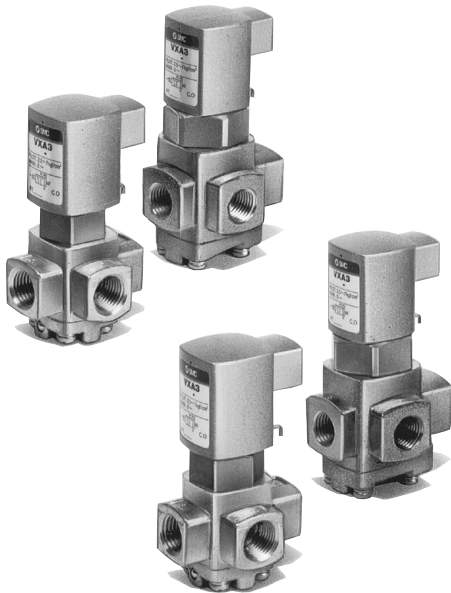


Direct Air Operated 3-Port Valve **VXA31/32 Series**

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 mm²/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

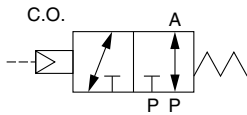
Model

| 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 ⁻⁶ Pa·m ³ /s or less)..... (V, M) |
| Turbine oil | |
| Carbon dioxide (CO ₂), Nitrogen gas (N ₂) | |



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

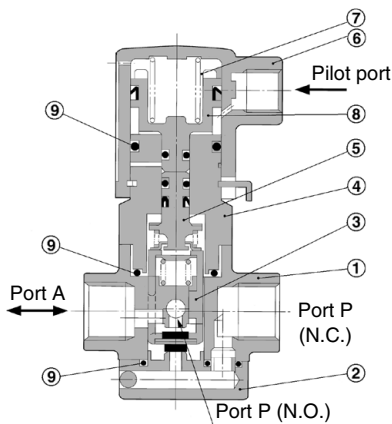
Model/Valve Specifications

| 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 ⁻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 | VXA3134 | 0.3 | 8.0 | 0.24 | 0.82 | 0.20 | 0.20 | | | | | |
| 4 | VXA3234 | 0.6 | 9.0 | 0.33 | 1.1 | 0.25 | 0.27 | | | | | | |
| | 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 | 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 | | | | | |



* 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 mm²/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 ³ /min or less | 0.1 cm ³ /min or less |

