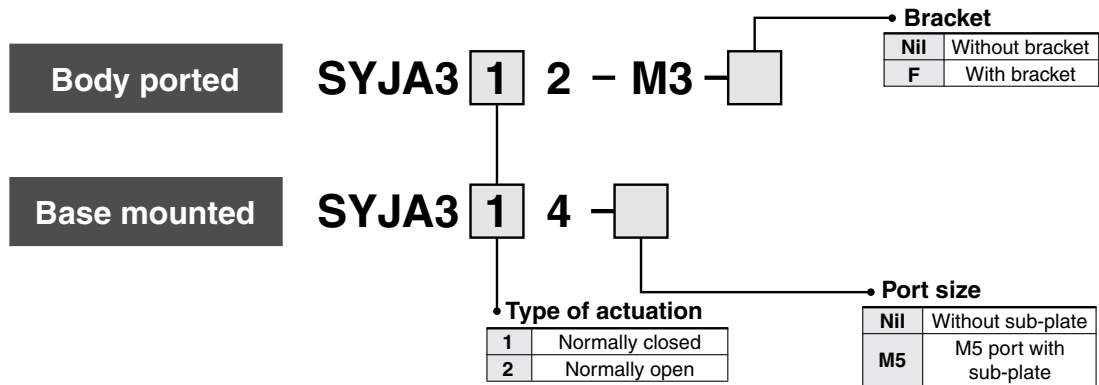


# 3 Port Air Operated Valve

## Series SYJA300

### How to Order



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

### How to Order Manifold Base

Same manifolds as Series SYJ300 are prepared.

**SS3YJA3** - [Fill the same as SS3YJ3.]

\* Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

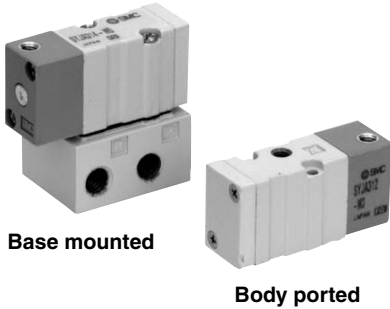
(Example)

- SS3YJA3-41-03-M3 ..... 1 set
- \*SYJA314 ..... 1 set
- \*SYJA324 ..... 1 set
- \*SYJ300-10-2A ..... 1 set

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

# Series SYJA300

## Compact and lightweight



## Specifications

Fluid	Air
Operating pressure range (MPa)	0.15 to 0.7
Pilot pressure range MPa <sup>Note 1)</sup>	Operating pressure range to 0.7
Ambient and fluid temperature (°C)	-10 to 50 (No freezing. Refer to page 5-11-4.)
Lubrication	Not required
Mounting orientation	Unrestricted
Impact/Vibration resistance (m/s <sup>2</sup> ) <sup>Note 2)</sup>	150/30



Note 1) Be certain that pressure within operating pressure range be supplied to supply port, because return pressure is introduced from supply port {1(P)} for activation.

Note 2) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve, when pilot signal is ON and OFF. (Value in the initial state)

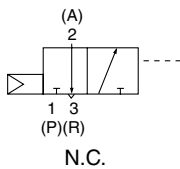
Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000 Hz. Test was performed to axis and right angle directions of the main valve when pilot signal is ON and OFF. (Value in the initial state)

## With Bracket

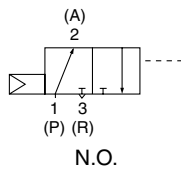
Air operated valve type	SYJA3 $\frac{1}{2}$ -M3-F
-------------------------	---------------------------

### JIS Symbol

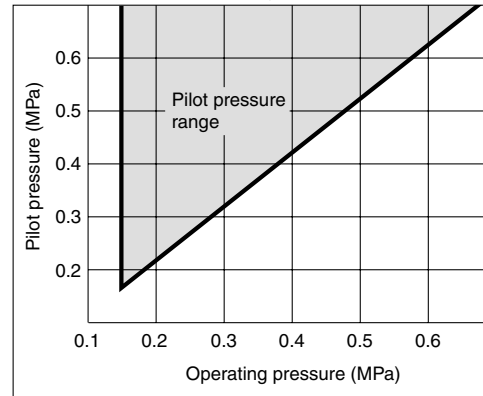
SYJA31 $\frac{2}{4}$



SYJA32 $\frac{2}{4}$



### Pilot Pressure Range



### ⚠ Caution

For Safety Instructions and Solenoid Valve Precautions, refer to pages 5-11-2 to 5-11-6.

## Flow Characteristics/Weight

Valve model	Type of actuation	Port size	Flow characteristics						Pilot port size	Weight (g)	Effective area (mm <sup>2</sup> )	
			1 → 2 (P → A)			2 → 3 (A → R)						
			C [dm <sup>3</sup> /(s bar)]	b	Cv	C [dm <sup>3</sup> /(s bar)]	b	Cv				
Body ported	SYJA312-M3	N.C.	M3 x 0.5	—	—	—	—	—	—	M3 x 0.5	18	0.9
	SYJA322-M3	N.O.		—	—	—	—	—	—			
Base mounted (with sub-plate)	SYJA314-M5	N.C.	M5 x 0.8	0.41	0.18	0.086	0.35	0.33	0.086	M3 x 0.5	39 (Without sub-plate 18)	—
	SYJA324-M5	N.O.		0.36	0.31	0.089	0.36	0.31	0.089			

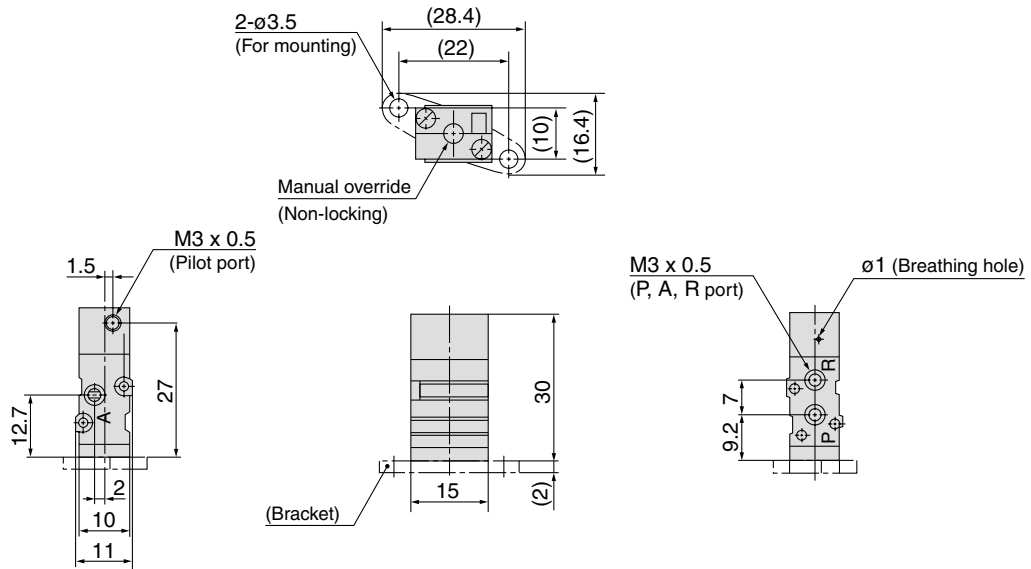


Note) Model no. for base mounted style without sub-plate is SYJA3 $\frac{1}{4}$ .

# 3 Port Air Operated Valve Series SYJA300

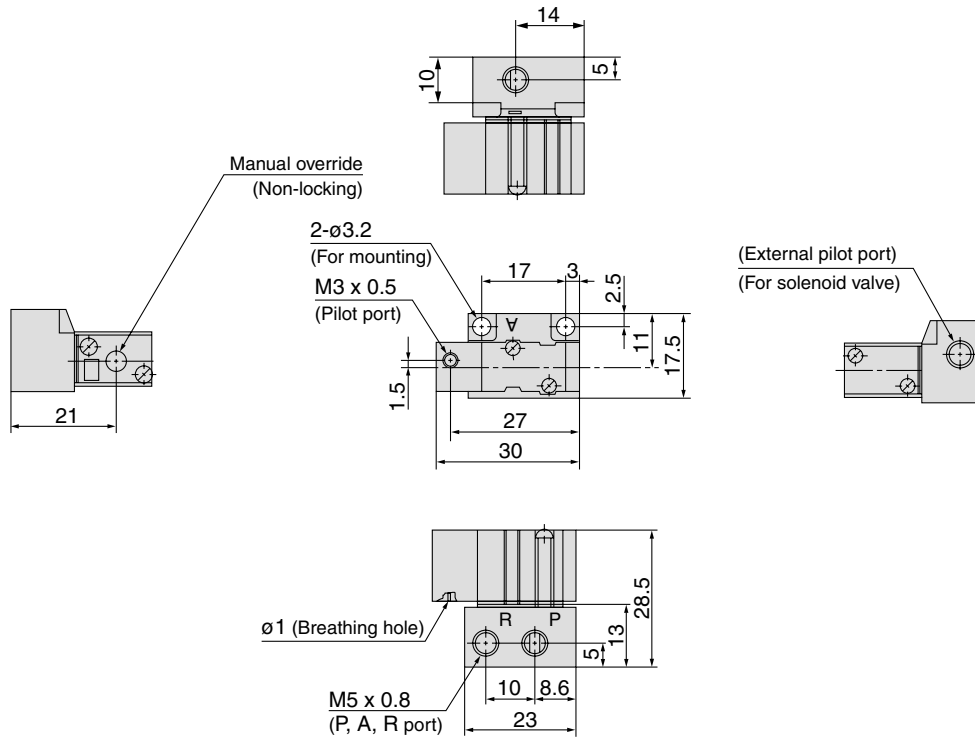
## Dimensions

Body ported: SYJA3□2-M3(-F)



S□A
V□A
S□A
V□A
VM
VR
VH
VHS

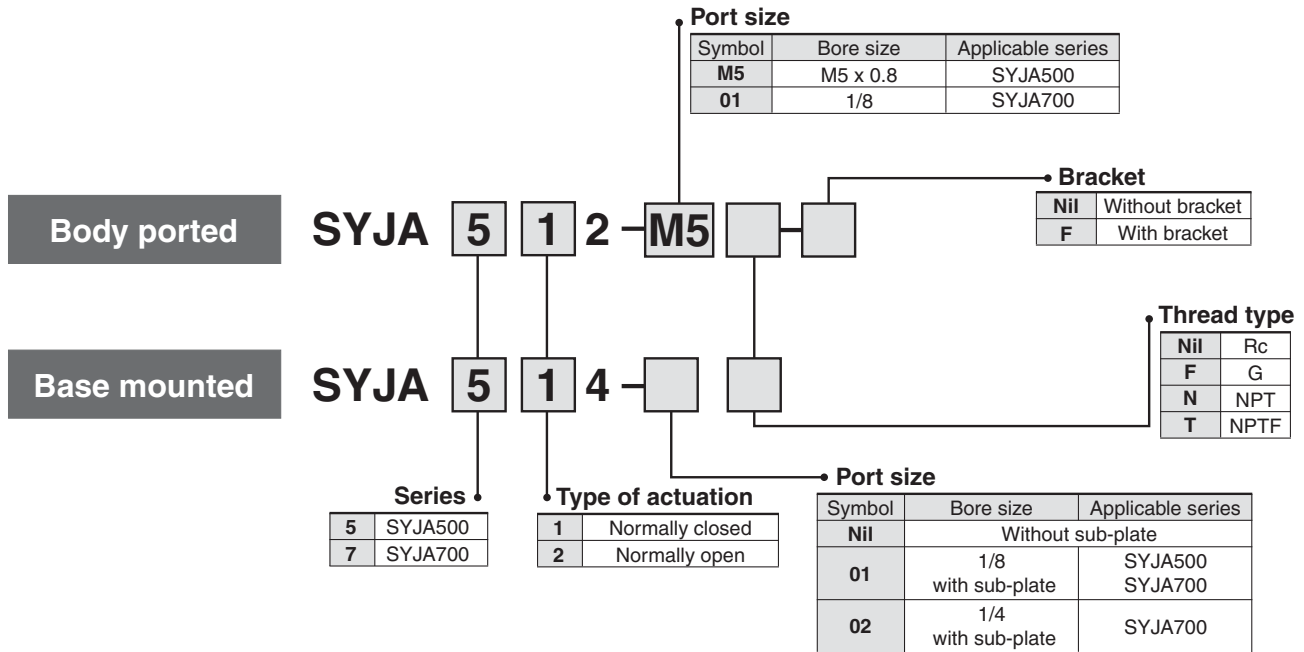
Base mounted: SYJA3□4-M5



# 3 Port Air Operated Valve

## Series SYJA500/700

### How to Order



### How to Order Manifold Base

Same manifolds as series SYJ500/700 are prepared.

