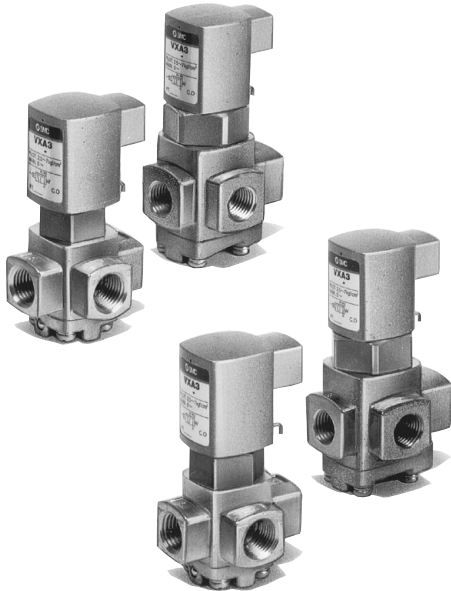


# Direct Air Operated 3-Port Valve **VXA31/32 Series**

**For Air, Vacuum, Water, Oil**



■ **Able to control a wide variety of fluids.**

**Wide variations of combination.**

Valve can be matched to particular application through selection of body materials (Brass or Stainless steel), seal material (NBR, FKM or EPDM).

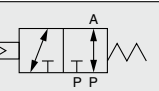
■ **Easy to use common type (C.O.) can be used for both normally closed and normally open types**

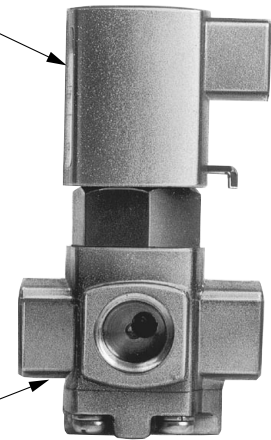
■ **Easy to disassemble and reassemble in a short time.**

■ **High viscosity (500 mm<sup>2</sup>/s) control is possible.**

## Variations

Valve ●

Common (C.O.) --> 



● **Pilot port** (Free take off direction)

Port size — Rc1/8  
Pilot pressure — 0.25 to 0.7 MPa

Material ●

Body — Brass, Stainless steel  
Seal — NBR, FKM, EPDM

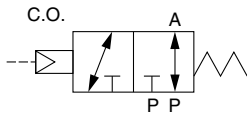
**Model**

Model	Port size Rc	Orifice dia. [mm]
VXA3114	1/8, 1/4	1.5
VXA3124	1/8, 1/4	2.2
VXA3134	1/8, 1/4	3
VXA3224	1/4, 3/8	2.2
VXA3234	1/4, 3/8	3
VXA3244	1/4, 3/8	4

# VXA31/32 Series

## Common (C.O.)

### Symbol



### Fluid

Standard specifications	Option*1
Water (Standard, up to 40°C)	Medium vacuum (0.1 Pa-abs)..... (V, M)
Air (Standard, Dry)	Non-leak (10 <sup>-6</sup> Pa·m <sup>3</sup> /s or less)..... (V, M)
Turbine oil	
Carbon dioxide (CO <sub>2</sub> ), Nitrogen gas (N <sub>2</sub> )	



