

3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal

Series VP300/500/700

How to Order

VP 3 4 2 1 E B A

Series VP solenoid valve

Body size

3	1/4 standard
5	3/8 standard
7	1/2 standard

Type of actuation

4	Common use to normally closed and normally open (Pilot)
---	---

Body type

2	Body ported
4	Base mounted

Valve option

Nil	Standard (Internal pilot)
R*	External pilot

* Option

Rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

* Option

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Option

F	With bracket (Only VP342, 542 or 742.)
---	--

Passage symbol

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

In the case of external pilot type of body ported type, A is only available.

Port size

Symbol	Port size Rc	VP342	VP542	VP742
Nil*	Without sub-plate	●	●	●
01	1/8	●		
02	1/4	●	●	
03	3/8		●	●
04	1/2			●

* VP344, VP544, or VP744 only.

Light/Surge voltage suppressor

Nil	None
Z*	With light/surge voltage suppressor (Type "E", "T", "D", or "Y" only)
S*	With surge voltage suppressor (Type "G" only)

* Option

Manual override

Nil	Push type
B*	Locking type (Slotted)
C*	Locking type (Manual)

* Option

Electrical entry

G	Grommet
E	Grommet terminal
T	Conduit terminal
D	DIN terminal
Y	DIN terminal: DIN43650B

- V100
- SY
- SYJ
- VK
- VZ
- VT
- VP
- VG
- VP
- S070
- VQ
- VKF
- VQZ
- VZ
- VS
- VFN

How to Order Pilot Valve Assembly

SF4 - 1 E B - 50

Rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

* Option

Manual override

Nil	Push type
B*	Locking type (Slotted)
C*	Locking type (Manual)

* Option

Light/Surge voltage suppressor

Nil	None
Z*	With light/surge voltage suppressor (Type "E", "T", "D", or "Y" only)
S*	With surge voltage suppressor (Type "G" only)

* Option

Electrical entry

G	Grommet
E	Grommet terminal
T	Conduit terminal
D	DIN terminal
Y	DIN terminal: DIN43650B

Pilot Valve Assembly and Electrical Entry

Symbol	Electrical entry	Symbol	Electrical entry
G	(Lead wire length)	GS	Surge voltage suppressor
E		EZ	Surge voltage suppressor Indicator light
T		TZ	Surge voltage suppressor Indicator light
D Y		DZ YZ	Surge voltage suppressor Indicator light

Series VP300/500/700

Low power consumption
1.8 W (DC)

Possible to use as either a
selector or divider valve

Changeable from normally
closed type to normally
open type

Suitable for use in vacuum
applications

Up to -101.2 kPa



Specifications

Fluid	Air		
Type of actuation	N.C. or N.O. (Convertible)		
Pilot type	Internal pilot	External pilot	
Operating pressure range (MPa)	0.2 to 0.8	Inlet pressure	-101.2 kPa to 0.8
		External pilot pressure	Same as supply pressure: Min. 0.2
Ambient and fluid temperature (°C)	-10 to 50 (No freezing. Refer to page 4-18-4.)		
Response time (ms) ⁽¹⁾	30 or less (at 0.5 MPa)		
Max. operating frequency (Hz)	5		
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)		
Manual override	Non-locking push type		
	Locking type (Slotted), Locking type (Manual)		
Mounting orientation	Unrestricted		
Shock/Vibration resistance (m/s ²) ⁽²⁾	300/50		

Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

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

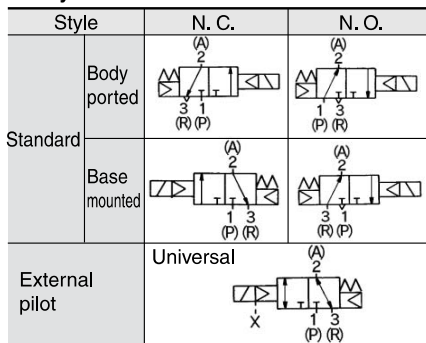
Electrical entry	Grommet (G), Grommet terminal (E), Conduit terminal (T), DIN terminal (D, Y)		
Coil rated voltage (V)	AC (50/60 Hz)	100, 200, 12*, 24*, 48*, 110* to 120*, 220*, 240*	
	DC	24, 6*, 12*, 48*, 100*, 110*	
Allowable voltage fluctuation	-15 to +10% of rated voltage		
Apparent power (VA) ^{Note}	AC	Inrush	5.6 (50 Hz), 5.0 (60 Hz)
		Holding	3.4 (50 Hz), 2.3 (60 Hz)
Power consumption (W) ^{Note}	DC	1.8, 2 (With indicator light)	

* Option Note) At rated voltage

Option

Description	Series	Part no.
Bracket (With screw)	VP342	VP300-27-1A
	VP542	VP500-27-1A
	VP742	VP700-27-1A

JIS Symbol



External Pilot (Option)

Use external pilot model in the following cases:

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

Flow Characteristics/Weight

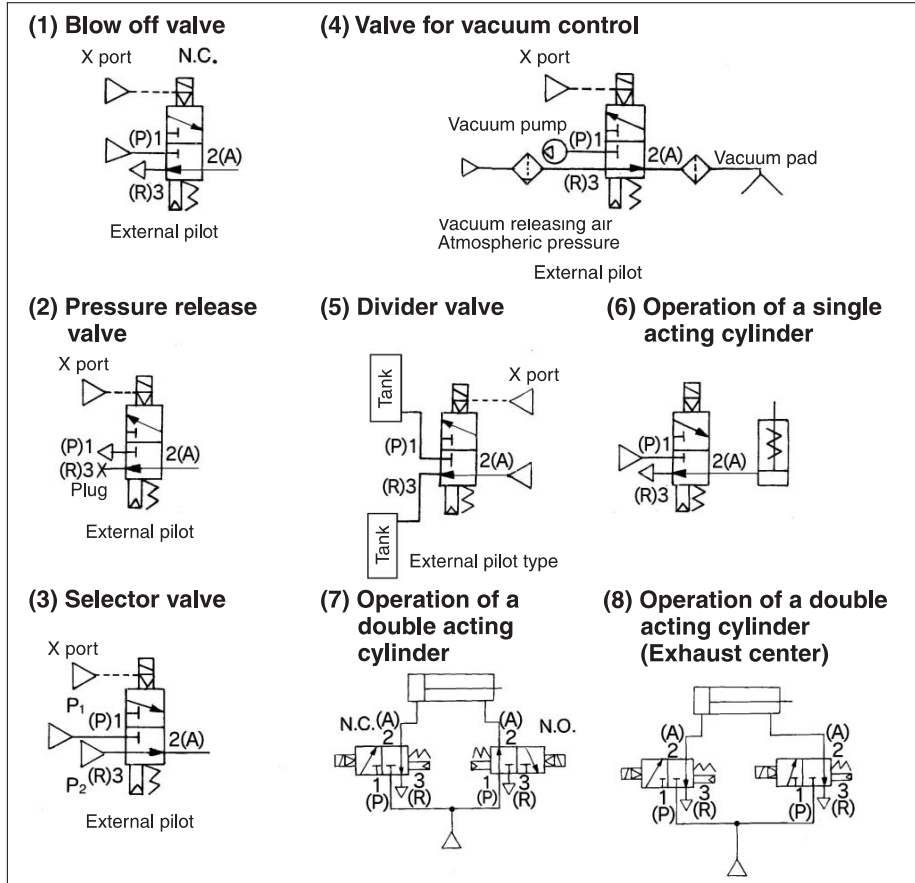
Series	Valve model	Port size	Flow characteristics												Weight ⁽¹⁾ (kg)
			1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
			C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
Series VP300	VP342 (Body ported)	1/8	3.3	0.31	0.86	3.4	0.34	0.86	2.9	0.47	0.83	3.5	0.38	0.93	0.19
		1/4	4.0	0.26	0.99	3.7	0.27	0.88	3.2	0.40	0.92	4.4	0.28	1.1	
	VP344 (Base mounted)	1/8	2.9/2.9	0.27/0.33	0.74/0.76	3.3/3.6	0.31/0.30	0.80/0.86	2.9/3.0	0.38/0.40	0.83/0.83	3.5/3.5	0.37/0.37	0.89/0.89	
Series VP500	VP542 (Body ported)	1/4	6.6	0.35	1.6	7.4	0.41	2.0	6.9	0.34	1.7	7.5	0.42	2.0	0.33
		3/8	9.1	0.42	2.4	9.0	0.43	2.4	8.8	0.36	2.2	9.3	0.43	2.5	
	VP544 (Base mounted)	1/4	6.5/7.0	0.36/0.34	1.7/1.8	7.5/7.7	0.36/0.41	1.9/2.1	7.9/7.4	0.30/0.26	1.9/1.8	7.4/7.3	0.35/0.32	1.9/1.8	
Series VP700	VP742 (Body ported)	3/8	12	0.29	2.9	12	0.36	3.1	12	0.31	3.1	13	0.36	3.4	0.64
		1/2	15	0.23	3.8	14	0.25	3.8	15	0.22	3.7	16	0.29	4.0	
	VP744 (Base mounted)	3/8	12/12	0.18/0.23	2.9/3.1	14/14	0.27/0.27	3.5/3.5	14/13	0.25/0.24	3.2/3.2	14/14	0.25/0.24	3.3/3.5	
		1/2	15/14	0.19/0.18	3.5/3.3	15/16	0.26/0.28	3.8/4.0	15/15	0.24/0.23	3.6/3.7	15/15	0.22/0.24	3.8/3.6	

Note 1) Weight for body ported does not include a bracket.

Note 2) Flow characteristics of base mounted is the values for Normally closed/Normally open.

3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal Series VP300/500/700

Application Example



V100
SY
SYJ
VK
VZ
VT
VP
VG
VP
S070
VQ
VKF
VQZ
VZ
VS
VFN

⚠ Caution

Light/Surge Voltage Suppressor

Rated voltage	Circuit	No.	Grommet (G)	Grommet terminal (E) Conduit terminal (T) DIN terminal (D, Y)
AC	Surge voltage suppressor	S		—
	Light/Surge voltage suppressor	Z		Neon bulb EZ, TZ, DZ, YZ (100 VAC or more)
DC	Surge voltage suppressor	S		—
	Light/Surge voltage suppressor	Z		Neon bulb EZ, TZ, DZ, YZ (100 VDC or more)

Note) W/ surge voltage suppressor is available only for grommet type.

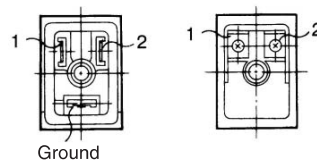
Electrical Connection

For grommet with surge voltage suppressor for DC specifications, please correctly connect the lead wires to positive and negative indicators on the connector.
For non-polar type such as DIN terminal or Terminal, the lead wires can be connected to either one.

Lead wire color	Red	Black
Polarity	+	-

DIN terminal or terminal

With DIN terminal block With terminal block



Piping

A pilot solenoid valve will generate a pressure drop due to the small flow upstream of the valve. It can cause the valve to malfunction. Select a fitting with an I.D. greater than ø8 for the VP344 and the VP342; more than ø10 for the VP544 and VP542, and more than ø12 for VP744 and VP742 when piping length is less than 3 meters. Use an external pilot when there is a small flow outlet of the valve.

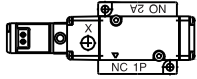
⚠ Precautions

Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 4-18-2.

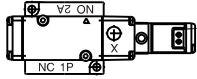
Change of Actuation

⚠ Caution

1. Base mounted N.C.



N.O.

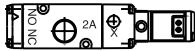


When changing the actuation from normally closed style to normally open style, remove the body from the sub-plate and reset the “▼” mark on the body corresponding to the “NO” mark on the sub-plate as shown in the figure above. It is not necessary to change the piping at that time.

2. Body ported N.C.



N.O.



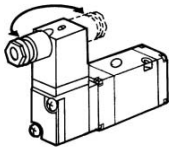
When changing the actuation from normally closed type to normally open type, remove the body from the sub-plate and reset the “▼” mark on the body corresponding to the “NO” mark on the sub-plate as shown in the figure above. Refer to the following table for piping.

Actuation \ Port	P	A	R
N.C.	Inlet	Outlet	Exhaust side
N.O.	Exhaust side	Outlet	Inlet

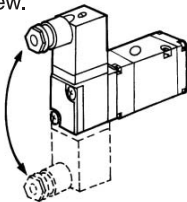
Confirm the safety sufficiently and conduct carefully when changing the passage state or restarting after changes.

Change of Electrical Entry

1. Push out the body of DIN terminal from the cover, turn it and then insert it.



2. Remove pilot valve mounting screws (M3, 2 pcs.), rotate the pilot valve at 180° and then re-tighten the valve with the screw.



How to Calculate the Flow Rate

For obtaining the flow rate, refer to page 4-1-6.

⚠ Caution How to Use DIN Terminal

1. Disassembly

- 1) After loosening the thread (1), then if the cover (2) is pulled in the direction of the thread, the connector will be removed from the body of equipment (solenoid, etc.).
- 2) Pull the screw (1) out of the housing (2).
- 3) On the bottom part of the terminal block (3), there's a cut-off part (9). If a small flat head screwdriver is inserted between the opening in the bottom, terminal block (3) will be removed from the cover (2).
- 4) Remove the cable gland (4) and plain washer (5) and rubber seal (6).

2. Wiring

- 1) Pass them through the cable (7) in the order of cable ground (4), washer (5), rubber seal (6), and then insert into the housing (2).
- 2) From the terminal block (3), loosen the screw (11), then pass the lead wire (10) through, then again tighten the screw (11).

Note) Tighten within the tightening torque of 0.5 N·m ±15%.

3. Assembly

- 1) Passing through the cable (7), the cable gland (4), plain washer (5), and rubber seal (6) housing (2) in this order, and then connect with the terminal block (3). After that, set the terminal block (3) on the housing (2).
(Push it down until you hear the click sound.)
- 2) Putting rubber seal (6), plain washer (5), in this order into the cable introducing slit on the housing (2), then further tighten the cable gland (4) securely.
- 3) Insert the gasket (8) or between the bottom part of terminal block (3) and a plug attached to equipment, and then screw (1) in from the top of the housing (2) to tighten it.

Note) Tighten within the tightening torque of 0.5 N·m ±20%.

Note) Connector orientation can be changed by 180 degrees depending on how to assemble the housing (2) and the terminal block (3).

