

# Energy Saving Type 2 Port Solenoid Valve

## VXE Series

For Air, Water, Oil



RoHS

*Power  
consumption*

(SMC comparison)

# 1/3



VX2

VXK

VXD

VXZ

VXS

VXB

**VXE**

VXP

VXR

VXH

VXF

VX3

VXA

**New generation valve corresponding to energy-saving needs**

●IP65 ●RoHS compliance

# VXE Series

VXE2, VXED2, VXEZ2

**2 port solenoid valve for various fluids**

**Energy saving type of the VX2, VXD2 and VXZ2 series**

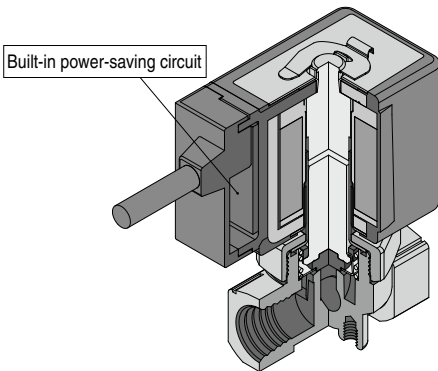
**VXE2** Direct Operated

**VXED2** Pilot Operated

**VXEZ2** Zero Differential Pressure Type Pilot Operated

- The power consumption (when holding) is substantially reduced (approx. 1/3).
- Coil heat reduction

Model	Power consumption (W) (Holding)	Inrush current (A) (Inrush time: 200 ms)		Temperature increase (°C)
		24 VDC	12 VDC	
VXE□21 (VXED2130)	1.5 (1.8)	0.19 (0.23)	0.38 (0.46)	25 (30)
VXE□22	2.3	0.29	0.58	25
VXE□23	3	0.44	0.88	30



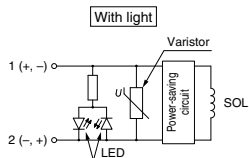
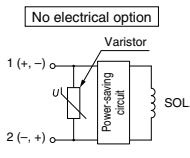
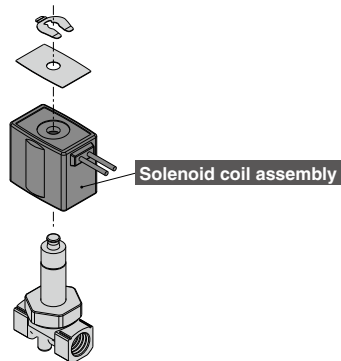
## ● Interchangeable

The mounting dimensions and its basic specifications are equivalent to those of current models.




## ● Replaceable coil

Possible to change the solenoid coil assembly for the VX2, VXD and VXZ with the power-saving coil type.

(Restricted for the rated voltage 12, 24 VDC)



# Body Size Variations between 1/8" to 2"

Series	Port size Orifice diameter	Thread						Flange		
		1/8	1/4	3/8	1/2	3/4	1	32A	40A	50A
<b>VXE2</b> Direct Operated 	2 mm $\varnothing$	●	●							
	3 mm $\varnothing$	●	●	●						
	4.5 mm $\varnothing$	●	●	●						
	6 mm $\varnothing$		●	●						
	8 mm $\varnothing$		●	●						
	10 mm $\varnothing$		●	●	●					
	10 mm $\varnothing$		●	●	●					
<b>VXED2</b> Pilot Operated 	15 mm $\varnothing$			●	●					
	20 mm $\varnothing$					●				
	25 mm $\varnothing$						●			
	35 mm $\varnothing$							●		
	40 mm $\varnothing$								●	
	50 mm $\varnothing$									●
	10 mm $\varnothing$		●	●						
<b>VXEZ2</b> Zero Differential Pressure Type Pilot Operated 	15 mm $\varnothing$				●					
	20 mm $\varnothing$					●				
	25 mm $\varnothing$						●			
	10 mm $\varnothing$		●	●						

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- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE**
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA



## Energy Saving Type

# Direct Operated 2 Port Solenoid Valve

# VXE21/22/23 Series

For Air, Water, Oil



## Single Unit

### Valve

Normally closed (N.C.)

### Solenoid Coil

Coil: Class B

### Rated Voltage

24 VDC, 12 VDC

### Material

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

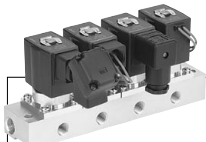
### Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



### Normally Closed (N.C.)

Model	VXE21	VXE22	VXE23	
Orifice diameter	2 mmφ	●	—	—
	3 mmφ	●	—	—
	4.5 mmφ	●	●	—
	6 mmφ	—	●	●
	8 mmφ	—	●	●
10 mmφ	—	●	●	●
Port size	1/8 1/4	1/4 3/8	1/2	1/4 3/8



## Manifold

### Valve

Normally closed (N.C.)

### Base

Common SUP  
Individual SUP (Aluminum base only)

### Solenoid Coil

Coil: Class B

### Rated Voltage

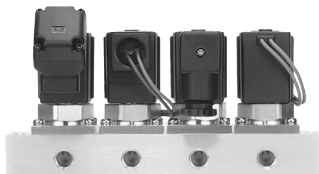
24 VDC, 12 VDC

### Material

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

### Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



### Manifold

Model	VXE21	VXE22	VXE23	
Orifice diameter	2 mmφ	●	—	—
	3 mmφ	●	●	●
	4.5 mmφ	●	●	●
	6 mmφ	—	●	●
(Common SUP) Port size	3/8			
	1/8, 1/4			

VX2

VXK

VXD

VXZ

VXS

VXB

VXE

VXP

VXR

VXH

VXF

VX3

VXA

# VXE21/22/23 Series

# Common Specifications

## Standard Specifications

Valve specifications	Valve construction	Direct operated poppet
	Valve type	N.C.
	Withstand pressure	5.0 MPa
	Body material	Brass (C37), Stainless steel
	Seal material	NBR, FKM, EPDM, PTFE
	Enclosure	Dusttight, Low jetproof (IP65)
	Environment	Location without corrosive or explosive gases
Coil specifications	Rated voltage	24 VDC, 12 VDC
	Allowable voltage fluctuation	±10% of rated voltage
	Allowable leakage voltage	2% or less of rated voltage
	Coil insulation type	Class B
	Surge voltage suppressor	Built-in surge voltage suppressor

## Solenoid Coil Specifications

### Normally Closed (N.C.)

#### DC Specification

Model	Power consumption (W) (Holding)	Inrush current (A) (Inrush time: 200 ms) <sup>Note 1)</sup>		Temperature increase (°C) <sup>Note 2)</sup>
		24 VDC	12 VDC	
VXE21	1.5	0.19	0.38	25
VXE22	2.3	0.29	0.58	25
VXE23	3	0.44	0.88	30

Note 1) Energizing time should be 200 ms or longer.

Note 2) Value for ambient temperature at 20°C and when the rated voltage is applied.

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# Energy Saving Type/Direct Operated 2 Port Solenoid Valve VXE21/22/23 Series

## Applicable Fluid Check List

### All Options (Single Unit)

Refer to page 264 and after for specifications and models.

VXE2   0   -   -    1 -

Option symbol



Fluid and application	Option symbol	Seal material	Body material
Air	Nil	NBR	Brass (C37)
	G		Stainless steel
Medium vacuum/Non-leak/ Oil-free <small>Note 1)</small>	V <small>Note 2)</small>	FKM	Brass (C37)
	M <small>Note 2)</small>		Stainless steel
Water	Nil	NBR	Brass (C37)
	G		Stainless steel
Oil <small>Note 3)</small>	A	FKM	Brass (C37)
	H		Stainless steel
High corrosive/Oil-free	L <small>Note 2)</small>	FKM	Stainless steel
Copper-free/Fluorine-free <small>Note 4)</small>	J	EPDM	Stainless steel
Other combination	B	PTFE	Brass (C37)
	C		
	K		

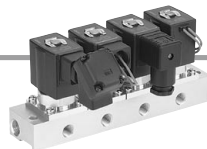
### All Options (Manifold)

Refer to page 266 and after for specifications and models.

VXE2   1   -   -    1

Option symbol

Base symbol



Fluid and application	Option symbol	Base symbol	Seal material	Body material
Air	Nil	00	NBR	Aluminum
Medium vacuum/Non-leak/Oil-free <small>Note 1)</small>	V <small>Note 2)</small>	00	FKM	Aluminum
Water	Nil	Nil	NBR	Brass (C37)
	G			Stainless steel
Oil <small>Note 3)</small>	A	Nil	FKM	Brass (C37)
	H			Stainless steel
High corrosive/Oil-free	L <small>Note 2)</small>	Nil	FKM	Stainless steel
Non-leak/Copper-free/Oil-free <small>Note 4)</small>	R	00	FKM	Aluminum

Note 1) The leakage amount ( $10^{-6}$  Pa·m<sup>3</sup>/s) of V and M options is value when differential pressure is 0.1 MPa.

Note 2) The V, M and L options are oil-free treatment.

Note 3) The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s or less.

Note 4) The nuts (non-wetted parts) are nickel plated on the C37 material.

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

VX2

VXK

VXD

VXZ

VXS

VXB

VXE

VXP

VXR

VXH

VXF

VX3

VXA

# VXE21/22/23 Series

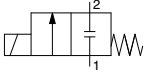
## For Air /Single Unit

(Non-leak/Medium vacuum)

### Model/Valve Specifications

N.C.

Symbol



### Normally Closed (N.C.)

Port size	Orifice dia. (mm)	Model	Note 3) Max. operating pressure differential (MPa)	Note 1) Flow rate characteristics			Note 3) Max. system pressure (MPa)	Note 2) Weight (g)			
				C[dm <sup>3</sup> /(s·bar)]	b	Cv					
1/8 (6A)	2	VXE2110-01	1.5	0.59	0.48	0.18	3.0	300			
	3	VXE2120-01	0.6	1.2	0.45	0.33					
	4.5	VXE2130-01	0.2	2.3	0.46	0.61					
1/4 (8A)	2	VXE2110-02	1.5	0.59	0.48	0.18			3.0	470	
		VXE2120-02	0.6								620
	3	VXE2220-02	1.5	1.2	0.45	0.33					
		VXE2320-02	3.0						3.0	300	
	4.5	VXE2130-02	0.2	2.3	0.46	0.61					
		VXE2230-02	0.35								620
		VXE2330-02	0.9						620		
	6	VXE2240-02	0.15	4.1	0.30	1.10				1.0	560
		VXE2340-02	0.35						700		
	8	VXE2250-02	0.08	6.4	0.30	1.60	1.0	560			
		VXE2350-02	0.2						700		
	10	VXE2260-02	0.03	8.8	0.30	2.00	1.0	560			
	VXE2360-02	0.07				700					
3/8 (10A)	3	VXE2220-03	1.5	1.2	0.45		0.33	3.0	470		
		VXE2320-03	3.0				620				
	4.5	VXE2230-03	0.35	2.3	0.46	0.61					
		VXE2330-03	0.9				3.0	470			
	6	VXE2240-03	0.15	4.1	0.30	1.10			1.0	560	
		VXE2340-03	0.35								700
	8	VXE2250-03	0.08	6.4	0.30	1.60	1.0	560			
		VXE2350-03	0.2						700		
	10	VXE2260-03	0.03	11	0.30	2.20	1.0	560			
		VXE2360-03	0.07						700		
1/2 (15A)	10	VXE2260-04	0.03	11	0.30	2.20	1.0	560			
		VXE2360-04	0.07						700		

Note 1) The flow rate characteristics of this product have variations.

When the highly precise flow control is required according to the system to be used, select an orifice diameter 1.3 times larger than that shown above and install a restrictor on the downstream side of the solenoid valve to make the adjustment.

Note 2) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 3) Refer to "Glossary of Terms" on page 309 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		
NH, G	V, M	-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	
	Air	Non-leak/ Medium vacuum <sup>Note)</sup>
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	
	Air	Non-leak/ Medium vacuum <sup>Note)</sup>
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 V and M options (Non-leak/Medium vacuum)





How to Order (Single Unit)

**DC** **VXE2120** **01** **5G1**

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

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

**Valve/Body configuration**  
0 N.C. / Single unit

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

**Suffix**  

Nil	—
Z	Oil-free

 Select Nil because the solenoid valve V, M options are oil-free treatment.