\*1 Refer to page 3 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

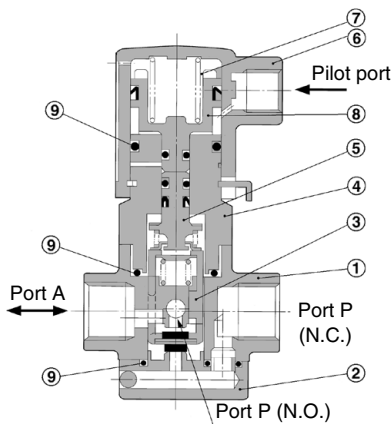
### Model/Valve Specifications

Port size	Orifice dia. [mm]	Model	Max. operating pressure differential [MPa]	Flow rate characteristics					Max. system pressure [MPa]	Proof pressure [MPa]	Weight [g]		
				Water, Oil		Air							
				Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	C [dm <sup>3</sup> /(s·bar)]	b	Cv					
1/8 (6A)	1.5	VXA3114	1.0	1.9	0.08	0.29	0.32	0.08	1.0	1.5	280		
	2.2	VXA3124	0.5	3.8	0.16	0.60	0.25	0.15					
	3	VXA3134	0.3	8.0	0.24	0.82	0.20	0.20					
1/4 (8A)	1.5	VXA3114	1.0	1.9	0.08	0.29	0.32	0.08					
	2.2	VXA3124	0.5	3.8	0.16	0.60	0.25	0.15					
		VXA3224	1.0	4.6	0.19	0.64	0.40	0.17					
3	VXA3134	0.3	8.0	0.24	0.82	0.20	0.20						
	VXA3234	0.6	9.0	0.33	1.1	0.25	0.27						
4	VXA3244	0.3	12	0.50	1.6	0.20	0.38						
	3/8 (10A)	2.2	VXA3224	1.0	4.6	0.19	0.64	0.40			0.17	1.0	1.5
3		VXA3234	0.6	9.0	0.33	1.1	0.25	0.27					
4		VXA3244	0.3	12	0.50	1.6	0.20	0.38					
3/8 (10A)	2.2	VXA3224	1.0	4.6	0.19	0.64	0.40	0.17	1.0	1.5	280		
	3	VXA3234	0.6	9.0	0.33	1.1	0.25	0.27					
	4	VXA3244	0.3	12	0.50	1.6	0.20	0.38					



\* Refer to "Glossary of Terms" in the Best Pneumatics No. 7. for detail of max. operating pressure differential and max. system pressure.

### Construction/Principle Parts Material



No.	Description	Material	
		Standard	Option
1	Body assembly	Brass	Stainless steel
2	Retainer assembly	Brass	Stainless steel
3	Valve assembly	NBR, PPS	FKM/EPDM PPS
4	Adapter	Brass	Stainless steel
5	Travel assembly	Stainless steel, NBR, Polyacetal	FKM/EPDM Stainless steel
6	Pilot cover	Aluminum	—
7	Piston spring	Stainless steel	—
8	Piston assembly	Polyacetal, NBR	—
9	O-ring	NBR	FKM/EPDM

### Fluid and ambient temperatures

Temperature conditions	Fluid temperature [°C]				Ambient temperature [°C]
	Water (Standard)	Air (Standard)	Oil (Standard)	Vacuum*3 (V, M)	
Maximum	40	60	40	40	40
Minimum	1	-5*1	-5*2	-5	-5



\*1 Dew point: -5°C or less

\*2 500 mm<sup>2</sup>/s or less

\*3 "V", "M" etc. in parentheses are option symbols.

### Valve Air Tightness (Leakage Amount)

Seal material	Fluid	Air	Liquid	Non-leak, Vacuum*1
	NBR, FKM, EPDM		1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less