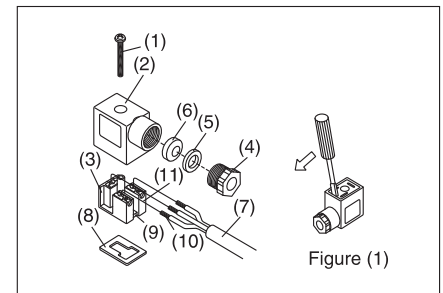
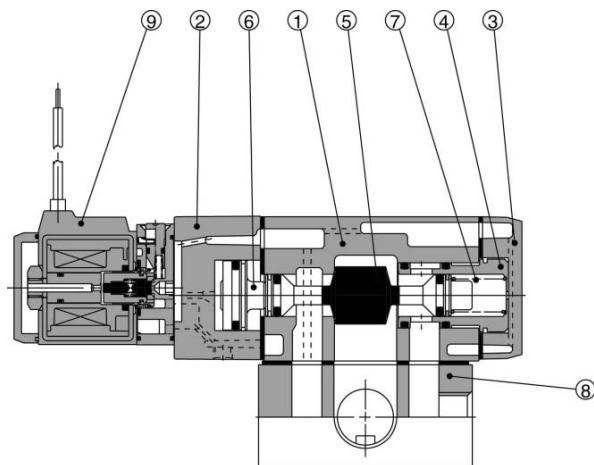


Figure (1)

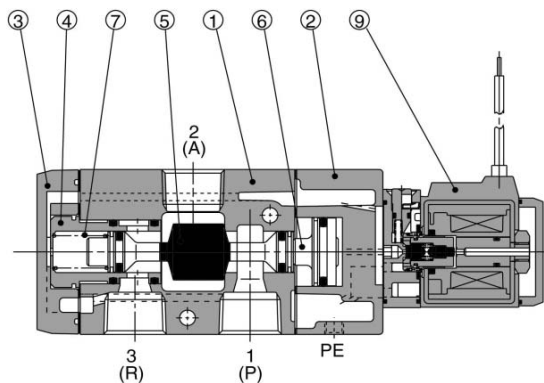
3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal Series VP300/500/700

Construction

Body ported



Base mounted



Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Color: Platinum silver
②	Adapter plate	Aluminum die-casted	Color: Platinum silver
③	End plate	Aluminum die-casted	Color: Platinum silver
④	Retainer	Brass	
⑤	Spool valve	Aluminum die-casted/HNBR	
⑥	Piston	Resin	
⑦	Spring	Stainless steel	
⑧	Sub-plate	Aluminum die-casted	Color: Platinum silver
⑨	Pilot valve assemblies		

Replacement Parts

Series	Sub-plate	Hexagon socket head screw	Sub-plate gasket	Pilot valve assembly
VP344	VP300-2-1P (Rc 1/8)	M3 x 0.5 x 32	VP300-17-1	SF4-□□□□-50
	VP300-2-2P (Rc 1/4)	VP300-24-4		
VP544	VP500-2-1P (Rc 1/4)	M4 x 0.7 x 41	VP500-17-1	
	VP500-2-2P (Rc 3/8)	VP500-24-3		
VP744	VP700-2-1P (Rc 3/8)	M5 x 0.8 x 50	VP700-17-1	
	VP700-2-2P (Rc 1/2)	VP700-24-1		

⚠ Caution

Mounting Screw Tightening Torques

M3: 0.6 N·m
M4: 1.4 N·m
M5: 2.9 N·m

How to Order Sub-plate

VP 00-2-

Series

3	VP344
5	VP544
7	VP744

Port size

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

Thread type

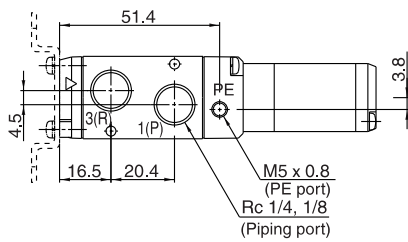
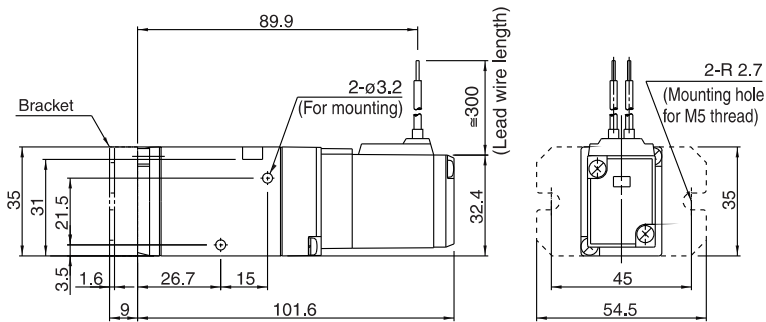
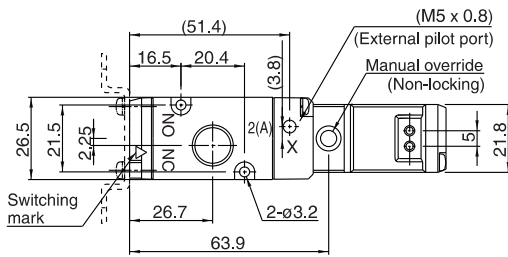
P	Rc
F	G
N	NPT
T	NPTF

V100
SY
SYJ
VK
VZ
VT
VP
VG
VP
S070
VQ
VKF
VQZ
VZ
VS
VFN

Series VP300/500/700

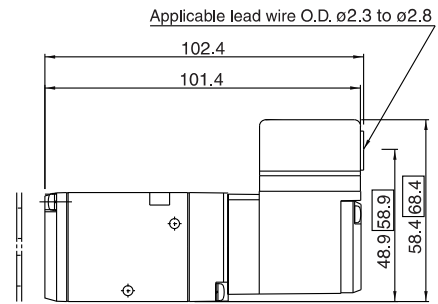
Dimensions: VP300/Body Ported

Grommet (G)



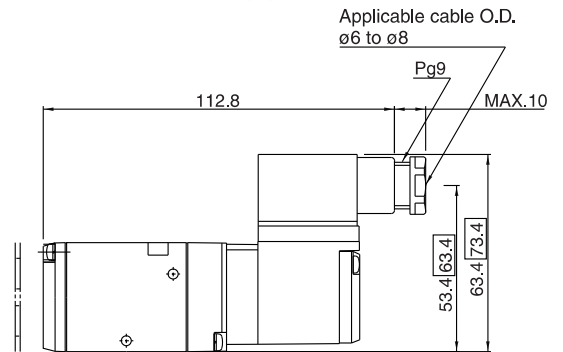
(): Dimensions for external pilot

Grommet terminal (E)



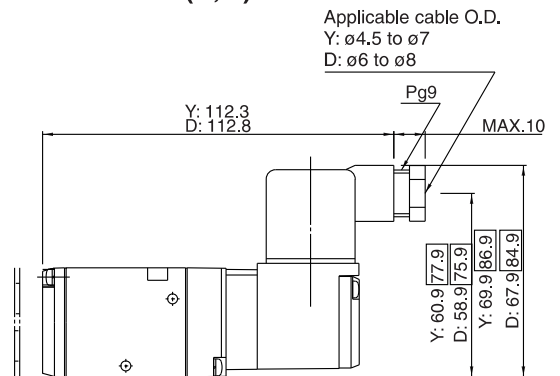
: With light/surge voltage suppressor

Conduit terminal (T)



: With light/surge voltage suppressor

DIN terminal (D, Y)

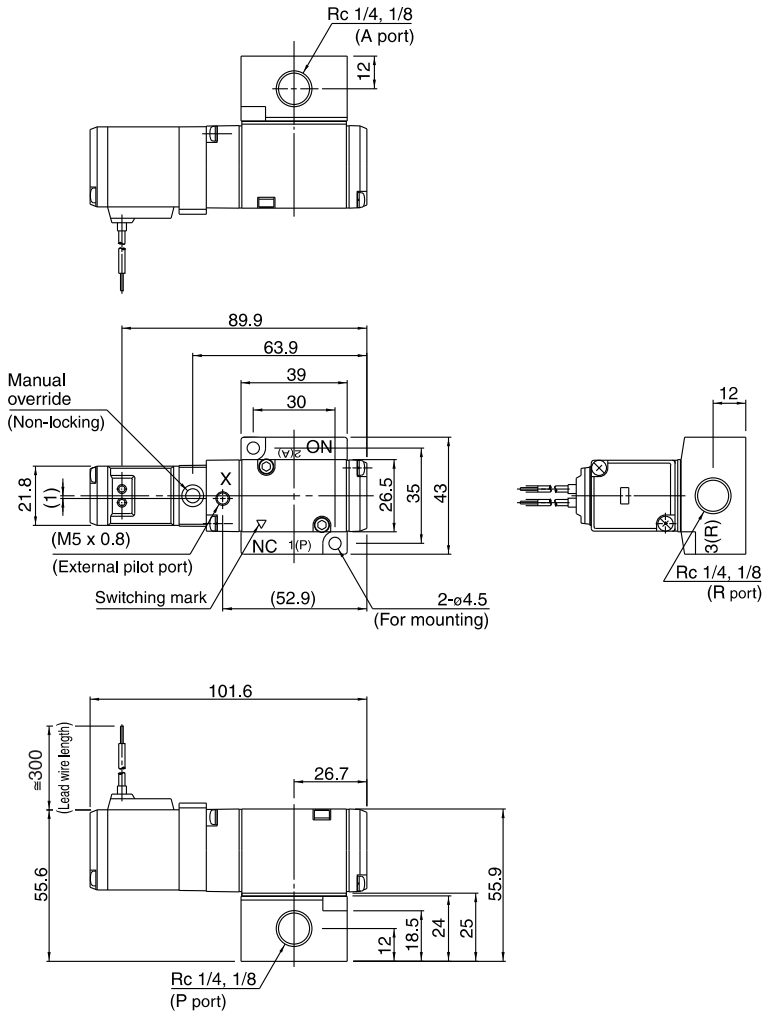


: With light/surge voltage suppressor

3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal Series VP300/500/700

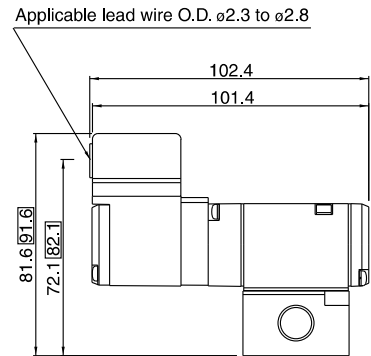
Dimensions: VP300/Base Mounted

Grommet (G)



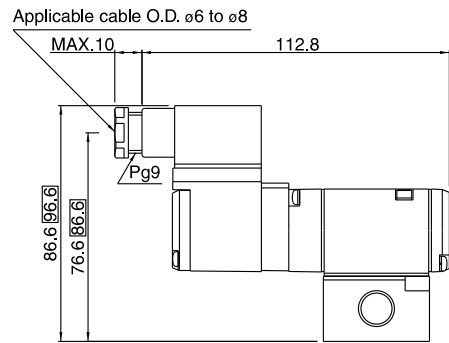
(): Dimensions for external pilot

Grommet terminal (E)



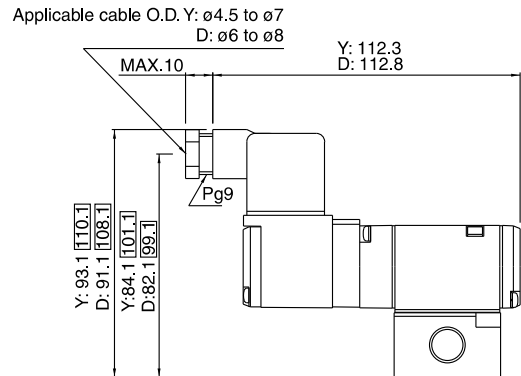
□: With light/surge voltage suppressor

Conduit terminal (T)



□: With light/surge voltage suppressor

DIN terminal (D, Y)



□: With light/surge voltage suppressor

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

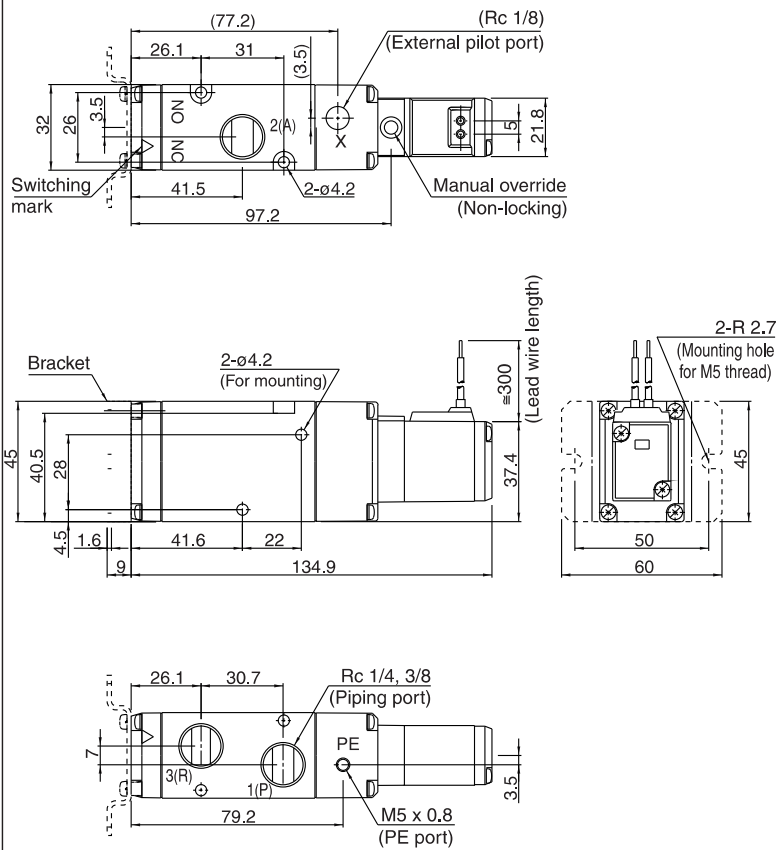
VS

VFN

Series VP300/500/700

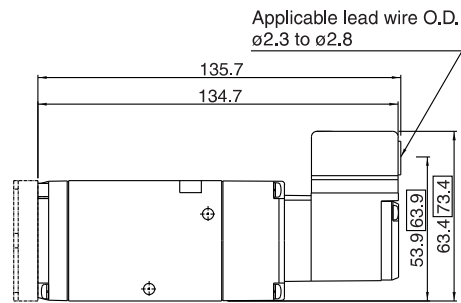
Dimensions: VP500/Body Ported

Grommet (G)



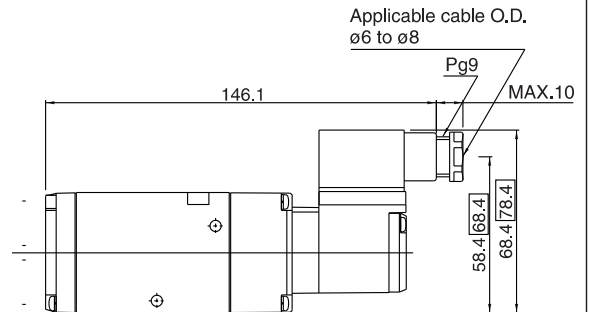
(): Dimensions for external pilot

Grommet terminal (E)



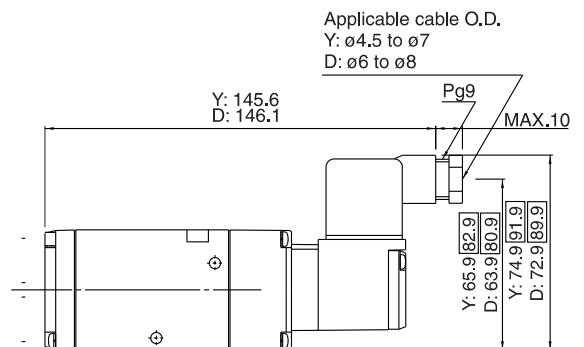
☐: With light/surge voltage suppressor

Conduit terminal (T)



☐: With light/surge voltage suppressor

DIN terminal (D, Y)