**Thread type**  

Nil	Rc
T	NPTF
F	G*
N	NPT

 \* For connection, prepare a fitting compliant with ISO 16030 and JIS B 8674.

**Rated voltage**  

5	24 VDC
6	12 VDC

 \* Refer to Table (3) shown below for availability. Refer to page 308 for ordering coil only.

**Bracket**  

Nil	None
B	With bracket

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

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

**Electrical entry**

<b>G-Grommet</b> 	<b>C-Conduit</b> 
<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, with gasket) 

\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

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

Solenoid valve model (Port size)			Orifice symbol (Diameter)						
Model	VXE21	VXE22	VXE23	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)	5 (8 mm)	6 (10 mm)
Port symbol (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	Note
Nil	NBR	Brass (C37)	—
G		Stainless steel	
V	FKM	Brass (C37)	Non-leak (10 <sup>-6</sup> Pa·m <sup>3</sup> /sec)/Oil-free/ Medium vacuum (0.1 Pa.abs)
M		Stainless steel	

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

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

Model	Part no.
VXE21 $\frac{1}{2}$ 0	VX021N-12A
VXE22 $\frac{3}{4}$ 0	VX022N-12A
VXE23 $\frac{3}{4}$ 0	
VXE22 $\frac{5}{8}$ 0	VX023N-12A-L
VXE23 $\frac{5}{8}$ 0	

Dimensions → page 278 (Single unit)

# VXE21/22/23 Series

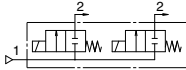
## For Air /Manifold

(Non-leak/Medium vacuum)

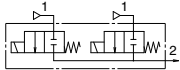
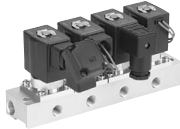
### Solenoid Valve for Manifold/Valve Specifications

N.C.

Symbol



Common SUP



Individual SUP

### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa) <sup>Note 2)</sup>	Flow rate characteristics <sup>Note 1)</sup>			Max. system pressure (MPa) <sup>Note 2)</sup>
			C [dm <sup>3</sup> /s·bar]	b	Cv	
2	VXE2111-00	1.5	0.59	0.48	0.18	3.0
	VXE2121-00	0.6				
3	VXE2221-00	1.5	1.2	0.45	0.33	
	VXE2321-00	3.0				
	VXE2131-00	0.2				
4.5	VXE2231-00	0.35	2.3	0.46	0.61	
	VXE2331-00	0.9				
	VXE2241-00	0.15				
6	VXE2341-00	0.35	4.1	0.30	1.10	

Note 1) The flow rate characteristics of this product have variations.

When the highly precise flow control is required according to the system to be used, select an orifice diameter 1.3 times larger than that shown above and install a restrictor on the downstream side of the solenoid valve to make the adjustment.

Note 2) Refer to "Glossary of Terms" on page 309 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		
NH, 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	
	Air	Non-leak/ Medium vacuum <sup>Note)</sup>
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	
	Air	Non-leak/ Medium vacuum <sup>Note)</sup>
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 V and M options (Non-leak/Medium vacuum)



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

**DC VXE 21 2 1 - 00 - 5 G 1**

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

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

**Valve/Body configuration**  
1 N.C. (for Manifold)

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

**Suffix**

Nil	—
Z	Oil-free

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

**Rated voltage**

5	24 VDC
6	12 VDC

\* Refer to Table (3) shown below for availability.  
Refer to page 308 for ordering coil only.

**Electrical entry**

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

\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE**
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

**How to Order Manifold Bases**

**VVX21 VVX22 VVX23 1 - 07 - 1 -**

**Port size (Individual port)**

1	Rc1/8
2	Rc1/4

\* For connection, prepare a fitting compliant with ISO 16030 and JIS B 8674.

\* Common port sizes are all Rc3/8.

**Thread type**

Nil	Rc
T	NPTF
F	G*
N	NPT

**Plug**

Nil	U side assembly
PD	D side assembly
P	Shipped together

**Number of manifolds**

02	2 stations
:	:
10	10 stations

**Manifold base**

**Base type**

Nil	Common SUP
V	Individual SUP

**Suffix**

Nil	—
Z	Oil-free

**Blanking plate part no.**

For VXE21: VX011-001  
For VXE22/23: VX011-006

**Seal material**

Nil	NBR
F	FKM

**Table (1) Model/Orifice Diameter**

Solenoid valve model	Orifice symbol (Diameter)			
	1 (2 mmφ)	2 (3 mmφ)	3 (4.5 mmφ)	4 (6 mmφ)
VXE21	●	●	●	—
VXE22	—	●	●	●
VXE23	—	●	●	●

**Table (2) Solenoid Valve Option**

Option symbol	Body/Base material	Seal material	Note
Nil		NBR	—
V	Aluminum	FKM	Non-leak/Medium vacuum/Oil-free
R			Non-leak/Copper-free/Oil-free <small>Note)</small>

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

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

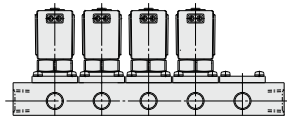
Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

**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.
- \* VXE2111-00-1G1 ... 4 sets      Add an "\*" in front of the part numbers
- \* VX011-001 ..... 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.

Dimensions → page 280 (Manifold)

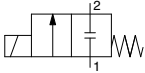
# VXE21/22/23 Series

## For Water /Single Unit

### Model/Valve Specifications

N.C.

Symbol



### Normally Closed (N.C.)

Port size	Orifice dia. (mm)	Model	Note 3) Max. operating pressure differential (MPa)	Note 1) Flow rate characteristics		Note 3) Max. system pressure (MPa)	Note 2) Weight (g)	
				Kv	Cv converted			
1/8 (6A)	2	VXE2110-01	1.5	0.15	0.17	3.0	300	
	3	VXE2120-01	0.5	0.28	0.33			
	4.5	VXE2130-01	0.2	0.54	0.61			
1/4 (8A)	2	VXE2110-02	1.5	0.15	0.17	3.0	470	
	3	VXE2120-02	0.5	0.28	0.33			620
		VXE2220-02	1.5					
		VXE2320-02	3.0					
	4.5	VXE2130-02	0.2	0.54	0.61	470		
		VXE2230-02	0.35					
		VXE2330-02	0.9					
	6	VXE2240-02	0.15	0.93	1.10	470		
		VXE2340-02	0.3					
		VXE2250-02	0.08				1.0	560
	VXE2350-02	0.2						
	VXE2260-02	0.03	1.64	1.90	560			
VXE2360-02	0.07	700						
3/8 (10A)	3		VXE2220-03	1.5	0.28	0.33	3.0	470
		VXE2320-03	3.0					
	4.5	VXE2230-03	0.35	0.54	0.61	470		
		VXE2330-03	0.9					
	6	VXE2240-03	0.15	0.93	1.10	470		
		VXE2340-03	0.3					
	8	VXE2250-03	0.08	1.36	1.60	560		
		VXE2350-03	0.2					
		VXE2260-03	0.03				1.89	2.20
VXE2360-03	0.07							
1/2 (15A)	10	VXE2260-04	0.03	1.89	2.20	560		
		VXE2360-04	0.07				700	

Note 1) The flow rate characteristics of this product have variations.

When the highly precise flow control is required according to the system to be used, select an orifice diameter 1.3 times larger than that shown above and install a restrictor on the downstream side of the solenoid valve to make the adjustment.

Note 2) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 3) Refer to "Glossary of Terms" on page 309 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	
NII, G, L	-20 to 60
1 to 60	

Note) With no freezing

### Valve Leakage Rate

#### Internal Leakage

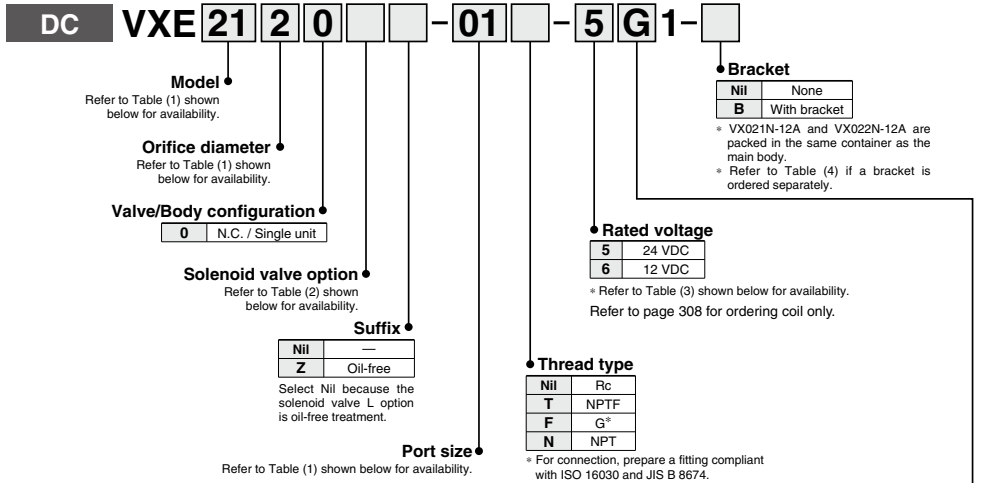
Seal material	Leakage (Water)
NBR, FKM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

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

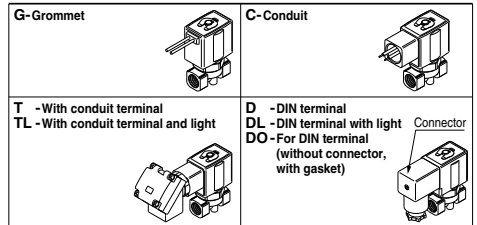


## How to Order (Single Unit)



- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

### Electrical entry



\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

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

Solenoid valve model (Port size)			Orifice symbol (Diameter)						
Model	VXE21	VXE22	VXE23	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)	5 (8 mm)	6 (10 mm)
Port symbol (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	Note
Nil	NBR	Brass (C37)	—
G	—	Stainless steel	—
L	FKM	Stainless steel	High corrosive/Oil-free

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

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

Model	Part no.
VXE21 $\frac{1}{2}$ 0	VX021N-12A
VXE22 $\frac{3}{4}$ 0	VX022N-12A
VXE23 $\frac{3}{4}$ 0	VX023N-12A-L

Dimensions → page 278 (Single unit)

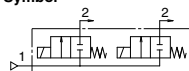
# VXE21/22/23 Series

## For Water /Manifold

### Solenoid Valve for Manifold/Valve Specifications

N.C.

Symbol



Common SUP



### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow rate characteristics		Max. system pressure (MPa)
			Kv	Cv converted	
2	VXE2111	1.5	0.15	0.17	3.0
3	VXE2121	0.5	0.28	0.33	
	VXE2221	1.5			
	VXE2321	3.0			
4.5	VXE2131	0.2	0.54	0.61	
	VXE2231	0.35			
	VXE2331	0.9			
6	VXE2241	0.15	0.93	1.10	
	VXE2341	0.3			

Note 1) The flow rate characteristics of this product have variations.

When the highly precise flow control is required according to the system to be used, select an orifice diameter 1.3 times larger than that shown above and install a restrictor on the downstream side of the solenoid valve to make the adjustment.

Note 2) Refer to "Glossary of Terms" on page 309 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	
NII, G, L	-20 to 60
1 to 60	

Note) With no freezing

### Valve Leakage Rate

#### Internal Leakage

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

#### External Leakage

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



## How to Order (Solenoid Valve for Manifold)

**DC VXE 21 2 1 [ ] [ ] - 5 G 1**

- Model**: Refer to Table (1) shown below for availability.
- Orifice diameter**: Refer to Table (1) shown below for availability.
- Valve/Body configuration**: 

1	N.C. (for Manifold)
---	---------------------
- Solenoid valve option**: Refer to Table (2)-(1) shown below for availability.
- Suffix**: 

Nil	—
Z	Oil-free
- Rated voltage**: 

5	24 VDC
6	12 VDC

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

\* Refer to Table (3) shown below for availability.  
Refer to page 308 for ordering coil only.

