Direct Operated 2 Port Solenoid Valve

Series VX21/22/23

For Water, Oil, Steam, Air

Single Unit

■ Valve

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

■ 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, Stainless steel
Seal —— NBR, FKM, EPDM, PTFE

■ Electrical Entry

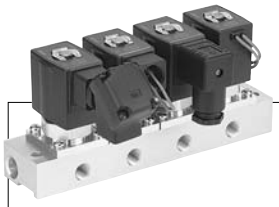
- Grommet
- Conduit
- DIN terminal
- Conduit terminal

Normally Closed (N.C.)

Model		VX21	VX22		VX23	
Orifice size	2 mmø	●	—	—	—	—
	3 mmø	●	●	—	●	—
	4.5 mmø	●	●	—	●	—
	6 mmø	—	●	—	●	—
	8 mmø	—	●	—	●	—
	10 mmø	—	●	●	●	●
Port size		1/8, 1/4	1/4, 3/8	1/2	1/4, 3/8	1/2

Normally Open (N.O.)

Model		VX21	VX22	VX23
Orifice size	2 mmø	●	—	—
	3 mmø	●	●	●
	4.5 mmø	●	●	●
	6 mmø	—	●	●
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8



Manifold

■ Valve

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

■ Base

Common SUP type, Individual SUP type (Base material Aluminum only)

■ Solenoid Coil

Coil: Class B, Class H

■ Rated Voltage

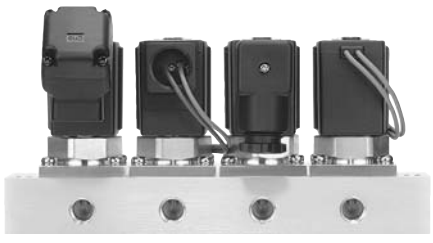
100 VAC, 200 VAC, 110 VAC,
220 VAC, 240 VAC, 230 VAC,
48 VAC, 24 VDC, 12 VDC

■ Material

Body —Aluminum, Brass, Stainless steel
Base —Aluminum, Brass, Stainless steel
Seal —NBR, FKM, EPDM, PTFE

■ Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



Manifold

Model		VX21	VX22	VX23
Orifice size	2 mmø	●	—	—
	3 mmø	●	●	●
	4.5 mmø	●	●	●
	6 mmø	—	●	●
(Common SUP type) Port size	IN port	3/8		
	OUT port	1/8, 1/4		

Standard Specifications

Valve specifications	**Valve construction**		Direct operated poppet
	Withstand pressure	**MPa**	5.0
	Body material		Brass, Stainless steel
	Seal material		NBR, FKM, EPDM, PTFE
	Enclosure		Dusttight, Low jetproof (equivalent to IP65)∗
	Environment		Location without corrosive or explosive gases
Coil specifications	**Rated voltage**	**AC**	100 VAC, 200 VAC, 110 VAC, 220 VAC, 230 VAC, 240 VAC, 48 VAC
		DC	24 VDC, 12 VDC
	Allowable voltage fluctuation		±10% of rated voltage
	Allowable leakage voltage	**AC**	±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

Normally Closed (N.C.)

DC Specification

Model	Power consumption (W)	Temperature rise (C°) Note)
VX21	4.5	45
VX22	7	45
VX23	10.5	60

AC Specification

Model		Apparent power (VA)		Temperature rise (C°) Note)
	Frequency (Hz)	Inrush	Holding	
VX21	50	19	9	45
	60	16	7	40
VX22	50	43	19	55
	60	35	16	50
VX23	50	62	30	65
	60	52	25	60

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

Normally Open (N.O.)

DC Specification

Model	Power consumption (W)	Temperature rise (C°) Note)
VX21	4.5	45
VX22	7	45
VX23	10.5	60

AC Specification

Model		Apparent power (VA)		Temperature rise (C°) Note)
	Frequency (Hz)	Inrush	Holding	
VX21	50	22	11	50
	60	18	8	45
VX22	50	46	20	55
	60	38	18	50
VX23	50	64	32	65
	60	54	27	60

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

● How to order solenoid coil assembly

VX02 1 N — 1 G — □ — □

Series

1	VX21□□
2	VX22□□
3	VX23□□

Rated voltage Note 1)

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

Note 1) Refer to the table (1) for the available combinations.

Coil insulation type Note 1)

Nil	Class B
H ∗	Class H

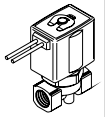
∗ DIN terminal or DC not available.

Valve/Material

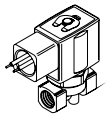
Symbol	Valve
Nil	N.C.
2	N.O.

