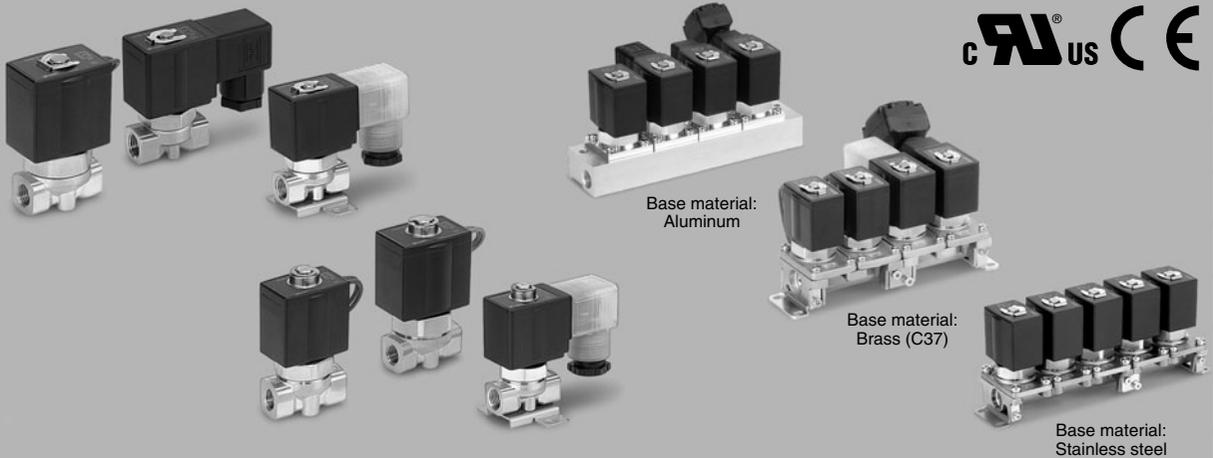


# Direct Operated 2 Port Solenoid Valve

## Series VX21/22/23

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: IP65

### Flame resistance UL94V-0 conformed

Flame resistant mold coil material

### Low-noise construction

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

### Improved maintenance performance

Maintenance is performed easily due to the threaded assembly.

### Reduced power consumption (DC spec.)

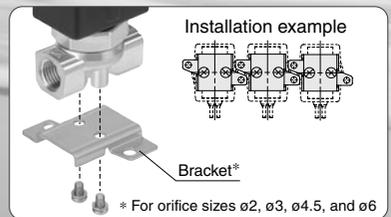
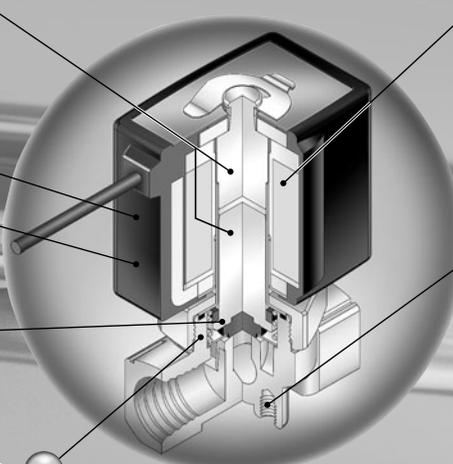
VX21: 6 W → **4.5 W**

VX22: 8 W → **7 W**

VX23: 11.5 W → **10.5 W**

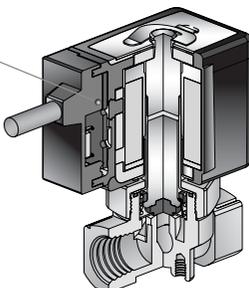
### With mounting threads on the bottom

A dedicated bracket is available.



### Built-in full-wave rectifier type

#### Built-in full-wave rectifier



- **Improved durability (SMC comparison: approx. double the service life)**  
Service life is extended by the special construction.

- **Reduced buzz noise**

Rectified to DC by the full-wave rectifier, resulting in a substantial buzz noise reduction.

- **Reduced apparent power (standard product: comparison with shading coil type)**

VX21: 10 VA → 7 VA

VX22: 20 VA → 9.5 VA

VX23: 32 VA → 12 VA

- **Improved OFF response**

Specially constructed to improve the OFF response when operated with a higher viscosity fluid such as oil.

- **Low-noise construction**

Specially constructed to reduce the metal noise during operation.



# Direct Operated 2 Port Solenoid Valve

## Series VX2 1/22/23

For Air, Water, Oil, Steam



### 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 (C37), Stainless steel  
Seal — NBR, FKM, EPDM, High-temperature FKM, PTFE

#### Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

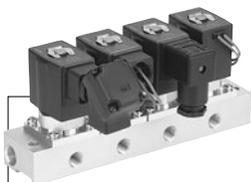


#### Normally Closed (N.C.)

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

#### Normally Open (N.O.)

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

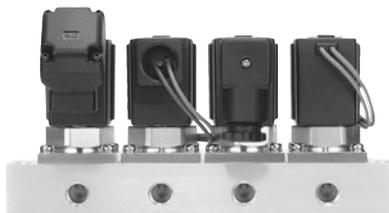
100 VAC, 200 VAC, 110 VAC, 220 VAC,  
240 VAC, 230 VAC, 48 VAC  
24 VDC, 12 VDC

#### Material

Body — Zn, Brass (C37), Stainless steel  
Base — Aluminum, Brass (C37), Stainless steel  
Seal — NBR, FKM, EPDM, High-temperature FKM, PTFE

#### Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



#### Manifold

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

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW

# Common Specifications

## Standard Specifications

Valve specifications	Valve construction		Direct operated poppet	
	Withstand pressure	MPa	5.0	
	Body material		Brass (C37), Stainless steel	
	Seal material		NBR, FKM, EPDM, PTFE	
	Enclosure		Dusttight, Low jetproof (equivalent to IP65) <sup>Note)</sup>	
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 (Class B coil, Built-in full-wave rectifier type)		10% or less of rated voltage
		AC (Class B coil/H coil)		20% or less of rated voltage
		DC (Class B coil only)		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°) <sup>Note)</sup>
VX21	4.5	45
VX22	7	45
VX23	10.5	60

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

Model	Apparent power (VA)*	Temperature rise (C°) <sup>Note)</sup>
VX21	7	55
VX22	9.5	60
VX23	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 coil, built-in full-wave rectifier type).

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

#### AC Specification

Model	Frequency (Hz)	Apparent power (VA)		Temperature rise (C°) <sup>Note)</sup>
		Inrush	Energized	
VX21	50	19	10	50
	60	16	8	45
VX22	50	43	20	65
	60	35	17	60
VX23	50	62	32	65
	60	52	27	60

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

### Normally Open (N.O.)

#### DC Specification

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

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

Model	Apparent power (VA)*	Temperature rise (C°) <sup>Note)</sup>
VX21	7	55
VX22	9.5	60
VX23	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 coil, built-in full-wave rectifier type).

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

#### AC Specification

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

Note) The value at ambient temperature of 20°C and when the rated voltage is applied.

## Contents

For Air /Single Unit .....	P.34
For Air /Manifold .....	P.36
For Water /Single Unit .....	P.38
For Water /Manifold .....	P.40
For Oil /Single Unit .....	P.42
For Oil /Manifold .....	P.44
For Steam/Single Unit .....	P.46

For Steam /Manifold .....	P.48
Construction: Single Unit .....	P.50
Construction: Manifold .....	P.51
Dimensions: Single unit .....	P.52
Dimensions: Manifold .....	P.54
Replacement Parts .....	P.56



# Series VX21/22/23

⚠ When the fluid is air.

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.)

When you operate the **VX series** (AC spec) by air, select the built-in full-wave rectifier type.

- The special construction of the armature reduces abrasion, resulting in a longer service life.
- Reduced buzz noise
- Best suited for medical equipment, low-noise environments, etc.

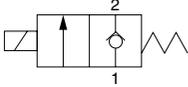
## For Air /Single Unit

(Inert gas, Non-leak, Medium vacuum)

### Model/Valve Specifications

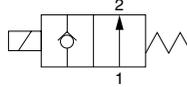
N.C.

Passage symbol



N.O.

Passage symbol



#### Normally Closed (N.C.)

Port size	Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics			Max. system pressure (MPa)	Note) Mass (g)
				C <sub>d</sub> (dm <sup>3</sup> /(s·bar))	b	C <sub>v</sub>		
1/8 (6A)	2	VX2110-01	1.5	0.59	0.48	0.18	300	
	3	VX2120-01	0.6	1.2	0.45	0.33		
	4.5	VX2130-01	0.2	2.3	0.46	0.61		
1/4 (8A)	2	VX2110-02	1.5	0.59	0.48	0.18	3.0	
		VX2120-02	0.6	1.2	0.45	0.33		
		VX2220-02	1.5					0.6
	3	VX2320-02	3.0	2.3	0.46	0.61		470
		VX2130-02	0.2					620
		VX2230-02	0.35					300
	4.5	VX2330-02	0.9	4.1	0.30	1.10		470
		VX2240-02	0.15					620
		VX2340-02	0.35					470
	6	VX2250-02	0.08	6.4	0.30	1.60		620
		VX2350-02	0.2					560
		VX2260-02	0.03					700
8	VX2360-02	0.07	8.8	0.30	2.00	560		
	VX2220-02	0.03				700		
	VX2320-02	0.03				560		
3/8 (10A)	3	VX2220-03	1.5	1.2	0.45	0.33	3.0	
		VX2320-03	3.0	2.3	0.46	0.61		
		VX2230-03	0.35					470
	4.5	VX2330-03	0.9	4.1	0.30	1.10		620
		VX2240-03	0.15					470
		VX2340-03	0.35					620
	6	VX2250-03	0.08	6.4	0.30	1.60		560
		VX2350-03	0.2					700
		VX2260-03	0.03					560
	8	VX2360-03	0.07	11	0.30	2.20		700
		VX2220-03	0.03					560
		VX2320-03	0.03					700
10	VX2260-04	0.03	11	0.30	2.20	560		
	VX2360-04	0.07				700		
	VX2260-04	0.03				560		
1/2 (15A)	10	VX2360-04	0.07	11	0.30	2.20	700	

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

- 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

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
Nil, G	V, M	-20 to 60
-10 Note) to 60	-10 Note) to 60	

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

#### Normally Open (N.O.)

Port size	Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics			Max. system pressure (MPa)	Note) Mass (g)	
				C <sub>d</sub> (dm <sup>3</sup> /(s·bar))	b	C <sub>v</sub>			
1/8 (6A)	2	VX2112-01	1.5	0.59	0.48	0.18	320		
	3	VX2122-01	0.7	1.2	0.45	0.33			
	4.5	VX2132-01	0.3	2.3	0.46	0.61			
1/4 (8A)	2	VX2112-02	1.5	0.59	0.48	0.18	3.0		
		VX2122-02	0.7	1.2	0.45	0.33			
		VX2222-02	1.0					500	
	3	VX2322-02	1.6	2.3	0.46	0.61		660	
		VX2132-02	0.3					320	
		VX2232-02	0.45					500	
	4.5	VX2332-02	0.8	4.1	0.30	1.10		660	
		VX2242-02	0.25					500	
		VX2342-02	0.45					660	
	3/8 (10)	3	VX2222-03	1.0	1.2	0.45		0.33	500
			VX2322-03	1.6	2.3	0.46		0.61	660
			VX2232-03	0.45					500
4.5		VX2332-03	0.8	4.1	0.30	1.10	660		
		VX2242-03	0.25				500		
		VX2342-03	0.45				660		

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

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

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate	
	Air	Non-leak, Note) Medium vacuum
NBR, FKM	1 cm <sup>3</sup> /min or less	10 <sup>-6</sup> Pa·m <sup>3</sup> /sec or less

#### External Leakage

Seal material	Leakage rate	
	Air	Non-leak, Note) Medium vacuum
NBR, FKM	1 cm <sup>3</sup> /min or less	10 <sup>-6</sup> Pa·m <sup>3</sup> /sec or less

Note) Value for option "V", "M" (Non-leak, Medium vacuum)

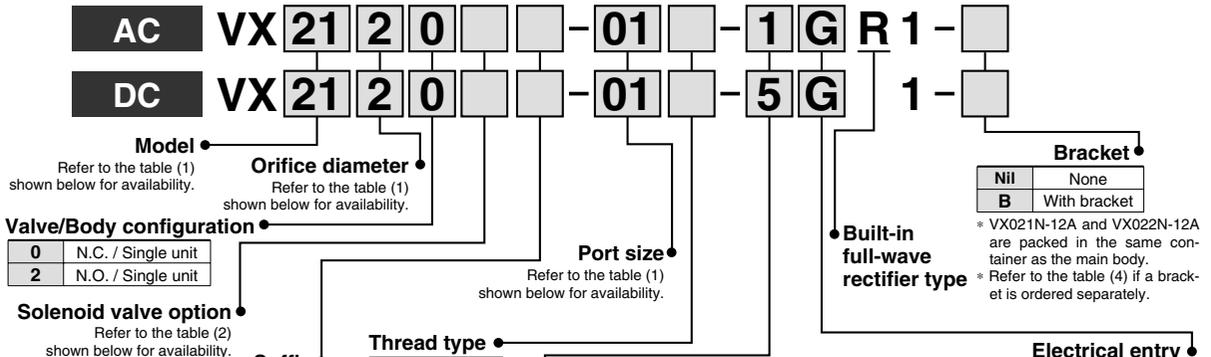
# Direct Operated 2 Port Solenoid Valve Series VX21/22/23

For Air/Single Unit

## How to Order (Single Unit)



Note) Refer to "How to Order" for UL-compliant.



**Table (1) Model/Orifice Diameter/Port Size Normally Closed (N.C.)**

Model	Solenoid valve (Port size)			Orifice symbol (Diameter)					
	VX21	VX22	VX23	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)	5 (8 mm)	6 (10 mm)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	02 (1/4)	02 (1/4)	—	●	●	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●	●	●
	—	04 (1/2)	04 (1/2)	—	—	—	—	—	●

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material	Coil insulation type	Note	UL-compliant
Nil	NBR	Brass (C37)	B	—	●
G		Stainless steel			●
V	FKM	Brass (C37)			—
M		Stainless steel			—

Non-leak (10<sup>-6</sup> Pam<sup>3</sup>/sec), Oil-free, Medium vacuum (0.1 Pa.abs) <sup>Note)</sup>

**Table (3) Rated Voltage - Electrical Option**

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

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

**Table (4) Bracket Part No.**

Model	Part no.
VX21 <sup>1</sup> / <sub>2</sub> / <sub>3</sub> 0	VX021N-12A
VX22 <sup>2</sup> / <sub>3</sub> / <sub>4</sub> 0	VX022N-12A
VX23 <sup>3</sup> / <sub>4</sub> 0	
VX22 <sup>2</sup> / <sub>5</sub> / <sub>6</sub> 0	VX023N-12A-L
VX23 <sup>3</sup> / <sub>5</sub> / <sub>6</sub> 0	

**Table (5) Thread Type**

Thread type	Symbol
Rc	Nil
NPTF	T
G	F
NPT	N

**Table (6) Solenoid Valve Option**

Option symbol	Seal material	Body material	Coil insulation type	Note	UL-compliant
Nil	NBR	Brass (C37)	B	—	●
G		Stainless steel			●
V	FKM	Brass (C37)			—
M		Stainless steel			—

Non-leak (10<sup>-6</sup> Pam<sup>3</sup>/sec), Oil-free, Medium vacuum (0.1 Pa.abs) <sup>Note)</sup>

\* Be careful of the Max. operating pressure differential when using this valve for vacuum applications. (A differential of 0.1 MPa or more is recommended).  
 \* eULus : Option symbols "V" and "M" are not UL-compliant.

**⚠ When the fluid is air.**

When you operate the VX series (AC spec) by air, select the built-in full-wave rectifier type.

- The special construction of the armature reduces abrasion, resulting in a longer service life.
- Reduced buzz noise
- Best suited for medical equipment, low-noise environments, etc.

Dimensions  
 → page S2 (Single unit)



**⚠ When the fluid is air.**

## For Air/Manifold

(Inert gas, Non-leak, Medium vacuum)

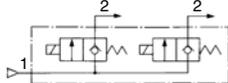
When you operate the **VX series (AC spec)** by air, select the built-in full-wave rectifier type.

- The special construction of the armature reduces abrasion, resulting in a longer service life.
  - Reduced buzz noise
- Best suited for medical equipment, low-noise environments, etc.

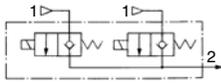
### Solenoid Valve for Manifold/Valve Specifications

**N.C.**

Passage symbol



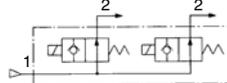
Common SUP type



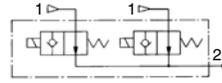
Individual SUP type

**N.O.**

Passage symbol



Common SUP type



Individual SUP type



#### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics			Max. system pressure (MPa)
			C <sub>d</sub> (dm <sup>3</sup> /(s·bar))	b	C <sub>v</sub>	
2	VX2111-00	1.5	0.59	0.48	0.18	3.0
	VX2121-00	0.6				
3	VX2221-00	1.5	1.2	0.45	0.33	
	VX2321-00	3.0				
	VX2131-00	0.2				
4.5	VX2231-00	0.35	2.3	0.46	0.61	
	VX2331-00	0.9				
	VX2241-00	0.15				
6	VX2341-00	0.35	4.1	0.30	1.10	



- Refer to "Glossary of Terms" on page 26 for details on the max. operating pressure differential and the max. system pressure.
- If you intend to use any of the solenoid valves at the rated maximum operating pressure for the AC spec with shading coil, please contact us beforehand.

#### Normally Open (N.O.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics			Max. system pressure (MPa)
			C <sub>d</sub> (dm <sup>3</sup> /(s·bar))	b	C <sub>v</sub>	
2	VX2113-00	1.5	0.59	0.48	0.18	3.0
	VX2123-00	0.7				
3	VX2223-00	1.0	1.2	0.45	0.33	
	VX2323-00	1.6				
	VX2133-00	0.3				
4.5	VX2233-00	0.45	2.3	0.46	0.61	
	VX2333-00	0.8				
	VX2243-00	0.25				
6	VX2343-00	0.45	4.1	0.30	1.10	



- 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

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
Nil, R	V	-20 to 60
-10 <sup>Note)</sup> to 60	-10 <sup>Note)</sup> to 60	



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

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate	
	Air	Non-leak, <sup>Note)</sup> Medium vacuum
NBR, FKM	1 cm <sup>3</sup> /min or less	10 <sup>-6</sup> Pa·m <sup>3</sup> /sec or less

#### External Leakage

Seal material	Leakage rate	
	Air	Non-leak, <sup>Note)</sup> Medium vacuum
NBR, FKM	1 cm <sup>3</sup> /min or less	10 <sup>-6</sup> Pa·m <sup>3</sup> /sec or less



Note) Value for option "V", "M" (Non-leak, Medium vacuum)



## How to Order (Solenoid Valve for Manifold)

(Note) Not UL-compliant

**AC** VX 21 2 1 [ ] [ ] - 00 - 1 G R 1

**DC** VX 21 2 1 [ ] [ ] - 00 - 5 G 1

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

**Orifice diameter** • Refer to the table (1) shown below for availability.

**Valve/Body configuration** •

1	N.C. (For manifold)
3	N.O. (For manifold)

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

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 56 for ordering coil only.