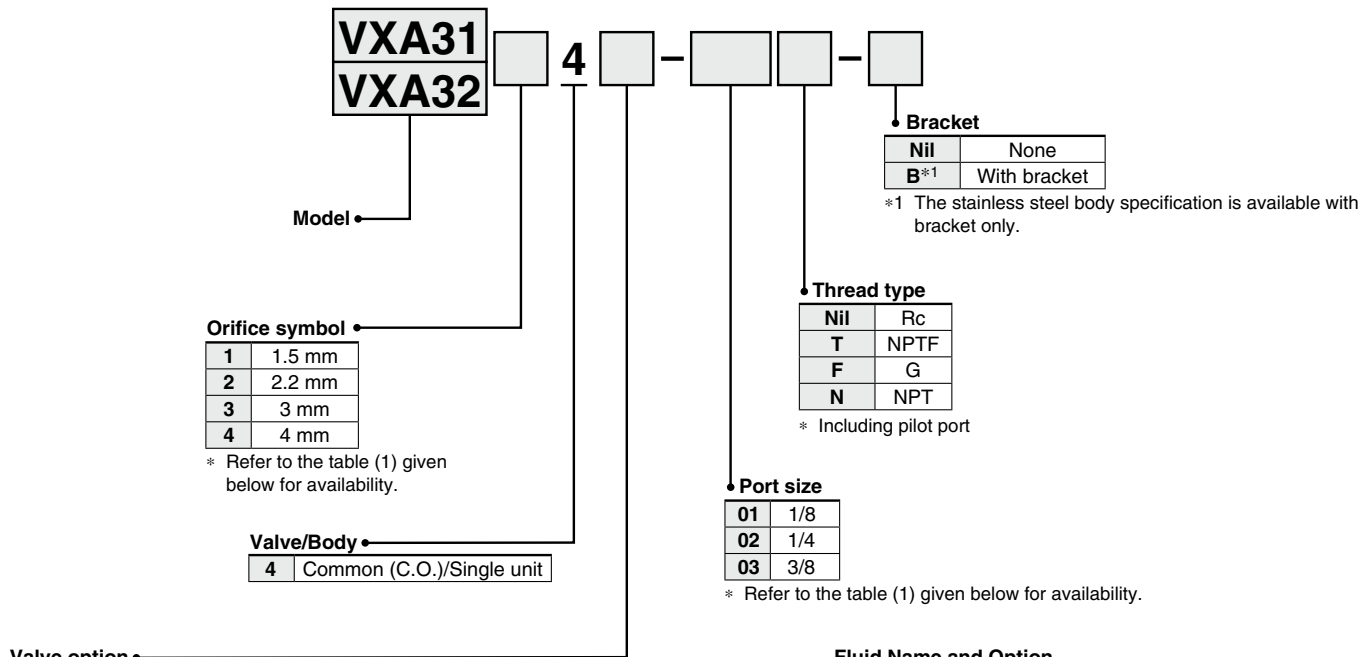


\*1 Value for V and M options (Non-leak/Vacuum)

### Pilot pressure

Model	Pressure [MPa]
VXA31□4 VXA32□4	0.25 to 0.7

## How to Order



**Valve option**

Option symbol	Seal material	Body material	Support material (drive part)
Standard	NBR	Brass	Polyacetal
A	FKM		
B	EPDM		
G	NBR		
H	FKM	Stainless steel	Stainless steel
J	EPDM		
*M (Non-leak)*1	FKM		
N	FKM		
P	EPDM	Brass	Polyacetal
*V (Non-leak)*1	FKM		

**Fluid Name and Option**

Fluid (Application)	Option symbol and body material	
	Brass	Stainless steel
Silicone oil	A	H
Vacuum (Up to $1.3 \times 10^{-1}$ Pa)	V	M
Fuel oil (up to 60°C)	A	H
Insulation oil	A	H
Non-leak ( $10^{-6}$ Pa·m <sup>3</sup> /s)	V	M
Brake oil	B	P
Water (up to 60°C)	A	H

\* The leakage amount ( $10^{-6}$  Pa·m<sup>3</sup>/s) of "V", "M" options are values when differential pressure is 0.1 MPa.  
 \* If using for other fluids, please contact SMC.

\*1 For Options "M" and "V," grease for vacuums is used on the sliding parts; however, silicon grease is used elsewhere.

**Table (1) Model/Orifice/Port Size**

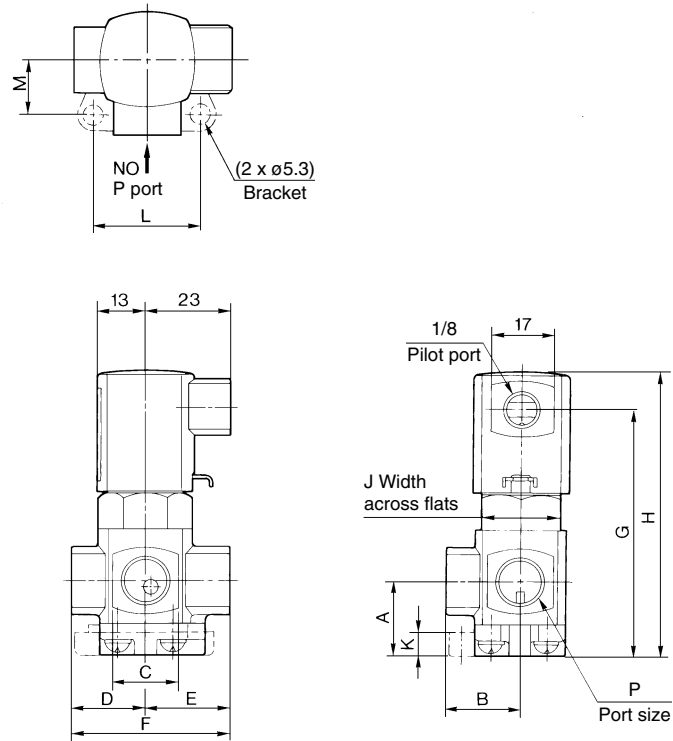
Valve (Port size)		Orifice dia. (Symbol)			
VXA31	VXA32	1 (1.5 mm)	2 (2.2 mm)	3 (3 mm)	4 (4 mm)
01 (1/8)	—	●	●	●	—
02 (1/4)	—	●	●	●	—
—	02 (1/4)	—	●	●	●
—	03 (3/8)	—	●	●	●

