

Direct Operated 3 Port Solenoid Valve

Series VX31/32/33

For Air, Water, Oil, Steam



VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW

Solenoid valves for various fluids used in a wide variety of applications

Improved corrosion resistance

Special magnetic material adopted

Enclosure: Equivalent to IP65

Low-noise construction

Special construction enables to reduce the metal noise. (DC specification)

Reduced power consumption (DC specification)

VX31: 6 w → **4.5 w**

VX32: 8 w → **7 w**

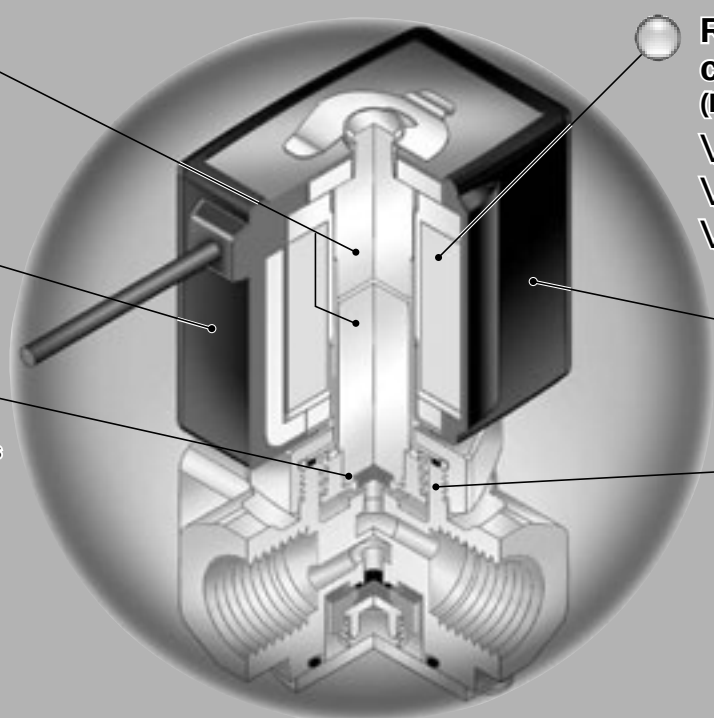
VX33: 11.5 w → **10.5 w**

Flame resistance UL94V-0 conformed

Flame resistant mold coil material

Improved maintenance performance

Maintenance is performed easily due to the threaded assembly.



Direct Operated 3 Port Solenoid Valve

Series VX31/32/33

For Air, Water, Oil, Steam



Single Unit

■ Valve

Normally closed (N.C.)
Normally open (N.O.)
Common (COM.)

■ Solenoid Coil

Coil: Class B, Class H

■ Rated Voltage

100 VAC, 200 VAC, 110 VAC,
220 VAC, 240 VAC, 230 VAC,
48 VAC, 24 VDC, 12 VDC

■ Material

Body — Brass (C37), Stainless steel
Seal — NBR, FKM, EPDM, PTFE, FFKM

■ Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



Normally Closed (N.C.) /
Normally Open (N.O.) /
Common (COM.)

Model	VX31	VX32	VX33
Orifice dia.			
1.5 mmø	●	—	—
2.2 mmø	●	●	●
3 mmø	●	●	●
4 mmø	—	●	●
Port size	1/8 1/4	1/4 3/8	1/4 3/8

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

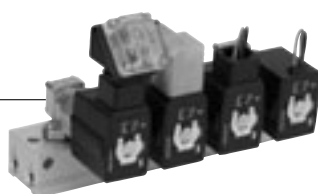
VCA

VCB

VCL

VCS

VCW



Manifold

■ Valve

Normally closed (N.C.)
Normally open (N.O.)
Common (COM.)

■ Base

Common SUP/EXH type

■ Solenoid Coil

Coil: Class B, Class H

■ Rated Voltage

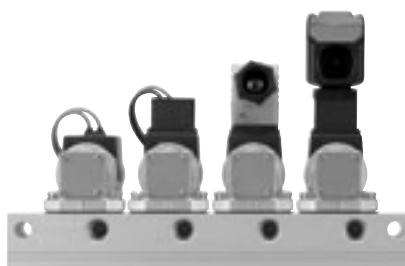
100 VAC, 200 VAC, 110 VAC,
220 VAC, 240 VAC, 230 VAC,
48 VAC, 24 VDC, 12 VDC

■ Material

Body — Brass (C37)
Base — Aluminum
Seal — NBR, FKM, EPDM

■ Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



Normally Closed (N.C.) /
Normally Open (N.O.) /
Common (COM.)

Model	VX31	VX32	VX33
Orifice dia.			
1.5 mmø	●	—	—
2.2 mmø	●	●	●
3 mmø	●	●	●
4 mmø	—	●	●
(Common SUP/EXH type) Port size	IN port	1/4	
	OUT port	1/8, 1/4	
	EXH port	1/4	

Common Specifications

Standard Specifications

Valve specifications	Valve construction		Direct operated poppet
	Withstand pressure (MPa)		3.0
	Body material		Brass (C37), Stainless steel
	Seal material		NBR, FKM, EPDM, PTFE, FFKM
	Enclosure		Dusttight, Low jetproof (equivalent to IP65)*
	Environment		Location without corrosive or explosive gases
Coil specifications	Rated voltage	AC (Class B coil, Built-in full-wave rectifier type)	100 VAC, 200 VAC, 110 VAC, 220 VAC, 230 VAC, 240 VAC, 48 VAC
		AC (Class H coil)	
		DC	
	Allowable voltage fluctuation		24 VDC, 12 VDC ±10% of rated voltage
	Allowable leakage voltage	AC (Class B coil, Built-in full-wave rectifier type)	±5% or less of rated voltage
		AC (Class H coil)	±20% or less of rated voltage
		DC	±2% or less of rated voltage
	Coil insulation type		Class B, Class H

* Electrical entry, Grommet with surge voltage suppressor (GS) has a rating of IP40.

Solenoid Coil Specifications

DC Specification

Model	Power consumption (W)	Temperature rise (°C) ^{Note)}
VX31	4.5	45
VX32	7	45
VX33	10.5	60

Note) The values are for an ambient temperature of 20°C and at the rated voltage.

AC Specification (Class B coil, Built-in full-wave rectifier type)

Model	Apparent power (VA)*	Temperature rise (°C) ^{Note)}
VX31	7	55
VX32	9.5	60
VX33	12	65

* There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC (Class B).

Note) The values are for an ambient temperature of 20°C and at the rated voltage.

AC Specification (Class H coil)

Model	Frequency (Hz)	Apparent power (VA)		Temperature rise (°C) ^{Note)}
		Inrush	Energized	
VX31	50	33	14	65
	60	28	12	60
VX32	50	65	33	100
	60	55	27	95
VX33	50	94	50	120
	60	79	41	115

Note) The values are for an ambient temperature of 20°C and at the rated voltage.

Contents

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For Steam /Single Unit	P.194	Replacement Parts	P.203

Applicable Fluid Check List

Direct Operated 3 Port Solenoid Valve Series VX31/32/33

All Options (Single Unit)  Refer to pages 184, 188, 190, 194, and 196 for specifications and models.



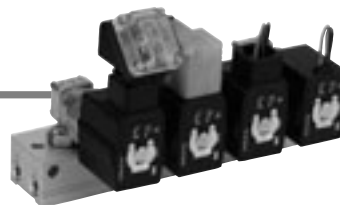
VX3 024 - - 1 -

• Option symbol

Fluid and application	Option symbol	Seal material		Body material/ Shading coil material Note 6)	Guide pin material	Coil insulation type Note 4)	Note
		Main valve poppet	Fixed sealant				
Air	Nil	NBR	NBR	Brass (C37)	PPS	B	—
	G			Stainless steel			
Medium vacuum, Non-leak, Oil-free	M Note 1, 2)	FKM	FKM	Stainless steel	PPS	B	
	V Note 1, 2)			Brass (C37)			
Water	Nil	NBR	NBR	Brass (C37)	PPS	B	
	G			Stainless steel			
Heated water	E	EPDM	EPDM	Brass (C37)/Cu	Stainless steel	H	
	P			Stainless steel/Ag			
Oil Note 3)	A	FKM	FKM	Brass (C37)	PPS	B	
	H			Stainless steel			
	D			Brass (C37)/Cu	Stainless steel	H	
	N			Stainless steel/Ag			
Steam (Max.183°C)	S	FFKM	PTFE	Brass (C37)/Cu	Stainless steel	H	COM. only
	Q			Stainless steel/Ag			
Copper-free, Fluorine-free Note 5)	J	EPDM	EPDM	Stainless steel	PPS	B	—
	P			Stainless steel/Ag	Stainless steel	H	
Others	B	EPDM	EPDM	Brass (C37)	PPS	B	COM. only
	C	FFKM	PTFE		Stainless steel		
	K Note 1, 2)			COM. only, Oil-free			

* If using for other fluids, please consult with SMC.

All Options (Manifold)  Refer to pages 186, 192, and 198 for specifications and models.



