



Direct Air Operated 3 Port Valve For Air, Gas, Vacuum, Water and Oil

Series VXA31/32



- **Able to control a wide variety of fluids. Wide variations of combination.**
Application can be matched by simply choosing body material (Brass or Stainless steel) and seal material (NBR, FKM or EPDM).
- **C.O. type easy to use; operatable as either N.C. or N.O.**
- **Easy to disassemble and reassemble in a short time.**
- **High viscosity fluids (500 cSt).**

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/
TIL

PA

PAX

PB

Variations

Common (C.O.)

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

Port size ——— Rc 1/8

Pilot pressure ——— 0.25 to 0.7 MPa

● **Material**

Body — Brass, Stainless steel

Seal — NBR, FKM, EPDM

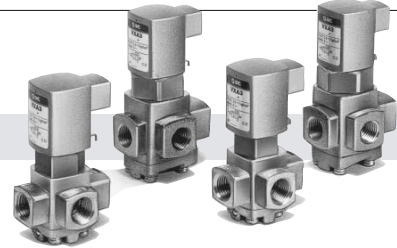
Model

Model	Port size Rc	Orifice size (mmø)
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

Series VX

Applicable Fluids Check List

3 Port Direct Air Operated Series VXA31/32



Common (C.O.)

Refer to pages 17-3-54 and 17-3-55 for specifications and models.

Option Symbol and Composition

Option symbol	Seal material	Body material	Support material (Driving parts)
Standard	NBR	Brass	Polyacetal
A	FKM		
B	EPDM		
G	NBR		
H	FKM	Stainless steel	Polyacetal
J	EPDM		
M^{Note 1} (Non-leak)	FKM		
N	FKM		
P	EPDM	Stainless steel	Stainless steel
V^{Note 1} (Non-leak)	FKM		
V^{Note 1} (Non-leak)	FKM	Brass	Polyacetal

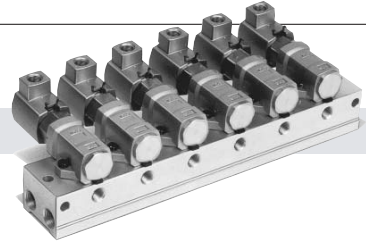
Note 1) Grease for vacuum has been applied to the sliding part, silicon grease to the other options.

Fluid Name and Option

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

* If using for other fluids, please contact SMC.
 Note 1) The leakage amount (10^{-6} Pa·m³/s) is value when differential pressure is 0.1 MPa.

Manifold Series VVXA31/32



Common (C.O.)

Refer to pages 17-3-58 and 17-3-59 for specifications and models.

Option Symbol and Composition

Option symbol	Seal material	Body material	Support material (Driving parts)
Standard	NBR	Aluminum	Polyacetal
A	FKM		
B	EPDM		
V^{Note 1} (Non-leak)⁽¹⁾	FKM	Brass ⁽¹⁾	

Note 1) Grease for vacuum has been applied to the sliding part, silicon grease to the other options.
 Note 2) Manifold base material: Aluminum

Fluid Name and Option

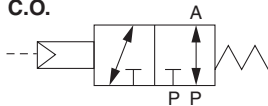
Fluid (Application)	Option symbol
Vacuum (up to 1.3×10^{-1} Pa)	V ^{Note 1}
Vacuum pad	Standard
Non-leak (10^{-6} Pa·m ³ /s)	V ^{Note 1}
Brake oil	B

* If using for other fluids, please contact SMC.
 Note 1) The leakage amount (10^{-6} Pa·m³/s) is value when differential pressure is 0.1 MPa.

Common (C.O.)

JIS Symbol

C.O.