**Ordering example**

(Example) VXA31 series, Orifice diameter: 1.5 mm, Rc1/8  
 (Part no.) **VXA3114-01**

# VXA31/32 Series

## Dimensions



Symbol Model	Port size P	A	B	C	D	E	F	G	H	J	With bracket		
											K	L	M
VXA31	1/8, 1/4	19	20	18	20	22.5	42.5	71	81	21	6	29	14.5
VXA32	1/4, 3/8	25	20	21	20	27.5	47.5	80	90	27	7.5	32	17

# Direct Air Operated 3-Port Valve/Manifold

# VVXA31/32 Series

For Air, Gas, Vacuum, Oil



## ■ A wide variety of applicable fluids

Valve can be matched to particular application through selection of seal material (NBR, FKM or EPDM).

## ■ Valves can be replaced without removing the piping.

## ■ Easily switch between N.C. and N.O.

## ■ Lightweight due to aluminum base and body

(No water or water vapor)

### Variations

**Valve**

Common (C.O.)

Port A

Port P

Port R

Normally closed (N.C.)

Normally open (N.O.)

**Material**

Base, Body — Aluminum

Seal material — NBR, FKM, EPDM

**Manifold**

Manifold system — B mount

Manifold station — 2 to 10 stations

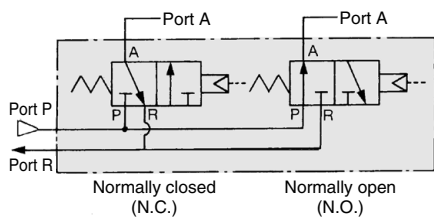
**Model**

Manifold base	Port A Rc	Port P Rc	Port R Rc
VVXA311-station	1/8	1/4	1/4
VVXA312-station	1/4		
VVXA321-station	1/8	1/4	1/4
VVXA322-station	1/4		

# VVXA31/32 Series

## Common (C.O.)

### Symbol



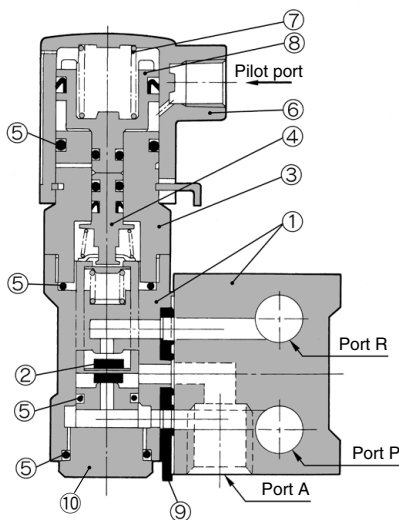
### Fluid

Standard specifications	Option*1
Air (Standard, Dry)	Medium vacuum (Up to 0.1 Pa-abs) ..... (V)
Turbine oil	Non-leak ( $10^{-6}$ Pa·m <sup>3</sup> /s or less) ..... (V)
Carbon dioxide (CO <sub>2</sub> ), Nitrogen gas (N <sub>2</sub> )	.....
	Others



\*1 Refer to page 7 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

### Construction/Principle Parts Material



No.	Description	Material	
		Standard	Option
1	Manifold body base	Aluminum	Brass (Aluminum base)
2	Valve assembly	NBR, PPS	FKM/EPDM
3	Adapter	Aluminum	—
4	Travel assembly	NBR, Polyacetal	FKM/EPDM
5	O-ring	NBR	FKM/EPDM
6	Pilot cover	Aluminum	—
7	Piston spring	Stainless steel	—
8	Piston	NBR, Polyacetal	—
9	Gasket	NBR	FKM/EPDM
10	Retainer	Aluminum	Brass

### Manifold Specifications

Manifold system	B mount	
Base type	Common SUP/EXH, Individual ports	
Valve stations	2 to 10 stations	
Blanking plate (With gasket and screws)	For VVXA31	VX011-004□
	For VVXA32	VX011-005□

### Manifold Base and Applicable Valve Model

Manifold base	Individual port Rc	Applicable valve model	Base weight [g]
VVXA311-station	1/8	VXA31□5-00	n x 100 + 50
VVXA312-station	1/4		
VVXA321-station	1/8	VXA32□5-00	n x 160 + 70
VVXA322-station	1/4		