(For SYJA500) **SS3YJA5** - [ ] Fill the same as SS3YJ5.

(For SYJA700) **SS3YJA7** - [ ] Fill the same as SS3YJ7.

\* Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example)

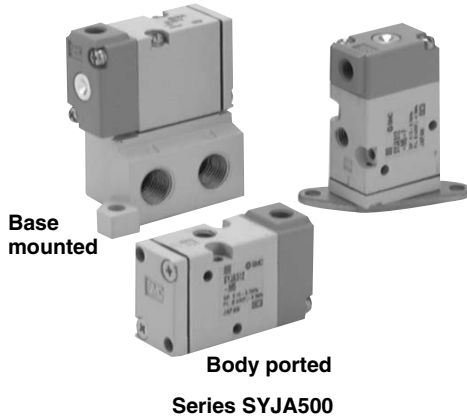
SS3YJA5-40-03-01..... 1 set  
 \*SYJA514 ..... 2 sets  
 \*SYJ500-10-3A ..... 1 set

(Example)

SS3YJA7-41-03-01..... 1 set  
 \*SYJA714 ..... 2 sets  
 \*SYJ700-10-2A ..... 1 set

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

# 3 Port Air Operated Valve Series SYJA500/700



## Specifications

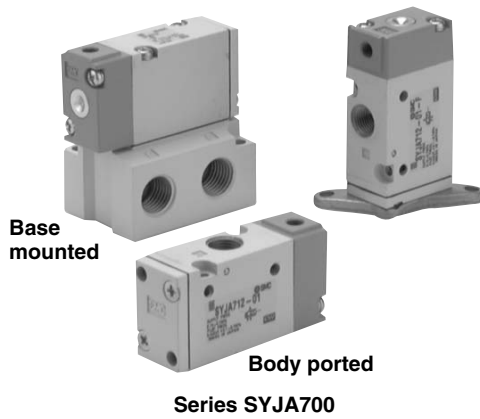
Fluid	Air
Operating pressure range (MPa)	0.15 to 0.7
Pilot pressure range (MPa) <sup>Note 1)</sup>	(0.4 x P + 0.1) to 0.7 P: Operating pressure range
Ambient and fluid temperature (°C)	-10 to 50 (No freezing. Refer to page 5-11-4.)
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)
Mounting orientation	Unrestricted
Impact/Vibration resistance (m/s <sup>2</sup> ) <sup>Note 2)</sup>	300/50

Note 1) Be certain that pressure within operating pressure range be supplied to supply port, because return pressure is introduced from supply port {1(P)} for activation.

Note 2) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve, when pilot signal is ON and OFF. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000 Hz. Test was performed to axis and right angle directions of the main valve when pilot signal is ON and OFF. (Value in the initial state)

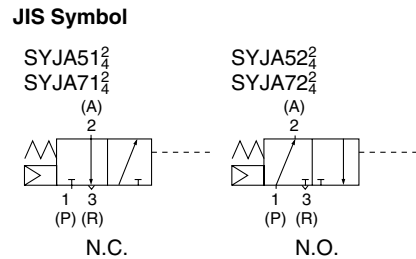
- A
- A
- A
- A
- VM
- VR
- VH
- VHS



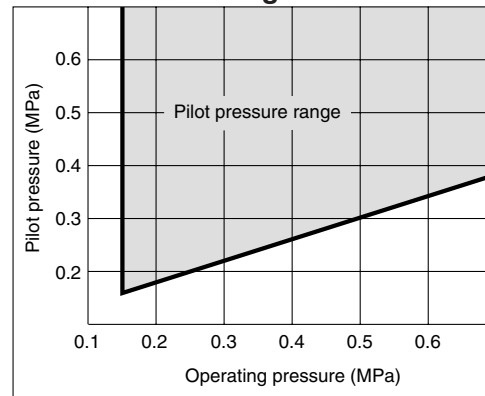
## With Bracket

Air operated valve type	SYJA5 <sup>1</sup> / <sub>2</sub> -2-M5-F, SYJA7 <sup>1</sup> / <sub>2</sub> -2-01-F
-------------------------	--

Note) Bracket is not mounted.



## Pilot Pressure Range



**⚠ Caution**

For Safety Instructions and Solenoid Valve Precautions, refer to pages 5-11-2 to 5-11-6.

## Flow Characteristics/Weight

Valve model	Type of actuation	Port size	Flow characteristics						Pilot port size	Weight (g)	
			1 → 2 (P → A)			2 → 3 (A → R)					
			C [dm <sup>3</sup> /(s bar)]	b	Cv	C [dm <sup>3</sup> /(s bar)]	b	Cv			
Body ported	SYJA512-M5	N.C.	M5 x 0.8	0.53	0.45	0.14	0.47	0.39	0.12	45	
	SYJA522-M5	N.O.		0.66	0.45	0.18	0.66	0.45	0.18		
Base mounted (with sub-plate)	SYJA514-01	N.C.	Rc 1/8	1.2	0.41	0.32	1.1	0.46	0.32	M5 x 0.8	75 (Without sub-plate 45)
	SYJA524-01	N.O.		1.3	0.37	0.33	1.2	0.48	0.34		
Body ported	SYJA712-01	N.C.	Rc 1/8	2.8	0.43	0.77	2.5	0.51	0.76	M5 x 0.8	80
	SYJA722-01	N.O.		2.7	0.38	0.72	2.4	0.42	0.69		
Base mounted (with sub-plate)	SYJA714-01	N.C.	Rc 1/8	2.9	0.32	0.71	2.7	0.34	0.69	M5 x 0.8	130 (Without sub-plate 80)
	SYJA714-02		Rc 1/4	3.0	0.31	0.74	2.6	0.33	0.66		
	SYJA724-01	N.O.	Rc 1/8	2.8	0.21	0.70	2.3	0.45	0.63		
	SYJA724-02		Rc 1/4	2.7	0.31	0.68	2.3	0.48	0.64		

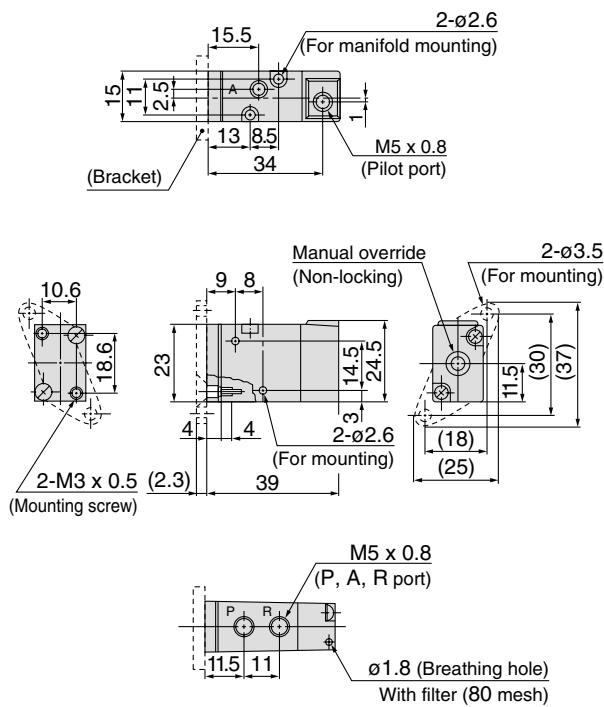
Note) Model no. for base mounted style without sub-plate is SYJA5<sup>1</sup>/<sub>2</sub>, SYJA7<sup>1</sup>/<sub>2</sub>.

# Series SYJA500/700

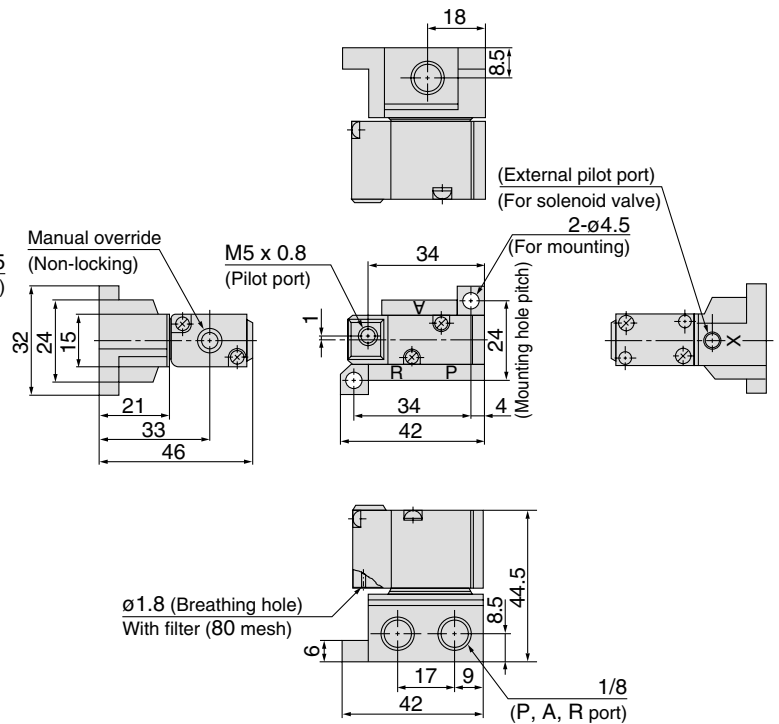
## Dimensions

### Series SYJA500

Body ported: SYJA5□2-M5(-F)

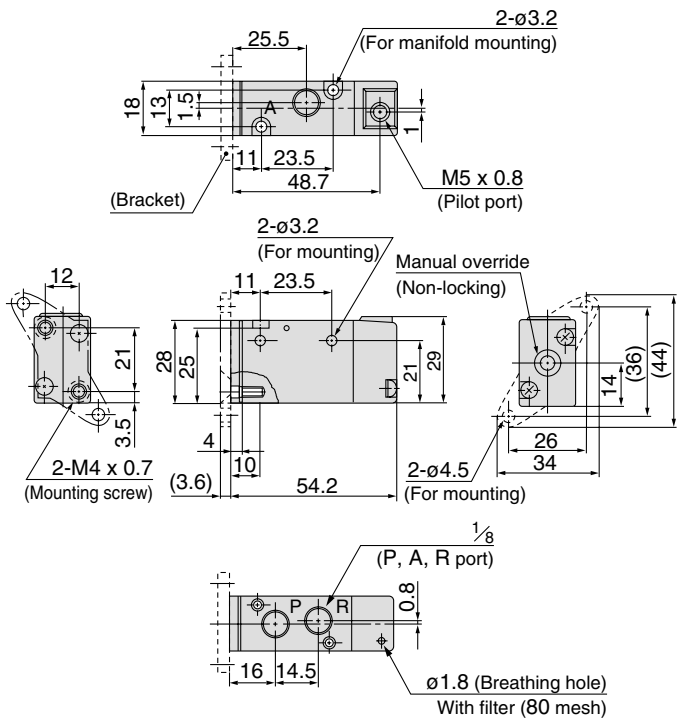


Base mounted: SYJA5□4-01□

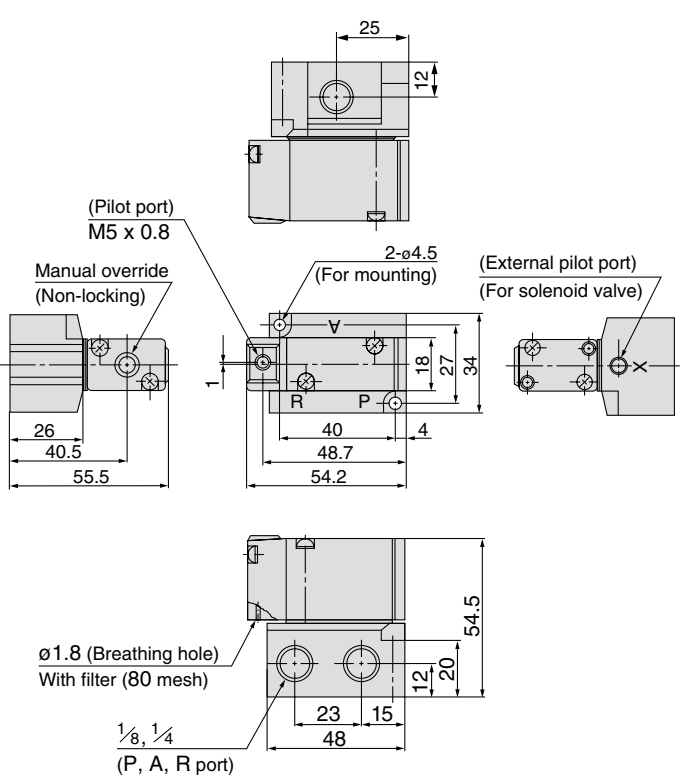


### Series SYJA700

Body ported: SYJA7□2-01□ (-F)