Fluid

Standard specifications	Option ^{Note)}
Water (Standard, up to 40°C)	Vacuum (up to 1.3×10^{-1} Pa) (V, M)
Air (Standard, Dry)	Non-leak (10^{-6} Pa·m ³ /s or less) (V, M)
Turbine oil	
Vacuum (up to 1.3×10^2 Pa)	
Carbon dioxide (CO ₂), Nitrogen gas (N ₂)	



Note) Refer to page 17-3-14 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

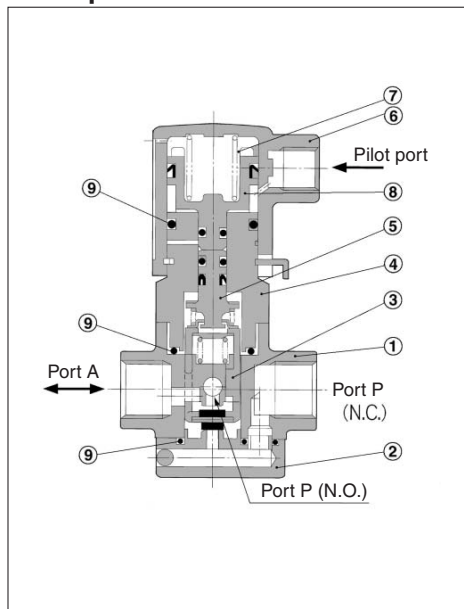
Model/Valve Specifications

Port size	Orifice size (mm ϕ)	Model	Max. operating pressure differential (MPa)	Flow characteristics					Max. system pressure (MPa)	Proof pressure (MPa)	Weight (g)
				Water, Oil		Air					
				Av x 10 ⁻⁶ (m ²)	Cv converted	C [dm ³ /(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			
3/8 (10A)	2.2	VXA3134	0.3	8.0	0.24	0.82	0.20	0.20			
	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			410
	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			



Note) Refer to "Glossary" on page 17-3-15 for details of max. operating pressure differential and max. system pressure.

Construction/ Principal Parts Material



No.	Description	Material	
		Standard	Option
①	Body assembly	Brass	Stainless steel
②	Retainer assembly	Brass	Stainless steel
③	Valve assembly	NBR, Polyacetal	FKM/EPDM, Stainless steel
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

Operating Fluid and Ambient Temperature

Temperature conditions	Operating 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



Note 1) Dew point: -5°C or less Note 2) 500 cSt or less
Note 3) "V", "M" in parentheses are option symbols.

Tightness of Valve (Leak rate)

Seal material	Fluid	Air	Liquid	Non-leak, Vacuum ⁽²⁾
NBR, FKM, EPDM		1 cm ³ /min or less	0.1 cm ³ /min or less ⁽¹⁾	10 ⁻⁶ Pa·m ³ /s or less



Note 1) Differs depending on the operating conditions such as pressure, etc.
Note 2) Value on option "V", "M" (Non-leak, Vacuum).

Pilot Pressure

Model	Pressure (MPa)
VXA31□4	0.25 to 0.7
VXA32□4	

Direct Air Operated 3 Port Valve For Air, Gas, Vacuum, Water and Oil Series **VXA31/32**

The VX* series will be revised shortly.