### Electrical entry

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

\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

### How to Order Manifold Bases

**VVX21 VVX22 VVX23 1 [ ] C [ ] - 07 - 1 - [ ]**

- Port size (OUT port)**: 

1	Rc1/8
2	Rc1/4

  
\* IN port sizes are all Rc3/8.
- Thread type**: 

Nil	Rc
T	NPTF
F	G*
N	NPT
- Plug**: 

Nil	U side assembly
PD	D side assembly
P	Shipped together
- Number of manifolds**: 

02	2 stations
:	:
10	10 stations
- Base/Seal material**: \* Refer to Table (2)-(2) shown below for availability.

**Table (1) Model/Orifice Diameter**

Solenoid valve model	Orifice symbol (Diameter)			
	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
VXE21	●	●	●	—
VXE22	—	●	●	●
VXE23	—	●	●	●

**Table (2) Solenoid Valve Option**

Solenoid valve option symbol (1)	Base/Seal material symbol (2)	Body/Base material	Seal material	Note
Nil	C	Brass (C37)	NBR	—
G	S	Stainless steel	NBR	—
L	SF	Stainless steel	FKM	High corrosive/ Oil-free

### Blanking plate part no.

For VXE21: VVX21-3A—  
 For VXE22: VVX22-3A—  
 For VXE23: VVX23-3A—

**Seal material**

Nil	NBR
F	FKM
E	EPDM

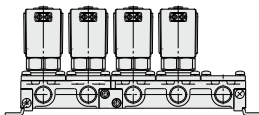
**Table (3) Rated Voltage – Electrical Option**

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

### 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.  
 \* VXE211-1G1 ..... 4 sets      Add an "\*" in front of the part numbers  
 \* VVX21-3A ..... 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.

Dimensions → page 281 (Manifold)

# VXE21/22/23 Series

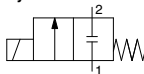
## For Oil /Single Unit

**⚠ When the fluid is oil.**  
The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s.

### Model/Valve Specifications

N.C.

Symbol



### Normally Closed (N.C.)

Port size	Orifice dia. (mm)	Model	Note 3) Max. operating pressure differential (MPa)	Note 1) Flow rate characteristics		Note 3) Max. system pressure (MPa)	Note 2) Weight (g)				
				Kv	Cv converted						
1/8 (6A)	2	VXE2110-01	1.5	0.15	0.17	3.0	300				
	3	VXE2120-01	0.5	0.28	0.33						
	4.5	VXE2130-01	0.15	0.54	0.61						
1/4 (8A)	2	VXE2110-02	1.5	0.15	0.17			3.0	300		
		VXE2120-02	0.5	0.28	0.33						
		VXE2220-02	1.2								
	VXE2320-02	2.0									
	3	VXE2130-02	0.15	3.0	300						
		VXE2230-02	0.3								
		VXE2330-02	0.85								
	4.5	VXE2240-02	0.1							3.0	300
		VXE2340-02	0.3								
		VXE2250-02	0.08								
	6	VXE2350-02	0.2			3.0	300				
		VXE2260-02	0.03								
VXE2360-02		0.07									
8	VXE2250-02	0.08	3.0					300			
	VXE2350-02	0.2									
	VXE2260-02	0.03									
10	VXE2360-02	0.07		3.0	300						
	VXE2250-02	0.08									
	VXE2350-02	0.2									
3/8 (10A)	3	VXE2220-03							1.2	3.0	300
		VXE2320-03							2.0		
		VXE2230-03							0.3		
	4.5	VXE2330-03				0.85	3.0		300		
		VXE2240-03				0.1					
		VXE2340-03				0.3					
	6	VXE2250-03	0.08			3.0		300			
		VXE2350-03	0.2								
		VXE2260-03	0.03								
	8	VXE2360-03	0.07	3.0	300						
		VXE2250-03	0.08								
		VXE2350-03	0.2								
10	VXE2260-03	0.03	3.0							300	
	VXE2360-03	0.07									
	VXE2260-03	0.03									
1/2 (15A)	10	VXE2260-04					0.03		3.0		300
		VXE2360-04					0.07				
		VXE2260-04					0.03				

Note 1) The flow rate characteristics of this product have variations.

When the highly precise flow control is required according to the system to be used, select an orifice diameter 1.3 times larger than that shown above and install a restrictor on the downstream side of the solenoid valve to make the adjustment.

Note 2) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 3) Refer to "Glossary of Terms" on page 309 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>A, H</b>	
-5 <sup>Note)</sup> to 60	-20 to 60

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

### Valve Leakage Rate

#### Internal Leakage

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

#### External Leakage

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





**How to Order (Single Unit)**

**DC** **VXE** **21** **2** **0** **A** **0** - **01** **5** **G** **1** **0**

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

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

**Valve/Body configuration**  
0 N.C. / Single unit

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

**Suffix**

Nil	—
Z	Oil-free

**Port size**  
Refer to Table (1) 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 Table (4) if a bracket is ordered separately.

**Rated voltage**

5	24 VDC
6	12 VDC

**Thread type**

Nil	Rc
T	NPTF
F	G*
N	NPT

\* For connection, prepare a fitting compliant with ISO 16030 and JIS B 8674.

**Electrical entry**

<b>G-Grommet</b> 	<b>C-Conduit</b> 
<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, with gasket) 

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

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

Solenoid valve model (Port size)			Orifice symbol (Diameter)						
Model	VXE21	VXE22	VXE23	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)	5 (8 mm)	6 (10 mm)
Port symbol (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
A	FKM	Brass (C37)
H		Stainless steel

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

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

Model	Part no.
VXE21 <sup>1</sup> / <sub>8</sub> 0	VX021N-12A
VXE22 <sup>2</sup> / <sub>4</sub> 0	VX022N-12A
VXE23 <sup>3</sup> / <sub>8</sub> 0	
VXE22 <sup>2</sup> / <sub>4</sub> 0	VX023N-12A-L
VXE23 <sup>3</sup> / <sub>8</sub> 0	

Dimensions → page 278 (Single unit)

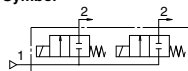
# VXE21/22/23 Series

## For Oil /Manifold

### Solenoid Valve for Manifold/Valve Specifications

N.C.

Symbol



Common SUP



### Normally Closed (N.C.)

Orifice dia. (mm)	Model	Max. operating pressure differential (MPa)	Flow rate characteristics		Max. system pressure (MPa)
			Kv	Cv converted	
2	VXE2111	1.5	0.15	0.17	3.0
	VXE2121	0.5			
3	VXE2221	1.2	0.28	0.33	
	VXE2321	2.0			
4.5	VXE2131	0.15	0.54	0.61	
	VXE2231	0.3			
	VXE2331	0.85			
6	VXE2241	0.1	0.93	1.10	
	VXE2341	0.3			

Note 1) The flow rate characteristics of this product have variations.

When the highly precise flow control is required according to the system to be used, select an orifice diameter 1.3 times larger than that shown above and install a restrictor on the downstream side of the solenoid valve to make the adjustment.

Note 2) Refer to "Glossary of Terms" on page 309 for details on the max. operating pressure differential and the max. system pressure.

**⚠ When the fluid is oil.**  
The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s.

### Fluid and Ambient Temperature

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

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

### Valve Leakage Rate

#### Internal Leakage

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

#### External Leakage

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



How to Order (Solenoid Valve for Manifold)

**DC** **VXE** **21** **2** **1** **A** **5** **G** **1**

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

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

**Valve/Body configuration**  
1 N.C. (for Manifold)

**Solenoid valve option**  
Refer to Table (2)-(1) shown below for availability.

**Suffix**

Nil	—
Z	Oil-free

**Rated voltage**

5	24 VDC
6	12 VDC

\* Refer to Table (3) shown below for availability.  
Refer to page 308 for ordering coil only.

**Electrical entry**

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

\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

How to Order Manifold Bases

**VVX21**  
**VVX22** **1** **CF** **07** **1**

**Port size (OUT port)**  
1 Rc1/8  
2 Rc1/4

**Thread type**  
Nil Rc  
T NPTF  
F G\*  
N NPT

**Number of manifolds**  
02 2 stations  
: :  
10 10 stations

**Plug**  
Nil U side assembly  
PD D side assembly  
P Shipped together

**Manifold base**  
**Base/Seal material**  
\* Refer to Table (2)-(2) shown below for availability.

**Suffix**  
Nil —  
Z Oil-free

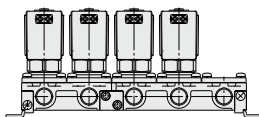
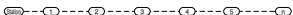
**Blanking plate part no.**  
For VXE21: VVX21-3A-F  
For VXE22: VVX22-3A-F  
For VXE23: VVX23-3A-F

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.  
\* VXE2111A-1G1 ..... 4 sets Add an "\*" in front of the part numbers for solenoid valves, etc. to be mounted.  
\* VVX21-3A-F ..... 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.

Table (1) Model/Orifice Diameter

Solenoid valve model	Orifice symbol (Diameter)			
	1 (2 mm)	2 (3 mm)	3 (4.5 mm)	4 (6 mm)
VXE21	●	●	●	—
VXE22	—	●	●	●
VXE23	—	●	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base/Seal material symbol (2)	Body/Base material	Seal material
A	CF	Brass (C37)	FKM
H	SF	Stainless steel	

Table (3) Rated Voltage – Electrical Option

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

Dimensions → page 281 (Manifold)

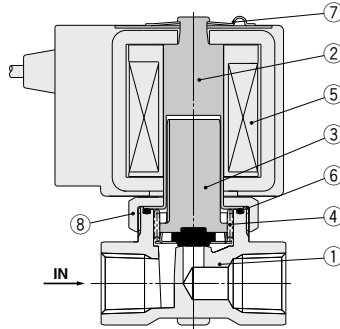
# VXE21/22/23 Series

For Air/Water/Oil

## Construction: Single Unit

Normally closed (N.C.)

Body material: Brass (C37), Stainless steel



## Component Parts

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

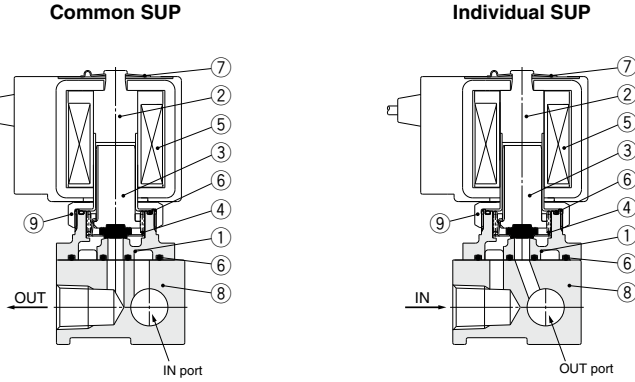
The materials in parentheses are seal materials.

**Construction: Manifold**

Normally closed (N.C.)

Base material: Aluminum

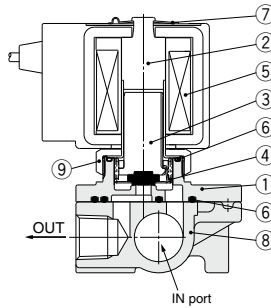
Fluid: Air



Base material: Brass (C37), Stainless steel

Fluid: Water/Oil

**Common SUP**



**Component Parts**

No.	Description	Material		
		Aluminum base specification	Brass (C37) base specification	Stainless steel base specification
1	Body	Aluminum	Brass (C37)	Stainless steel
2	Tube assembly	Stainless steel		
3	Armature assembly	(NBR, FKM, EPDM, PTFE) Stainless steel, PPS		
4	Return spring	Stainless steel		
5	Solenoid coil	—		
6	O-ring	(NBR, FKM, EPDM, 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 seal materials.