Electrical entry

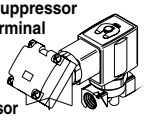
G - **Grommet**
GS - **With grommet surge voltage suppressor**



C - **Conduit**

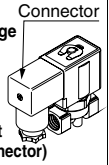


T - **With conduit terminal**
TS - **With conduit terminal and surge voltage suppressor**
TL - **With conduit terminal and light**
TZ - **With conduit terminal, surge voltage suppressor and light**



D - **DIN**
DS - **DIN with surge voltage suppressor**
DL - **DIN with light**
DZ - **DIN with surge voltage suppressor suppressor and light**
DO - **For DIN (without connector)**

Connector



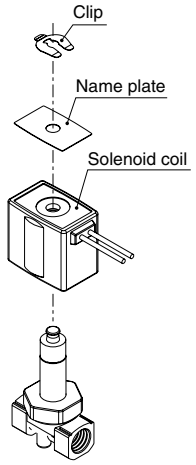
∗ DIN type is available with class B insulation only.

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

● Name plate part no.

AZ-T-VX **Valve model**

↑ Enter by referring to "How to Order (Single Unit)".



● Clip part no. (For N.C.)

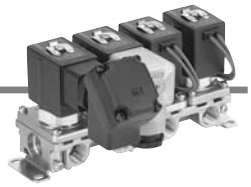
For VX21: VX021N-10
For VX22: VX022N-10
For VX23: VX023N-10

Table (1) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage symbol	Voltage	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	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	**5**	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

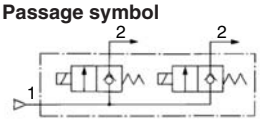
For Water/Manifold

Solenoid Valve for Manifold/Valve Specifications



N.C.

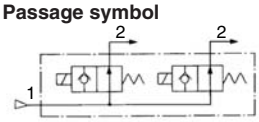
Passage symbol



Common SUP type

N.O.

Passage symbol



Common SUP type

Normally Closed (N.C.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)
		AC	DC	Av x 10^{-6} m^2	Cv converted	
2	**VX2111-00**	2.0	1.5	4.1	0.17	3.0
3	**VX2121-00**	0.9	0.5	7.9	0.33	
	VX2221-00	1.7	1.5			
	VX2321-00	2.5	3.0			
4.5	**VX2131-00**	0.4	0.2	15	0.61	
	VX2231-00	0.6	0.35			
	VX2331-00	0.85	0.9			
6	**VX2241-00**	0.35	0.15	26	1.10	
	VX2341-00	0.55	0.3			

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Normally Open (N.O.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
		AC·DC	Av x 10^{-6} m^2	Cv converted	
2	**VX2113-00**	0.9	4.1	0.17	3.0
3	**VX2123-00**	0.45	7.9	0.33	
	VX2223-00	0.8			
	VX2323-00	1.2			
4.5	**VX2133-00**	0.2	15	0.61	
	VX2233-00	0.3			
	VX2333-00	0.6			
6	**VX2243-00**	0.15	26	1.10	
	VX2343-00	0.35			

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Operating Fluid and Ambient Temperature

Power source	Operating fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (symbol)		
	Nil, G, L	**E, P**	
AC	1 to 60	1 to 99	–20 to 60
DC	1 to 40	—	–20 to 40

Note) With no freezing

Tightness of Valve (Leakage Rate)

Seal material	Leakage rate (With water pressure)
NBR, FKM, EPDM	0.1 cm^3/min or less

How to Order (Solenoid Valve for Manifold)

Normally Closed (N.C.) **VX 21 2 1 ☐ ☐ — 1 G 1**

Normally Open (N.O.) **VX 21 2 3 ☐ ☐ — 1 G 1**

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Solenoid valve option
Refer to the table (2)-1) shown below for availability.

Suffix

Nil	—
Z	Oil-free specification

Select "Nil" because the solenoid valve option "L" is the oil-free treatment.

Rated voltage

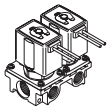
1	100 VAC 50/60 Hz	**6**	12 VDC
2	200 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

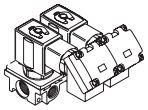
Refer to page 2 for ordering coil only.

Electrical entry

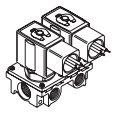
G - Grommet
GS - With grommet surge voltage suppressor



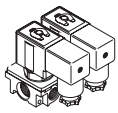
T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



C - Conduit



D - DIN
DS - DIN with surge voltage suppressor
DL - DIN with light
DZ - DIN with surge voltage suppressor and light
DO - For DIN (without connector)



∗ DIN type is available with class B insulation only.

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

How to Order Manifold Bases

VVX21
VVX22 **1 ☐ C ☐ — 07 — 1**
VVX23

Port size (Out port)

1	Rc1/8
2	Rc1/4

∗ All IN ports are Rc 3/8.

Manifold base

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Number of manifolds

02	2 stations
•	•
•	•
•	•
10	10 stations

Suffix

Nil	—
Z	Oil-free specification

Base, Seal material
Refer to the table (2)-(2).

