5 Port Air Operated Valve
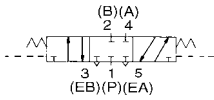# Series *VPA4□50/4□70*
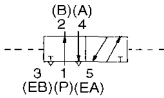
VPA4270-14

VPA4150-04

How to Order

VPA4 | 1 | 5 | 0 - 10 | ☐

VP 5 port Air operated valve

Function

1	2 position single pilot
2	2 position double pilot
3	3 position closed center
4	3 position exhaust center

Note) 3 position is not available on Series VPA4□70.

Body size

| 5 | ¾ standard |
| 7 | 1¼ standard |

Piping

0	Side ported
1*	Bottom ported
4	W/o sub-plate

∗ Option

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	Port size	Applicable valve model
00	Without sub-plate	VPA4□54/4□74
03	⅜ (10A)	
04	½ (15A)	VPA4□50
06	¾ (20A)	
10	1 (25A)	
12	1 ¼ (32A)	
14	1 ½ (40A)	VPA4□70

JIS Symbol

2 position single
VPA4150/4170

2 position double
VPA4250/4270

(B)(A)
2 4

3 1 5
(EB)(P)(EA)

3 position closed center
VPA4350

3 position exhaust center
VPA4450

(B)(A)
2 4

3 1 5
(EB)(P)(EA)

## Specifications

Fluid	Air
Operating pressure range (MPa)	0.2 to 0.9
Pilot pressure range (MPa)	Refer to the pilot pressure graph shown in below.
Ambient and fluid temperature (°C)	0 to 60
Lubrication [1]	Required (Use turbine oil Class 1 ISO VG32.)
Mounting orientation	Free
Impact/Vibration resistance (m/s²) [2]	150/50

Note 1) Use turbine oil Class 1 (ISO VG32).
Note 2) 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 is ON and OFF. (Valve in the inltial stage)
Vibration resistance: No malfunction from test with 45 to 1000 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)

Pilot Pressure Range

Pilot pressure (MPa) vs Operating pressure (MPa)
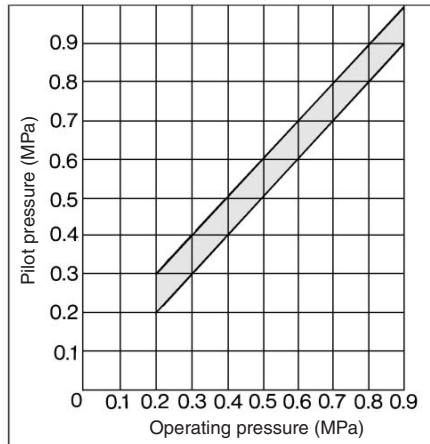
⚠ Precautions

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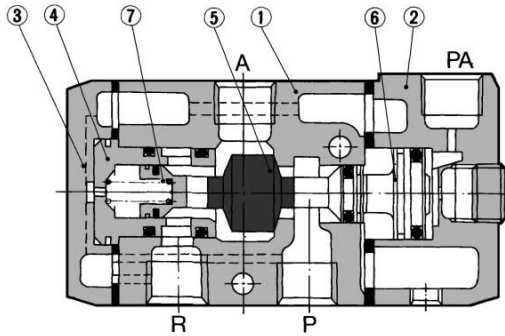
⚠ Caution

1. Lubrication
Use turbine oil Class 1 (ISO VG32).

2. Refer to Best Pneumatics Vol. 3 regarding piping, air quality, operating condition and 3 position closed center.
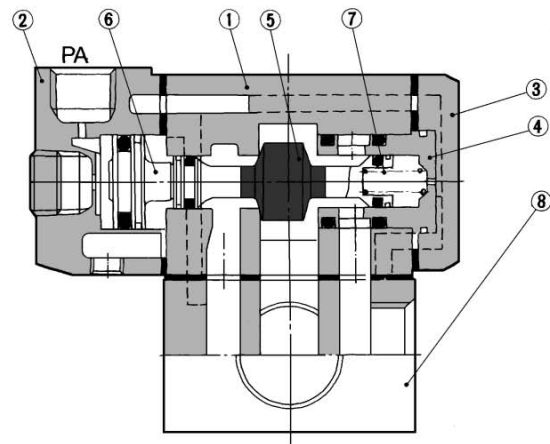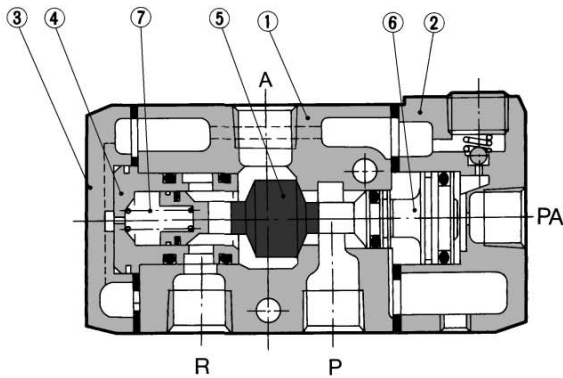
Construction