VX3 135 - 00 - 1

• Option symbol

Fluid and application	Option symbol	Seal material		Body material/ Shading coil material Note 6)	Guide pin material	Coil insulation type Note 4)
		Main valve poppet	Fixed sealant			
Air	Nil	NBR	NBR	Brass (C37)	PPS	B
Medium vacuum, Non-leak, Oil-free	V Note 1, 2)	FKM	FKM	Brass (C37)	PPS	B
Oil Note 3)	A	FKM	FKM	Brass (C37)	PPS	B
	D			Brass (C37)/Cu	Stainless steel	H
Others	B	EPDM	EPDM	Brass (C37)	PPS	B
	E			Brass (C37)/Cu	Stainless steel	H

* Aluminum is only available with the material for a manifold base.

** If using for other fluids, please consult with SMC.

Note 1) The leakage amount (10⁻⁶ Pa·m³/s) of "V", "M" options are values when differential pressure is 0.1 MPa.

Note 2) "V", "M" and "K" options are for oil-free treatment.

Note 3) The dynamic viscosity of the fluid must not exceed 50 mm²/s.

Note 4) Coil insulation type Class H: AC spec. only, Class B/AC spec.: built-in full-wave rectifier type only

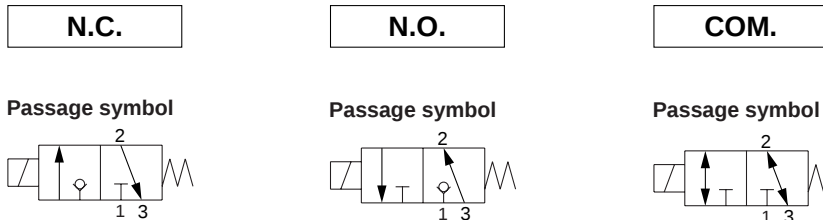
Note 5) The nuts (non-welded parts) are nickel plated on the Brass (C37) material.

Note 6) There is no shading coil attached to DC spec. or Class B/AC spec.

For Air /Single Unit

(Inert gas, Non-leak, Medium vacuum)

Model / Valve Specifications



Port size	Orifice diameter (mmø)	Model	Max. operating pressure differential (MPa)			Flow characteristics			Max. system pressure (MPa)	^{Note)} Mass (g)
			N.C.	N.O.	COM.	C[dm³/(s·bar)]	b	Cv		
1/8 (6A)	1.5	VX311□-01	1	1	0.7	0.29	0.32	0.08	2.0	380
	2.2	VX312□-01	0.7	0.5	0.4	0.60	0.25	0.15		
	3	VX313□-01	0.3	0.3	0.2	0.82	0.20	0.20		
1/4 (8A)	1.5	VX311□-02	1	1	0.7	0.29	0.32	0.08		
	2.2	VX312□-02	0.7	0.5	0.4	0.60	0.25	0.15		
		VX322□-02	1.2	1	0.7	0.64	0.40	0.17		
		VX332□-02	1.6	1.6	1					
	3	VX313□-02	0.3	0.3	0.2	0.82	0.20	0.20		
		VX323□-02	0.6	0.5	0.3	1.1	0.25	0.27		
		VX333□-02	1	0.9	0.6					
	4	VX324□-02	0.3	0.25	0.2	1.6	0.20	0.38		
		VX334□-02	0.5	0.4	0.3					
3/8 (10A)	2.2	VX322□-03	1.2	1	0.7	0.64	0.40	0.17		
		VX332□-03	1.6	1.6	1					
	3	VX323□-03	0.6	0.5	0.3	1.1	0.25	0.27		
		VX333□-03	1	0.9	0.6					
	4	VX324□-03	0.3	0.25	0.2	1.6	0.20	0.38		
		VX334□-03	0.5	0.4	0.3					

Note) Mass of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Also, add 60 g for VX31□□, 80 g for VX32□□ and VX33□□ respectively for bracket option.

- Refer to "Glossary of Terms" on page 26, for details on the max. operating pressure differential and the max. system pressure.

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (symbol)		
	Nil, G	V, M	
AC	−10 ^(Note) to 60	−10 ^(Note) to 40	−20 to 60
DC	−10 ^(Note) to 60	−10 ^(Note) to 40	−20 to 40

Note) Dew point temperature: -10°C or less

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Max. operating pressure differential	Leakage rate	
		Air	Non-leak, Medium vacuum ^{Note)}
NBR, FKM	From 0 to less than 1 MPa	1 cm ³ /min or less	10 ⁻⁶ Pa·m ³ /sec or less
	1 MPa or more	2 cm ³ /min or less	

Note) The leakage amount (10⁻⁶ Pa·m³/sec) for the "V" and "M" option are values when the differential pressure is 0.1 MPa.

Direct Operated 3 Port Solenoid Valve *Series* **VX31/32/33**

For Air / Single Unit

How to Order (Single Unit)

DC **VX** **31** **1** **4** **□** **□** - **01** **□** - **5** **G** **1** - **□**

AC/Class B coil (Built-in full-wave rectifier type) **VX** **31** **1** **4** **□** **□** - **01** **□** - **1** **G** **R1** - **□**

Model Refer to Table (1) shown below for availability.

Orifice diameter Refer to Table (1) shown below for availability.

Valve / Body type

0	N.C. / Single unit
2	N.O. / Single unit
4	COM. / Single unit

Solenoid valve option Refer to Table (2) shown below for availability.

Port size Refer to Table (1) shown below for availability.

Suffix

Nil	—
Z	Oil-free spec.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

* Refer to Table (3) shown below for availability.

Electrical entry

G - Grommet GS - With grommet surge voltage suppressor	C - Conduit
T - With conduit terminal TS - With conduit terminal and surge voltage suppressor TL - With conduit terminal and light TZ - With conduit terminal, surge voltage suppressor and light	D - DIN terminal DS - DIN terminal with surge voltage suppressor DL - DIN terminal with light DZ - DIN terminal with surge voltage suppressor and light DO - For DIN terminal (without connector, gasket is included.)

* Refer to Table (3) for available combinations between each electrical option (S, L, Z) and rated voltage.
 * Surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Bracket

Nil	None
B	With bracket

* Bracket is neither mountable nor removable.

Built-in full-wave rectifier type

Connector

Table (1) Model/Orifice Diameter/Port Size

Solenoid valve model				Orifice symbol (Diameter)			
Model	VX31	VX32	VX33	1 (1.5 mmø)	2 (2.2 mmø)	3 (3 mmø)	4 (4 mmø)
Port symbol (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material/ Shading coil material	Guide pin material	Coil insulation type	Note ^{Note)}
	Main valve poppet	Fixed sealant				
Nil			Brass (C37)			
G	NBR	NBR	Stainless steel			
M			Stainless steel	PPS	B	
V	FKM	FKM	Brass (C37)			Non-leak (10 ⁻⁶ Pa·m ³ /sec), Medium vacuum (0.1 Pa.abs), Oil-free

Note) The leakage amount (10⁻⁶ Pa·m³/sec) for the "V" and "M" option are values when the differential pressure is 0.1 MPa.

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V		●	
	2	200 V		●	
	3	110 V		●	
	4	220 V	— Note)	●	— Note)
	7	240 V		—	
	8	48 V		—	
DC	J	230 V		—	
	5	24 V	●	●	●
	6	12 V	●	—	—

Note 1) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

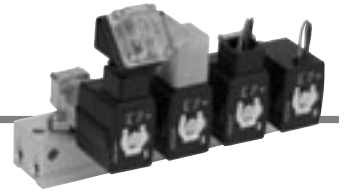
* Class H coil is not available.

Series VVX31/32/33

For Air /Manifold

(Inert gas, Non-leak, Medium vacuum)

Solenoid Valve for Manifold / Valve Specifications



N.C.	N.O.	COM.
Passage symbol 	Passage symbol 	Passage symbol

Orifice diameter (mmø)	Model	Max. operating pressure differential (MPa)			Flow characteristics			Max. system pressure (MPa)
		N.C.	N.O.	COM.	C[dm³/(s·bar)]	b	Cv	
1.5	VX311□-00	1	1	0.7	0.29	0.32	0.08	2.0
2.2	VX312□-00	0.7	0.5	0.4	0.60	0.25	0.15	
	VX322□-00	1.2	1	0.7	0.64	0.40	0.17	
	VX332□-00	1.6	1.6	1				
3	VX313□-00	0.3	0.3	0.2	0.82	0.20	0.20	
	VX323□-00	0.6	0.5	0.3	1.1	0.25	0.27	
	VX333□-00	1	0.9	0.6				
4	VX324□-00	0.3	0.25	0.2	1.6	0.20	0.38	
	VX334□-00	0.5	0.4	0.3				



• Refer to "Glossary of Terms" on page 26 for details on the max. operating pressure differential and the max. system pressure.