• Blanking plate part no.
For VX21: VVX21-3A ☐
For VX22: VVX22-3A ☐
For VX23: VVX23-3A ☐

Seal material

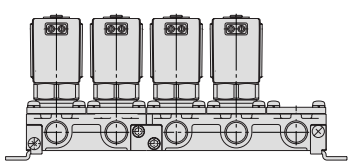
Nil	NBR
F	FKM
E	EPDM

How to Order Manifold Assemblies (Example)

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

Example
VVX211C-05-1 ..... 1 set
∗ VX2111-1G1 ..... 4 sets
∗ VX21-3A ..... 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.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (diameter)			
	1 (2 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base, Seal material symbol (2)	Body, Base material	Seal material	Coil insulation type	Note
Nil	**C**	Brass	NBR	B	—
G	**S**	Stainless steel			
E	**CE**	Brass	EPDM	H	Heated water (AC only)
P	**SE**	Stainless steel			
L	**SF**	Stainless steel	FKM	B	High corrosive, Oil-free

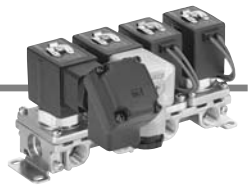
Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage symbol	Voltage	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	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	5	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

Dimensions → page 23 (manifold)

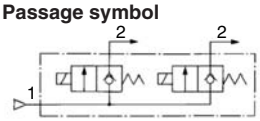
For Oil/Manifold

Solenoid Valve for Manifold/Valve Specifications



N.C.

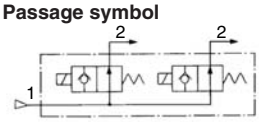
Passage symbol



Common SUP type

N.O.

Passage symbol



Common SUP type

Normally Closed (N.C.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)
		AC	DC	Av x 10^{-6} m^2	Cv converted	
2	**VX2111-00**	1.5	1.5	4.1	0.17	3.0
3	**VX2121-00**	0.5	0.5	7.9	0.33	
	VX2221-00	1.2	1.2			
	VX2321-00	1.7	2.0			
4.5	**VX2131-00**	0.2	0.15	15	0.61	
	VX2231-00	0.35	0.3			
	VX2331-00	0.55	0.85			
6	**VX2241-00**	0.2	0.1	26	1.1	
	VX2341-00	0.35	0.3			

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Normally Open (N.O.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
		AC·DC	Av x 10^{-6} m^2	Cv converted	
2	**VX2113-00**	0.8	4.1	0.17	3.0
3	**VX2123-00**	0.45	7.9	0.33	
	VX2223-00	0.7			
	VX2323-00	1.0			
4.5	**VX2133-00**	0.2	15	0.61	
	VX2233-00	0.3			
	VX2333-00	0.6			
6	**VX2243-00**	0.15	26	1.1	
	VX2343-00	0.35			

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Operating Fluid and Ambient Temperature

Power source	Operating 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 mm^2/s or less

Tightness of Valve (Leakage Rate)

Seal material	Leakage rate (With oil pressure)
FKM	0.1 cm^3/min or less

How to Order (Solenoid Valve for Manifold)

Normally Closed (N.C.) **VX 21 2 1 ☐ ☐ — 1 G 1**

Normally Open (N.O.) **VX 21 2 3 ☐ ☐ — 1 G 1**

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Solenoid valve option
Refer to the table (2)-1) shown below for availability.

Suffix

Nil	—
Z	Oil-free specification

Rated voltage

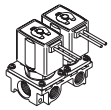
1	100 VAC 50/60 Hz	**6**	12 VDC
2	200 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

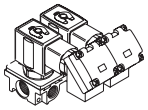
Refer to page 2 for ordering coil only.

Electrical entry

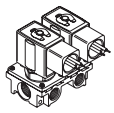
G - Grommet
GS - With grommet surge voltage suppressor



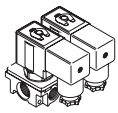
T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



C - Conduit



D - DIN
DS - DIN with surge voltage suppressor
DL - DIN with light
DZ - DIN with surge voltage suppressor and light
DO - For DIN (without connector)



∗ DIN type is available with class B insulation only.

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

How to Order Manifold Bases

VVX21
VVX22 **1 ☐ CF ☐ — 07 — 1**
VVX23

Number of manifolds

02	2 stations
•	•
•	•
•	•
10	10 stations

Port size (Out port)

1	Rc1/8
2	Rc1/4

∗ All IN ports are Rc 3/8.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Suffix

Nil	—
Z	Oil-free specification

Base, Seal material
Refer to the table (2)-(2).

Manifold base

• Blanking plate part no.
For VX21: VVX21-3A-F
For VX22: VVX22-3A-F
For VX23: VVX23-3A-F

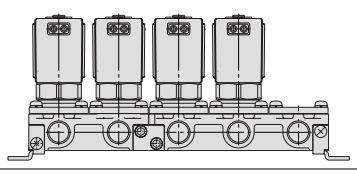
Seal material: FKM

How to Order Manifold Assemblies (Example)

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

Example
VVX211CF-05-1.....1 set
∗ VX2111A-1G1.....4 sets
∗ VX21-3A-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.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (diameter)			
	1 (2 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base, Seal material symbol (2)	Body, Base material	Seal material	Coil insulation type	Note
A	**CF**	Brass	FKM	B	—
H	**SF**	Stainless steel			
D	**CF**	Brass		H	AC only
N	**SF**	Stainless steel			

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.