VX2
VXK
VXD
VXZ
VXS
VXB
VXE
VXP
VXR
VXH
VXF
VX3
VXA

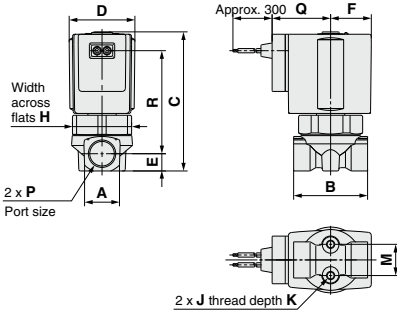
# VXE21/22/23 Series

For Air/Water/Oil

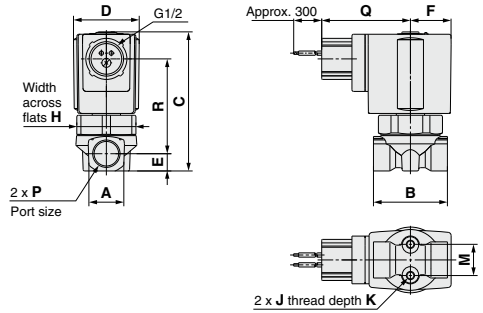
## Dimensions: Single Unit/Body Material: Brass (C37), Stainless Steel

VXE21□□/22□□/23□□

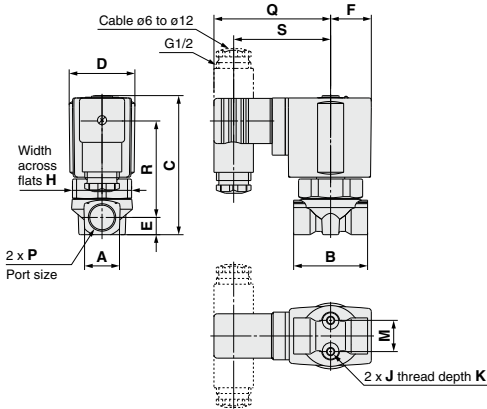
### Grommet: G



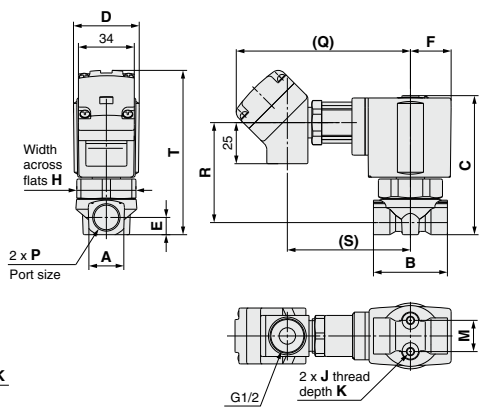
### Conduit: C



### DIN terminal: D



### Conduit terminal: T



Model N.C.	Orifice diameter	Port size P	A	B	C	D	E	F	H	Mounting dimension			Electrical entry										
													Grommet		Conduit		DIN terminal				Conduit terminal		
										J	K	M	Q	R	Q	R	Q	R	S	Q	R	S	Q
VXE21□□	ø2, ø3, ø4.5	1/8, 1/4	18	40	68	30	9	19.5	27	M4	6	12.8	30	46	48.5	41	65.5	42	53.5	100.5	41	69.5	82
VXE22□□	ø3, ø4.5, ø6	1/4, 3/8	22	45	78		10.5		32	M5	8	19	33	56	51.5	51	68.5	52	56.5	103.5	51	72.5	93.5
VXE22□□	ø8, ø10	1/4, 3/8, 1/2	30	50	85		14	22.5		M5	8	23	33	59	51.5	54	68.5	55	56.5	103.5	54	72.5	100
VXE23□□	ø3, ø4.5, ø6	1/4, 3/8	22	45	85.5		10.5		36	M5	8	19	36	62	54	57	71	58	59	106	57	75	99.5
VXE23□□	ø8, ø10	1/4, 3/8, 1/2	30	50	92		14	25		M5	8	23	36	65	54	60	71	61	59	106	60	75	106

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

VXE21□0/22□0/23□0

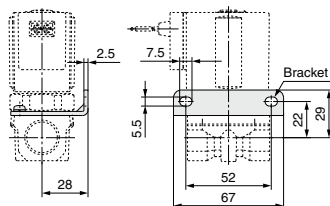
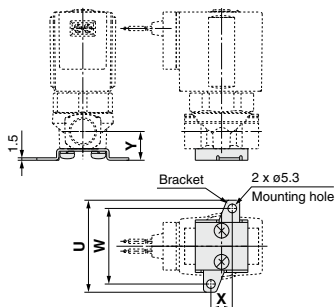
Specifications with bracket

Orifice:  $\phi 2$ ,  $\phi 3$ ,  $\phi 4.5$ ,  $\phi 6$

(Packed in the same container)

Orifice:  $\phi 8$ ,  $\phi 10$

(Assembled at the shipment)



(mm)

Model N.C.	Orifice diameter	Port size P	Bracket mounting dimension			
			U	W	X	Y
VXE21□0	$\phi 2$ , $\phi 3$ , $\phi 4.5$	1/8, 1/4	46	36	11	15
VXE22□0	$\phi 3$ , $\phi 4.5$ , $\phi 6$	1/4, 3/8	56	46	13	17.5
VXE22□0	$\phi 8$ , $\phi 10$	1/4, 3/8, 1/2	—	—	—	—
VXE23□0	$\phi 3$ , $\phi 4.5$ , $\phi 6$	1/4, 3/8	56	46	13	17.5
VXE23□0	$\phi 8$ , $\phi 10$	1/4, 3/8, 1/2	—	—	—	—

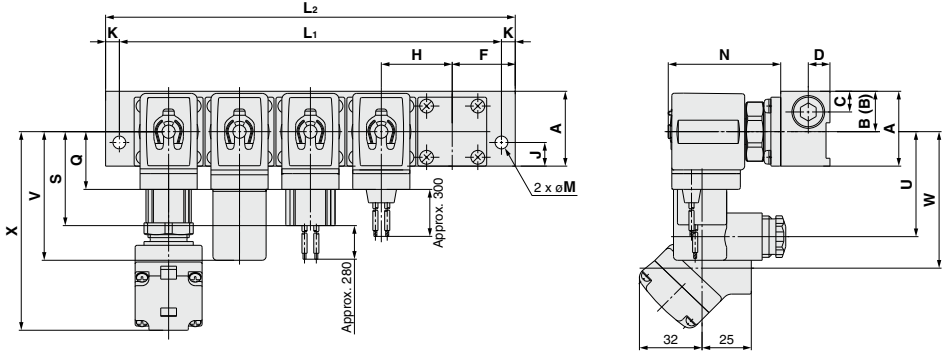
- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

# VXE21/22/23 Series

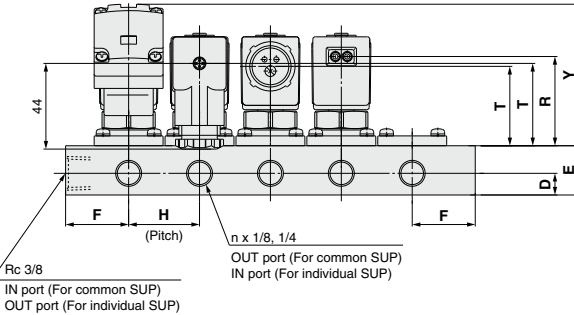
For Air

## Dimensions: Manifold/Base Material: Aluminum

Normally closed (N.C.): VXE21/22/23



D side Stations 1 2 3 4 5 n U side



(mm)

Model	Dimension	n (stations)									
		2	3	4	5	6	7	8	9	10	
VVXE21	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	
VVXE22	L <sub>1</sub>	108	154	200	246	292	338	384	430	476	
	L <sub>2</sub>	126	172	218	264	310	356	402	448	494	

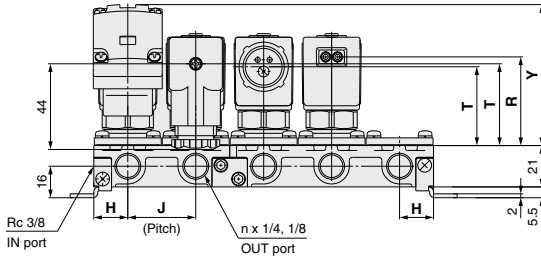
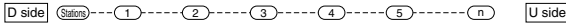
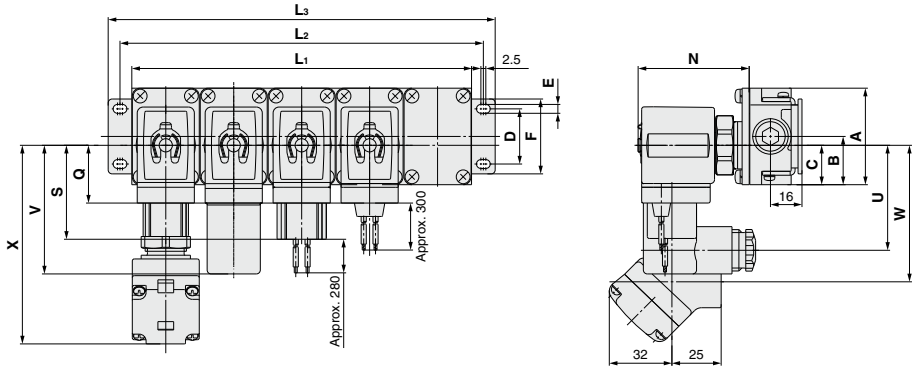
(mm)

Model	A	B	(B) Individual SUP	C	D	E	F	H	J	K	M	N	Electrical entry											
													Grommet			Conduit			DIN terminal			Conduit terminal		
													Q	R	S	T	U	V	T	W	X	Y		
VVXE21	38	20.5	17.5	10.5	11	25	32	36	12	7	6.5	57.5	30	44.5	48.5	40	53.5	65.5	41	69.5	100.5	72		
VVXE22	49	26.5	22.5	13	13	30	40	46	15	9	8.5	66.5	33	54.5	51.5	50	56.5	68.5	51	72.5	103.5	82		
VVXE23	49	26.5	22.5	13	13	30	40	46	15	9	8.5	71.5	36	59	54	54	59	71	55	75	106	86		



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

**VXE21/22/23**



- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE**
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

Model	Dimension	n (stations)									
		2	3	4	5	6	7	8	9	10	
VXE21	L <sub>1</sub>	69	103.5	138	172.5	207	241.5	276	310.5	345	
	L <sub>2</sub>	81	115.5	150	184.5	219	253.5	288	322.5	357	
	L <sub>3</sub>	93	127.5	162	196.5	231	265.5	300	334.5	369	
VXE22	L <sub>1</sub>	77	115.5	154	192.5	231	269.5	308	346.5	385	
	L <sub>2</sub>	89	127.5	166	204.5	243	281.5	320	358.5	397	
	L <sub>3</sub>	101	139.5	178	216.5	255	293.5	332	370.5	409	
VXE23	L <sub>1</sub>	83	124.5	166	207.5	249	290.5	332	373.5	415	
	L <sub>2</sub>	95	136.5	178	219.5	261	302.5	344	385.5	427	
	L <sub>3</sub>	107	148.5	190	231.5	273	314.5	356	397.5	439	
Manifold construction	2 stations x 1	3 stations x 1	2 stations x 2	2 stations + 3 stations	3 stations x 2	2 stations x 2 + 3 stations	2 stations + 3 stations x 2	3 stations x 3	2 stations x 2 + 3 stations x 2		

Model	A	B	C	D	E	F	H	J	N	Electrical entry (mm)									
										Grommet					DIN terminal				
										Q	R	S	T	U	V	T	W	X	Y
VXE21	49	24.5	20	28	4.5	38	17.3	34.5	56	30	43	48.5	38	53.5	65.5	39	69.5	100.5	70
VXE22	57	28.5	25.5	30	5.5	42	19.3	38.5	64.5	33	52.5	51.5	47.5	56.5	68.5	48.5	72.5	103.5	80
VXE23	57	28.5	25.5	30	5.5	42	20.8	41.5	72.5	36	60	54	55	59	71	56	75	106	87



## Energy Saving Type

# Pilot Operated 2 Port Solenoid Valve

# VXED21/22/23 Series

For Air, Water, Oil



### Valve

Normally closed (N.C.)