How to Order

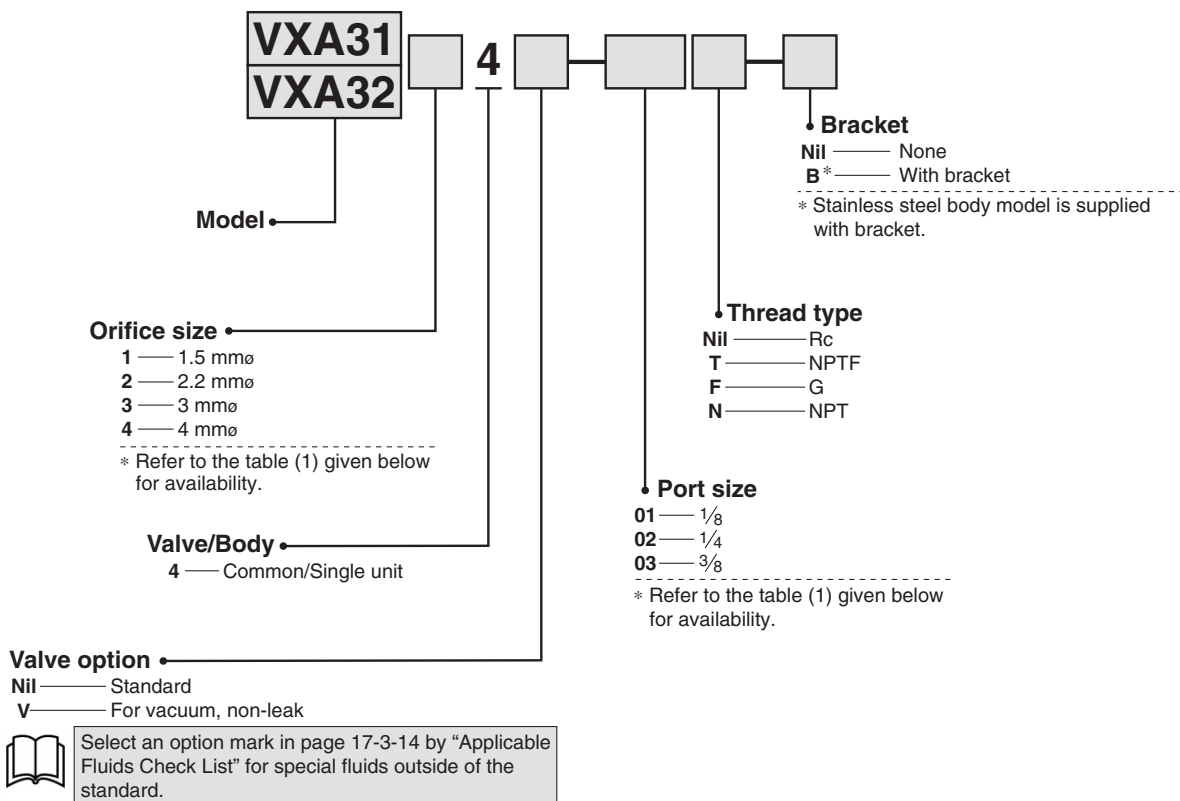


Table (1) Port/Orifice Size

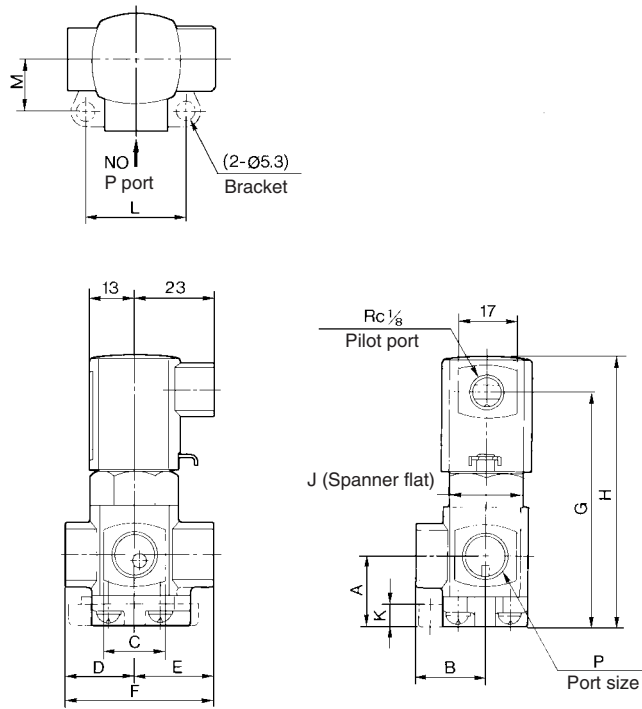
Valve (Port size)		Orifice size (No.)			
VXA31	VXA32	1 (1.5 mm \varnothing)	2 (2.2 mm \varnothing)	3 (3 mm \varnothing)	4 (4 mm \varnothing)
01 (1/8)	—	●	●	●	—
02 (1/4)	—	●	●	●	—
—	02 (1/4)	—	●	●	●
—	03 (3/8)	—	●	●	●