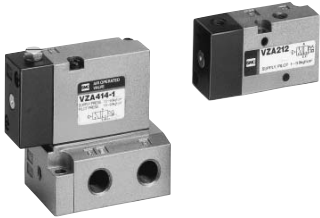


Base mounted: SYJA7□4-01□



# 3 Port Air Operated Valve

## Series VZA200/400



### Specifications

Fluid	Air	
	Operating pressure range (MPa)	VZA2 $\frac{1}{2}$ 2, 2 $\frac{1}{4}$ 4
Pilot pressure range (MPa)	VZA4 $\frac{1}{2}$ 2, 4 $\frac{1}{4}$ 4	0.15 to 1.0
	VZA2 $\frac{1}{2}$ 2, 2 $\frac{1}{4}$ 4	0.1 to 1.0
Impact/Vibration resistance (m/s <sup>2</sup> ) Note)	150/50	

Operating pressure  $\leq$  Pilot pressure  
 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)

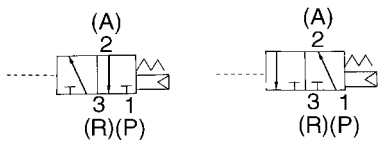
### Model

Valve model	Type of actuation	Pilot	Port size	Flow characteristics <sup>(2)</sup>						Pilot port size	
				1 $\rightarrow$ 4/2 (P $\rightarrow$ A/B)			4/2 $\rightarrow$ 5/3 (A/B $\rightarrow$ EA/EB)				
				C [dm <sup>3</sup> /(s-bar)]	b	Cv	C [dm <sup>3</sup> /(s-bar)]	b	Cv		
Body ported	VZA212-P-M5	N.C.	Body side	M5 x 0.8	0.60	0.43	0.15	0.52	0.35	0.13	M5 x 0.8
	VZA222-P-M5	N.O.	Body side	M5 x 0.8	0.60	0.43	0.15	0.52	0.35	0.13	M5 x 0.8
Base mounted (With sub-plate)	VZA214-1P-01	N.C.	Sub-plate side	Rc 1/8	1.0	0.30	0.25	0.85	0.35	0.22	M5 x 0.8
	VZA214-2P-01	N.C.	Body side	Rc 1/8	1.0	0.30	0.25	0.85	0.35	0.22	M5 x 0.8
	VZA224-1P-01	N.O.	Sub-plate side	Rc 1/8	0.90	0.25	0.21	0.85	0.35	0.22	M5 x 0.8
	VZA224-2P-01	N.O.	Body side	Rc 1/8	0.90	0.25	0.21	0.85	0.35	0.22	M5 x 0.8
Body ported	VZA412-P-01	N.C.	Body side	Rc 1/8	2.0	0.14	0.49	2.2	0.17	0.53	M5 x 0.8
	VZA422-P-01	N.O.	Body side	Rc 1/8	2.0	0.17	0.49	2.2	0.17	0.53	M5 x 0.8
Base mounted	VZA414-1P-01	N.C.	Sub-plate side	Rc 1/8	2.4	0.19	0.57	2.2	0.11	0.49	M5 x 0.8
	Rc 1/4										
	VZA414-2P-01	N.C.	Body side	Rc 1/8	2.4	0.19	0.57	2.2	0.11	0.49	M5 x 0.8
	Rc 1/4										
	VZA424-1P-01	N.O.	Sub-plate side	Rc 1/8	2.4	0.19	0.57	1.9	0.32	0.45	M5 x 0.8
	Rc 1/4										
	VZA424-2P-01	N.O.	Body side	Rc 1/8	2.4	0.19	0.57	1.9	0.32	0.45	M5 x 0.8
	Rc 1/4										

Note 1) Base mounted style model no. without sub-plate are VZA2 $\frac{1}{2}$ 4- $\frac{1}{2}$ P, VZA4 $\frac{1}{2}$ 4- $\frac{1}{2}$ P.  
 Note 2) Value at the minimum port size

### JIS Symbol

VZA2 $\frac{1}{4}$                       VZA22 $\frac{2}{4}$   
 VZA4 $\frac{1}{4}$                       VZA42 $\frac{2}{4}$



### Caution

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

### Foot Bracket

Air operated valve model no.	VZA2 $\frac{1}{2}$ 2-M5-F
------------------------------	---------------------------

### How to Order Manifold Base

Manifold bases same as those for Series VZ200/VZ400 manifold valves are available.

(VZA200) VV3ZA2- Specify the same manifold number as VV3Z2.  
 (VZA400) VV3ZA4- Specify the same manifold number as VV3Z4.

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

<Example: VZA200 Body ported>  
 VV3ZA2-20-031..... 1 pc.  
 \*VZA212-P-M5.....2 pcs.  
 \*VVZ200-32A-1.....1 pc.

<Example: VZA400 Body ported>  
 VV3ZA4-20-031.....1 pc.  
 \*VZA412-P-01.....2 pcs.  
 \*VVZ400-32A-1.....1 pc.

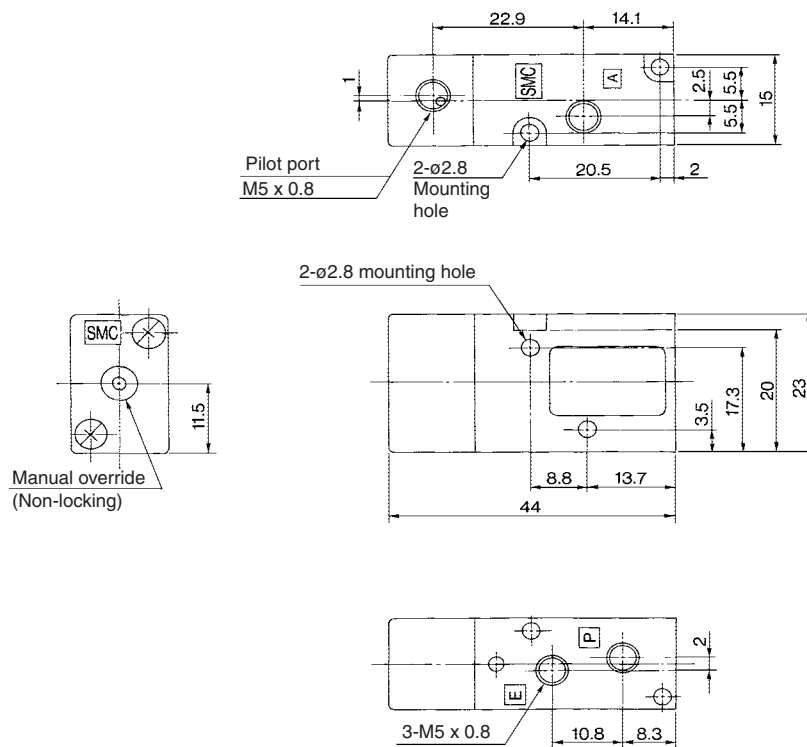
<Example: VZA200 Base mounted ported>  
 VV3ZA2-50-031-01..... 1 pc.  
 \*VZA214-P.....2 pcs.  
 \*VVZ200-31A-1.....1 pc.

<Example: VZA400 Body ported>  
 VV3ZA4-50-031-02.....1 pc.  
 \*VZA414-2P.....2 pcs.  
 \*VVZ400-32A-2.....1 pc.