**Suffix** •

Nil	—
Z	Oil-free spec.

Select nil because the solenoid valve options "V", "R" are the oil-free treatment.

**Electrical entry** •

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

\* DIN type is available with class B only.

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

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

### How to Order Manifold Bases

VVX21  
VVX22  
VVX23

1 [ ] [ ] [ ] - 07 - 1

**Number of manifolds**

02	2 stations
⋮	⋮
10	10 stations

**Thread type**

Nil	Rc
T	NPTF
F	G
N	NPT

**Port size (Out port)**

1	Rc 1/8
2	Rc 1/4

\* All IN ports are Rc 3/8.

**Manifold base**

**Blanking plate part no.**

For VX21: VX011-001 [ ] [ ]

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    "\*" is the symbol for mounting.

\* VX2111-00-1G1 ..... 4 sets    Add an "\*" in front of the part numbers for solenoid valves, etc. to be mounted.

\* VX011-001 ..... 1 set

① --- ② --- ③ --- ④ --- ⑤ --- ⑥

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) Model/Orifice Diameter

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		NBR		—
V	Aluminum	FKM	B	Non-leak, Medium vacuum, Oil-free
R				Non-leak, Copper-free, Fluorine-free, Oil-free (Note)

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

\* Be careful of the Max. operating pressure differential when using this valve for vacuum applications. (A differential of 0.1 MPa or more is recommended).

### ⚠ When the fluid is air.

When you operate the **VX series** (AC spec) by air, select the built-in full-wave rectifier type.

- The special construction of the armature reduces abrasion, resulting in a longer service life.
  - Reduced buzz noise
- Best suited for medical equipment, low-noise environments, etc.

Table (3) Rated Voltage - Electrical Option

Rated voltage		Class B		
		S	L	Z
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	●	●
	6	12 V	●	—

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

Dimensions → page 54 (Manifold)

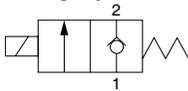
- VX2
- VXD
- VXZ
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA
- VCH□
- VDW
- VQ
- LVM
- VCA
- VCB
- VCL
- VCS
- VCW

## For Water / Single Unit

### Model/Valve Specifications

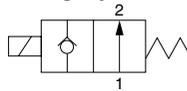
**N.C.**

Passage symbol



**N.O.**

Passage symbol



#### Normally Closed (N.C.)

Port size	Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Note) Mass (g)
			AC	DC (Built-in full-wave rectifier type)	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted		
1/8 (6A)	2	VX2110-01	2.0	1.5	4.1	0.17	300	
	3	VX2120-01	0.9	0.5	7.9	0.33		
	4.5	VX2130-01	0.4	0.2	15.0	0.61		
1/4 (8A)	2	VX2110-02	2.0	1.5	4.1	0.17	3.0	
		VX2120-02	0.9	0.5	7.9	0.33		
	3	VX2220-02	1.7	1.5				15.0
	VX2320-02	2.5	3.0					
	VX2130-02	0.4	0.2					
	4.5	VX2230-02	0.6	0.35	26.0	1.10		
		VX2330-02	0.85	0.9				
		VX2240-02	0.35	0.15				
	6	VX2340-02	0.55	0.3	38.0	1.60		
		VX2250-02	0.13	0.08				
		VX2350-02	0.17	0.2				
	8	VX2260-02	0.08	0.03	46.0	1.90		
VX2360-02		0.1	0.07					
10		VX2260-02	0.08	0.03			1.0	
10	VX2360-02	0.1	0.07					
	10	VX2360-02	0.1	0.07				
3/8 (10A)	3	VX2220-03	1.7	1.5	7.9	0.33	3.0	
		VX2320-03	2.5	3.0				
	4.5	VX2230-03	0.6	0.35	15.0	0.61		
		VX2330-03	0.85	0.9				
	6	VX2240-03	0.35	0.15	26.0	1.10		
		VX2340-03	0.55	0.3				
	8	VX2250-03	0.13	0.08	38.0	1.60		
		VX2350-03	0.17	0.2				
	10	VX2260-03	0.08	0.03	53.0	2.20		
		VX2360-03	0.1	0.07				
	1/2 (15A)	10	VX2260-04	0.08	0.03	53.0		2.20
			VX2360-04	0.1	0.07			

Note) Mass of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, and 60 g for conduit terminal type respectively.  
 • Refer to "Glossary of Terms" on page 26 for details on the max. operating pressure differential and the max. system pressure.

#### Normally Open (N.O.)

Port size	Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)	Note) Mass (g)	
				Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted			
1/8 (6A)	2	VX2112-01	0.9	4.1	0.17	320		
	3	VX2122-01	0.45	7.9	0.33			
	4.5	VX2132-01	0.2	15.0	0.61			
1/4 (8A)	2	VX2112-02	0.9	4.1	0.17	3.0		
		VX2122-02	0.45	7.9	0.33			
	3	VX2222-02	0.8				15.0	0.61
	VX2322-02	1.2						
	VX2132-02	0.2						
	4.5	VX2232-02	0.3	26.0	1.10			
		VX2332-02	0.6					
		VX2242-02	0.15					
	6	VX2342-02	0.35	38.0	1.60			
		VX2252-02	0.13				7.9	0.33
		VX2322-03	1.2					
	3/8 (10)	3	VX2222-03	0.8	15.0		0.61	
VX2322-03			1.2					
4.5		VX2232-03	0.3	26.0	1.10			
	VX2332-03	0.6						
6	VX2242-03	0.15	38.0	1.60				
	VX2342-03	0.35						

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

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
Nil, G, L	E, P	-20 to 60
1 to 60	1 to 99	

Note) With no freezing

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate (Water)
NBR, FKM, EPDM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage rate (Water)
NBR, FKM, EPDM	0.1 cm <sup>3</sup> /min or less

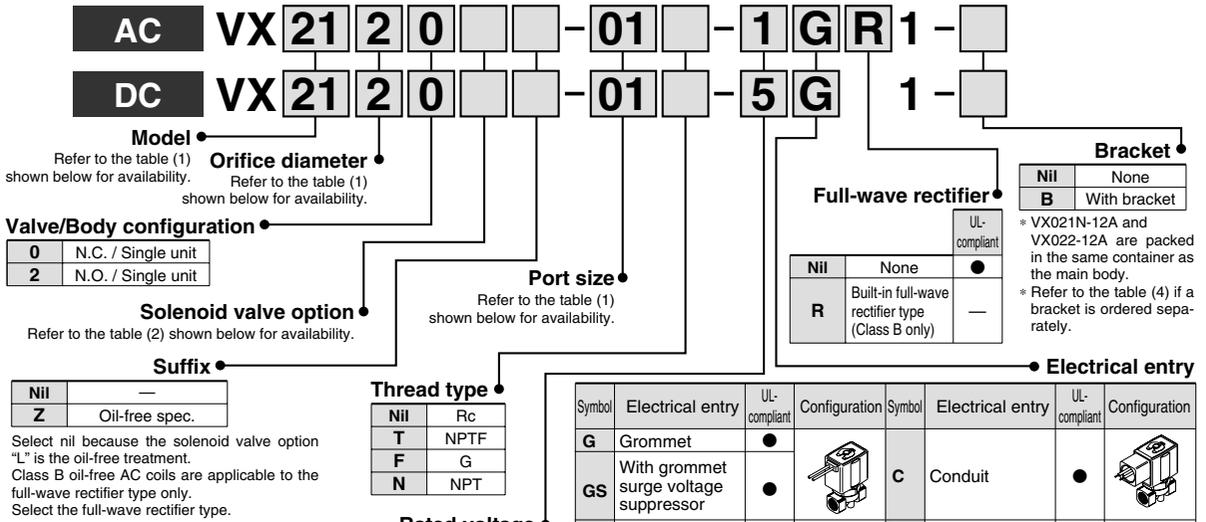
# Direct Operated 2 Port Solenoid Valve Series VX21/22/23

For Water/Single Unit

## How to Order (Single Unit)



Note) Refer to "How to Order" for UL-compliant.



**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 56 for ordering coil only.

**Table (1) Model/Orifice Diameter/Port Size Normally Closed (N.C.)**

Solenoid valve (Port size)				Orifice symbol (Diameter)					
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	02 (1/4)	02 (1/4)	—	●	●	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●	●	●
—	—	04 (1/2)	04 (1/2)	—	—	—	—	●	

**Normally Open (N.O.)**

Solenoid valve (Port size)				Orifice symbol (Diameter)			
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●

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

Rated voltage			Class B			Class H		
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/surge voltage suppressor	With surge voltage suppressor	With light	With light/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 spec. is not available.		
	6	12 V	●	—	—	DC spec. is not available.		

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body/Shading coil material	Coil insulation type	Note	UL-compliant
Nil	—	Brass (C37)/Cu	—	—	●
G	NBR	Stainless steel/Ag	B	—	●
E	—	Brass (C37)/Cu	—	Heated water (AC only)	●(Note)
P	EPDM	Stainless steel/Ag	H	—	●
L	FKM	Stainless steel/Ag	B	High corrosive, Oil-free	●

Note) N.O. valve is not UL-compliant.

**Table (4) Bracket Part No.**

Model	Part no.
VX21 <sub>1</sub> 0	VX021N-12A
VX22 <sub>3</sub> 0	VX022N-12A
VX23 <sub>3</sub> 0	
VX22 <sub>5</sub> 0	VX023N-12A-L
VX23 <sub>5</sub> 0	

Dimensions → page 52 (Single unit)



## For Water /Manifold

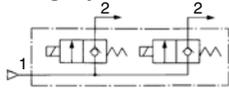
### Solenoid Valve for Manifold/Valve Specifications



**N.C.**

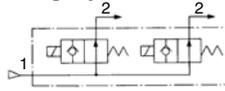
**N.O.**

Passage symbol



Common SUP type

Passage symbol



Common SUP type

#### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)
		AC	DC AC (Built-in full-wave rectifier type)	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	
2	VX2111	2.0	1.5	4.1	0.17	3.0
	VX2121	0.9	0.5			
3	VX2221	1.7	1.5	7.9	0.33	
	VX2321	2.5	3.0			
	VX2131	0.4	0.2			
4.5	VX2231	0.6	0.35	15	0.61	
	VX2331	0.85	0.9			
	VX2241	0.35	0.15			
6	VX2341	0.55	0.3	26	1.10	

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

#### Normally Open (N.O.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
			Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	
2	VX2113	0.9	4.1	0.17	3.0
	VX2123	0.45			
3	VX2223	0.8	7.9	0.33	
	VX2323	1.2			
	VX2133	0.2			
4.5	VX2233	0.3	15	0.61	
	VX2333	0.6			
	VX2243	0.15			
6	VX2343	0.35	26	1.10	

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

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
<b>Nii, G, L</b>	<b>E, P</b>	-20 to 60
1 to 60	1 to 99	

Note) With no freezing

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate (Water)
NBR, FKM, EPDM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage rate (Water)
NBR, FKM, EPDM	0.1 cm <sup>3</sup> /min or less



## How to Order (Solenoid Valve for Manifold)

(Note) Not UL-compliant

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

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

**Valve/Body configuration**

1	N.C. (For manifold)
3	N.O. (For manifold)

**Suffix**

Nil	—
Z	Oil-free spec.

Select nil because the solenoid valve option "L" is the oil-free treatment. Class B oil-free AC coils are applicable to the full-wave rectifier type only. Select the full-wave rectifier type.

**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 56 for ordering coil only.

**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

**Full-wave rectifier**

Nil	None
R	Built-in full-wave rectifier type (Class B only)

\* Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and rated voltage.  
 \* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

### How to Order Manifold Bases

**VVX21**  
**VVX22**  
**VVX23**

**1** **C** **-07-** **1**

**Port size (OUT port)**

1	Rc 1/8
2	Rc 1/4

\* 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 spec.

**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

Table (1) Model/Orifice Diameter

Solenoid valve	Orifice symbol (Diameter)			
	1 (2 mmø)	2 (2 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/ Shading coil material	Seal material	Coil insulation type	Note
Nil	C	Brass(C37)/Cu	NBR	B	—
G	S	Stainless steel/Ag			
E	CE	Brass(C37)/Cu	EPDM	H	Heated water (AC only)
P	SE	Stainless steel/Ag			
L	SF	Stainless steel/Ag	FKM	B	High corrosive, Oil-free

Table (3) Rated Voltage – Electrical Option

AC/ DC	Rated voltage		Class B			Class H		
	Voltage symbol	Voltage	S	L	Z	S	L	Z
			With surge voltage suppressor	With light	With light/ surge voltage suppressor	With surge voltage suppressor	With light	With light/ 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 spec. is not available.		
	6	12 V	●	—	—	DC spec. is not available.		

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

### 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    "\*" is the symbol for mounting.  
 \* VX2111-1G1 ..... 4 sets    Add an "\*" in front of the part numbers for solenoid valves, etc. to be mounted.  
 \* VVX21-3A ..... 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.

Dimensions → page 55 (Manifold)

**⚠ When the fluid is oil.**

The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s.

The special construction of the armature adopted in the built-in full-wave rectifier type gives an improvement in OFF response by providing clearance on the absorbed surface when it is switched ON.

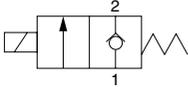
Select the DC spec. or AC spec. built-in full-wave rectifier type when the dynamic viscosity is higher than water or when the OFF response is prioritized.

## For Oil / Single Unit

### Model/Valve Specifications

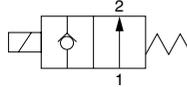
**N.C.**

Passage symbol



**N.O.**

Passage symbol



### Normally Closed (N.C.)

Port size	Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Note) Mass (g)	
			AC	DC (Built-in full-wave rectifier type)	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted			
1/8 (6A)	2	VX2110-01	1.5	1.5	4.1	0.17	300		
	3	VX2120-01	0.5	0.5	7.9	0.33			
	4.5	VX2130-01	0.2	0.15	15	0.61			
1/4 (8A)	2	VX2110-02	1.5	1.5	4.1	0.17	3.0		
		VX2120-02	0.5	0.5	7.9	0.33			
		VX2220-02	1.2	1.2					
	VX2320-02	1.7	2.0						
	3	VX2130-02	0.2	0.15	15	0.61			
		VX2230-02	0.35	0.3					
		VX2330-02	0.55	0.85					
	4.5	VX2240-02	0.2	0.1	26	1.10			
		VX2340-02	0.35	0.3					
		VX2250-02	0.1	0.08					
	6	VX2350-02	0.14	0.2	38	1.60			
		VX2260-02	0.05	0.03				46	1.90
VX2360-02		0.08	0.07						
3/8 (10A)	3	VX2220-03	1.2	1.2	7.9	0.33	3.0		
		VX2320-03	1.7	2.0	15	0.61			
		VX2230-03	0.35	0.3					
	VX2330-03	0.55	0.85						
	4.5	VX2240-03	0.2	0.1	26	1.10			
		VX2340-03	0.35	0.3					
		VX2250-03	0.1	0.08					
	6	VX2350-03	0.14	0.2	38	1.60			
		VX2260-03	0.05	0.03				53	2.20
		VX2360-03	0.08	0.07					
	8	VX2260-03	0.05	0.03	53	2.20			
		VX2360-03	0.08	0.07					
VX2260-04		0.05	0.03	53			2.20		
VX2360-04	0.08	0.07							

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

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

### Normally Closed (N.C.)

Port size	Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Note) Mass (g)
			AC, DC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted			
1/8 (6A)	2	VX2112-01	0.8	4.1	0.17	320		
	3	VX2122-01	0.45	7.9	0.33			
	4.5	VX2132-01	0.2	15	0.61			
1/4 (8A)	2	VX2112-02	0.8	4.1	0.17	3.0		
		VX2122-02	0.45	7.9	0.33			
		VX2222-02	0.7					
	VX2322-02	1.0						
	3	VX2132-02	0.2	15	0.61			
		VX2232-02	0.3					
		VX2332-02	0.6					
	4.5	VX2242-02	0.15	26	1.10			
		VX2342-02	0.35					
		VX2252-02	0.7				7.9	0.33
	VX2322-03	1.0						
	VX2232-03	0.3	15	0.61				
VX2332-03	0.6							
VX2242-03	0.15	26			1.10			
VX2342-03	0.35							



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

- 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

Fluid temperature (°C)		Ambient temperature (°C)
A, H	D, N	
-5 <sup>Note)</sup> to 60	-5 <sup>Note)</sup> to 120	-20 to 60

Note) Dynamic viscosity: 50 mm<sup>2</sup>/s or less

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate (Oil)
FKM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage rate (Oil)
FKM	0.1 cm <sup>3</sup> /min or less

# Direct Operated 2 Port Solenoid Valve Series VX21/22/23

For Oil/Single Unit



Note) Refer to "How to Order" for UL-compliant.

## How to Order (Single Unit)

**AC** VX21 20A - 01 - 1GR1 -

**DC** VX21 20A - 01 - 5G 1 -

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

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

**Valve/Body configuration**

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

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

Nil	—
Z	Oil-free spec.

Class B oil-free AC coils are applicable to the full-wave rectifier type only. Select the full-wave rectifier type.

**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 the table (3) shown below for availability.

**Full-wave rectifier**

Nil	None	UL-compliant	●
R	Built-in full-wave rectifier type (Class B only)	UL-compliant	—

**Bracket**

Nil	None
B	With bracket

\* VX021N-12A and VX022N-12A are packed in the same container as the main body.  
\* Refer to the table (4) if a bracket is ordered separately.

**Electrical entry**

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

\* Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and rated voltage.  
\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.  
\* cULus: Symbols "G", "GS", "C", "DO" only

**Table (1) Model/Orifice Diameter/Port Size Normally Closed (N.C.)**

Solenoid valve (Port size)				Orifice symbol (Diameter)					
Model	VX21	VX22	VX23	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)	5 (8 mm)	6 (10 mm)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	02 (1/4)	02 (1/4)	—	●	●	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●	●	●
	—	04 (1/2)	04 (1/2)	—	—	—	—	—	●

**Normally Open (N.O.)**

Solenoid valve (Port size)				Orifice symbol (Diameter)			
Model	VX21	VX22	VX23	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
—	03 (3/8)	03 (3/8)	—	●	●	●	●

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

Rated voltage			Class B			Class H		
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/surge voltage suppressor	With surge voltage suppressor	With light	With light/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	●	—	—	DC spec. is not available.		

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body/Shading coil material	Coil insulation type	UL-compliant
A	FKM	Brass (C37)/Cu	B	●
H		Stainless steel/Ag		—
D		Brass (C37)/Cu	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.

\* cULus: Option symbol "A" only

**Table (4) Bracket Part No.**

Model	Part no.
VX21 <sup>1</sup> / <sub>2</sub> 0	VX021N-12A
VX22 <sup>2</sup> / <sub>3</sub> 0	VX022N-12A
VX23 <sup>2</sup> / <sub>3</sub> 0	
VX22 <sup>5</sup> / <sub>6</sub> 0	VX023N-12A-L
VX23 <sup>5</sup> / <sub>6</sub> 0	

Dimensions → page 52 (Single unit)



**⚠ When the fluid is oil.**

The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s.

