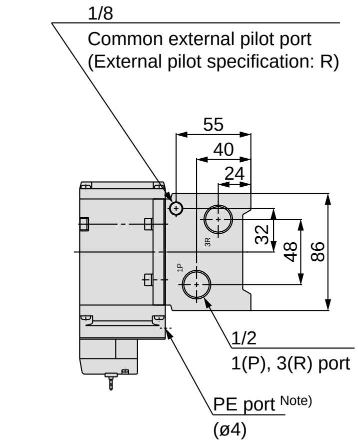
[ ] valves: Without indicator light

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

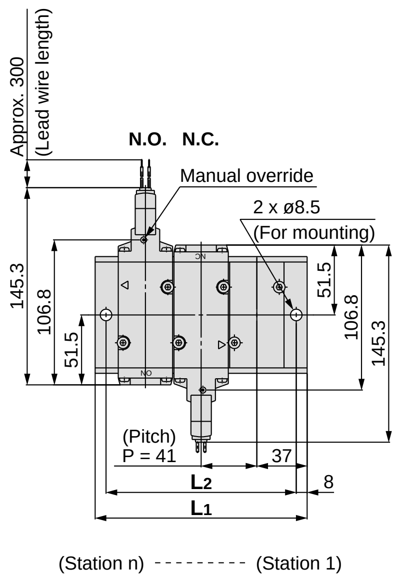
Series VP700/Dimensions

Type 41/Common exhaust: VV3P7-41□-Stations 1-04
Grommet (G)



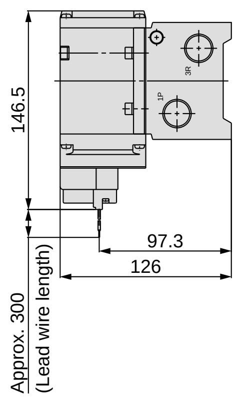


Note) Refer to page 24 when piping to PE port is required.

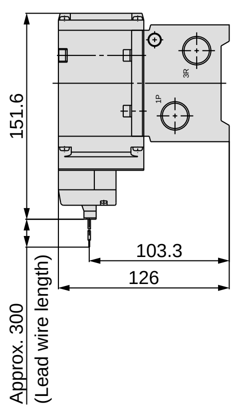


Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	115	156	197	238	279	320	361	402	443	484	525	566	607	648	689	730	771	812	853
L2	99	140	181	222	263	304	345	386	427	468	509	550	591	632	673	714	755	796	837

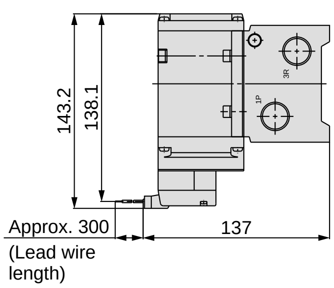
Grommet (G)
DC without light/surge voltage suppressor



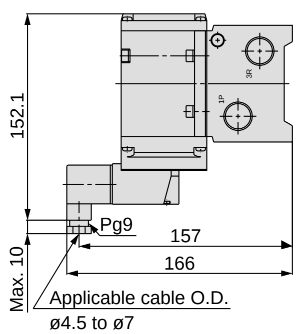
L-type plug connector (L)



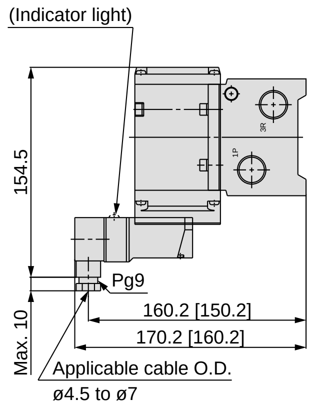
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)

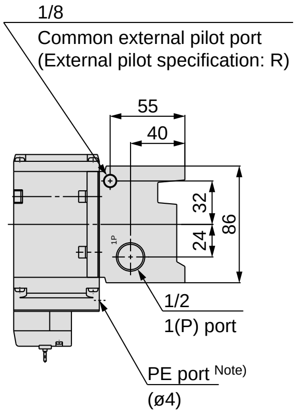


[ ] valves: Without indicator light

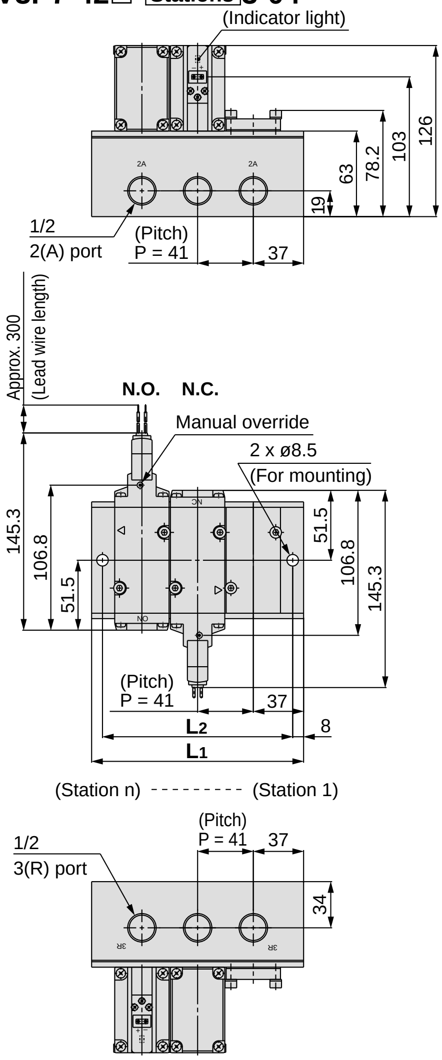
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VP700/Dimensions

Type 42/Individual exhaust: VV3P7-42□-Stations 3-04
Grommet (G)

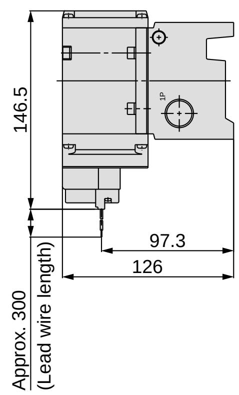


Note) Refer to page 24 when piping to PE port is required.

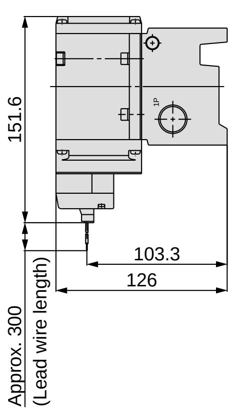


Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	115	156	197	238	279	320	361	402	443	484	525	566	607	648	689	730	771	812	853
L_2	99	140	181	222	263	304	345	386	427	468	509	550	591	632	673	714	755	796	837

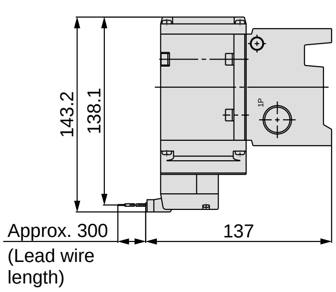
Grommet (G)
DC without light/surge voltage suppressor



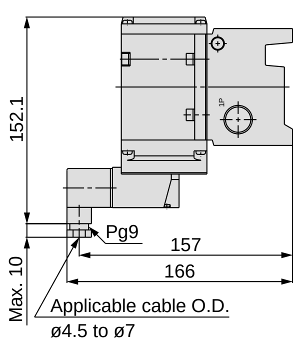
L-type plug connector (L)



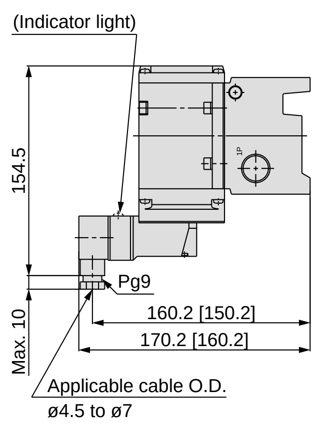
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



[ ] valves: Without indicator light

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

Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.

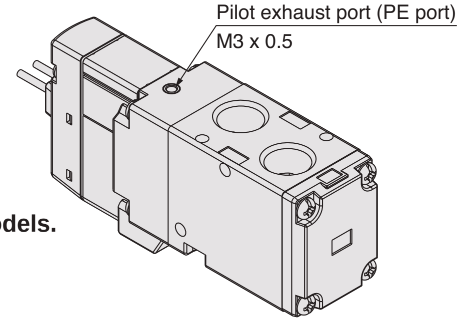
1 Pilot Exhaust Port with Piping Thread (M3) Specification

In this specification, piping to the pilot exhaust port (PE port) is available when the valve is used in an environment where the exhaust from the pilot valve is not allowable, or intrusion of ambient dust should be prevented.

How to Order Valve

VP $\begin{smallmatrix}3\\5\\7\end{smallmatrix}$ 4 $\begin{smallmatrix}2\\4\end{smallmatrix}$ □□□ − □□□□ 1 − □□□ − X500

- **Entry is the same as standard products. The specifications, performance and external dimensions are the same as those of standard models.**



2 Body Ported Interchangeable Specification with the Previous Valve Mounting Hole Pitch Type

The mounting hole has been changed to the long type in order to provide interchangeability with the previous VP300/500 series.

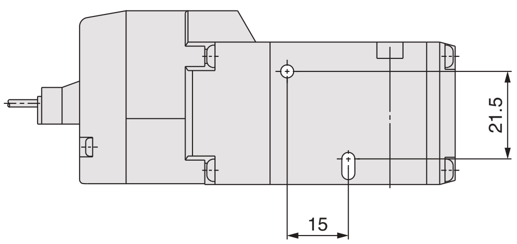
How to Order Valve

VP $\begin{smallmatrix}3\\5\end{smallmatrix}$ 42 □□□ − □□□□ 1 − □□□ − X505

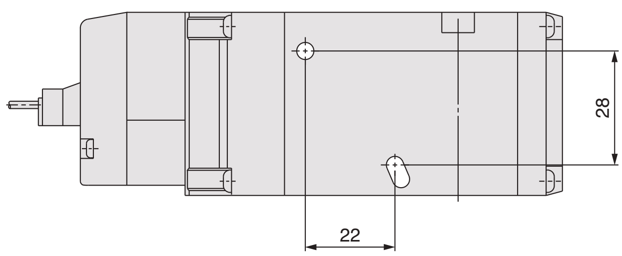
- **Entry is the same as standard products. The specifications, performance and external dimensions are the same as those of standard models.**

Note) VP742 is not available because the mounting hole pitch is the same as the previous type.

VP342



VP542



3 TRIAC Output Specification

For AC type valve, use this specification when the pilot valve is not recovered even though valve power supply is turned OFF at the equipment using output unit with large leakage voltage over 8% of the rated voltage (TRIAC output such as PLC or SSR, etc.). Combination with low wattage specification is not possible.

How to Order Valve

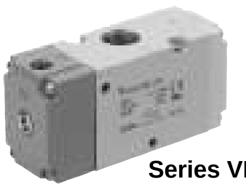
VP $\begin{smallmatrix}3\\5\\7\end{smallmatrix}$ 4 □□□ − □□□□ 1 − □□□ − □ − □ − X600

- **Entry is the same as standard products.**

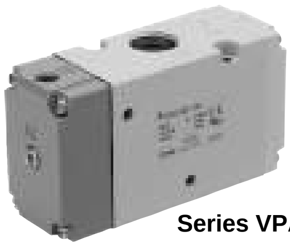
Note) Rated voltage: AC type only

3 Port/Air Operated Valve
Body Ported/Single Unit
Series VPA300/500/700

Series VPA300



Series VPA500



Series VPA700

How to Order

VPA 3 4 2 □ − 1 − 01 □ A − □

Series

3	VPA300
5	VPA500
7	VPA700

Body option

—	Standard
V	For vacuum

Port size

Symbol	Port size	VPA300	VPA500	VPA700
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Type of actuation

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

Bracket

—	Without bracket
F	With bracket

Specifications

Fluid		Air
Type of actuation		N.C. or N.O. (Convertible)
Operating pressure range (MPa)	**Standard**	0.2 to 1.0
	For vacuum	–100 kPa to 0.2
Pilot pressure (MPa)		0.2 to 1.0 (Equivalent to the operating pressure or more)
Ambient and fluid temperature (°C)		–10 to 50 (No freezing)
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s^2) Note)		300/50

Note) Impact resistance: No malfunction occurred when tested in both the axial and right angle directions of main valve and armature (tested in both energized and de-energized states). (Values at the initial period).

Vibration resistance: No malfunction occurred when tested in a one-sweep test between 45 and 2000 Hz, in both the axial and right angle directions of main valve and armature (tested in both energized and de-energized states). (Values at the initial period).