Ordering example

(Example) Series VXA31, Orifice size 1.5 mm \varnothing , Rc 1/8
 (Part no.) **VXA3114-01**

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA**
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/
TIL
- PA
- PAX
- PB

Dimensions



Symbol Model	P Port size Rc	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 For Air, Gas, Vacuum and Oil

Series VVXA31/32



- **A wide variety of applicable fluids.**
Combination of seal materials (NBR, FKM, or EPDM) can be selected freely, depending on the purpose.
- **Able to replace valves with the piping remained unchanged.**
- **N.C./N.O. switchover is easy.**
- **Weight-saving aluminum base and body.**
(Not applicable to water or steam.)

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/
TIL

PA

PAX

PB

Variations

Valve

Common (C.O.)

Material

Base, Body — Aluminum
Seal material — NBR, FKM, EPDM

Manifold

Manifold — B mount
Manifold stations — 2 to 10 stations

Model

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

Common (C.O.)

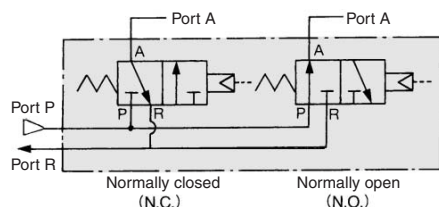
Fluid

Standard specifications	Option ^{Note)}
Air (Standard, Dry)	Vacuum (up to 1.3×10^{-1} Pa).....(V)
Vacuum (up to 1.3×10^2 Pa)	Non-leak (10^{-6} Pa·m ³ /s or less).....(V)
Turbine oil
Carbon dioxide (CO ₂), Nitrogen gas (N ₂)	Other

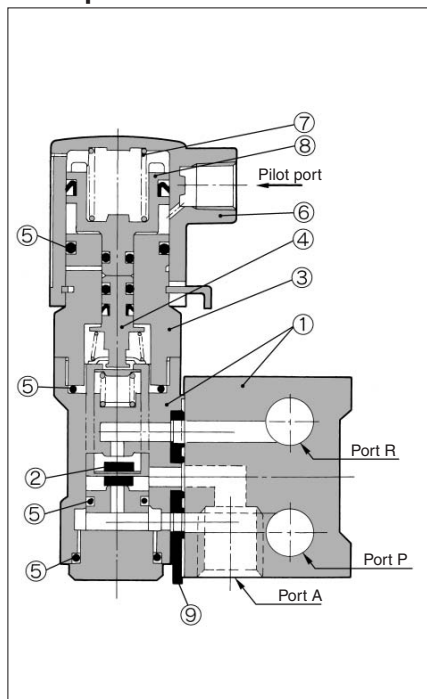


Note) Refer to page 17-3-14 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

JIS Symbol



Construction/ Principal Parts Material



No.	Description	Material	
		Standard	Option
①	Manifold body, Base	Aluminum	Brass (Base is made of aluminum.)
②	Valve assembly	NBR, Polyacetal	FKM/EPDM
③	Adapter	Aluminum	FKM/EPDM
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

Manifold Specifications

Manifold	B Mount	
Manifold type	Common supply, Common exhaust, Individual out	
Number of valves	2 to 10 stations	
Blanking plate (with gasket, screws)	VVXA31	VX011-004
	VVXA32	VX011-005

Manifold Base And Applicable Valve Part No.

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

Model/Valve Specifications

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



Note) • Add the V type (VXA31) 80 g, (VXA32) 130 g
• Refer to "Glossary" on page 17-3-15 for details of max. operating pressure differential and max. system pressure.

Operating Fluid and Ambient Temperature

Temperature conditions	Operating fluid temperature (°C)			Ambient temperature (°C)
	Air (Standard)	Oil (Standard)	Vacuum ⁽³⁾ (V)	
Maximum	60	40	40	40
Minimum	-5 ⁽¹⁾	-5 ⁽²⁾	-5	-5



Note 1) Dew point: -5°C or less
Note 2) 500 cSt or less
Note 3) "V" in parentheses is option symbol.