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (symbol)		
	Nil	V	
AC	-10 ^{Note)} to 60	-10 ^{Note)} to 40	-20 to 60
DC	-10 ^{Note)} to 60	-10 ^{Note)} to 40	-20 to 40



Note) Dew point temperature: -10°C or less

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Max. operating pressure differential	Leakage rate	
		Air	Non-leak, Medium vacuum ^{Note)}
NBR, FKM	From 0 to less than 1 MPa	1 cm ³ /min or less	10 ⁻⁶ Pa·m ³ /sec or less
	1 MPa or more	2 cm ³ /min or less	



Note) The leakage amount (10⁻⁶ Pa·m³/sec) for the "V" option are values when the differential pressure is 0.1 MPa.

How to Order (Solenoid Valve for Manifold)

DC

AC/Class B coil (Built-in full-wave rectifier type)

Model
Refer to Table (1) shown below for availability.

Valve / Body type

1	N.C. / Manifold
3	N.O. / Manifold
5	COM. / Manifold

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

* Refer to Table (3) shown below for availability.

Refer to page 203 for ordering coil only.

VX 31 1 1 -00-5 G 1

VX 31 1 1 -00-1 GR1

Orifice diameter
Refer to Table (1) shown below for availability.

Suffix

Nil	—
Z	Oil-free spec.

Solenoid valve option
Refer to Table (2) shown below for availability.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor

T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

C - Conduit

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

* DIN type is available with class B only.

Built-in full-wave rectifier type

How to Order Manifold Bases

VVX31
VVX32
VVX33

1 -07-1

Number of manifolds

02	2 stations
10	10 stations

Port size (Individual port)

1	Rc 1/8
2	Rc 1/4

* Common port sizes are all Rc 1/4.
** Indicating numbers shown below are for common ports.

Type	SUP port	EXH port
N.C.	1	3
N.O.	3	1

Suffix

Nil	—
Z	Oil-free spec.

Manifold base

Blanking plate part no.

For VX31: VVX31-4A-
For VX32/33: VVX32-4A-
Seal material

Nil	NBR
F	FKM

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX311-05-1 1 set “*” is the symbol for mounting.
* VX3111-00-1GR1 ... 4 sets Add an “*” in front of the part numbers for solenoid valves, etc. to be mounted.
* VVX31-4A 1 set

Enter the product's part number in order, counting the 1st station from the left in the manifold arrangement, when viewing the individual port in front. The common port on the right side is plugged.

* Refer to Table (3) for available combinations between each electrical option (S, L, Z) and rated voltage.
* Surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Table (1) Model/Orifice Diameter

Solenoid valve model	Orifice symbol (Diameter)			
	1 (1.5 mmφ)	2 (2.2 mmφ)	3 (3 mmφ)	4 (4 mmφ)
VX31	●	●	●	—
VX32	—	●	●	●
VX33	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material	Guide pin material	Coil insulation type	Note (Note)
	Main valve poppet	Fixed sealant				
Nil	NBR	NBR	Brass (C37)	PPS	B	Non-leak (10^{-6} Pa·m ³ /sec), Medium vacuum (0.1 Pa.abs), Oil-free
V	FKM	FKM				

* Aluminum is only available as a material for the manifold base.

Note) The leakage amount (10^{-6} Pa·m³/sec) for the “V” option are values when the differential pressure is 0.1 MPa.

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V	— (Note)	●	— (Note)
	2	200 V		●	
	3	110 V		●	
	4	220 V		●	
	7	240 V		—	
	8	48 V		—	
DC	J	230 V	●	—	—
	5	24 V		●	
	6	12 V		—	

* Class H coil is not available.

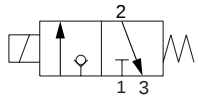
Note) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

For Water /Single Unit

Model / Valve Specifications

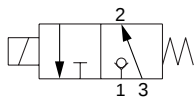
N.C.

Passage symbol



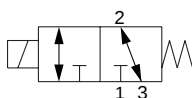
N.O.

Passage symbol



COM.

Passage symbol



Port size	Orifice diameter (mmø)	Model	Max. operating pressure differential (MPa)			Flow characteristics		Max. system pressure (MPa)	^{Note)} Mass (g)	
			N.C.	N.O.	COM.	Av x 10 ⁻⁶ m ²	Cv converted			
1/8 (6A)	1.5	VX311□-01	1	1	0.7	1.9	0.08	2.0	380	
	2.2	VX312□-01	0.7	0.5	0.4	3.8	0.16			
	3	VX313□-01	0.3	0.3	0.2	5.8	0.24			
1/4 (8A)	1.5	VX311□-02	1	1	0.7	1.9	0.08		530	
	2.2	VX312□-02	0.7	0.5	0.4	3.8	0.16			
		VX322□-02	1.2	1	0.7	4.6	0.19			
		VX332□-02	1.6	1.6	1					
	3	VX313□-02	0.3	0.3	0.2	5.8	0.24			
		VX323□-02	0.6	0.5	0.3	7.9	0.33			
		VX333□-02	1	0.9	0.6					
	4	VX324□-02	0.3	0.25	0.2	12	0.50			
		VX334□-02	0.5	0.4	0.3					
3/8 (10A)	2.2	VX322□-03	1.2	1	0.7	4.6	0.19		530	
		VX332□-03	1.6	1.6	1					
	3	VX323□-03	0.6	0.5	0.3	7.9	0.33			530
		VX333□-03	1	0.9	0.6					
	4	VX324□-03	0.3	0.25	0.2	12	0.50			530
		VX334□-03	0.5	0.4	0.3					



Note) Mass of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Also, add 60 g for VX31□□, 80 g for VX32□□ and VX33□□ respectively for bracket option.

• Refer to "Glossary of Terms" on page 26, for details on the max. operating pressure differential and the max. system pressure.

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (Symbol)		
	Ni, G, H	E, P	
AC	1 to 60	1 to 99	−20 to 60
DC	1 to 40	—	−20 to 40



Note) With no freezing

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Max. operating pressure differential	Leakage rate (Water)
NBR, FKM, EPDM	From 0 to less than 1 MPa 1 MPa or more	0.1 cm ³ /min or less 0.2 cm ³ /min or less

Direct Operated 3 Port Solenoid Valve *Series* **VX31/32/33**

For Water / Single Unit

How to Order (Single Unit)

DC, AC/Class H coil **VX 31 1 4** **01** **1 G** **1**

AC/Class B coil (Built-in full-wave rectifier type) **VX 31 1 4** **01** **1 G R1**

Model Refer to Table (1) shown below for availability.

Orifice diameter Refer to Table (1) shown below for availability.

Valve / Body type

0	N.C. / Single unit
2	N.O. / Single unit
4	COM. / Single unit

Solenoid valve option Refer to Table (2) shown below for availability.

Port size Refer to Table (1) shown below for availability.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Suffix

Nil	—
Z	Oil-free spec.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

* Refer to Table (3) shown below for availability.

Refer to page 203 for ordering coil only.

Bracket

Nil	None
B	With bracket

* Bracket is neither mountable nor removable.

Built-in full-wave rectifier type

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor

C - Conduit

T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector

* DIN type is available with class B only.

* Refer to Table (3) for available combinations between each electrical option (S, L, Z) and rated voltage.

* Surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Table (1) Model/Orifice Diameter/Port Size

Solenoid valve model				Orifice symbol (Diameter)			
Model	VX31	VX32	VX33	1 (1.5 mmø)	2 (2.2 mmø)	3 (3 mmø)	4 (4 mmø)
Port symbol (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material/ Shading coil material	Guide pin material	Coil insulation type	Note
	Main valve poppet	Fixed sealant				
Nil			Brass (C37)	PPS	B	—
G	NBR	NBR	Stainless steel			
E	EPDM	EPDM	Brass (C37)/Cu	Stainless steel	H	Heated water
P			Stainless steel/Ag			
H	FKM	FKM	Stainless steel	PPS	B	—

Table (3) Rated Voltage – Electrical Option

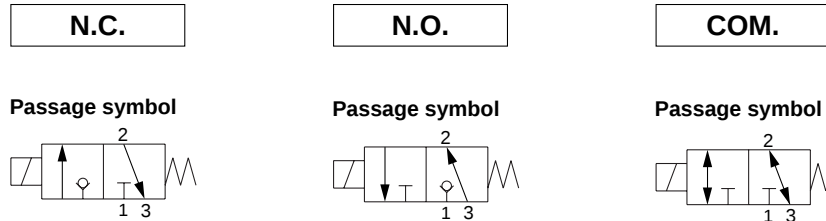
Rated voltage			Class B		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V	— Note)	●	— Note)
	2	200 V		●	
	3	110 V		●	
	4	220 V		●	
	7	240 V		—	
	8	48 V		—	
	J	230 V		—	
DC	5	24 V	●	●	●
	6	12 V	●	—	—

Note) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Rated voltage			Class H		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V	●	●	●
	2	200 V	●	●	●
	3	110 V	●	●	●
	4	220 V	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
	J	230 V	●	—	—
DC	5	24 V	DC specification is not available.		
	6	12 V			