The special construction of the armature adopted in the built-in full-wave rectifier type gives an improvement in OFF response by providing clearance on the absorbed surface when it is switched ON.

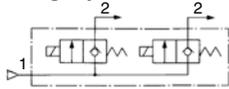
Select the DC spec. or AC spec. built-in full-wave rectifier type when the dynamic viscosity is higher than water or when the OFF response is prioritized.

## For Oil/Manifold

### Solenoid Valve for Manifold/Valve Specifications

**N.C.**

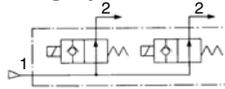
Passage symbol



Common SUP type

**N.O.**

Passage symbol



Common SUP type



#### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)
		AC	DC AC (Built-in full-wave rectifier type)	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	
2	VX2111	1.5	1.5	4.1	0.17	3.0
	VX2121	0.5	0.5			
3	VX2221	1.2	1.2	7.9	0.33	
	VX2321	1.7	2.0			
	VX2131	0.2	0.15			
4.5	VX2231	0.35	0.3	15	0.61	
	VX2331	0.55	0.85			
	VX2241	0.2	0.1			
6	VX2341	0.35	0.3	26	1.10	



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

#### Normally Open (N.O.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
			AC, DC	Av x 10 <sup>-6</sup> m <sup>2</sup>	
2	VX2113	0.8	4.1	0.17	3.0
	VX2123	0.45			
3	VX2223	0.7	7.9	0.33	
	VX2323	1.0			
	VX2133	0.2			
4.5	VX2233	0.3	15	0.61	
	VX2333	0.6			
	VX2243	0.15			
6	VX2343	0.35	26	1.10	



• 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

Fluid temperature (°C)		Ambient temperature (°C)
Solenoid valve option symbol		
A, H	D, N	
-5 <sup>Note</sup> to 60	-5 <sup>Note</sup> to 120	-20 to 60



Note) Dynamic viscosity: 50 mm<sup>2</sup>/s or less

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate (Oil)
FKM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage rate (Oil)
FKM	0.1 cm <sup>3</sup> /min or less



## How to Order (Solenoid Valve for Manifold)

(Note) Not UL-compliant

**Model**

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

**Orifice diameter**

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

**Valve/Body configuration**

1	N.C. (For manifold)
3	N.O. (For manifold)

**Solenoid valve option**

Refer to the table (2)-(1) 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 the table (3) shown below for availability.

**Suffix**

Nil	—
Z	Oil-free spec.

Class B oil-free AC coils are applicable to the full-wave rectifier type only. Select the full-wave rectifier type.

**Full-wave rectifier**

Nil	None
R	Built-in full-wave rectifier type (Class B only)

Refer to page 56 for ordering coil only.

**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

\* DIN type is available with class B only.

## How to Order Manifold Bases

**VVX21**  
**VVX22**  
**VVX23**

**1** **CF** **07** **1**

**Number of manifolds**

02	2 stations
⋮	⋮
10	10 stations

**Port size (OUT port)**

1	Rc 1/8
2	Rc 1/4

\* All IN ports are Rc 3/8.

**Thread type**

Nil	Rc
T	NPTF
F	G
N	NPT

**Suffix**

Nil	—
Z	Oil-free spec.

**Base, Seal material**

Refer to the table (2)-(2).

### Blanking plate part no.

For VX21: VVX21-3A-F

For VX22: VVX22-3A-F

For VX23: VVX23-3A-F

Seal material: FKM

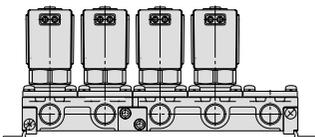
## How to Order Manifold Assemblies (Example)

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

Example

VVX211CF-05-1..... 1 set      "\*" is the symbol for mounting.  
 \* VX211A-1G1 ..... 4 sets      Add an "\*" in front of the part numbers  
 \* VVX21-3A-F ..... 1 set      for solenoid valves, etc. to be mounted.

① ② ③ ④ ⑤ ⑥



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) Model/Orifice Diameter

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/ Shading coil material	Seal material	Coil insulation type	Note
A	CF	Brass (C37)/Cu	FKM	B	—
H	SF	Stainless steel/Ag		H	AC only
D	CF	Brass (C37)/Cu			
N	SF	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 Entry – Electrical Option

Rated voltage	Class B	Class B		Class H		
		S	L	S	L	
AC/ DC	Voltage symbol	With surge voltage suppressor	With light	With surge voltage suppressor	With light	With 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	●	—	—	—

DC spec. is not available.

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

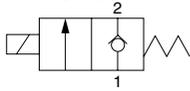
Dimensions → page 55 (Manifold)

## For Steam /Single Unit

### Model/Valve Specifications

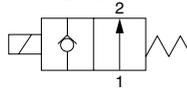
**N.C.**

Passage symbol



**N.O.**

Passage symbol



#### Normally Closed (N.C.)

Port size	Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Weight (g)			
			AC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted						
1/8 (6A)	2	VX2110-01	1.0	4.1	0.17	1.0	300				
	3	VX2120-01	1.0	7.9	0.33						
	4.5	VX2130-01	0.45	15	0.61						
1/4 (8A)	2	VX2110-02	1.0	4.1	0.17			0.5	560		
	3	VX2120-02	1.0	7.9	0.33						
	4.5	VX2130-02	0.45	15	0.61			1.0	470		
		VX2230-02	0.75								
	6	VX2240-02	0.4	26	1.10					0.5	470
		VX2340-02	0.5								
	8	VX2250-02	0.15	38	1.60					0.5	560
		VX2350-02	0.2								
10	VX2260-02	0.08	46	1.90	0.5	700					
	VX2360-02	0.1									
3/8 (10A)	3	VX2220-03	1.0	7.9	0.33	1.0	470				
	4.5	VX2230-03	0.75	15	0.61						
		VX2330-03	1.0								
	6	VX2240-03	0.4	26	1.10	0.5	470				
		VX2340-03	0.5								
	8	VX2250-03	0.15	38	1.60	0.5	560				
		VX2350-03	0.2								
	10	VX2260-03	0.08	53	2.20	0.5	560				
VX2360-03		0.1									
1/2 (15A)	10	VX2260-04	0.08	53	2.20	0.5	560				
		VX2360-04	0.1					700			

Note) Mass of grommet type. Add 60 g for conduit terminal type.  
 • Refer to "Glossary of Terms" on page 26 for details on the max. operating pressure differential and the max. system pressure.

#### Normally Open (N.O.)

Port size	Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Weight (g)			
			AC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted						
1/8 (6A)	2	VX2112-01	1.0	4.1	0.17	1.0	320				
	3	VX2122-01	0.7	7.9	0.33						
	4.5	VX2132-01	0.3	15	0.61						
1/4 (8A)	2	VX2112-02	1.0	4.1	0.17			0.5	500		
	3	VX2122-02	0.7	7.9	0.33						
	3	VX2222-02	1.0					1.0	320		
		VX2132-02	0.3								
	4.5	VX2232-02	0.45	15	0.61					0.5	500
		VX2332-02	0.8								
	6	VX2242-02	0.25	26	1.10					0.5	660
		VX2342-02	0.45								
3/8 (10)	3	VX2222-03	1.0	7.9	0.33	0.5	500				
	4.5	VX2232-03	0.45	15	0.61						
		VX2332-03	0.8								
	6	VX2242-03	0.25	26	1.10	0.5	660				
		VX2342-03	0.45								

Note) Mass of grommet type. Add 60 g for conduit terminal type.  
 • 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

Max. fluid temperature (°C)	Ambient temperature (°C)
Solenoid valve option symbol	
S, Q	
183	-20 to 60

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate (Air)
PTFE	300 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage rate (Air)
High-temperature FKM	1 cm <sup>3</sup> /min or less



(Note) Not UL-compliant

## How to Order (Single Unit)

**AC VX2120S - 01 - 1G1 -**

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

**Orifice diameter** • Refer to the table (1) shown below for availability.

**Valve/Body configuration**

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

**Suffix**

Nil	—
Z	Oil-free spec.

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

**Thread type**

Nil	Rc
T	NPTF
F	G
N	NPT

**Port size** • Refer to the table (1) shown below for availability.

**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.

**Bracket**

Nil	None
B	With bracket

\* VX021N-12A and VX022N-12A are packed in the same container as the main body.  
\* Refer to the table (4) if a bracket is ordered separately.

**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 56 for ordering coil only.**

**Table (1) Model/Orifice Diameter/Port size Normally Closed (N.C.)**

Solenoid valve (Port size)			Orifice symbol (Diameter)						
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	02 (1/4)	02 (1/4)	—	—	●	●	●	●
	—	03 (3/8)	03 (3/8)	—	● (VX22)	●	●	●	●
	—	04 (1/2)	04 (1/2)	—	—	—	—	—	●

**Normally Open (N.O.)**

Solenoid valve (Port size)			Orifice symbol (Diameter)				
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
Port no. (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/Shading coil material	Coil insulation type
S	PTFE	Brass (C37)/Cu	H
Q	+ High-temperature FKM	Stainless steel/Ag	

Solenoid coil: AC/Class H only

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

Rated voltage			Class H		
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/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 spec. is not available.		
	6	12 V	DC spec. is not available.		

**Table (4) Bracket Part No.**

Model	Part no.
VX21 <sup>1</sup> / <sub>3</sub> 0	VX021N-12A
VX22 <sup>2</sup> / <sub>4</sub> 0	VX022N-12A
VX23 <sup>3</sup> / <sub>4</sub> 0	
VX22 <sup>5</sup> / <sub>6</sub> 0	VX023N-12A-L
VX23 <sup>5</sup> / <sub>6</sub> 0	

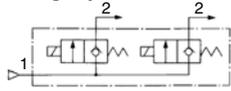
- VX2
- VXD
- VXZ
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA
- VCH
- VDW
- VQ
- LVM
- VCA
- VCB
- VCL
- VCS
- VCW

## For Steam /Manifold

### Solenoid Valve for Manifold/Valve Specifications

**N.C.**

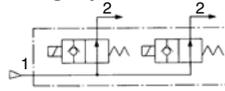
Passage symbol



Common SUP type

**N.O.**

Passage symbol



Common SUP type

#### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
		AC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	
2	VX2111	1.0	4.1	0.17	3.0
3	VX2121	1.0	7.9	0.33	
4.5	VX2131	0.45	15	0.61	
	VX2231	0.75			
6	VX2331	1.0	26	1.10	
	VX2241	0.4			
	VX2341	0.5			



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

#### Normally Open (N.O.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)
		AC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	
2	VX2113	1.0	4.1	0.17	3.0
3	VX2123	0.7	7.9	0.33	
	VX2223	1.0			
4.5	VX2133	0.3	15	0.61	
	VX2233	0.45			
	VX2333	0.8			
6	VX2243	0.25	26	1.10	
	VX2343	0.45			



• 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	Max. fluid temperature (°C)	Ambient temperature (°C)
	Solenoid valve option symbol	
AC	S, Q 183	-20 to 60

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage rate (Air)
PTFE	300 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage rate (Air)
High-temperature FKM	1 cm <sup>3</sup> /min or less



(Note) Not UL-compliant

### How to Order (Solenoid Valve for Manifold)

**AC VX2123S - 1G1**

- Model**: Refer to the table (1) shown below for availability.
- Orifice diameter**: 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 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 the table (3) shown below for availability.

Refer to page 56 for ordering coil only.
- Electrical entry**:
 

<b>G</b> - Grommet <b>GS</b> - With grommet surge voltage suppressor	<b>C</b> - Conduit
<b>T</b> - With conduit terminal <b>TS</b> - With conduit terminal and surge voltage suppressor	
<b>TL</b> - With conduit terminal and light	
<b>TZ</b> - 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 VVX23 1 CP - 07 - 1**

- Port size (OUT port)**:
 

1	Rc 1/8
2	Rc 1/4

\* 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 spec.
- Base, Seal material**: Refer to the table (2)-(2).

### Blanking plate part no.

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

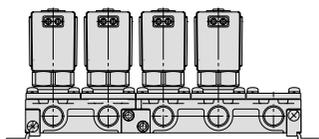
Seal material: High-temperature FKM

### 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      "\*" is the symbol for mounting.  
 \* VX211S-1G1..... 4 sets      Add an "\*" in front of the part numbers  
 \* VVX21-3A-P..... 1 set      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) Model/Orifice Diameter

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/Shading coil material	Seal material	Coil insulation type
S	CP	Brass(C37)/Cu	High-temperature FKM	H
Q	SP	Stainless steel/Ag		

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/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 55 (Manifold)

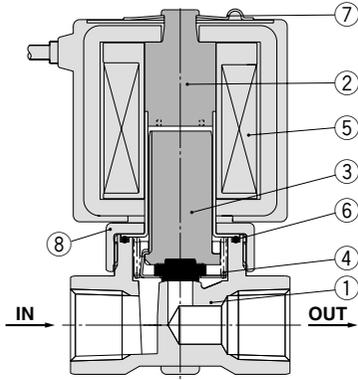
# Series VX21/22/23

For Air, Water, Oil, Steam

## Construction: Single Unit

Normally closed (N.C.)

Body material: Brass (C37), Stainless steel



### Component Parts

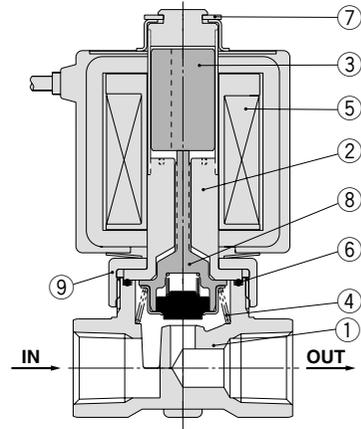
No.	Description	Material	
		Body material Brass (C37) specification	Body material stainless steel specification
1	Body	Brass (C37)	Stainless steel
2	Tube assembly <sup>Note)</sup>	Stainless steel, Cu	Stainless steel, Ag
3	Armature assembly	(NBR, FKM, EPDM, High-temperature FKM) Stainless steel, PPS	
4	Return spring	Stainless steel	
5	Solenoid coil	—	
6	O-ring	(NBR, FKM, EPDM, High-temperature FKM, PTFE)	
7	Clip	SK	
8	Nut	Brass (C37)	Brass (C37), Ni plated

The materials in parentheses are the seal materials.

Note) Cu and Ag are inapplicable to the DC spec and to the AC spec with built-in full-wave rectifier.

Normally open (N.O.)

Body material: Brass (C37), Stainless steel



### Component Parts

No.	Description	Material	
		Body material Brass (C37) specification	Body material stainless steel specification
1	Body	Brass (C37)	Stainless steel
2	Tube assembly <sup>Note)</sup>	Stainless steel, Cu	Stainless steel, Ag
3	Armature assembly	Stainless steel	
4	Return spring	Stainless steel	
5	Solenoid coil	—	
6	O-ring	(NBR, FKM, EPDM, High-temperature FKM, PTFE)	
7	Clip	SK	
8	Push rod assembly	(NBR, FKM, EPDM, High-temperature FKM) Stainless steel, PPS	
9	Nut	Brass (C37)	Brass (C37), Ni plated

The materials in parentheses are the seal materials.

Note) Cu and Ag are inapplicable to the DC spec and to the AC spec with built-in full-wave rectifier.

**Construction: Manifold**

**Normally closed (N.C.)**

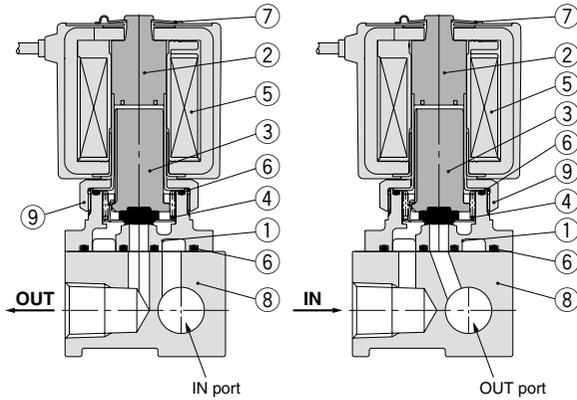
**Base material: Aluminum**

**Body material: Zn**

**Fluid: Air**

**Common SUP type**

**Individual SUP type**

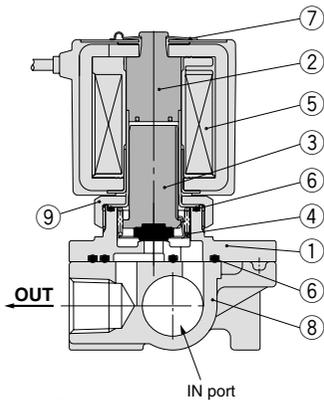


**Base material: Brass (C37), Stainless steel**

**Body material: Brass (C37), Stainless steel**

**Fluid: Water, Oil, Steam**

**Common SUP type**



**Normally open (N.O.)**

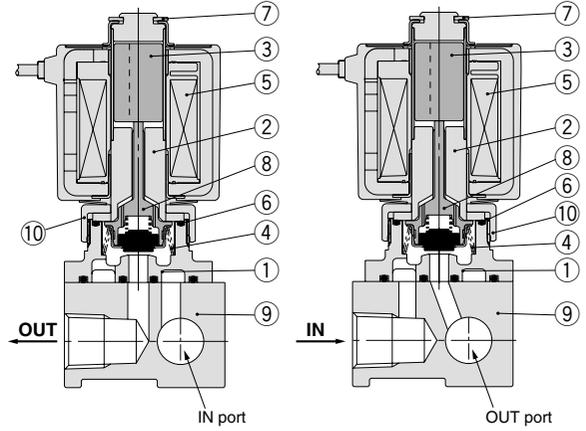
**Base material: Aluminum**

**Body material: Zn**

**Fluid: Air**

**Common SUP type**

**Individual SUP type**

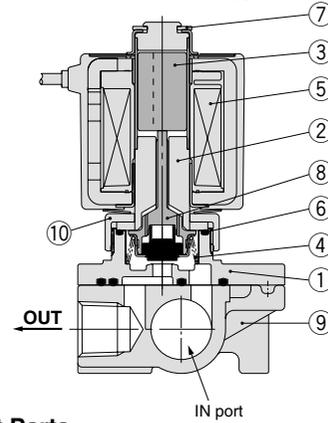


**Base material: Brass (C37), Stainless steel**

**Body material: Brass (C37), Stainless steel**

**Fluid: Water, Oil, Steam**

**Common SUP type**



**Component Parts**

No.	Description	Material		
		Base material aluminum specification	Base material Brass (C37) specification	Base material stainless steel specification
1	Body	Zn	Brass (C37)	Stainless steel
2	Tube assembly <small>(Note)</small>	Stainless steel, Cu		Stainless steel, Ag
3	Armature assembly	(NBR, FKM, EPDM, High-temperature FKM) Stainless steel, PPS		
4	Return spring	Stainless steel		
5	Solenoid coil	—		
6	O-ring	(NBR, FKM, EPDM, High-temperature FKM, PTFE)		
7	Clip	SK		
8	Base	Aluminum	Brass (C37)	Stainless steel
9	Nut	Brass (C37) (Ni plated)	Brass (C37)	Brass (C37), Ni plated

The materials in parentheses are the seal materials.  
 Note) Cu and Ag are inapplicable to the DC spec and to the AC spec with built-in full-wave rectifier.