# Series VZA200/400

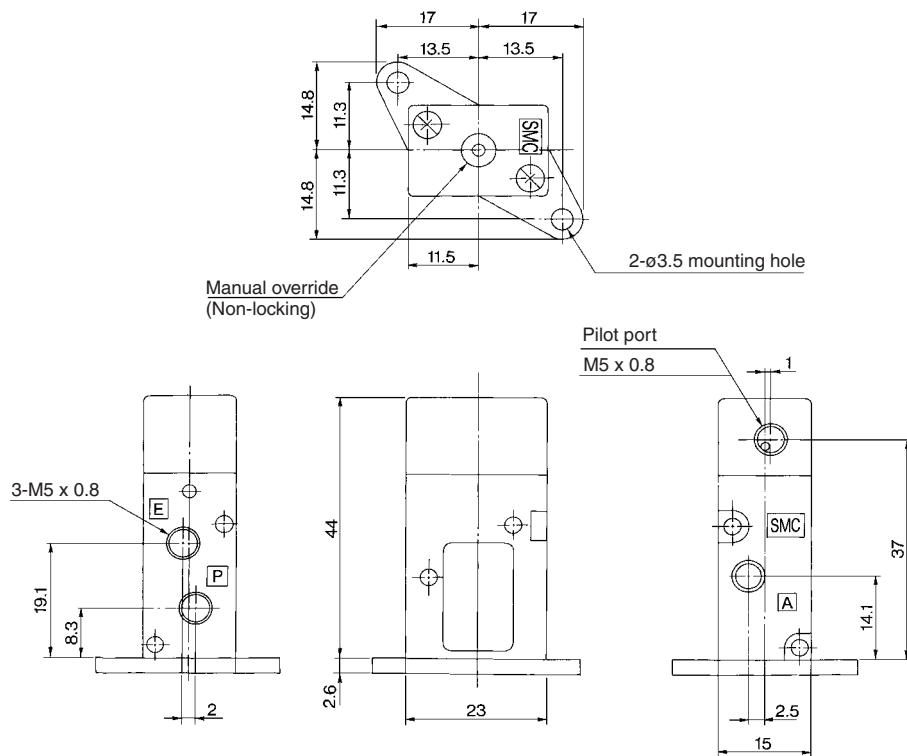
## Dimensions

### Body ported: VZA2□2-P-M5



### Foot bracket

### Body ported: VZA2□2-P-M5-F

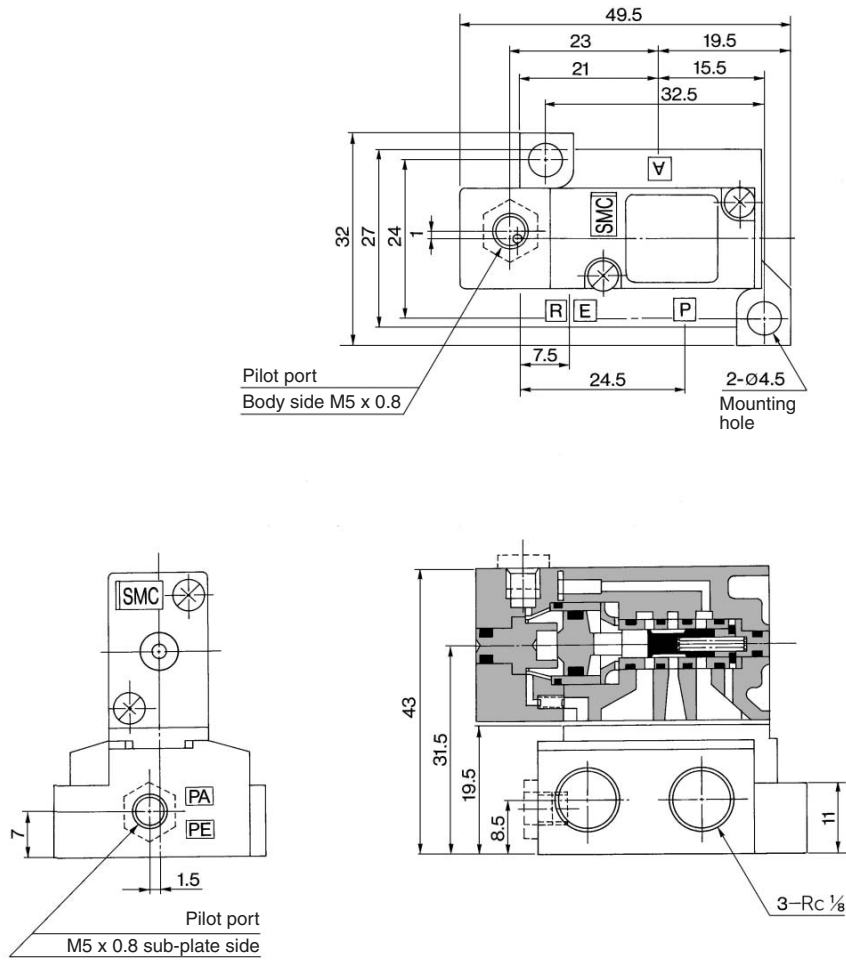




# 3 Port Air Operated Valve Series VZA200/400

## Dimensions

Base mounted: VZA2□4-□-01



- A
- A
- A
- A
- M
- R
- H
- S

### International Thread Standards Other than Rc

Rc specifications are standard for all ports, however, NPT, NPTF and G are available for international markets.

Add the appropriate symbol following the port size in the standard part number.

#### <How to Order Valve>

VZA412 - P - 01

VZA414 - 1P - 01

#### Thread type

Nil	Rc
T	NPTF, NPT
F	G

#### <How to Order Manifold>

VV3ZA2 - 50 - 031 - 01

#### Thread type

Nil	Rc
T	NPTF, NPT
F	G

### Sub-plate Assembly Part No.

Model	Part no.
VZA200	VZA200-S-01
VZA400	VZA400-S- <sup>01</sup> <sub>02</sub>

\* Mounting bolt and gasket are not included.

#### <How to Order Sub-plate>

VZA200 - S - 01

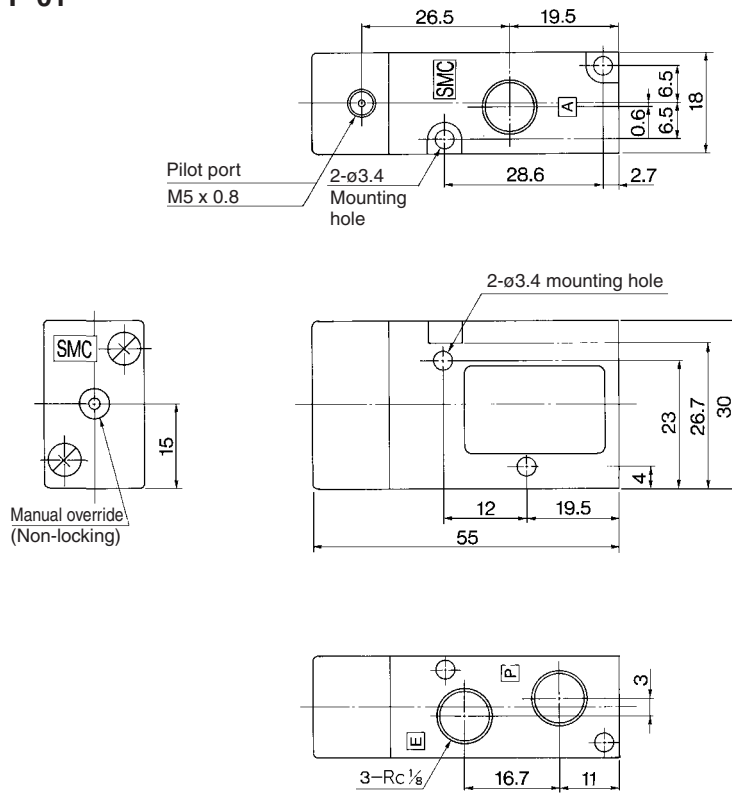
#### Thread type

Nil	Rc
T	NPTF, NPT
F	G

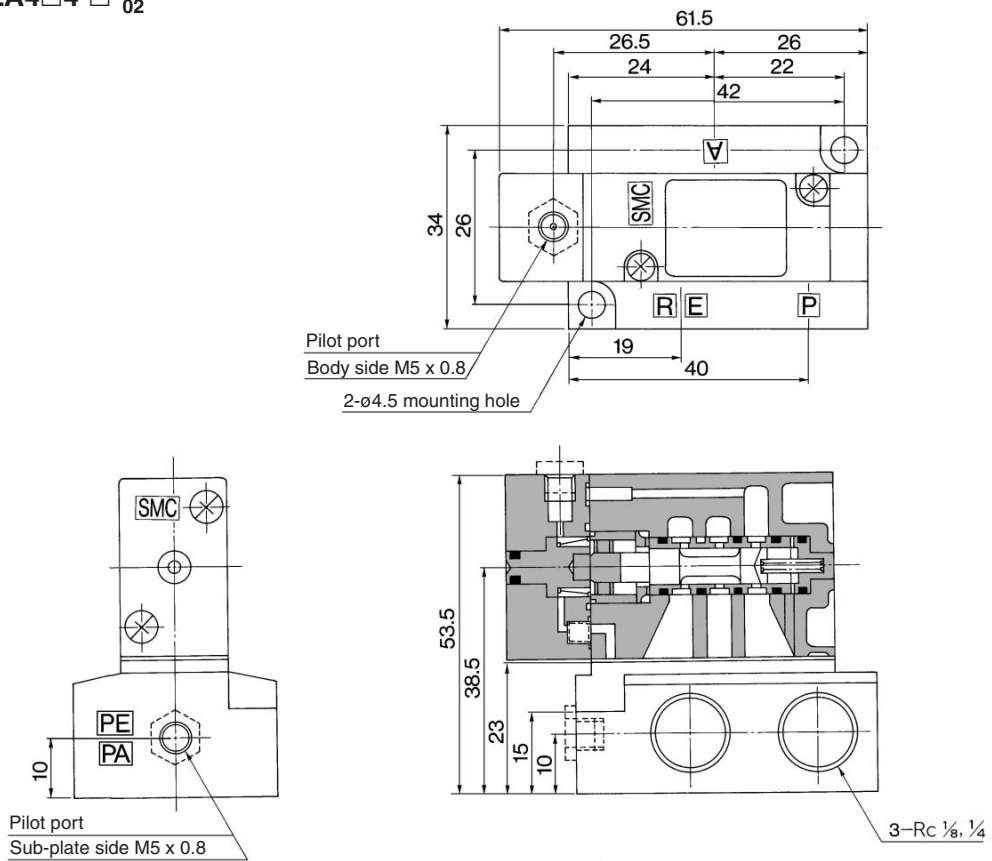
# Series VZA200/400

## Dimensions

### Body ported: VZA4□2-P-01



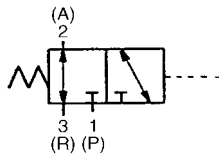
### Base mounted: VZA4□4-□-01/02



# 3 Port Air Operated Valve Series VTA301



JIS Symbol



## How to Order

VTA 301 - [ ] - [ ] - [ ]

Indicate VO for manifold.

Port size

Nil	Without connection port (For manifold)
01	1/8
02	1/4

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Option

Nil	Without bracket
B	Foot bracket

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

## Specifications

Fluid	Air
Operating pressure range (MPa)	0 to 1.0
Pilot pressure range (MPa)	0.2 to 1.0
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.)
Impact/Vibration resistance (m/s <sup>2</sup> ) <sup>Note)</sup>	150/50
Enclosure	Dustproof

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)

## Option

Description	Part no.
Bracket (With screw)	DXT060-27A

## Flow Characteristics/Weight

Valve model	Port size	Flow characteristics												Weight (kg)
		1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
		C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
VTA301-01-□-□	1/8	0.63	0.30	0.16	0.59	0.30	0.15	0.59	0.32	0.15	0.65	0.30	0.16	0.11
VTA301-02-□-□	1/4	0.66	0.28	0.16	0.60	0.29	0.15	0.61	0.32	0.15	0.66	0.30	0.16	(With bracket: 0.13)
VOA301	Without connection port	0.34	0.26	0.084	0.32	0.17	0.076	0.35	0.22	0.084	0.35	0.13	0.079	0.12

Note 1) The pilot port size is 1/8.  
 Note 2) Flow characteristics of VOA301 is the value when the valve is mounted on a manifold.

# Series VTA301

**⚠ Precautions**

Be sure to read before handling. Refer to pages 5-11-2 to 6 for Safety Instruction and Solenoid Valve Precautions.

**For manifold**

**⚠ Caution**

1. Each valve is fixed on the manifold with two M4 mounting screws. Please tighten the screws properly when valves are reassembled.  
Screw tightening torque: 1.4 N·m
2. M4 or equivalent bolts should be tightened evenly to mount the valve onto the manifold base.
3. In the case of common exhaust type, pressurization or vacuum suction through R port is not possible.
4. In the case of 6 stations or more, supply pressure from both sides of P port.  
In the case of common exhaust type, exhaust air from both sides of R port as well.

## How to Order Manifold

VVTA300 - 05 1 01

**• Stations**

02	2 stations
⋮	⋮
20	20 stations

**Exhaust type**

1	Individual exhaust
3	Common exhaust

**• Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**• A port size**

Symbol	Port size	Exhaust style
01	1/8	Individual exhaust Common exhaust
02	1/4	Individual exhaust

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

<Example>

- VVTA300-051-01..... 1 pc.
- \*VOA301..... 4 pcs.
- \*DXT060-51-13A..... 1 pc.



• Manifold bases same as those for Series VVT300 manifold valves are available. For the manifold specifications and precautions, refer to Best Pneumatics Vol. 4.