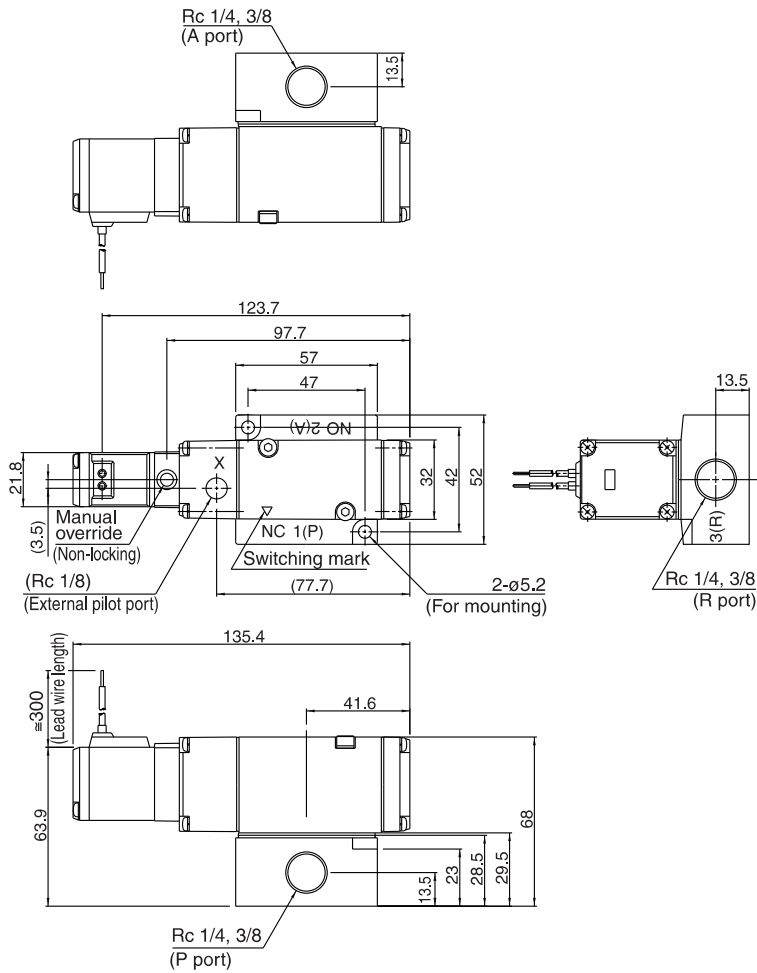


☐: With light/surge voltage suppressor

3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal Series VP300/500/700

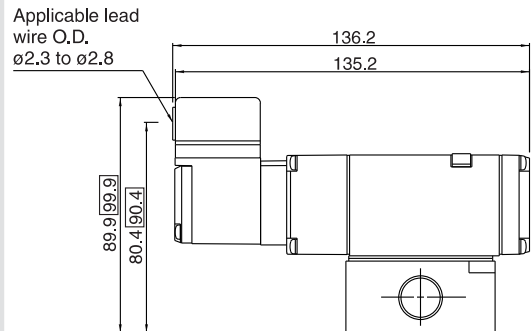
Dimensions: VP500/Base Mounted

Grommet (G)



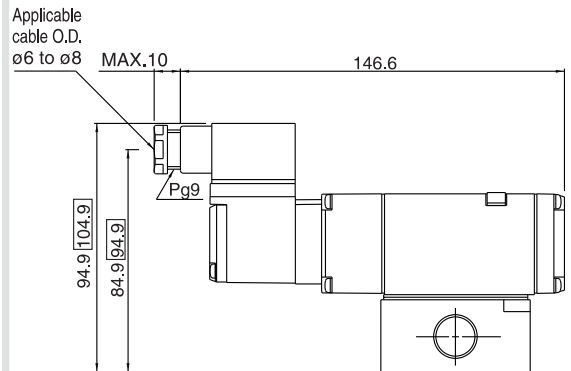
(): Dimensions for external pilot

Grommet terminal (E)



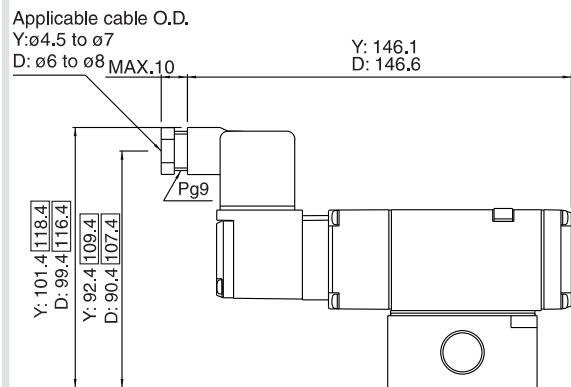
□: With light/surge voltage suppressor

Conduit terminal (T)



□: With light/surge voltage suppressor

DIN terminal (D, Y)



□: With light/surge voltage suppressor

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

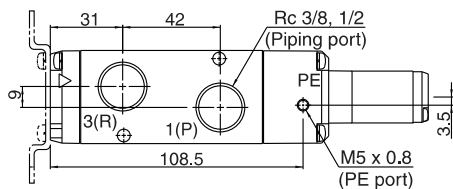
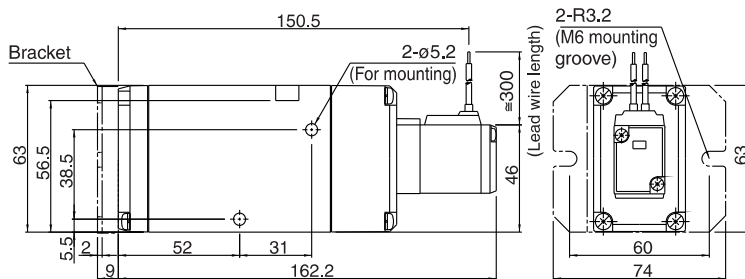
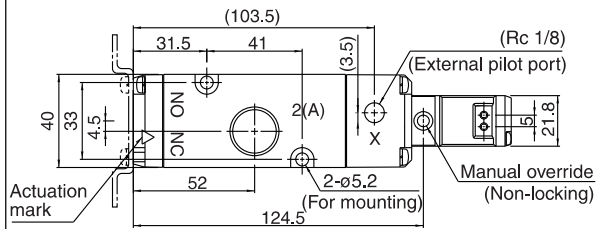
VS

VFN

Series VP300/500/700

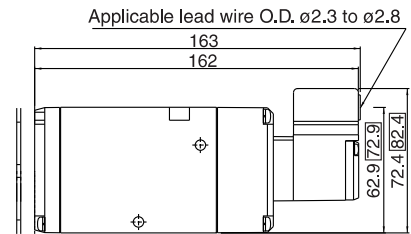
Dimensions: VP700/Body Ported

Grommet (G)



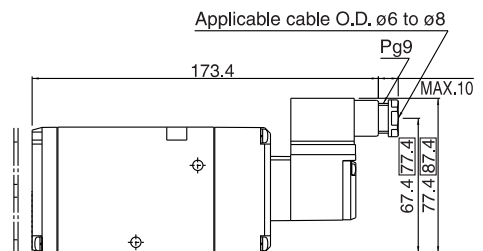
(): Dimensions for external pilot

Grommet terminal (E)



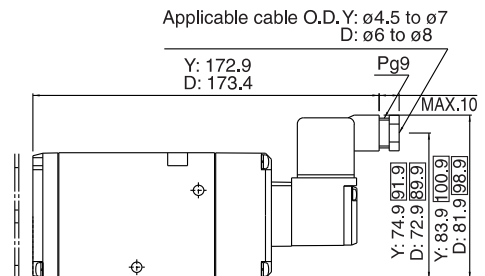
□: With light/surge voltage suppressor

Conduit terminal (T)



□: With light/surge voltage suppressor

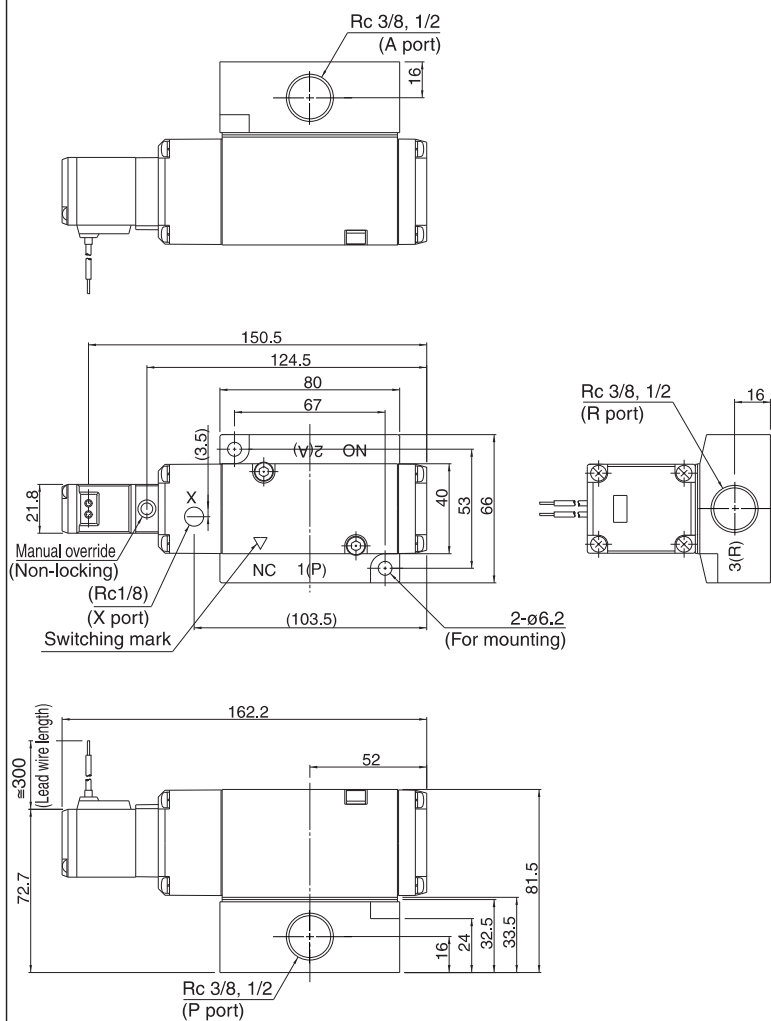
DIN terminal (D, Y)



□: With light/surge voltage suppressor

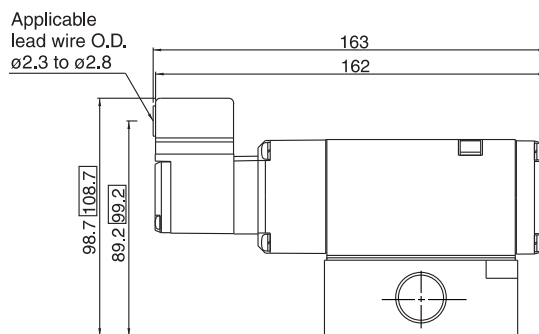
Dimensions: VP700/Base Mounted

Grommet (G)



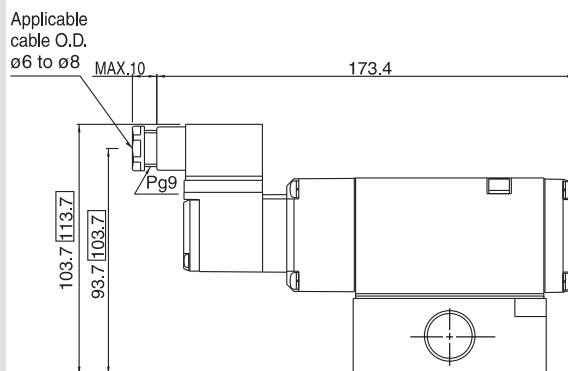
(): Dimensions for external pilot

Grommet terminal (E)



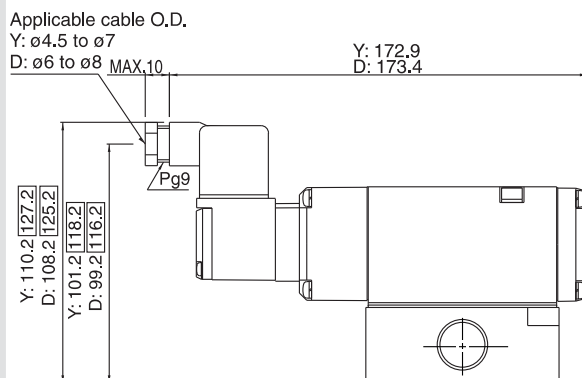
□: With light/surge voltage suppressor

Conduit terminal (T)



□: With light/surge voltage suppressor

DIN terminal (D, Y)



□: With light/surge voltage suppressor

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

VS

VFN

Series VP300/500/700

Manifold Specifications

Piping is concentrated at the base side.

All external pilots are gathered in the base.

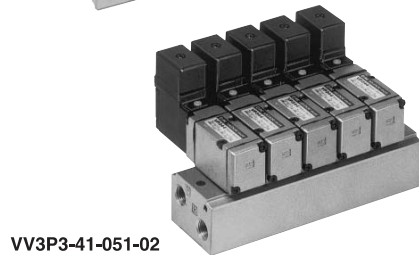
Common external, pilot port allows one piping.

2 types of exhaust ports

Select either a common or individual exhaust port. Individual exhaust type makes it possible to control the flow rate.

Easy to change switching style. (Normally Closed or Normally Open)

Switching style is easily changed from normally closed to normally open by changing the direction of the valve only 180°.



Specifications

Manifold base type	B mount single base
R (EXH) type	Common EXH, Individual EXH
P(SUP) type	Common SUP
Max. number of stations	Max. 20 stations ^{Note)}

Note) In the case of more than 10 stations, use 2 SUP/EXH ports to supply/exhaust pressure.

Model

Series	Manifold base model no.	Port 3 (R) type	Port size	Applicable valve model
VP300	VV3P3-41- <u>Stations</u> 1-02	Common	1/4	VP344-□□
	VV3P3-42- <u>Stations</u> 3-02	Individual	1/4	
VP500	VV3P5-41- <u>Stations</u> 1-03	Common	3/8	VP544-□□
	VV3P5-42- <u>Stations</u> 3-03	Individual	3/8	
VP700	VV3P7-41- <u>Stations</u> 1-04	Common	1/2	VP744-□□
	VV3P7-42- <u>Stations</u> 3-04	Individual	1/2	

• Common external pilot style (VV3P□-41R/-42R).
In the case of external pilot manifold, valve is external pilot type (standard specification).

Option

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

How to Order

VV3P 3 - 41 - 04 1 - 02

Series VP
3 port solenoid valve
Manifold

Body size

3	1/4 standard
5	3/8 standard
7	1/2 standard

Base type

41	Common exhaust
42	Individual exhaust

Supply port is common.

Special specifications

Nil	Standard
R	Common external pilot

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	Port size	Applicable manifold base model
02	1/4	VV3P3
03	3/8	VV3P5
04	1/2	VV3P7

Symbol

Symbol	Flow passage		Porting specifications	Note
	P	R		
1	Common	Common	Side	Type 41
3	Common	Individual	Side	Type 42

Stations

02	2 stations
⋮	⋮
20	20 stations

Note) Instruct by specifying the valves and blanking plate to be mounted on the manifold along with the manifold base model no.