Standard

Body ported
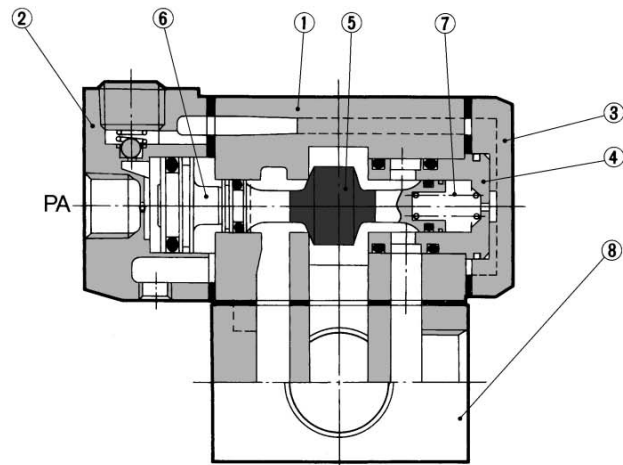

Base mounted

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

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 | **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

SMC

Dimensions

VPA4150-□-□

140(192)
120(168)
35 35
B A
PILOT
84(100)
104(124)
86(100)
B A
EB P EA
35(44) 35(44)
4-Rc 1/8 pilot port
4-ø9 mounting hole
(ø11)

181
72
108(133)
116(141)
73(98)
22 (30)
24 (40)
5-Rc 3/8, 1/2
(Rc 3/4, 1)

Bottom ported

35(44) 35(44)
EB P EA
25 (30)
25 (30)
B A
35 35
(5-Rc 3/8, 1/2)
(Rc 3/4, 1)

( ): For Rc 3/4, 1
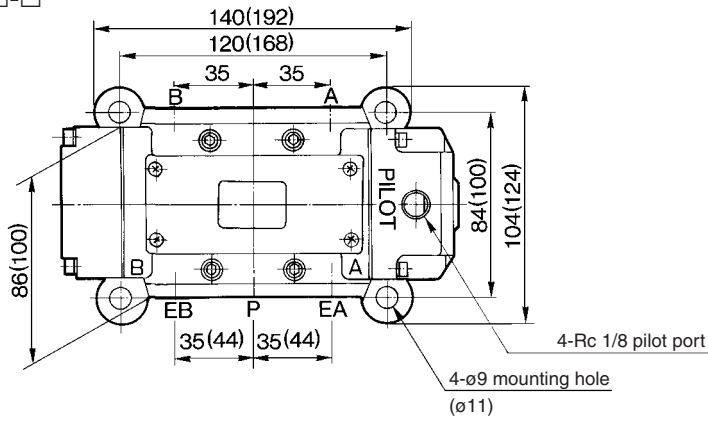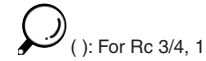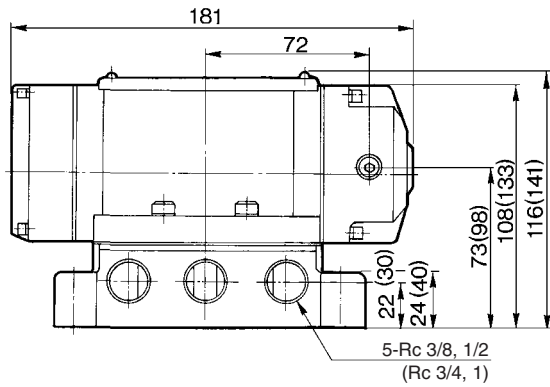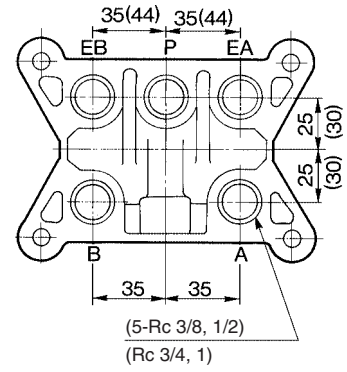
VPA4250-□-□, VPA4350-□-□, VPA4450-□-□