For Oil /Single Unit

Model / Valve Specifications



Port size	Orifice diameter (mmø)	Model	Max. operating pressure differential (MPa)			Flow characteristics		Max. system pressure (MPa)	Mass (g) ^{Note)}
			N.C.	N.O.	COM.	Av x 10 ⁻⁶ m²	Cv converted		
1/8 (6A)	1.5	VX311□-01	1	1	0.7	1.9	0.08	2.0	380
	2.2	VX312□-01	0.7	0.5	0.4	3.8	0.16		
	3	VX313□-01	0.3	0.3	0.2	5.8	0.24		
1/4 (8A)	1.5	VX311□-02	1	1	0.7	1.9	0.08		
	2.2	VX312□-02	0.7	0.5	0.4	3.8	0.16		
		VX322□-02	1.2	1	0.7	4.6	0.19		
		VX332□-02	1.6	1.6	1				
	3	VX313□-02	0.3	0.3	0.2	5.8	0.24		
		VX323□-02	0.6	0.5	0.3	7.9	0.33		
		VX333□-02	1	0.9	0.6				
4	VX324□-02	0.3	0.25	0.2	12	0.50			
	VX334□-02	0.5	0.4	0.3					
3/8 (10A)	2.2	VX322□-03	1.2	1	0.7	4.6	0.19		
		VX332□-03	1.6	1.6	1				
		3	VX323□-03	0.6	0.5	0.3	7.9		0.33
	VX333□-03		1	0.9	0.6				
	4	VX324□-03	0.3	0.25	0.2	12	0.50		
		VX334□-03	0.5	0.4	0.3				

Note) Mass of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.
Also, add 60 g for VX31□□, 80 g for VX32□□ and VX33□□ respectively for bracket option.
• Refer to "Glossary of Terms" on page 26, for details on the max. operating pressure differential and the max. system pressure.

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (Symbol)		
	A, H	D, N	
AC	-5 ^{Note)} to 60	-5 ^{Note)} to 120	-20 to 60
DC	-5 ^{Note)} to 40	—	-20 to 40

Note) Dynamic viscosity: 50 mm²/s or less

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Max. operating pressure differential	Leakage rate (Oil)
FKM	From 0 to less than 1 MPa	0.1 cm ³ /min or less
	1 MPa or more	0.2 cm ³ /min or less

Direct Operated 3 Port Solenoid Valve *Series VX31/32/33*

For Oil / Single Unit

How to Order (Single Unit)

DC, AC/Class H coil **VX 31 1 4 A** **01** **1 G** **1**

AC/Class B coil (Built-in full-wave rectifier type) **VX 31 1 4 A** **01** **1 G R1**

Model • Refer to Table (1) shown below for availability.

Orifice diameter • Refer to Table (1) shown below for availability.

Valve / Body type

0	N.C. / Single unit
2	N.O. / Single unit
4	COM. / Single unit

Solenoid valve option • Refer to Table (2) shown below for availability.

Port size • Refer to Table (1) shown below for availability.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Suffix

Nil	—
Z	Oil-free spec.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

* Refer to Table (3) shown below for availability.

Refer to page 203 for ordering coil only.

Bracket

Nil	None
B	With bracket

* Bracket is neither mountable nor removable.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor

C - Conduit

T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector

* DIN type is available with class B only.

* Refer to Table (3) for available combinations between each electrical option (S, L, Z) and rated voltage.

* Surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Table (1) Model/Orifice Diameter/Port Size

Solenoid valve model				Orifice symbol (Diameter)			
Model	VX31	VX32	VX33	1 (1.5 mmø)	2 (2.2 mmø)	3 (3 mmø)	4 (4 mmø)
Port symbol (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material/ Shading coil material	Guide pin material	Coil insulation type
	Main valve poppet	Fixed sealant			
A	FKM	FKM	Brass (C37)	PPS	B
H			Stainless steel		
D			Brass (C37)/Cu	Stainless steel	H
N			Stainless steel/Ag		

* The additives contained in oil are different depending on the type and manufacturers, so the durability of the seal materials will vary. For details, please consult with SMC.

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V	— Note)	●	— Note)
	2	200 V		●	
	3	110 V		●	
	4	220 V		●	
	7	240 V		—	
	8	48 V		—	
	J	230 V		—	
DC	5	24 V	●	●	●
	6	12 V	●	—	—

Note) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Rated voltage			Class H		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V	●	●	●
	2	200 V	●	●	●
	3	110 V	●	●	●
	4	220 V	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
	J	230 V	●	—	—
DC	5	24 V	DC specification is not available.		
	6	12 V			

For Oil /Manifold

Solenoid Valve for Manifold / Valve Specifications

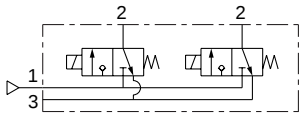


N.C.

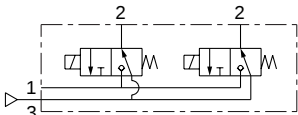
N.O.

COM.

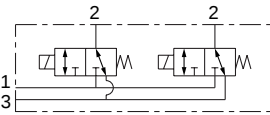
Passage symbol



Passage symbol



Passage symbol



Orifice diameter (mmø)	Model	Max. operating pressure differential (MPa)			Flow characteristics		Max. system pressure (MPa)
		N.C.	N.O.	COM.	Av x 10 ⁻⁶ m ²	Cv converted	
1.5	VX311□-00	1	1	0.7	1.9	0.08	2.0
2.2	VX312□-00	0.7	0.5	0.4	3.8	0.16	
	VX322□-00	1.2	1	0.7	4.6	0.19	
	VX332□-00	1.6	1.6	1			
3	VX313□-00	0.3	0.3	0.2	5.8	0.24	
	VX323□-00	0.6	0.5	0.3	7.9	0.33	
	VX333□-00	1	0.9	0.6			
4	VX324□-00	0.3	0.25	0.2	12	0.50	
	VX334□-00	0.5	0.4	0.3			



• Refer to "Glossary of Terms" on page 26 for details on the max. operating pressure differential and the max. system pressure.

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (Symbol)		
	A	D	
AC	-5 ^{Note)} to 60	-5 ^{Note)} to 120	-20 to 60
DC	-5 ^{Note)} to 40	—	-20 to 40



Note) Dynamic viscosity: 50 mm²/s or less

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Max. operating pressure differential	Leakage rate (Oil)
FKM	From 0 to less than 1 MPa	0.1 cm ³ /min or less
	1 MPa or more	0.2 cm ³ /min or less

How to Order (Solenoid Valve for Manifold)

DC, AC/Class H coil VX **31** **1** **1** **A** **-00-1 G 1**

AC/Class B coil (Built-in full-wave rectifier type) VX **31** **1** **1** **A** **-00-1 G R1**

Model
Refer to Table (1) shown below for availability.

Orifice diameter
Refer to Table (1) shown below for availability.

Valve / Body type

1	N.C. / Manifold
3	N.O. / Manifold
5	COM. / Manifold

Solenoid valve option
Refer to Table (2) shown below for availability.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

Suffix

Nil	—
Z	Oil-free spec.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor

C - Conduit

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

* Refer to Table (3) shown below for availability.

Refer to page 203 for ordering coil only.

How to Order Manifold Bases

VVX31
VVX32
VVX33

1 **-07-1**

Manifold base

Suffix

Nil	—
Z	Oil-free spec.

Number of manifolds

02	2 stations
10	10 stations

Port size (Individual port)

1	Rc 1/8
2	Rc 1/4

* Common port sizes are all Rc 1/4.
** Indicating numbers shown below are for common ports.

Type	SUP port	EXH port
N.C.	1	3
N.O.	3	1

Blanking plate part no.

For VX31: VVX31-4A-F

For VX32/33: VVX32-4A-F

Seal material: FKM

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX311-05-1 1 set
* VX311A-00-1GR1... 4 sets
* VVX31-4A-F..... 1 set

"*" is the symbol for mounting.
Add an "*" in front of the part numbers for solenoid valves, etc. to be mounted.

Enter the product's part number in order, counting the 1st station from the left in the manifold arrangement, when viewing the individual port in front.
The common port on the right side is plugged.

Table (1) Model/Orifice/Diameter

Solenoid valve model	Orifice symbol (Diameter)			
	1 (1.5 mmø)	2 (2.2 mmø)	3 (3 mmø)	4 (4 mmø)
VX31	●	●	●	—
VX32	—	●	●	●
VX33	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material/ Shading coil material	Guide pin material	Coil insulation type
	Main valve poppet	Fixed sealant			
A	FKM	FKM	Brass (C37)	PPS	B
D			Brass (C37)/Cu	Stainless steel	H

* Aluminum is only available as a material for the manifold base.

* The additives contained in oil are different depending on the type and manufacturers, so the durability of the seal materials will vary. For details, please consult with SMC.