Tightness of Valve (Leak rate)

Seal material	Fluid		
	Air	Liquid	Non-leak, Vacuum ⁽²⁾
NBR, FKM, EPDM	1 cm ³ /min or less	0.1 cm ³ /min or less ⁽¹⁾	10 ⁻⁶ Pa·m ³ /s or less



Note 1) Differs depending on the operating conditions such as pressure, etc.
Note 2) Value on option "V" (Non-leak, Vacuum).

Pilot Pressure

Model	Pressure (MPa)
VXA31 □ 5 VXA32 □ 5	0.25 to 0.7

Direct Air Operated 3 Port Valve/Manifold For Air, Gas, Vacuum and Oil Series **VVXA31/32**

The VX* series will be revised shortly.

How to Order

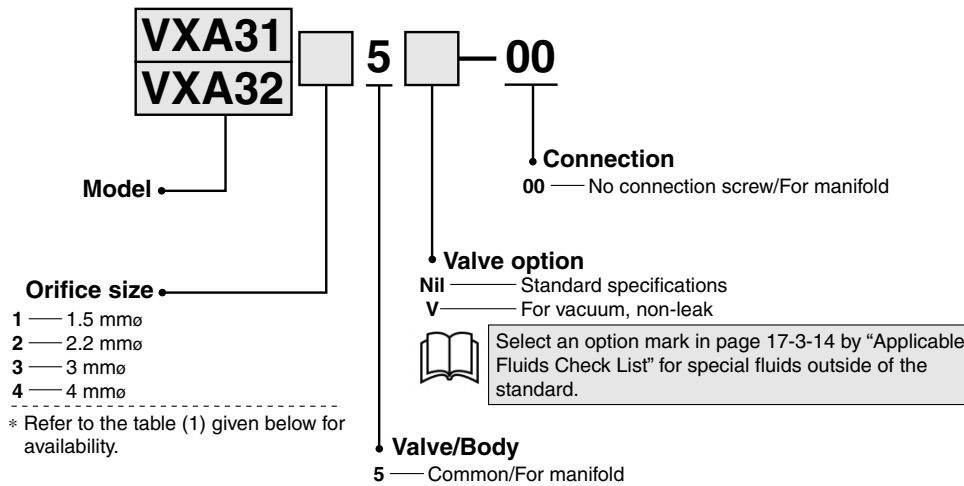
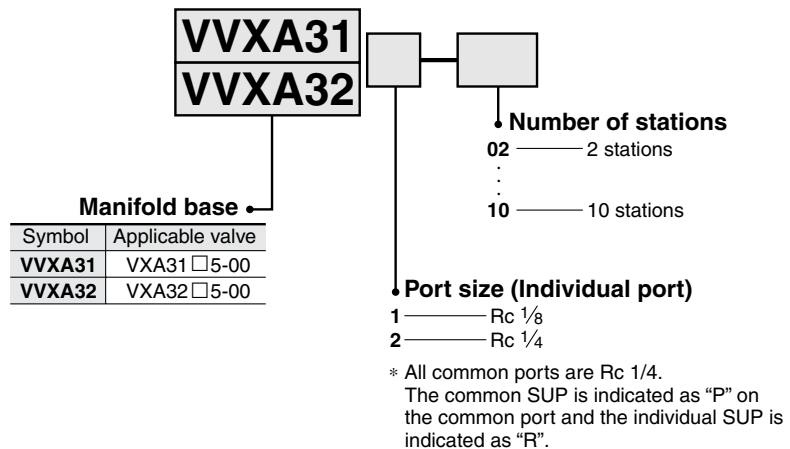


Table (1) Orifice Size

Model	Orifice size (No)			
	1 (1.5 mm \varnothing)	2 (2.2 mm \varnothing)	3 (3 mm \varnothing)	4 (4 mm \varnothing)
VXA31	●	●	●	—
VXA32	—	●	●	●

How to Order Manifold Base



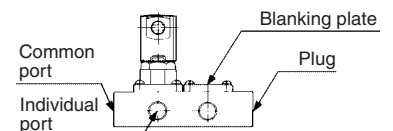
How to Order Manifold

■ Write both the base part number and the solenoid valve to be mounted or blanking plate part number.