Flow Characteristics/Mass

Model	Port size	1 ↔ 2 (P ↔ A)				2 ↔ 3 (A ↔ R)				Mass (g) Note 1)
		C [dm^3/(s·bar)]	b	Cv	Q [ℓ/min] (ANR) Note 2)	C [dm^3/(s·bar)]	b	Cv	Q [ℓ/min] (ANR) Note 2)	
VPA342	1/8	3.5	0.26	0.8	868	3.6	0.26	0.9	893	118
	1/4	4.2	0.22	1.0	1018	4.2	0.23	1.0	1023	114
VPA542	1/4	7.9	0.21	1.8	1903	7.2	0.27	1.8	1797	237
	3/8	8.9	0.16	2.2	2085	8.9	0.20	2.1	2132	229
VPA742	3/8	11.9	0.21	2.7	2867	11.8	0.20	2.7	2826	501
	1/2	15.1	0.21	3.6	3637	15.3	0.22	3.7	3707	484

Note 1) Values without brackets

Note 2) These valves have been calculated according to ISO6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

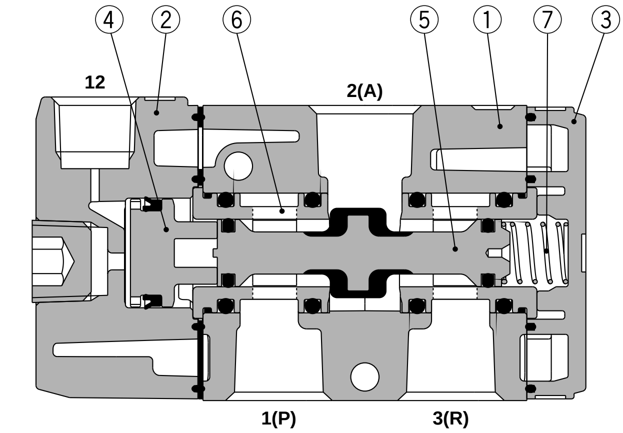
⚠ Caution

Refer to back pages 1 and 2 for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for Common Precautions.

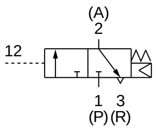
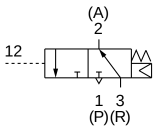
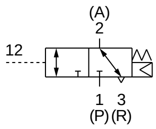
• Refer to back page 8 for changing the type of actuation.

Construction

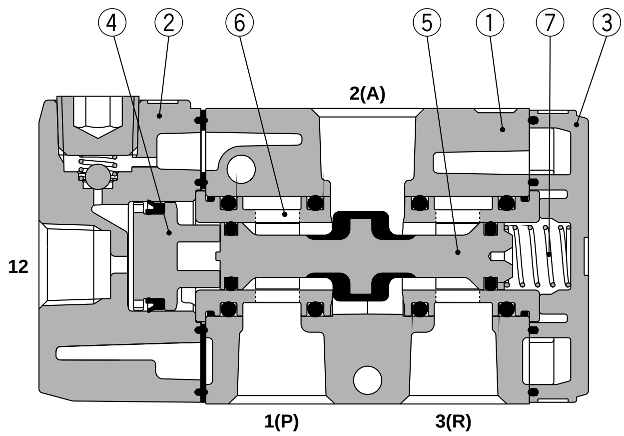
Standard



JIS symbol

	N.C.	N.O.
Standard		
For vacuum		

For vacuum



Component Parts

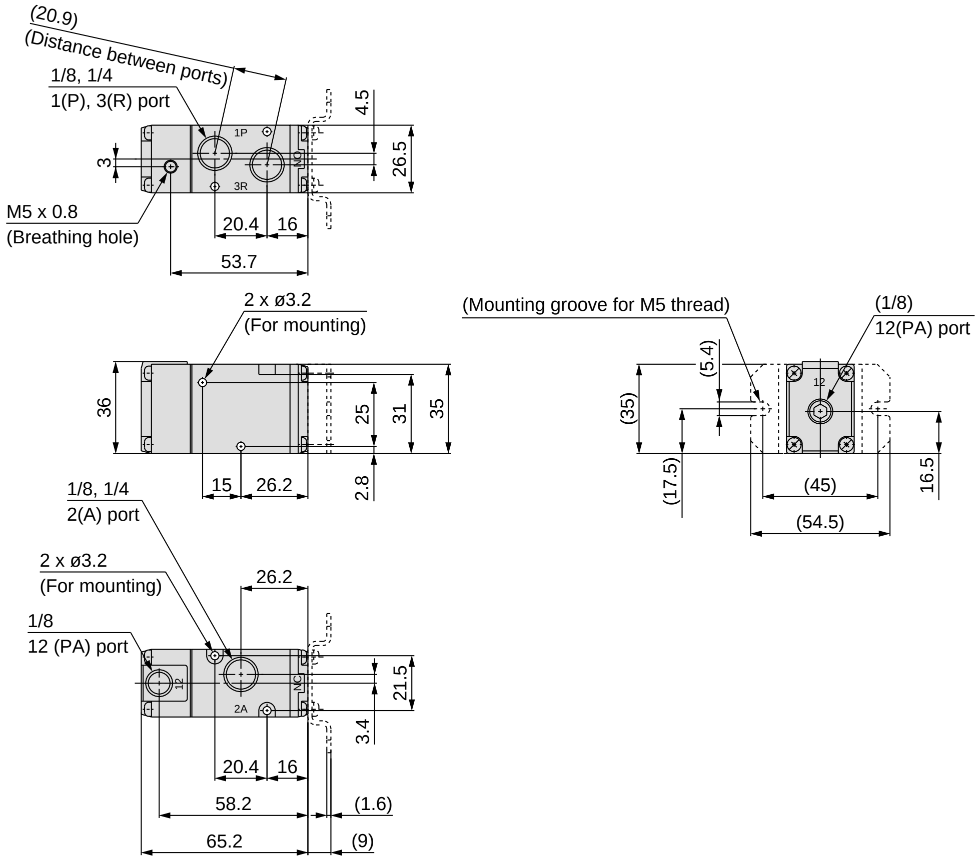
No.	Description	Material	Note
1	**Body**	Aluminum die-casted	White
2	**Adapter plate**	Aluminum die-casted	Grey
3	**End plate**	Resin	White
4	**Piston**	Resin	
5	**Spool valve**	Aluminum/HNBR	
6	**Retainer**	Resin	
7	**Spring**	Stainless steel	

Bracket Assembly Part No.

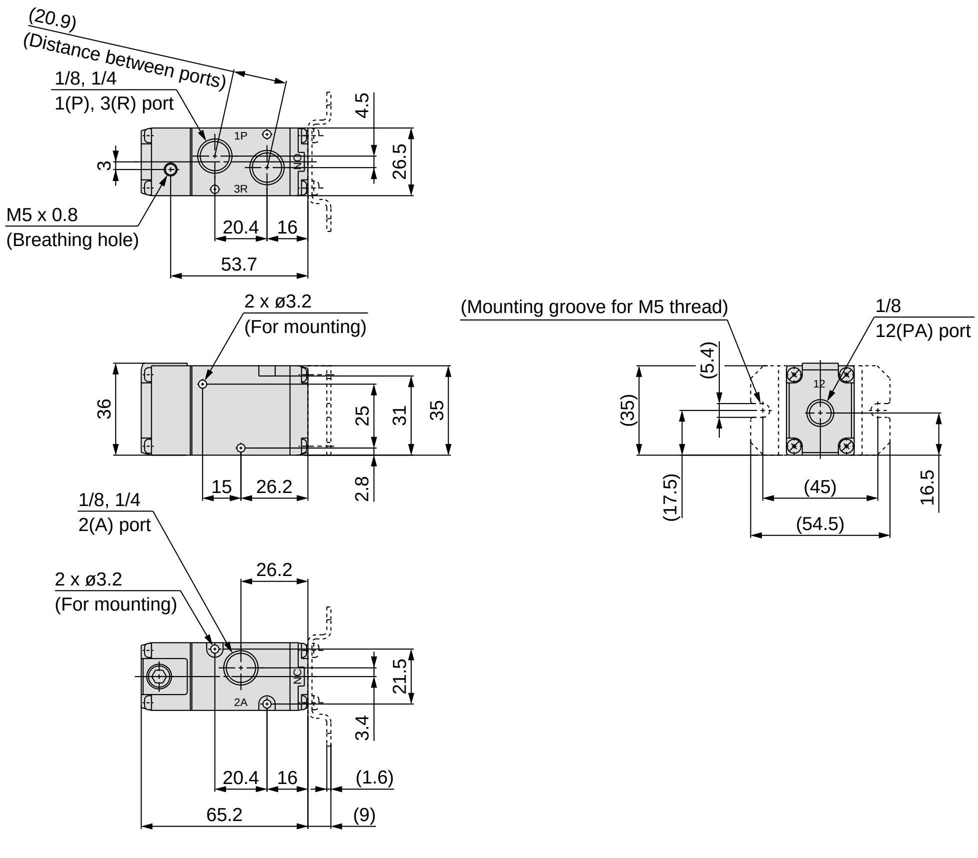
Description	Model	Part no.
Bracket (With 2 screws)	VPA342	VP300-227-1A
	VPA542	VP500-227-1A
	VPA742	VP700-227-1A

Series VPA300/Body Ported/Dimensions

Standard/VPA342-1-$^{01}_{02}$□$^{A}_{B}$ (-F)



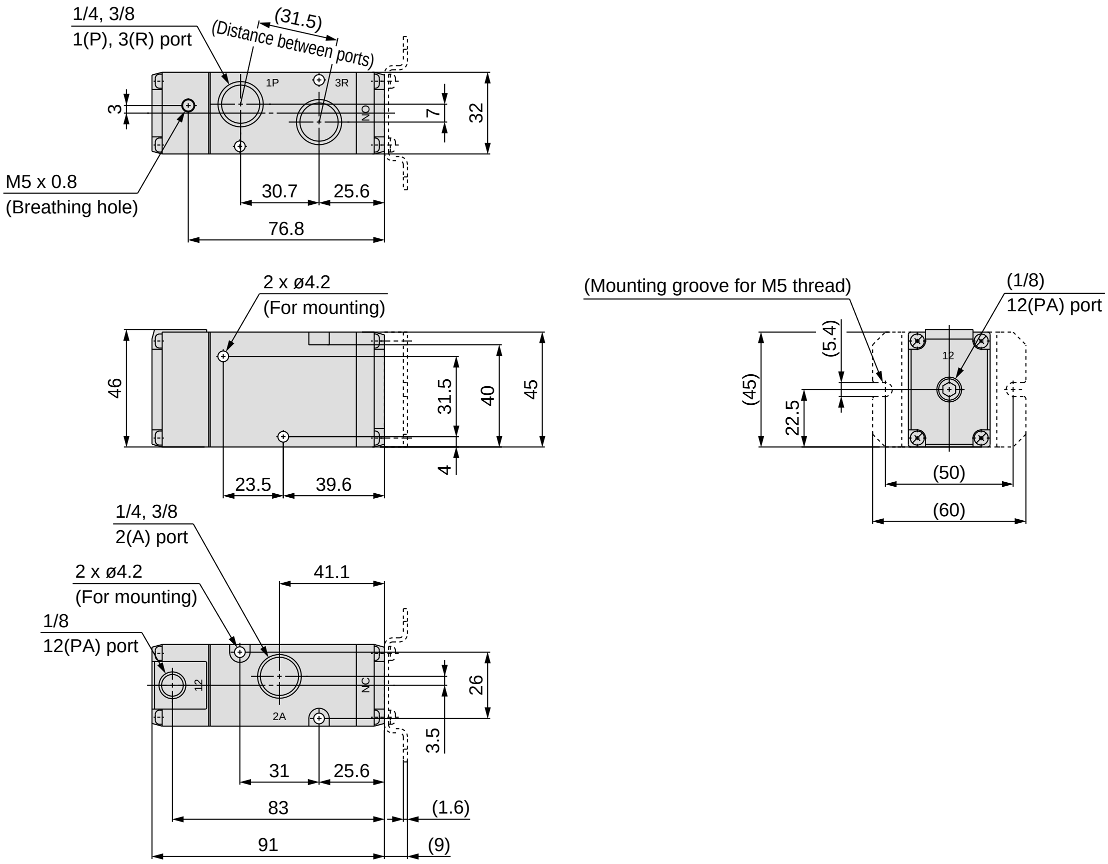
For vacuum/VPA342V-1-$^{01}_{02}$□$^{A}_{B}$ (-F)