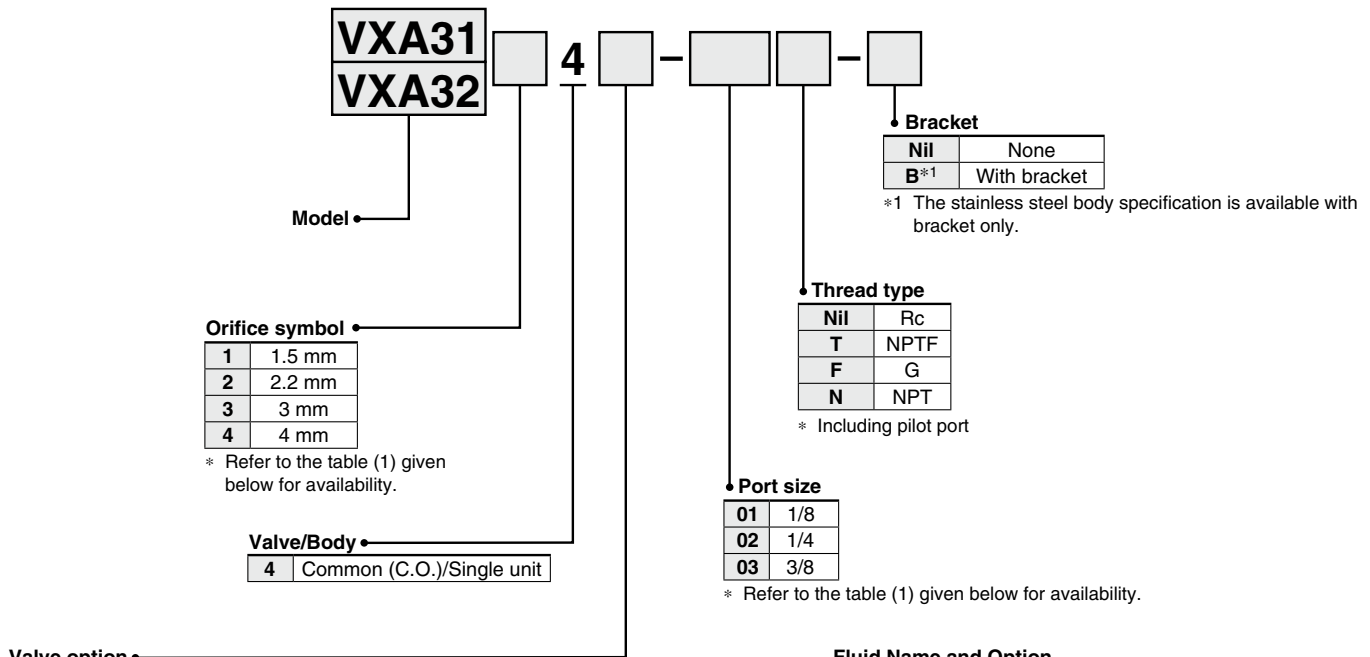


*1 Value for V and M options (Non-leak/Vacuum)

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 1.3×10^{-1} Pa) | V | M |
| Fuel oil (up to 60°C) | A | H |
| Insulation oil | A | H |
| Non-leak (10^{-6} Pa·m ³ /s) | V | M |
| Brake oil | B | P |
| Water (up to 60°C) | A | H |

* The leakage amount (10^{-6} Pa·m³/s) of "V", "M" options are values when differential pressure is 0.1 MPa.

*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

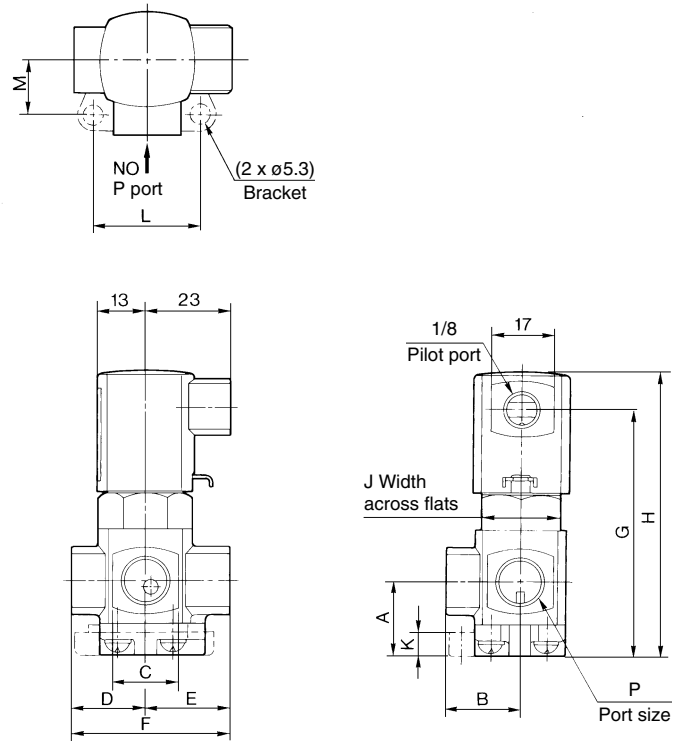
| Valve (Port size) | | Orifice dia. (Symbol) | | | |
|-------------------|----------|-----------------------|---------------|-------------|-------------|
| VXA31 | VXA32 | 1 (1.5 mm) | 2 (2.2 mm) | 3 (3 mm) | 4 (4 mm) |
| 01 (1/8) | — | ● | ● | ● | — |
| 02 (1/4) | — | ● | ● | ● | — |
| — | 02 (1/4)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

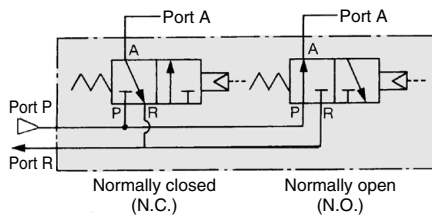
Model

| 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



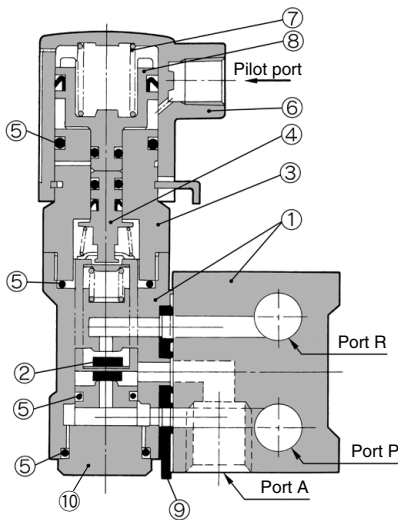
Fluid

| Standard specifications | Option*1 |
|---|--|
| Air (Standard, Dry) | Medium vacuum (Up to 0.1 Pa-abs) (V) |
| Turbine oil | Non-leak (10^{-6} Pa·m ³ /s or less) (V) |
| Carbon dioxide (CO ₂), Nitrogen gas (N ₂) | |
| | 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 ⁻⁶ m ² | Cv converted | C [dm ³ /(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 mm²/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 ³ /min or less | 0.1 cm ³ /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 1.3×10^{-1} Pa) | V |
| Vacuum pad | Standard |
| Non-leak (10^{-6} Pa·m ³ /s) | V |
| Brake oil | B |