### Manifold Model

Model	Applicable manifold model	Accessory (Part no.)
VOA301	Common/Individual exhaust	Function plate (DXT060-32-4A)

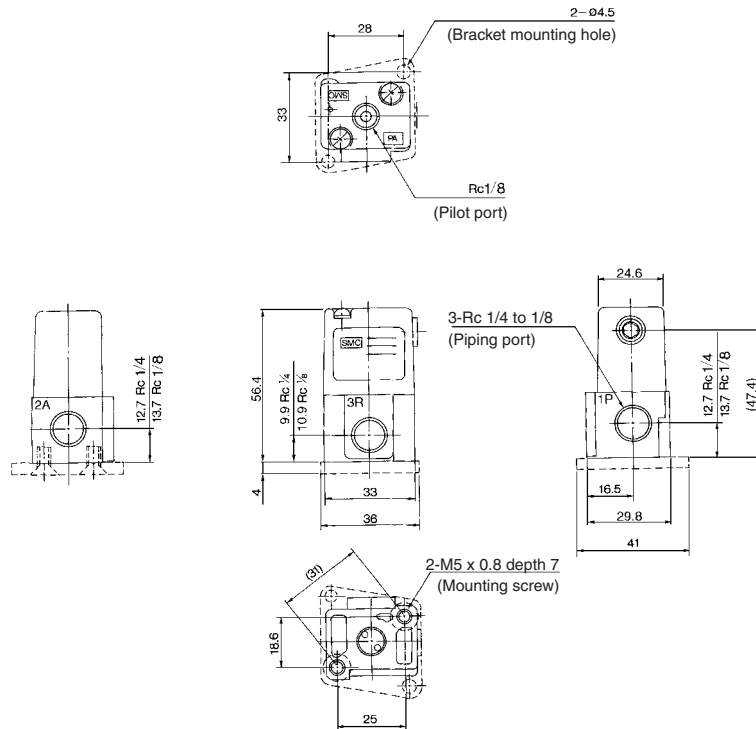
### 6 Valve Functions Available by Changing of Piping Port

	3 port N.C.	3 port N.O.	2 port N.C.	2 port N.O.	Selector	Divider
Pilot OFF						
Pilot ON						

# 3 Port Air Operated Valve Series VTA301

## Base Mounted

VTA301-□□□

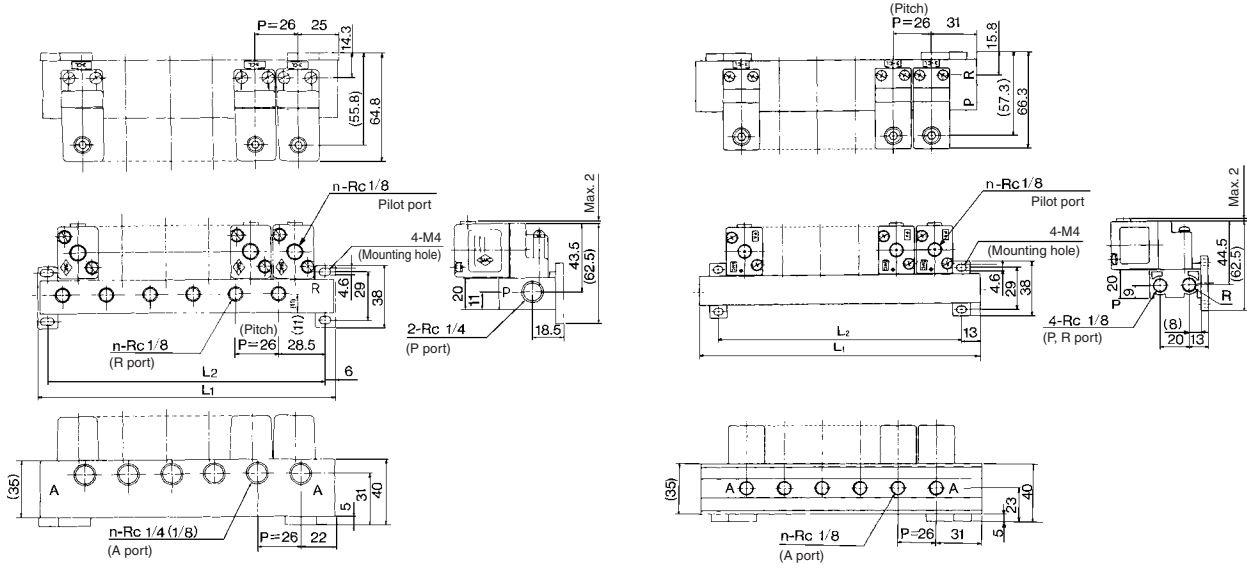


- A
- V□A
- A
- V□A
- VM
- VR
- VH
- VHS

## Dimensions/Manifold

VVTA300-□□1

VVTA300-□□3



### Individual Exhaust

n: Station

Symbol	n	2	3	4	5	6	7	8	9	10
L <sub>1</sub>		76	102	128	154	180	206	232	258	284
L <sub>2</sub>		64	90	116	142	168	194	220	246	272

Calculation formula: L<sub>1</sub> = 26n + 24, L<sub>2</sub> = 26n + 12

### Common Exhaust

n: Station

Symbol	n	2	3	4	5	6	7	8	9	10
L <sub>1</sub>		88	114	140	166	192	218	244	270	296
L <sub>2</sub>		62	88	114	140	166	192	218	244	270

Calculation formula: L<sub>1</sub> = 26n + 36, L<sub>2</sub> = 26n + 10



# 3 Port Air Operated Valve

## Series VTA315

### How to Order

VTA315

Indicate VO for manifold.

Port size

02	1/4
Nil	Without connection port (For manifold)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Note) The pilot port size is 1/8.

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

### How to Order Manifold

VVTA32

Piping

Symbol	P	A	R
0	Side	Side	Side
1	Side	Bottom	Side

Stations

02	2 stations
:	:
20	20 stations

Accessory (Mounting bracket)

O	No
A	Yes

Exhaust style

1	Common exhaust
2	Individual exhaust

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

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

Example) VVTA320-0501..... 1 pc.  
 \*VOA315..... 4 pcs.  
 \*DXT010-36-2A..... 1 pc.



- Manifold bases same as those for Series VVT320 manifold valves are available. Refer to Best Pneumatics Vol. 4 for manifold specifications, precautions and warnings.
- Port location on the bottom of a single valve for manifold is not related to the indication on the side of the body ① ② ③ (P, A, R). (Refer to page Best Pneumatics Vol. 4.)

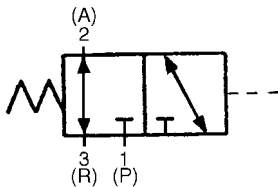
### Manifold Model

Model	Applicable manifold model	Accessory
VOA315	Common/Individual exhaust	O-ring ("P-8": 4 pcs.), Bolt (DXT010-66-2: 2 pcs.)

# Series VTA315



JIS Symbol



## Specifications

Fluid	Air
Operating pressure range (MPa)	0 to 1.0
Pilot pressure range (MPa)	0.1 to 1.0
Ambient and fluid temperature (°C)	-10 to 60°C (No freezing. Refer to page 5-11-4.)
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)
Impact/Vibration resistance (m/s <sup>2</sup> ) Note)	150/50
Enclosure	Dustproof



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 occurs on the test with one sweep from 45 to 1000 Hz, to axis and right angle directions of main valve each time when energized and de-energized. (Value in the initial stage)

## Flow Characteristics/Weight

Valve model	Flow characteristics												Weight (kg)
	1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
VTA315	1.6	0.30	0.39	1.7	0.39	0.45	1.9	0.38	0.49	1.7	0.36	0.45	0.16
VOA315	1.4	0.12	0.33	1.2	0.18	0.29	1.5	0.16	0.35	1.2	0.13	0.28	

## ⚠ Precautions

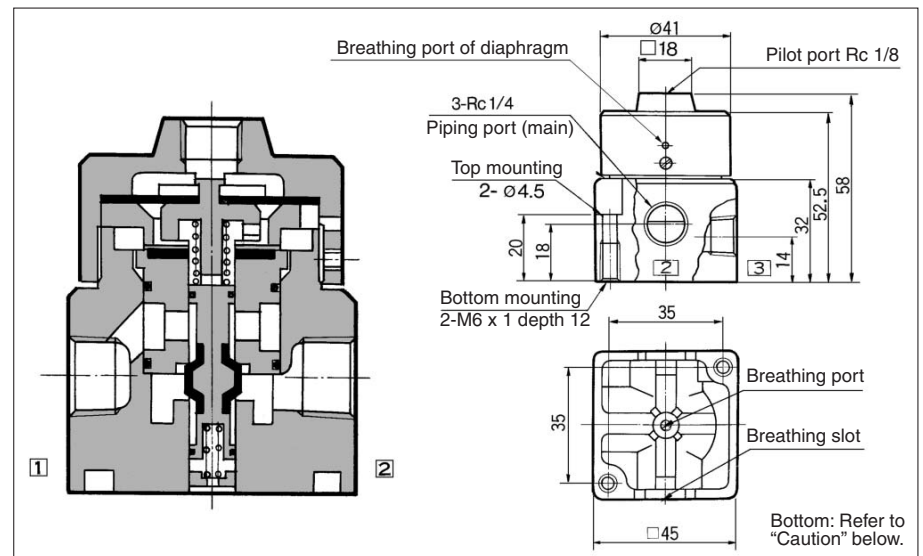
Be sure to read before handling. Refer to pages 5-11-2 to 6 for Safety Instruction and Solenoid Valve Precautions.

### For manifold

#### ⚠ Caution

- Each valve is fixed on the manifold with two M4 mounting screws. Please tighten the screws properly when valves are reassembled.  
Screw tightening torque: 1.4 N·m
- When using 6 or more stations on the manifold, supply pressure from both sides of P port.  
In the case of common exhaust type, exhaust air from both sides of R port as well.

## Construction/Dimensions



#### ⚠ Caution

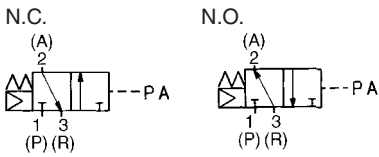
- This valve has a breathing port for the main valve at the bottom. To prevent malfunctions, do not clog the breathing port.  
(When mounted on a metal surface, breathing air can go through from the breathing port to the breathing groove; however, when the valve is mounted on a rubber surface, the breathing air may be blocked by the deformation of rubber.)
- Take measures to prevent ingress of dust and foreign matter from the exhaust port and other unused ports. Also, take measures to prevent ingress of water and foreign matter from the breathing port of the diaphragm.



# 3 Port Air Operated Valve Series VGA342



### JIS Symbol

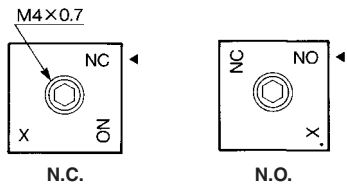


## ⚠️ Precautions

Be sure to read before handling. Refer to pages 5-11-2 to 6 for Safety Instruction and Solenoid Valve Precautions.

### ⚠️ Caution

#### 1. Change of fluid passage



Please note that the pressure in the valve should be exhausted when changing the fluid passage.

Loosen the hexagon socket head cap screw M4 x 0.7. Rotate the NC/NO switching plate and align the desired passage symbol NO/NC with the ◀ mark on the adapter plate. However, the X symbol is not applicable. For piping, refer to the table below.

Screw tightening torque M4: 1.4 N·m

### Piping

Fluid passage	Port	P	A	R
N.C.		Inlet side	Outlet side	EXH side (2 port: Plug)
N.O.		EXH side (2 port: Plug)	Outlet side	Inlet side

Take sufficient precautions and confirm safety when changing the flow path and restarting after the changes.

#### 2. Other

M5 size hole at the left side of the adapter plate is a breathing port for spool valve. Do not plug or tighten it.

## How to Order

VGA342-04 [ ] A

Port size	
04	1/2
06	3/4
10	1

Thread type	
Nil	Rc
F	G
N	NPT
T	NPTF

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

## Specifications

Operating type	Air operated type
Type of actuation	N.C./N.O. (Changeable)
Return mechanism	Air + Spring
Fluid	Air
Operating pressure range	0.2 to 0.9 MPa
Pilot pressure	Same as operating pressure
Ambient temperature and operating fluid temperature	-10 to 50°C (No freezing. Refer to page 5-11-4.)
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)
Impact/Vibration resistance Note)	150/50 m/s <sup>2</sup>



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.)