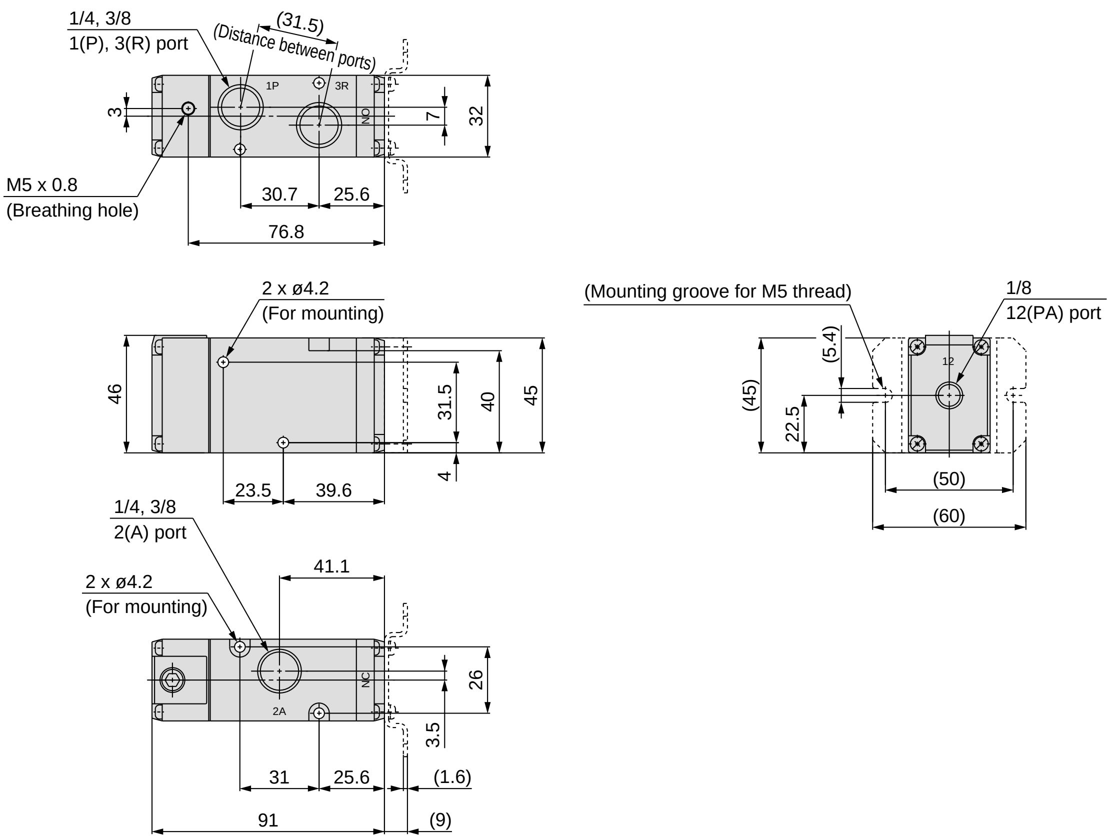
SMC

Series VPA500/Body Ported/Dimensions

Standard/VPA542-1-$^{02}_{03}\square^{A}_{B}$(-F)

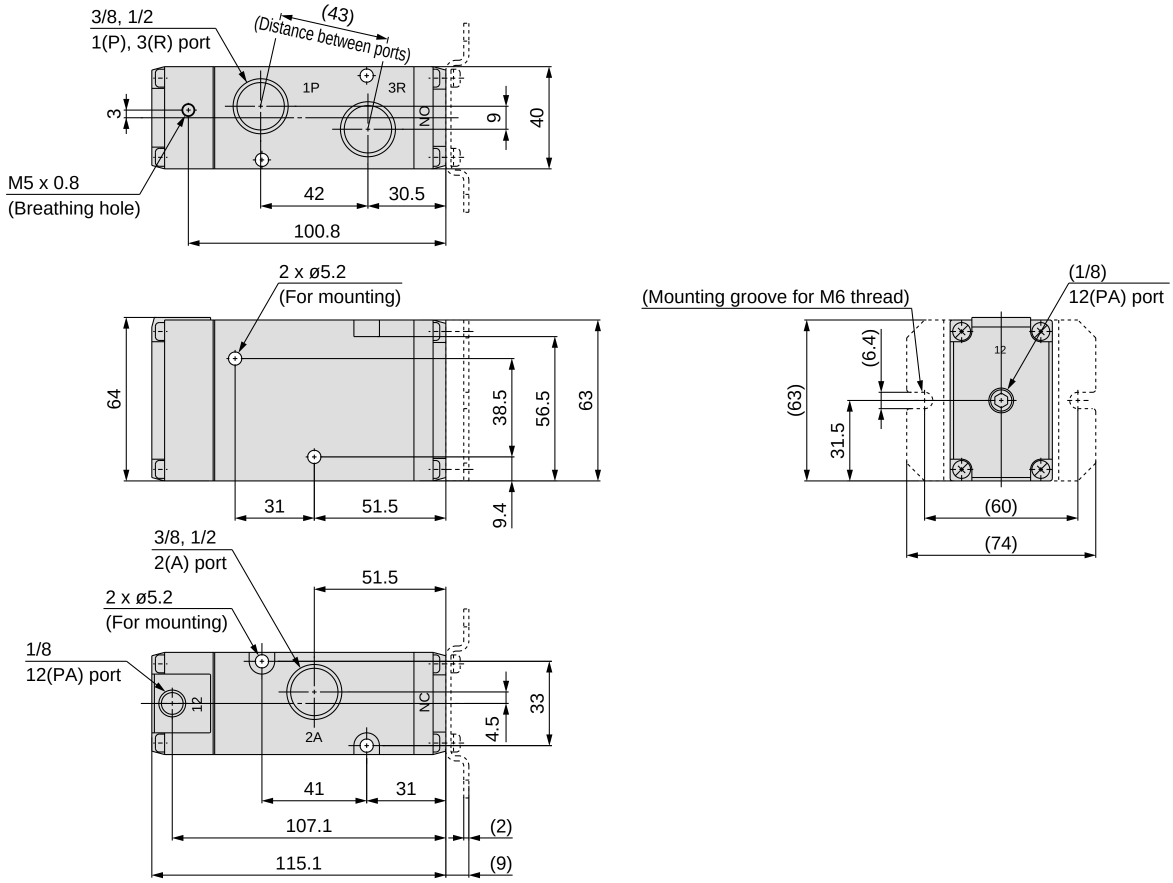


For vacuum/VPA542V-1-$^{02}_{03}\square^{A}_{B}$(-F)

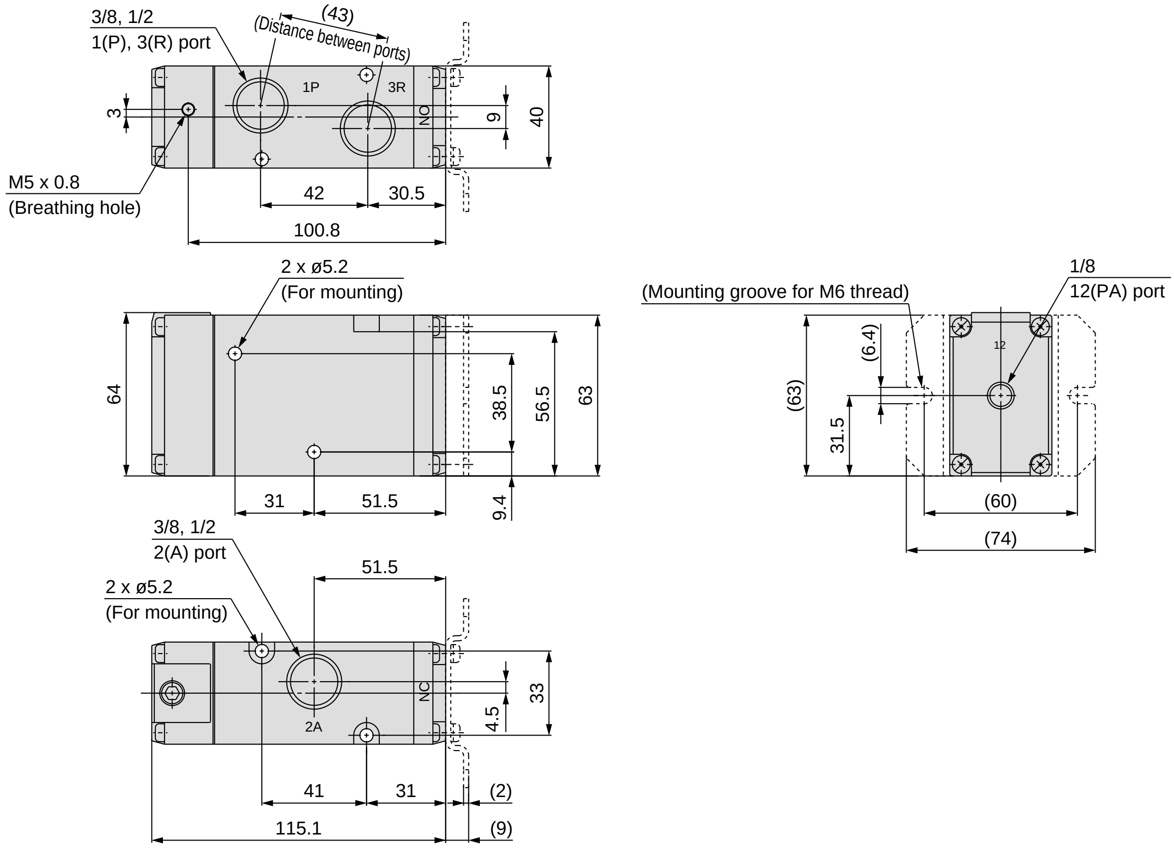


Series VPA700/Body Ported/Dimensions

Standard/VPA742-1-$^{03}_{04}$□$^{A}_{B}$(-F)



For vacuum/VPA742V-1-$^{03}_{04}$□$^{A}_{B}$(-F)



3 Port/Air Operated Valve
Base Mounted/Single Unit
Series VPA300/500/700

Series VPA300

Series VPA500

Series VPA700

How to Order

VPA 3 4 4 □ − 1 − 01 □ A

Series

3	VPA300
5	VPA500
7	VPA700

Body option

—	Standard
V	For vacuum

Type of actuation

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

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Port size (Sub-plate)

Symbol	Port size	VPA300	VPA500	VPA700
—	Without sub-plate Note)			
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

Note) With a gasket and two mounting bolts

Specifications

Fluid		Air
Type of actuation		N.C. or N.O. (Convertible)
Operating pressure range (MPa)	Standard	0.2 to 1.0
	For vacuum	–100 kPa to 0.2
Pilot pressure (MPa)		0.2 to 1.0 (Equivalent to the operating pressure or more)
Ambient and fluid temperature (°C)		–10 to 50 (No freezing)
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s^2) Note)		300/50

Note) Impact resistance: No malfunction occurred when tested in both the axial and right angle directions of main valve and armature (tested in both energized and de-energized states). (Values at the initial period).

Vibration resistance: No malfunction occurred when tested in a one-sweep test between 45 and 2000 Hz, in both the axial and right angle directions of main valve and armature (tested

Flow Characteristics/Mass

Model	Port size	1 ↔ 2 (P ↔ A)				2 ↔ 3 (A ↔ R)				Mass (g) Note 1)
		C [$dm^3/(s·bar)$]	b	Cv	Q [l/min] (ANR) Note 2)	C [$dm^3/(s·bar)$]	b	Cv	Q [l/min] (ANR) Note 2)	
VPA344	1/8	3.6	0.22	0.8	872	3.5	0.24	0.8	858	185 (118)
	1/4	3.9	0.22	0.9	945	3.8	0.14	0.9	881	180 (118)
VPA544	1/4	7.5	0.16	1.7	1757	7.3	0.20	1.7	1749	358 (233)
	3/8	8.8	0.07	2.0	1968	8.8	0.13	2.0	2029	350 (233)
VPA744	3/8	12.9	0.10	2.9	2929	13.3	0.24	3.1	3260	693 (476)
	1/2	14.7	0.05	3.3	3256	15.0	0.17	3.4	3534	675 (476)

Note 1) ( ) valves: Values without sub-plate

Note 2) These valves have been calculated according to ISO6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

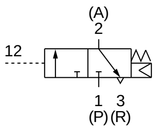
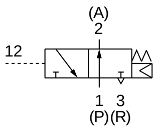
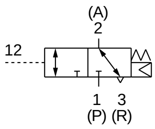
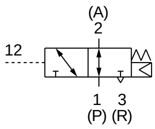
⚠ Caution

Refer to back pages 1 and 2 for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for Common Precautions.

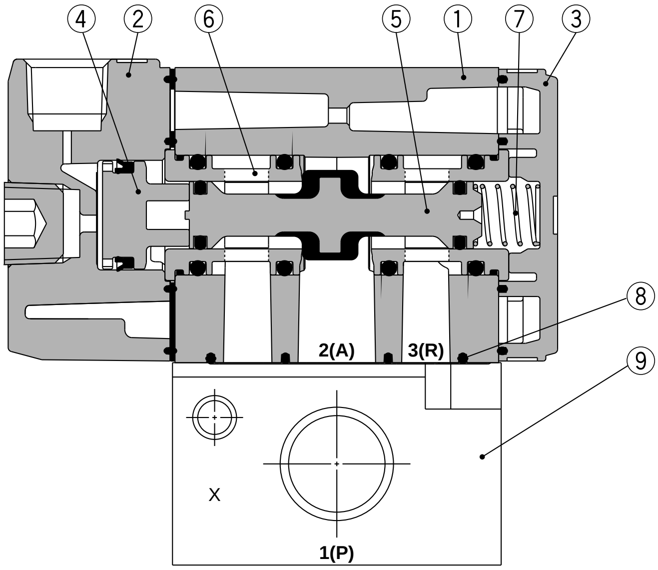
• Refer to back page 8 for changing the type of actuation.