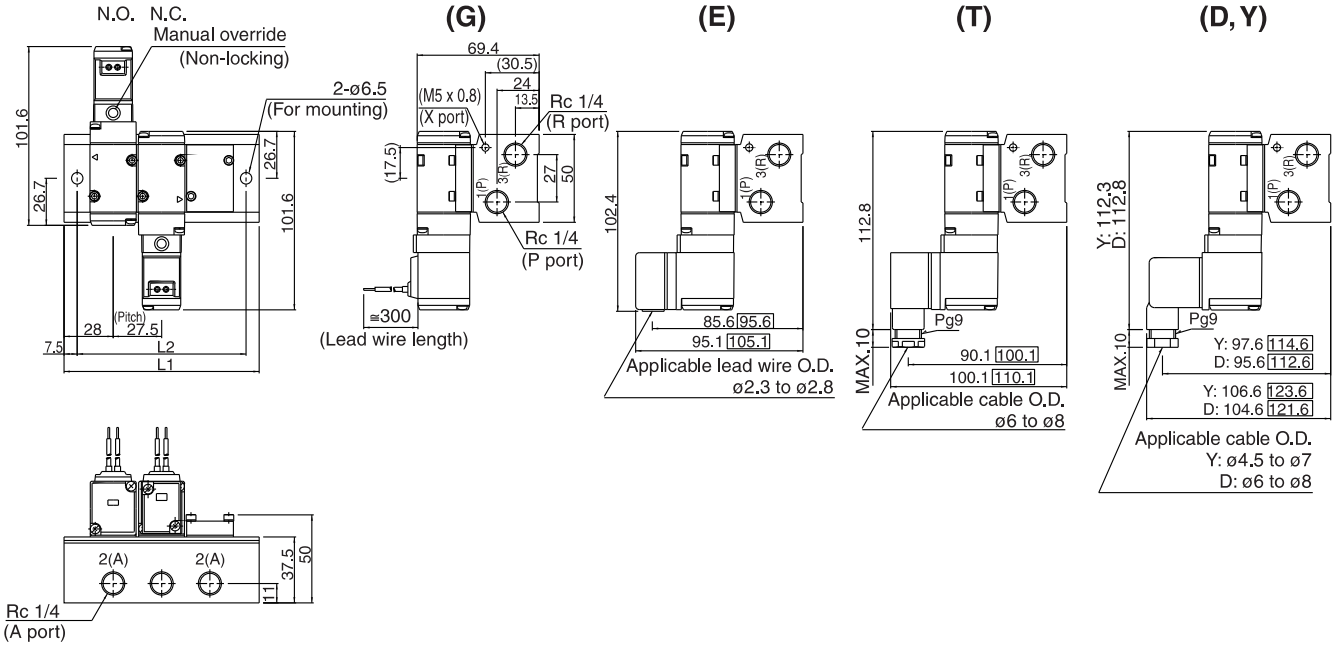
(Example) 4 stations manifolds
 VV3P3-41-041-02.....1
 *VV344-1G-A.....3
 *VV300-25-1A (Blanking plate).....1

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

3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal Series **VP300/500/700**

Dimensions: VV3P3 (For N.C.)

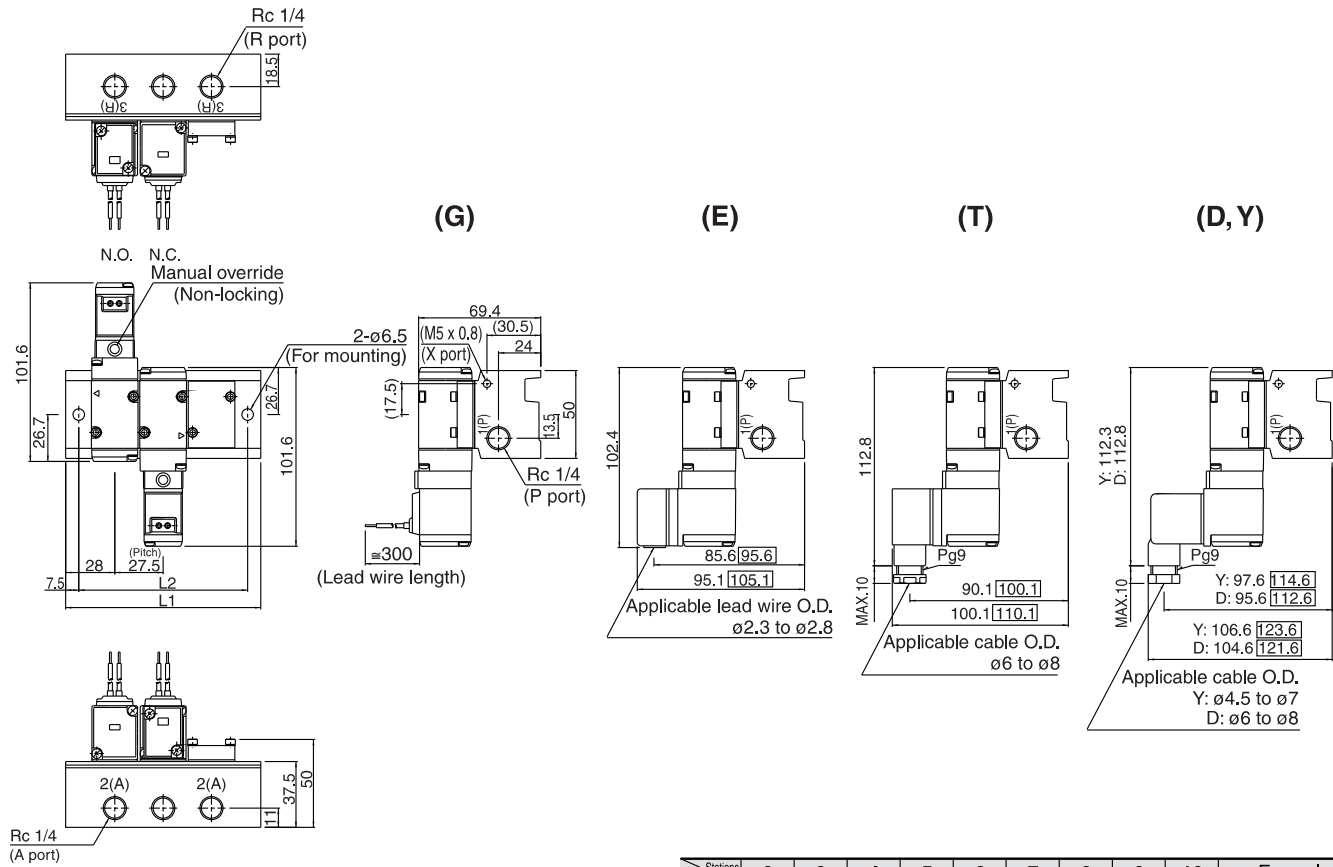
Common exhaust: VV3P3-41 □ - Stations 1-02



□: With light/surge voltage suppressor
(): Dimensions for external pilot

L Stations	2	3	4	5	6	7	8	9	10	Formula
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	$L_1 = 27.5 \times n + 28.5$
L2	68.5	96	123.5	151	178.5	206	233.5	261	288.5	$L_2 = 27.5 \times n + 13.5$

Individual exhaust: VV3P3-42 □ - Stations 3-02



□: With light/surge voltage suppressor
(): Dimensions for external pilot

L Stations	2	3	4	5	6	7	8	9	10	Formula
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	$L_1 = 27.5 \times n + 28.5$
L2	68.5	96	123.5	151	178.5	206	233.5	261	288.5	$L_2 = 27.5 \times n + 13.5$

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

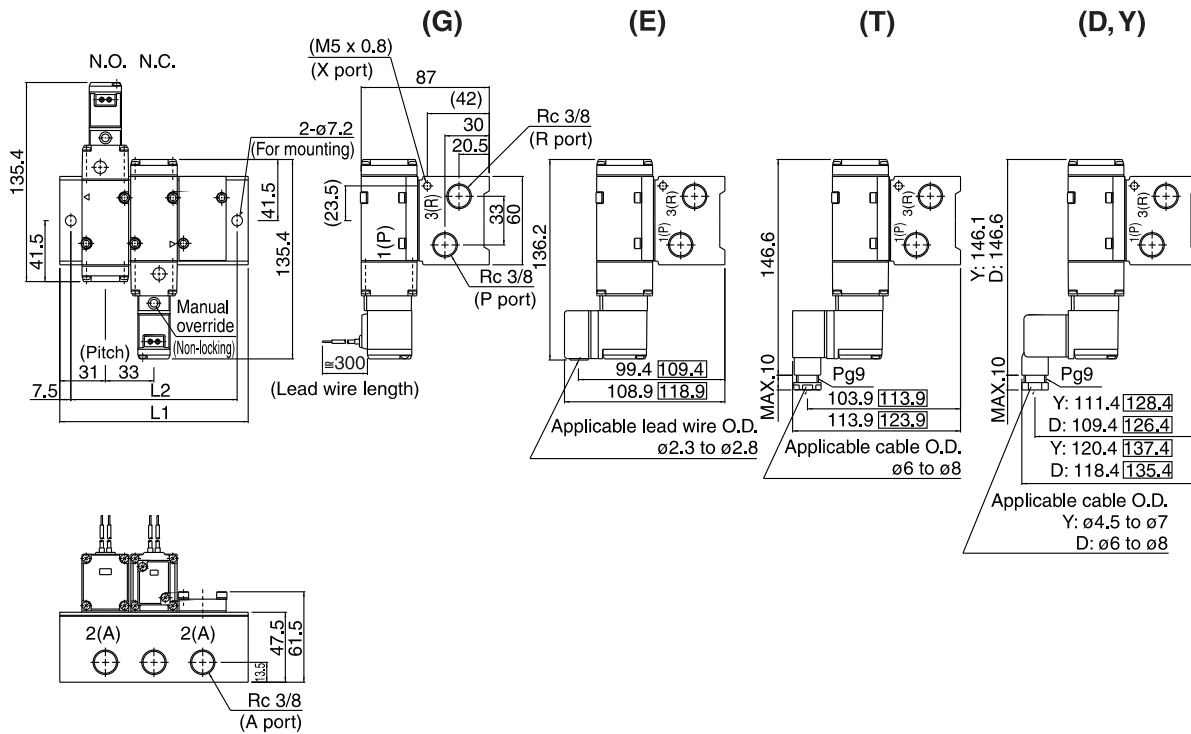
VS

VFN

Series VP300/500/700

Dimensions: VV3P5 (For N.C.)

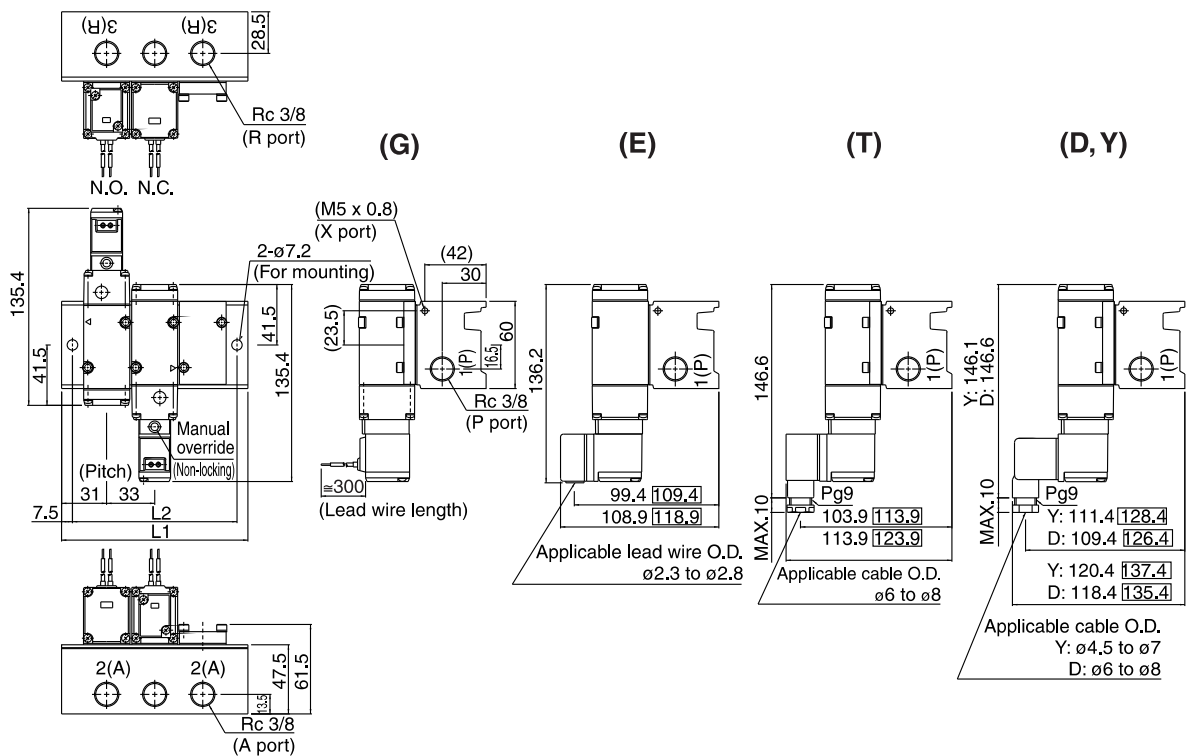
Common exhaust: VV3P5-41 □ - Stations 1-03



□: With light/surge voltage suppressor
 (:): Dimensions for external pilot

Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	95	128	161	194	227	260	293	326	359	L ₁ = 33 x n + 29
L ₂	80	113	146	179	212	245	278	311	344	L ₂ = 33 x n + 14

Individual exhaust: VV3P5-42 □ - Stations 3-03



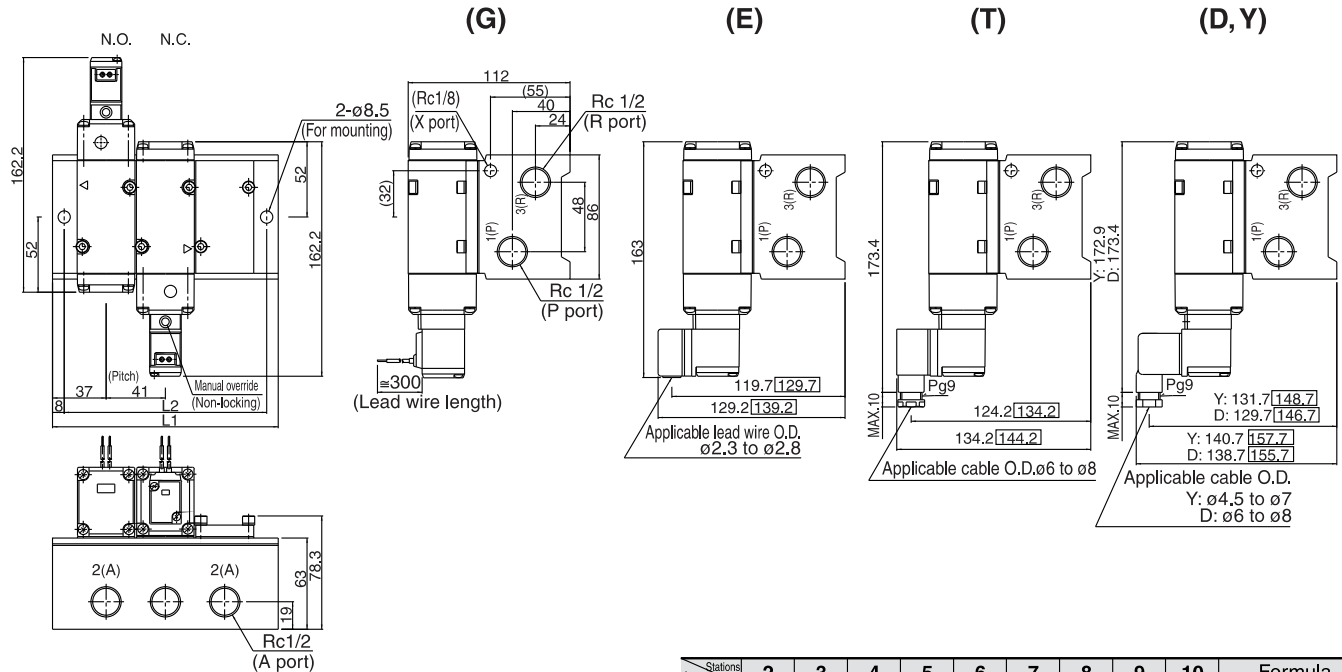
□: With light/surge voltage suppressor
 (:): Dimensions for external pilot

Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	95	128	161	194	227	260	293	326	359	L ₁ = 33 x n + 29
L ₂	80	113	146	179	212	245	278	311	344	L ₂ = 33 x n + 14

3 Port Pilot Operated Poppet Solenoid Valve Rubber Seal Series VP300/500/700

Dimensions: VV3P7 (For N.C.)