(Example)
7 stations of VXA31, Individual port Rc 1/8

(Base P/N) VXA311-07..... 1 pc
(Valve P/N) VXA3115-00..... 6 pcs
(Blanking plate P/N) VX011-004..... 1 pc

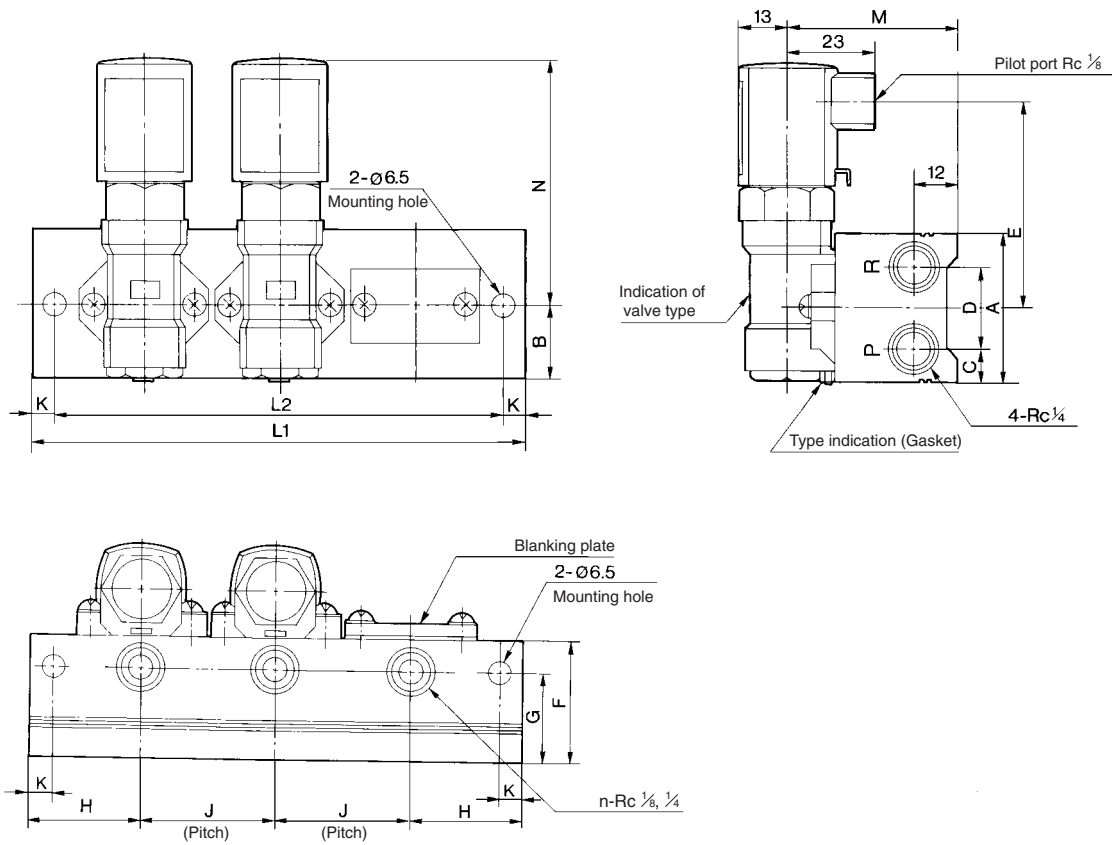
■ Arrangement of solenoid valves



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 a plug.

- VC □
- VDW
- VQ
- VX2
- VX □
- VX3
- VXA**
- VN □
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

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