**Component Parts**

No.	Description	Material		
		Base material aluminum specification	Base material Brass (C37) specification	Base material stainless steel specification
1	Body	Zn	Brass (C37)	Stainless steel
2	Tube assembly <small>(Note)</small>	Stainless steel, Cu		Stainless steel, Ag
3	Armature assembly	Stainless steel		
4	Return spring	Stainless steel		
5	Solenoid coil	—		
6	O-ring	(NBR, FKM, EPDM, High-temperature FKM, PTFE)		
7	Clip	SK		
8	Push rod assembly	(NBR, FKM, EPDM, High-temperature FKM) Stainless steel, PPS		
9	Base	Aluminum	Brass (C37)	Stainless steel
10	Nut	Brass (C37) (Ni plated)	Brass (C37)	Brass (C37), Ni plated

The materials in parentheses are the seal materials.  
 Note) Cu and Ag are inapplicable to the DC spec and to the AC spec with built-in full-wave rectifier.

**VX2**

**VXD**

**VXZ**

**VXE**

**VXP**

**VXR**

**VXH**

**VXF**

**VX3**

**VXA**

**VCH**

**VDW**

**VQ**

**LVM**

**VCA**

**VCB**

**VCL**

**VCS**

**VCW**

# Series VX21/22/23

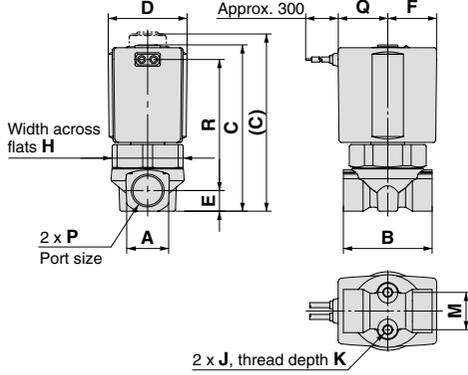
For Air, Water, Oil, Steam

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

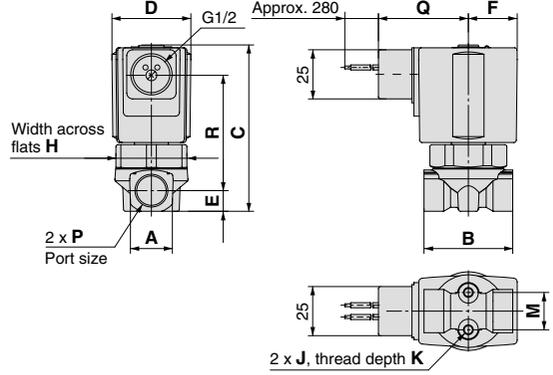
Normally closed (N.C.): VX21□0/VX22□0/VX23□0

Normally open (N.O.): VX21□2/VX22□2/VX23□2

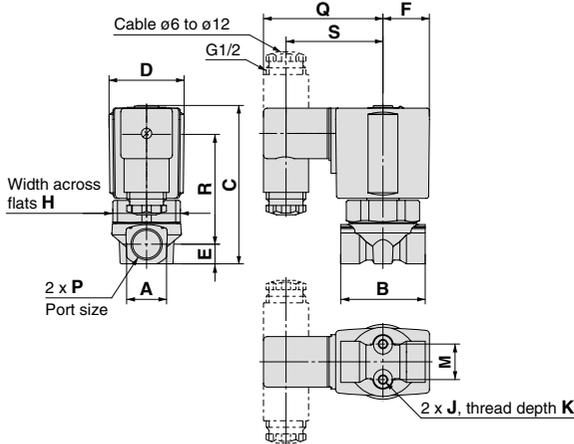
### Grommet: G



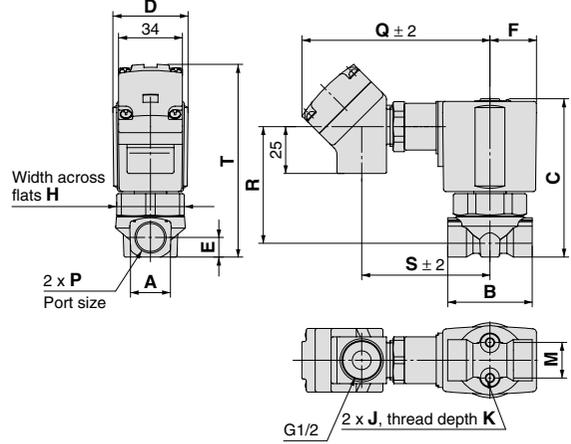
### Conduit: C



### DIN terminal: D



### Conduit terminal: T



Model		Orifice diameter	Port size P	A	B	C	D	E	F	H	Bracket mounting		
N.C.	N.O.										J	K	M
VX21□0	VX21□2	ø2, ø3, ø4.5	1/8, 1/4	18	40	68 (76)	30	9	19.5	27	M4	6	12.8
VX22□0	VX22□2	ø3, ø4.5, ø6	1/4, 3/8	22	45	78 (86)	35	10.5	—	—	M5	8	19
VX22□0	—	ø8, ø10	1/4, 3/8, 1/2	30	50	85	—	14	22.5	32	M5	8	23
VX23□0	VX23□2	ø3, ø4.5, ø6	1/4, 3/8	22	45	85.5 (93)	40	10.5	—	—	M5	8	19
VX23□0	—	ø8, ø10	1/4, 3/8, 1/2	30	50	92	—	14	—	—	M5	8	23

Model		Orifice diameter	Port size P	Electrical entry <sup>Note 2)</sup>								Electrical entry (Built-in full-wave rectifier type) <sup>Note 2)</sup>													
N.C.	N.O.			Grommet	Conduit		DIN terminal		Conduit terminal		Grommet	Conduit		DIN terminal		Conduit terminal									
			Q	R	Q	R	S	Q	R	S	T	Q	R	Q	R	S	T								
VX21□0	VX21□2	ø2, ø3, ø4.5	1/8, 1/4	19.5	50	40	42.5	58.5	42	46.5	92	42.5	61	83.5	30	46	48.5	41	65.5	42	53.5	100.5	41	69.5	82
VX22□0	VX22□2	ø3, ø4.5, ø6	1/4, 3/8	22.5	60	43	52.5	61.5	52	49.5	95	52.5	64	95	33	56	51.5	51	68.5	52	56.5	103.5	51	72.5	93.5
VX22□0	—	ø8, ø10	1/4, 3/8, 1/2	—	63	—	55.5	—	55	—	—	55.5	—	101.5	33	59	51.5	54	68.5	55	56.5	103.5	54	72.5	100
VX23□0	VX23□2	ø3, ø4.5, ø6	1/4, 3/8	25.5	66	46	58.5	58	58	—	—	58.5	62	54	57	71	58	59	106	59	106	57	75	99.5	
VX23□0	—	ø8, ø10	1/4, 3/8, 1/2	—	69	—	61.5	64	61	52	98	61.5	66.5	107.5	36	65	54	60	71	61	59	106	60	75	106

Note 1) The figures in parentheses are the normally open (N.O.) type dimensions.

Note 2) Add 1.5 mm to "R" and "T" dimensions for the N.O. spec.

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

Normally closed (N.C.): VX21□0/VX22□0/VX23□0

Normally open (N.O.): VX21□2/VX22□2/VX23□2

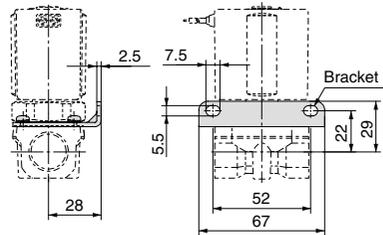
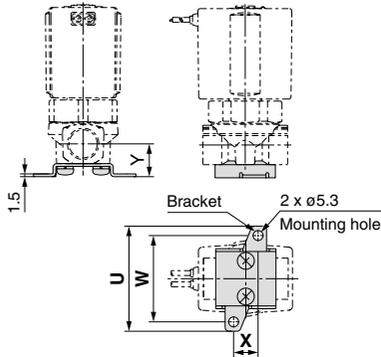
Specifications with bracket

Orifice ø2, ø3, ø4.5, ø6

(Packed in the same container)

Orifice ø8, ø10

(Assembled at the time of shipment)



(mm)

Model		Orifice diameter	Port size P	Bracket mounting			
N.C.	N.O.			U	W	X	Y
VX21□0	VX21□2	ø2, ø3, ø4.5	1/8, 1/4	46	36	11	15
VX22□0	VX22□2	ø3, ø4.5, ø6	1/4, 3/8	56	46	13	17.5
VX22□0	—	ø8, ø10	1/4, 3/8, 1/2	—	—	—	—
VX23□0	VX23□2	ø3, ø4.5, ø6	1/4, 3/8	56	46	13	17.5
VX23□0	—	ø8, ø10	1/4, 3/8, 1/2	—	—	—	—

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

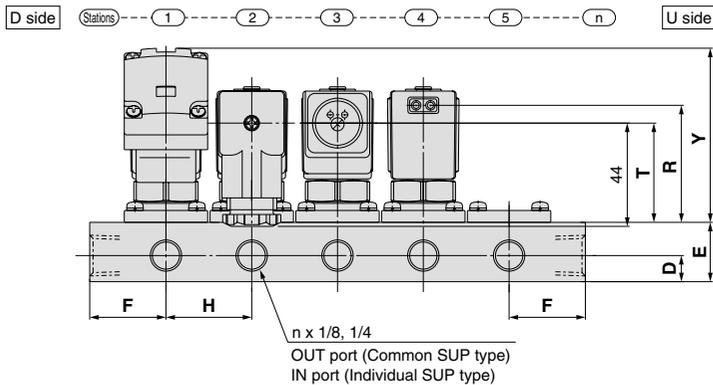
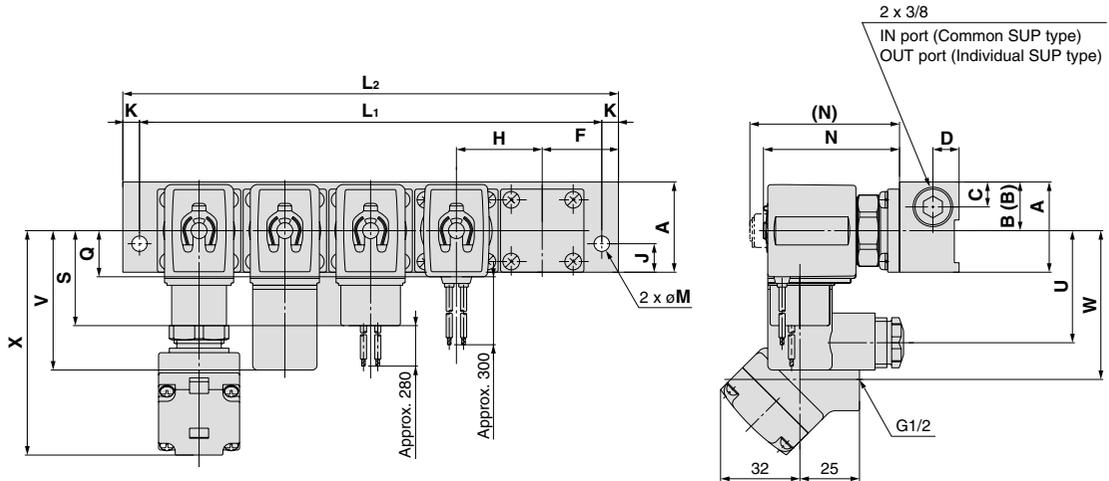
VCW

# Series VVX21/22/23

For Air

## Dimensions: Manifold/Base Material: Aluminum

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	L <sub>1</sub>	86	122	158	194	230	266	302	338	374	
	L <sub>2</sub>	100	136	172	208	244	280	316	352	388	
VVX22	L <sub>1</sub>	108	154	200	246	292	338	384	430	476	
VVX23	L <sub>2</sub>	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
VVX21	38	20.5	17.5	10.5	11	25	32	36	12	7	6.5	57.5 (65.5)
VVX22	49	26.5	22.5	13	13	30	40	46	15	9	8.5	66.5 (74.5)
VVX23	49	26.5	22.5	13	13	30	40	46	15	9	8.5	71.5 (80)

(mm)

Model	Electrical entry										Electrical entry (Built-in full-wave rectifier type) <small>Note 2)</small>									
	Grommet		Conduit		DIN terminal			Conduit terminal			Grommet		Conduit		DIN terminal			Conduit terminal		
	Q	R	S	T	U	V	T	W	X	Y	Q	R	S	T	U	V	T	W	X	Y
VVX21	19.5	48.5	40	41	46.5	58.5	40.5	61	92	73	30	44.5	48.5	40	53.5	65.5	41	69.5	100.5	72
VVX22	22.5	58.5	43	51	49.5	61.5	50.5	64	95	83	33	54.5	51.5	50	56.5	68.5	51	72.5	103.5	82
VVX23	25.5	63	46	55.5	52	64	55	66.5	98	87.5	36	59	54	54	59	71	55	75	106	86

Note 1) The figures in parentheses are the normally open (N.O.) type dimensions.

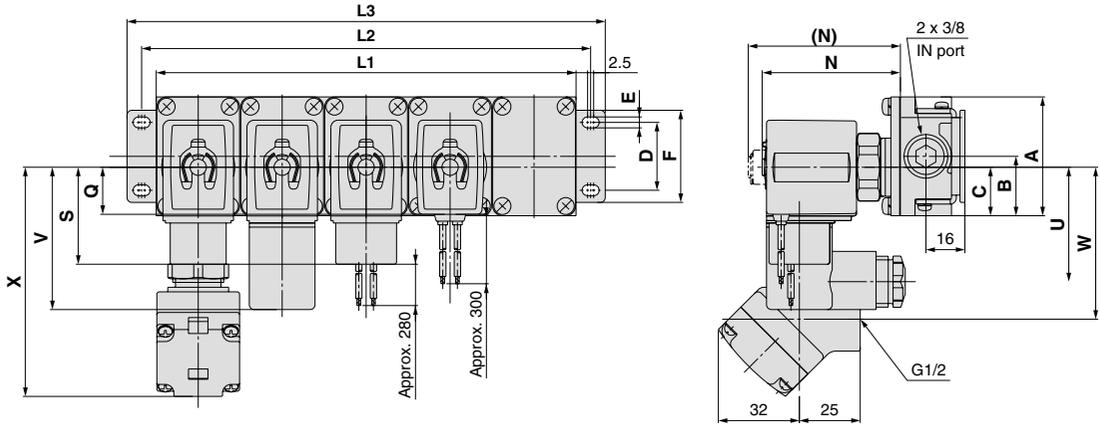
Note 2) Add 1.5 mm to "R", "T" and "Y" dimensions for the N.O. spec.

# Direct Operated 2 Port Solenoid Valve *Series VVX21/22/23*

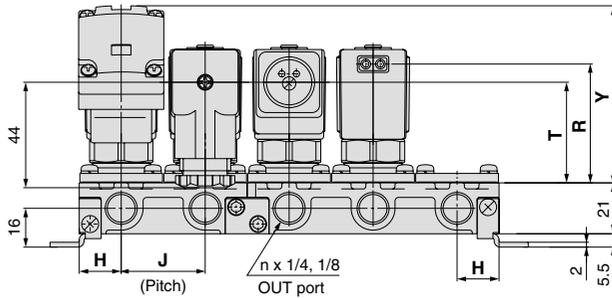
For Water, Oil, Steam

## Dimensions: Manifold/Base Material: Brass (C37), Stainless Steel

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



D side Stations 1 2 3 4 5 n U side



Model	Dimension	n (Stations)									
		2	3	4	5	6	7	8	9	10	
VVX21	L <sub>1</sub>	70	105	140	175	210	245	280	315	350	
	L <sub>2</sub>	82	117	152	187	222	257	292	327	362	
	L <sub>3</sub>	94	129	164	199	234	269	304	339	374	
VVX22	L <sub>1</sub>	78	117	156	195	234	273	312	351	390	
	L <sub>2</sub>	90	129	168	207	246	285	324	363	402	
	L <sub>3</sub>	102	141	180	219	258	297	336	375	414	
VVX23	L <sub>1</sub>	84	126	168	210	252	294	336	378	420	
	L <sub>2</sub>	96	138	180	222	264	306	348	390	432	
	L <sub>3</sub>	108	150	192	234	276	318	360	402	444	
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	

Model	(mm)									
	A	B	C	D	E	F	H	J	N	
VVX21	49	24.5	20	28	4.5	38	17.3	34.5	56	(64)
VVX22	57	28.5	25.5	30	5.5	42	19.3	38.5	64.5	(72.5)
VVX23	57	28.5	25.5	30	5.5	42	20.8	41.5	72.5	(81)

Model	Electrical entry <sup>Note 2)</sup>										Electrical entry (Built-in full-wave rectifier type) <sup>Note 2)</sup>									
	Grommet		Conduit		DIN terminal			Conduit terminal			Grommet		Conduit		DIN terminal			Conduit terminal		
	Q	R	S	T	U	V	T	W	X	Y	Q	R	S	T	U	V	T	W	X	Y
VVX21	19.5	47	40	39.5	46.5	58.5	39	61	92	71.5	30	43	48.5	38	53.5	65.5	39	69.5	100.5	70
VVX22	22.5	56.5	43	49	49.5	61.5	48.5	64	95	81	33	52.5	51.5	47.5	56.5	68.5	48.5	72.5	103.5	80
VVX23	25.5	64	46	56.5	52	64	56	66.5	98	88.5	36	60	54	55	59	71	56	75	106	87

Note 1) The figures in parentheses are the normally open (N.O.) type dimensions.

Note 2) Add 1.5 mm to "R", "T" and "Y" dimensions for the N.O. spec.



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

# Series VX21/22/23

For Air, Water, Oil, Steam

## Replacement Parts

### ● Solenoid coil assembly part no.

VX02 **1** N - **1** G - **1** - **1**

Series

1	VX21□□
2	VX22□□
3	VX23□□

Valve

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

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
5	24 VDC
6	12 VDC
7	240 VAC 50/60 Hz
8	48 VAC 50/60 Hz
J	230 VAC 50/60 Hz

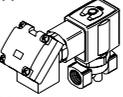
(Note) Refer to the table (1) for the available combinations.

Coil insulation type (Note)

Symbol	Insulation type
Nil	Class B
H*	Class H

\* DIN terminal and DC spec are not available.