Table (3) Rated Voltage – Electrical Entry – Electrical Option

Rated voltage		Class B			Class H		
		S	L	Z	S	L	Z
AC/DC	Voltage symbol	Voltage			Voltage		
AC	1	100 V	●	—	●	●	●
	2	200 V	●	—	●	●	●
	3	110 V	●	—	●	●	●
	4	220 V	—	—	●	●	●
	7	240 V	—	—	●	—	—
	8	48 V	—	—	●	—	—
DC	J	230 V	—	—	●	—	—
	5	24 V	●	●	DC specification is not available.		
	6	12 V	●	—			

Note) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

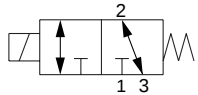
Series VX31/32/33

For Steam /Single Unit

Model / Valve Specifications

COM.

Passage symbol



Port size	Orifice diameter (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)	^{Note)} Mass (g)
			COM.	Av x 10 ⁻⁶ m ²	Cv converted		
1/8 (6A)	1.5	VX3114-01	0.7	1.9	0.08	1.0	380
	2.2	VX3124-01	0.4	3.8	0.16		
	3	VX3134-01	0.2	5.8	0.24		
1/4 (8A)	1.5	VX3114-02	0.7	1.9	0.08		530
	2.2	VX3124-02	0.4	3.8	0.16		
		VX3224-02	0.7	4.6	0.19		
		VX3324-02	1				
	3	VX3134-02	0.2	5.8	0.24		
		VX3234-02	0.3	7.9	0.33		
		VX3334-02	0.6				
	4	VX3244-02	0.2	12	0.50		
		VX3344-02	0.3				
3/8 (10A)	2.2	VX3224-03	0.7	4.6	0.19		730
		VX3324-03	1				
	3	VX3234-03	0.3	7.9	0.33		
		VX3334-03	0.6				
	4	VX3244-03	0.2	12	0.50	530	
		VX3344-03	0.3				



(Note) Mass of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Also, add 60 g for VX31□□, 80 g for VX32□□ and VX33□□ respectively for bracket option.

- Refer to "Glossary of Terms" on page 26, for details on the max. operating pressure differential and the max. system pressure.

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)	Ambient temperature (°C)
	Solenoid valve option (Symbol)	
	S, Q	
AC	183	-20 to 60

Valve Leakage Rate

Internal Leakage

Seal material	Leakage rate (Air)
FFKM	150 cm ³ /min or less

External Leakage

Seal material	Leakage rate (Air)
PTFE	1 cm ³ /min or less

Direct Operated 3 Port Solenoid Valve *Series* **VX31/32/33**

For Steam / Single Unit

How to Order (Single Unit)

Model • Refer to Table (1) shown below for availability.

Orifice diameter • Refer to Table (1) shown below for availability.

Valve / Body type

4	COM. / Single unit
---	--------------------

Solenoid valve option • Refer to Table (2) shown below for availability.

Port size • Refer to Table (1) shown below for availability.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Suffix

Nil	—
Z	Oil-free spec.

Rated voltage

1	100 VAC 50/60 Hz	7	240 VAC 50/60 Hz
2	200 VAC 50/60 Hz	8	48 VAC 50/60 Hz
3	110 VAC 50/60 Hz	J	230 VAC 50/60 Hz
4	220 VAC 50/60 Hz		

* Refer to Table (3) shown below for availability.

Bracket

Nil	None
B	With bracket

* Bracket is neither mountable nor removable.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor

C - Conduit

T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

Refer to page 203 for ordering coil only.

* Refer to Table (3) for available combinations between each electrical option (S, L, Z) and rated voltage.

Table (1) Model/Orifice Diameter/Port Size

Solenoid valve model				Orifice symbol (Diameter)			
Model	VX31	VX32	VX33	1 (1.5 mmø)	2 (2.2 mmø)	3 (3 mmø)	4 (4 mmø)
Port symbol (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material/ Shading coil material	Guide pin material	Coil insulation type
	Main valve poppet	Fixed sealant			
S	FFKM	PTFE	Brass (C37)/Cu	Stainless steel	H
Q	FFKM	PTFE	Stainless steel/Ag	Stainless steel	H

Solenoid coil: AC/Class H only

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class H		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With light and surge voltage suppressor
AC	1	100 V	●	●	●
	2	200 V	●	●	●
	3	110 V	●	●	●
	4	220 V	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
DC	J	230 V	●	—	—
	5	24 V	DC specification is not available.		
	6	12 V			

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW

For Vacuum Pad / Single Unit Series **VXV31/32/33**

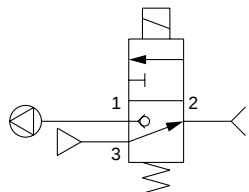
- Vacuum circuit side is suited for a large orifice. Supply pressure side is suited for high pressure and a vacuum pad.
- Construction and dimensions are the same as the VX3 series.

Model / Valve Specifications

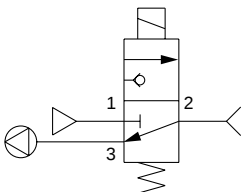
N.C.

N.O.

Passage symbol (example)



Passage symbol (example)



Port size	Orifice diameter (mmø)		Model	Operating pressure* (MPa)		Flow characteristics						Max. system pressure (MPa)	Mass ^{Note)} (g)				
	Port 1 side	Port 3 side		Port 1 side	Port 3 side	Passage: 1↔2			Passage: 2↔3								
						C[dm ³ / (s·bar)]	b	Cv	C[dm ³ / (s·bar)]	b	Cv						
1/8 (6A)	3	1.5	VXV3130-01	Low vacuum	0 to 0.5	0.82	0.20	0.20	0.29	0.32	0.08	2.0	380				
	1.5	3	VXV3132-01	0 to 0.5	Low vacuum	0.29	0.32	0.08	0.82	0.20	0.20						
1/4 (8A)	3	1.5	VXV3130-02	Low vacuum	0 to 0.5	0.82	0.20	0.20	0.29	0.32	0.08			530			
	1.5	3	VXV3132-02	0 to 0.5	Low vacuum	0.29	0.32	0.08	0.82	0.20	0.20				730		
	4	2.2	VXV3240-02	Low vacuum	0 to 0.5	1.6	0.20	0.38	0.64	0.40	0.17		530				
			VXV3340-02		0 to 0.9											730	
	2.2	4	VXV3242-02	Low vacuum	0 to 0.5	0.64	0.40	0.17	1.6	0.20	0.38						530
			VXV3342-02		0 to 0.9												
3/8 (10A)	4	2.2	VXV3240-03	Low vacuum	0 to 0.5	1.6	0.20	0.38	0.64	0.40	0.17			530			
			VXV3340-03		0 to 0.9										730		
	2.2	4	VXV3242-03	Low vacuum	0 to 0.5	0.64	0.40	0.17	1.6	0.20	0.38		530				
			VXV3342-03		0 to 0.9											730	



Note) Mass of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Also, add 60 g for VX31□□, 80 g for VX32□□ and VX33□□ respectively for bracket option.

• Refer to "Glossary of Terms" on page 26, for details on the max. operating pressure differential and the max. system pressure.

* Low vacuum: Up to 1.3×10^2 Pa

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)	Ambient temperature (°C)
AC	-10 ^{Note)} to 60	-20 to 60
DC	-10 ^{Note)} to 60	-20 to 40



Note 1) Dew point temperature: -10°C or less

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Leakage rate ^{Note)}
	Air
NBR, FKM	1 cm ³ /min or less



Note) Value when air pressure is applied.

Direct Operated 3 Port Solenoid Valve *Series* **VX31/32/33**

For Vacuum Pad / Single Unit

How to Order (Single Unit)

DC

AC/Class B coil (Built-in full-wave rectifier type)

Model
Refer to Table (1) shown below for availability.

Valve / Body type

0	N.C. / Single unit
2	N.O. / Single unit

Suffix

Nil	—
Z	Oil-free spec.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

* Refer to Table (3) shown below for availability.

Refer to page 203 for ordering coil only.

Orifice diameter
Refer to Table (1) shown below for availability.

Solenoid valve option
Refer to Table (2) shown below for availability.

Port size
Refer to Table (1) shown below for availability.

Bracket

Nil	None
B	With bracket

* Bracket is neither mountable nor removable.

Built-in full-wave rectifier type

Electrical entry

G - Grommet GS - With grommet surge voltage suppressor	C - Conduit
T - With conduit terminal TS - With conduit terminal and surge voltage suppressor TL - With conduit terminal and light TZ - With conduit terminal, surge voltage suppressor and light	D - DIN terminal DS - DIN terminal with surge voltage suppressor DL - DIN terminal with light DZ - DIN terminal with surge voltage suppressor and light DO - For DIN terminal (without connector, gasket is included.)

* Refer to Table (3) for available combinations between each electrical option (S, L, Z) and rated voltage.
 * Surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

Table (1) Model/Orifice Diameter/Port Size

Solenoid valve model			Orifice symbol (Diameter) ^{Note)}	
Model	VXV31	VXV32	VXV33	
Port symbol (Port size)	01 (1/8)	—	—	3 (1.5/3 mmø)
	02 (1/4)	—	—	4 (2.2/4 mmø)
	—	02 (1/4)	02 (1/4)	—
	—	03 (3/8)	03 (3/8)	—

Note) The orifice diameter shown above are for the supply pressure side/ vacuum side port.