* The leakage amount (10^{-6} Pa·m³/s) of the option "V" is a value when the differential pressure is 0.1 MPa.

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."

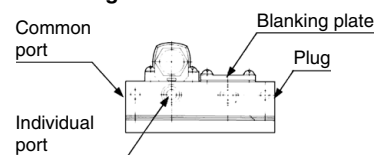
How to Order Manifold

■ 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.

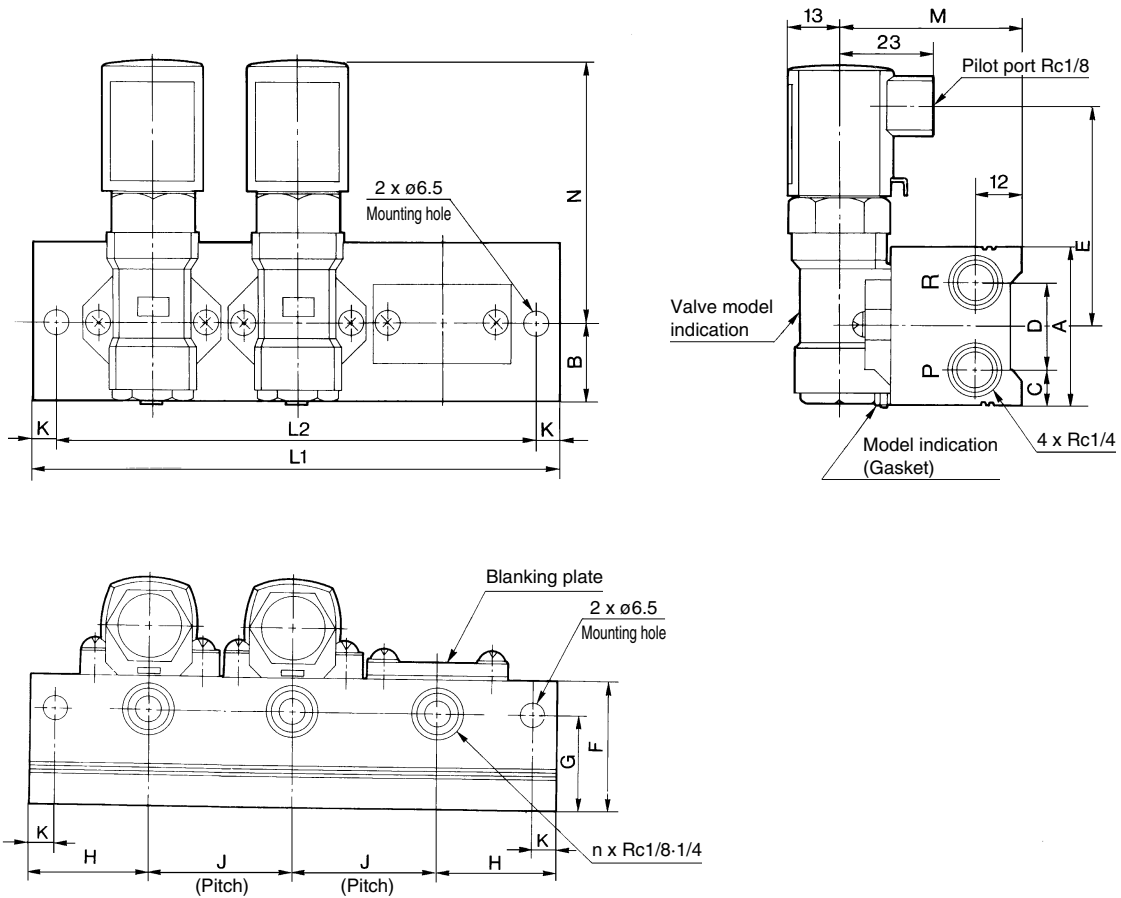
■ Arrangement of solenoid valves



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



| | | Stations | | | | | | | | | |
|--------|--------|----------|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Model | Symbol | 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 |