### Solenoid Coil

Coil: Class B

### Rated Voltage

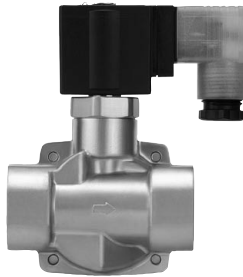
24 VDC, 12 VDC

### Material

Body — Brass (C37)/CAC408,  
Stainless steel  
Seal — NBR, FKM, EPDM

### Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal



Model	VXED2130	VXED2140	VXED2150	VXED2260
Orifice diameter	●	—	—	—
10 mmø	—	●	—	—
15 mmø	—	—	●	—
20 mmø	—	—	—	●
25 mmø	—	—	—	—
Port size (Thread)	1/4 3/8 1/2	3/8 1/2	3/4	1

Model	VXED2270	VXED2380	VXED2390
Orifice diameter	●	—	—
35 mmø	—	●	—
40 mmø	—	—	●
50 mmø	—	—	—
Port size (Flange)	32A	40A	50A

VX2

VXK

VXD

VXZ

VXS

VXB

VXE

VXP

VXR

VXH

VXF

VX3

VXA

# Common Specifications

## Standard Specifications

Valve specifications	Valve construction	Pilot operated 2 port diaphragm type
	Valve type	N.C.
	Withstand pressure	8A to 25A: 5.0 MPa, 32A to 50A: 2.0 MPa
	Body material	Brass (C37), Stainless steel, CAC408
	Seal material	NBR, FKM, EPDM
	Enclosure	Dusttight, Low jetproof (IP65)
	Environment	Location without corrosive or explosive gases
Coil specifications	Rated voltage	24 VDC, 12 VDC
	Allowable voltage fluctuation	±10% of rated voltage
	Allowable leakage voltage	2% or less of rated voltage
	Coil insulation type	Class B
	Surge voltage suppressor	Built-in surge voltage suppressor

⚠ Be sure to read “Specific Product Precautions.”

## Solenoid Coil Specifications

Normally Closed (N.C.)

### DC Specification

Model	Power consumption (W) (Holding)	Inrush current (A) (Inrush time: 200 ms) <sup>Note 1)</sup>		Temperature increase (°C) <sup>Note 2)</sup>
		24 VDC	12 VDC	
VXED2130	1.8	0.23	0.46	30
VXED2140/2150	1.5	0.19	0.38	25
VXED2260/2270	2.3	0.29	0.58	25
VXED2380/2390	3	0.44	0.88	30

Note 1) Energizing time should be 200 ms or longer.

Note 2) Value for ambient temperature at 20°C and when the rated voltage is applied.

## Contents

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For Water .....	P.288
For Oil .....	P.290
Construction .....	P.292
Dimensions .....	P.293
Replacement Parts .....	P.308

# Applicable Fluid Check List

**Energy Saving Type / Pilot Operated 2 Port Solenoid Valve VXED21/22/23 Series**  
**All Options (8A to 25A)** Refer to page 286 and after for specifications and models.



VXED2 <sup>3</sup>1 <sup>4</sup>4 <sup>5</sup>0   -   -    1 -   
<sup>6</sup> ↓ Option symbol

Fluid and application	Option symbol	Seal material	Body material
Air	Nil	NBR	Brass (C37)
	G		Stainless steel
Water	Nil	NBR	Brass (C37)
	G		Stainless steel
Oil <sup>Note 2)</sup>	A	FKM	Brass (C37)
	H		Stainless steel
High corrosive/Oil-free	L <sup>Note 1)</sup>	FKM	Stainless steel
Copper-free/Fluorine-free <sup>Note 3)</sup>	J	EPDM	Stainless steel
Other combination	B	EPDM	Brass (C37)

Note 1) The L option is oil-free treatment.

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

Note 3) The nuts (non-wetted parts) are nickel plated on the C37 material.

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

**All Options (32A to 50A)** Refer to page 286 and after for specifications and models.

VXED2 <sup>2</sup>3 <sup>7</sup>8 <sup>9</sup>0   -   -    1 -   
 ↓ Option symbol

Fluid and application	Option symbol	Seal material	Body material
Air	Nil	NBR	CAC408
Water	Nil	NBR	
Oil <sup>Note)</sup>	A	FKM	
Other combination	B	EPDM	

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

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



- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

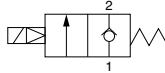
# VXED21/22/23 Series

## For Air

### Model/Valve Specifications

N.C.

Symbol



Port size		Orifice diameter (mm)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential <sup>Note 2)</sup> (MPa)	Flow rate characteristics			<sup>Note 2)</sup> Max. system pressure (MPa)	<sup>Note 1)</sup> Weight (g)	
						C	b	Cv			
Thread (Nominal size)	1/4 (8A)	10	VXED2130-02	0.02	0.7	8.5	0.35	2.0	1.5	420	
		10	VXED2130-03			9.2		2.4			
	3/8 (10A)	15	VXED2140-03		1.0	18.0		5.0			670
		10	VXED2130-04		0.7	9.2		2.4			500
	1/2 (15A)	15	VXED2140-04		1.0	20.0		5.5			670
		20	VXED2150-06			38.0		0.30			9.5

Port size		Orifice diameter (mm)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential <sup>Note 2)</sup> (MPa)	Flow rate characteristics	<sup>Note 2)</sup> Max. system pressure (MPa)	<sup>Note 1)</sup> Weight (g)
						Effective area (mm <sup>2</sup> )		
Thread (Nominal size)	1 (25A)	25	VXED2260-10	0.02	1.0	225	1.5	1650
Flange	32A	35	VXED2270-32	0.03		415		5400
	40A	40	VXED2380-40			560		6800
	50A	50	VXED2390-50			880		8400

Note 1) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 2) Refer to "Glossary of Terms" on page 309 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</b>	
-10 to 60	-10 to 60

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

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage (Air) <sup>Note 1)</sup>	
	NBR	1/4 to 1
	2 cm <sup>3</sup> /min or less	10 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage (Air) <sup>Note 1)</sup>	
	NBR	1/4 to 1
	1 cm <sup>3</sup> /min or less	1 cm <sup>3</sup> /min or less

Note 1) Leakage is the value at ambient temperature 20°C.



How to Order

**DC** **VXED** **21** **3** **0** **02** **5** **G** **1**

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

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

**Valve/Body configuration**  
**0** N.C. / Single unit

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

<b>Suffix</b>	Nil	—
	Z	Oil-free

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

**Bracket**

Nil	None
B	With bracket

\* Removal of bracket is not possible.

**Rated voltage**

5	24 VDC
6	12 VDC

\* Refer to Table (3) shown below for availability.  
Refer to page 308 for ordering coil only.

**Thread type**

Nil	Rc
T	NPTF
F	G*
N	NPT

\* For connection, prepare a fitting compliant with ISO 16030 and JIS B 8674.

**Electrical entry**

<b>G-Grommet</b>		<b>C-Conduit</b>	
<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, with gasket)	

\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

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

Solenoid valve model (Port size)			Orifice diameter							Material		
Model	VXED21	VXED22	VXED23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)	7 (35 mmø)	8 (40 mmø)	9 (50 mmø)	Body	Seal
Port symbol (Port size)	Thread	02 (1/4)	—	—	●	—	—	—	—	—	Brass (C37) Stainless steel	NBR
		03 (3/8)	—	—	●	●	—	—	—	—		
		04 (1/2)	—	—	—	●	●	—	—	—		
		06 (3/4)	—	—	—	—	●	●	—	—		
	Flange	—	10 (1)	—	—	—	—	●	—	—	CAC408	
		—	32 (32A)	—	—	—	—	—	●	—		
		—	—	40 (40A)	—	—	—	—	—	●		
		—	—	50 (50A)	—	—	—	—	—	●		

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material
Nil	NBR	Brass (C37), CAC408
G (Note)		Stainless steel

Note 1) The G option (stainless steel specification) is for port size 1/4 to 1 only.

Note 2) Select nil because the L option is the oil-free treatment.

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

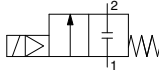
# VXED21/22/23 Series

## For Water

### Model/Valve Specifications

N.C.

Symbol



Port size	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa) <sup>Note 2)</sup>	Flow rate characteristics		Max. system pressure (MPa) <sup>Note 2)</sup>	Weight (g) <sup>Note 1)</sup>		
					Kv	Cv converted				
Thread (Nominal size)	1/4 (8A)	10	0.02	0.5	1.6	1.9	1.5	420		
	3/8 (10A)	10			VXED2130-03	2.0			2.4	
		15			VXED2140-03	3.9			4.5	
	1/2 (15A)	10			VXED2130-04	0.5			2.0	2.4
		15			VXED2140-04	4.6			5.5	
	3/4 (20A)	20			VXED2150-06	1.0			8.2	9.5
1 (25A)		25	VXED2260-10	11.0	13					
Flange	32A	35	VXED2270-32	19.6	23		5400			
	40A	40	VXED2380-40	26.4	31		6800			
	50A	50	VXED2390-50	42.8	49		8400			

Note 1) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 2) Refer to "Glossary of Terms" on page 309 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>N, I, G, L</b>	
1 to 60	-10 to 60

Note) With no freezing

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage (Water) <sup>Note 1)</sup>	
		1/4 to 1
NBR, FKM	0.2 cm <sup>3</sup> /min or less	1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage (Water) <sup>Note 1)</sup>	
		1/4 to 1
NBR, FKM	0.1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less

Note 1) Leakage is the value at ambient temperature 20°C.





How to Order

**DC VXED 21 3 0 [ ] [ ] - 02 [ ] - 5 G 1 - [ ]**

- Model**  
Refer to Table (1) shown below for availability.
- Orifice diameter**  
Refer to Table (1) shown below for availability.
- Valve/Body configuration**  
0 N.C. / Single unit
- Solenoid valve option**  
Refer to Table (2) shown below for availability.
- Suffix**

Nil	—
Z	Oil-free
- Port size**  
Refer to Table (1) shown below for availability.
- Bracket**

Nil	None
B	With bracket

\* Removal of bracket is not possible.
- Rated voltage**

5	24 VDC
6	12 VDC

\* Refer to Table (3) shown below for availability.  
Refer to page 308 for ordering coil only.
- Thread type**

Nil	Rc
T	NPTF
F	G*
N	NPT

\* For connection, prepare a fitting compliant with ISO 16030 and JIS B 8674.
- Electrical entry**

<b>G-Grommet</b> 	<b>C-Conduit</b> 
<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, with gasket) 

\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

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

Solenoid valve model (Port size)			Orifice diameter							Material		
Model	VXED21	VXED22	VXED23	3 (10 mm)	4 (15 mm)	5 (20 mm)	6 (25 mm)	7 (35 mm)	8 (40 mm)	9 (50 mm)	Body	Seal
Port symbol (Port size)	Thread	02 (1/4)	—	—	●	—	—	—	—	—	Brass (C37) Stainless steel	NBR FKM
		03 (3/8)	—	—	●	●	—	—	—	—		
		04 (1/2)	—	—	—	●	●	—	—	—		
		06 (3/4)	—	—	—	—	●	●	—	—		
	Flange	—	10 (1)	—	—	—	—	●	—	—	—	
		—	32 (32A)	—	—	—	—	—	●	—	—	
		—	—	40 (40A)	—	—	—	—	—	●	—	
		—	—	50 (50A)	—	—	—	—	—	—	●	

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material	Note
Nil	—	—	—
G (Note)	NBR	Brass (C37), CAC408	—
L (Note)	FKM	Stainless steel	High corrosive/Oil-free

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

Note) The G and L options (stainless steel specification) are for port size 1/4 to 1 only.

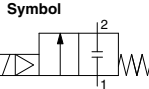
# VXED21/22/23 Series

## For Oil

**⚠ When the fluid is oil.**  
The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s.

### Model/Valve Specifications

N.C.