B A
PILOT PILOT
B A
EB P EA
8-Rc 1/8 pilot port

188 220 (For 3 position)
80 96 (For 3 position) 72 88 (For 3 position)
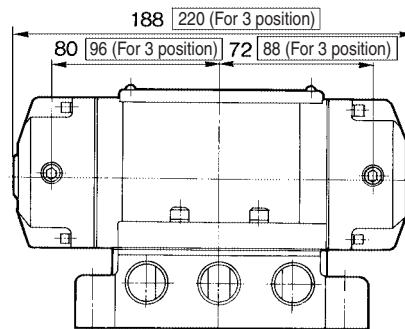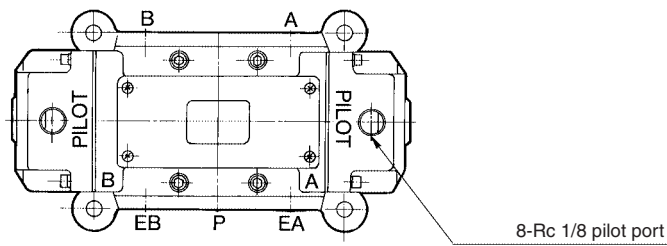
S□A
V□A
S□A
V□A
VM
VR
VH
VHS

Dimensions

VPA4170-$^{12}_{14}$-□

3-Rc 1/4 pilot port

264
234
80
B
A
130
150
160
EB 70 P 70 EA

4-ø13 mounting hole

266
132
115

123 177 186

40 53

EB P EA

5-Rc 1 1/4, 1 1/2

Bottom ported

70 70
EB P EA

70

B 80 A

(5-Rc 1 1/4, 1 1/2)

VPA4270-$^{12}_{14}$-□

B A

6-Rc 1/4 pilot port

EB P EA

264
230

EB P EA

SMC
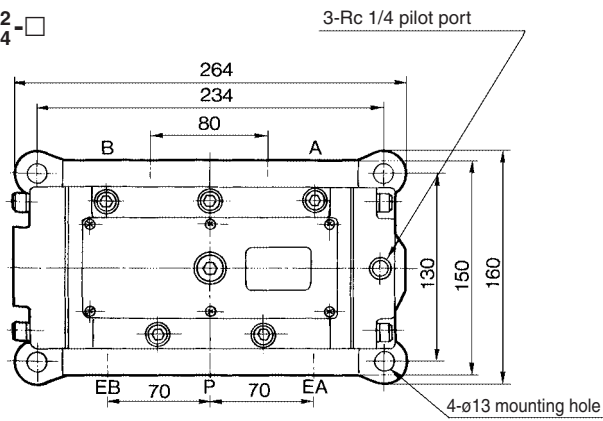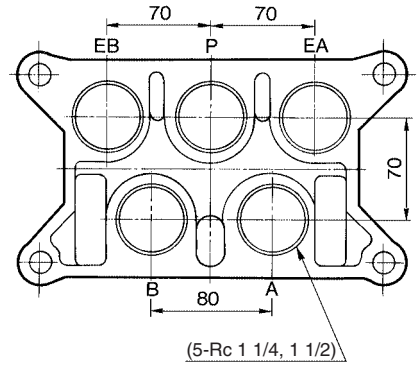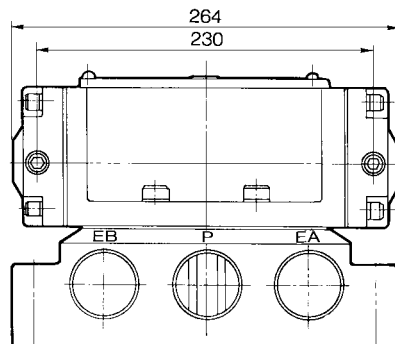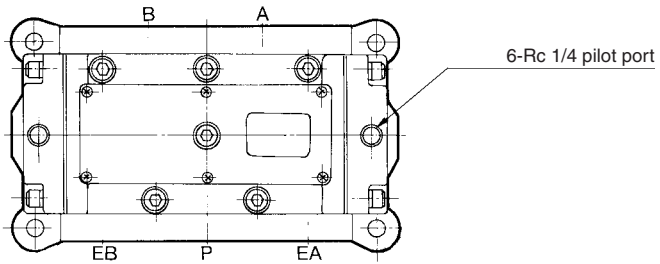
Series *VPA4□50*
Manifold Specifications
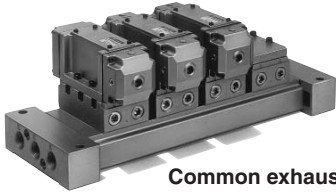
Common exhaust
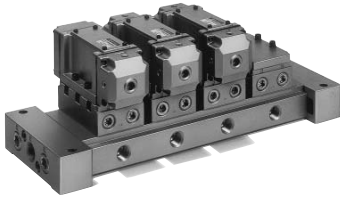
Individual exhaust