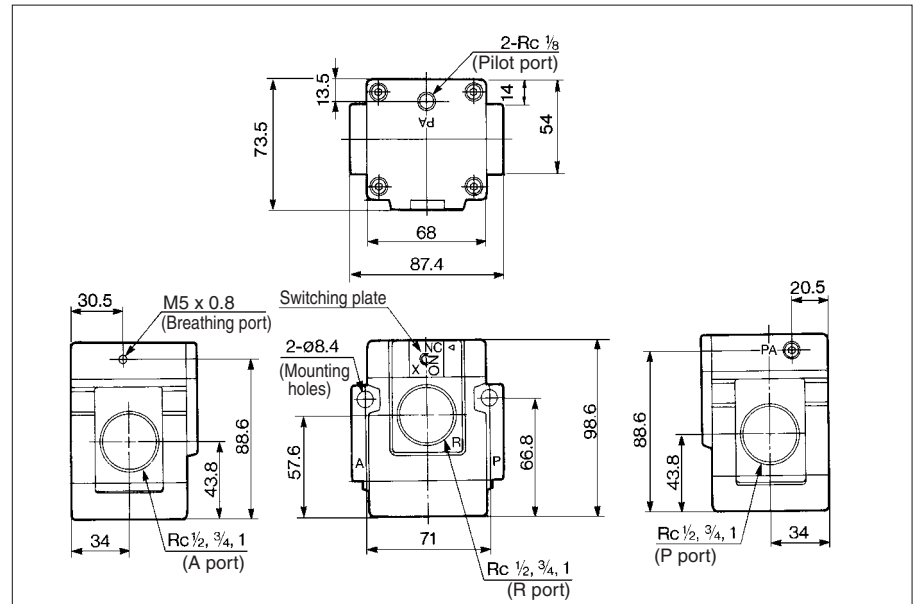
Vibration resistance: No malfunction occurs on the test with one sweep from 45 to 1000 Hz, to axis and right angle directions of main valve each time when energized and de-energized. (Value in the initial stage.)

## Flow Characteristics

Port size	Flow characteristics											
	1 → 2 (P → A)			2 → 3 (A → R)			2 → 1 (A → P)			3 → 2 (R → A)		
	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv
1/2	26	0.38	7.0	27	0.37	7.4	27	0.36	7.3	25	0.37	6.8
3/4	38	0.30	9.8	38	0.32	9.8	40	0.22	9.8	40	0.20	9.6

Port size	Effective area (mm <sup>2</sup> )	
	1 → 2 (P → A)	2 → 3 (A → R)
1	210	235

## Dimensions



# Series VGA342

# Made to Order Specifications:

Please contact SMC for detailed specifications, dimensions and delivery.

## External Pilot, Air Operated Valve

### How to Order

**VGA342R**

**04**

**□**

Solenoid valve specifications

R	External pilot
---	----------------

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

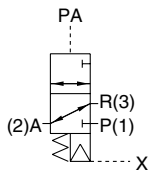
Port size

04	1/2
06	3/4
10	1

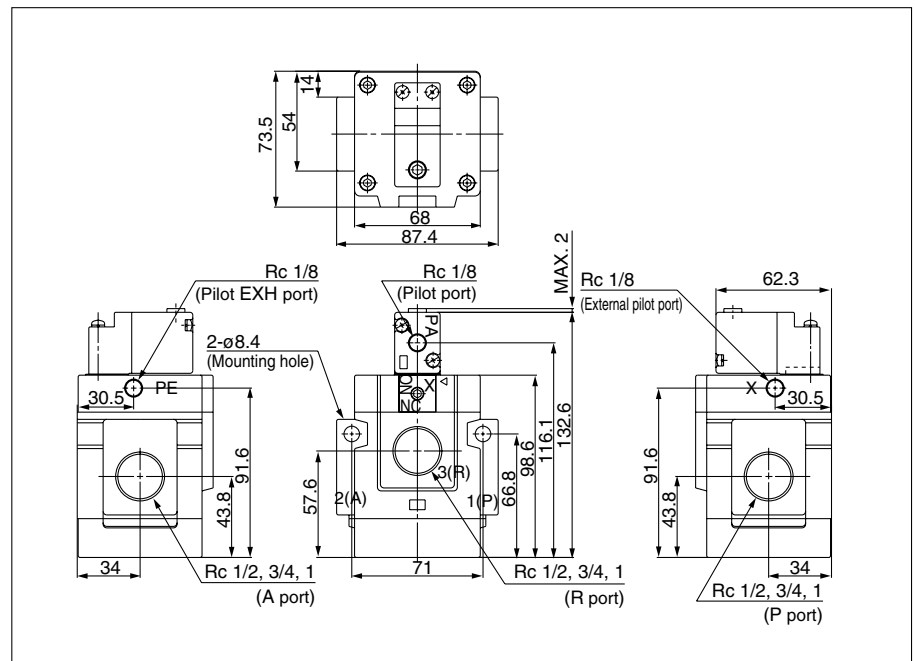
### Specifications

Valve type	External pilot, air operated valve	
Type of actuation	Universal porting type	
Fluid	Air	
Operating pressure range	Main pressure	-101.2 kPa to 0.9 MPa Equivalent to main pressure (Min. 0.2 MPa or more)
	Pilot pressure	Equivalent to pilot pressure
	External pilot	Equivalent to pilot pressure
Ambient and fluid temperature	-10 to 50°C (No freezing. Refer to page 5-11-4.)	
Weight	1.2 kg	

### JIS Symbol



### Dimensions



# 3 Port Air Operated Valve

## Series VPA300/500/700

### How to Order



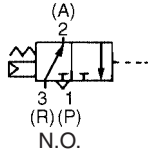
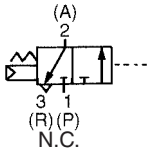
VPA542



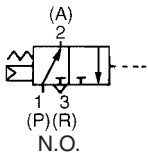
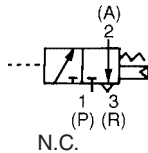
VPA544

#### 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

\* 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 <sup>2</sup> ) 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 <sup>(1)</sup> (kg)
			1 → 2 (P → A)			2 → 3 (A → R)			3 → 2 (R → A)			2 → 1 (A → P)			
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(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.