### Model/Valve Specifications

Orifice dia. [mm]	Model	Max. operating pressure differential [MPa]	Pilot pressure [MPa]	Flow rate characteristics			Max. system pressure [MPa]	Proof pressure [MPa]	*1 Weight [g]	
				Oil		Air				
				Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	C [dm <sup>3</sup> /(s·bar)]				b
1.5	VXA3115-00	1.0	0.25 to 0.7	1.9	0.08	0.29	0.32	0.08	150	
	VXA3125-00	0.5		3.8	0.16	0.60	0.25	0.15		
2.2	VXA3225-00	1.0		4.6	0.19	0.64	0.40	0.17	230	
	VXA3135-00	0.3		8.0	0.24	0.82	0.20	0.20	150	
3	VXA3235-00	0.6		9.0	0.33	1.10	0.25	0.27	230	
	VXA3245-00	0.3		12	0.60	1.66	0.20	0.38		



\*1 • The additional weight for Option "V" is as follows. VXA31: 80 g and VXA32: 130 g  
• Refer to "Glossary of Terms" in the Best Pneumatics No. 7. for detail of max. operating pressure differential and max. system pressure.

### Fluid and ambient temperatures

Temperature conditions	Fluid temperature [°C]			Ambient temperature [°C]
	Water (Standard)	Oil (Standard)	Vacuum*3 (V)	
Maximum	60	40	40	40
Minimum	-5*1	-5*2	-5	-5



\*1 Dew point: -5°C or less  
\*2 500 mm<sup>2</sup>/s or less  
\*3 "V" in parentheses is an option symbol.

### Valve Air Tightness (Leakage Amount)

Seal material	Fluid	Air	Oil	Non-leak, Vacuum*1
	NBR, FKM, EPDM		1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less



\*1 Value for option "V" (Non-leak, Vacuum)

## How to Order

**VXA31**  
**VXA32**

Model

**5**

Orifice symbol

1	1.5 mm
2	2.2 mm
3	3 mm
4	4 mm

\* Refer to the table (1) given below for availability.

**-00**

Connection

00	Without connection thread/For manifold
----	--

Valve option

Option symbol	Seal material	Body material	Support material (drive part)
Standard	NBR	Aluminum	Polyacetal
A	FKM		
B	EPDM		
*V (Non-leak)*1	FKM	Brass*2	

\*1 For Option "V," grease for vacuums is used on the sliding parts; however, silicon grease is used elsewhere.  
\*2 Aluminum is only available as a material for the manifold base.

Fluid Name and Option

Fluid (Application)	Option symbol
Vacuum (Up to $1.3 \times 10^{-1}$ Pa)	V
Vacuum pad	Standard
Non-leak ( $10^{-6}$ Pa·m <sup>3</sup> /s)	V
Brake oil	B

\* The leakage amount ( $10^{-6}$  Pa·m<sup>3</sup>/s) of the option "V" is a value when the differential pressure is 0.1 MPa.  
\* If using for other fluids, please contact SMC.

Valve/Body configuration

5	Common/For manifold
---	---------------------

**Table (1) Model/Orifice**

Model	Orifice dia. (Symbol)			
	1 (1.5 mm)	2 (2.2 mm)	3 (3 mm)	4 (4 mm)
VXA31	●	●	●	—
VXA32	—	●	●	●

## How to Order Manifold Bases

• Blanking plate part no.

For VXA31: **VX011-004**

For VXA32: **VX011-005**

Seal material

N	NBR
F	FKM
E	EPDM

**VVXA31**  
**VVXA32**

Manifold base

Symbol	Applicable valve
VVXA31	VXA31□5-00
VVXA32	VXA32□5-00

**Manifold station**

02	2 stations
⋮	⋮
10	10 stations

Port size (Individual port)

1	Rc1/8
2	Rc1/4

\* Common port sizes are all Rc1/4.  
The SUP port is indicated as "P," and the EXH port is indicated as "R."

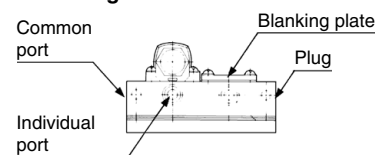
## How to Order Manifold

■ Write both the base part number and the solenoid valve to be mounted or blanking plate part number.  
(Example) VXA31 series, 7 stations, individual port Rc1/8.

(Base) VVXA311-07 ..... 1 pc.  
(Valve) \*VXA3115-00..... 6 pcs.  
(Blanking plate) \*VX011-004N ..... 1 pc.