Port size	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa) <sup>Note 2)</sup>	Flow rate characteristics		Max. system pressure (MPa) <sup>Note 2)</sup>	Weight (g) <sup>Note 1)</sup>		
					Kv	Cv converted				
Thread (Nominal size)	1/4 (8A)	10	0.02	0.4	1.6	1.9	1.5	420		
	3/8 (10A)	10			VXED2130-03	2.0			2.4	
		15			VXED2140-03	3.9			4.5	
	1/2 (15A)	10			VXED2130-04	0.4			2.0	2.4
		15			VXED2140-04	4.6			5.5	
	3/4 (20A)	20			VXED2150-06	0.7			8.2	9.5
		1 (25A)			25	VXED2260-10			11.0	13
Flange	32A	35	0.03	0.7	19.6	23	1.5	5400		
	40A	40			VXED2380-40	26.4			31	
	50A	50			VXED2390-50	42.8			49	

Note 1) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 2) Refer to "Glossary of Terms" on page 309 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>A, H</b>	
-5 to 60	-10 to 60

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

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage (Oil) <sup>Note 1)</sup>	
		1/4 to 1
FKM	0.2 cm <sup>3</sup> /min or less	1 cm <sup>3</sup> /min or less

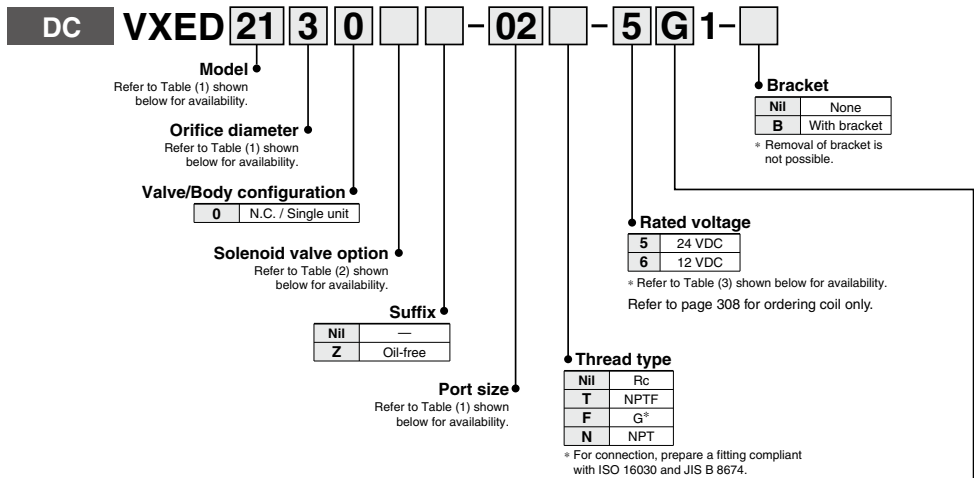
#### External Leakage

Seal material	Leakage (Oil) <sup>Note 1)</sup>	
		1/4 to 1
FKM	0.1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less

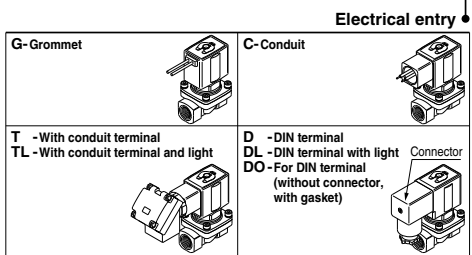
Note 1) Leakage is the value at ambient temperature 20°C.



How to Order



- VX2
- VXX
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA



\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

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

Solenoid valve model (Port size)			Orifice diameter							Material		
Model	VXED21	VXED22	VXED23	3 (10 mm)	4 (15 mm)	5 (20 mm)	6 (25 mm)	7 (35 mm)	8 (40 mm)	9 (50 mm)	Body	Seal
Port symbol (Port size)	Thread	02 (1/4)	—	—	●	—	—	—	—	—	Brass (C37) Stainless steel	FKM
		03 (3/8)	—	—	●	●	—	—	—	—		
		04 (1/2)	—	—	●	●	—	—	—	—		
		06 (3/4)	—	—	—	—	●	—	—	—		
	Flange	—	10 (1)	—	—	—	—	●	—	—	CAC408	
		—	32 (32A)	—	—	—	—	—	●	—		
		—	—	40 (40A)	—	—	—	—	—	●		
		—	—	50 (50A)	—	—	—	—	—	●		

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material
<b>A</b>	FKM	Brass (C37), CAC408
<b>H</b> (Note)		Stainless steel

Note) The H option (stainless steel specification) is for port size 1/4 to 1 only.

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
<b>5</b>	24 VDC	●
<b>6</b>	12 VDC	—

# VXED21/22/23 Series

For Air/Water/Oil

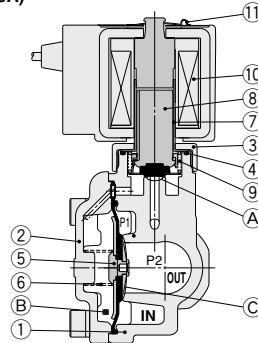
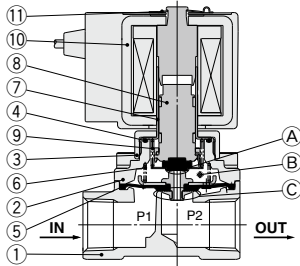
## Construction

Normally closed (N.C.)

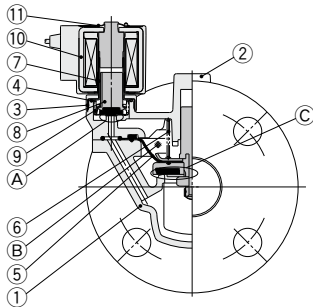
Body material: Brass (C37) (32A or more: CAC408), Stainless steel (32A or more: not available)

VXED2130 (8A/10A)

VXED2140/2150/2260  
(10A to 25A)



VXED2270/2380/2390 (32A to 50A)



### Working principle

<Valve opened>

When the coil 10 is energized, the armature assembly 8 is attracted into the core of the tube assembly 7 and the pilot valve A opens. Then the pressure in the pressure action chamber B falls to open the main valve C.

<Valve closed>

When the coil 10 is not energized, the pilot valve A is closed and the pressure in the pressure action chamber B rises and the main valve C closes.

### Component Parts

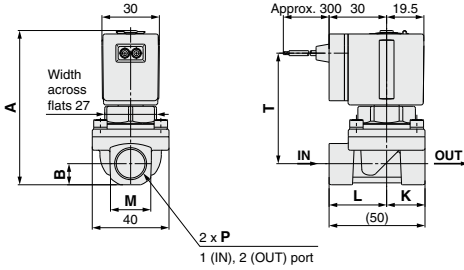
No.	Description	Size	Material	
			Brass (C37) (CAC408) body specification	Stainless steel body specification
1	Body	8A to 25A	Brass (C37)	Stainless steel
		32A to 50A	CAC408	—
2	Bonnet	8A to 25A	Brass (C37)	Stainless steel
		32A to 50A	CAC408	—
3	Nut	8A to 50A	Brass (C37)	Brass (C37), Ni plated
4	O-ring	8A to 50A	(NBR, FKM, EPDM)	
5	Diaphragm assembly	8A to 25A	(NBR, FKM, EPDM) Stainless steel	
		32A to 50A	(NBR, FKM, EPDM) Stainless steel, Brass (C37)	(NBR, FKM, EPDM) Stainless steel
6	Valve spring	8A to 50A	Stainless steel	
7	Tube assembly	8A to 50A	Stainless steel	
8	Armature assembly	8A to 50A	(NBR, FKM, EPDM) Stainless steel, PPS	
9	Return spring	8A to 50A	Stainless steel	
10	Solenoid coil	8A to 50A	—	
11	Clip	8A to 50A	SK	

The materials in parentheses are seal materials.

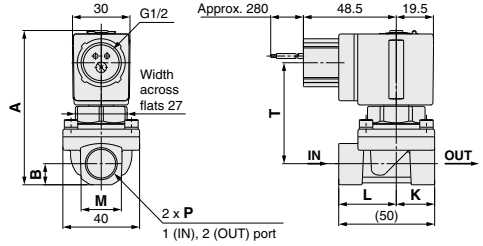
**Dimensions: Body Material: Brass (C37), Stainless Steel**

**VXED2130**

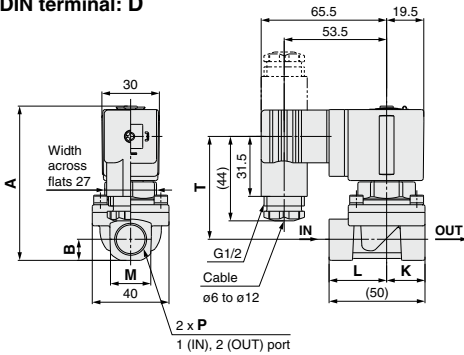
**Grommet: G**



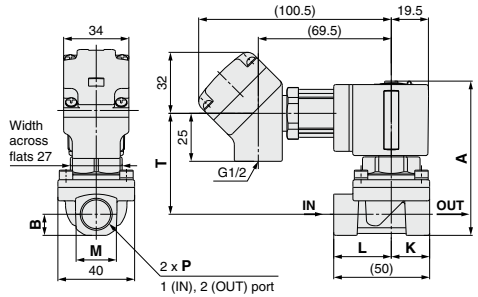
**Conduit: C**



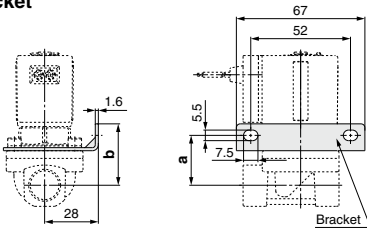
**DIN terminal: D**



**Conduit terminal: T**



**With bracket**



**VXED2130□□-04□-□□□□**  
 Note) A thread is drilled on the bottom of the body of the VXED2130 with port size 04 (1/2).  
 2 x M5 x 8 thread depth 8

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

Model	Port size P	A	B	K	L	M	Electrical entry								Bracket mounting dimension			
							Grommet		Conduit		DIN terminal		Conduit terminal		a	b		
							T	U	T	U	T	U	T	U				
VXED2130	1/4, 3/8	80.5	11	20	30	22	58	30	53	48.5	54	65.5	53.5	53	100.5	69.5	26	32
	1/2	86	14.5	24	26	28	60	30	55	48.5	56	65.5	53.5	55	100.5	69.5	28	34









## Energy Saving Type

Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve

# VXEZ22/23 Series

For Air, Water, Oil



### ■ Valve

Normally closed (N.C.)

### ■ Solenoid Coil

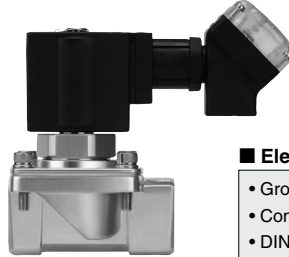
Coil: Class B

### ■ Rated Voltage

24 VDC, 12 VDC

### ■ Material

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



### ■ Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

Model	VXEZ2230	VXEZ2240	VXEZ2350	VXEZ2360
Orifice diameter				
10 mmø	●	—	—	—
15 mmø	—	●	—	—
20 mmø	—	—	●	—
25 mmø	—	—	—	●
Port size (Nominal size)	1/4 (8A) 3/8 (10A)	1/2 (15A)	3/4 (20A)	1 (25A)

VX2

VXK

VXD

VXZ

VXS

VXB

VXE

VXP

VXR

VXH

VXF

VX3

VXA

# VXEZ22/23 Series

# Common Specifications

## Standard Specifications

Valve specifications	Valve construction	Zero differential pressure type pilot operated 2 port diaphragm type
	Valve type	N.C.
	Withstand pressure	5.0 MPa
	Body material	Brass (C37), Stainless steel
	Seal material	NBR, FKM, EPDM
	Enclosure	Dusttight, Low jetproof (IP65)*
	Environment	Location without corrosive or explosive gases
Coil specifications	Rated voltage	24 VDC, 12 VDC
	Allowable voltage fluctuation	±10% of rated voltage
	Allowable leakage voltage	2% or less of rated voltage
	Coil insulation type	Class B
	Surge voltage suppressor	Built-in surge voltage suppressor

⚠ Be sure to read “Specific Product Precautions.”