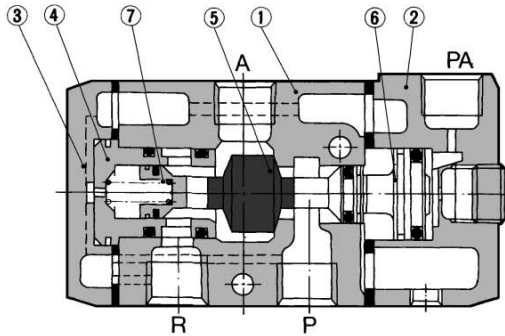
- A
- A
- A
- A
- VM
- VR
- VH
- VHS

# Series VPA300/500/700

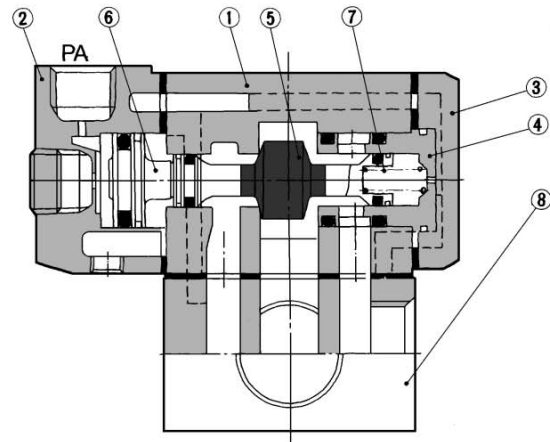
## Construction

### Standard

Body ported

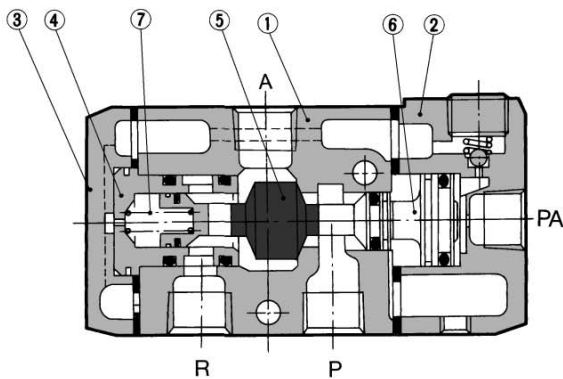


Base mounted

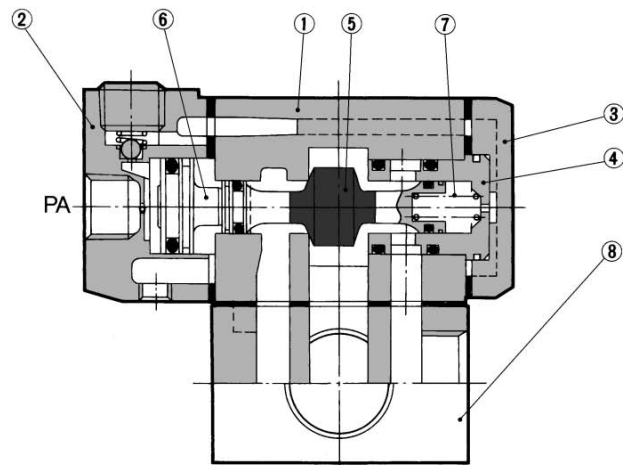


### Vacuum (Option)

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

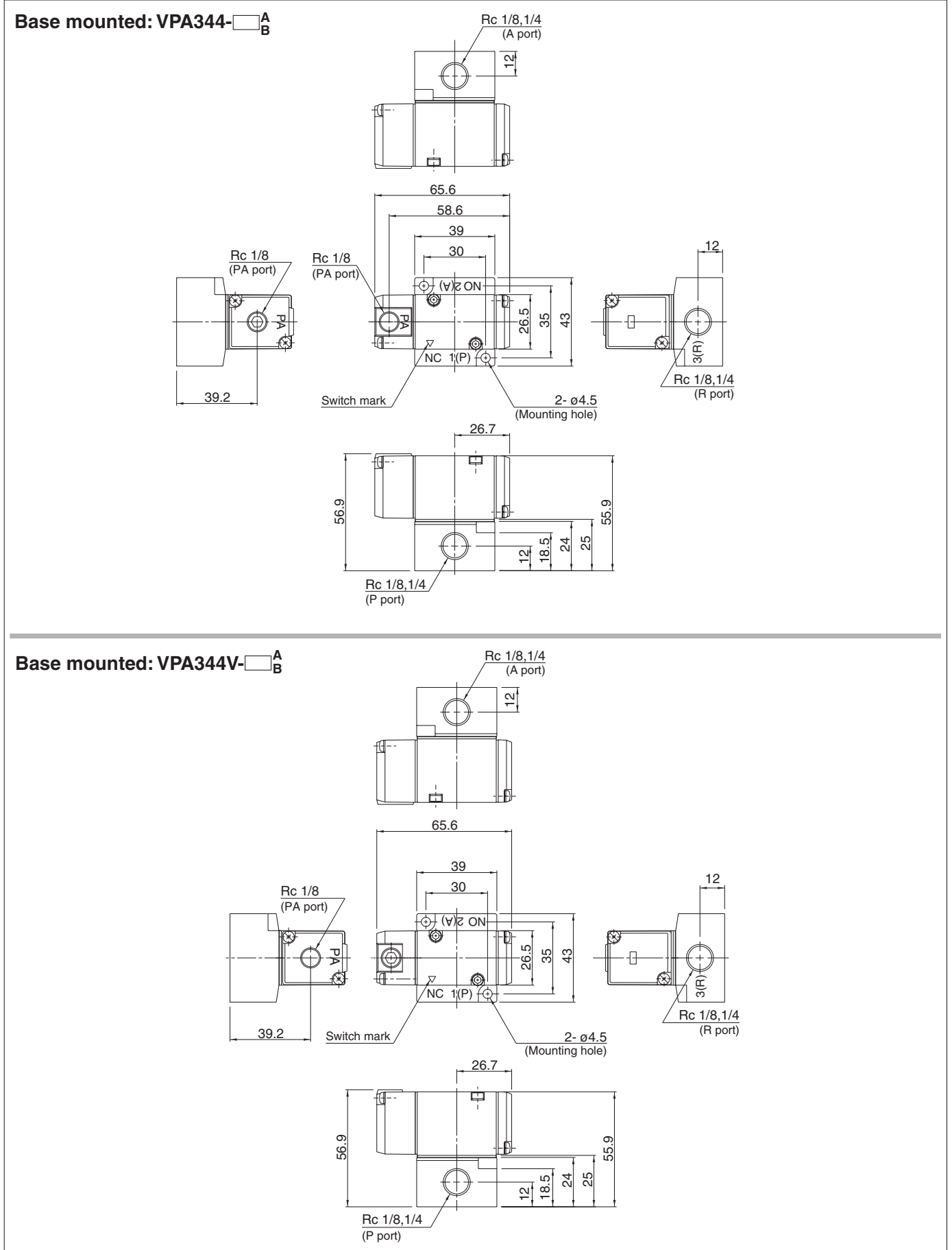
• Port size

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



# Series VPA300/500/700

## Dimensions





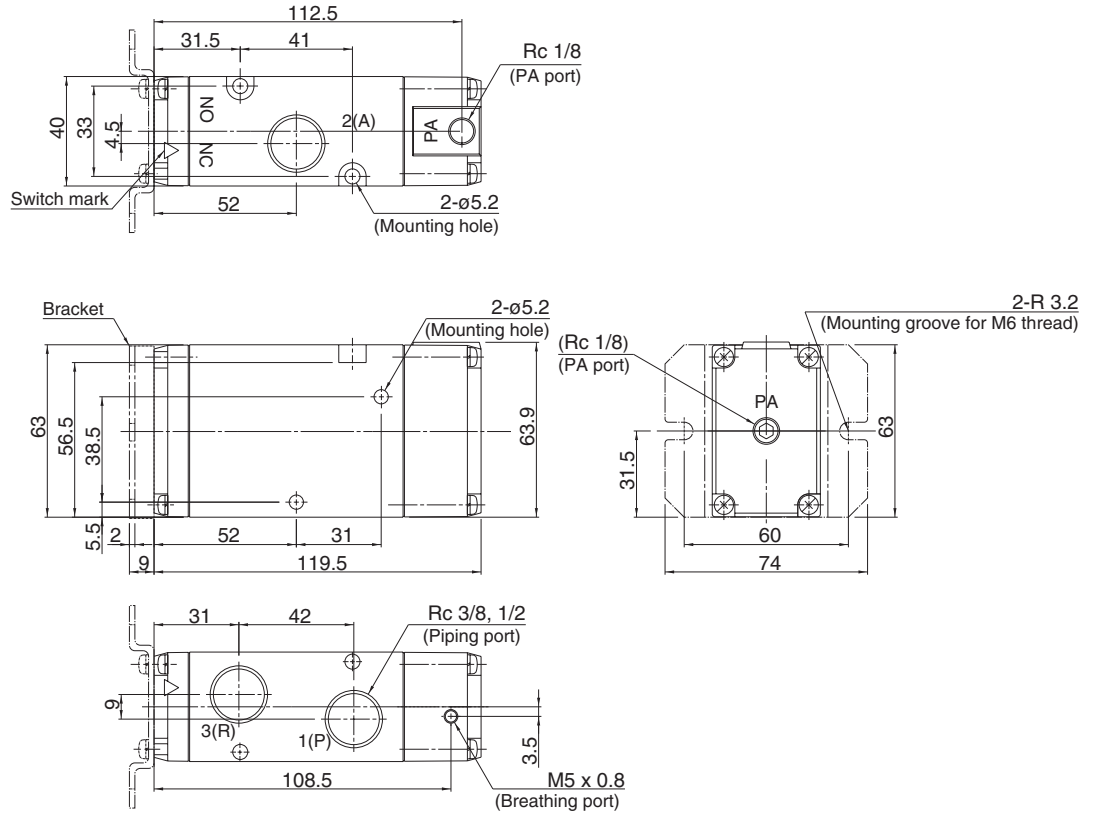




# 3 Port Air Operated Valve Series VPA300/500/700

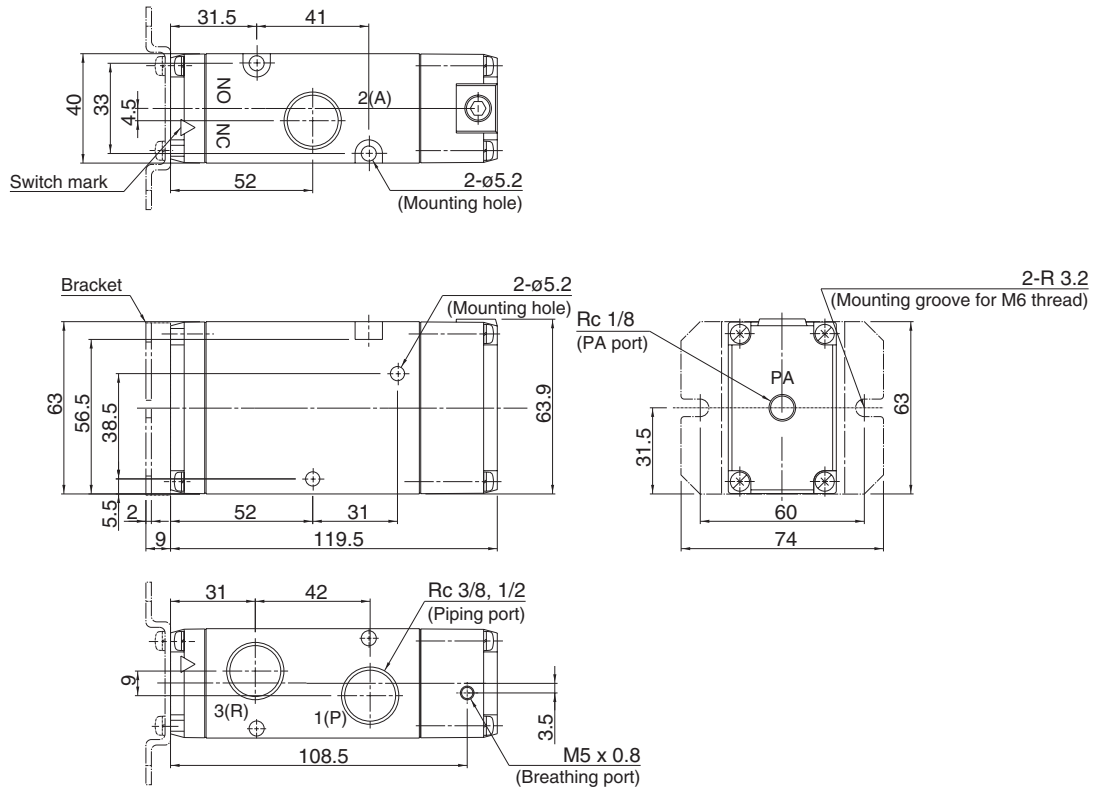
## Dimensions

Body ported: VPA742- <sub>A</sub>  
 <sub>B</sub>



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

Body ported: VPA742V- <sub>A</sub>  
 <sub>B</sub>





# Series VPA300/500/700 Manifold Specifications



## How to Order

**VV3PA 3 41 04 1 02**

VP  
Air operated manifold

Body size

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

Base specifications

41	Common exhaust
42	Individual exhaust

Air supply port (P port) is common.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

A port size

Symbol	Port size Rc	Applicable manifold base model
02	1/4	VV3PA3
03	3/8	VV3PA5
04	1/2	VV3PA7

Combination symbol

Symbol	Passage		Piping	Note
	1P	3R	2A	
1	Common	Common	Side	Type 41
3	Common	Individual	Side	Type 42