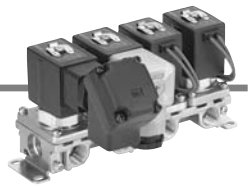
Table (3) Rated Voltage – Electrical Entry – Electrical Option

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage symbol	Voltage	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	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	5	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

Dimensions → page 23 (manifold)

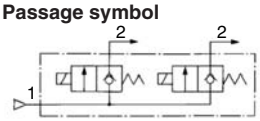
For Steam /Manifold

Solenoid Valve for Manifold/Valve Specifications



N.C.

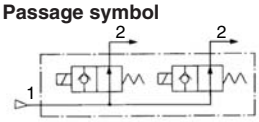
Passage symbol



Common SUP type

N.O.

Passage symbol



Common SUP type

Normally Closed (N.C.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
		AC	Av x 10^{-6} m^2	Cv converted	
2	**VX2111-00**	1.0	4.1	0.17	3.0
3	**VX2121-00**	1.0	7.9	0.33	
4.5	**VX2131-00**	0.45	15	0.61	
	VX2231-00	0.75			
	VX2331-00	1.0			
6	**VX2241-00**	0.4	26	1.1	
	VX2341-00	0.5			

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Normally Open (N.O.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
		AC	Av x 10^{-6} m^2	Cv converted	
2	**VX2113-00**	1.0	4.1	0.17	3.0
3	**VX2123-00**	0.7	7.9	0.33	
	VX2223-00	1.0			
4.5	**VX2133-00**	0.3	15	0.61	
	VX2233-00	0.45			
	VX2333-00	0.8			
6	**VX2243-00**	0.25	26	1.1	
	VX2343-00	0.45			

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Operating Fluid and Ambient Temperature

Power source	Operating fluid temperature (°C)	Ambient temperature (°C)
	Solenoid valve option (symbol)	
	S, Q	
AC	183	–20 to 60

Tightness of Valve (Leakage Rate)

Seal material	Leakage rate (With air pressure)
PTFE	300 cm^3/min or less

How to Order (Solenoid Valve for Manifold)

Normally Closed (N.C.) **VX 21 2 1 ☐ ☐ — 1 G 1**

Normally Open (N.O.) **VX 21 2 3 ☐ ☐ — 1 G 1**

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Solenoid valve option
Refer to the table (2)-(1) shown below for availability.

Suffix

Nil	—
Z	Oil-free specification

Rated voltage

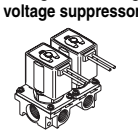
1	100 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
2	200 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
4	220 VAC 50/60 Hz		

∗ Refer to the table (3) shown below for availability.

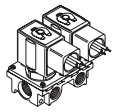
Refer to page 2 for ordering coil only.

Electrical entry

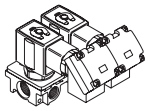
G - Grommet
GS - With grommet surge voltage suppressor



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 the table (3) for the available combinations between each electrical option (S, L, Z) and rated voltage.

How to Order Manifold Bases

VVX21
VVX22 **1 ☐ CP ☐ — 07 — 1**
VVX23

Port size (Out port)

1	Rc1/8
2	Rc1/4

∗ All IN ports are Rc 3/8.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Number of manifolds

02	2 stations
•	•
•	•
•	•
10	10 stations

Suffix

Nil	—
Z	Oil-free specification

Manifold base

Base, Seal material
Refer to the table (2)-(2).

• Blanking plate part no.

For VX21: VVX21-3A-P
For VX22: VVX22-3A-P
For VX23: VVX23-3A-P

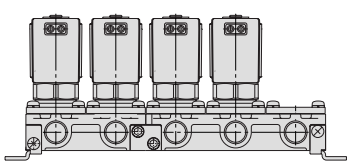
Seal material: PTFE

How to Order Manifold Assemblies (Example)

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

Example
VVX211CP-05-1.....1 set
∗ VX2111S-1G1.....4 sets
∗ VVX21-3A-P.....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.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (diameter)			
	1 (2 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	—	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base, Seal material symbol (2)	Body, Base material	Seal material	Coil insulation type
S	**CP**	Brass	PTFE	H
Q	**SP**	Stainless steel		

Table (3) Rated Voltage – Electrical Option

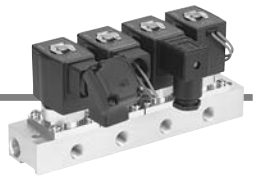
Rated voltage			Class H		
			S	**L**	**Z**
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light and surge voltage suppressor
AC	1	100 V	●	●	●
	2	200 V	●	●	●
	3	110 V	●	●	●
	4	220 V	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
	J	230 V	●	—	—
DC	5	24 V	DC spec. is not available.		
	6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

Dimensions → page 23 (manifold)

For Air /Manifold

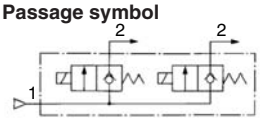
(Inert gas, Non-leak, Medium vacuum)

Solenoid Valve for Manifold/Valve Specifications

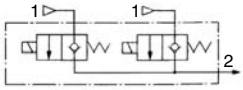


N.C.