## Solenoid Coil Specifications

### DC Specification (Class B coil only)

Model	Power consumption (W) (Holding)	Inrush current (A) (Inrush time: 200 ms) <sup>Note 1)</sup>		Temperature increase (°C) <sup>Note 2)</sup>
		24 VDC	12 VDC	
VXEZ22	2.3	0.29	0.58	25
VXEZ23	3	0.44	0.88	30

Note 1) Energizing time should be 200 ms or longer.

Note 2) Value for ambient temperature at 20°C and when the rated voltage is applied.

## Contents

For Air .....	P.300
For Water .....	P.302
For Oil .....	P.304
Construction .....	P.306
Dimensions .....	P.307
Replacement Parts .....	P.308

## VXEZ22/23 Series

# Applicable Fluid Check List

### All Options

Refer to page 300 or later for specifications and models.

VXEZ2    0   -   -    1 -

● Option symbol



Fluid and application	Option symbol	Seal material	Body material
Air	Nil	NBR	Brass (C37)
	G		Stainless steel
Water	Nil	NBR	Brass (C37)
	G		Stainless steel
Oil <small>Note 2)</small>	A	FKM	Brass (C37)
	H		Stainless steel
High corrosive/Oil-free	L <small>Note 1)</small>	FKM	Stainless steel
Copper-free/Fluorine-free <small>Note 3)</small>	J	EPDM	Stainless steel
Other combination	B	EPDM	Brass (C37)

Note 1) The L option is oil-free treatment.

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

Note 3) The nuts (non-wetted parts) are nickel plated on the C37 material.

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

VX2

VXK

VXD

VXZ

VXS

VXB

**VXE**

VXP

VXR

VXH

VXF

VX3

VXA

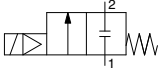
# VXEZ22/23 Series

## For Air

### Model/Valve Specifications

N.C.

Symbol



### Normally Closed (N.C.)

Port size (Nominal size)	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential <sup>Note 2)</sup> (MPa)	Flow rate characteristics			Max. system pressure <sup>Note 2)</sup> (MPa)	Weight <sup>Note 1)</sup> (g)
					C	b	Cv		
1/4 (8A)	10	VXEZ2230-02	0	0.7	8.5	0.44	2.4	1.5	550
3/8 (10A)		VXEZ2230-03			11.0	0.42	2.8		
1/2 (15A)	VXEZ2240-04	23.0		0.34	6.0	760			
3/4 (20A)	VXEZ2350-06	38.0		0.20	9.5		1300		

Port size (Nominal size)	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential <sup>Note 2)</sup> (MPa)	Flow rate characteristics	Max. system pressure <sup>Note 2)</sup> (MPa)	Weight <sup>Note 1)</sup> (g)
					Effective area (mm <sup>2</sup> )		
1 (25A)	25	VXEZ2360-10	0	1.0	215	1.5	1480

Note 1) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 2) Refer to "Glossary of Terms" on page 309 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</b>	-10 to 60
-10 to 60 <sup>Note)</sup>	

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

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage (Air) <sup>Note 1) 2)</sup>
NBR	1 cm <sup>3</sup> /min or less

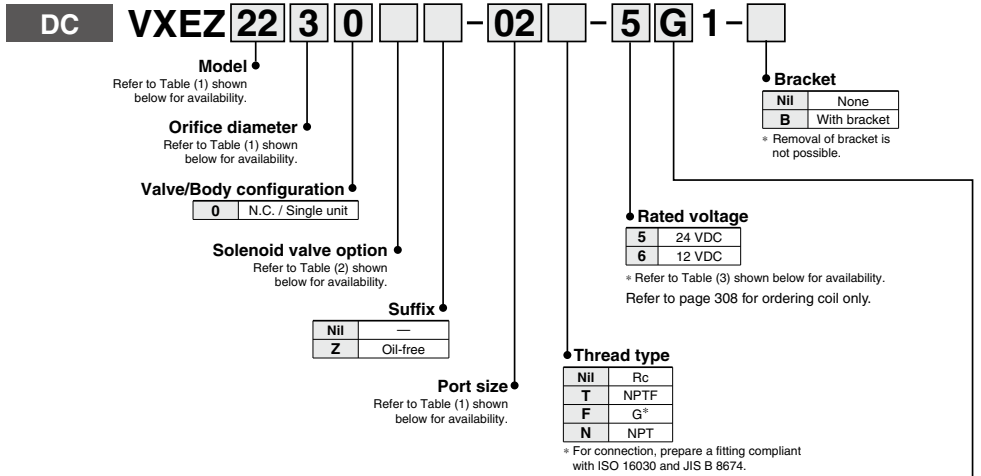
#### External Leakage

Seal material	Leakage (Air) <sup>Note 1)</sup>
NBR	1 cm <sup>3</sup> /min or less

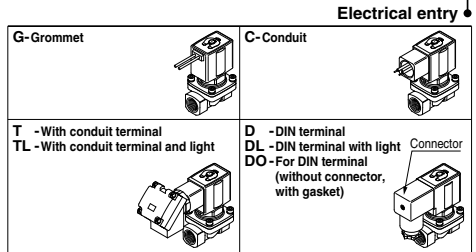
Note 1) Leakage is the value at ambient temperature 20°C.

Note 2) Leakage is the value when the pressure differential ranges from 0.02 MPa to the maximum operating pressure differential.

**How to Order**



- VX2
- VXX
- VXD
- VXZ
- VXS
- VXB
- VXE**
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA



\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

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

Solenoid valve model (Port size)		Orifice symbol (Diameter)				
Model	VXEZ22	VXEZ23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)
Port symbol (Port size)	02 (1/4)	—	●	—	—	—
	03 (3/8)	—	●	—	—	—
	04 (1/2)	—	—	●	—	—
	—	06 (3/4)	—	—	●	—
	—	10 (1)	—	—	—	●

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material	Note
Nil	NBR	Brass (C37)	—
G		Stainless steel	

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

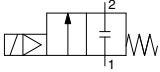
# VXEZ22/23 Series

## For Water

### Model/Valve Specifications

N.C.

Symbol



### Normally Closed (N.C.)

Port size (Nominal size)	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential <sup>Note 2)</sup> (MPa)	Flow rate characteristics		Max. system pressure <sup>Note 2)</sup> (MPa)	Weight <sup>Note 1)</sup> (g)
					Kv	Cv converted		
1/4 (8A)	10	VXEZ2230-02	0	0.7	1.6	1.9	1.5	550
3/8 (10A)		VXEZ2230-03			2.0	2.4		
1/2 (15A)	VXEZ2240-04	4.6		5.3				
3/4 (20A)	VXEZ2350-06	7.8		9.2				
1 (25A)	25	VXEZ2360-10		1.0	10.3	12.0		1480

Note 1) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 2) Refer to "Glossary of Terms" on page 309 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>	
1 to 60	-10 to 60

\* With no freezing

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage (Water) <sup>Note 1) 2)</sup>
NBR, FKM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage (Water) <sup>Note 1)</sup>
NBR, FKM	0.1 cm <sup>3</sup> /min or less

Note 1) Leakage is the value at ambient temperature 20°C.

Note 2) Leakage is the value when the pressure differential ranges from 0.02 MPa to the maximum operating pressure differential.

# Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve **VXEZ22/23 Series**

For Water



## How to Order

**DC** **VXEZ2230** **02** **5G1**

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

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

**Valve/Body configuration**  
0 N.C. / Single unit

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

**Suffix**

Nil	—
Z	Oil-free

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

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

**Rated voltage**

5	24 VDC
6	12 VDC

\* Refer to Table (3) shown below for availability.  
Refer to page 308 for ordering coil only.

**Thread type**

Nil	Rc
T	NPTF
F	G*
N	NPT

\* For connection, prepare a fitting compliant with ISO 16030 and JIS B 8674.

**Bracket**

Nil	None
B	With bracket

\* Removal of bracket is not possible.

**Electrical entry**

<b>G-Grommet</b> 	<b>C-Conduit</b> 
<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, with gasket) 

- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

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

Solenoid valve model (Port size)		Orifice symbol (Diameter)				
Model	VXEZ22	VXEZ23	3 (10 mm)	4 (15 mm)	5 (20 mm)	6 (25 mm)
Port symbol (Port size)	02 (1/4)	—	●	—	—	—
	03 (3/8)	—	●	—	—	—
	04 (1/2)	—	—	●	—	—
	—	06 (3/4)	—	—	●	—
—	10 (1)	—	—	—	●	—

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material	Note
Nil	NBR	Brass (C37)	—
G		Stainless steel	
L	FKM	Stainless steel	High corrosive/Oil-free

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

# VXEZ22/23 Series

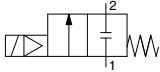
## For Oil

**⚠ When the fluid is oil.**  
**The dynamic viscosity of the fluid must not exceed 50 mm<sup>2</sup>/s.**

### Model/Valve Specifications

N.C.

Symbol



### Normally Closed (N.C.)

Port size (Nominal size)	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential <sup>Note 2)</sup> (MPa)	Flow rate characteristics		Max. system pressure <sup>Note 2)</sup> (MPa)	Weight <sup>Note 1)</sup> (g)
					Kv	Cv converted		
1/4 (8A)	10	VXEZ2230-02	0	0.7	1.6	1.9	1.5	550
3/8 (10A)		VXEZ2230-03			2.0	2.4		
1/2 (15A)	VXEZ2240-04	4.6			5.3			
3/4 (20A)	VXEZ2350-06	7.8			9.2			
1 (25A)	VXEZ2360-10	10.3			12.0			

Note 1) Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.

Note 2) Refer to "Glossary of Terms" on page 309 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>A, H</b>	
-5 to 60	-10 to 60

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

### Valve Leakage Rate

#### Internal Leakage

Seal material	Leakage (Oil) <sup>Note 1) 2)</sup>
FKM	0.1 cm <sup>3</sup> /min or less

#### External Leakage

Seal material	Leakage (Oil) <sup>Note 1)</sup>
FKM	0.1 cm <sup>3</sup> /min or less

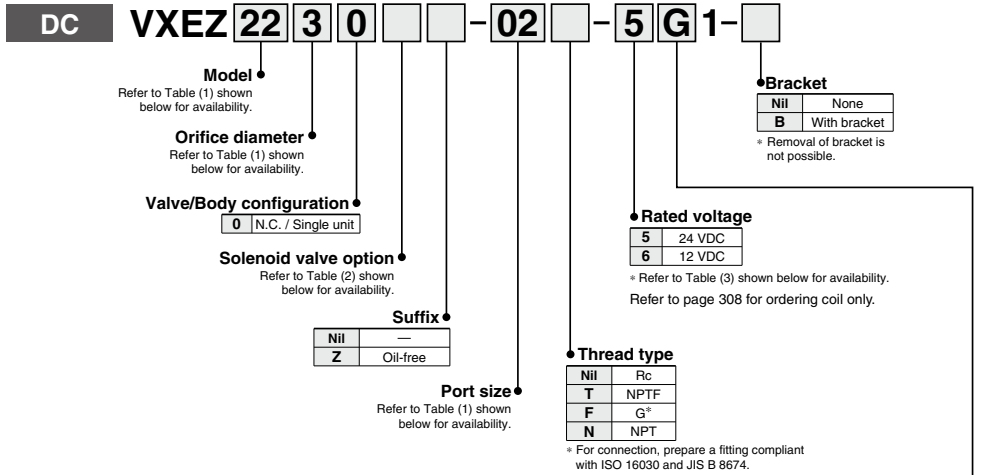
Note 1) Leakage is the value at ambient temperature 20°C.

Note 2) Leakage is the value when the pressure differential ranges from 0.02 MPa to the maximum operating pressure differential.



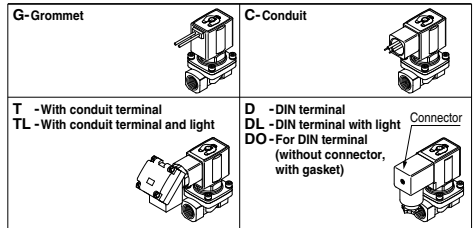


**How to Order**



- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

**Electrical entry**



\* Refer to Table (3) for available combinations between electrical option (L) and rated voltage.