Stations

02	2 stations
⋮	⋮
20	20 stations

- A
- A
- A
- A
- M
- R
- H
- S

\* 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	

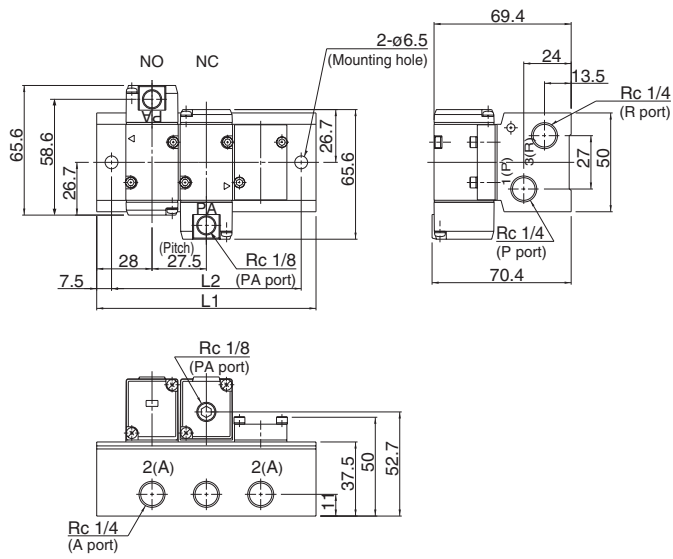
## Option

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

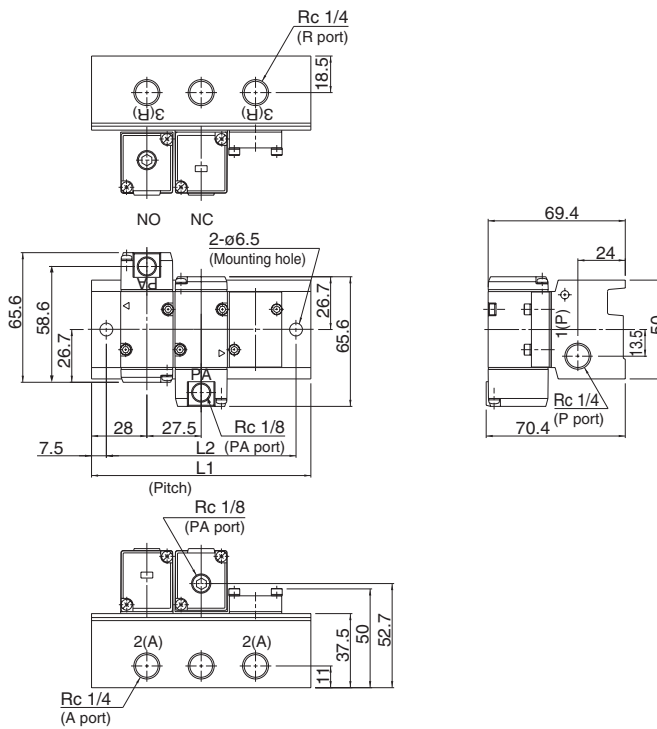
# Series VPA300/500/700

## Dimensions

### Common exhaust: VV3PA3-41- Station 1-02



### Individual exhaust: VV3PA3-42- Station 3-02



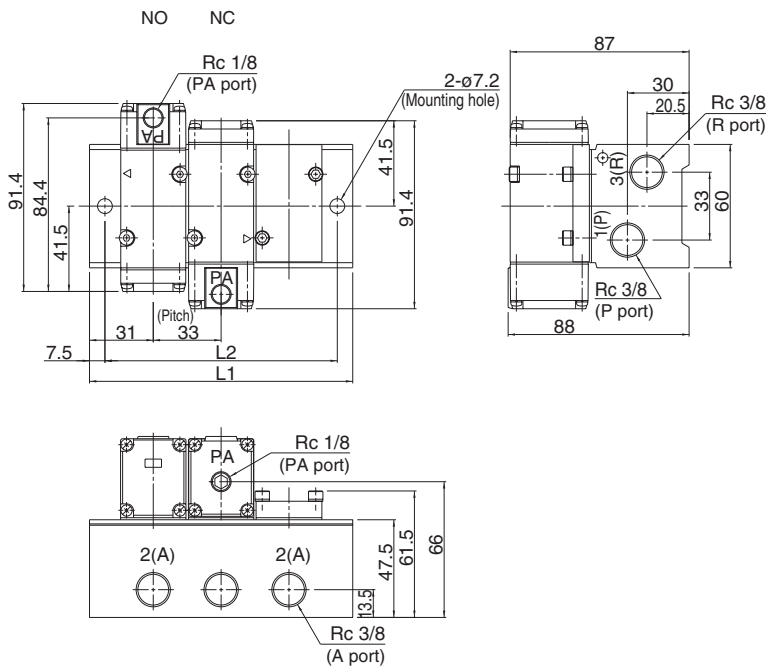
n: Station

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

# 3 Port Air Operated Valve Series VPA300/500/700

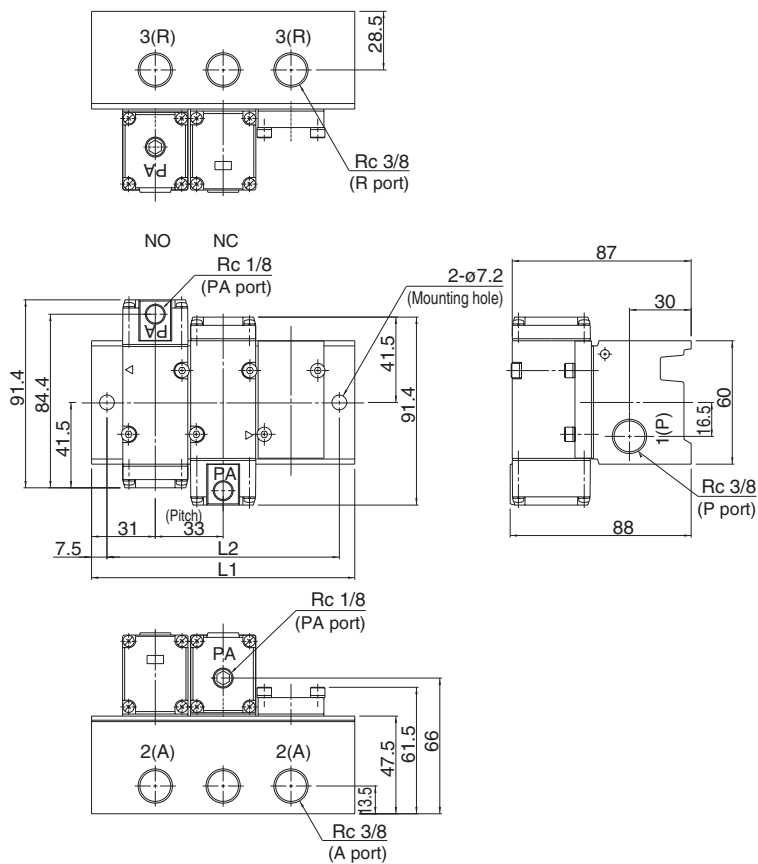
## Dimensions

### Common exhaust: VV3PA5-41- Station 1-03



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

### Individual exhaust: VV3PA5-42- Station 3-03



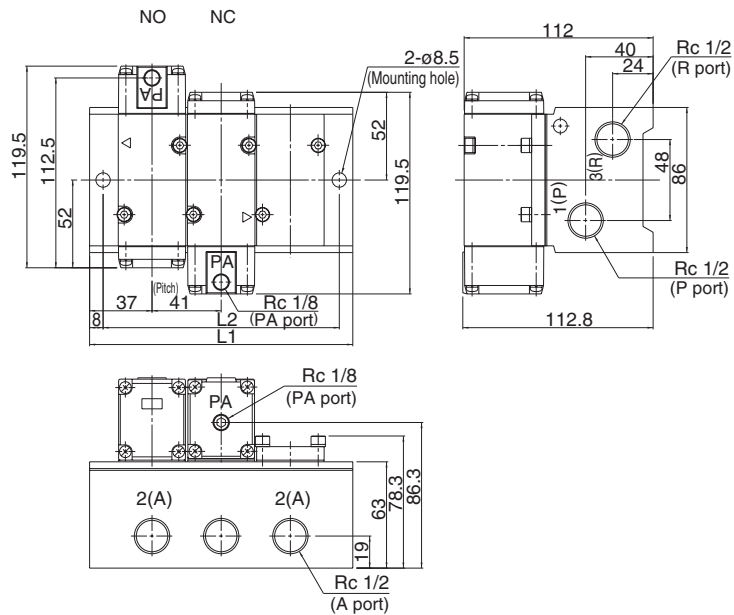
n: Station

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

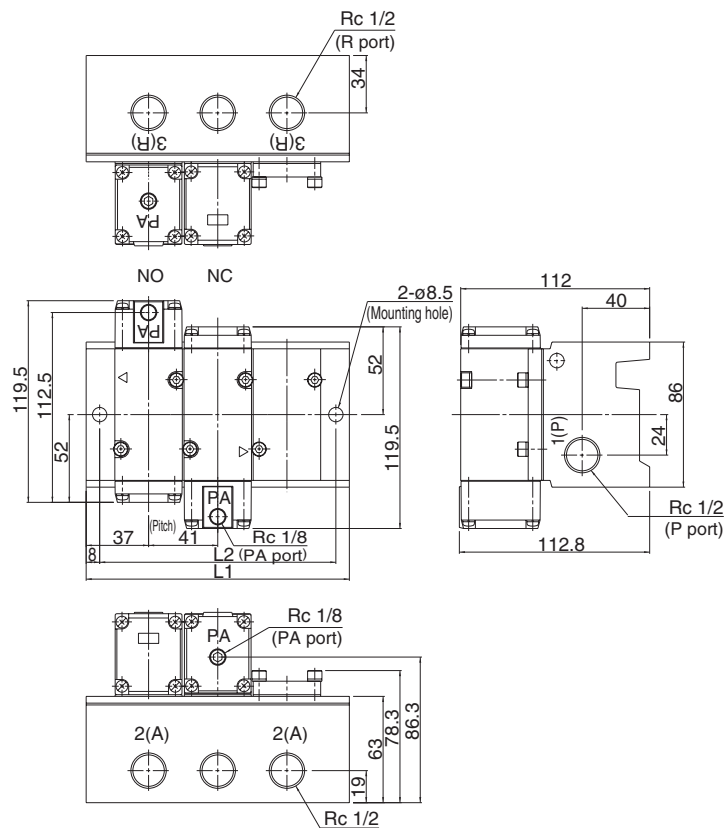
# Series VPA300/500/700

## Dimensions

### Common exhaust: VV3PA7-41- Station 1-04



### Individual exhaust: VV3PA7-42- Station 3-04



n: Station

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

# 3 Port Air Operated Valve

## Series VPA3145/3165/3185

### How to Order

**VPA3 1 4 5 [ ] 04 [ ]**

VPA Air operated valve

Number of pilot  
1 Single

Body size

4	1/2
6	1
8	1 1/2

Body type

5	Body ported
---	-------------

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

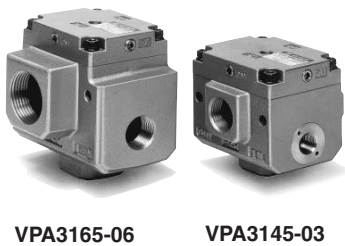
Port size (IN, OUT port)

Symbol	Port size Rc size	VPA3145	VPA3165	VPA3185
03	3/8 (10A)	●	—	—
04	1/2 (15A)	●	—	—
06	3/4 (20A)	●	●	—
10	1 (25A)	—	●	—
12	1 1/4 (32A)	—	●	●
14	1 1/2 (40A)	—	—	●
20	2 (50A)	—	—	●

Valve option

Nil	For general purpose
v	For vacuum and low pressure

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

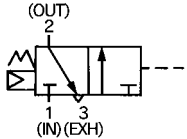


VPA3165-06

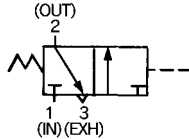
VPA3145-03

#### JIS Symbol

<Positive pressure>



<Vacuum pressure>



### Specifications

Fluid	Air	
Type of actuation	N.C. only (N.O. only for vacuum)	
Operating pressure range	For vacuum and low pressure	For general purpose
	-101.2 kPa to 0.2 MPa	0.2 to 0.8 MPa
Pilot pressure range	Refer to the graph of pilot pressure.	
Ambient and fluid temperature (°C)	0 to 60 (No freezing)	
Lubrication	Required (Turbine oil, Class 1 ISO VG32 equivalent)	
Mounting orientation	Free	
Impact resistance/Vibration resistance (m/s <sup>2</sup> ) Note)	150/50	

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)

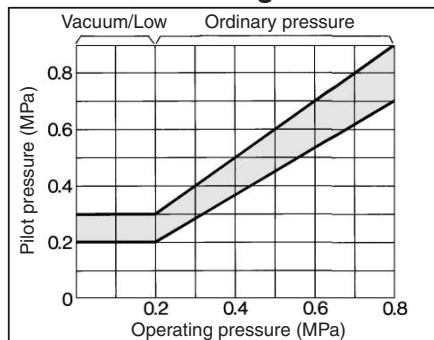
### ⚠ Precautions

**Be sure to read before handling. Refer to pages 5-11-2 to 6 for Safety Instruction and Solenoid Valve Precautions.**

### ⚠ Caution

- Lubrication**  
Since this valve needs lubrication, use turbine oil Class 1 (ISO VG32). Refer to page 5-11-5 for the brand names of lubricants.
- Refer to Best Pneumatics Vol. 4 for information about the pressure applied to piping and ports, quality of air and piping for vacuum applications.

### Pilot Pressure Range

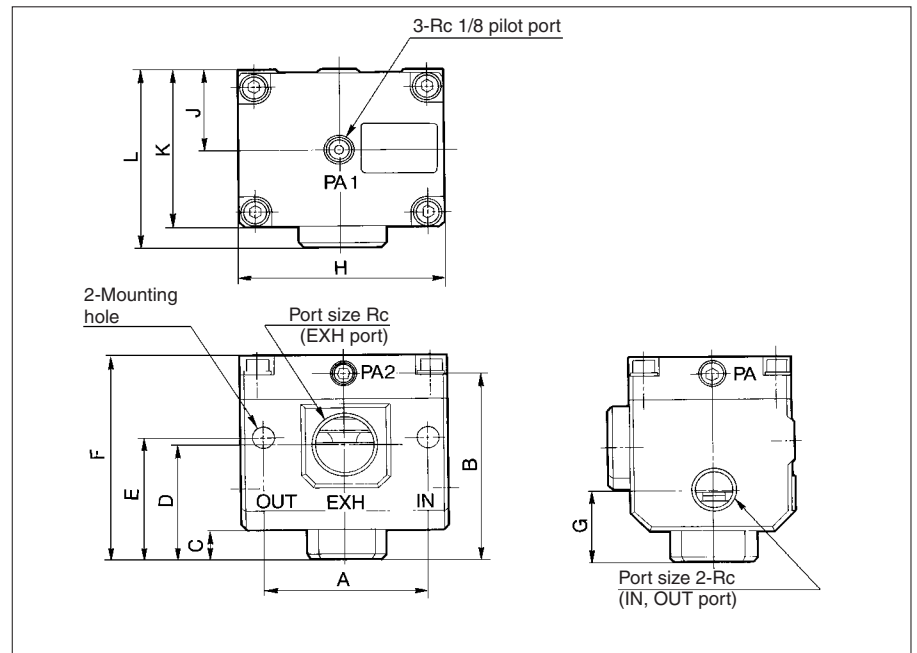


### Flow Characteristics/Weight

Valve model	Port size		Flow characteristics						Weight (kg)
			1 → 2 (IN → OUT)			2 → 3 (OUT → EXH)			
	1 (IN), 2 (OUT)	3 (EXH)	C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
VPA3145	3/8	3/4	19	0.43	5.5	18	0.47	5.4	
	1/2		23	0.32	6.2	42	0.39	10	
	3/4		28	0.36	7.6	26	0.35	7.0	

Valve model	Port size		Effective area (mm <sup>2</sup> )		Weight (kg)
	1 (IN), 2 (OUT)	3 (EXH)	1 → 2 (IN → OUT)	2 → 3 (OUT → EXH)	
VPA3165	3/4	1 1/4	230	280	1.5
	1		280	310	
	1 1/4		310	330	
VPA3185	1 1/4	2	570	650	2.3
	1 1/2		650	670	
	2		650	670	

### Dimensions



Model	Port size Rc		A	B	C	D	E	F	G	H	J	K	L	Mounting hole
	IN, OUT	EXH												
VPA3145	3/8	3/4	71	85	14	52	55	93	32	87.4	36	71	80	ø8.5
	1/2													
	3/4													
VPA3165	3/4	1 1/4	82.6	110	17	68	75	118	45	113	36	71	95	ø8.5
	1													
VPA3185	1 1/4	2	118	132	14	80	95	140	52	140	41	81	105	ø13
	1 1/2													
	2													