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material	Guide pin material	Coil insulation type
	Main valve poppet	Fixed sealant			
Nil	NBR	NBR	Brass (C37)	PPS	B
A	FKM	FKM			
G	NBR	NBR	Stainless steel		
H	FKM	FKM			

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
AC/DC	Voltage symbol	Voltage	S	L	Z
AC	1	100 V	— Note)	●	— Note)
	2	200 V		●	
	3	110 V		●	
	4	220 V		●	
	7	240 V		—	
	8	48 V		—	
	J	230 V		—	
DC	5	24 V	●	●	●
	6	12 V	●	—	—

Note) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

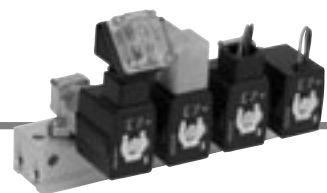
* Class H coil is not available.

VX2
VXD
VXZ
VXE
VXP
VXR
VXH
VXF
VX3
VXA
VCH
VDW
VQ
LVM
VCA
VCB
VCL
VCS
VCW

For Vacuum Pad / Manifold Series **VVXV31/32/33**

- Construction and dimensions are the same as those of the VVX3 series.

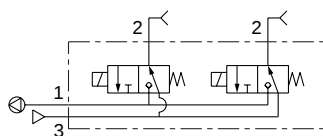
Model / Valve Specifications



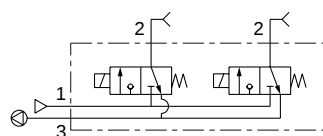
N.C.

N.O.

Passage symbol (example)



Passage symbol (example)



Orifice diameter (mmø)		Model	Operating pressure* (MPa)		Flow characteristics						Max. system pressure (MPa)
Port 1 side	Port 3 side		Port 1 side	Port 3 side	Passage: 1↔2			Passage: 2↔3			
					C[dm ³ / (s·bar)]	b	Cv	C[dm ³ / (s·bar)]	b	Cv	
3	1.5	VXV3131-00	Low vacuum	0 to 0.5	0.82	0.20	0.20	0.29	0.32	0.08	2.0
1.5	3	VXV3133-00	0 to 0.5	Low vacuum	0.29	0.32	0.08	0.82	0.20	0.20	
4	2.2	VXV3241-00	Low vacuum	0 to 0.5	1.6	0.20	0.38	0.64	0.40	0.17	
		VXV3341-00		0 to 0.9							
2.2	4	VXV3243-00	0 to 0.5	Low vacuum	0.64	0.40	0.17	1.6	0.20	0.38	
		VXV3343-00	0 to 0.9								



• Refer to "Glossary of Terms" on page 26 for details on the max. operating pressure differential and the max. system pressure.

* Low vacuum: Up to 1.3×10^2 Pa

Fluid and Ambient Temperature

Power source	Fluid temperature (°C)	Ambient temperature (°C)
AC	-10 ^{Note)} to 60	-20 to 60
DC	-10 ^{Note)} to 60	-20 to 40



Note 1) Dew point temperature: -10°C or less

Valve Leakage Rate

Internal Leakage / External Leakage

Seal material	Leakage rate ^{Note)}
	Air
NBR, FKM	1 cm ³ /min or less



Note) Value when air pressure is applied.

How to Order (Solenoid Valve for Manifold)

DC **VXV** **31** **3** **1** **—** **—** **—** **00** **—** **5** **G** **1**

AC/Class B coil (Built-in full-wave rectifier type) **VXV** **31** **3** **1** **—** **—** **—** **00** **—** **1** **G** **R1**

Model Refer to Table (1) shown below for availability.

Orifice diameter Refer to Table (1) shown below for availability.

Suffix

Nil	—
Z	Oil-free spec.

Built-in full-wave rectifier type

Valve / Body type

1	N.C. / Manifold
3	N.O. / Manifold

Solenoid valve option Refer to Table (2) shown below for availability.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

* Refer to Table (3) shown below for availability.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor

C - Conduit

T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

* DIN type is available with class B only.

How to Order Manifold Bases

VVX31 **VVX32** **1** **—** **07** **—** **1** **VVX33**

Port size (Individual port)

1	Rc 1/8
2	Rc 1/4

* Common port sizes are all Rc 1/4.
** Indicating numbers shown below are for common ports.

Type Vacuum side port SUP side port

N.C.	1	3
N.O.	3	1

Number of manifolds

02	2 stations
10	10 stations

Suffix

Nil	—
Z	Oil-free spec.

Manifold base

Blanking plate part no.

For VXV31: **VVX31-4A**-**—**

For VXV32/33: **VVX32-4A**-**—**

Seal material

Nil	NBR
F	FKM

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX311-05-1 1 set
* VVX3131-00-1GR1.. 4 sets
* VVX31-4A 1 set

"*" is the symbol for mounting. Add an "*" in front of the part numbers for solenoid valves, etc. to be mounted.

Enter the product's part number in order, counting the 1st station from the left in the manifold arrangement, when viewing the individual port in front. The common port on the right side is plugged.

Table (1) Model/Orifice Diameter

Solenoid valve model	Orifice symbol (Diameter) ^{Note)}	
	3 (1.5/3 mmø)	4 (2.2/4 mmø)
VXV31	●	—
VXV32	—	●
VXV33	—	●

Note) The orifice diameter shows the supply pressure side/vacuum side.

Table (2) Solenoid Valve Option

Option symbol	Seal material		Body material	Guide pin material	Coil insulation type
	Main valve poppet	Fixed sealant			
Nil	NBR	NBR	Brass (C37)	PPS	B
A	FKM	FKM			

* Aluminum is only available as a material for the manifold base.

Table (3) Rated Voltage - Electrical Option

Rated voltage			Class B		
AC/DC	Voltage symbol	Voltage	S With surge voltage suppressor	L With light	Z With surge voltage suppressor
AC	1	100 V	— Note)	●	— Note)
	2	200 V		●	
	3	110 V		●	
	4	220 V		●	
	7	240 V		—	
	8	48 V		—	
DC	J	230 V		—	
	5	24 V	●	●	●
	6	12 V	●	—	—

* Class H coil is not available.

Note) Option S, Z are not available as surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

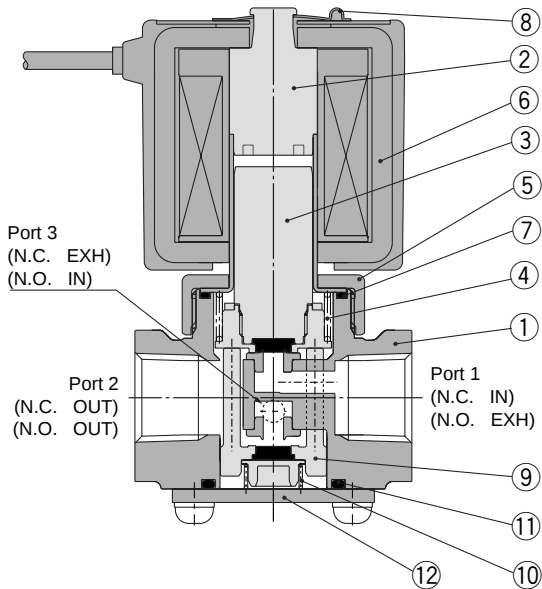
Series VX31/32/33

For Air, Water, Oil, Steam

Construction

Single unit

Body material: Brass (C37), Stainless steel



Component Parts

No.	Description	Material	
		Standard	Option
1	Body	Brass (C37)	Stainless steel
2	Tube assembly ^{Note)}	Stainless steel, Cu	Stainless steel, Ag
3	Armature assembly	Stainless steel, C36, PTFE (NBR)	Stainless steel, PTFE (FKM, EPDM, FFKM)
4	Return spring	Stainless steel	
5	Nut	Brass (C37)	Brass (C37)/Ni plated
6	Solenoid coil	Class B molded	Class H molded
7	O-ring	(NBR)	(FKM, EPDM, PTFE)
8	Clip	SK	
9	Guide pin assembly	PPS, C36 (NBR)	Stainless steel (FKM, EPDM, FFKM)
10	Support spring	Stainless steel	
11	O-ring	(NBR)	(FKM, EPDM, PTFE)
12	Plate	Stainless steel	

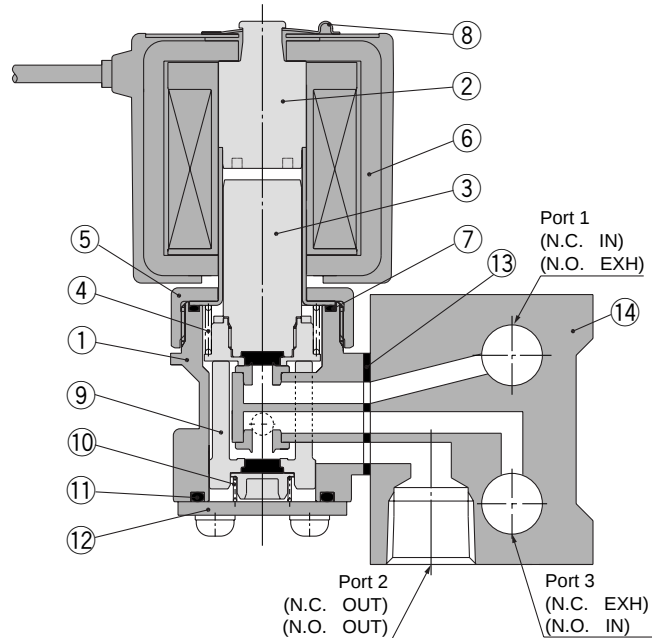
The materials in parentheses are the seal materials.