Passage symbol



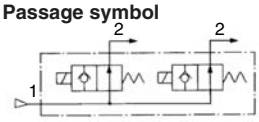
Common SUP type



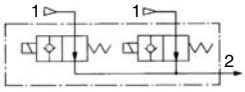
Individual SUP type

N.O.

Passage symbol



Common SUP type



Individual SUP type

Normally Closed (N.C.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics			Max. system pressure (MPa)
		AC	DC	C[dm³/(s·bar)]	b	Cv	
2	**VX2111-00**	2.0	1.5	0.59	0.48	0.18	3.0
3	**VX2121-00**	1.1	0.6	1.2	0.45	0.33	
	VX2221-00	2.0	1.5				
	VX2321-00	3.0	3.0				
4.5	**VX2131-00**	0.45	0.2	2.3	0.46	0.61	
	VX2231-00	0.75	0.35				
	VX2331-00	1.0	0.9				
6	**VX2241-00**	0.4	0.15	4.1	0.3	1.1	
	VX2341-00	0.5	0.35				

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Normally Open (N.O.)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics			Max. system pressure (MPa)
		AC·DC	C[dm³/(s·bar)]	b	Cv	
2	**VX2113-00**	1.5	0.59	0.48	0.18	3.0
3	**VX2123-00**	0.7	1.2	0.45	0.33	
	VX2223-00	1.0				
	VX2323-00	1.6				
4.5	**VX2133-00**	0.3	2.3	0.46	0.61	
	VX2233-00	0.45				
	VX2333-00	0.8				
6	**VX2243-00**	0.25	4.1	0.3	1.1	
	VX2343-00	0.45				

• Refer to “Glossary of Terms” on front matter 10 for details on the max. operating pressure differential and the max. system pressure.

Operating Fluid and Ambient Temperature

Power source	Operating fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option (symbol)		
	Nil, G	**V, M**	
AC	–10 Note) to 80	–10 Note) to 60	–20 to 60
DC	–10 Note) to 60	–10 Note) to 40	–20 to 40

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

Tightness of Valve (Leakage Rate)

Seal material	Leakage rate	
	Air	Note) Non-leak, Medium vacuum
NBR, FKM	1 cm³/min or less	10^{-6} Pa·m³/sec or less

Note) Value on option “V”, “M” (non-leak, medium vacuum)

How to Order (Solenoid Valve for Manifold)

Normally Closed (N.C.) VX 21 2 1 ☐ ☐ — 00 — 1 G 1

Normally Open (N.O.) VX 21 2 3 ☐ ☐ — 00 — 1 G 1

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

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

Suffix

Nil	—
Z	Oil-free specification

Select "Nil" because the solenoid valve option "V" is the oil-free treatment.

Rated voltage

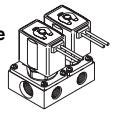
1	100 VAC 50/60 Hz	**6**	12 VDC
2	200 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

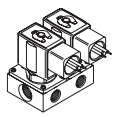
Refer to page 2 for ordering coil only.

Electrical entry

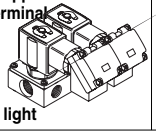
G - Grommet
GS - With grommet surge voltage suppressor



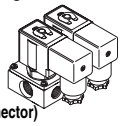
C - Conduit



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
DS - DIN with surge voltage suppressor
DL - DIN with light
DZ - DIN with surge voltage suppressor and light
DO - For DIN (without connector)



∗ DIN type is available with class B insulation only.

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

How to Order Manifold Bases

VVX21
VVX22 1 ☐ ☐ ☐ — 07 — 1
VVX23

Number of manifolds

02	2 stations
•	•
•	•
•	•
10	10 stations

Port size (Out port)

1	Rc1/8
2	Rc1/4

∗ All IN ports are Rc 3/8.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Suffix

Nil	—
Z	Oil-free specification

Base

Nil	Common SUP type
V	Individual SUP type

Manifold base

• Blanking plate part no.

For VX21: X011-001 ☐
For VX22/23: VX011-006 ☐

Seal material

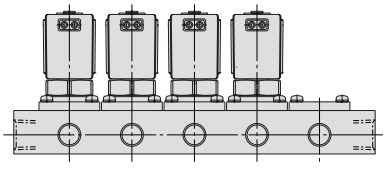
Nil	NBR
F	FKM

How to Order Manifold Assemblies (Example)

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

Example
VVX211-05-1 ..... 1 set
∗ VX2111-00-1G1 ..... 4 sets
∗ VV011-001..... 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.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (diameter)			
	1 (2 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Body, Base material	Seal material	Coil insulation type	Note
Nil	Aluminum	NBR	B	—
V		FKM		Non-leak specification

Please select the VCA series when using air because it is specifically designed for it.
(The VCA series is limited to air to improve its function and service life.)