"\*" is the symbol for mounting. When shipping mounted on a base, add an "\*" in front of the valve and blanking plate model.

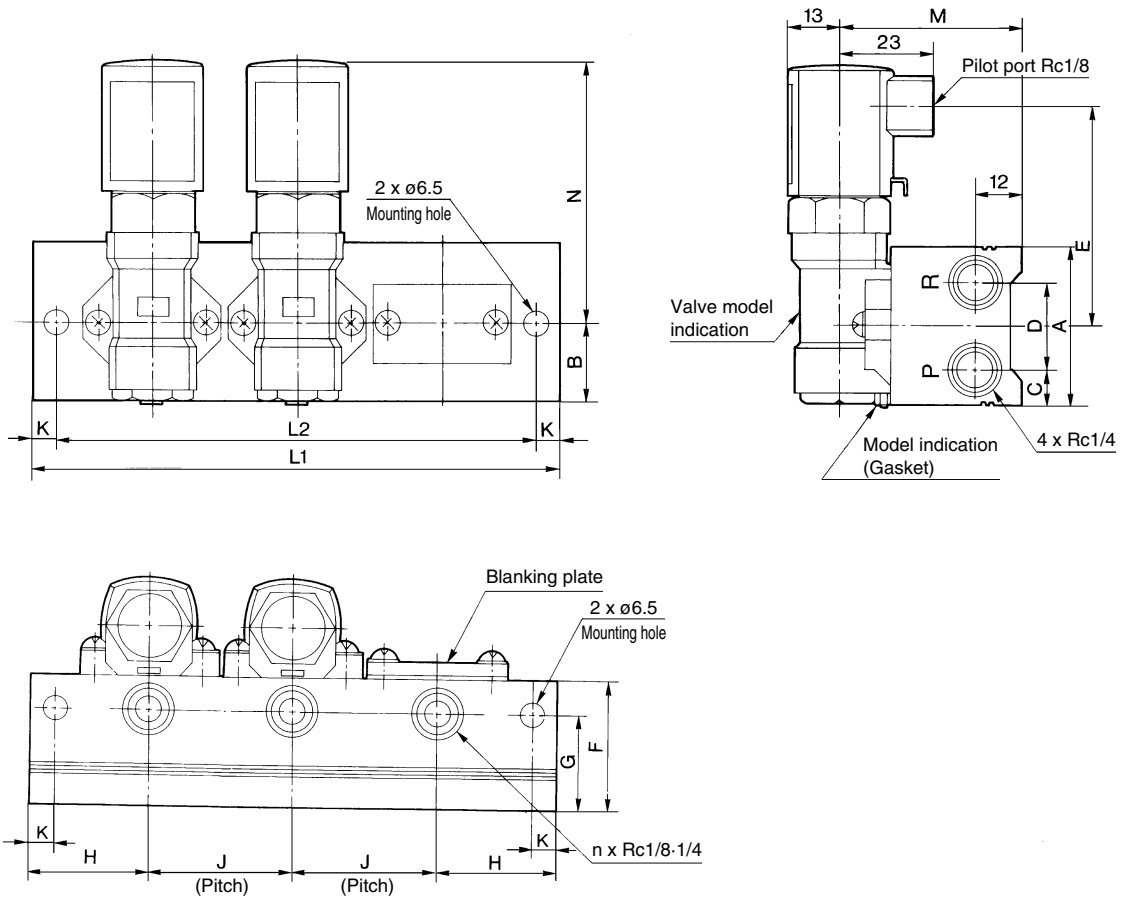
■ Arrangement of solenoid valves



The standard arrangement of manifolds should be placed on an individual port on this side, each solenoid valve from the left side and a blank plate in the right side. The right side of the common port provides plug.

# VVXA31/32 Series

## Dimensions



Model	Symbol	Stations									
		2	3	4	5	6	7	8	9	10	
VVXA31	L1	96	132	168	204	240	276	312	348	384	
	L2	84	120	156	192	228	264	300	336	372	
VVXA32	L1	126	172	218	264	310	356	402	448	494	
	L2	108	154	200	246	292	338	384	430	476	

Model	Symbol	A	B	C	D	E	F	G	H	J	K	M	N
VVXA31		40	20	9	22	59	33	24	30	36	6	45.5	69
VVXA32		44	22	10	24	66	34	25	40	46	9	50.5	76