Construction

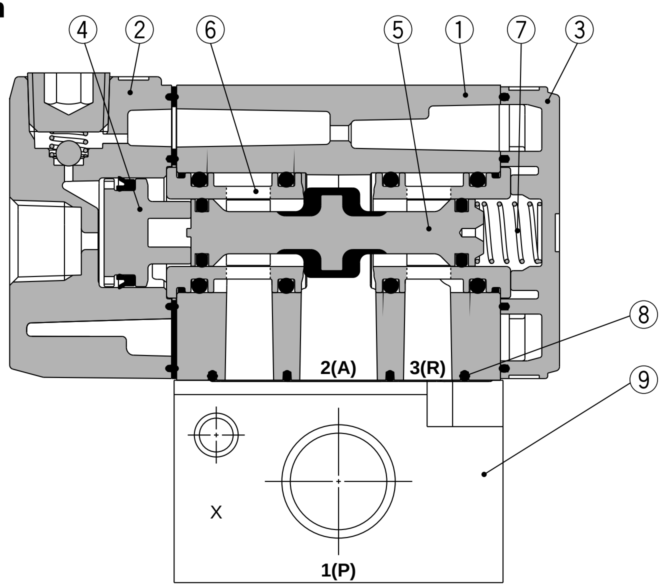
JIS symbol

	N.C.	N.O.
Standard		
For vacuum		

Standard



For vacuum



Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum die-casted	White
2	**Adapter plate**	Aluminum die-casted	Grey
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	**Gasket**	VP300-217-1	VP500-217-1	VP700-217-1	HNBR
9	**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

⚠ Caution

Tightening Torque of Mounting Screw

M3: 0.8 N·m
M4: 1.4 N·m
M5: 2.9 N·m

How to Order Sub-plate

VP 3 00 − 202 − 1 □

Series

3	VPA344
5	VPA544
7	VPA744

Thread type

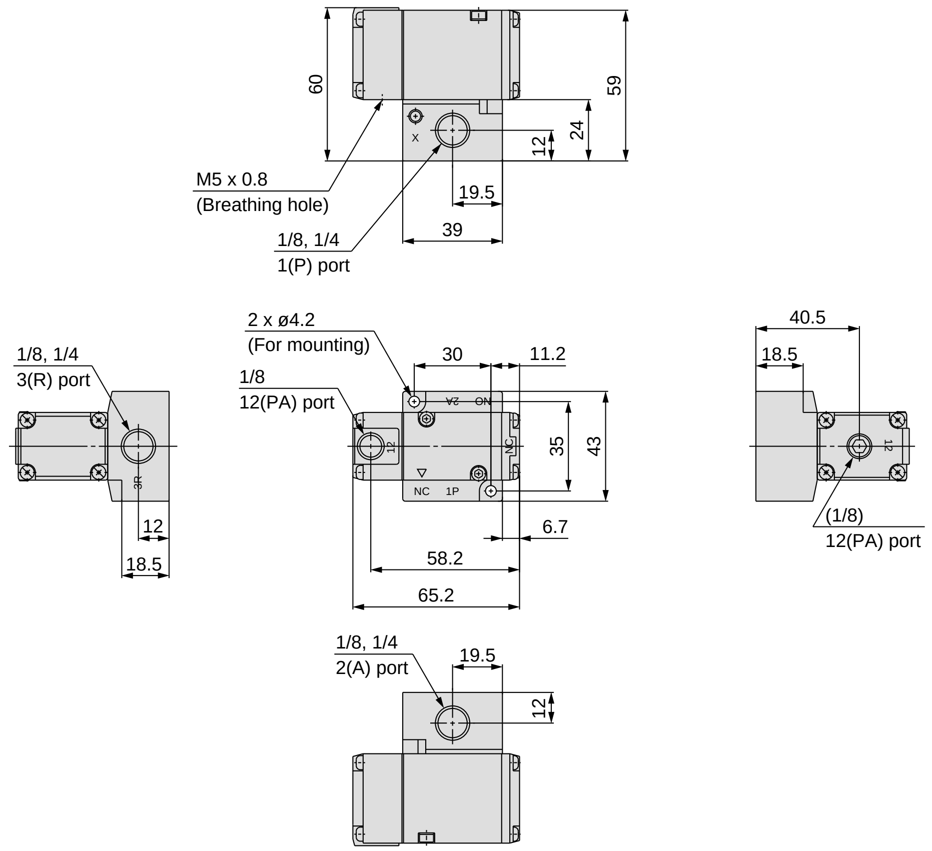
—	Rc
F	G
N	NPT
T	NPTF

Port size

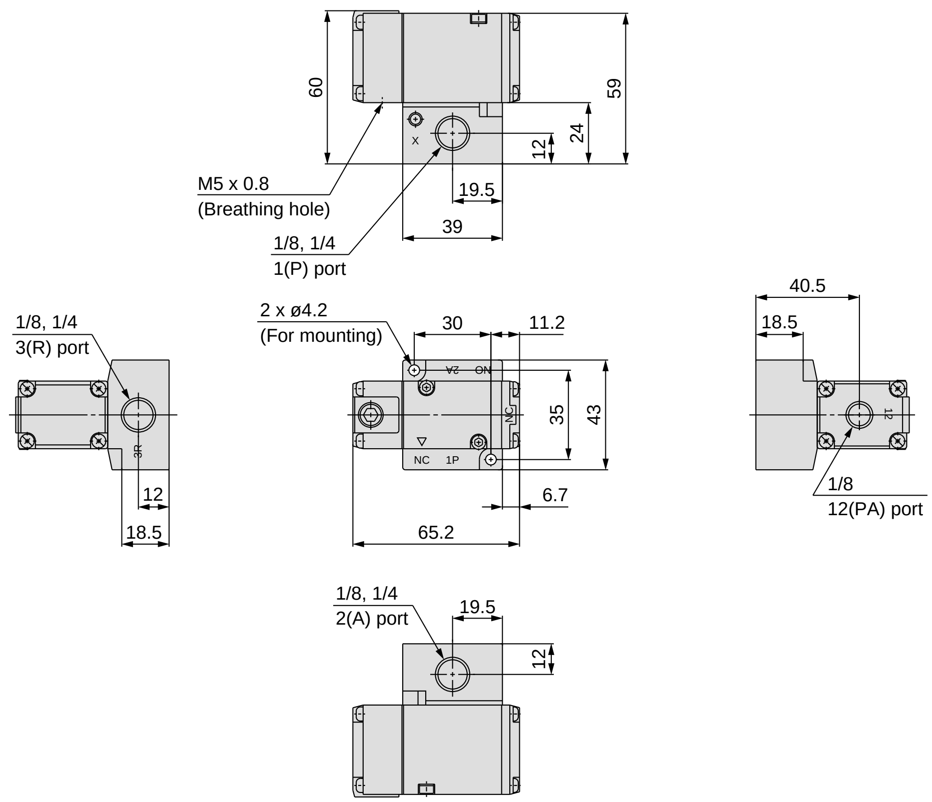
Symbol	VPA344	VPA544	VPA744
1	1/8	1/4	3/8
2	1/4	3/8	1/2