Electrical entry

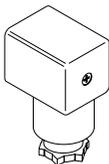
<b>G</b> - Grommet <b>GS</b> - With grommet surge voltage suppressor		<b>C</b> - Conduit	
<b>T</b> - With conduit terminal <b>TS</b> - With conduit terminal and surge voltage suppressor <b>TL</b> - With conduit terminal and light <b>TZ</b> - With conduit terminal, surge voltage suppressor and light	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

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

### ● DIN connector part no.

Without electrical option **GDM2A**

With electrical option **GDM2A -** **1** **1**



Electrical option

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

\* Refer to the table (1) for the 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**

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

VX02 **1** N - **1** GR - **1**

Series

1	VX21□□
2	VX22□□
3	VX23□□

Valve

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

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

Electrical entry

<b>G</b> - Grommet		<b>C</b> - Conduit	
<b>T</b> - With conduit terminal <b>TL</b> - With conduit terminal and light		<b>D</b> - DIN terminal <b>DL</b> - DIN terminal with light <b>DO</b> - For DIN terminal (without connector, gasket is included.)	

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

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

Table (1) Rated Voltage – Electrical Option

AC/DC	Voltage symbol	Rated voltage		Class B			Class H	
		Voltage	With surge voltage suppressor	With light	With light/surge voltage suppressor	With surge voltage suppressor	With light	With light/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	●	—	—	DC spec. is not available.		

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

\* Replacement of solenoid coils:

- DC and AC coils cannot be interchanged in order to change the voltage.
- DC and AC (built-in full-wave rectifier type) coils can be interchanged in order to change the voltage.
- All DC coil voltages are interchangeable.
- All AC coil voltages are interchangeable.

● 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**

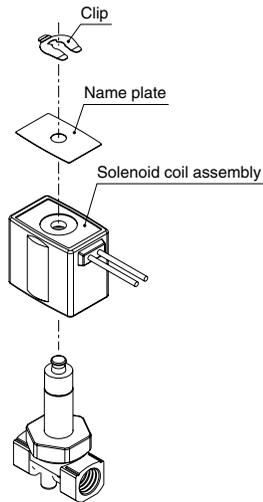
For VX23: **VX023N-10**

● Clip part no. (For N.O.)

For VX21: **ETW-7**

For VX22: **ETW-8**

For VX23: **ETW-9**



**VX2**

**VXD**

**VXZ**

**VXE**

**VXP**

**VXR**

**VXH**

**VXF**

**VX3**

**VXA**

**VCH□**

**VDW**

**VQ**

**LVM**

**VCA**

**VCB**

**VCL**

**VCS**

**VCW**

# Direct Operated 2 Port Solenoid Valve For Air, Gas, Vacuum, Water, Steam and Oil

## Series VX21/22/23



N.C.



N.O.

■ **Wide variations of combination.**

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

Application can be matched by simply choosing body materials (Brass, Stainless steel), seal material (NBR, EPDM, FKM, PTFE) and solenoid coil (Class B, Class H).

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

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

L VH

LVD

L VQ

LQ

L VN

T I/  
T I L

PA

PAX

PB

### Variations

**Valve**

Normally closed (N.C.)

Normally open (N.O.)

**Solenoid coil**

Coil: Class B, Class H

**Rated voltage**

AC  
Standard — 100 V, 200 V  
Option — 48 V, 110 V, 220 V, 240 V

DC  
Standard — 24 V  
Option — 12 V

**Material**

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

**Electrical entry**

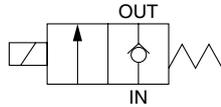
- Grommet
- Conduit
- DIN terminal
- Conduit terminal

**Model**

Model	Port size Rc	Orifice size (mmø)
VX211 <sup>2</sup> / <sub>0</sub>	1/8, 1/4	2
VX212 <sup>2</sup> / <sub>0</sub>	1/8, 1/4	3
VX213 <sup>2</sup> / <sub>0</sub>	1/8, 1/4	4.5
VX222 <sup>2</sup> / <sub>0</sub>	1/4, 3/8	3
VX223 <sup>2</sup> / <sub>0</sub>	1/4, 3/8	4.5
VX224 <sup>2</sup> / <sub>0</sub>	1/4, 3/8	6
VX2250	1/4, 3/8	8
VX2260	1/4, 3/8, 1/2	10
VX232 <sup>2</sup> / <sub>0</sub>	1/4, 3/8	3
VX233 <sup>2</sup> / <sub>0</sub>	1/4, 3/8	4.5
VX234 <sup>2</sup> / <sub>0</sub>	1/4, 3/8	6
VX2350	1/4, 3/8	8
VX2360	1/4, 3/8, 1/2	10

## Normally Closed (N.C.)

### JIS Symbol



### Fluid

Standard specifications	Option <sup>(1)</sup>	Made to Order <sup>(2)</sup>
Water (Standard)	High temperature water ... (D, E, N, P)	Air ..... X44
Turbine oil	High temperature oil ..... (D, N)	Vacuum (up to 1.3 x 10 <sup>2</sup> Pa) ..... X44
	Steam ..... (S, Q)	



Note 1) Refer to page 17-3-6 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

Note 2) Please contact SMC for details.

## Model/Valve Specifications <Normally Closed>

Port size	Orifice size (mm)	Model	Maximum operating pressure differential (MPa)						Flow characteristics						Max. system pressure (MPa)	Proof pressure (MPa)	Note ) Weight (g)	
			Water		Air		Oil		Steam	Water, Oil, Steam			Air					
			AC	DC	AC	DC	AC	DC	AC	Av x 10 <sup>-6</sup> (m <sup>2</sup> )	Cv converted	C [dm <sup>3</sup> /(s·bar)]	b	Cv				
1/8 (6A)	2	VX2110-01	2.0	1.5	2.0	1.5	1.5	1.5	1.0	4.1	0.17	0.58	0.57	0.19	Water, Air, Oil 3.0 Steam 1.0	5.0	260	
	3	VX2120-01	0.9	0.5	1.1	0.6	0.5	0.5	1.0	7.9	0.33	1.3	0.50	0.38				
	4.5	VX2130-01	0.4	0.2	0.45	0.2	0.2	0.15	0.45	15	0.61	2.5	0.45	0.65				
2	VX2110-02	2.0	1.5	2.0	1.5	1.5	1.5	1.0	4.1	0.17	0.58	0.57	0.19					
3	VX2120-02	0.9	0.5	1.1	0.6	0.5	0.5	1.0	7.9	0.33	1.3	0.50	0.38					
	VX2220-02	1.7	1.5	2.0	1.5	1.2	1.2	1.0										
	VX2320-02	2.5	3.0	3.0	3.0	1.7	2.0	—										
4.5	VX2130-02	0.4	0.2	0.45	0.2	0.2	0.15	0.45	15	0.61	2.6	0.50	0.75					
	VX2230-02	0.6	0.35	0.75	0.35	0.35	0.3	0.75										
	VX2330-02	0.85	0.9	1.0	0.9	0.55	0.85	1.0										
6	VX2240-02	0.35	0.15	0.4	0.15	0.2	0.1	0.4	26	1.1	4.3	0.40	1.2					
	VX2340-02	0.55	0.3	0.5	0.35	0.35	0.3	0.5										
	VX2250-02	0.13	0.08	0.15	0.08	0.1	0.08	0.15										
8	VX2350-02	0.17	0.2	0.2	0.2	0.14	0.2	0.2	41	1.7	6.4	0.40	1.8					
	VX2260-02	0.08	0.03	0.08	0.03	0.05	0.03	0.08										
	VX2360-02	0.1	0.07	0.1	0.07	0.08	0.07	0.1										
10	VX2260-02	0.08	0.03	0.08	0.03	0.05	0.03	0.08	46	1.9	8.8	0.40	2.3					
	VX2360-02	0.1	0.07	0.1	0.07	0.08	0.07	0.1										
	VX2220-03	1.7	1.5	2.0	1.5	1.2	1.2	1.0										
3	VX2320-03	2.5	3.0	3.0	3.0	1.7	2.0	—	7.9	0.33	1.3	0.50	0.38					
	VX2230-03	0.6	0.35	0.75	0.35	0.35	0.3	0.75										
	VX2330-03	0.85	0.9	1.0	0.9	0.55	0.85	1.0										
4.5	VX2240-03	0.35	0.15	0.4	0.15	0.2	0.1	0.4	15	0.61	2.6	0.50	0.75					
	VX2340-03	0.55	0.3	0.5	0.35	0.35	0.3	0.5										
	VX2250-03	0.13	0.08	0.15	0.08	0.1	0.08	0.15										
6	VX2350-03	0.17	0.2	0.2	0.2	0.14	0.2	0.2	26	1.1	4.3	0.40	1.2					
	VX2260-03	0.08	0.03	0.08	0.03	0.05	0.03	0.08										
	VX2360-03	0.1	0.07	0.1	0.07	0.08	0.07	0.1										
8	VX2260-03	0.08	0.03	0.08	0.03	0.05	0.03	0.08	41	1.7	6.4	0.40	1.8					
	VX2360-03	0.1	0.07	0.1	0.07	0.08	0.07	0.1										
	VX2260-03	0.08	0.03	0.08	0.03	0.05	0.03	0.08										
10	VX2360-03	0.1	0.07	0.1	0.07	0.08	0.07	0.1	58	2.4	11	0.38	2.8					
	VX2260-04	0.08	0.03	0.08	0.03	0.05	0.03	0.08										
	VX2360-04	0.1	0.07	0.1	0.07	0.08	0.07	0.1										
1/2 (15A)	10	VX2260-04	0.08	0.03	0.08	0.03	0.05	0.03	0.08	58	2.4	11	0.38	2.8				
	VX2360-04	0.1	0.07	0.1	0.07	0.08	0.07	0.1										



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

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

## Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VX21	AC	50	20	11	4.5	45
		60	17	7	3.2	35
DC	—	—	—	—	6	55
	DC	—	—	—	6	50
VX22	AC	50	40	18	7.5	60
		60	35	12	6	50
DC	—	—	—	—	8	60
	DC	—	—	—	8	60
VX23	AC	50	50	21	11	65
		60	45	17	9.5	60
DC	—	—	—	—	11.5	65
	DC	—	—	—	11.5	65



Note) • They are values in an ambient temperature of 20°C ± 5°C and application of rated voltage.

- Changing a coil from AC to DC is possible, but it's impossible to change from DC to AC. (Hum sound may generate, because of no shading coil for DC.)
- Return voltage is 20% or more of the rated value at AC power and 2% or more at the DC power.
- Allowable voltage fluctuation is ±10% of the rated voltage.

## Operating Fluid and Ambient Temperature

Temperature condition	Power source	Operating fluid temperature (°C)							Ambient temperature (°C)
		Water (Std.)	Air (Std.)	Oil (Std.)	High temperature water (D,E,N,P)	Oil <sup>(1)</sup> (D,N)	Steam <sup>(1)</sup> (S,Q)	Vacuum <sup>(1)</sup> (V,M)	
Maximum	AC	60	80	60	99	120	183	60	60
	DC	40	60	40	—	—	—	40	40
Minimum	AC/DC	1	-10 <sup>(1)</sup>	-5 <sup>(2)</sup>	—	—	—	-10	-20



Note 1) Dew point: -10°C or less

Note 2) 50 cSt or less

Note 3) "D", "E", "N", "P" etc. in parentheses are option symbols.

## Tightness of Valve (Leak rate)

Fluid	Air	Liquid	Non-leak <sup>(3)</sup> Vacuum	Steam
NBR, FKM	1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less <sup>(1)</sup>	10 <sup>-6</sup> Pa·m <sup>3</sup> /s sec or less	—
EPDM	1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less <sup>(1)</sup>	10 <sup>-6</sup> Pa·m <sup>3</sup> /s sec or less	—
PTFE	150 cm <sup>3</sup> /min or less <sup>(1)</sup>	5 cm <sup>3</sup> /min or less <sup>(1)</sup>	—	50 cm <sup>3</sup> /min or less <sup>(2)</sup>



Note 1) Differs depending on the operating conditions such as pressure, etc.

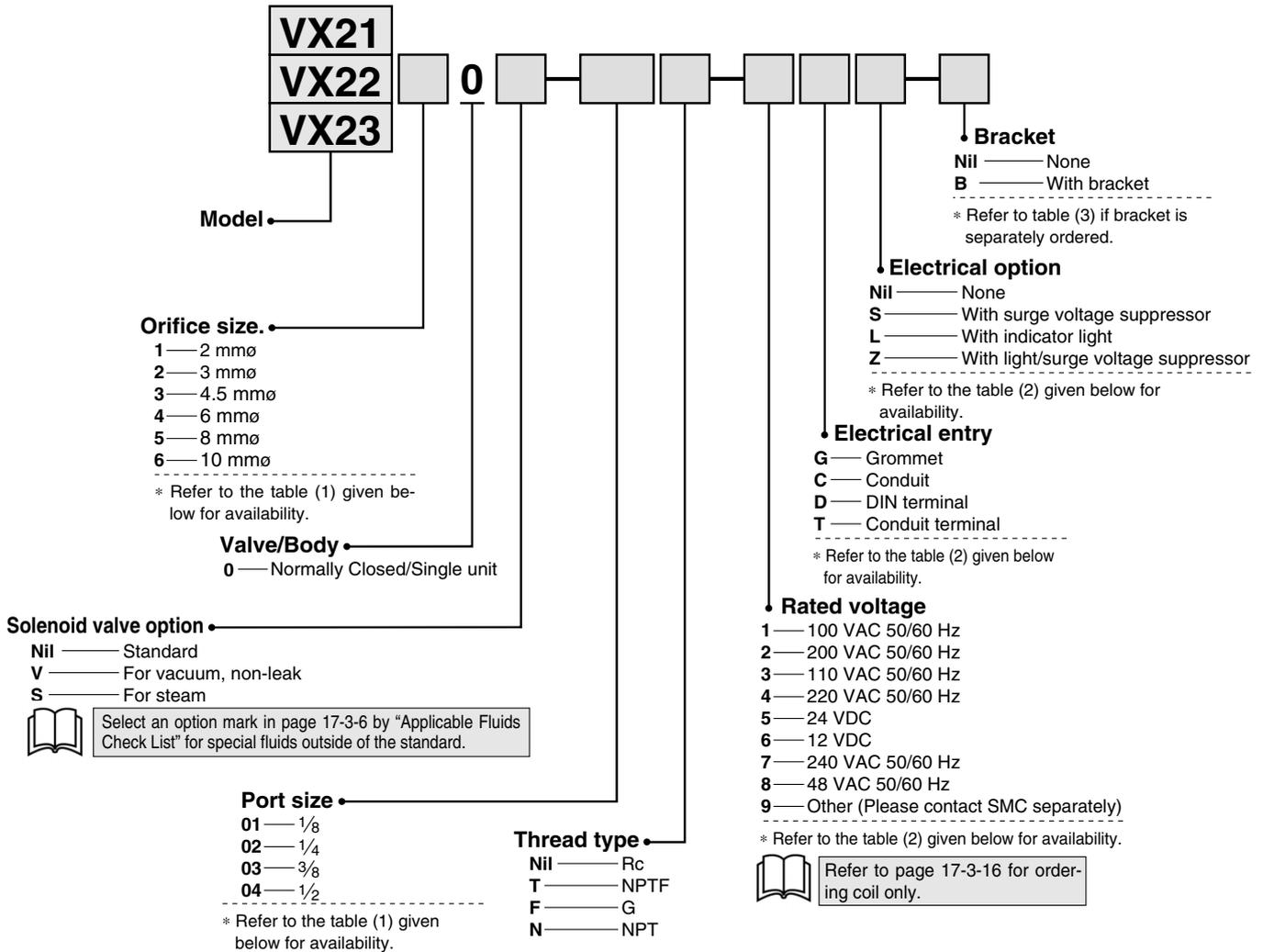
Note 2) Heat loss at 0.5 MPA is about 5 kcal/h.

Note 3) Valve on option "V", "M", "Y" (Non-leak, Vacuum).

# Direct Operated 2 Port Solenoid Valve For Air, Gas, Vacuum, Water, Steam and Oil Series VX21/22/23

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## How to Order (Normally Closed)



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

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

Solenoid valve (Port size)			Orifice size (No.)					
VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
01 (1/8)	—	—	●	●	●	—	—	—
02 (1/4)	—	—	●	●	●	—	—	—
—	02 (1/4)	02 (1/4)	—	●	●	●	●	●
—	03 (3/8)	03 (3/8)	—	●	●	●	●	●
—	04 (1/2)	04 (1/2)	—	—	—	—	—	●

**Ordering example**

(Example) Series VX21, Orifice size 2 mmø, Rc 1/8, 100 VAC, Grommet (Part no.) "VX2110-01-1G"

**Made to Order Specifications**

**Splashproof Specifications** (Based on JIS C 0920 / Based on IEC529IP-X4)

VX2 Model — Port size — Electrical entry - X36

DIN terminal or class H coil not available.

**Table(2) Rated Voltage-Electrical Entry-Electrical Option**

Insulation type	Class B			Class H		
	G	C	D, T	G, C	T	
Electrical entry	S <sup>Note</sup>	—	S, L, Z	—	S	L, Z
Electrical option						
AC	1 (100 V)	●	●	●	●	●
	2 (200 V)	●	●	●	●	●
	3 (110 V)	●	●	●	●	●
	4 (220 V)	●	●	●	●	●
	7 (240 V)	●	●	—	●	—
8 (48 V)	●	●	—	—	●	
DC	5 (24 V)	●	●	●	—	—
	6 (12 V)	●	●	—	—	—

Note) Surge voltage suppressor is attached in the middle of lead wire.

**Table (3) Bracket Part No.**

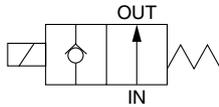
Model	Part no.
VX21 <sub>2</sub> 0	VX070-020
VX22 <sub>3</sub> 0 VX23 <sub>3</sub> 0	VX070-022
VX22 <sub>5</sub> 0 VX22 <sub>6</sub> 0	VX070-029

# Series VX21/22/23

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## Nomally Open (N.O.)

### JIS Symbol



### Fluid

Standard specifications	Option <sup>(1)</sup>	Made to Order <sup>(2)</sup>
Water (Standard)	High temperature water ... (D, E, N, P)	Air ..... X44
Turbine oil	High temperature oil ..... (D, N)	Vacuum (up to 1.3 x 10 <sup>2</sup> Pa) ..... X44
	Steam ..... (S, Q)	



Note 1) Refer to page 17-3-7 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.  
 Note 2) Please contact SMC for details.