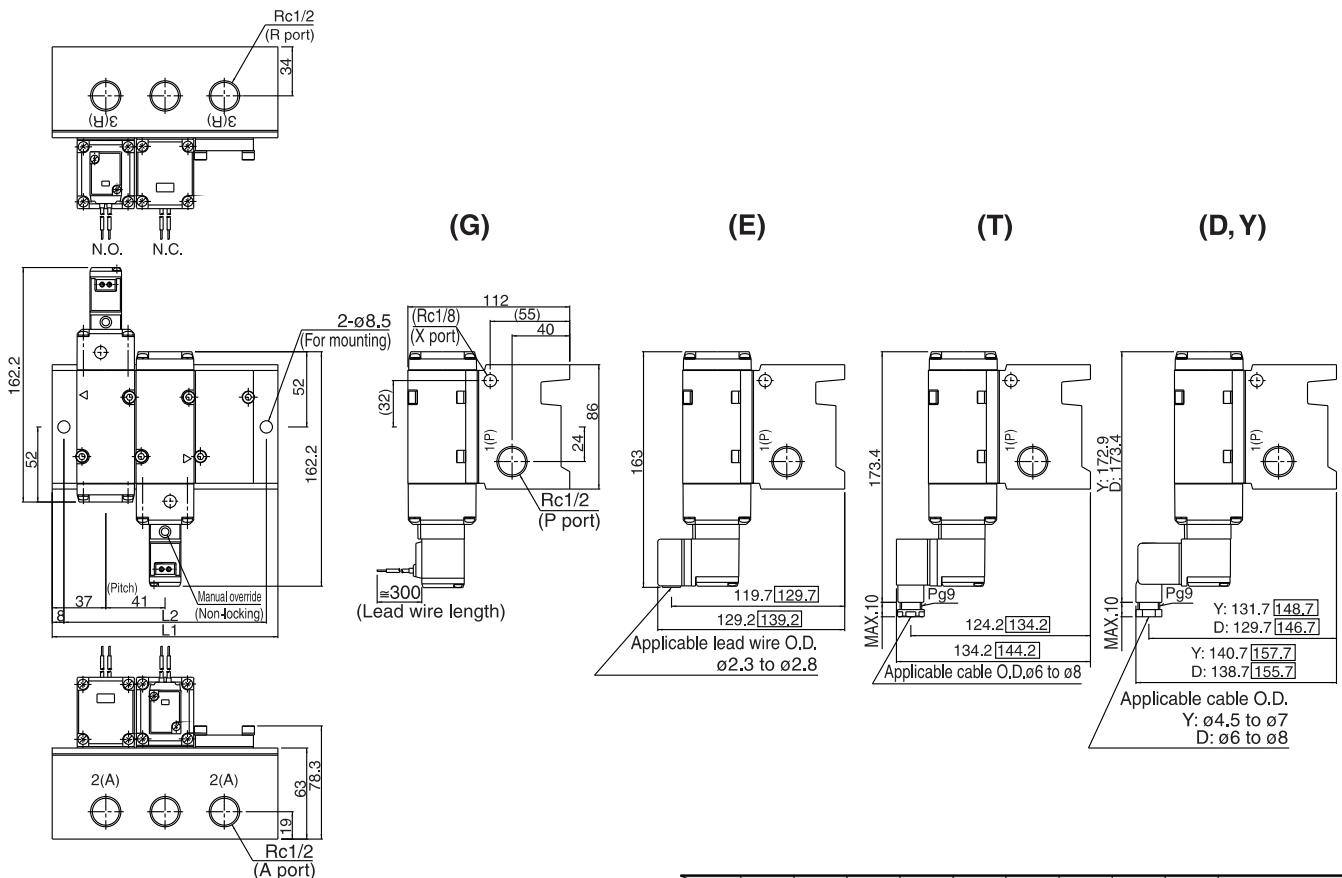
Common exhaust: VV3P7-41 □ - Stations 1-04



□: With light/surge voltage suppressor
(): Dimensions for external pilot

Stations	2	3	4	5	6	7	8	9	10	Formula
L1	115	156	197	238	279	320	361	402	443	L1 = 41 x n + 33
L2	99	140	181	222	263	304	345	386	427	L2 = 41 x n + 17

Individual exhaust: VV3P7-42 □ - Stations 3-04



□: With light/surge voltage suppressor
(): Dimensions for external pilot

Stations	2	3	4	5	6	7	8	9	10	Formula
L1	115	156	197	238	279	320	361	402	443	L1 = 41 x n + 33
L2	99	140	181	222	263	304	345	386	427	L2 = 41 x n + 17

V100

SY

SYJ

VK

VZ

VT

VP

VG

VP

S070

VQ

VKF

VQZ

VZ

VS

VFN

3 Port Air Operated Valve

Series VPA300/500/700

How to Order



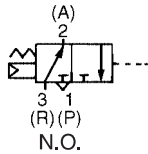
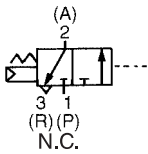
VPA542



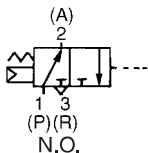
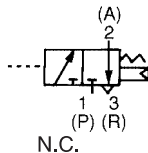
VPA544

JIS Symbol

VPA342
542
742



VPA344
544
744



VP
Air operated valve

Body size

3	1/4 standard
5	3/8 standard
7	1/2 standard

Actuation

4	NC/NO common
---	--------------

Body type

2	Body ported
4	Base mounted

Valve option

Nil	Standard
V*	Vacuum

Option

Description	Series	Part no.
Bracket (With screw)	VPA342	VP300-27-1A
	VPA542	VP500-27-1A
	VPA742	VP700-27-1A

Option

Nil	None
F	With bracket (Only VPA342, VPA542 and VPA742)

Passage

A	Normally closed
B	Normally open

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	Port size Rc	VPA342 VPA344	VPA542 VPA544	VPA742 VPA744
Nil*	Without sub-plate	●	●	●
01	1/8	●	—	—
02	1/4	●	●	—
03	3/8	—	●	●
04	1/2	—	—	●

* Only VPA344, VPA544 and VPA744

Specifications

Fluid	Air	
Type of actuation	N.C. or N.O. (Can be switched.) Note	
Operating pressure range (MPa)	Standard	0.2 to 0.8
	Vacuum	-101.2 kPa to 0.2
Pilot pressure (MPa)	Same as operating pressure (Min. 0.2 MPa)	
Ambient and fluid temperature (°C)	-10 to 50°C (No freezing. Refer to page 5-11-4.)	
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)	
Mounting orientation	Free	
Impact/Vibration resistance (m/s ²) Note	300/50	
Option	Bracket (With screw)	VPA342: VP300-27-1A VPA542: VP500-27-1A VPA742: VP700-27-1A

Note) Impact resistance: No malfunction from test using drop impact tester, to axis and right angle directions of main valve, each one time when pilot signal ON and OFF. (Value in the initial stage)

Vibration resistance: No malfunction from test with 45 to 2000 Hz one sweep, to axis and right angle direction of main valve, each one time when pilot signal ON and OFF. (Value in the initial stage)

Flow Characteristics/Weight

Series	Model	Port size	Flow characteristics												Weight ⁽¹⁾ (kg)
			1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
			C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
Series VPA300	VPA342 (Body ported)	1/8	3.3	0.31	0.86	3.4	0.34	0.86	2.9	0.47	0.83	3.5	0.38	0.93	0.12
		1/4	4.0	0.26	0.99	3.7	0.27	0.88	3.2	0.40	0.92	4.4	0.28	1.1	
	VPA344 (Base mounted)	1/8	2.9/2.9	0.27/0.33	0.74/0.76	3.3/3.6	0.31/0.30	0.80/0.86	2.9/3.0	0.38/0.40	0.83/0.83	3.5/3.5	0.37/0.37	0.89/0.89	0.19
		1/4	3.1/2.9	0.29/0.41	0.79/0.83	4.1/4.1	0.31/0.25	1.0/1.0	2.7/3.6	0.57/0.21	0.86/0.88	4.1/3.9	0.25/0.23	1.0/0.95	
Series VPA500	VPA542 (Body ported)	1/4	6.6	0.35	1.6	7.4	0.41	2.0	6.9	0.34	1.7	7.5	0.42	2.0	0.27
		3/8	9.1	0.42	2.4	9.0	0.43	2.4	8.8	0.36	2.2	9.3	0.43	2.5	
	VPA544 (Base mounted)	1/4	6.5/7.0	0.36/0.34	1.7/1.8	7.5/7.7	0.36/0.41	1.9/2.1	7.9/7.4	0.30/0.26	1.9/1.8	7.4/7.3	0.35/0.32	1.9/1.8	0.36
		3/8	7.9/8.1	0.29/0.30	1.8/1.9	8.8/9.3	0.41/0.42	2.3/2.4	9.2/8.8	0.17/0.14	2.1/2.0	9.2/9.1	0.22/0.21	2.2/2.2	
Series VPA700	VPA742 (Body ported)	3/8	12	0.29	2.9	12	0.36	3.1	12	0.31	3.1	13	0.36	3.4	0.64
		1/2	15	0.23	3.8	14	0.25	3.8	15	0.22	3.7	16	0.29	4.0	
	VPA744 (Base mounted)	3/8	12/12	0.18/0.23	2.9/3.1	14/14	0.27/0.27	3.5/3.5	14/13	0.25/0.24	3.2/3.2	14/14	0.25/0.24	3.3/3.5	0.71
		1/2	15/14	0.19/0.18	3.5/3.3	15/16	0.26/0.28	3.8/4.0	15/15	0.24/0.23	3.6/3.7	15/15	0.22/0.24	3.8/3.6	

Note 1) In the case of body ported type, the valve is without bracket.

Note 2) Flow characteristics of base mounted type are the values measured in the normally closed and normally open state.

⚠ Cautions

Refer to pages 5-11-2 to 6 for Safety Instruction and Solenoid Valve Precautions.



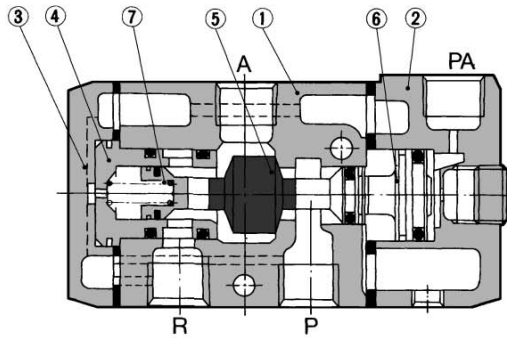
• Refer to Best Pneumatics Vol. 4 regarding exchange of passage.

Series VPA300/500/700

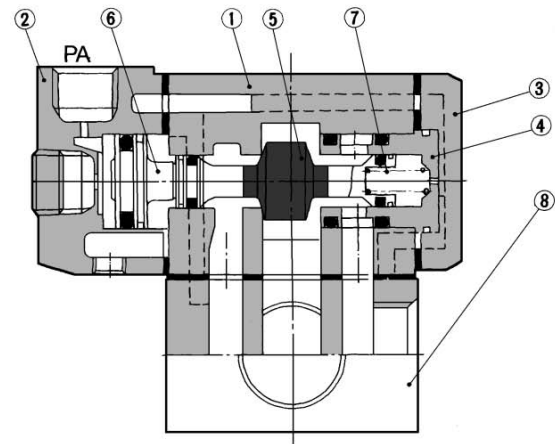
Construction

Standard

Body ported

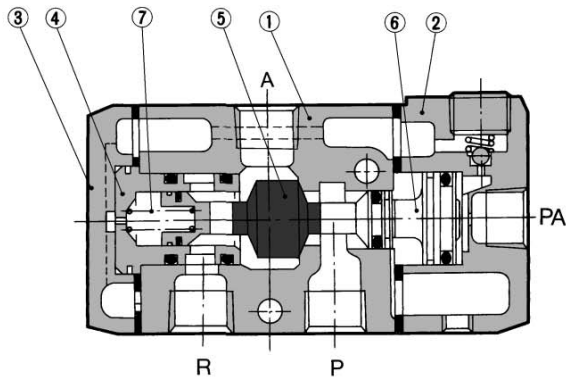


Base mounted

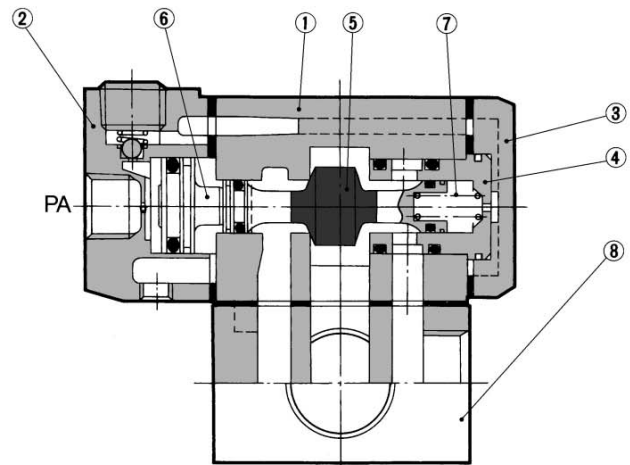


Vacuum (Option)

Body ported



Base mounted



Component Parts

No.	Description	Material	Note
①	Body	Aluminium die-casted	Platinum silver
②	Adapter plate	Aluminium die-casted	Platinum silver
③	End plate	Aluminium die-casted	Platinum silver
④	Retainer	Brass	
⑤	Spool valve	Aluminum/NBR	
⑥	Piston	Resin	
⑦	Spring	Stainless steel	
⑧	Sub-plate	Aluminium die-casted	Platinum silver

Replacement Parts

Series	Sub-plate	Hexagon socket head bolt	Gasket for sub-plate
VPA344	VP300-2-1P (Rc 1/8)	M3 x 0.5 x 32	VP300-17-1
	VP300-2-2P (Rc 1/4)	VP300-24-4	
VPA544	VP500-2-1P (Rc 1/4)	M4 x 0.7 x 41	VP500-17-1
	VP500-2-2P (Rc 3/8)	VP500-24-3	
VPA744	VP700-2-1P (Rc 3/8)	M5 x 0.8 x 50	VP700-17-1
	VP700-2-2P (Rc 1/2)	VP700-24-1	