Specifications

Manifold type	B mount
Exhaust type	Common exhaust, Individual exhaust [1]
Supply type	Common supply port
Stations	Max. 10 stations (VVPA460: Max. 8 stations) [2]

Note 1) When valves are closed with diaphragm, back pressure may cause malfunction. Use individual exhaust to prevent such a problem.
Note 2) In the case of more than 4 stations, supply air to both sides of supply port and exhaust air from both sides.

S□A
V□A
S□A
V□A
VM
VR
VH
VHS

Simultaneus Operation with Manifold Valves

Note) Pressure drop will occur by simultaneously using manifold valves.

Model

Base model	Exhaust type	Port size			Applicable valve model
		P	A, B	E	
VVPA450	Common	$3/4$	$1/2$, $3/4$	$3/4$	**VPA4154-00** **VPA4254-00** **VPA4354-00** **VPA4454-00**
	Individual				
VVPA460	Common	1	$3/4$, 1	1	
	Individual				

Option

Blanking plate assembly	XT038N-4A	Gasket, Bolt

Caution

Manifold specifications are not available for Series VPA4□70.

How to Order

VVPA4 **5** **0** **-** **04** **1** **-** **04** [ ]

VP 5 port Air operated manifold

Base size Rc

5	$3/4$
6	1

Piping

Symbol	P	A, B	E
0	Side	Side	Side
1∗	Side	Bottom [1]	Side
9∗		Other	

Note 1) Size of A, B port bottom ported: Rc 3/8, 1/2
∗ Option

Stations

02	2 stations
⋮	⋮
10	10 stations

Base specifications

1	Common exhaust
2	Individual exhaust

A, B Port size Rc

Symbol	Port size	VVPA450	VVPA460
04	$1/2$	●	—
06	$3/4$	●	●
10	1	—	●
M [2]	Mixed	●	●

Note 2) In the case of mixed specifications, indicate M and specify port location sparately on a manifold specification sheet.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

How to Assemble Manifold
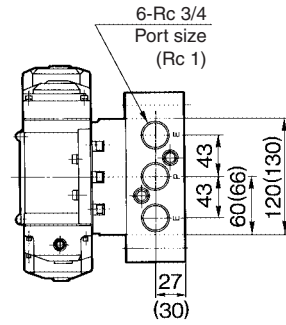
To order valves and blanking plate assembly mounted onto the manifold, list valves and blanking plate assembly with manifold base part number.
EX) Base: 6 stations, common EXH, A & B port Rc 1/2
    VVPA450-061-04 ···················· 1 pc.
    ∗VPA4154-00 ·························· 3 pcs.
    ∗VPA4254-00 ·························· 2 pcs.
    ∗XT038N-4A ··························· 1 pc.

↳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.

Dimensions

Common EXH: VVPA450- Station 1- Port size - ☐
VVPA460- Station 1- Port size - ☐
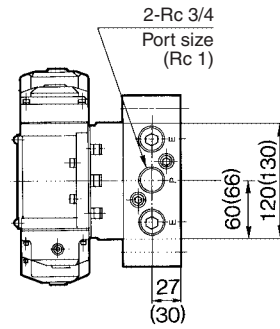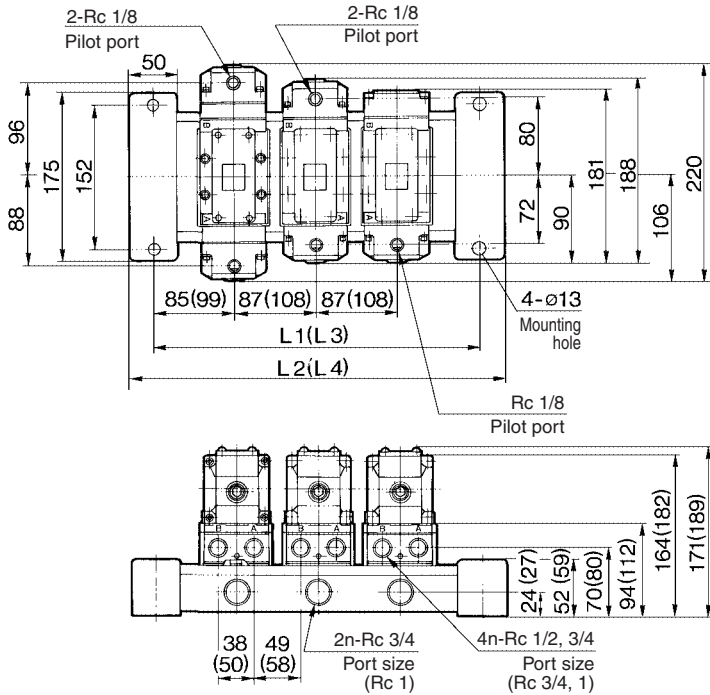