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
			S	**L**	**Z**
AC/DC	Voltage symbol	Voltage	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	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
	J	230 V	●	—	—
DC	5	24 V	●	●	●
	6	12 V	●	—	—

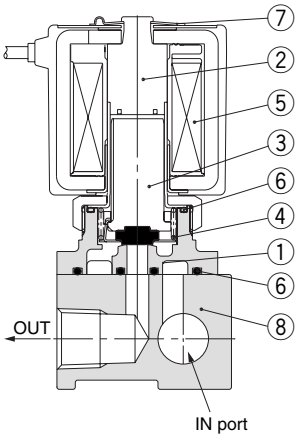
Dimensions → page 24 (manifold)

Construction: Manifold

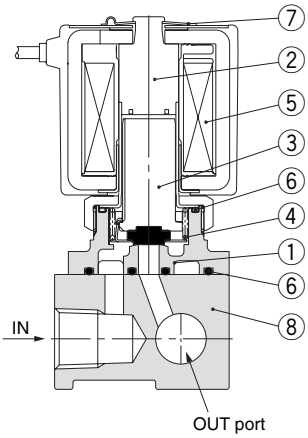
Normally closed (N.C.)

Base material: Aluminum
Fluid: Air

Common SUP type



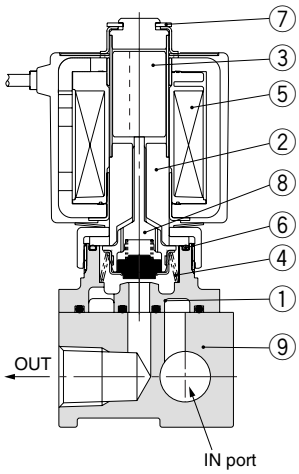
Individual SUP type



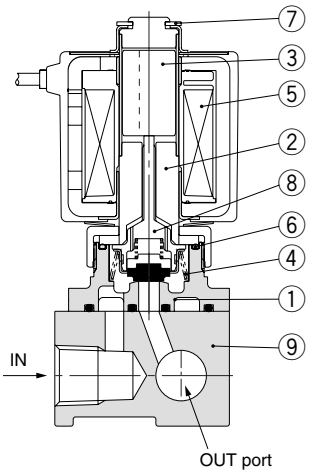
Normally open (N.O.)

Base material: Aluminum
Fluid: Air

Common SUP type

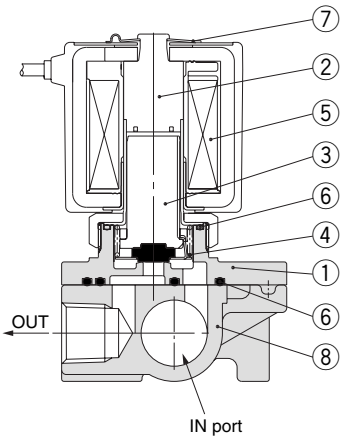


Individual SUP type



Base material: Brass, Stainless Steel
Fluid: Water, Oil, Steam

Common SUP type



Base material: Brass, Stainless Steel
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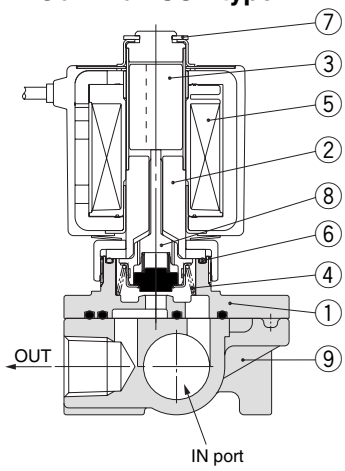

Component Parts

No.	Description	Material		
		Base material aluminum specification	Base material brass specification	Base material stainless steel specification
1	**Body**	Aluminum	Brass	Stainless steel
2	**Tube assembly**	Stainless steel, Copper		Stainless steel, Silver
3	**Armature assembly**	(NBR, FKM, EPDM, PTFE) Stainless steel, PPS		
4	**Return spring**	Stainless steel		
5	**Solenoid coil**	Class B/H molded		
6	**O-ring**	(NBR, FKM, EPDM, PTFE)		
7	**Clip**	SK		
8	**Push rod assembly**	Aluminum	Brass	Stainless steel

The materials in parentheses are the seal materials.