⚠ Caution

Tightening Torque for Mounting Screw

M3: 0.6 N·m
M4: 1.4 N·m
M5: 2.9 N·m

How to Order Sub-plate

VP **3** 00 - 2 - **1** **P**

Series

3	VPA344
5	VPA544
7	VPA744

Thread type

P	Rc
F	G
N	NPT
T	NPTF

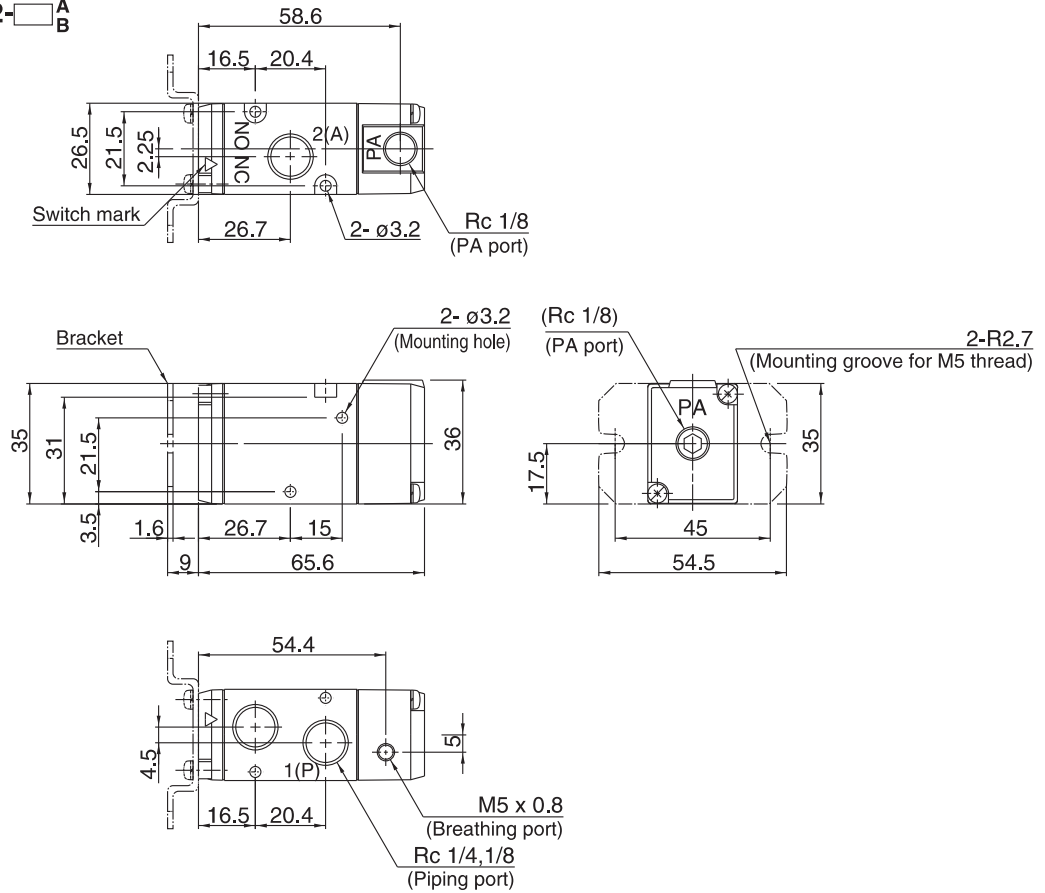
Port size

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

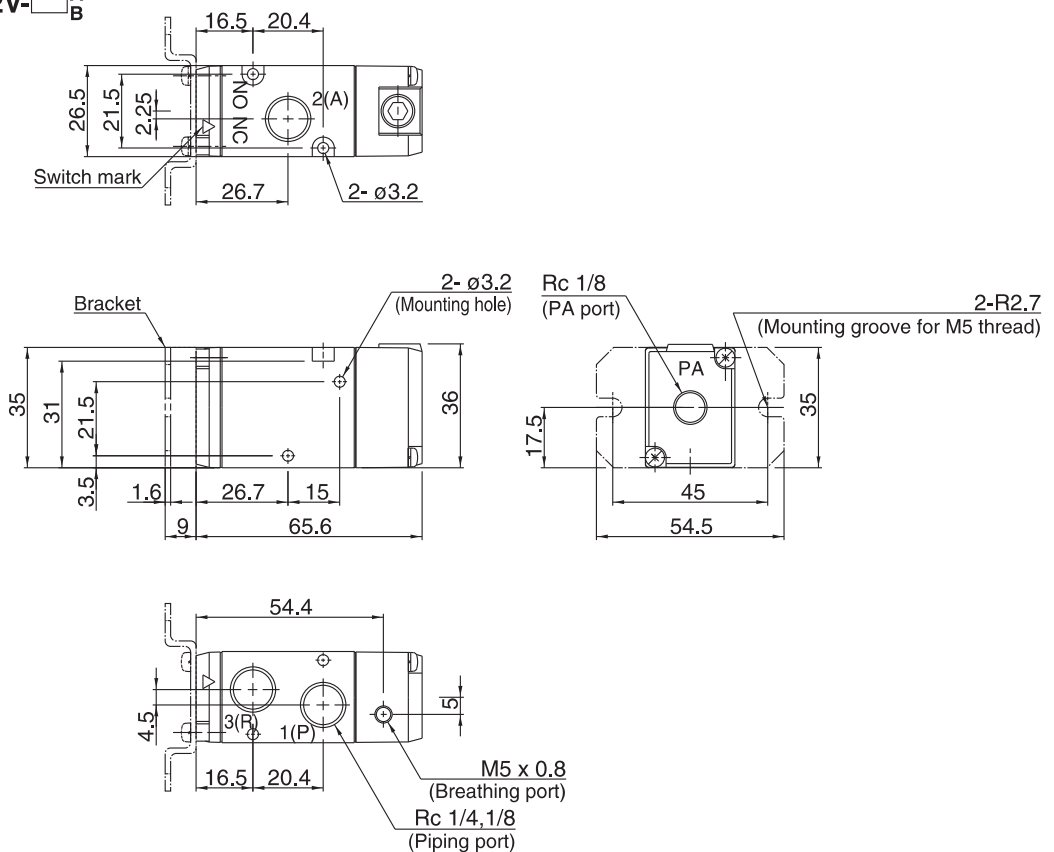
3 Port Air Operated Valve Series VPA300/500/700

Dimensions

Body ported: VPA342-A
B



Body ported: VPA342V-A
B



A

A

A

A

VM

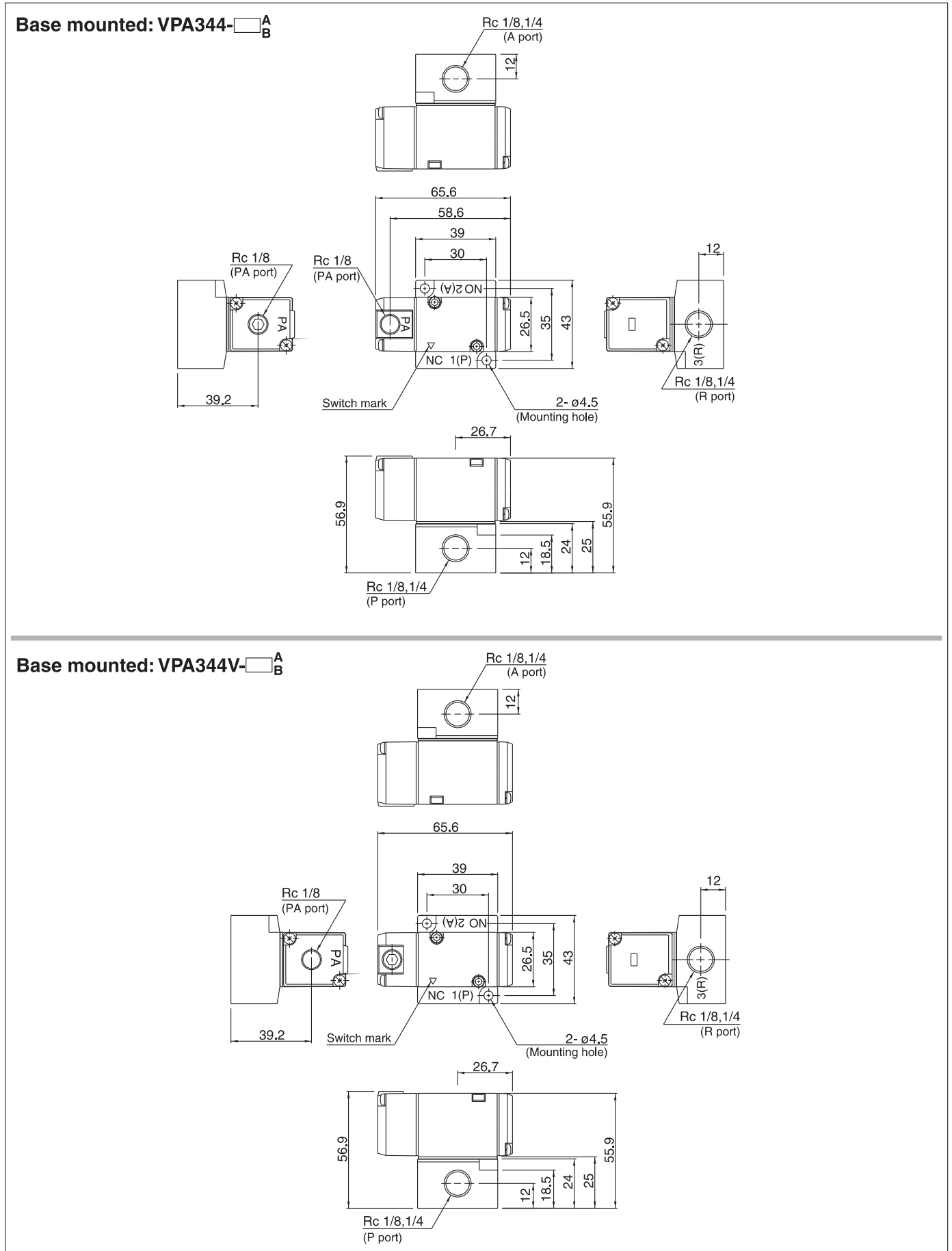
VR

VH

VHS

Series VPA300/500/700

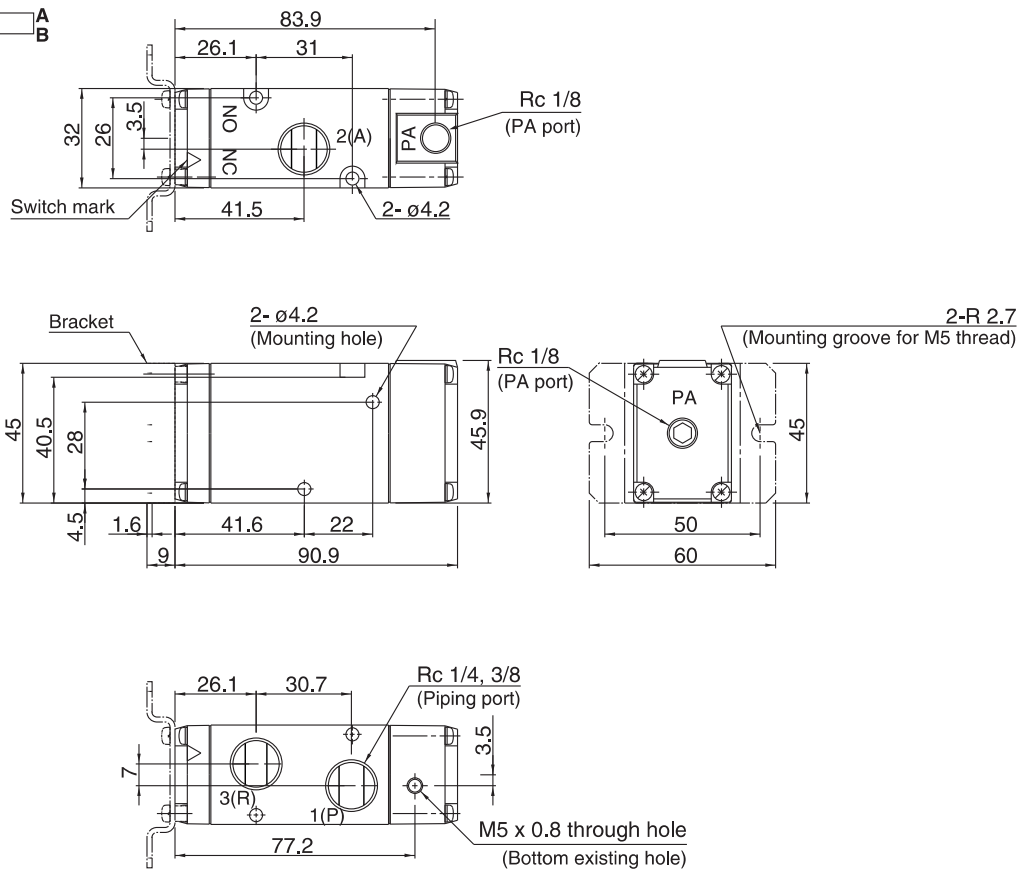
Dimensions



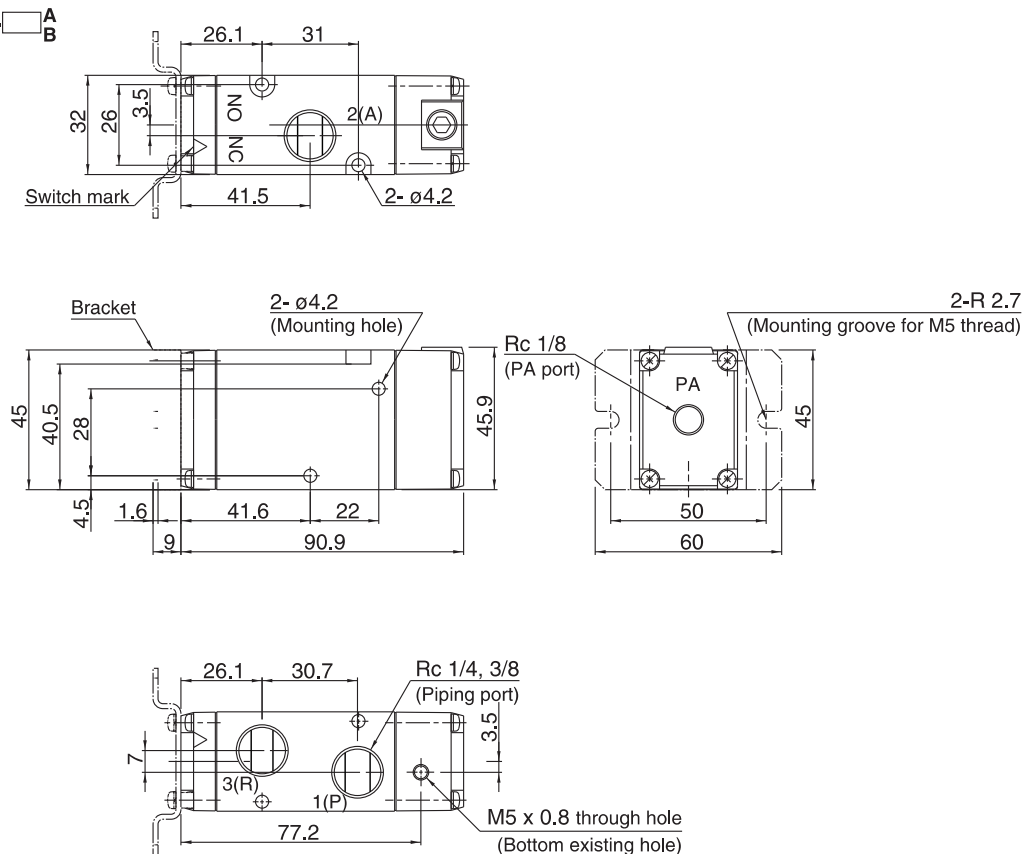
3 Port Air Operated Valve Series VPA300/500/700