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

Model	Solenoid valve model (Port size)		Orifice symbol (Diameter)			
	VXEZ22	VXEZ23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)
Port symbol (Port size)	02 (1/4)	—	●	—	—	—
	03 (3/8)	—	●	—	—	—
	04 (1/2)	—	—	●	—	—
	—	06 (3/4)	—	—	●	—
	—	10 (1)	—	—	—	●

**Table (2) Solenoid Valve Option**

Option symbol	Seal material	Body material
A	FKM	Brass (C37)
H		Stainless steel

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

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

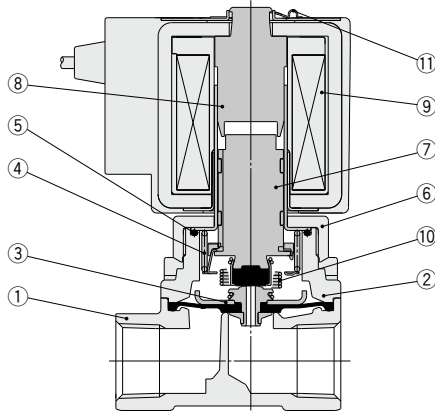
# VXEZ22/23 Series

For Air/Water/Oil

## Construction

Normally closed (N.C.)

Body material: Brass (C37), Stainless steel



### Working principle

<Valve opened – when there is pressure>

When the coil (9) is energized, the armature assembly (7) is attracted into the core of the tube assembly (8) and the pilot valve (A) is opened.

When the pilot valve is opened and the pressure inside the pilot chamber (B) decreases, resulting in the pressure difference from the inlet pressure. Then the diaphragm assembly (3) is lifted and the main valve (C) is opened.

<Valve opened – when there is no pressure or under low minute pressure>

The armature assembly (7) and the diaphragm assembly (3) are connected with each other with the lift spring (10). When the armature assembly is attracted, the diaphragm assembly is pulled up and the main valve (C) is opened.

<Valve closed>

When the coil (9) is de-energized, the armature assembly (7) returns by the reacting force of the return spring (4) and the pilot valve (A) is closed.

When the pilot valve is closed, the pressure inside the pilot chamber (B) increases, resulting that the pressure difference from the inlet pressure is lost and the main valve (C) is closed.

### Component Parts

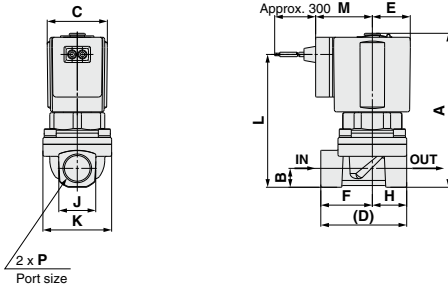
No.	Description	Material	
		Brass (C37) body specification	Stainless steel body specification
1	<b>Body</b>	Brass (C37)	Stainless steel
2	<b>Bonnet</b>	Brass (C37)	Stainless steel
3	<b>Diaphragm assembly</b>	(NBR, FKM, EPDM) Stainless steel	
4	<b>Return spring</b>	Stainless steel	
5	<b>O-ring</b>	(NBR, FKM, EPDM)	
6	<b>Nut</b>	Brass (C37)	Brass (C37), Ni plated
7	<b>Armature assembly</b>	(NBR, FKM, EPDM) Stainless steel, PPS	
8	<b>Tube assembly</b>	Stainless steel	
9	<b>Solenoid coil</b>	—	
10	<b>Lift spring</b>	Stainless steel	
11	<b>Clip</b>	SK	

The materials in parentheses are seal materials.

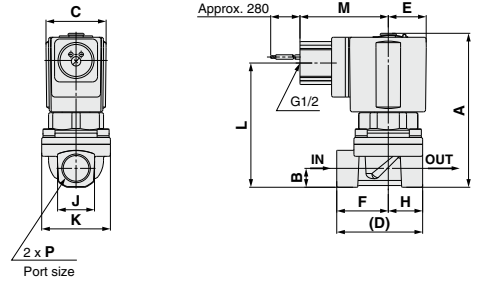
**Dimensions: Body Material: Brass (C37), Stainless Steel**

**VXEZ22□0/23□0**

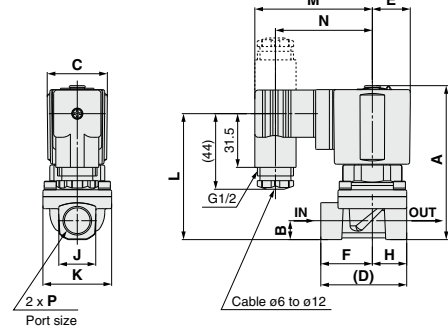
**Grommet: G**



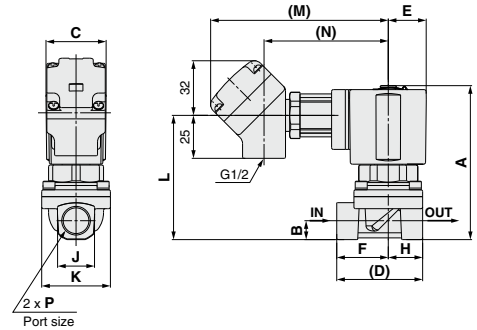
**Conduit: C**



**DIN terminal: D**

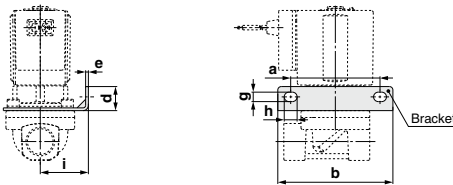


**Conduit terminal: T**



- VX2
- VXK
- VXD
- VXZ
- VXS
- VXB
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA

**With bracket**



(mm)

Model	Port size P	A	B	C	D	E	F	H	J	K
N.C.										
VXEZ2230	1/4, 3/8	89	11	35	50	22.5	30	20	22	40
VXEZ2240	1/2	97	14	35	63	22.5	37	26	29.5	52
VXEZ2350	3/4	111	18	40	80	25	47.5	32.5	36	65
VXEZ2360	1/1	118.5	21	40	90	25	55	35	40.5	70

(mm)

Model	Port size P	a	b	d	e	f	g	h	i	Electrical entry												
										Grommet		Conduit		DIN terminal		Conduit terminal						
										L	M	L	M	L	M	L	M	N				
N.C.																						
VXEZ2230	1/4, 3/8	52	67	14	1.6	26	5.5	7.5	28	77	33	72	51.5	73	68.5	56.5	72	103.5	72.5			
VXEZ2240	1/2	60	75	17	2.3	33	6.5	8.5	35	84.5	33	80	51.5	81	68.5	56.5	80	103.5	72.5			
VXEZ2350	3/4	68	87	22	2.6	40	6.5	9	43	99.5	36	94.5	54	95.5	71	59	94.5	106	75			
VXEZ2360	1/1	73	92	22	2.6	45.5	6.5	9	45	107	36	102	54	103	71	59	102	106	75			

# VXE□21/22/23 Series

For Air/Water/Oil

## Replacement Parts

### ● Solenoid coil assembly part no.

VXE02 **1** N - **1** GE - □

Series ●

1	VXE□21
2	VXE□22□□
3	VXE□23□□

Valve





Symbol	Model
Z	VXED2130
Nil	Others

Rated voltage (Note) ●

5	24 VDC
6	12 VDC

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

Electrical entry ●

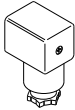
<b>G-Grommet</b> 	<b>C-Conduit</b> 
<b>T</b> - With conduit terminal <b>TL</b> - With conduit terminal and light 	<b>D</b> - DIN terminal <b>DL</b> - DIN terminal with light <b>DO</b> - For DIN terminal (without connector, with gasket) 

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

### ● DIN connector part no.

Without electrical option **3G-GDM2A**

With electrical option **GDM2A - □ □**



Electrical option ●

**L** With light

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

Rated voltage ●

5	24 VDC
6	12 VDC

### ● Clip part no.

For VXE□21: **VX021N-10**

For VXE□22: **VX022N-10**

For VXE□23: **VX023N-10**

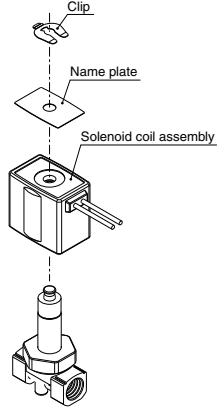


Table (1) Rated Voltage – Electrical Option

Rated voltage		L (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

### ● Gasket part no. for DIN connector **VCW20-1-29-1**

### ● Name plate part no.

**AZ-T** **Valve model**

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

# Glossary of Terms

## Pressure Terminology

### 1. Maximum operating pressure differential

The maximum pressure differential (the difference between the inlet and outlet pressure) which is allowed for operation. When the outlet pressure is 0 MPa, this becomes the maximum operating pressure.

### 2. Minimum operating pressure differential

The minimum pressure differential (the difference between the inlet pressure and outlet pressure) required to keep the main valve fully opened.

### 3. Maximum system pressure

The maximum pressure that can be applied inside the pipelines (line pressure).

(The pressure differential of the solenoid valve portion must be less than the maximum operating pressure differential.)

### 4. Proof pressure

The pressure in which the valve must be withstood without a drop in performance after holding for one minute under prescribed pressure and returning to the operating pressure range. (value under the prescribed conditions)

## Electrical Terminology

### 1. Apparent power (VA)

Volt-ampere is the product of voltage (V) and current (A). Power consumption (W); For AC,  $W = V \cdot A \cdot \cos\theta$ . For DC,  $W = V \cdot A$ . Note)  $\cos\theta$  shows power factor.  $\cos\theta = 0.6$

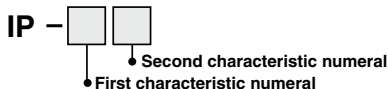
### 2. Surge voltage

A high voltage which is momentarily generated by shutting off the power in the shut-off area.

### 3. Enclosure

A degree of protection defined in the "JIS C 0920: Waterproof test of electric machinery/appliance and the degree of protection against the intrusion of solid foreign objects".

Verify the degree of protection for each product.



#### ● First Characteristics:

##### Degrees of protection against solid foreign objects

0	Non-protected
1	Protected against solid foreign objects of 50 mm $\phi$ and greater
2	Protected against solid foreign objects of 12 mm $\phi$ and greater
3	Protected against solid foreign objects of 2.5 mm $\phi$ and greater
4	Protected against solid foreign objects of 1.0 mm $\phi$ and greater
5	Dust-protected
6	Dusttight

#### ● Second Characteristics:

##### Degrees of protection against water

0	Non-protected	—
1	Protected against vertically falling water drops	Dripproof type 1
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Dripproof type 2
3	Protected against rainfall when enclosure tilted up to 60°	Rainproof type
4	Protected against splashing water	Splashproof type
5	Protected against water jets	Low jetproof type
6	Protected against powerful water jets	Strong jetproof type
7	Protected against the effects of temporary immersion in water	Immersible type
8	Protected against the effects of continuous immersion in water	Submersible type

Example) IP65: Dusttight, Low jetproof type

"Low jetproof type" means that no water intrudes inside an equipment that could hinder from operating normally by means of applying water for 3 minutes in the prescribed manner. Take appropriate protection measures, since a device is not usable in an environment where a droplet of water is splashed constantly.

## Others

### 1. Material

NBR: Nitrile rubber  
FKM: Fluororubber  
EPDM: Ethylene propylene rubber  
PTFE: Polytetrafluoroethylene resin  
FFKM: Perfluoroelastomer

### 2. Oil-free treatment

The degreasing and washing of wetted parts.

### 3. Passage symbol

In the symbol ( $\frac{\text{Port 1 (IN)}}{\text{Port 2 (OUT)}}$ ) Port 1 (IN) and Port 2 (OUT) are shown in a blocked condition ( $\frac{\text{---}}{\text{---}}$ ), but it is not possible to use the valve in cases of reverse pressure, where the Port 2 pressure is higher than the Port 1 pressure.

VX2

VXK

VXD

VXZ

VXS

VXB

VXE

VXP

VXR

VXH

VXF

VX3

VXA