Component Parts

No.	Description	Material		
		Base material aluminum specification	Base material brass specification	Base material stainless steel specification
1	**Body**	Aluminum	Brass	Stainless steel
2	**Tube assembly**	Stainless steel, Copper		Stainless steel, Silver
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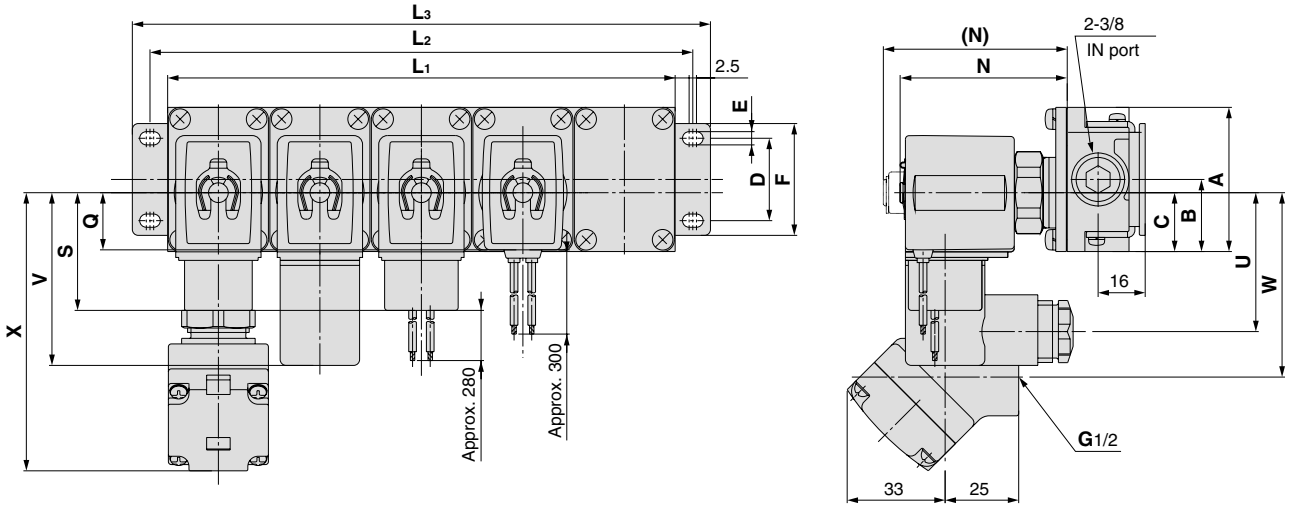
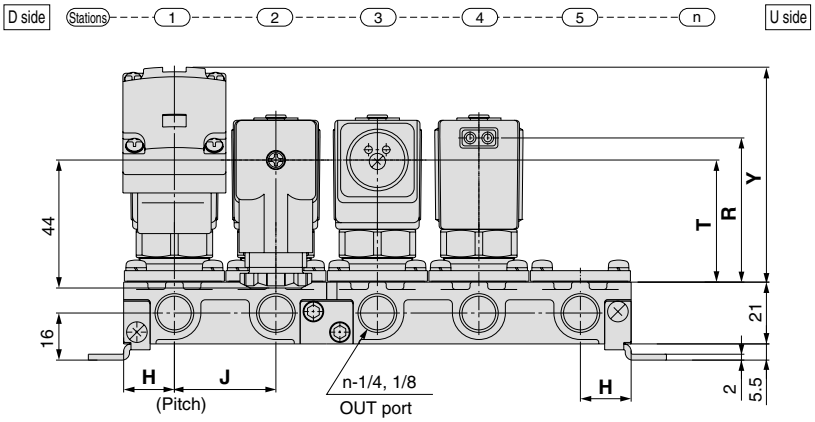
5	**Solenoid coil**	Class B/H molded		
6	**O-ring**	(NBR, FKM, EPDM, PTFE)		
7	**Clip**	SK		
8	**Push rod assembly**	(NBR, FKM, EPDM, PTFE) Stainless steel, PPS		
9	**Base**	Aluminum	Brass	Stainless steel

The materials in parentheses are the seal materials.

Dimensions: Manifold/Base Material: Brass, Stainless Steel

Normally closed (N.C.): VVX21/VVX22/VVX23
Normally open (N.O.)





(mm)

Model	Dimension	n (stations)								
		2	3	4	5	6	7	8	9	10
VVX21	L1	69	103.5	138	172.5	207	241.5	276	310.5	345
	L2	81	115.5	150	184.5	219	253.5	288	322.5	357
	L3	93	127.5	162	196.5	231	265.5	300	334.5	369
VVX22 VVX23	L1	77	115.5	154	192.5	231	269.5	308	346.5	385
	L2	89	127.5	166	204.5	243	281.5	320	358.5	397
	L3	101	139.5	178	216.5	255	293.5	332	370.5	409
	L1	83	124.5	166	207.5	249	290.5	332	373.5	415
	L2	95	136.5	178	219.5	261	302.5	344	385.5	427
	L3	107	148.5	190	231.5	273	314.5	356	397.5	439
Manifold composition		2 stns. x 1	3 stns. x 1	2 stns. x 2	2 stns. + 3 stns.	3 stns. x 2	2 stns. x 2 + 3 stns.	2 stns. + 3 stns. x 2	3 stns. x 3	2 stns. x 2 + 3 stns. x 2