Dimensions

Body ported: VPA542-A
B



Body ported: VPA542V-A
B



A

A

A

A

VM

VR

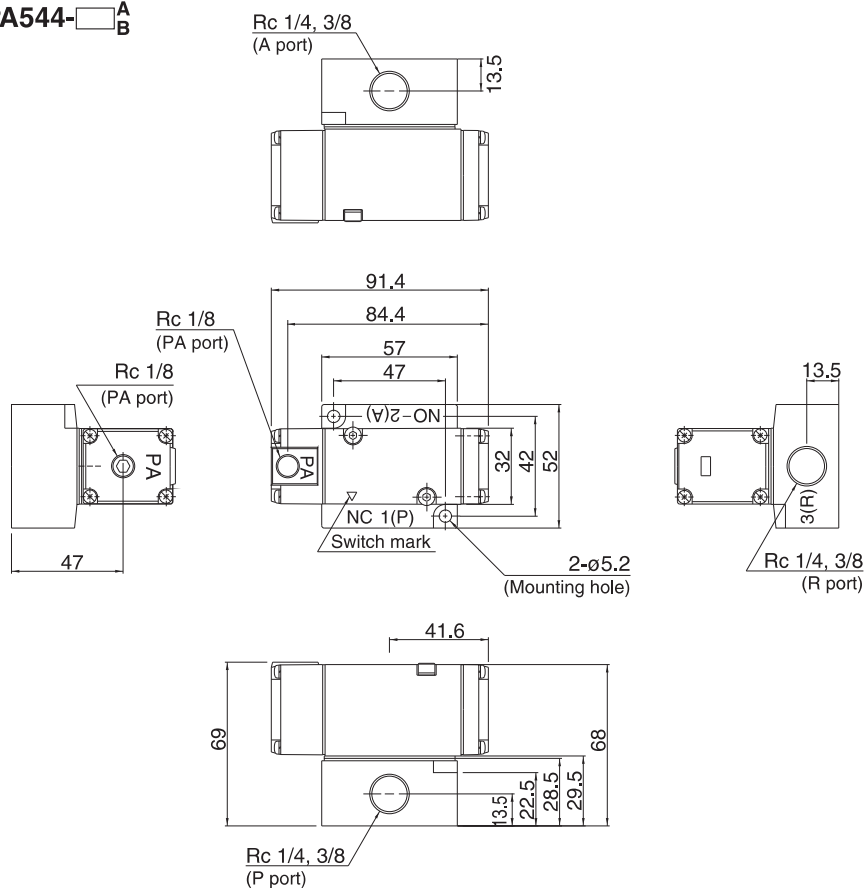
VH

VHS

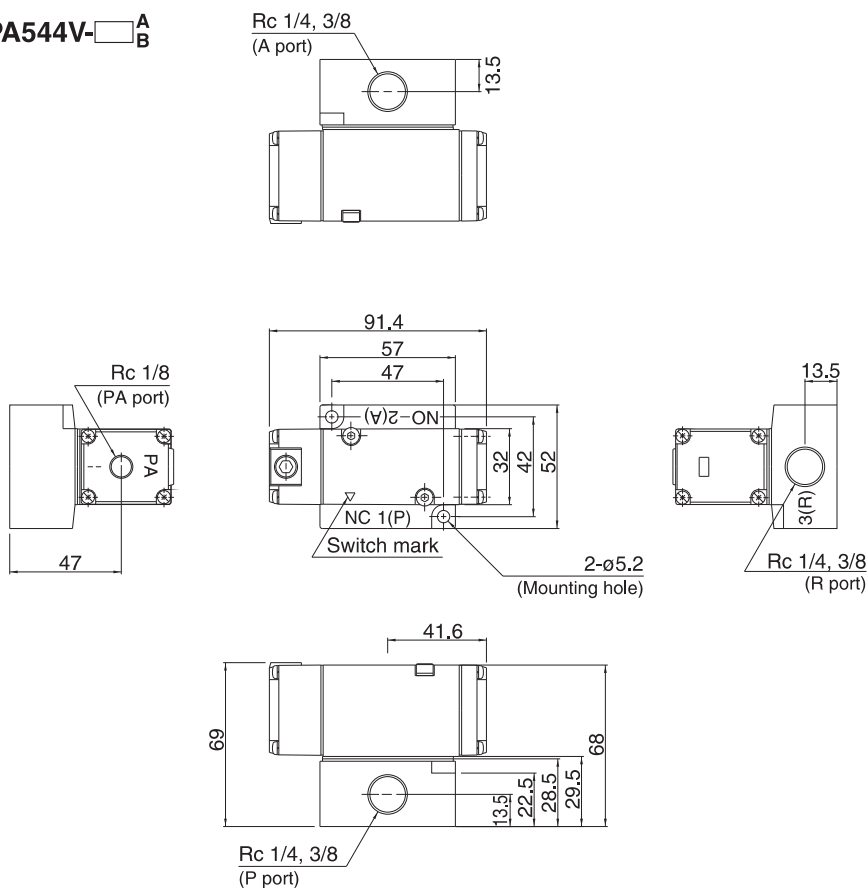
Series VPA300/500/700

Dimensions

Base mounted: VPA544-



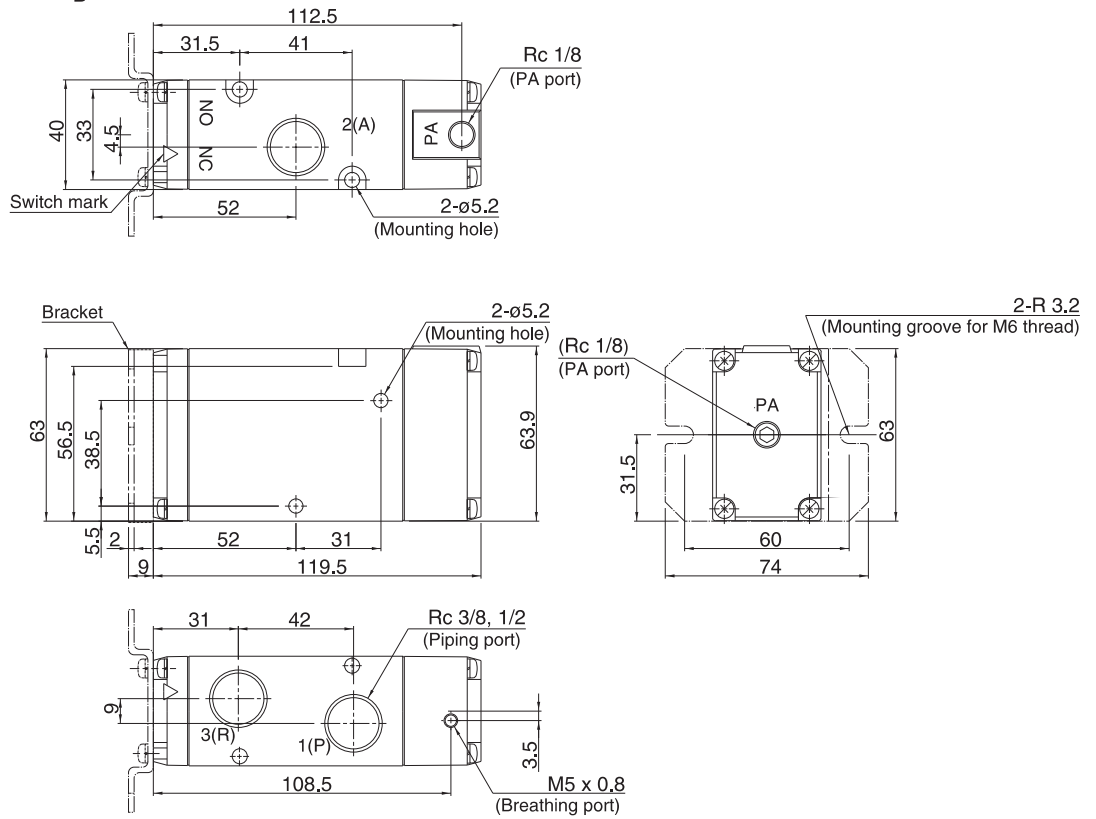
Base mounted: VPA544V-



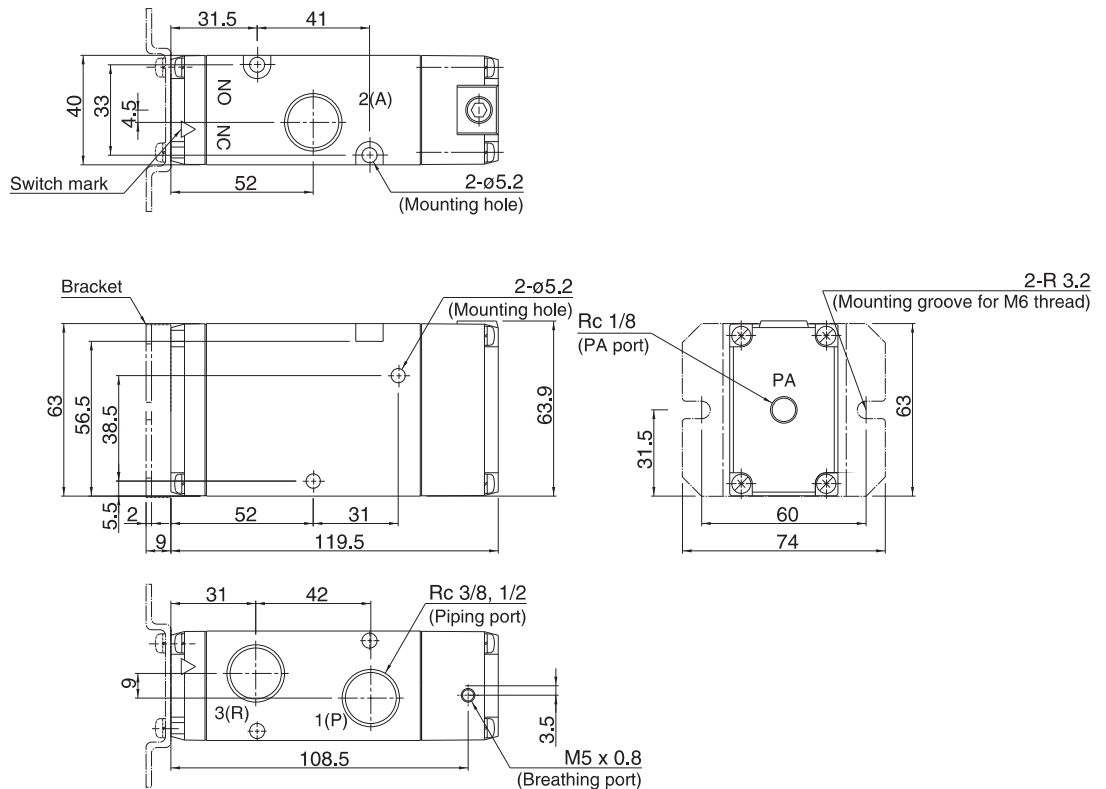
3 Port Air Operated Valve Series VPA300/500/700