Note) Cu and Ag are not applicable to the DC spec and to the AC spec with built-in full-wave rectifier.

Manifold

Base material: Aluminum

Manifold body material: Brass (C37)



Component Parts

No.	Description	Material	
		Standard	Option
1	Manifold body	Brass (C37)	
2	Tube assembly ^{Note)}	Stainless steel, Cu	
3	Armature assembly	Stainless steel, C36, PTFE (NBR)	Stainless steel, PTFE (FKM, EPDM)
4	Return spring	Stainless steel	
5	Nut	Brass (C37)	Brass (C37)/Ni plated
6	Solenoid coil	Class B molded	Class H molded
7	O-ring	(NBR)	(FKM, EPDM)
8	Clip	SK	
9	Guide pin assembly	PPS, C36 (NBR)	Stainless steel (FKM, EPDM)
10	Support spring	Stainless steel	
11	O-ring	(NBR)	(FKM, EPDM)
12	Plate	Stainless steel	
13	Gasket	(NBR)	(FKM, EPDM)
14	Base	Aluminum	

The materials in parentheses are the seal materials.

Note) Cu is not applicable to the DC spec and to the AC spec with built-in full-wave rectifier.

Direct Operated 3 Port Solenoid Valve *Series* **VX31/32/33**

For Air, Water, Oil, Steam / Single Unit

Dimensions: Single Unit / Body Material: Brass (C37), Stainless Steel

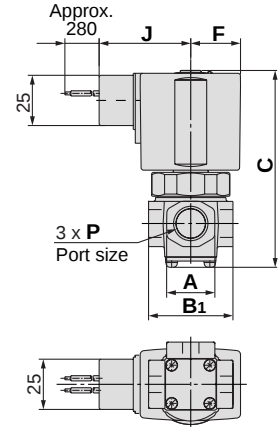
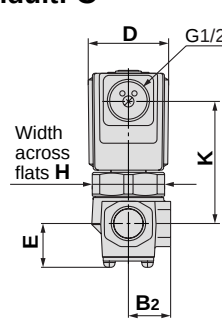
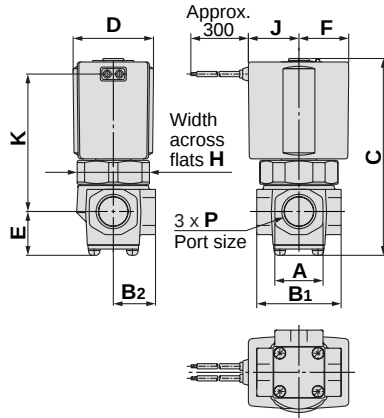
Normally closed (N.C.) : VX31□0/VX32□0/VX33□0

Normally open (N.O.) : VX31□2/VX32□2/VX33□2

Common (COM.) : VX31□4/VX32□4/VX33□4

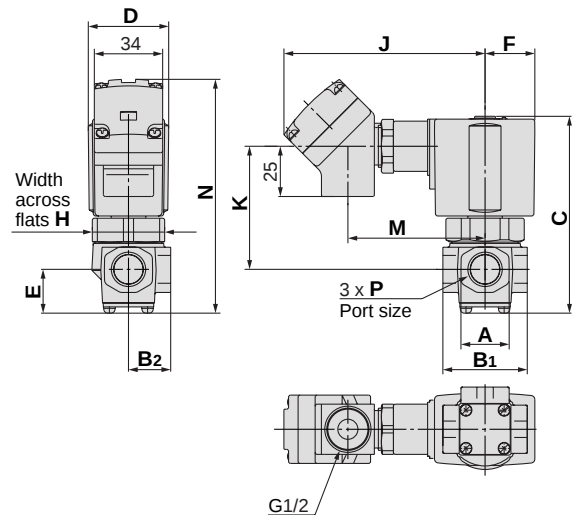
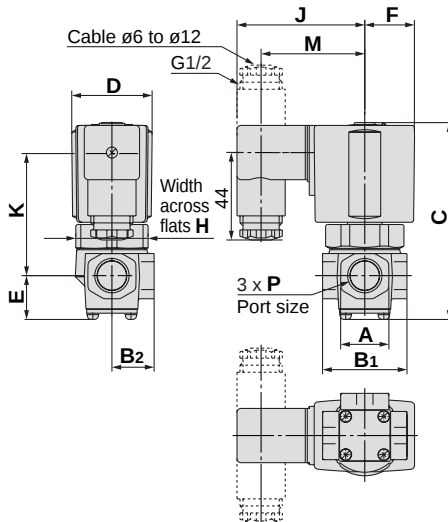
Grommet: G

Conduit: C

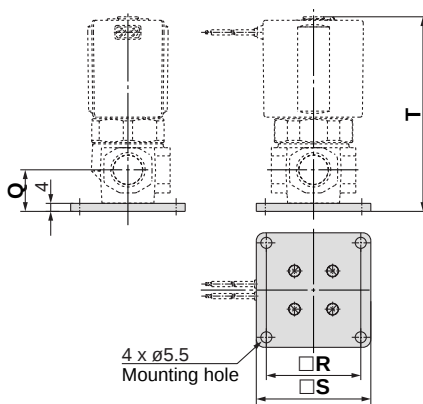


DIN terminal: D

Conduit terminal: T



With bracket



VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW

(mm)

Model	Orifice diameter	Port size P	Electrical entry (AC/Class B)											
			Grommet		Conduit		DIN terminal			Conduit terminal				
			J	K	J	K	J	K	M	J	K	M	N	
N.C., N.O., COM.														
VX31□□	ø1.5, ø2.2, ø3	1/8												
VX31□□	ø1.5, ø2.2, ø3	1/4	30	46	48.5	41	65.5	42	53.5	100.5	41	69.5	91.5	
VX32□□	ø2.2, ø3, ø4	1/4, 3/8	33	56	51.5	51	68.5	52	56.5	103.5	51	72.5	105	
VX33□□	ø2.2, ø3, ø4	1/4, 3/8	36	64.5	54	59.5	71	60.5	59	106	59.5	75	113	

(mm)