## Model/Valve Specifications <Nomally Open>

Port size	Orifice size (mmø)	Model	Maximum operating pressure differential				Flow characteristics					Max. system pressure (MPa)	Proof pressure (MPa)	Weight <sup>(Note 1)</sup> (g)
			Water	Air	Oil	Steam	Water, Oil, Steam		Air					
							Av x 10 <sup>-6</sup> (m <sup>2</sup> )	Cv converted	C [dm <sup>3</sup> /(s·bar)]	b	Cv			
1/8 (6A)	2	VX2112-01	0.9	1.5	0.8	1.0	4.1	0.17	0.58	0.57	0.19	Water, Air, Oil 3.0 Steam 1.0	5.0	280
	3	VX2122-01	0.45	0.7	0.45	0.7	7.9	0.33	1.3	0.50	0.38			
	4.5	VX2132-01	0.2	0.3	0.2	0.3	15	0.61	2.3	0.45	0.70			
1/4 (8A)	2	VX2112-02	0.9	1.5	0.8	1.0	4.1	0.17	0.58	0.57	0.19			
	3	VX2122-02	0.45	0.7	0.45	0.7	7.9	0.33	1.3	0.52	0.38			
		VX2222-02	0.8	1.0	0.7	1.0								
		VX2322-02	1.2	1.6	1.0	—								
	4.5	VX2132-02	0.2	0.3	0.2	0.3	15	0.61	2.5	0.45	0.75			
		VX2232-02	0.3	0.45	0.3	0.45								
VX2332-02		0.6	0.8	0.6	0.8									
6	VX2242-02	0.15	0.25	0.15	0.25	26	1.1	3.3	0.50	1.1				
	VX2342-02	0.35	0.45	0.35	0.45									
3/8 (10)	3	VX2222-03	0.8	1.0	0.7	1.0	7.9	0.33	1.3	0.52	0.38			
		VX2322-03	1.2	1.6	1.0	—								
	4.5	VX2232-03	0.3	0.45	0.3	0.45	15	0.61	2.5	0.45	0.75			
		VX2332-03	0.6	0.8	0.6	0.8								
	6	VX2242-03	0.15	0.25	0.15	0.25	26	1.1	3.3	0.50	1.1			
		VX2342-03	0.35	0.45	0.35	0.45								



Note) Weight of grommet type. Add 10 g for conduit type, 30 g for DIN terminal type, 60 g for conduit terminal type respectively.  
 • Refer to "Glossary" on page 17-3-15 for details of max. operating pressure differential and max. system pressure.

## Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VX21	AC	50	25	12	5	50
		60	20	8	3.5	35
VX22	AC	50	45	20	8	55
		60	40	15	6.5	45
VX23	AC	50	60	25	10.5	60
		60	50	20	9.5	50
VX21	DC	—	—	—	6	50
		—	—	—	8	50
VX22	DC	—	—	—	8	50
		—	—	—	11.5	55



Note) • They are values in an ambient temperature of 20°C ± 5°C and application of rated voltage.

- Changing a coil from AC to DC is possible, but it's impossible to change from DC to AC.
- Return voltage is 20% or more of the rated value at AC power and 5% or more at the DC power.
- Allowable voltage fluctuation is ±10% of the rated voltage.

## Operating Fluid and Ambient Temperature

Temperature conditions	Power source	Operating fluid temperature (°C)							Ambient temperature (°C)
		Water (Std.)	Air (Std.)	Oil (Std.)	High temperature water <sup>(3)</sup> (D,E,N,P)	Oil <sup>(3)</sup> (D,N)	Steam <sup>(3)</sup> (S,Q)	Vacuum <sup>(3)</sup> (V,M)	
Maximum	AC	60	80	60	99	120	183	60	60
	DC	40	60	40	—	—	—	40	40
Minimum	AC/DC	1	-10 <sup>(1)</sup>	-5 <sup>(2)</sup>	—	—	—	-10	-20



Note 1) Dew point: -10°C or less  
 Note 2) 50 cSt or less  
 Note 3) "X", "E", "N", "P" etc. in parentheses are option symbols.

## Tightness of Valve (Leak rate)

Fluid	Air	Liquid	Non-leak <sup>(3)</sup> Vacuum	Steam
Seal material				
NBR, FKM	1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less <sup>(1)</sup>	10 <sup>-6</sup> Pa·m <sup>3</sup> /s sec or less	—
EPDM	150 cm <sup>3</sup> /min or less <sup>(1)</sup>	5 cm <sup>3</sup> /min or less <sup>(1)</sup>	—	50 cm <sup>3</sup> /min or less <sup>(2)</sup>

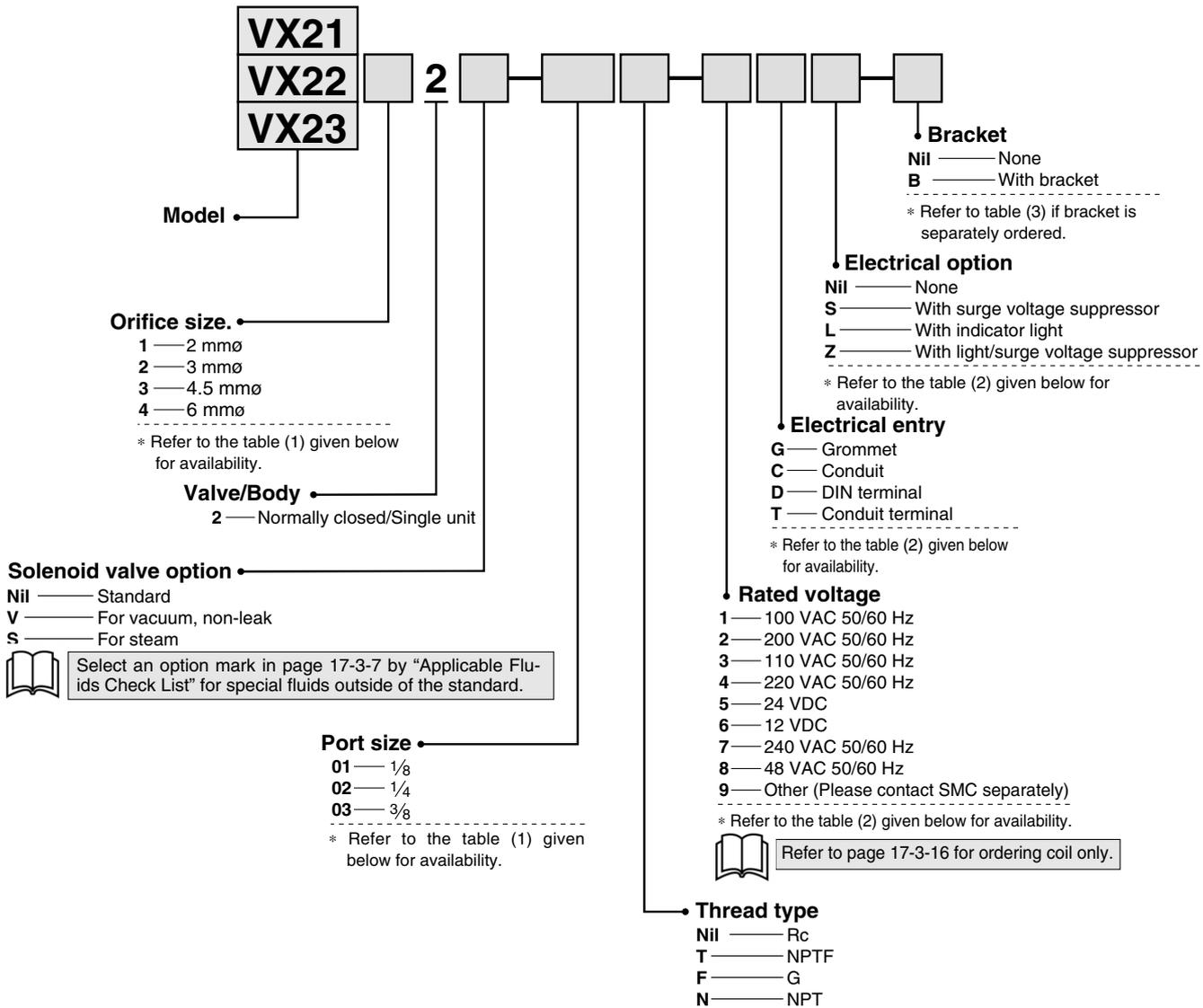


Note 1) Differs depending on the operating conditions such as pressure, etc.  
 Note 2) Heat loss at 0.5 MPA is about 5 kcal/h.  
 Note 3) Valve on option "V", "M" (Non-leak, Vacuum).

# Direct Operated 2 Port Solenoid Valve For Air, Gas, Vacuum, Water, Steam and Oil Series VX21/22/23

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## How to Order (Normally Closed)



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

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

Solenoid valve (Port size)			Orifice size (No.)			
VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
01 ( 1/8 )	—	—	●	●	●	—
02 ( 1/4 )	—	—	●	●	●	—
—	02 ( 1/4 )	02 ( 1/4 )	—	●	●	●
—	03 ( 3/8 )	03 ( 3/8 )	—	●	●	●

**Ordering example**

(Example) Series VX22, Orifice size 4.5 mmø, Rc 1/8, 100 VAC Grommet  
 (Part no.) "VX2232-02-1C"

**Made to Order Specifications**

**Splashproof Specifications** (Based on JIS C 0920 / Based on IEC529IP-X4)

**VX2 Model** — **Port size** — **Electrical entry** - X36

DIN terminal or class H coil not available.

**Table (2) Rated Voltage-Electrical Entry-Electrical Option**

	Insulation type	Class B				Class H		
		G	C	D, T	G, C	T		
Electrical entry		S <sup>Note)</sup>	—	S	L, Z	—	S	T
Electrical option								
AC	1 (100 V)	●	●	●	●	●	●	●
	2 (200 V)	●	●	●	●	●	●	●
	3 (110 V)	●	●	●	●	●	●	●
	4 (220 V)	●	●	●	●	●	●	●
	7 (240 V)	●	●	●	—	●	●	—
DC	8 (48 V)	●	●	●	—	—	●	—
	5 (24 V)	●	●	●	—	—	—	—
	6 (12 V)	●	●	●	—	—	—	—

Note) Surge voltage suppressor is attached in the middle of lead wire.

**Table (3) Bracket Part No.**

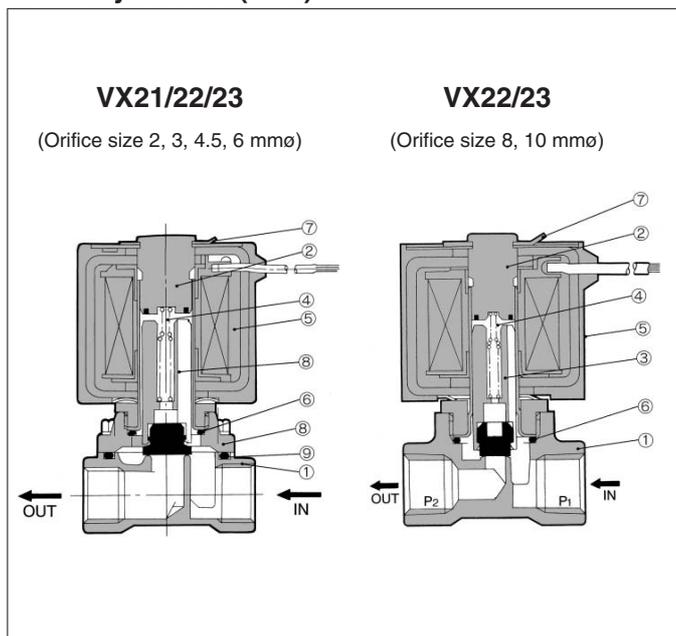
Model	Part no.
VX21 <sub>1</sub> <sup>0</sup>	VX070-020
VX22 <sub>2</sub> <sup>0</sup>	VX070-022
VX23 <sub>3</sub> <sup>0</sup>	

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

# Series VX21/22/23

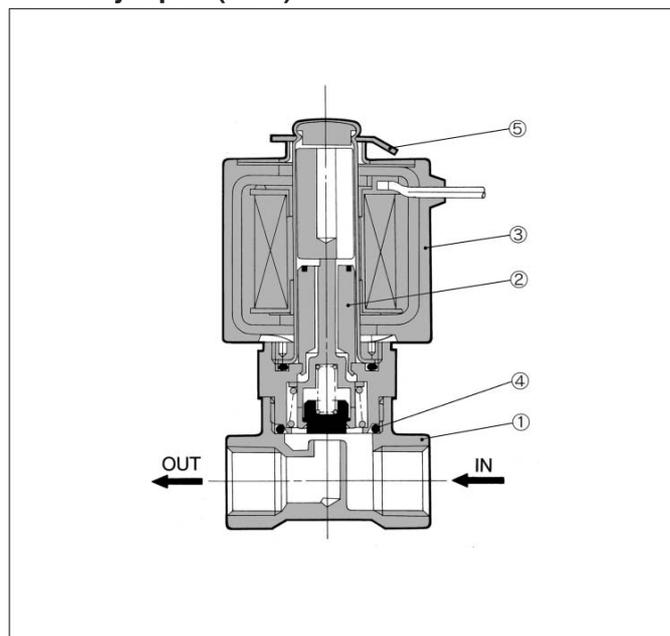
## Construction/Principal Parts Material

### Normally Closed (N.C.)



No.	Description	Material	
		Standard	Option
①	Body	Brass	Stainless steel
②	Core assembly	Stainless steel, Copper	Stainless steel/Silver
③	Armature assembly	Stainless steel, NBR	Stainless steel, FKM/ Stainless steel, PTFE/ Stainless steel, EPDM
④	Return spring	Stainless steel	—
⑤	Coil assembly	Class B molded	Class H molded
⑥	O-ring	NBR	FKM/EPDM/PTFE
⑦	Retainer	Stainless steel	—
⑧	Bonnet	Brass	Stainless steel
⑨	O-ring	NBR	FKM/EPDM/PTFE

### Normally Open (N.O.)



No.	Description	Material	
		Standard	Option
①	Body	Brass	Stainless steel
②	Core assembly	Stainless steel, Copper, Polyacetal NBR PTFE	Stainless steel, Silver, EPDM, FKM, PTFE
③	Coil assembly	Class B molded	Class H molded
④	O-ring	NBR	EPDM/FKM/PTFE
⑤	Retainer	Stainless steel	—

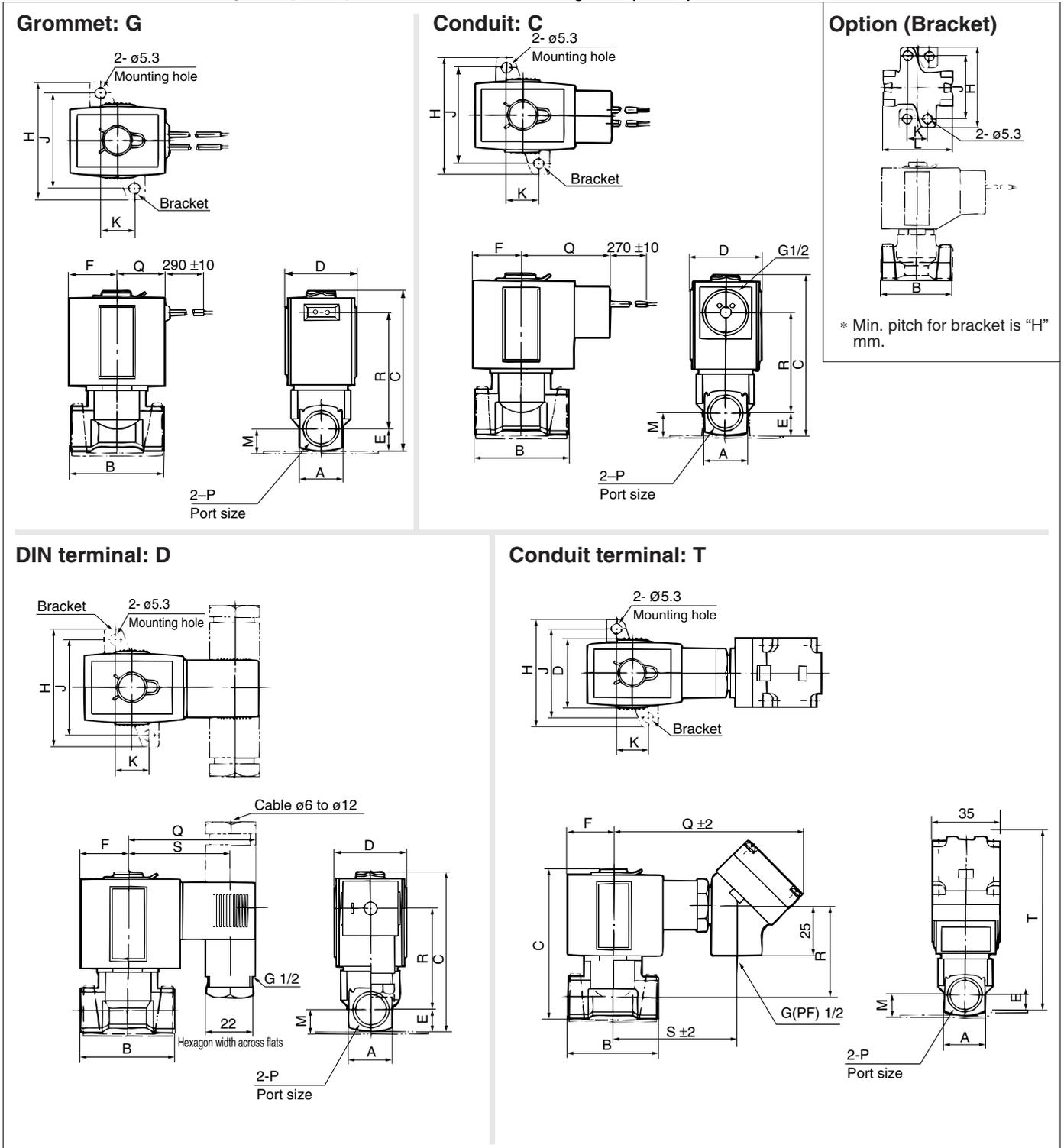
# Direct Operated 2 Port Solenoid Valve Series VX21/22/23

For Air, Gas, Vacuum, Water, Steam and Oil

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## Dimensions (Orifice Size: 2 mm $\phi$ , 3 mm $\phi$ , 4.5 mm $\phi$ , 6 mm $\phi$ )

Normally closed: VX21 $\frac{1}{2}$ 0, 22 $\frac{2}{4}$ 0, 23 $\frac{3}{4}$ 0, Normally open: VX2 $\frac{1}{2}$ 2, 22 $\frac{2}{4}$ 2, 23 $\frac{3}{4}$ 2



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

Model		P Port size Rc	Dimensions related to mounting							Electrical entry														
			A	B	C	D	E	F	Grommet		Conduit		DIN terminal			Conduit terminal								
Normally closed	Normally open		H	J	K	L	M	Q	R	Q	R	Q	R	S	Q	R	S	T						
VX21 $\square$ 0	VX21 $\square$ 2	1/8, 1/4	18	40	68(78)	30	9	20	46	36	11	39	10	23	48(55)	39	40(47)	59	40(47)	47	92	40(47)	59	84 (91)
VX22 $\square$ 0	VX22 $\square$ 2	1/4, 3/8	21	45	76(93)	35	10.5	23	56	46	13	44	11.5	25	56(66)	41	47(57)	60	47(57)	48	95	47(57)	62	94(104)
VX23 $\square$ 0	VX23 $\square$ 2	1/4, 3/8	21	45	84(99)	40	10.5	25.5	56	46	13	44	11.5	28	63(73)	44	55(65)	62	55(65)	50	97	55(65)	64	101(111)

The figures in parentheses are when closed at energizing.