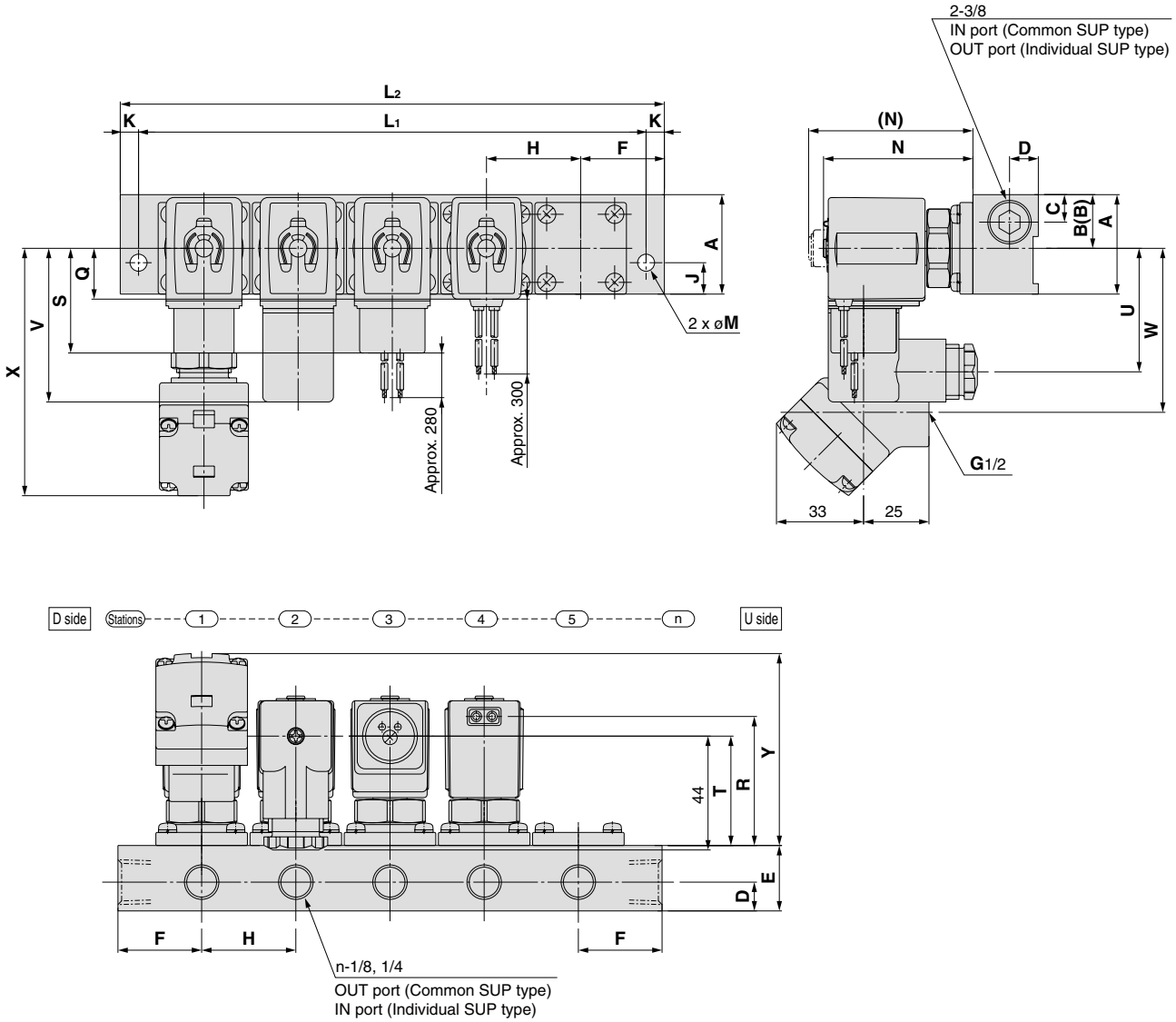
(mm)

Model	A	B	C	D	E	F	H	J	N	Electrical entry								
										Grommet		Conduit		DIN terminal		Conduit terminal		
										Q	R	S	T	U	V	W	X	Y
VVX21	49	24.5	20	28	4.5	38	17.3	34.5	57 (65)	19.5	49	40	41.5	46	58	63	94.5	73
VVX22	57	28.5	25.5	30	5.5	42	19.3	38.5	70 (78)	22.5	62	43	54	50	62	66	97.5	86
VVX23	57	28.5	25.5	30	5.5	42	20.8	41.5	74 (82)	25	66.5	46	59	53	64.5	68	100	90.5

The figures in parentheses are the normally open type.

Dimensions: Manifold/Base Material: Aluminum

Normally closed (N.C.)
Normally open (N.O.): VVX21/VVX22/VVX23



(mm)

Model	Dimension	n (stations)								
		2	3	4	5	6	7	8	9	10
VVX21	L_1	86	122	158	194	230	266	302	338	374
	L_2	100	136	172	208	244	280	316	352	388
VVX22	L_1	108	154	200	246	292	338	384	430	476
VVX23	L_2	126	172	218	264	310	356	402	448	494

(mm)

Model	A	B	(B) Individual SUP type	C	D	E	F	H	J	K	M	N	Electrical entry								
													Grommet		Conduit		DIN terminal		Conduit terminal		
													Q	R	S	T	U	V	W	X	Y
VVX21	38	20.5	17.5	10.5	11	25	32	36	12	7	6.5	57 (65)	19.5	49	40	42	46	58	62	95	73.5
VVX22	49	26.5	22.5	13	13	30	40	46	15	9	8.5	66 (74)	22.5	58	43	51	50	62	65	98	82
VVX23	49	26.5	22.5	13	13	30	40	46	15	9	8.5	71 (79)	25	63	46	56	53	64.5	68	101	87

The figures in parentheses are the normally open type.