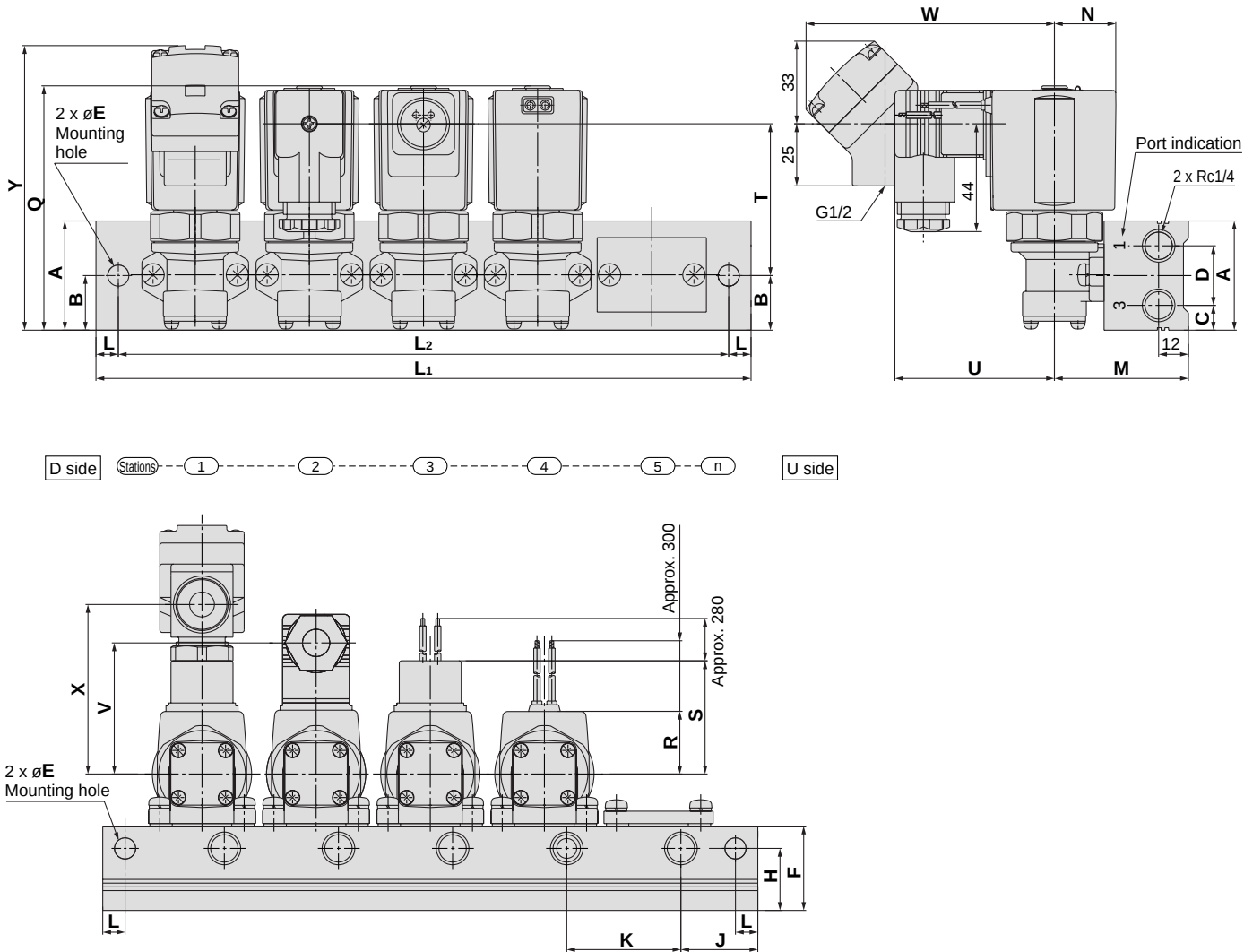
Model N.C., N.O., COM.	Orifice diameter	Port size P	A	B		C	D	E	F	H	Electrical entry (DC, AC/Class H)												Bracket mounting			
				Grommet	Conduit						DIN terminal		Conduit terminal													
											J	K	J	K	M	N	J	K	M	N	Q	R	S	T		
VX31□□	ø1.5, ø2.2, ø3	1/8	22	36	18	76.5	30	19	19.5	27	19.5	50	40	42.5	58.5	42	46.5	92	42.5	61	93	17.5	40	50	75.5	
VX31□□	ø1.5, ø2.2, ø3	1/4		41	20.5																					
VX32□□	ø2.2, ø3, ø4	1/4, 3/8	24	42	21	90	35	22	22.5	32	22.5	60	43	52.5	61.5	52	49.5	95	52.5	64	106.5	21	47	57	89	
VX33□□	ø2.2, ø3, ø4	1/4, 3/8	24	42	21	98	40	22	25	36	25.5	68.5	46	61	64	60.5	52	98	61	66.5	114.5	21	47	57	97	

Series VVX31/32/33

For Air, Oil / Manifold

Dimensions: Manifold / Base Material: Aluminum

Normally closed (N.C.) :
Normally open (N.O.) : VVX31/VVX32/VVX33
Common (COM.) :



Model	Dimension	n (stations)								
		2	3	4	5	6	7	8	9	10
VVX31	L1	96	132	168	204	240	276	312	348	384
	L2	84	120	156	192	228	264	300	336	372
VVX32	L1	126	172	218	264	310	356	402	448	494
VVX33	L2	108	154	200	246	292	338	384	430	476

(mm)																						
Model	A	B	C	D	E	F	H	J	K	L	M	N	Q	Electrical entry (DC, AC/Class H)								
														Grommet		Conduit		DIN terminal		Conduit terminal		
														R	S	T	T	U	V	W	X	Y
VVX31	40	20	9	22	6.5	33	24	26	36	6	49	19.5	80.5	19.5	40	45.5	45	58.5	46.5	92	61	97
VVX32	44	22	10	24	8.5	34	25	31	46	9	55	22.5	91	22.5	43	54	53.5	61.5	49.5	95	64	107.5
VVX33	44	22	10	24	8.5	34	25	31	46	9	55	25	99.5	25.5	46	62	61.5	64	52	98	66.5	116

Model	Electrical entry (AC/Class B)											
	Grommet				Conduit				DIN terminal			
	R	S	T	T	U	V	W	X	Y	W	X	Y
VVX31	30	48.5	44	45	65.5	53.5	100.5	69.5	95.5			
VVX32	33	51.5	52.5	53.5	68.5	56.5	103.5	72.5	106			
VVX33	36	54	60.5	61.5	71	59	106	75	114.5			

Direct Operated 3 Port Solenoid Valve *Series* **VX31/32/33**

For Air, Water, Oil, Steam

Replacement Parts

• Solenoid coil assembly part no.

DC

VX02 1N-5G

Series

1	VX31□□
2	VX32□□
3	VX33□□

Rated voltage (Note)

5	24 VDC
6	12 VDC

Note 1) Refer to Table (1) for available combinations.

Electrical entry

G - Grommet GS - With grommet surge voltage suppressor	C - Conduit
T - With conduit terminal TS - With conduit terminal and surge voltage suppressor TL - With conduit terminal and light TZ - With conduit terminal, surge voltage suppressor and light	D - DIN terminal DS - DIN terminal with surge voltage suppressor DL - DIN terminal with light DZ - DIN terminal with surge voltage suppressor and light DO - For DIN terminal (without connector)

* Refer to Table (1) for available combinations between each electrical option and rated voltage.

AC/Class B coil (Built-in full-wave rectifier type)

VX02 1N-1GR

Series

1	VX31□□
2	VX32□□
3	VX33□□

Rated voltage (Note)

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
7	240 VAC 50/60 Hz
8	48 VAC 50/60 Hz
J	230 VAC 50/60 Hz

Note 1) Refer to Table (1) for available combinations.

Electrical entry

G - Grommet	C - Conduit
T - With conduit terminal TL - With conduit terminal and light	D - DIN terminal DL - DIN terminal with light DO - For DIN terminal (without connector)

* Refer to Table (1) for available combinations between each electrical option and rated voltage.

* Surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

AC/Class H coil

VX02 1N-1G-H-2-Z

Series

1	VX31□□
2	VX32□□
3	VX33□□

Rated voltage (Note)

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
7	240 VAC 50/60 Hz
8	48 VAC 50/60 Hz
J	230 VAC 50/60 Hz

Note 1) Refer to Table (1) for available combinations.

Electrical entry

G - Grommet GS - With grommet surge voltage suppressor	C - Conduit
T - With conduit terminal TS - With conduit terminal and surge voltage suppressor TL - With conduit terminal and light TZ - With conduit terminal, surge voltage suppressor and light	

* Refer to Table (1) for available combinations between each electrical option and rated voltage.

Table (1) Rated Voltage – Electrical Option

Rated voltage		Class B			Class H		
		S	L	Z	S	L	Z
AC/DC	Voltage symbol	With surge voltage suppressor	With light	With light and surge voltage suppressor	With surge voltage suppressor	With light	With light and surge voltage suppressor
AC	1 100 V		●		●	●	●
	2 200 V		●		●	●	●
	3 110 V		●		●	●	●
	4 220 V	— (Note)	●	— (Note)	●	●	●
	7 240 V		—		●	—	—
	8 48 V		—		●	—	—
DC	J 230 V		—		●	—	—
	5 24 V	●	●	●	DC specification is not available.		
	6 12 V	●	—	—			

Note) Option S, Z are not available since a surge voltage suppressor is integrated into the AC/Class B coil, as a standard.

* When changing coils, AC/DC are not interchangeable with each other, and Class B and H coils are also not interchangeable with each other.

Series **VX31/32/33**

For Air, Water, Oil, Steam

Replacement Parts

- Name plate part no.

AZ-T-VX Valve model

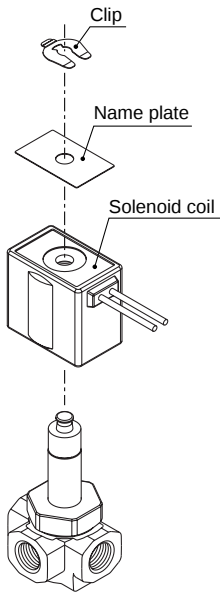
↑ Enter by referring to
"How to Order".

- Clip part no.

For VX31: **VX021N-10**

For VX32: **VX022N-10**

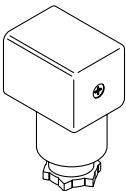
For VX33: **VX023N-10**



- DIN connector part no.

Without electrical option **GDM2A**

With electrical option **GDM2A -**



Electrical option •

S	With surge voltage suppressor
L	With light
Z	With light and surge voltage suppressor

* Refer to Table (1) for available combinations between each electrical option (S, L, Z) and rated voltage.

Rated voltage •

1	100 VAC, 110 VAC
2	200 VAC, 220 VAC, 230 VAC, 240 VAC
5	24 VDC
6	12 VDC
15	48 VAC

- Gasket part no. for DIN connector

VCW20-1-29-1