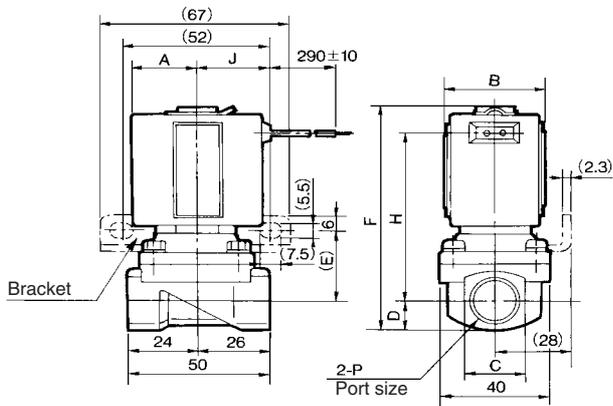
# Series VX21/22/23

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

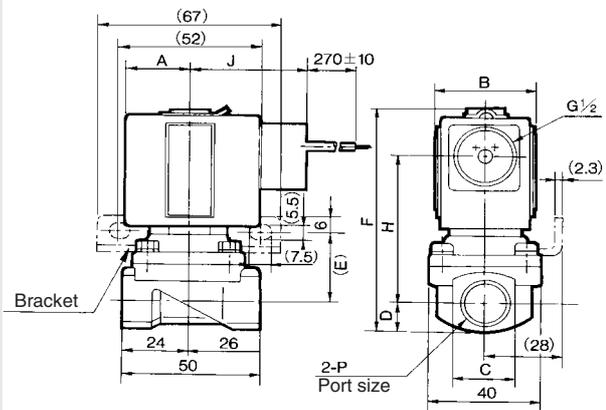
## Dimensions (Orifice Size: 8 mmø, 10 mmø)

Normally Closed: VX2250/2260/2350,

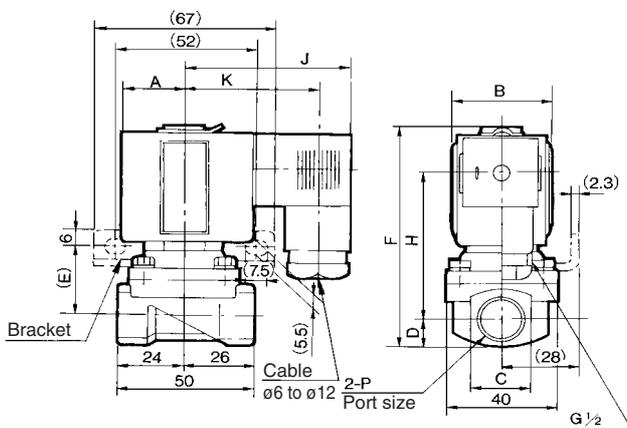
### Grommet: G



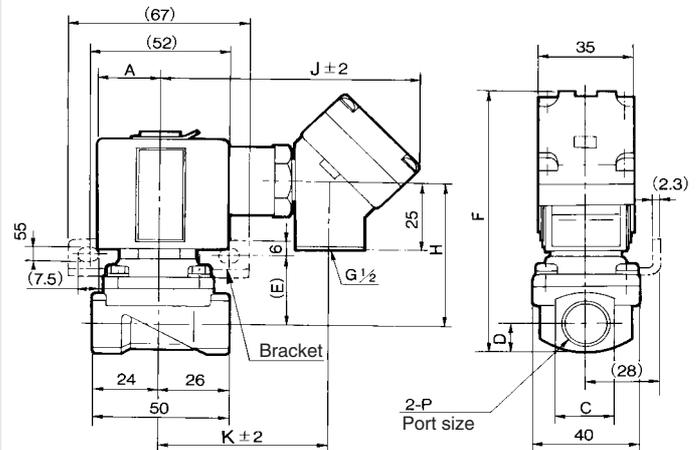
### Conduit: C



### DIN terminal: D



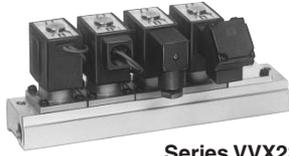
### Conduit terminal: T



Model	P Port size	A	B	C	D	E	Electrical entry																
							Grommet			Conduit			DIN terminal				Conduit terminal						
							F	H	J	F	H	J	F	H	J	K	F	H	J	K			
Normally closed	Rc																						
VX2250-02	1/4	23	35	22	11	27	83	62	25.5	83	54	41	83	54	60	48	100	54	95	62			
VX2350-03	3/8	25.5	40				91	69	28	91	62	44	91	62	62	62	50	108	62	97	64		
VX2260-04	1/2	23	35	28	14.5	30	89	65	25.5	89	57	41	89	57	60	48	106	57	95	62			
VX2360-04		25.5	40				97	72	28	97	65	44	97	65	62	50	114	65	97	64			

# Direct Operated 2 Port Solenoid Valve/Manifold For Air, Gas, Vacuum and Oil

## Series VVX21/22/23



Series VVX23



Series VVX22



Series VVX21

■ Common SUP type and individual SUP type (for vacuum use) are standardized.

■ A wide variety of applicable fluids.

Combination of seal materials (NBR, FKM, or EPDM) can be selected freely, depending on the purpose.

■ Able to replace valves with the piping remained unchanged.

■ Weight-saving aluminum base and body.

■ Brass base and stainless steel base are available.

Please contact SMC for details.

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/  
TIL

PA

PAX

PB

### Variations

**Valve**

Normally closed (N.C.)	Common SUP	
	Individual SUP	
Normally open (N.O.)	Common SUP	
	Individual SUP	

**Electrical entry**

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

**Voltage**

AC  
Standard — 100 V, 200 V  
Option — 48 V, 110 V, 220 V, 240 V

DC  
Standard — 24 V  
Option — 12 V

**Material**

Body — Aluminum  
Seal — NBR, FPM, EPR

**Model**

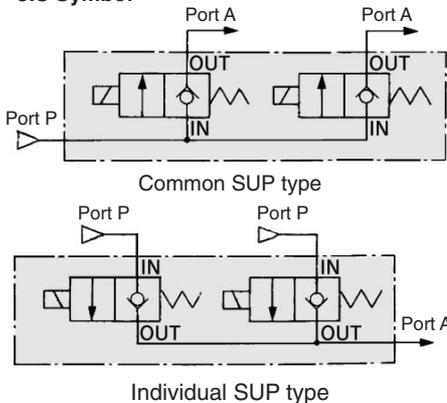
Manifold base model	Individual port Rc	Common port Rc
VVX211-stations	1/8	3/8
VVX212-stations	1/4	
VVX221-stations	1/8	
VVX222-stations	1/4	
VVX231-stations	1/8	
VVX232-stations	1/4	

# Series VVX21/22/23

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## Normally Closed (N.C.)

### JIS Symbol



### Fluid

Standard	Option <sup>(1)</sup>	Made to Order <sup>(2)</sup>
Turbine oil	High temperature oil ..... (D, N)	Air ..... X44 Vacuum (up to 1.3 x 10 <sup>2</sup> Pa) ..... X44



Note 1) Refer to page 17-3-8 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

Note 2) Please contact SMC for details.

### Manifold Specifications

Manifold	B Mount
Manifold type	Common pressure supply, Individual pressure supply <sup>Note)</sup>
Number of valves	2 to 10 stations
Blanking plate (with O-rings, screws)	VVX21...VX011-001, VVX22/23...VX011-006



Note) Common port is placed on vacuum side.

### Manifold Base and Applicable Solenoid Valve Part No.

n: Stations

Manifold base	Individual port Rc	Applicable solenoid valve	Base weight (g)
VVX211-stations	1/8	VX21□1-00-□□	n x 70 + 50
VVX212-stations	1/4		
VVX221-stations	1/8	VX22□1-00-□□	n x 130 + 110
VVX222-stations	1/4		
VVX231-stations	1/8	VX23□1-00-□□	n x 130 + 110
VVX232-stations	1/4		

### Solenoid Valve for Manifold/Valve Specifications <Normally Closed>

Orifice size (mm)	Model	Max. operating pressure differential (MPa)				Flow characteristics					Max. system pressure (MPa)	Proof pressure (MPa)	Weight (g)									
		Water	Air		Oil	Water, Oil, Steam		Air														
			DC	AC		AC	DC	Av x 10 <sup>-6</sup> (m <sup>2</sup> )	Cv converted	C[dm <sup>3</sup> /(s-bar)]				b	Cv							
2	VX2111-00	2.0	1.5	1.5	1.5	4.1	0.17	0.58	0.57	0.19	3.0	5.0	220									
	VX2121-00	1.1	0.6	0.5	0.5																	
3	VX2221-00	2.0	1.5	1.2	1.2	7.9	0.33	1.3	0.50	0.38				3.0	5.0	350						
	VX2321-00	3.0	3.0	1.7	2.0																	
	VX2131-00	0.45	0.2	0.2	0.15																	
4.5	VX2231-00	0.75	0.35	0.35	0.3	15	0.61	2.6	0.50	0.75							3.0	5.0	490			
	VX2331-00	1.0	0.9	0.55	0.85																	
	VX2241-00	0.4	0.15	0.2	0.1																	
6	VX2341-00	0.5	0.35	0.35	0.3	26	1.1	4.3	0.40	1.2										3.0	5.0	350
	VX2341-00	0.5	0.35	0.35	0.3																	



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

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

### Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VX21	AC	50	20	11	4.5	45
		60	17	7	3.2	35
VX22	AC	50	40	18	7.5	60
		60	35	12	6	50
VX23	AC	50	50	21	11	65
		60	45	17	9.5	60
VX21	DC	—	—	—	6	55
		—	—	—	8	60
VX22	DC	—	—	—	8	60
		—	—	—	11.5	65



Note) • They are values in an ambient temperature of 20°C ± 5°C and application of rated voltage.

• Changing a coil from AC to DC is possible, but it's impossible to change from DC to AC. (Hum sound may generate, because of no shading coil for DC.)

• Return voltage is 20% or more of the rated value at AC power and 2% or more at the DC power.

• Allowable voltage fluctuation is ±10% of the rated voltage.

### Operating Fluid and Ambient Temperature

Temperature conditions	Power source	Operating fluid temperature (°C)				Ambient temperature (°C)
		Air (Std.)	Oil (Std.)	Oil <sup>(3)</sup> (D,N)	Vacuum <sup>(3)</sup> (V, R, Y)	
Maximum	AC	80	60	120	60	60
	DC	60	40	—	40	40
Minimum	AC	-10 <sup>(1)</sup>	-5 <sup>(2)</sup>	—	-10	-20
	DC	—	—	—	—	—



Note 1) Dew point: -10°C or less

Note 2) 50 cSt or less

Note 3) "D", "N", etc. in parentheses are option symbols.

### Tightness of Valve (Leak rate)

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



Note 1) Differs depending on the operating conditions such as pressure, etc.

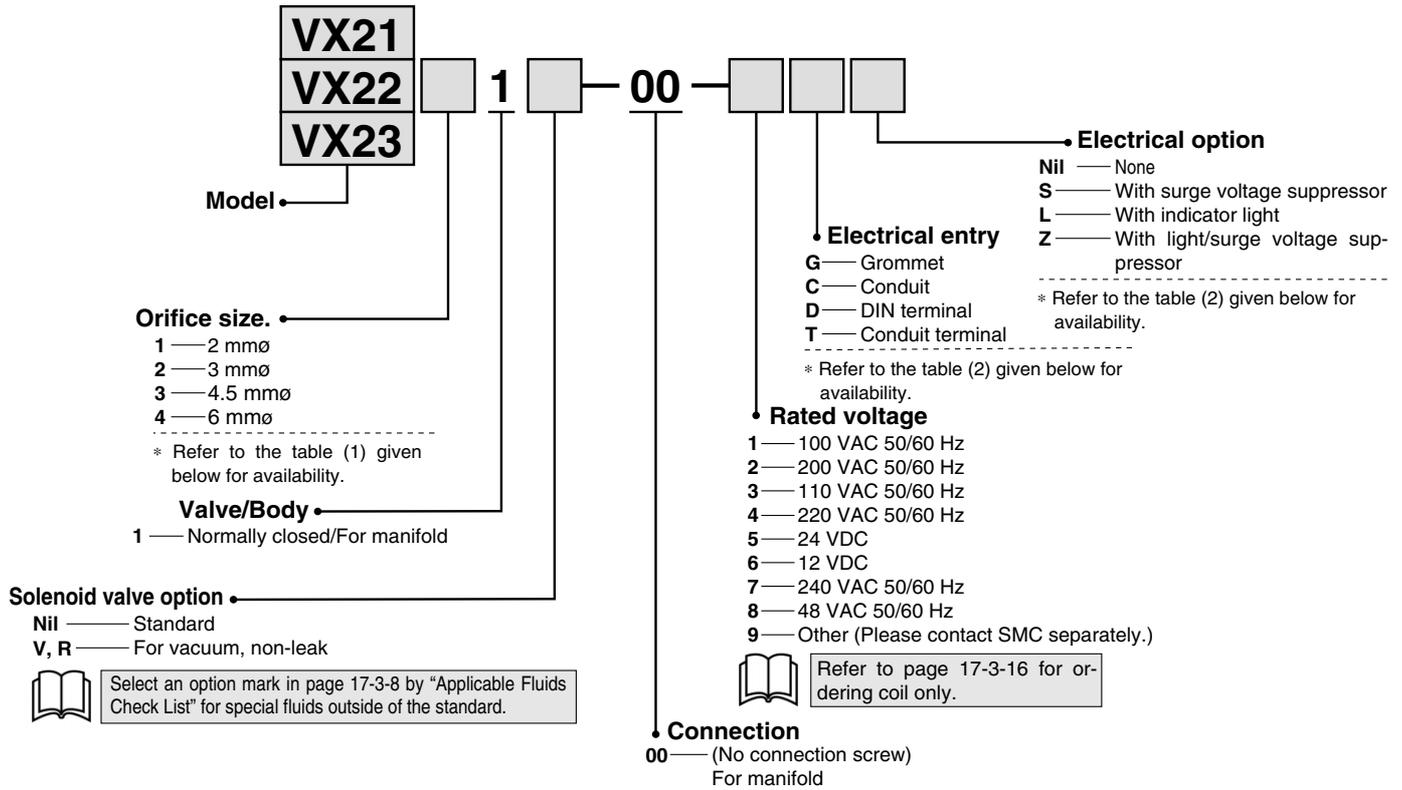
Note 2) Value on option "V", "R", "Y" (Non-leak, Vacuum).

# Direct Operated 2 Port Solenoid Valve/Manifold Series VVX21/22/23

For Air, Gas, Vacuum and Oil

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## How to Order Solenoid Valves for Manifold (Normally Closed)



VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/  
TIL

PA

PAX

PB

Table (1) Orifice Size

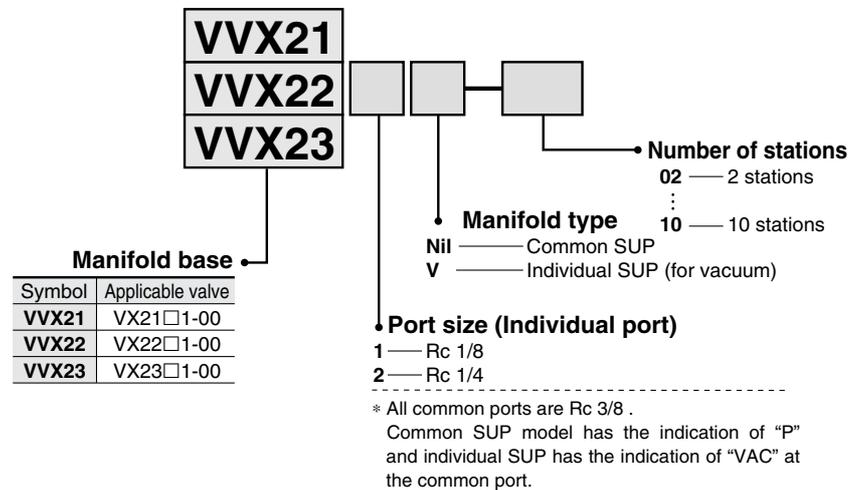
Solenoid valve model	Orifice size (No.)			
	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table(2) Rated Voltage-Electrical Entry-Electrical Option

Insulation type	Class B				Class H			
	Electrical entry	G	C	D, T	G, C	T	Electrical option	S, L, Z
AC	1 (100 V)	●	●	●	●	●	S <sup>Note)</sup>	—
	2 (200 V)	●	●	●	●	●	—	—
	3 (110 V)	●	●	●	●	●	—	—
	4 (220 V)	●	●	●	●	●	—	—
	7 (240 V)	●	●	—	—	—	—	—
DC	8 (48 V)	●	●	—	—	—	—	—
	5 (24 V)	●	●	●	—	—	—	—
	6 (12 V)	●	●	—	—	—	—	—

Note) Surge voltage suppressor is attached in the middle of lead wire.

## How to Order Manifold Base

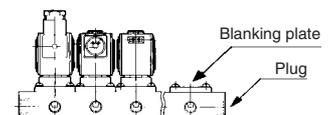


## How to Order Manifold

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

(Example) 7 stations of VX21 common SUP, Individual port Rc 1/8.

(Base P/N) VVX211-07..... 1 pc.  
(Solenoid valve P/N) VVX2111-00-1G..... 6 pcs.  
(Blanking plate P/N) VVX011-001..... 1 pc.



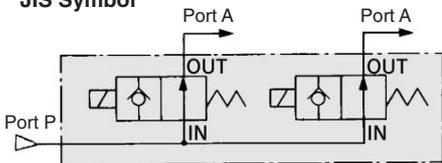
The standard arrangements of manifolds should be placed on an individual port on this side, each solenoid valve from the left side and a blank plate in the right side. The right side of the common port provides plug.

# Series VVX21/22/23

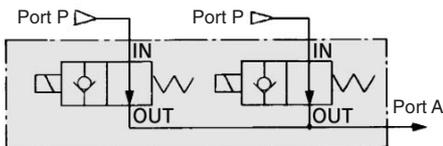
The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## Normally Open (N.O.)

### JIS Symbol



Common SUP type



Individual SUP type

### Fluid

Standard specifications	Option <sup>(1)</sup>	Made to Order <sup>(2)</sup>
Turbine oil	High temperature oil ..... (D, N)	Air ..... X44 Vacuum (up to 1.3 x 10 <sup>2</sup> Pa)..... X44



Note 1) Refer to page 17-3-8 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

Note 2) Please contact SMC for details.

### Manifold Specifications

Manifold	B mount
Manifold type	Common pressure supply, Individual pressure supply <sup>Note)</sup>
Number of valves	2 to 10 stations
Blanking plate (with O-rings, screws)	VVX21...VX011-001, VVX22/23...VX011-006



Note) Common port is placed on vacuum side.