Series VPA300/Base Mounted/Dimensions

Standard/VPA344-1-$^{01}_{02}$□$^{A}_{B}$

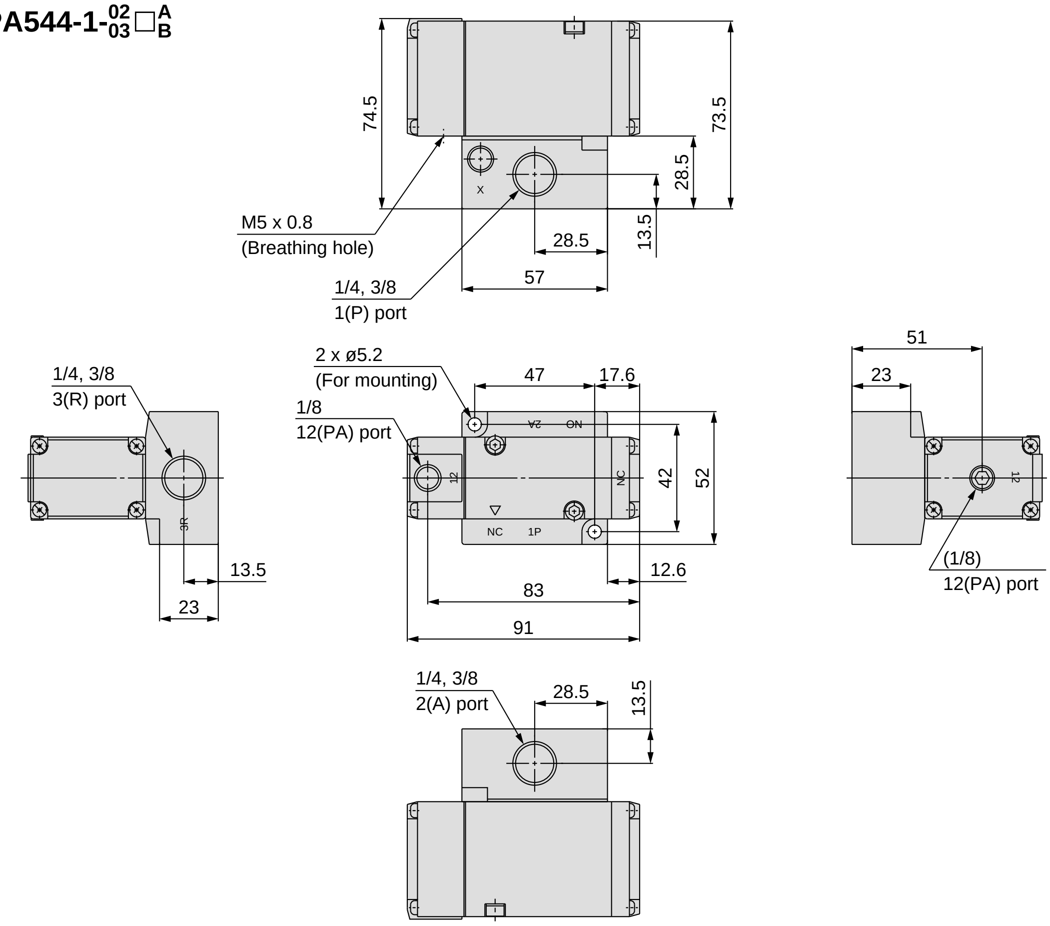


For vacuum/VPA344V-1-$^{01}_{02}$□$^{A}_{B}$

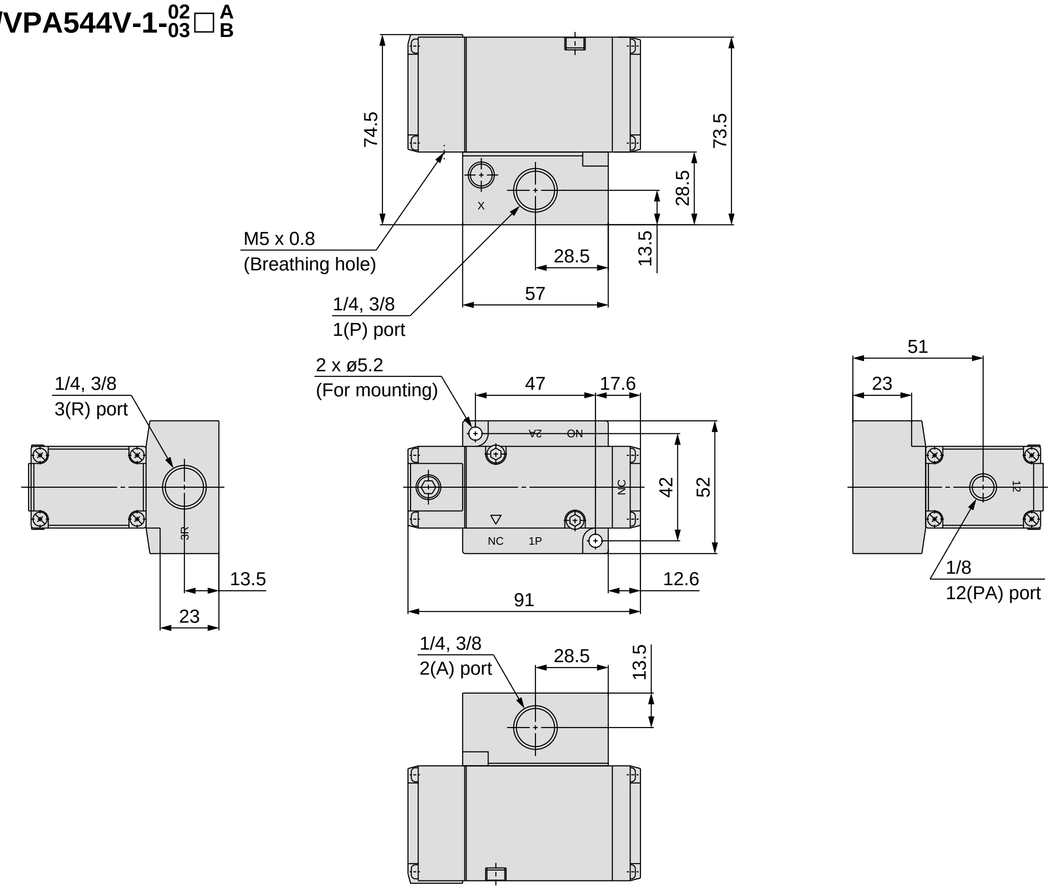


Series VPA500/Base Mounted/Dimensions

Standard/VPA544-1-$^{02}_{03}$□$^{A}_{B}$

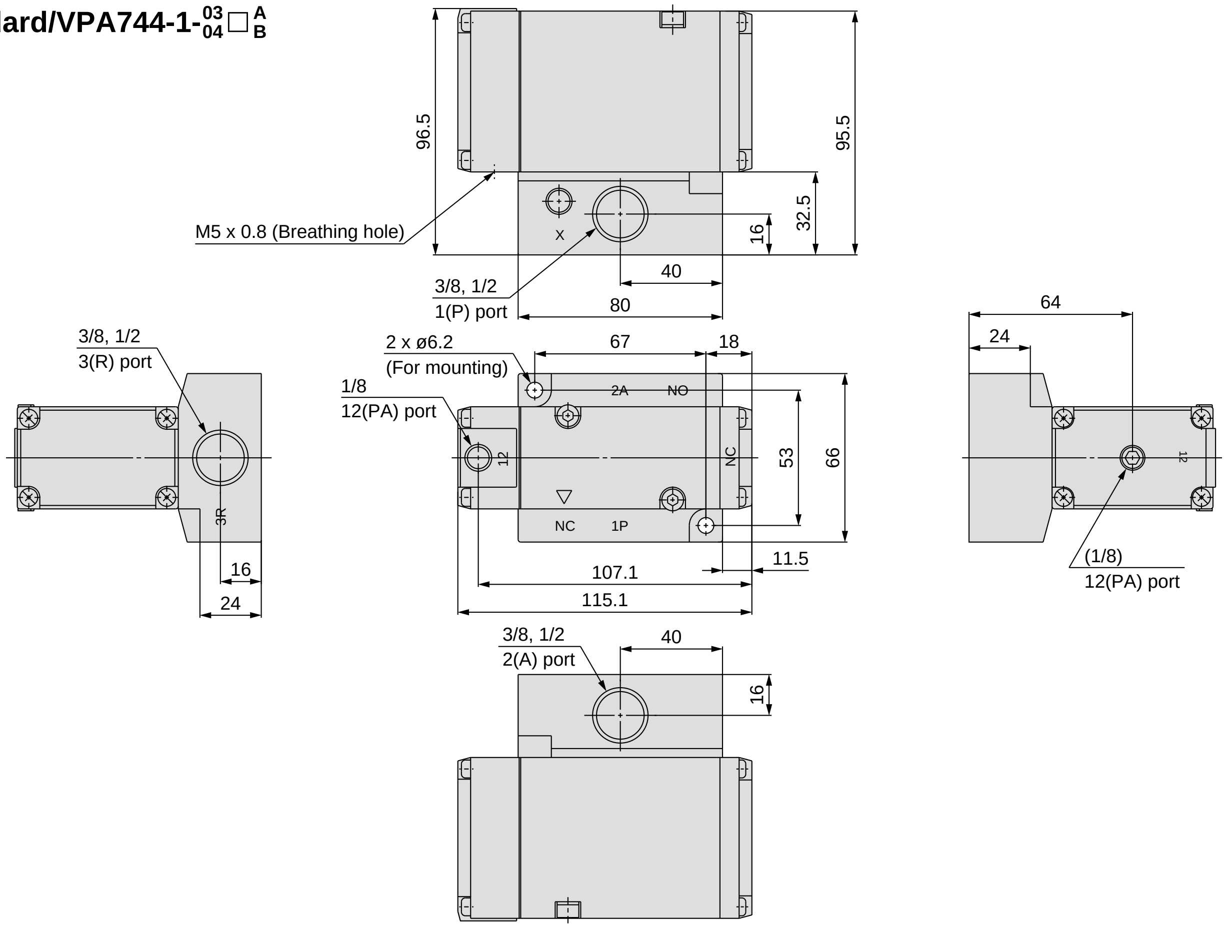


For vacuum/VPA544V-1-$^{02}_{03}$□$^{A}_{B}$

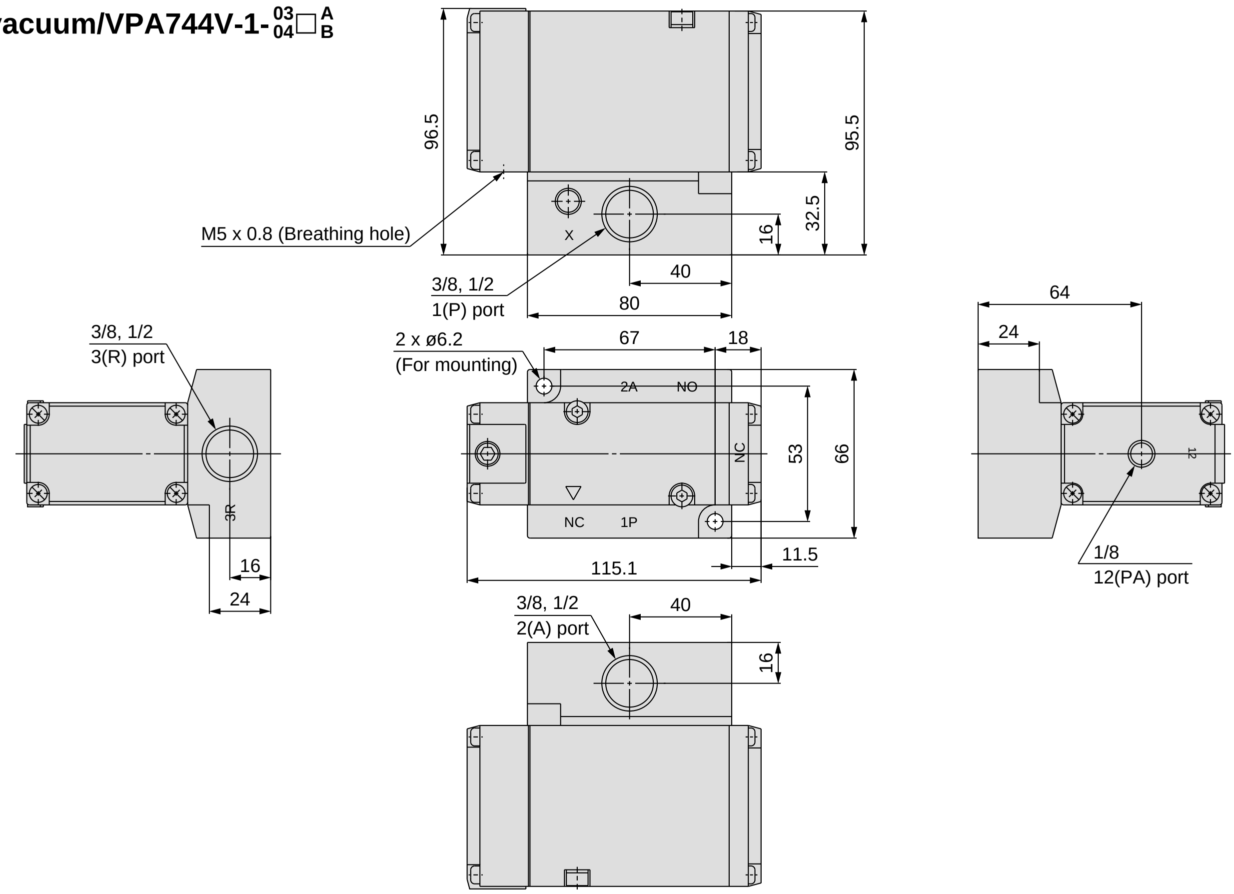


Series VPA700/Base Mounted/Dimensions

Standard/VPA744-1-$^{03}_{04}$□$^{A}_{B}$



For vacuum/VPA744V-1-$^{03}_{04}$□$^{A}_{B}$

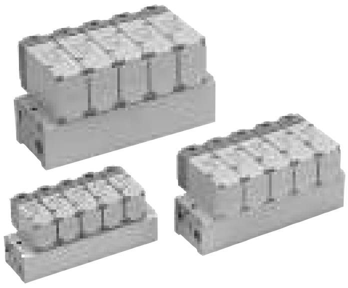


3 Port/Air Operated Valve Manifold
Common Exhaust Type 41 / Individual Exhaust Type 42
Series VPA300/500/700

How to Order Manifold

Type 41/Common exhaust

VV3PA 3 – 41 – 04 1 – 02 ▢



Series

3	VPA300
5	VPA500
7	VPA700

Stations

02	2 stations
⋮	⋮
20	20 stations

Port size

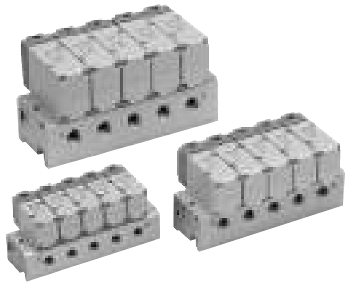
Symbol	Port size	Applicable series
02	1/4	VPA300
03	3/8	VPA500
04	1/2	VPA700

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Type 42/Individual exhaust

VV3PA 3 – 42 – 04 3 – 02 ▢



Series

3	VPA300
5	VPA500
7	VPA700

Stations

02	2 stations
⋮	⋮
20	20 stations

Port size

Symbol	Port size	Applicable series
02	1/4	VPA300
03	3/8	VPA500
04	1/2	VPA700

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Manifold Option

Description	Part no.	Applicable manifold base model
Blanking plate assembly (With a gasket and two mounting bolts)	VP300-25-1A	VV3PA3
	VP500-25-1A	VV3PA5
	VP700-25-1A	VV3PA7

How to Order Valve (With a gasket and two mounting bolts)

VPA 3 4 4 □ – 1 – A

Series

3	VPA300
5	VPA500
7	VPA700

Body option

—V	Standard
	For vacuum

Type of actuation

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

Manifold Specifications

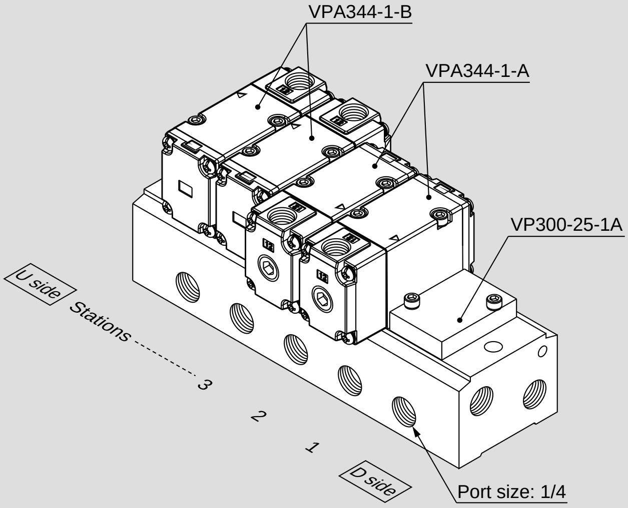
Series	Base model	Piping specifications			Applicable valve	Applicable stations Note)	Manifold base Mass: W [g] Stations: n
		1P (SUP) port type	3R (EXH) port type	Port size			
VPA300	**VV3PA3-41**	Common	Common	1/4	VPA344	2 to 20 stations	W = 110n + 90
	VV3PA3-42		Individual				
VPA500	**VV3PA5-41**		Common	3/8	VPA544	2 to 20 stations	W = 190n + 150
	VV3PA5-42		Individual				
VPA700	**VV3PA7-41**		Common	1/2	VPA744	2 to 20 stations	W = 410n + 380
	VV3PA7-42		Individual				

Note) Supply pressure to 1(P) ports and exhaust air from 3(R) ports on both sides for 10 stations or more.

• Refer to back page 8 for changing the type of actuation.