2-Rc 1/8 Pilot port
2-Rc 1/8 Pilot port
50
96
175
152
88
80
72
90
181
188
106
220
85(99) 87(108) 87(108)
L1(L3)
L2(L4)
4-⌀13 Mounting hole
Rc 1/8 Pilot port

6-Rc 3/4 Port size (Rc 1)
43 43
43
60(66)
120(130)
27 (30)

164(182)
171(189)
52(59)
70(80)
94(112)
38 (50) 49 (58)
4n-Rc 1/2, 3/4 Port size (Rc 3/4, 1)
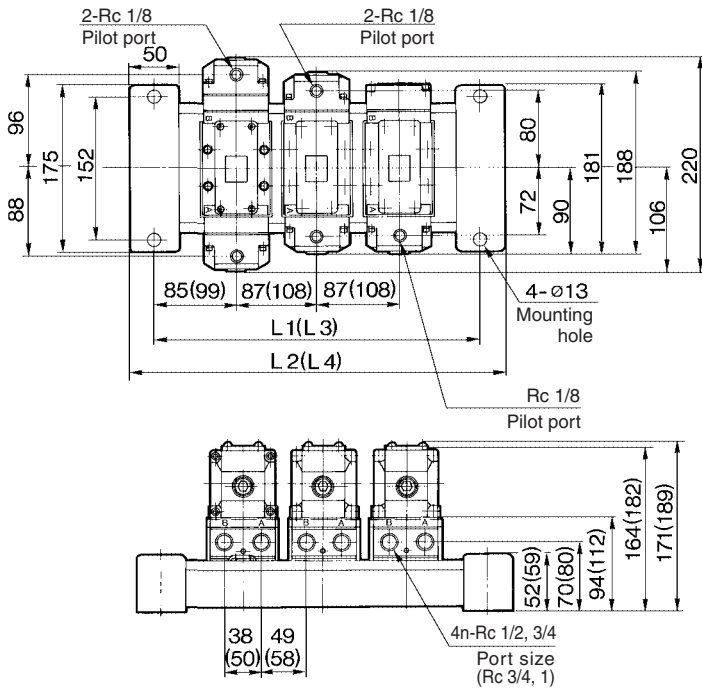
( ) for VVPA460

Individual EXH: VVPA450- Station 2- Port size - ☐
VVPA460- Station 2- Port size - ☐

2-Rc 1/8 Pilot port
2-Rc 1/8 Pilot port
50
96
175
152
88
80
72
90
181
188
106
220
85(99) 87(108) 87(108)
L1(L3)
L2(L4)
4-⌀13 Mounting hole
Rc 1/8 Pilot port

2-Rc 3/4 Port size (Rc 1)
60(66)
120(130)
27 (30)

164(182)
171(189)
24 (27)
52(59)
70(80)
94(112)
38 (50) 49 (58)
2n-Rc 3/4 Port size (Rc 1)
4n-Rc 1/2, 3/4 Port size (Rc 3/4, 1)

( ) for VVPA460

L Dimension

n: Station

Model		2	3	4	5	6	7	8	9	10	Formula
VVPA450	L1	257	344	431	518	605	692	779	866	953	L1 = 87 x n + 83
	L2	307	394	481	568	655	742	829	916	1003	L2 = 87 x n + 133
VVPA460	L3	306	414	522	630	738	846	954	—	—	L3 = 108 x n + 90
	L4	356	464	572	680	788	896	1004	—	—	L4 = 108 x n + 140

SMC