### Manifold Base and Applicable Solenoid Valve Part No.

n: Stations

Manifold base	Individual port Rc	Applicable solenoid valve	Base weight (g)
VVX211-stations	1/8	VX21□3-00-□□	n x 70 + 50
VVX212-stations	1/4		
VVX221-stations	1/8	VX22□3-00-□□	n x 130 + 110
VVX222-stations	1/4		
VVX231-stations	1/8	VX23□3-00-□□	n x 130 + 110
VVX232-stations	1/4		

### Solenoid Valves for Manifold/Valve Specifications <Normally Open>

Orifice size (mm)	Model	Max. operating pressure differential (MPa)		Flow characteristics					Max. system pressure (MPa)	Proof pressure (MPa)	Weight (g)
		Air	Oil	Oil		Air					
				Av x 10 <sup>-6</sup> (m <sup>2</sup> )	Cv converted	C [dm <sup>3</sup> / (s·bar)]	b	Cv			
2	VX2113-00	1.5	0.8	4.1	0.17	0.58	0.57	0.19	3.0	5.0	240
	VX2123-00	0.7	0.45								240
3	VX2223-00	1.0	0.7	7.9	0.33	1.3	0.52	0.38			390
	VX2323-00	1.6	1.0								530
	VX2133-00	0.3	0.2								240
4.5	VX2233-00	0.45	0.3	15	0.61	2.5	0.45	0.75			390
	VX2333-00	0.8	0.6								530
	VX2243-00	0.25	0.15								390
6	VX2343-00	0.45	0.35	26	1.1	3.3	0.50	1.1			530



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

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

### Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VX21	AC	50	25	12	5	50
		60	20	8	3.5	35
VX22	AC	50	45	20	8	55
		60	40	15	6.5	45
VX23	AC	50	60	25	10.5	60
		60	50	20	9.5	50
VX21	DC	—	—	—	6	50
		—	—	—	8	50
VX22	DC	—	—	—	8	50
		—	—	—	11.5	55



Note) • They are values in an ambient temperature of 20°C ± 5°C and application of rated voltage.

- Changing a coil from AC to DC is possible, but it's impossible to change from DC to AC.
- Return voltage is 20% or more of the rated value at AC power and 2% or more at the DC power.
- Allowable voltage fluctuation is ±10% of the rated voltage.

### Operating Fluid and Ambient Temperature

Temperature conditions	Power source	Operating fluid temperature (°C)				Ambient temperature (°C)
		Air (Std.)	Oil (Std.)	Oil <sup>(3)</sup> (D,N)	Vacuum <sup>(3)</sup> (V, R, Y)	
Maximum	AC	80	60	100	60	60
	DC	60	40	—	40	40
Minimum	AC	-10 <sup>(1)</sup>	-5 <sup>(2)</sup>	—	-10	-20
	DC	—	—	—	—	—



Note 1) Dew point: -10°C or less

Note 2) 50 cSt or less

Note 3) "D", "N", etc. in parentheses are option symbols.

### Tightness of Valve (Leak rate)

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



Note 1) Differs depending on the operating conditions such as pressure, etc.

Note 2) Value on option "V", "R", "Y" (Non-leak, Vacuum).

# Direct Operated 2 Port Solenoid Valve/Manifold Series VVX21/22/23

For Air, Gas, Vacuum and Oil

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## How to Order Solenoid Valves for Manifold (Normally Open)

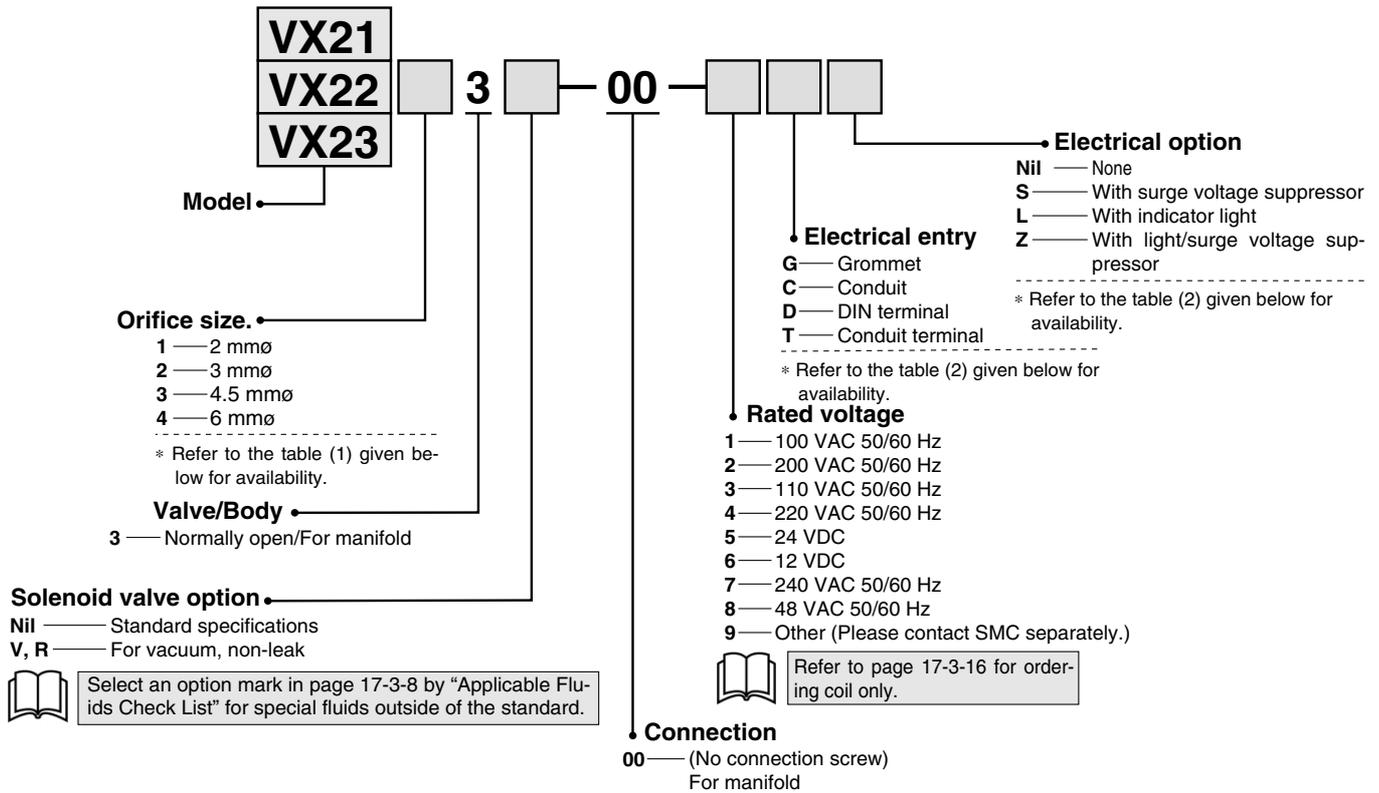


Table (1) Orifice Size

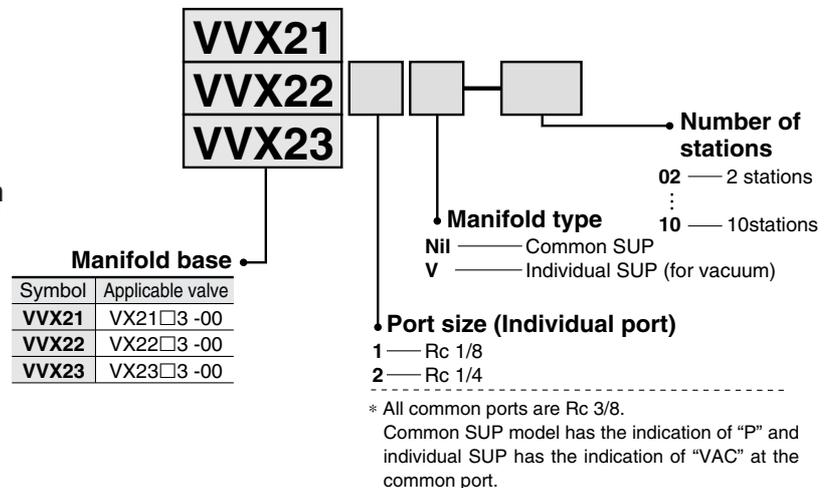
Solenoid valve model	Orifice size (No.)			
	1 (2 mm $\phi$ )	2 (3 mm $\phi$ )	3 (4.5 mm $\phi$ )	4 (6 mm $\phi$ )
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Rated Voltage-Electrical Entry-Electrical Option

Insulation type	Class B				Class H		
	G	C	D, T	G, C	T	S	L, Z
Electrical entry	G	C	D, T	G, C	T	S	L, Z
Electrical option	S <sup>(Note)</sup>	—	S, L, Z	—	S, L, Z	—	—
AC	1 (100 V)	●	●	●	●	●	●
	2 (200 V)	●	●	●	●	●	●
	3 (110 V)	●	●	●	●	●	●
	4 (220 V)	●	●	●	●	●	●
DC	5 (24 V)	●	●	●	—	—	—
	7 (240 V)	●	●	●	—	—	—
	8 (48 V)	●	●	●	—	—	—
	6 (12 V)	●	●	●	—	—	—

Note) Surge voltage suppressor is attached in the middle of lead wire.

## How to Order Manifold Base

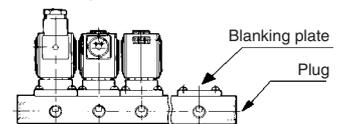


## How to Order Manifold

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

(Example) 7 stations of VX21 common SUP, Individual port Rc1/8.

(Base P/N) VVX211-07..... 1 pc  
 (Solenoid valve P/N) VX2113-00-1G..... 6 pc  
 (Blanking plate P/N) VVX2111-00..... 1 pc



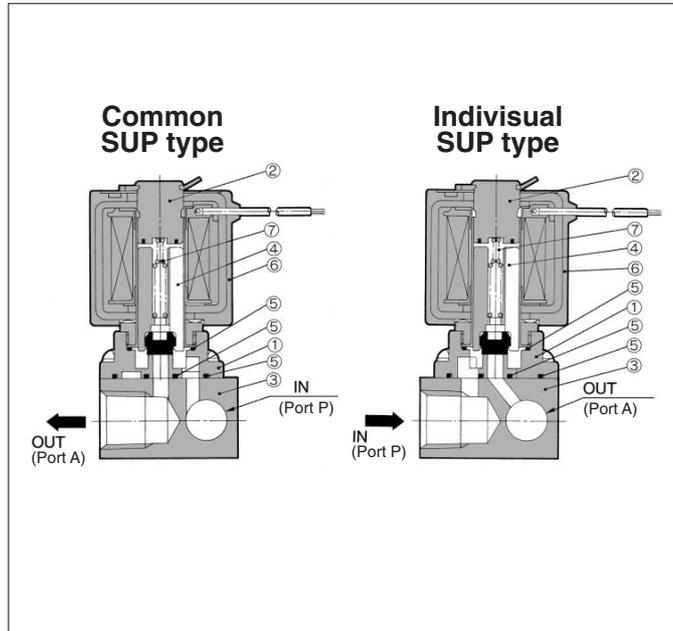
The standard arrangements of manifolds should be placed on an individual port on this side, each solenoid valve from the left side and a blank plate in the right side. The right side of the common port provides plug.

# Series VVX21/22/23

The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

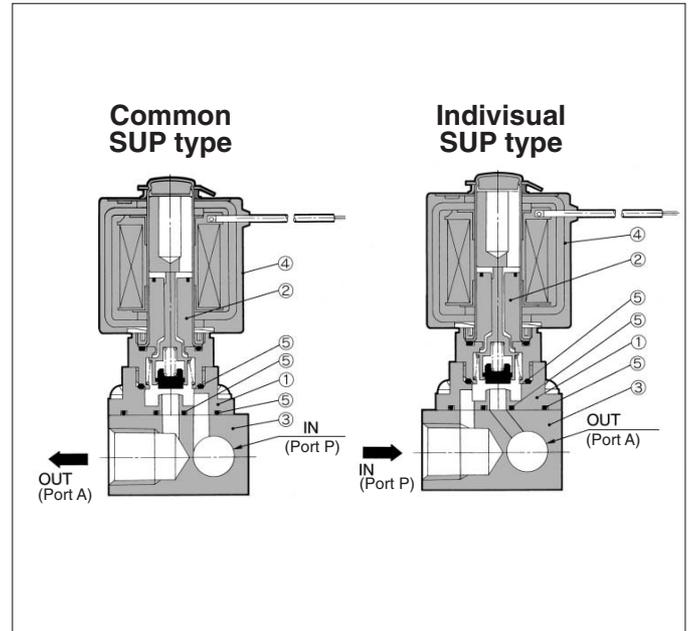
## Construction/Principal Parts Material

### Normally Closed (N.C.)



No.	Description	Material	
		Standard	Option
①	Body	Aluminum	—
②	Core assembly	Stainless steel, Copper	Stainless steel, Silver
③	Base	Aluminum	—
④	Armature assembly	Stainless steel, NBR	Stainless steel, FKM/ Stainless steel, EPDM
⑤	O-ring	NBR	FKM/EPDM
⑥	Coil assembly	Class B molded	Class H molded
⑦	Return spring	Stainless steel	—

### Normally Open (N.O.)



No.	Description	Material	
		Standard	Option
①	Body	Aluminum	—
②	Core assembly	Stainless steel, Copper, Polyacetal, NBR, PTFE	Stainless steel, Silver, EPDM, PTFE, FKM
③	Base	Aluminum	—
④	Coil assembly	Class B molded	Class H molded
⑤	O-ring	NBR	FKM/EPDM

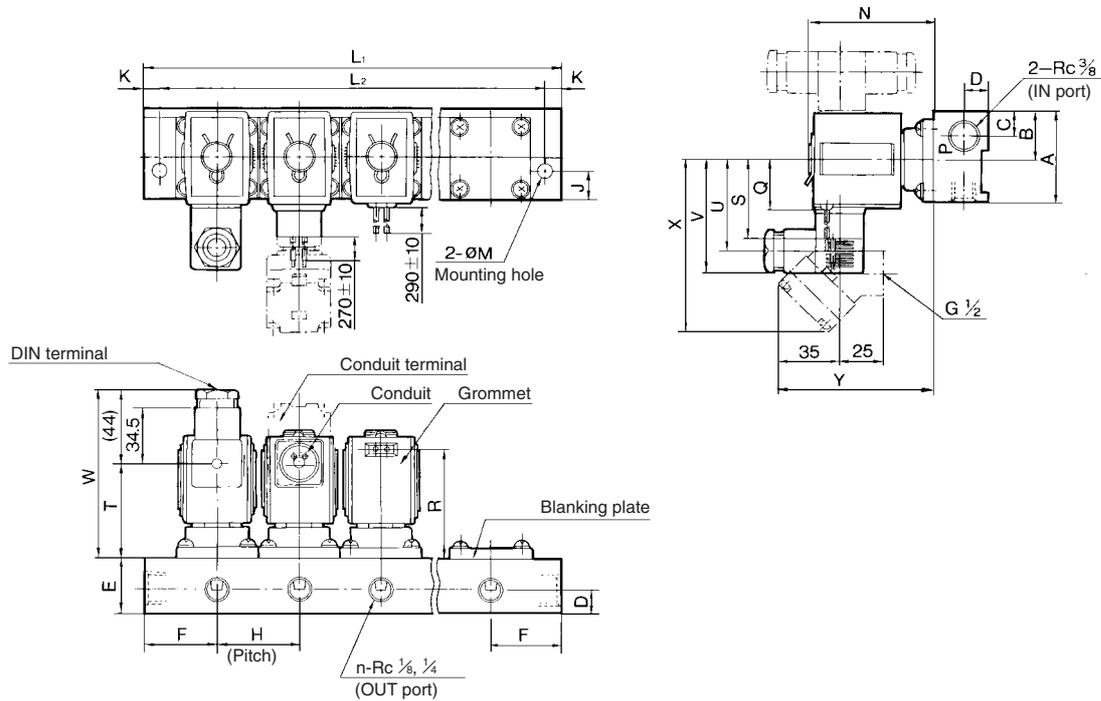
# Direct Operated 2 Port Solenoid Valve/Manifold Series VVX21/22/23

For Air, Gas, Vacuum and Oil

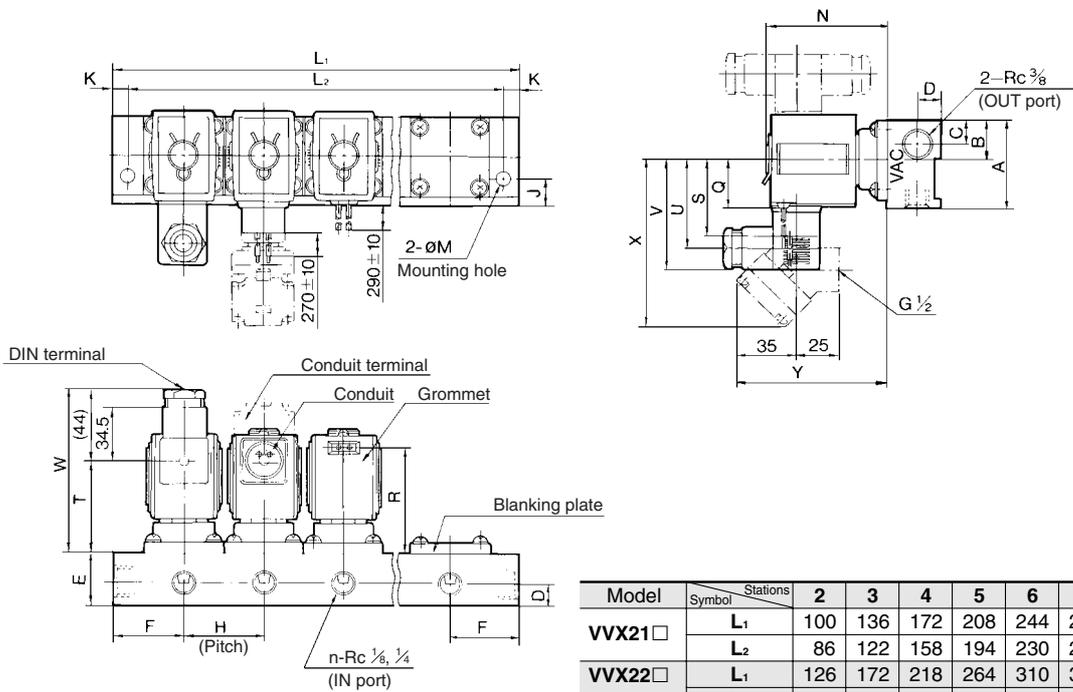
The models VX21/22/23 have been revised. For details, please refer to catalog no. ES70-23A. Similar updating for other VX\* series are scheduled to follow shortly.

## Dimensions

### Common SUP type



### Individual SUP type



Model	Symbol	Stations									
		2	3	4	5	6	7	8	9	10	
VVX21□	L <sub>1</sub>	100	136	172	208	244	280	316	352	388	
	L <sub>2</sub>	86	122	158	194	230	266	302	338	374	
VVX22□	L <sub>1</sub>	126	172	218	264	310	356	402	448	494	
	L <sub>2</sub>	108	154	200	246	292	338	384	430	476	

Model	A	B	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	56 (67)	23	47 (54)	39	40 (47)	47	59	84 (91)	92	74 (81)	
VVX22□	49	26.5 (22.5)	13	13	30	40	46	15	9	8.5	64 (81)	25.5	54 (64)	41.5	46 (56)	48	60	90 (100)	94	81 (91)	
VVX23□	49	26.5 (22.5)	13	13	30	40	46	15	9	8.5	72 (87)	28	61 (71)	44	54 (64)	51	63	98 (108)	97	88 (98)	

The figures in parentheses are a closed type at energizing ( ): Individual pressure

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