Dimensions

Body ported: VPA742-A
B



Body ported: VPA742V-A
B



A

A

A

A

VM

VR

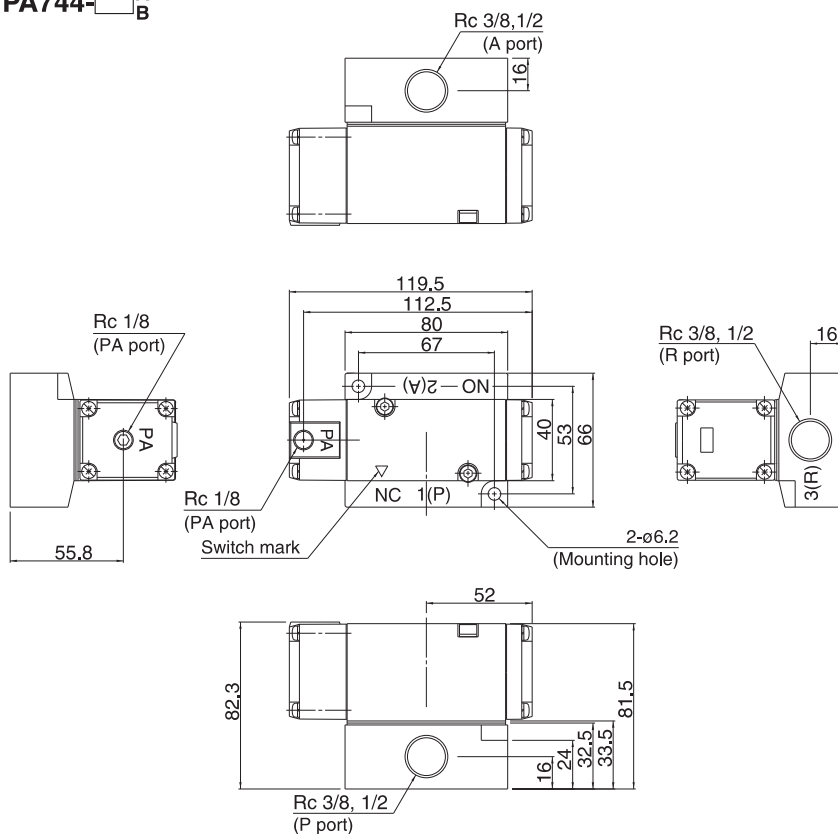
VH

VHS

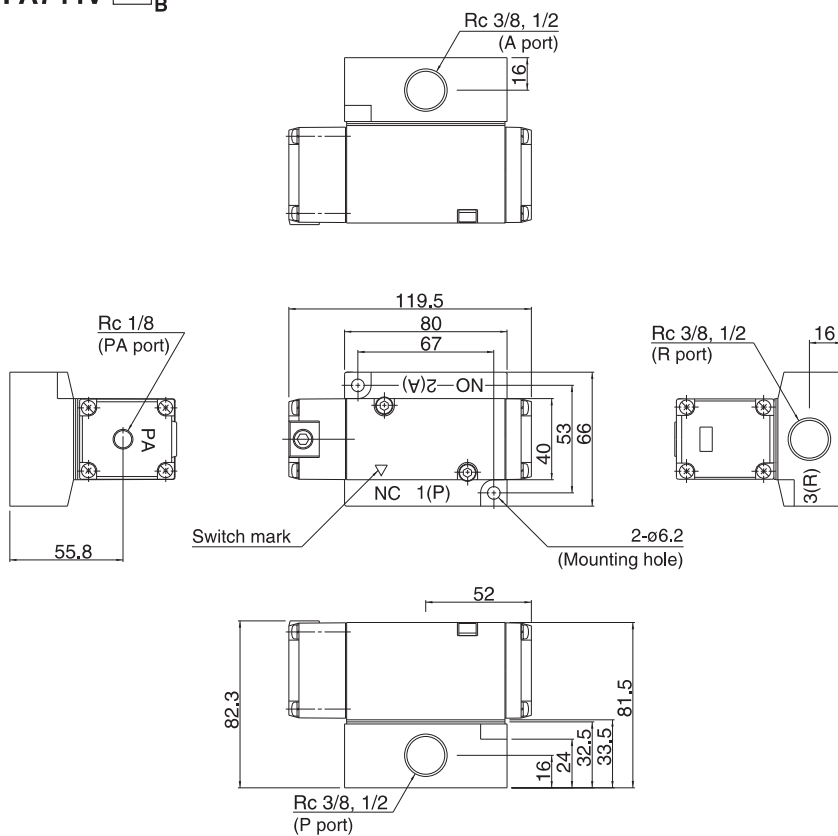
Series VPA300/500/700

Dimensions

Base mounted: VPA744-



Base mounted: VPA744V-

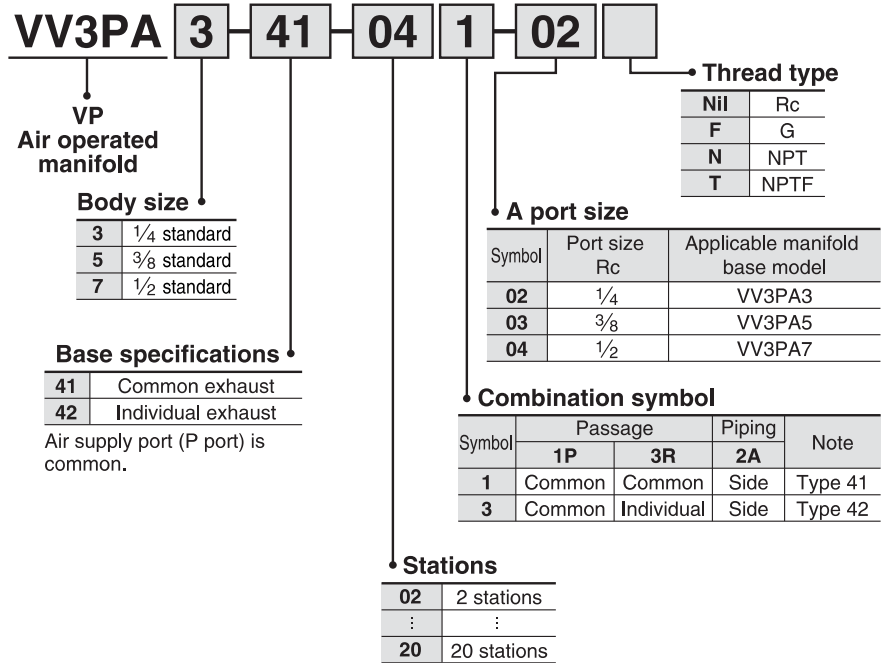


Series VPA300/500/700

Manifold Specifications



How to Order



- S□A
- V□A
- S□A
- V□A
- VM
- VR
- VH
- VHS

* To order valves and blank plate assembly mounted onto the manifold, list valves and blanking plate assembly with manifold base part number.

Example) 4 stations manifold
 VV3PA3-41-041-02..... 1
 *VPA344-A..... 3
 *VP300-25-1A (Blanking plate)..... 1

↳ To order valves and options mounted onto the manifold at the factory, list the valve/option with an asterisk (*) in front of each part number.

Specifications

Manifold base type	B mount (Single base)
Exhaust type	Common exhaust, Individual exhaust
Supply (P) port type	Common supply port
Max. valve stations	20 stations

Note) If there are more than 10 stations, supply air to P port on both sides of the manifold and exhaust from R port on both sides of the manifold.

Model

Series	Manifold base model	R port model	Port size	Applicable valve model
VPA300	VV3PA3-41- <u>n</u> 1-02	Common	Rc 1/4	VPA344
	VV3PA3-42- <u>n</u> 3-02	Individual	Rc 1/4	
VPA500	VV3PA5-41- <u>n</u> 1-03	Common	Rc 3/8	VPA544
	VV3PA5-42- <u>n</u> 3-03	Individual	Rc 3/8	
VPA700	VV3PA7-41- <u>n</u> 1-04	Common	Rc 1/2	VPA744
	VV3PA7-42- <u>n</u> 3-04	Individual	Rc 1/2	

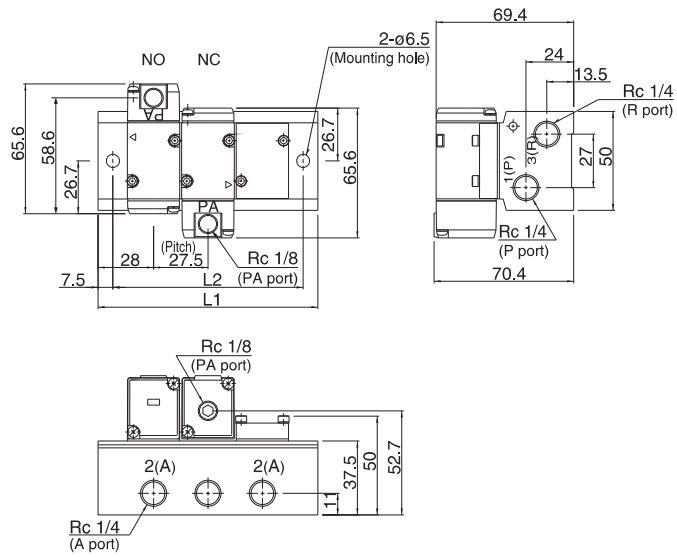
Option

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

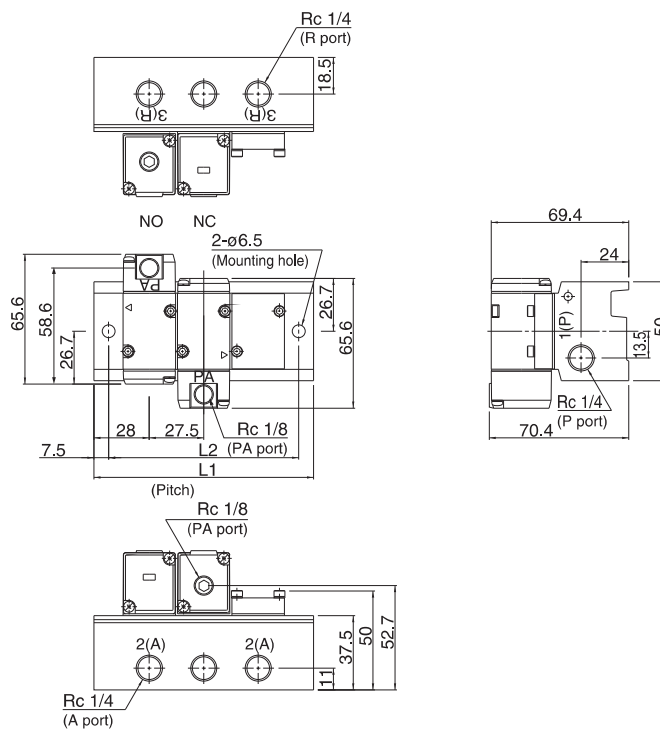
Series VPA300/500/700

Dimensions

Common exhaust: VV3PA3-41- Station 1-02



Individual exhaust: VV3PA3-42- Station 3-02



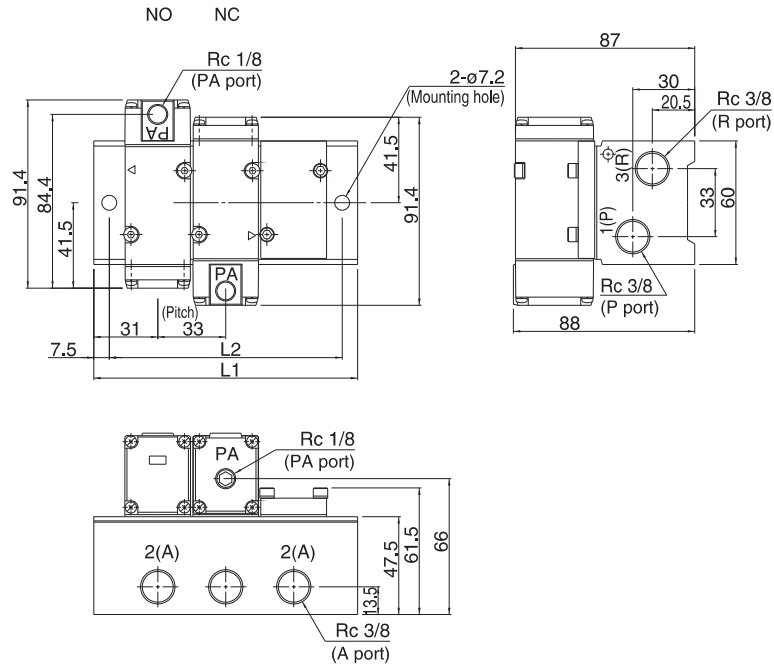
n: Station

n	2	3	4	5	6	7	8	9	10	Formula
L ₁	83.5	111	138.5	166	193.5	221	248.5	276	303.5	L ₁ = 27.5 x n + 28.5
L ₂	68.5	96	123.5	151	178.5	206	233.5	261	288.5	L ₂ = 27.5 x n + 13.5

3 Port Air Operated Valve Series VPA300/500/700

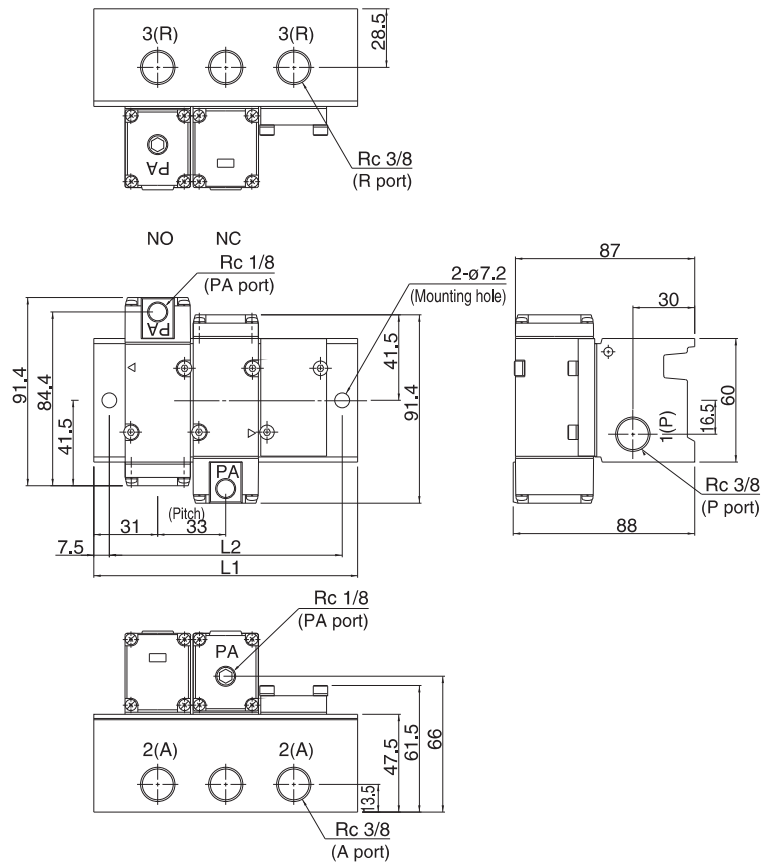
Dimensions

Common exhaust: VV3PA5-41- Station 1-03



- A
- A
- A
- A
- VM
- VR
- VH
- VHS

Individual exhaust: VV3PA5-42- Station 3-03



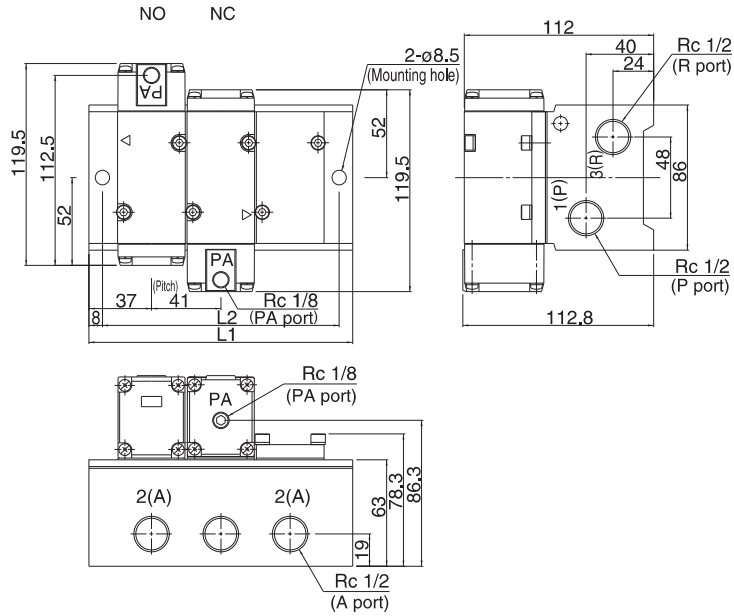
n: Station

L	n	2	3	4	5	6	7	8	9	10	Formula
L ₁		95	128	161	194	227	260	293	326	359	L ₁ = 33 x n + 29
L ₂		80	113	146	179	212	245	278	311	344	L ₂ = 33 x n + 14

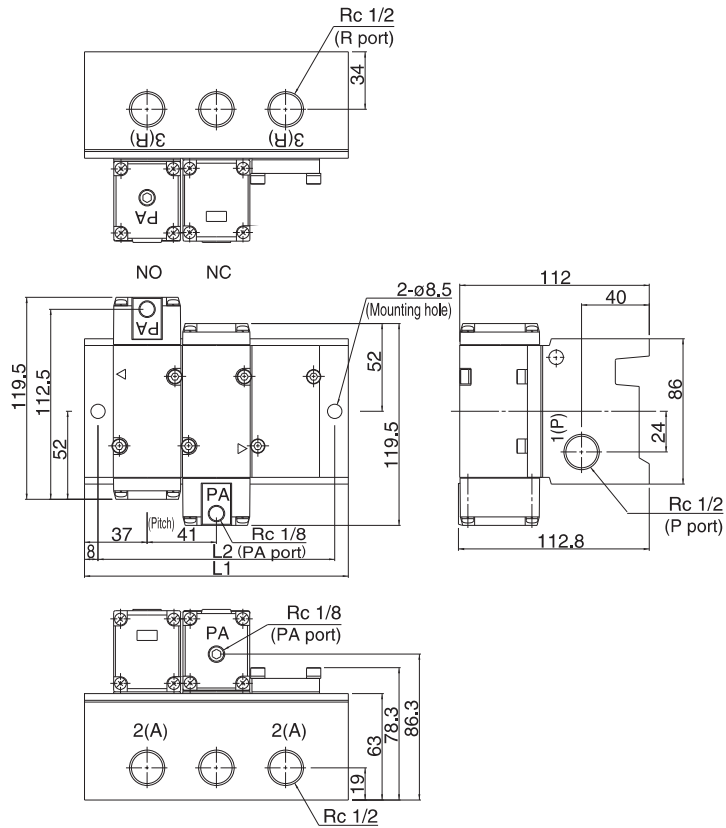
Series VPA300/500/700

Dimensions

Common exhaust: VV3PA7-41- Station 1-04



Individual exhaust: VV3PA7-42- Station 3-04



n: Station

L ⁿ	2	3	4	5	6	7	8	9	10	Formula
L ₁	115	156	197	238	279	320	361	402	443	L ₁ = 41 x n + 33
L ₂	99	140	181	222	263	304	345	386	427	L ₂ = 41 x n + 17