How to Order Manifold Assembly (Example)

Ordering example (VV3PA3-41)



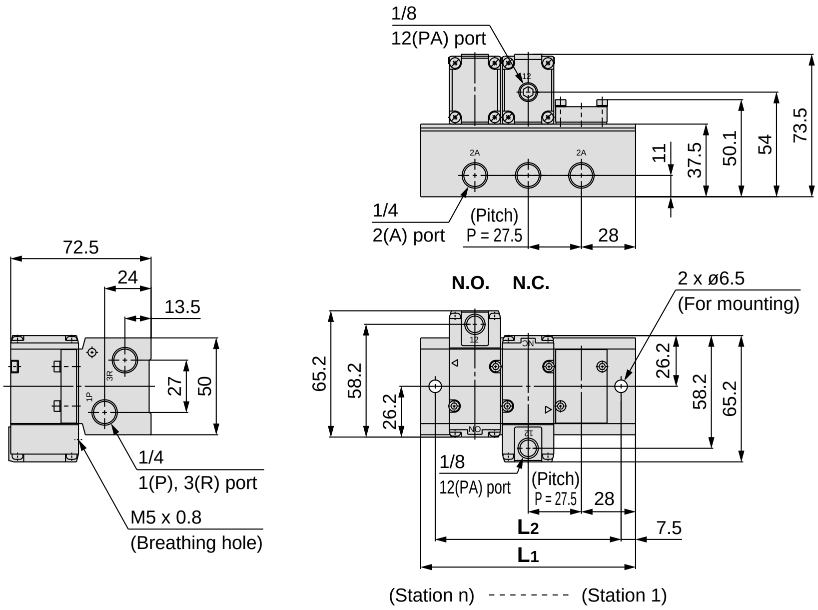
VV3PA3-41-051-02 ·················· 1 set (Type 41, 5-station manifold base part no.)
∗ VP300-25-1A ························ 1 set (Blanking plate assembly part no.)
∗ VPA344-1-A ························ 2 sets (N.C. type part no.)
∗ VPA344-1-B ························ 2 sets (N.O. type part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the valve, etc.

• Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing.

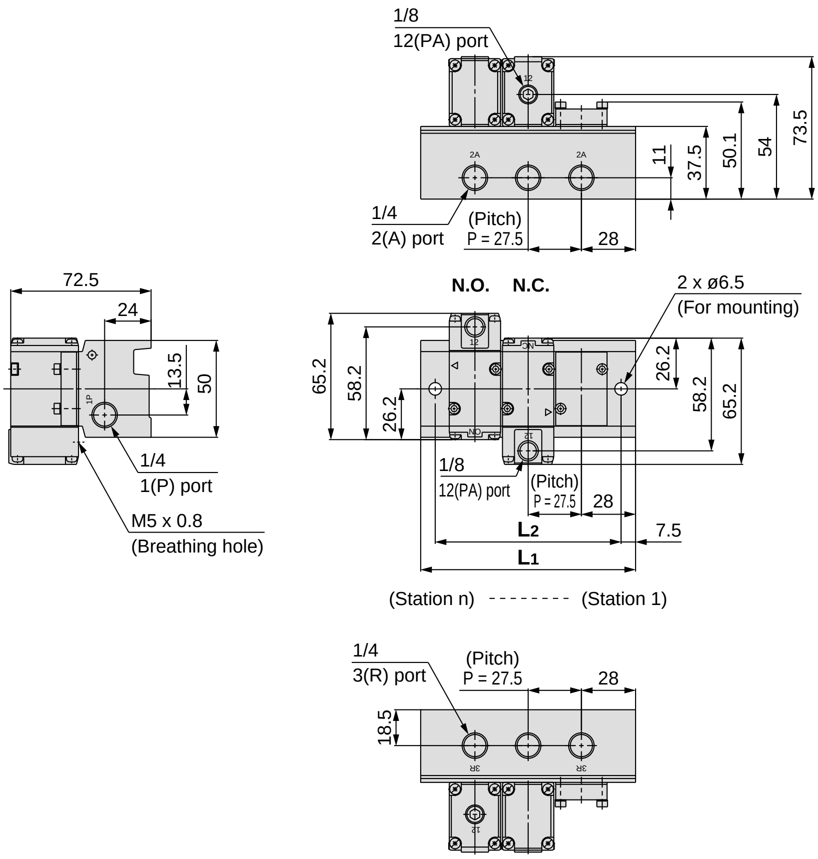
Series VPA300/Dimensions

Type 41/Common exhaust: VV3PA3-41-Stations1-02



Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L_2	68.5	96	123.5	151	178.5	206	233.5	261	288.5	316	343.5	371	398.5	426	453.5	481	508.5	536	563.5

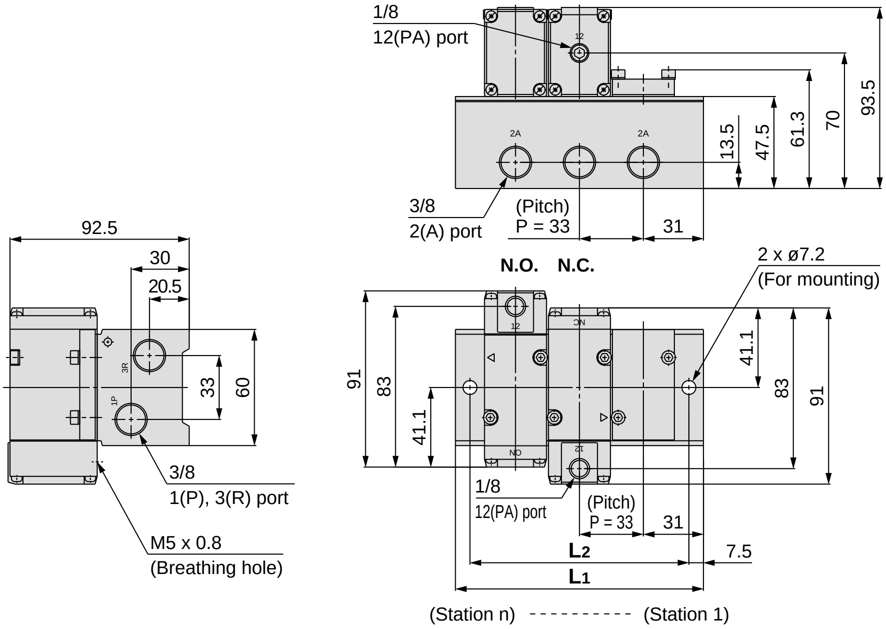
Type 42/Individual exhaust: VV3PA3-42-Stations3-02



Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L_2	68.5	96	123.5	151	178.5	206	233.5	261	288.5	316	343.5	371	398.5	426	453.5	481	508.5	536	563.5

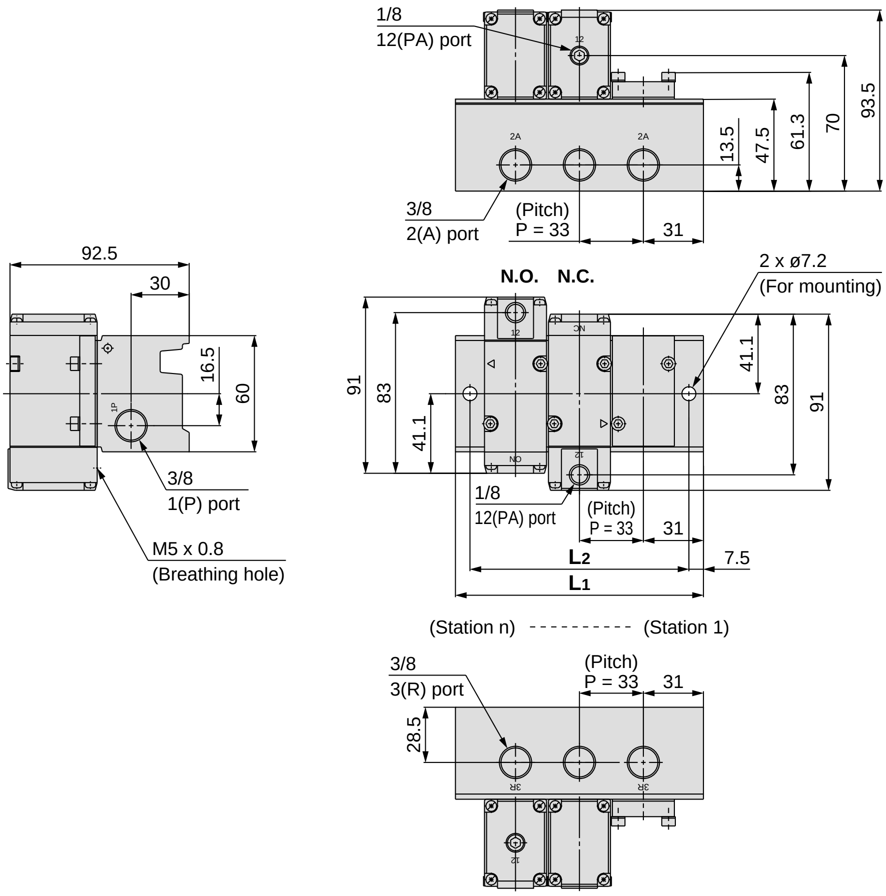
Series VPA500/Dimensions

Type 41/Common exhaust: VV3PA5-41-Stations1-03



Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	95	128	161	194	227	260	293	326	359	392	425	458	491	524	557	590	623	656	689
L_2	80	113	146	179	212	245	278	311	344	377	410	443	476	509	542	575	608	641	674

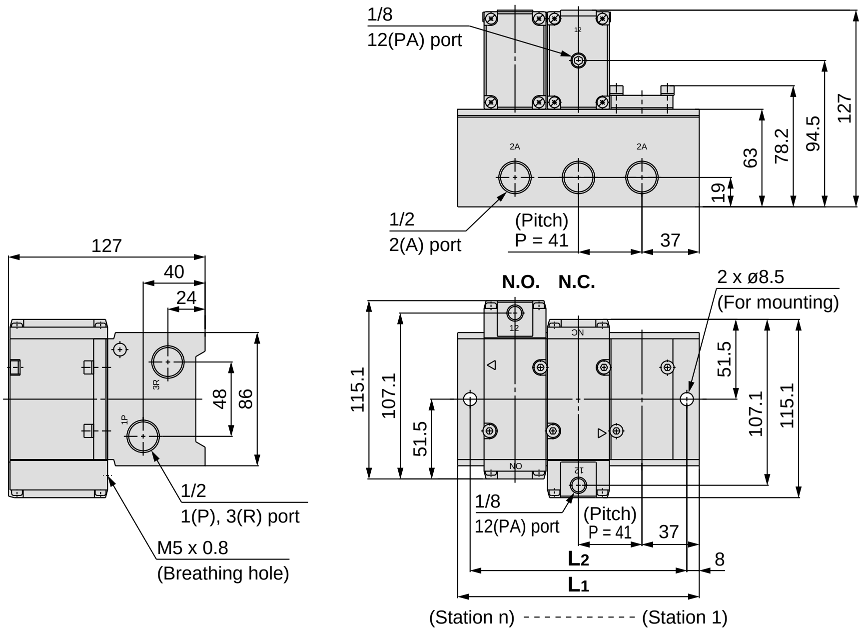
Type 42/Individual exhaust: VV3PA5-42-Stations3-03



Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	95	128	161	194	227	260	293	326	359	392	425	458	491	524	557	590	623	656	689
L_2	80	113	146	179	212	245	278	311	344	377	410	443	476	509	542	575	608	641	674

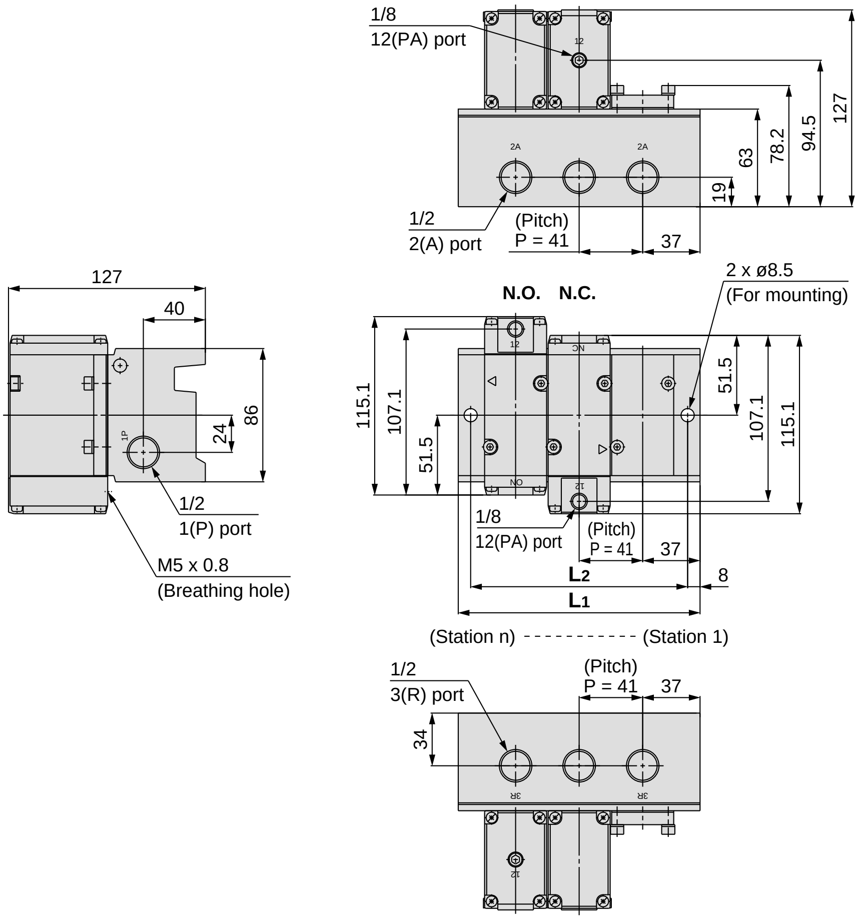
Series VPA700/Dimensions

Type 41/Common exhaust: VV3PA7-41-Stations1-04



Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	115	156	197	238	279	320	361	402	443	484	525	566	607	648	689	730	771	812	853
L_2	99	140	181	222	263	304	345	386	427	468	509	550	591	632	673	714	755	796	837

Type 42/Individual exhaust: VV3PA7-42-Stations3-04



Station n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	115	156	197	238	279	320	361	402	443	484	525	566	607	648	689	730	771	812	853
L_2	99	140	181	222	263	304	345	386	427	468	509	550	591	632	673	714	755	796	837

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) Note 1) and other safety regulations.

Note 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218: Manipulating industrial robots -Safety.
etc.

Caution: Operator error could result in injury or equipment damage.

Warning: Operator error could result in serious injury or loss of life.

Danger : In extreme conditions, there is a possibility of serious injury or loss of life.

Warning

1. **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
2. **Only personnel with appropriate training should operate machinery and equipment.**
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
3. **Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
4. **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Safety Instructions

⚠Caution

The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

Limited Warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited Warranty and Disclaimer" and "Compliance Requirements". Read and accept them before using the product.

Limited Warranty and Disclaimer

1. **The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.Note 2)**
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. **For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.**
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. **Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.**

Note 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).

Series VP
Specific Product Precautions 1

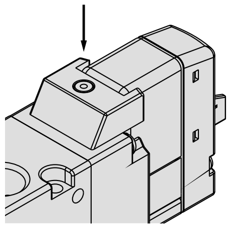
Be sure to read before handling.
Refer to back pages 1 and 2 for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Manual Override

⚠Warning

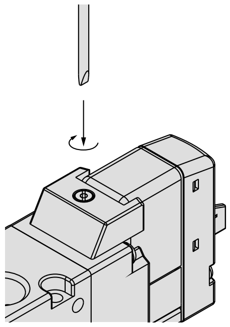
When no electric signal is applied to the solenoid valve. The manual override is used for switching the main valve. Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

■ **Non-locking push type**

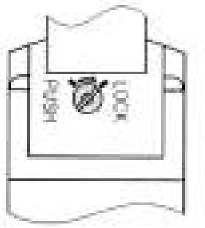


Push down on the manual override button with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

■ **Push-turn locking slotted type**



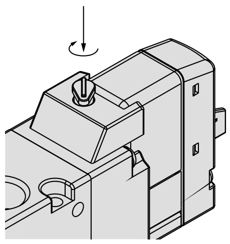
Locked condition

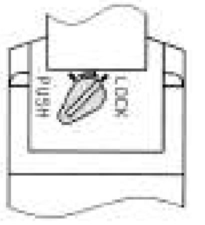


Push the manual override button with a small flat head screwdriver until it stops. Turn it in the clockwise direction 90° to lock the manual. Turn it counterclockwise to release it.

■ **Push-turn locking lever type**

Locked condition





After pushing down, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking type.

⚠Caution

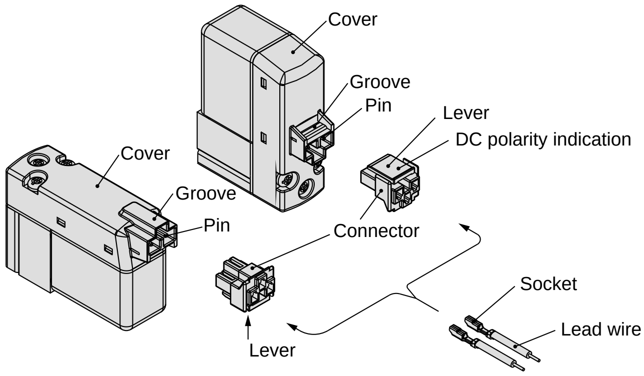
When locking the manual override with the push-turn locking type (D or E type), be sure to push it down before turning.
Turning without first pushing it down can cause damage to the manual override and other troubles such as air leakage, etc.
Do not apply excessive torque when turning the locking type manual override. (0.1 N·m)

How to Use L/M-Type Plug Connector

⚠Caution

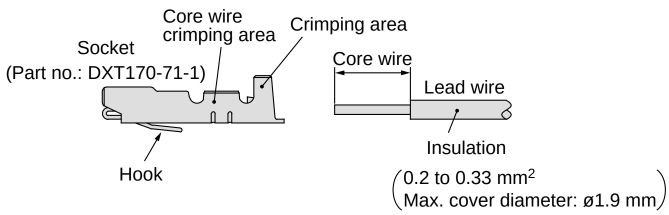
1. Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever’s pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



2. Crimping lead wires and sockets

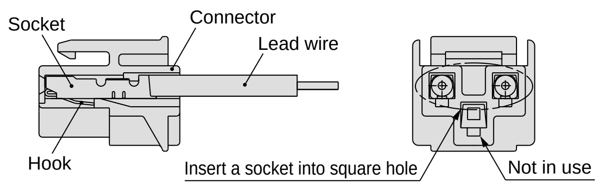
Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area. (Please contact SMC for details on the crimping tool.)



Note) It is not necessary to crimp lead wires and socket if ordering the lead wire pre-connected model.

3. Attaching and detaching sockets with lead wire

- **Attaching**
  Insert the sockets into the square holes of the connector (⊕,⊖ indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then, confirm that they are locked by pulling lightly on the lead wires.
- **Detaching**
  To detach a socket from a connector, pull out the lead wire while pressing the socket’s hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.



Specific Product Precautions 2

Be sure to read before handling.
Refer to back pages 1 and 2 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Plug Connector Lead Wire Length

⚠Caution

Plug connector lead wires have a standard length of 300 mm, however, the following lengths are also available.

How to Order Connector Assembly

DC : **V200-30-4A-**□

100 VAC : **V200-30-1A-**□

200 VAC : **V200-30-2A-**□

AC other voltages: **V200-30-3A-**□

Without lead wire : **V200-30-A**
(With connector and 2 pcs. of socket)

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

How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

(Example) 2000 mm lead wire length:

DC	AC
VP342-5LO1-01A	VP342-1LO1-01A
V200-30-4A-20	V200-30-1A-20

How to Use DIN Terminal

The DIN terminal type with an IP65 enclosure is protected against dust and water, however, it must not be used in water.

⚠Caution

Connection

1) Loosen the set screw and pull the connector out of the solenoid valve terminal block.
2) After removing the set screw, insert a flat head screwdriver into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3) Loosen the terminal screws on the terminal block, insert the core of the lead wire into the terminal, and attach securely with the terminal screws.
   In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires corresponding to the polarity (+ or –) that is printed on the terminal block.
4) Tighten the ground nut to secure the wire.
   In the case of connecting wires, select cabtire cords carefully because if those out of the specified range (ø4.5 to ø7) are used, it will not be able to satisfy IP65 (enclosure).
   Tighten the ground nut and set screw within the specified range of torque.

Changing the entry direction

After separating terminal block and housing, the cord entry direction can be changed by attaching the housing in the opposite direction.

Note) Make sure not to damage elements, etc., with the lead wires of the cord.

Precautions

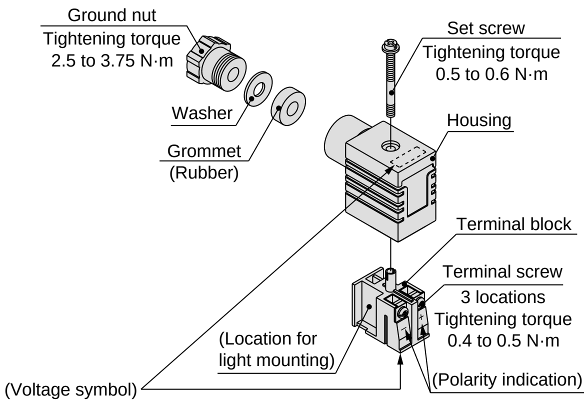
Plug in and pull out the connector vertically without tilting to one side.

Applicable cable

Cable O.D.: ø4.5 to ø7.
(Reference) 0.5 mm^2 to 1.5 mm^2, 2-core or 3-core, equivalent to JIS C 3306.

Applicable crimped terminal

O terminal: R1.25-4M that is specified in JIS C 2805.
Y terminal: 1.25-3L, which is released by JST Mfg. Co., Ltd.
Stick terminal: size 1.5 or shorter.



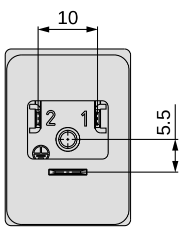
Series VP
Specific Product Precautions 3

Be sure to read before handling.
Refer to back pages 1 and 2 for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

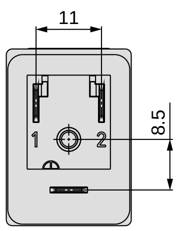
DIN (EN175301-803) Terminal

Y type DIN terminal corresponds to the DIN connector with terminal pitch 10 mm, which complies with EN175301-803B. Since the terminal pitch is different from the D type DIN connector, these two types are not interchangeable.

Y type



D type



How to Order DIN Connector

⚠Caution

● **Without indicator light:**
DC, AC, Other voltages: V200-□-1

● **With indicator light:**
DC
Polar type (□Z) : V200-□-3-□
Non-polar type (□U) : V200-□-5-□

Rated voltage

05	24 VDC
06	12 VDC

AC (□Z) : V200-□-7-□

Connector specification

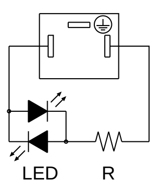
61	D type
63	Y type

Rated voltage

01	100/110 VAC [115 VAC]
02	200/220 VAC [230 VAC]
07	240 VAC

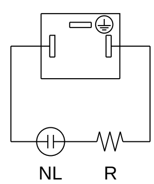
Circuit with indicator light (Built-in connector)

DC (□U) circuit



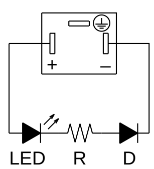
LED: Light emitting diode, R: Resistor

AC (□Z) circuit



NL: Neon bulb, R: Resistor

DC (□Z) circuit



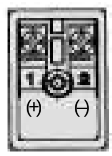
LED: Light emitting diode
D: Protective diode
R: Resistor

How to Use Conduit Terminal

⚠Caution

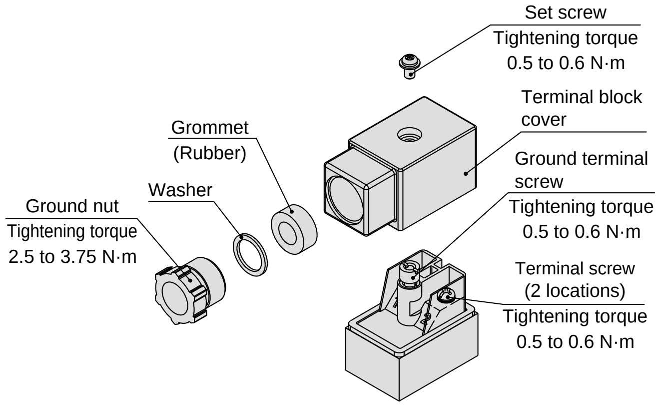
Connection

1) Loosen the set screw and remove the terminal block cover from the terminal block.
2) Loosen the terminal screws on the terminal block, insert the core of the lead wire or crimped terminal into the terminal, and attach securely with the terminal screws.
In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires to terminal 1 and 2 corresponding to the polarity (+ or –) as shown on the figure on the right.



3) Secure the cord by fastening the ground nut.

In case of connecting wires, select cabtire cords carefully because if those out of the specified range (ø4.5 to ø7) are used, it will not be able to satisfy IP65 (enclosure).
Tighten the ground nut and set screw within the specified range of torque.



Applicable cable

Cable O.D.: ø4.5 to ø7.
(Reference) 0.5 mm^2 to 1.5 mm^2, 2-core or 3-core, equivalent to JIS C 3306.

Applicable crimped terminal

O terminal: Equivalent to R1.25-3 that is specified in JIS C 2805.
Y terminal: Equivalent to 1.25-3, which is released by JST Mfg. Co., Ltd.
Note) Use O terminal when a ground terminal is used.

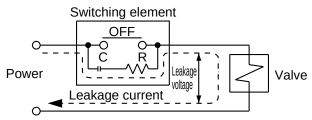
Specific Product Precautions 4

Be sure to read before handling.
Refer to back pages 1 and 2 for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Leakage Voltage

⚠Caution

Especially when a resistor and a switching element are used in parallel or C-R device (surge voltage suppressor) is used for the protection of the switching device, note that leakage voltage will be increased by passing leakage voltage through the resistor and C-R device. Therefore, suppressor residual leakage voltage should be as follows.



DC coil

3% or less of the rated voltage

AC coil

8% or less of the rated voltage

Continuous Duty

⚠Caution

- If a valve is continuously energized for long periods of time, the rise in temperature due to heat-up of the coil assembly may cause a decline in solenoid valve performance, reduce service life, or have adverse effects on peripheral equipment. If the valve is continuously energized for a long time, or the total energizing time per day becomes longer than the non-energizing time, use a valve with power saving circuit.
Also, it is possible to reduce the energizing time by using a N.O. (normally open) valve.

- When the valve is mounted onto a control panel, take measures against radiation in order to keep the valve temperature within the specified range.

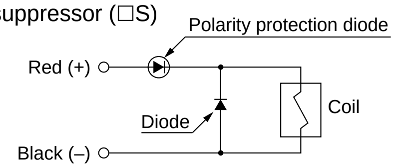
Light/Surge Voltage Suppressor

⚠Caution

<DC>

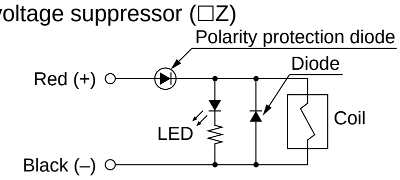
■ **Polar type**

With surge voltage suppressor (□S)



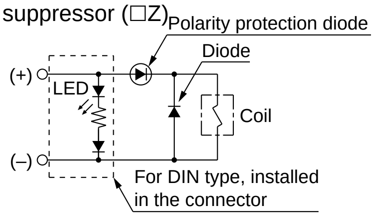
● Grommet or L/M-type plug connector

With light/surge voltage suppressor (□Z)



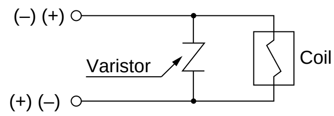
● DIN or Conduit terminal

With light/surge voltage suppressor (□Z)



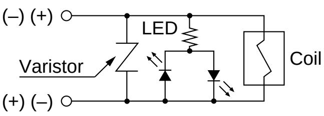
■ **Non-polar type**

With surge voltage suppressor (□R)



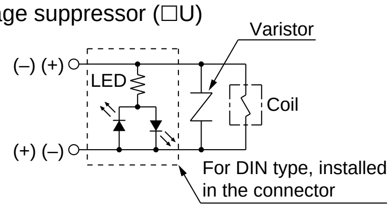
● Grommet or L/M-type plug connector

With light/surge voltage suppressor (□U)



● DIN or Conduit terminal

With light/surge voltage suppressor (□U)



- Please connect correctly the lead wires to + (positive) and – (negative) indications on the connector. (For non-polar type, the lead wires can be connected to either one.)
- When the valve with mis-wiring protection diode is used, the voltage will drop by approx. 1 V. Therefore, pay attention to the allowable voltage fluctuation (For details, refer to the solenoid specification of each type of valve).
- Solenoids, whose lead wires have been pre-wired: + (positive) side red and – (negative) side black.

Series VP
Specific Product Precautions 5

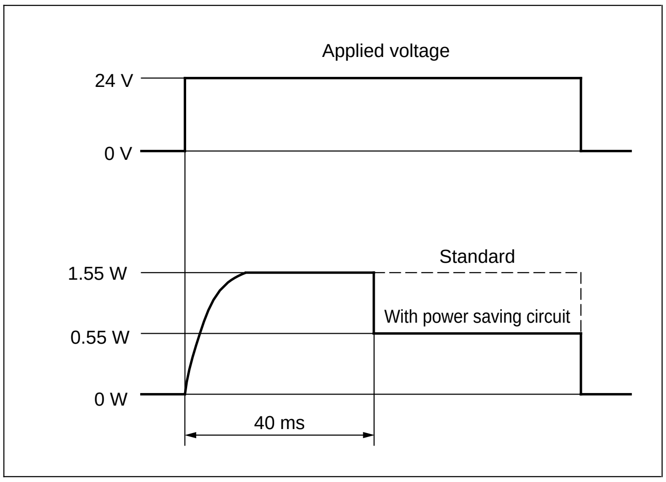
Be sure to read before handling.
Refer to back pages 1 and 2 for Safety Instructions, “Handling Precautions for SMC Products” (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Light/Surge Voltage Suppressor

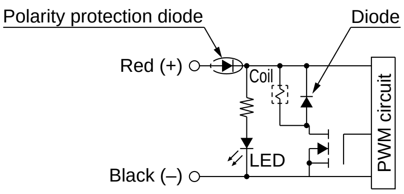
■ **With power saving circuit**

Power consumption is decreased by approx. 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 40 ms at 24 VDC.)
Refer to the electrical power waveform as shown below.

<Electrical power waveform of energy saving type>



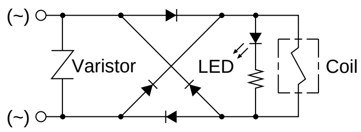
- Since the voltage will drop by approx. 0.5 V due to the transistor, pay attention to the allowable voltage fluctuation. (For details, refer to the solenoid specifications of each type of valve.)



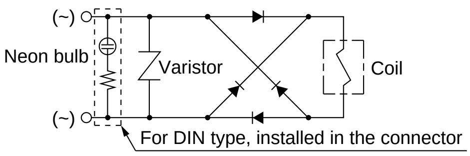
<AC>

There is no S option, since a rectifier prevents surge voltage generation.

● Grommet or L/M-type plug connector
With light/surge voltage suppressor (□Z)



● DIN or Conduit terminal
With light/surge voltage suppressor (□Z)



⚠Caution

Residual voltage of the surge voltage suppressor

Note) if a varistor or diode surge voltage suppressor is used, there is some residual voltage to the protection element and rated voltage. Therefore, refer to the table below and pay attention to the surge voltage protection on the controller side. Also, since the response time does change, refer to the specifications on page 2 and 9.

Residual Voltage

Surge voltage suppressor	DC		AC
	24	12	
S, Z	Approx. 1 V		Approx. 1 V
R, U	Approx. 47 V	Approx. 32 V	—

Countermeasure for Surge Voltage Intrusion

⚠Caution

With non-polar type solenoid valves, at times of sudden interruption of the loading power supply, such as emergency shutdown, surge voltage intrusion may be generated from loading equipment with a large capacity (power consumption), and the solenoid valve in a de-energized state may switch over (see Figure 1).
When installing a breaker circuit for the loading power supply, consider using a solenoid valve with polarity (with polarity protection diode), or install a surge absorption diode between the loading equipment COM line and the output equipment COM line (see Figure 2).

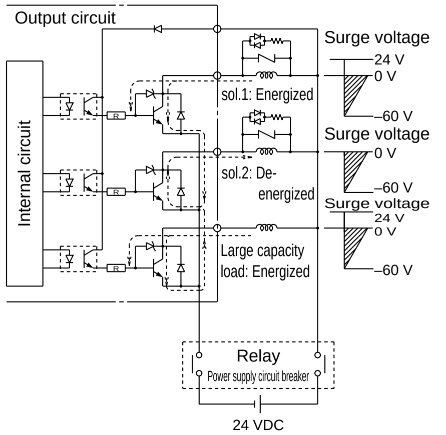


Figure 1. Surge intrusion circuit example (NPN outlet example) (24 VDC)

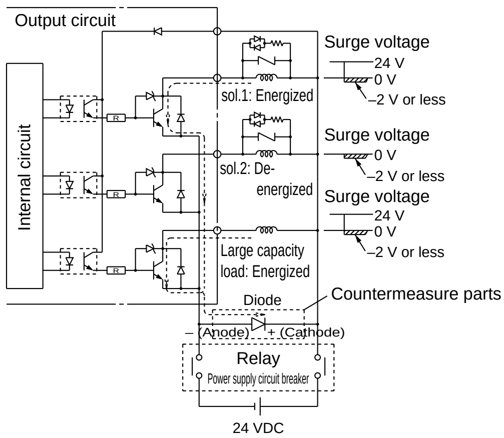


Figure 2. Surge intrusion circuit example (NPN outlet example) (24 VDC)

Series VP
Specific Product Precautions 6

Be sure to read before handling.
Refer to back pages 1 and 2 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Type of Actuation Changing

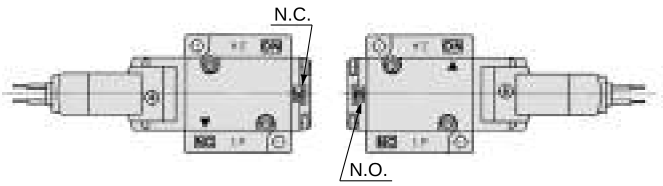
⚠Warning

When changing the actuation or restarting the valve after the change, make sure that safety is fully assured.

Example: Changing from N.C. to N.O.

1) Base mounted

<N.C.> <N.O.>

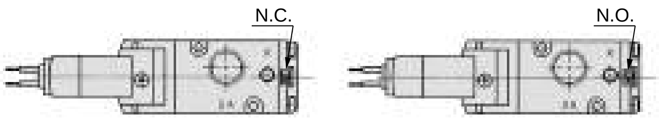


1. Remove the body from the sub-plate and reset the "▼" mark on the body corresponding to the "N.O." mark on the sub-plate as shown in the figure above.
2. Remove the end plate from the body and rotate the end plate by 180° so that the "N.O." mark on the end plate is at the top of the valve.

Note) It is not necessary to change the piping when this is done.

2) Body ported

<N.C.> <N.O.>



- Remove the end plate from the body and rotate the end plate by 180° to correspond the "N.O." mark on the end plate to the top of the valve.

Note)Piping should be arranged as follows.

Type of actuation \ Port	1P	2A	3R
N.C.	Inlet side	Outlet side	Exhaust side
N.O.	Exhaust side	Outlet side	Inlet side

One-touch Fittings

⚠Caution

When fittings are used, they may interfere with others depending on their types and sizes. Therefore, the dimensions of the fittings to be used should first be confirmed in their respective catalogues.
Fittings compliant with the VP series are stated below. If the fitting within the applicable range is selected, there will not be any interference.

Applicable Fittings: Series KQ2H, KQ2S

Series	Piping port	Port size	Applicable tubing O.D.						
			ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
VP(A)300	1P, 2A, 3R	1/8, 1/4	●	●	●	●			
	X	M5	●	●	●				
VP(A)500	1P, 2A, 3R	1/4, 3/8	●	●	●	●	●	●	
	X	1/8	●	●	●	●	●		
VP(A)700	1P, 2A, 3R	3/8, 1/2			●	●	●	●	●
	X	1/8	●	●	●	●	●		
VV3P(A)3 Manifold base	1P, 2A, 3R	1/4	●	●	●	●	●	●	
	X	M5	●	●	●				
VV3P(A)5 Manifold base	1P, 2A, 3R	3/8			●	●	●	●	
	X	M5	●	●	●				
VV3P(A)7 Manifold base	1P, 2A, 3R	1/2					●	●	●
	X	1/8	●	●	●	●	●		

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) 1), and other safety regulations.

⚠ **Caution:**	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
⚠ **Warning:**	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Danger:**	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. 2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

⚠ Safety Instructions Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

SMC Corporation (Europe)

Austria	+43 (0)2262622800	www.smc.at	office@smc.at
Belgium	+32 (0)33551464	www.smc.be	info@smc.be
Bulgaria	+359 (0)2807670	www.smc.bg	office@smc.bg
Croatia	+385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	+420 541424611	www.smc.cz	office@smc.cz
Denmark	+45 70252900	www.smcdk.com	smc@smcdk.com
Estonia	+372 651 0370	www.smcee.ee	info@smcee.ee
Finland	+358 207513513	www.smc.fi	smcfi@smc.fi
France	+33 (0)164761000	www.smc-france.fr	supportclient@smc-france.fr
Germany	+49 (0)61034020	www.smc.de	info@smc.de
Greece	+30 210 2717265	www.smchellas.gr	sales@smchellas.gr
Hungary	+36 23513000	www.smc.hu	office@smc.hu
Ireland	+353 (0)14039000	www.smcautomation.ie	sales@smcautomation.ie
Italy	+39 03990691	www.smcitalia.it	mailbox@smcitalia.it
Latvia	+371 67817700	www.smc.lv	info@smc.lv
Lithuania	+370 5 2308118	www.smclt.lt	info@smclt.lt
Netherlands	+31 (0)205318888	www.smc.nl	info@smc.nl
Norway	+47 67129020	www.smc-norge.no	post@smc-norge.no
Poland	+48 222119600	www.smc.pl	office@smc.pl
Portugal	+351 214724500	www.smc.eu	apoioclientept@smc.smces.es
Romania	+40 213205111	www.smcromania.ro	smcromania@smcromania.ro
Russia	+7 (812)3036600	www.smc.eu	sales@smcru.com
Slovakia	+421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	+386 (0)73885412	www.smc.si	office@smc.si
Spain	+34 945184100	www.smc.eu	post@smc.smces.es
Sweden	+46 (0)86031240	www.smc.nu	smc@smc.nu
Switzerland	+41 (0)523963131	www.smc.ch	info@smc.ch
Turkey	+90 212 489 0 440	www.smcturkey.com.tr	info@smcturkey.com.tr
UK	+44 (0)845 121 5122	www.smc.uk	sales@smc.uk
South Africa	+27 10 900 1233	www.smcza.co.za	zasales@smcza.co.za

Printing BT 00 Printed in Spain

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer