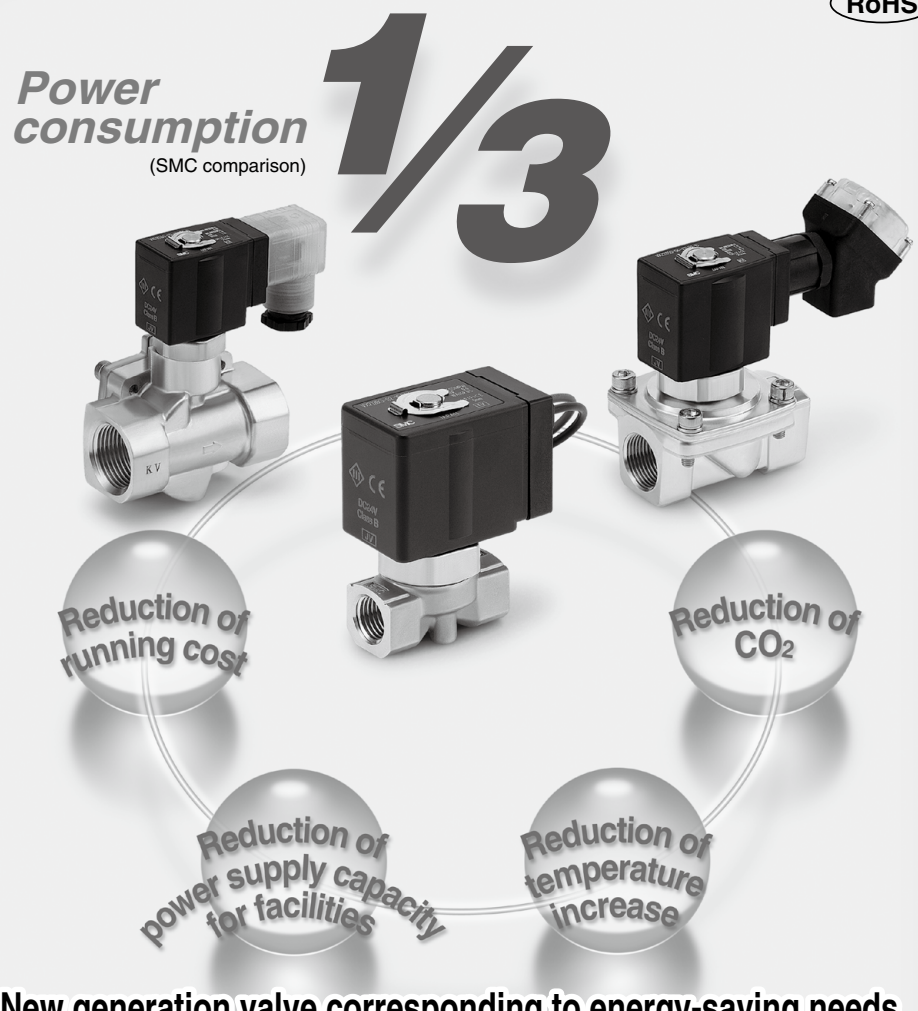
Energy Saving Type 2 Port Solenoid Valve

VXE Series

For Air, Water, Oil

CE

RoHS



New generation valve corresponding to energy-saving needs

●IP65 ●RoHS compliance

VXE Series

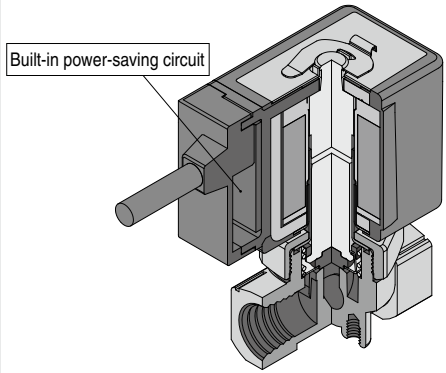
VXE2, VXED2, VXEZ2

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

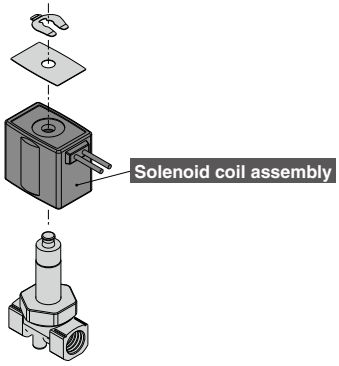


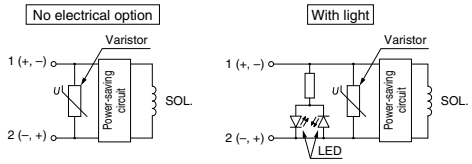
● Interchangeable

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 1/8	Thread 1/4	Thread 3/8	Thread 1/2	Thread 3/4	Thread 1	Flange 32A	Flange 40A	Flange 50A	
VXE2 Direct Operated 	2 mmø	●	●								P.261
	3 mmø	●	●	●							
	4.5 mmø	●	●	●							
	6 mmø		●	●							
	8 mmø		●	●							
	10 mmø		●	●	●						
VXED2 Pilot Operated 	10 mmø		●	●	●						P.283
	15 mmø			●	●						
	20 mmø					●					
	25 mmø						●				
	35 mmø							●			
	40 mmø								●		
	50 mmø									●	
VXEZ2 Zero Differential Pressure Type Pilot Operated 	10 mmø		●	●							P.297
	15 mmø				●						
	20 mmø					●					
	25 mmø						●				

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

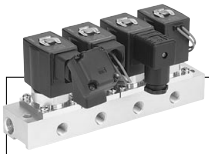
Body — Brass (C37), Stainless steel
Seal — NBR, FKM, EPDM, PTFE

■ Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

Normally Closed (N.C.)

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



Manifold

■ Valve

Normally closed (N.C.)

■ Base

Common SUP
Individual SUP (Aluminum base only)

■ Solenoid Coil

Coil: Class B

■ Rated Voltage

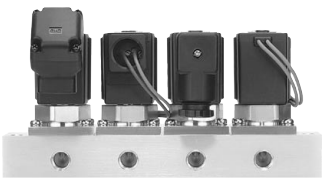
24 VDC, 12 VDC

■ 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 mmø	●	—	—
	3 mmø	●	●	●
	4.5 mmø	●	●	●
	6 mmø	—	●	●
(Common SUP) Port size	IN port	3/8		
	OUT port	1/8, 1/4		

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) Note 1)		Temperature increase (°C) Note 2)
		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.

Contents

Applicable Fluid Check List

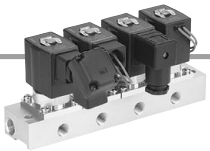
All Options (Single Unit)

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 Note 1)	**V** Note 2)	FKM	Brass (C37)
	M Note 2)		Stainless steel
Water	**Nil**	NBR	Brass (C37)
	G		Stainless steel
Oil Note 3)	**A**	FKM	Brass (C37)
	H		Stainless steel
High corrosive/Oil-free	**L** Note 2)	FKM	Stainless steel
Copper-free/Fluorine-free Note 4)	**J**	EPDM	Stainless steel
Other combination	**B**	EPDM	Brass (C37)
	C	PTFE	
	K		Stainless steel



All Options (Manifold)

Refer to page 266 and after for specifications and models.

VXE2□□1□□-□□-□□□1

Base symbol

Option symbol

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

Note 1) The leakage amount (10^{-6} Pa·m³/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 mm²/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.

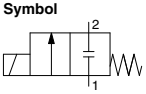
For Air /Single Unit

(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)	Flow rate characteristics Note 1)			Note 3) Max. system pressure (MPa)	Note 2) Weight (g)
				C[dm³/(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		300
	3	**VXE2120-02**	0.6	1.2	0.45	0.33		470
		VXE2220-02	1.5					
		VXE2320-02	3.0					620
	4.5	**VXE2130-02**	0.2	2.3	0.46	0.61		300
		VXE2230-02	0.35					470
		VXE2330-02	0.9					620
	6	**VXE2240-02**	0.15	4.1	0.30	1.10		470
		VXE2340-02	0.35					620
	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		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		470
		VXE2330-03	0.9					620
	6	**VXE2240-03**	0.15	4.1	0.30	1.10		470
		VXE2340-03	0.35					620
	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		560
		VXE2360-03	0.07					700
1/2 (15A)	10	**VXE2260-04**	0.03	11	0.30	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		
Nil, G	**V, M**	
–10 Note) to 60	–10 Note) to 60	–20 to 60

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

Valve Leakage Rate

Internal Leakage

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

External Leakage

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

Note) Value for V and M options (Non-leak/Medium vacuum)

How to Order (Single Unit)

DC **VXE** **21** **2** **0** □ □ – **01** □ – **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

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

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

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

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

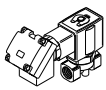
∗ VX021N-12A and VX022N-12A are packed in the same container as the main body.
∗ Refer to Table (4) if a bracket is ordered separately.

Electrical entry

G - Grommet

C - Conduit

T - With conduit terminal
TL - With conduit terminal and light



D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket)

Connector

∗ 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 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)	**5** (8 mmø)	**6** (10 mmø)
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^{-6} Pa·m³/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 $\frac{1}{3}$**0**	VX021N-12A
VXE22 $\frac{3}{4}$**0** **VXE23** $\frac{3}{4}$**0**	VX022N-12A
VXE22 $\frac{5}{6}$**0** **VXE23** $\frac{5}{6}$**0**	VX023N-12A-L

Dimensions → page 278 (Single unit)

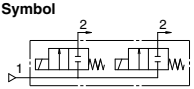
For Air /Manifold

(Non-leak/Medium vacuum)

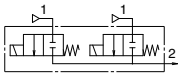
Solenoid Valve for Manifold/Valve Specifications

N.C.

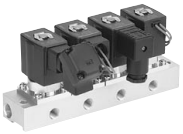
Symbol



Common SUP



Individual SUP



Normally Closed (N.C.)

Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa) Note 2)	Flow rate characteristics Note 1)			Max. system pressure (MPa) Note 2)
			C[dm³/(s·bar)]	b	Cv	
2	**VXE2111-00**	1.5	0.59	0.48	0.18	3.0
3	**VXE2121-00**	0.6	1.2	0.45	0.33	
	VXE2221-00	1.5				
	VXE2321-00	3.0				
4.5	**VXE2131-00**	0.2	2.3	0.46	0.61	
	VXE2231-00	0.35				
	VXE2331-00	0.9				
6	**VXE2241-00**	0.15	4.1	0.30	1.10	
	VXE2341-00	0.35				

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		
Nil, R	**V**	
–10 Note) to 60	–10 Note) to 60	–20 to 60

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

Valve Leakage Rate

Internal Leakage

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

External Leakage

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

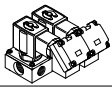
∗ Refer to Table (3) shown below for availability.

Refer to page 308 for ordering coil only.

Electrical entry

G - Grommet 

C - Conduit 

T - With conduit terminal
TL - With conduit terminal and light 

D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket) 

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

How to Order Manifold Bases

VVX21
VVX22 **1** □ □ □ **– 07 – 1**
VVX23

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

Port size (Individual port)

1	Rc1/8
2	Rc1/4

∗ Common port sizes are all Rc3/8.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Suffix

Nil	—
Z	Oil-free

Base type

Nil	Common SUP
V	Individual SUP

Manifold base

Blanking plate part no.

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

Seal material

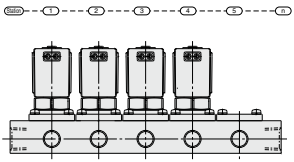
Nil	NBR
F	FKM

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
∗ VXE2111-00-1G1 ... 4 sets
∗ VX011-001..... 1 set

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



Enter the product's part number in order, counting the 1st station from the left in the manifold arrangement, when viewing the individual port in front.

Table (1) 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

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

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	—

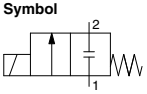
Dimensions → page 280 (Manifold)

For Water/Single Unit

Model/Valve Specifications

N.C.

Symbol



Normally Closed (N.C.)

Port size	Orifice dia. (mmø)	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	**VXE2120-02**	0.5	0.28	0.33		
		VXE2220-02	1.5				470
		VXE2320-02	3.0				620
	4.5	**VXE2130-02**	0.2	0.54	0.61		300
		VXE2230-02	0.35				470
		VXE2330-02	0.9				620
	6	**VXE2240-02**	0.15	0.93	1.10		470
		VXE2340-02	0.3				620
	8	**VXE2250-02**	0.08	1.36	1.60	1.0	560
		VXE2350-02	0.2				700
	10	**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				620
	4.5	**VXE2230-03**	0.35	0.54	0.61		470
		VXE2330-03	0.9				620
	6	**VXE2240-03**	0.15	0.93	1.10		470
		VXE2340-03	0.3				620
	8	**VXE2250-03**	0.08	1.36	1.60	1.0	560
		VXE2350-03	0.2				700
	10	**VXE2260-03**	0.03	1.89	2.20		560
		VXE2360-03	0.07				700
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	
Nil, G, L	
1 to 60	–20 to 60

Note) With no freezing

Valve Leakage Rate

Internal Leakage

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

External Leakage

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

How to Order (Single Unit)

DC **VXE** [21] [2] [0] [ ] [ ] – [01] [ ] – [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

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

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

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

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

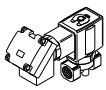
∗ VX021N-12A and VX022N-12A are packed in the same container as the main body.
∗ Refer to Table (4) if a bracket is ordered separately.

Electrical entry

G – Grommet

C – Conduit

T – With conduit terminal
TL – With conduit terminal and light



D – DIN terminal
DL – DIN terminal with light
DO – For DIN terminal (without connector, with gasket)

Connector

∗ 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 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)	**5** (8 mmø)	**6** (10 mmø)
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 $\frac{1}{2}_{3}$**0**	VX021N-12A
VXE22 $\frac{2}{3}_{4}$**0** **VXE23** $\frac{2}{3}_{4}$**0**	VX022N-12A
VXE22 $\frac{5}{6}$**0** **VXE23** $\frac{5}{6}$**0**	VX023N-12A-L

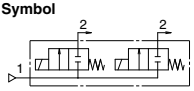
Dimensions → page 278 (Single unit)

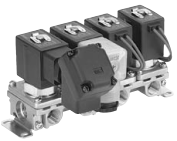
For Water/Manifold

Solenoid Valve for Manifold/Valve Specifications

N.C.

Symbol





Normally Closed (N.C.)

Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa) Note 2)	Flow rate characteristics Note 1)		Max. system pressure (MPa) Note 2)
			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	
Nil, G, L	
1 to 60	–20 to 60

Note) With no freezing

Valve Leakage Rate

Internal Leakage

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

External Leakage

Seal material	Leakage (Water)
NBR, FKM	0.1 cm^3/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

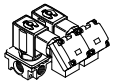
Select Nil because the solenoid valve L option is oil-free treatment.

Rated voltage

5	24 VDC
6	12 VDC

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

Electrical entry

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

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

Refer to page 308 for ordering coil only.

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

How to Order Manifold Bases

VVX21
VVX22 **1** □ **C** □ – **07** – **1**
VVX23

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

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

Suffix

Nil	—
Z	Oil-free

Manifold base

Base/Seal material
∗ Refer to Table (2)-(2) shown below for availability.

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

Seal material

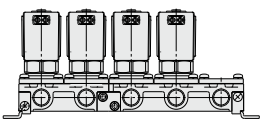
Nil	NBR
F	FKM
E	EPDM

How to Order Manifold Assemblies (Example)

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

Example
VVX211C-05-1 ..... 1 set
∗ VXE2111-1G1 ..... 4 sets
∗ VVX21-3A ..... 1 set

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



Enter the product's part number in order, counting the 1st station from the left in the manifold arrangement, when viewing the individual port in front.

Table (1) 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		
L	SF	Stainless steel	FKM	High corrosive/ Oil-free

Table (3) Rated Voltage – Electrical Option

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

Dimensions → page 281 (Manifold)

For Oil/Single Unit

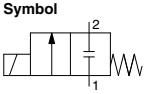
⚠ When the fluid is oil.

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

Model/Valve Specifications

N.C.

Symbol



Normally Closed (N.C.)

Port size	Orifice dia. (mmø)	Model	Note 3) Max. operating pressure differential (MPa)	Flow rate characteristics Note 1)		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	**VXE2120-02**	0.5	0.28	0.33		
		VXE2220-02	1.2				470
		VXE2320-02	2.0				620
	4.5	**VXE2130-02**	0.15	0.54	0.61		300
		VXE2230-02	0.3				470
		VXE2330-02	0.85				620
	6	**VXE2240-02**	0.1	0.93	1.10		470
		VXE2340-02	0.3				620
	8	**VXE2250-02**	0.08	1.36	1.60	1.0	560
		VXE2350-02	0.2				700
	10	**VXE2260-02**	0.03	1.64	1.90		560
		VXE2360-02	0.07				700
3/8 (10A)	3	**VXE2220-03**	1.2	0.28	0.33	3.0	470
		VXE2320-03	2.0				620
	4.5	**VXE2230-03**	0.3	0.54	0.61		470
		VXE2330-03	0.85				620
	6	**VXE2240-03**	0.1	0.93	1.10		470
		VXE2340-03	0.3				620
	8	**VXE2250-03**	0.08	1.36	1.60	1.0	560
		VXE2350-03	0.2				700
	10	**VXE2260-03**	0.03	1.89	2.20		560
		VXE2360-03	0.07				700
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	
A, H	
–5 Note) to 60	–20 to 60

Note) Dynamic viscosity: 50 mm²/s or less

Valve Leakage Rate

Internal Leakage

Seal material	Leakage (Oil)
FKM	0.1 cm³/min or less

External Leakage

Seal material	Leakage (Oil)
FKM	0.1 cm³/min or less

How to Order (Single Unit)

DC **VXE** [21] [2] [0] [A] [ ] – [01] [ ] – [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.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

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

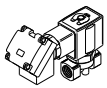
Nil	None
B	With bracket

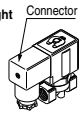
∗ VX021N-12A and VX022N-12A are packed in the same container as the main body.
∗ Refer to Table (4) if a bracket is ordered separately.

Electrical entry

G - Grommet 

C - Conduit 

T - With conduit terminal
TL - With conduit terminal and light 

D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket)
Connector 

∗ 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 mmø)	**2** (3 mmø)	**3** (4.5 mmø)	**4** (6 mmø)	**5** (8 mmø)	**6** (10 mmø)
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

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

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 $\frac{2}{3}$ $\frac{3}{4}$**0** **VXE23** $\frac{2}{3}$ $\frac{3}{4}$**0**	VX022N-12A
VXE22 $\frac{5}{6}$**0** **VXE23** $\frac{5}{6}$**0**	VX023N-12A-L

Dimensions → page 278 (Single unit)

For Oil/Manifold

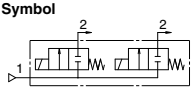
⚠ When the fluid is oil.

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

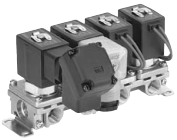
Solenoid Valve for Manifold/Valve Specifications

N.C.

Symbol



Common SUP



Normally Closed (N.C.)

Orifice dia. (mmø)	Model	Max. operating pressure differential (MPa) Note 2)	Flow rate characteristics Note 1)		Max. system pressure (MPa) Note 2)
			Kv	Cv converted	
2	**VXE2111**	1.5	0.15	0.17	3.0
3	**VXE2121**	0.5	0.28	0.33	
	VXE2221	1.2			
	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.

Fluid and Ambient Temperature

Fluid temperature (°C)	Ambient temperature (°C)
Solenoid valve option symbol	
A, H	
–5 Note) to 60	–20 to 60

Note) Dynamic viscosity: 50 mm²/s or less

Valve Leakage Rate

Internal Leakage

Seal material	Leakage (Oil)
FKM	0.1 cm³/min or less

External Leakage

Seal material	Leakage (Oil)
FKM	0.1 cm³/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

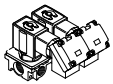
Rated voltage

5	24 VDC
6	12 VDC

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

Refer to page 308 for ordering coil only.

Electrical entry

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

∗ 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**
VVX23

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

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

Suffix

Nil	—
Z	Oil-free

Base/Seal material
∗ Refer to Table (2)-(2) shown below for availability.

Manifold base

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

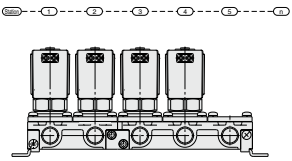
Seal material: FKM

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
∗ VXE2111A-1G1 ..... 4 sets
∗ VVX21-3A-F ..... 1 set

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



Enter the product's part number in order, counting the 1st station from the left in the manifold arrangement, when viewing the individual port in front.

Table (1) 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
A	**CF**	Brass (C37)	FKM
H	**SF**	Stainless steel	

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

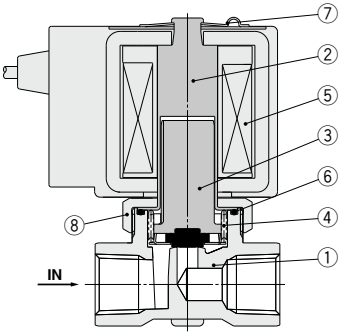
Table (3) Rated Voltage – Electrical Option

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

Dimensions → page 281 (Manifold)

Construction: Single Unit

Normally closed (N.C.)
Body material: Brass (C37), Stainless steel



Component Parts

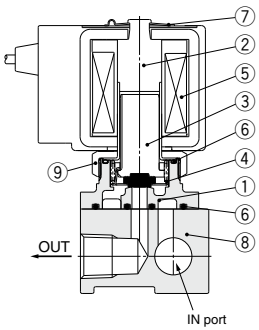
No.	Description	Material	
		Brass (C37) body specification	Stainless steel body specification
1	**Body**	Brass (C37)	Stainless steel
2	**Tube assembly**	Stainless steel	
3	**Armature assembly**	(NBR, FKM, EPDM, PTFE) Stainless steel, PPS	
4	**Return spring**	Stainless steel	
5	**Solenoid coil**	—	
6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

The materials in parentheses are seal materials.

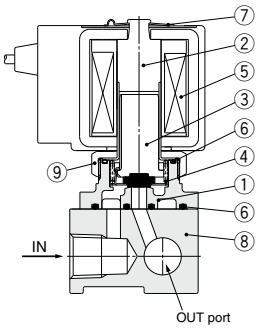
Construction: Manifold

Normally closed (N.C.)
Base material: Aluminum
Fluid: Air

Common SUP

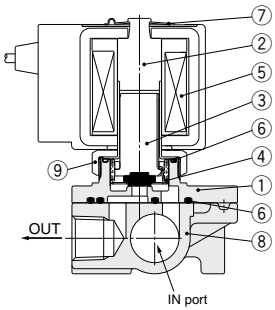


Individual SUP



Base material: Brass (C37), Stainless steel
Fluid: Water/Oil

Common SUP



Component Parts

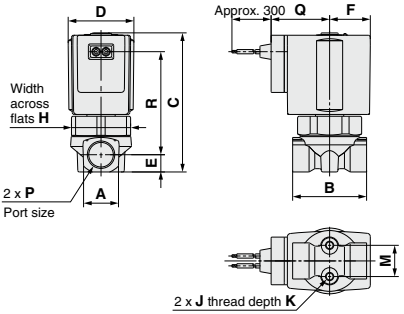
No.	Description	Material		
		Aluminum base specification	Brass (C37) base specification	Stainless steel base specification
1	**Body**	Aluminum	Brass (C37)	Stainless steel
2	**Tube assembly**	Stainless steel		
3	**Armature assembly**	(NBR, FKM, EPDM, PTFE) Stainless steel, PPS		
4	**Return spring**	Stainless 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.

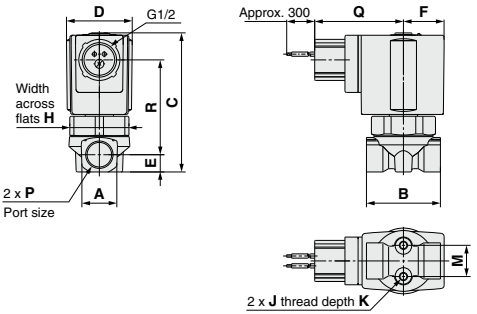
Dimensions: Single Unit/Body Material: Brass (C37), Stainless Steel

VXE21□0/22□0/23□0

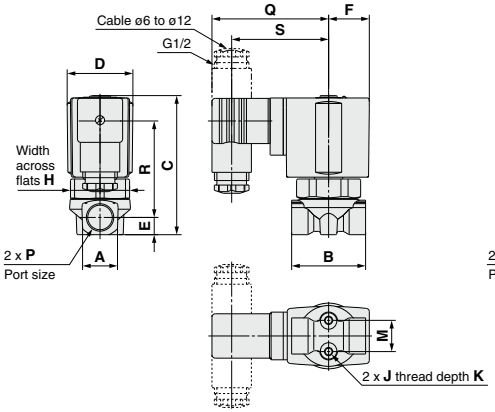
Grommet: G



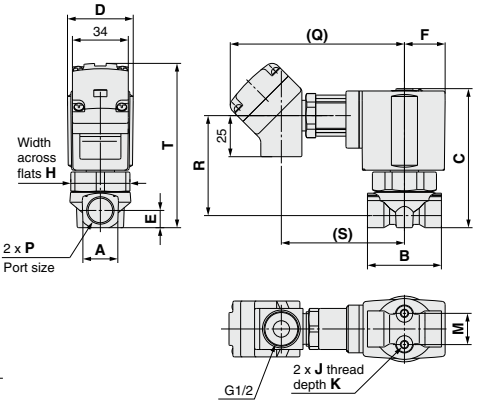
Conduit: C



DIN terminal: D



Conduit terminal: T



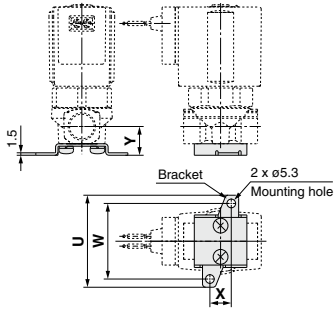
(mm)

Model	Orifice diameter	Port size	A	B	C	D	E	F	H	Mounting dimension			Electrical entry									
													Grommet		Conduit		DIN terminal			Conduit terminal			
N.C.		P								J	K	M	Q	R	Q	R	Q	R	S	Q	R	S	T
VXE21□0	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□0	ø3, ø4.5, ø6	1/4, 3/8	22	45	78	35	10.5	22.5	32	M5	8	19	33	56	51.5	51	68.5	52	56.5	103.5	51	72.5	93.5
VXE22□0	ø8, ø10	1/4, 3/8, 1/2	30	50	85		14			M5	8	23	33	59	51.5	54	68.5	55	56.5	103.5	54	72.5	100
VXE23□0	ø3, ø4.5, ø6	1/4, 3/8	22	45	85.5	40	10.5	25	36	M5	8	19	36	62	54	57	71	58	59	106	57	75	99.5
VXE23□0	ø8, ø10	1/4, 3/8, 1/2	30	50	92		14			M5	8	23	36	65	54	60	71	61	59	106	60	75	106

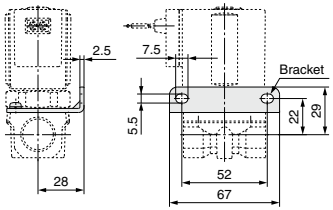
Dimensions: Single Unit/Body Material: Brass (C37), Stainless Steel

VXE21□0/22□0/23□0

Specifications with bracket
Orifice: ø2, ø3, ø4.5, ø6
(Packed in the same container)



Orifice: ø8, ø10
(Assembled at the shipment)

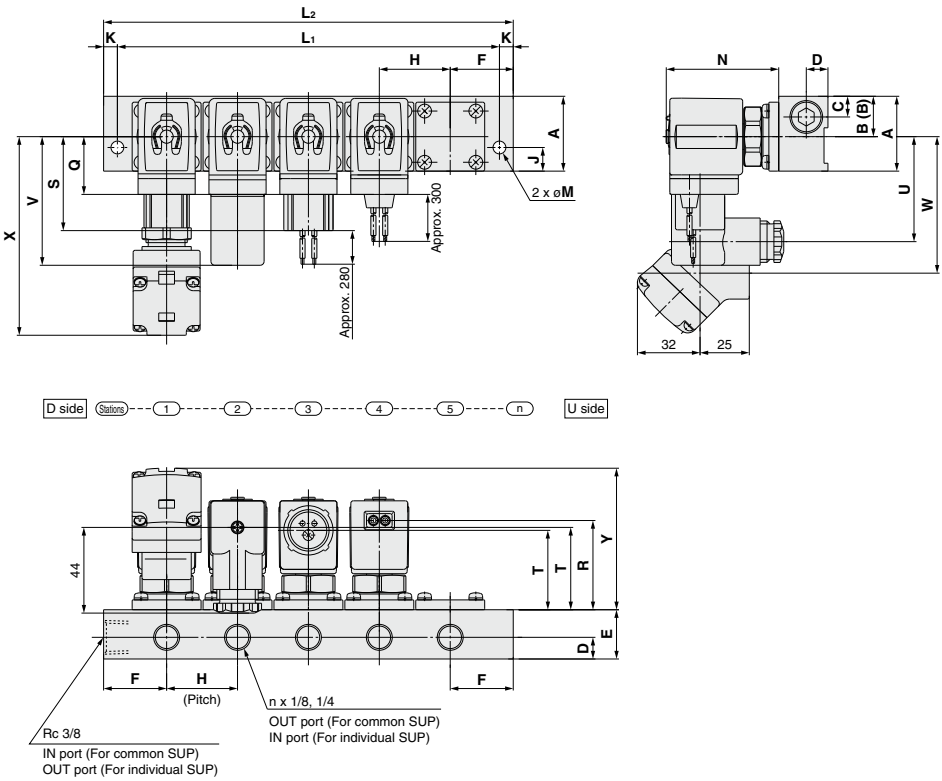


(mm)

Model	Orifice diameter	Port size	Bracket mounting dimension			
N.C.		P	U	W	X	Y
VXE21□0	ø2, ø3, ø4.5	1/8, 1/4	46	36	11	15
VXE22□0	ø3, ø4.5, ø6	1/4, 3/8	56	46	13	17.5
VXE22□0	ø8, ø10	1/4, 3/8, 1/2	—	—	—	—
VXE23□0	ø3, ø4.5, ø6	1/4, 3/8	56	46	13	17.5
VXE23□0	ø8, ø10	1/4, 3/8, 1/2	—	—	—	—

Dimensions: Manifold/Base Material: Aluminum

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



(mm)

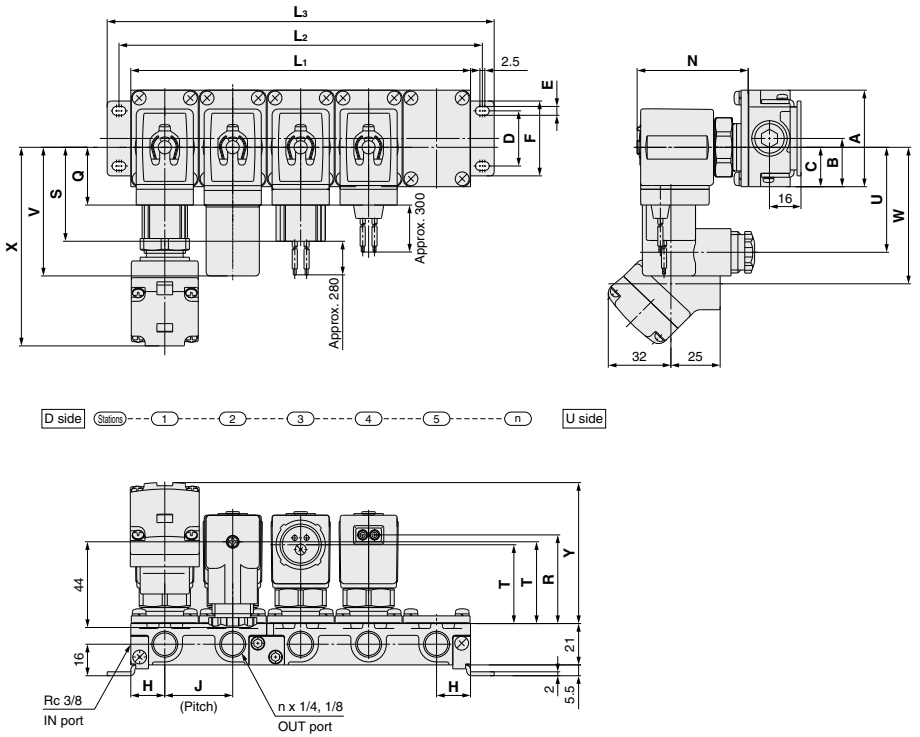
Model	Dimension	n (stations)								
		2	3	4	5	6	7	8	9	10
VVXE21	L_1	86	122	158	194	230	266	302	338	374
	L_2	100	136	172	208	244	280	316	352	388
VVXE22	L_1	108	154	200	246	292	338	384	430	476
VVXE23	L_2	126	172	218	264	310	356	402	448	494

(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



(mm)

Model	Dimension	n (stations)								
		2	3	4	5	6	7	8	9	10
VXE21	L_1	69	103.5	138	172.5	207	241.5	276	310.5	345
	L_2	81	115.5	150	184.5	219	253.5	288	322.5	357
	L_3	93	127.5	162	196.5	231	265.5	300	334.5	369
VXE22	L_1	77	115.5	154	192.5	231	269.5	308	346.5	385
	L_2	89	127.5	166	204.5	243	281.5	320	358.5	397
	L_3	101	139.5	178	216.5	255	293.5	332	370.5	409
VXE23	L_1	83	124.5	166	207.5	249	290.5	332	373.5	415
	L_2	95	136.5	178	219.5	261	302.5	344	385.5	427
	L_3	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

(mm)

Model	A	B	C	D	E	F	H	J	N	Electrical entry								
										Grommet		Conduit		DIN terminal			Conduit terminal		
										Q	R	S	T	U	V	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

VXED21/22/23 Series
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) Note 1)		Temperature increase (°C) Note 2)
		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

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 [1/2/3/4/5/6] 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 Note 2)	**A**	FKM	Brass (C37)
	H		Stainless steel
High corrosive/Oil-free	**L** Note 1)	FKM	Stainless steel
Copper-free/Fluorine-free Note 3)	**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 mm²/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 [2/3/7/8/9] 0 □□ – □□ – □□□ 1 – □

Option symbol

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

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

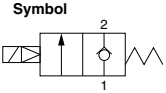
∗ If using for other fluids, please consult with SMC.

For Air

Model/Valve Specifications

N.C.

Symbol



Port size		Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential Note 2) (MPa)	Flow rate characteristics			Max. system pressure Note 2) (MPa)	Weight Note 1) (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
	3/8 (10A)	10	**VXED2130-03**			9.2		2.4		
		15	**VXED2140-03**		1.0	18.0		5.0		670
	1/2 (15A)	10	**VXED2130-04**		0.7	9.2		2.4		500
		15	**VXED2140-04**		1.0	20.0		5.5		670
	3/4 (20A)	20	**VXED2150-06**			38.0	0.30	9.5		1150

Port size		Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential Note 2) (MPa)	Flow rate characteristics	Max. system pressure Note 2) (MPa)	Weight Note 1) (g)
						Effective area (mm^2)		
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	
Nil, G	
–10 to 60	–10 to 60

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

Valve Leakage Rate

Internal Leakage

Seal material	Leakage (Air) Note 1)	
	1/4 to 1	32A to 50A
NBR	2 cm^3/min or less	10 cm^3/min or less

External Leakage

Seal material	Leakage (Air) Note 1)	
	1/4 to 1	32A to 50A
NBR	1 cm^3/min or less	1 cm^3/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.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

5	24 VDC
6	12 VDC

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

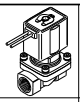
Bracket

Nil	None
B	With bracket

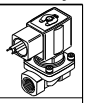
∗ Removal of bracket is not possible.

Electrical entry

G - Grommet



C - Conduit



T - With conduit terminal
TL - With conduit terminal and light

D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, 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 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)	—	—	—	—	●	—	—	—	—		
		—	**10** (1)	—	—	—	—	●	—	—	—		
	Flange	—	**32** (32A)	—	—	—	—	—	●	—	—	CAC408	
		—	—	**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

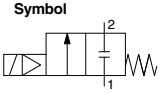
Rated voltage		**L** (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

For Water

Model/Valve Specifications

N.C.

Symbol



Port size		Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa) Note 2)	Flow rate characteristics		Max. system pressure (MPa) Note 2)	Weight (g) Note 1)
						Kv	Cv converted		
Thread (Nominal size)	1/4 (8A)	10	**VXED2130-02**	0.02	0.5	1.6	1.9	1.5	420
	3/8 (10A)	10	**VXED2130-03**			2.0	2.4		
		15	**VXED2140-03**		1.0	3.9	4.5		670
	1/2 (15A)	10	**VXED2130-04**		0.5	2.0	2.4		500
		15	**VXED2140-04**		1.0	4.6	5.5		670
	3/4 (20A)	20	**VXED2150-06**			8.2	9.5		1150
	1 (25A)	25	**VXED2260-10**			11.0	13		1650
Flange	32A	35	**VXED2270-32**	0.03		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	
Nil, G, L	
1 to 60	–10 to 60

Note) With no freezing

Valve Leakage Rate

Internal Leakage

Seal material	Leakage (Water) Note 1)	
	1/4 to 1	32A to 50A
NBR, FKM	0.2 cm^3/min or less	1 cm^3/min or less

External Leakage

Seal material	Leakage (Water) Note 1)	
	1/4 to 1	32A to 50A
NBR, FKM	0.1 cm^3/min or less	0.1 cm^3/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.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

5	24 VDC
6	12 VDC

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

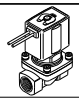
Bracket

Nil	None
B	With bracket

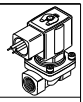
∗ Removal of bracket is not possible.

Electrical entry

G - Grommet



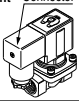
C - Conduit



T - With conduit terminal
TL - With conduit terminal and light

D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket)

Connector



∗ 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 FKM
		03 (3/8)	—	—	●	●	—	—	—	—	—		
		04 (1/2)	—	—	●	●	—	—	—	—	—		
		06 (3/4)	—	—	—	—	●	—	—	—	—		
		—	**10** (1)	—	—	—	—	●	—	—	—		
	Flange	—	**32** (32A)	—	—	—	—	—	●	—	—	CAC408	
		—	—	**40** (40A)	—	—	—	—	—	●	—		
		—	—	**50** (50A)	—	—	—	—	—	—	●		

Table (2) Solenoid Valve Option

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

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

Table (3) Rated Voltage – Electrical Option

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

For Oil

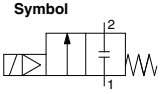
⚠ When the fluid is oil.

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

Model/Valve Specifications

N.C.

Symbol



Port size		Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa) Note 2)	Flow rate characteristics		Max. system pressure (MPa) Note 2)	Weight (g) Note 1)
						Kv	Cv converted		
Thread (Nominal size)	1/4 (8A)	10	**VXED2130-02**	0.02	0.4	1.6	1.9	1.5	420
	3/8 (10A)	10	**VXED2130-03**			2.0	2.4		
		15	**VXED2140-03**		0.7	3.9	4.5		670
	1/2 (15A)	10	**VXED2130-04**		0.4	2.0	2.4		500
		15	**VXED2140-04**		0.7	4.6	5.5		670
	3/4 (20A)	20	**VXED2150-06**			8.2	9.5		1150
	1 (25A)	25	**VXED2260-10**			11.0	13		1650
Flange	32A	35	**VXED2270-32**	0.03		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	
A, H	
–5 to 60	–10 to 60

Note) Dynamic viscosity: 50 mm²/s or less

Valve Leakage Rate

Internal Leakage

Seal material	Leakage (Oil) Note 1)	
	1/4 to 1	32A to 50A
FKM	0.2 cm³/min or less	1 cm³/min or less

External Leakage

Seal material	Leakage (Oil) Note 1)	
	1/4 to 1	32A to 50A
FKM	0.1 cm³/min or less	0.1 cm³/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.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

5	24 VDC
6	12 VDC

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

Refer to page 308 for ordering coil only.

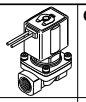
Bracket

Nil	None
B	With bracket

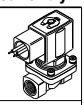
∗ Removal of bracket is not possible.

Electrical entry

G - Grommet



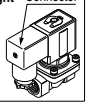
C - Conduit



T - With conduit terminal
TL - With conduit terminal and light

D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket)

Connector



∗ 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	FKM
		03 (3/8)	—	—	●	●	—	—	—	—	—		
		04 (1/2)	—	—	●	●	—	—	—	—	—		
		06 (3/4)	—	—	—	—	●	—	—	—	—		
		—	**10** (1)	—	—	—	—	●	—	—	—		
	Flange	—	**32** (32A)	—	—	—	—	—	●	—	—		
		—	—	**40** (40A)	—	—	—	—	—	●	—	CAC408	
		—	—	**50** (50A)	—	—	—	—	—	—	●		

Table (2) Solenoid Valve Option

Option symbol	Seal material	Body material
A	FKM	Brass (C37), CAC408
H 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

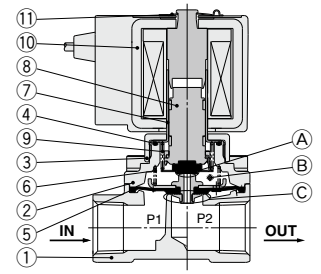
Rated voltage		**L** (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

Construction

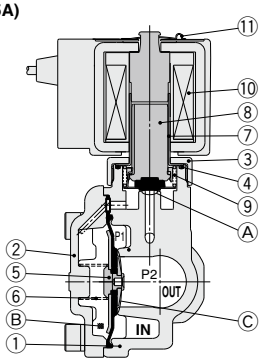
Normally closed (N.C.)

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

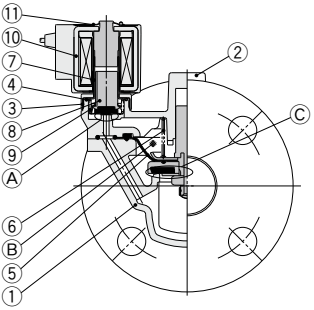
VXED2130 (8A/10A)



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 Ⓐ opens. Then the pressure in the pressure action chamber Ⓑ falls to open the main valve Ⓒ.

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

Component Parts

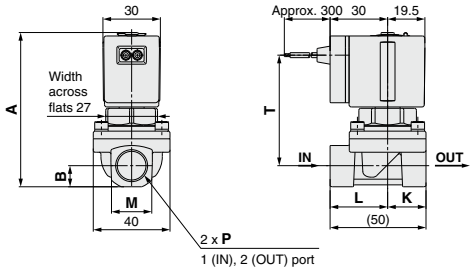
No.	Description	Size	Material	
			Brass (C37) (CAC408) body specification	Stainless steel body specification
1	**Body**	8A to 25A	Brass (C37)	Stainless steel
		32A to 50A	CAC408	—
2	**Bonnet**	8A to 25A	Brass (C37)	Stainless steel
		32A to 50A	CAC408	—
3	**Nut**	8A to 50A	Brass (C37)	Brass (C37), Ni 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.

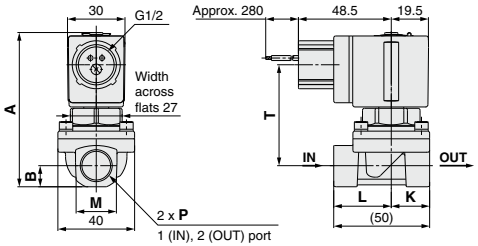
Dimensions: Body Material: Brass (C37), Stainless Steel

VXED2130

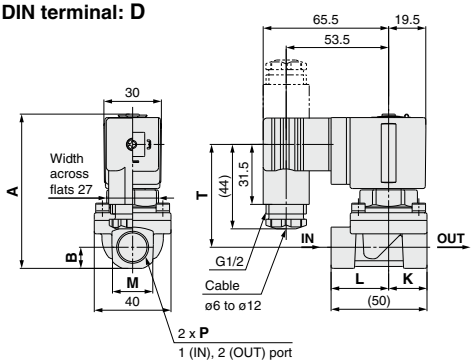
Grommet: G



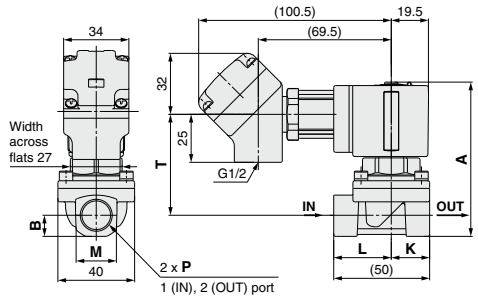
Conduit: C



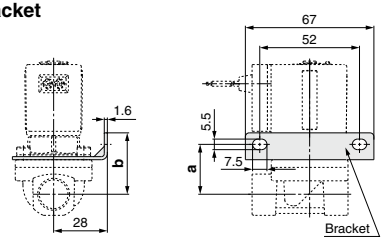
DIN terminal: D



Conduit terminal: T

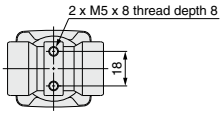


With bracket



VXED2130□□-04□-□□□□

Note) A thread is drilled on the bottom of the body of the VXED2130 with port size 04 (1/2).



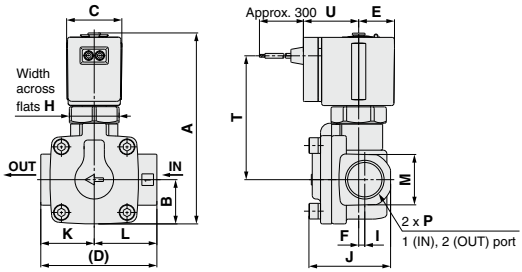
(mm)

Model	Port size P	A	B	K	L	M	Electrical entry										Bracket mounting dimension	
							Grommet		Conduit		DIN terminal			Conduit terminal				
N.C.							T	U	T	U	T	U	V	T	U	V	a	b
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

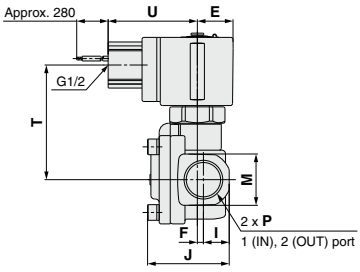
Dimensions: Body Material: Brass (C37), Stainless Steel

VXED2140/2150/2260

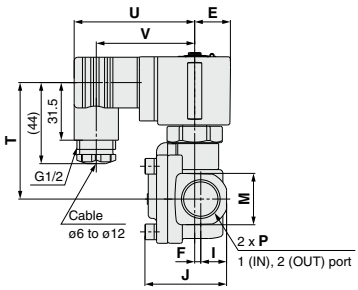
Grommet: G



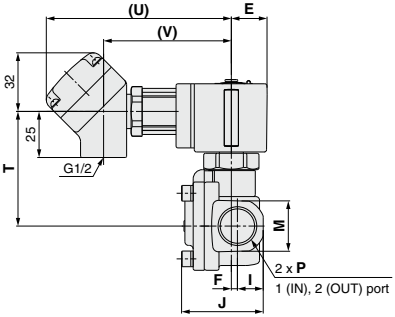
Conduit: C



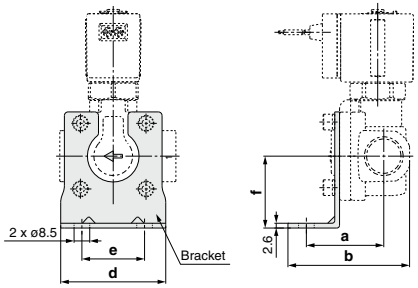
DIN terminal: D



Conduit terminal: T



With bracket



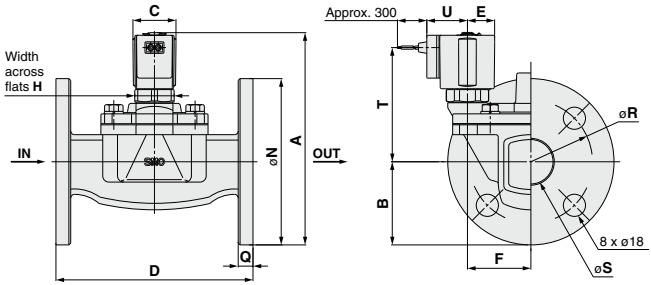
(mm)

Model	Port size	A	B	C	D	E	F	H	I	J	K	L	M	Electrical entry										Bracket mounting dimension				
														Grommet		Conduit		DIN terminal			Conduit terminal							
N.C.	P													T	U	T	U	T	U	V	T	U	V	a	b	d	e	f
VXED2140	3/8, 1/2	103.5	24	30	63	19.5	3.5	27	14	44.5	29	34	28	67.5	30	62.5	48.5	63.5	65.5	53.5	62.5	100.5	69.5	42	66	57	34	39
VXED2150	3/4	115	29	30	80	19.5	4.5	27	17	51.5	37	43	35	74	30	69	48.5	70	65.5	53.5	69	100.5	69.5	51	78	74	51	45.5
VXED2260	1	133	33	35	90	22.5	4.5	32	20	60	43	47	42	88	33	83	51.5	84	68.5	56.5	83	103.5	72.5	56	86	81	58	49.5

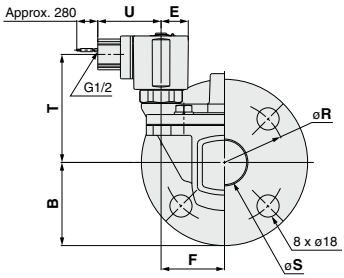
Dimensions: Body Material: Brass (CAC408), Stainless Steel

VXED2270/2380/2390

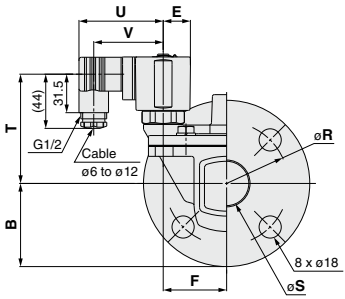
Grommet: G



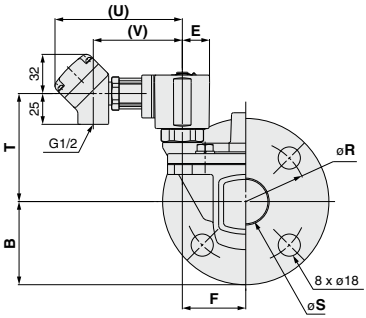
Conduit: C



DIN terminal: D



Conduit terminal: T



(mm)

Model	Applicable flange	A	B	C	D	E	F	H	N	Q	R	S	Electrical entry									
													Grommet		Conduit		DIN terminal			Conduit terminal		
N.C.													T	U	T	U	T	U	V	T	U	V
VXED2270	32A	172.5	67.5	35	160	22.5	51.5	32	135	12	100	36	93	33	88	51.5	89	68.5	56.5	88	103.5	72.5
VXED2380	40A	185	70	40	170	25	54.5	36	140	14	105	42	103	36	98	54	99	71	59	98	106	75
VXED2390	50A	198	77.5	40	180	25	59	36	155	14	120	52	108.5	36	103.5	54	104.5	71	59	103.5	106	75

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**

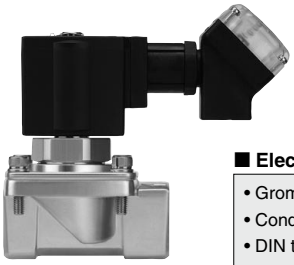
Coil: Class B

■ **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)

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) Note 1)		Temperature increase (°C) Note 2)
		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

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 Note 2)	**A**	FKM	Brass (C37)
	H		Stainless steel
High corrosive/Oil-free	**L** Note 1)	FKM	Stainless steel
Copper-free/Fluorine-free Note 3)	**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 mm²/s or less.
Note 3) The nuts (non-wetted parts) are nickel plated on the C37 material.

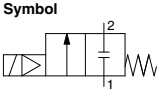
∗ If using for other fluids, please consult with SMC.

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 Note 2) (MPa)	Flow rate characteristics			Max. system pressure Note 2) (MPa)	Weight Note 1) (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)	15	**VXEZ2240-04**			23.0	0.34	6.0		760
3/4 (20A)	20	**VXEZ2350-06**		1.0	38.0	0.20	9.5		1300

Port size (Nominal size)	Orifice diameter (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential Note 2) (MPa)	Flow rate characteristics	Max. system pressure Note 2) (MPa)	Weight Note 1) (g)
					Effective area (mm^2)		
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	
Nil, G	
–10 to 60 Note)	–10 to 60

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

Valve Leakage Rate

Internal Leakage

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

External Leakage

Seal material	Leakage (Air) Note 1)
NBR	1 cm^3/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

DC **VXEZ** [22] [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.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

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

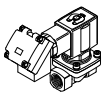
∗ Removal of bracket is not possible.

Electrical entry

G - Grommet

C - Conduit

T - With conduit terminal
TL - With conduit terminal and light



D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket)

Connector

∗ 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

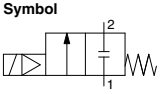
Rated voltage		**L** (With light)
Voltage symbol	Voltage	
5	24 VDC	●
6	12 VDC	—

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 Note 2) (MPa)	Flow rate characteristics		Max. system pressure Note 2) (MPa)	Weight Note 1) (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)	15	**VXEZ2240-04**			4.6	5.3		760
3/4 (20A)	20	**VXEZ2350-06**		1.0	7.8	9.2		1300
1 (25A)	25	**VXEZ2360-10**			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	
Nil, G, L	
1 to 60	–10 to 60

∗ With no freezing

Valve Leakage Rate

Internal Leakage

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

External Leakage

Seal material	Leakage (Water) Note 1)
NBR, FKM	0.1 cm^3/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

DC **VXEZ** [22] [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

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

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

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

5	24 VDC
6	12 VDC

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

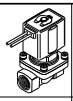
Refer to page 308 for ordering coil only.

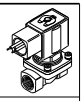
Bracket

Nil	None
B	With bracket

∗ Removal of bracket is not possible.

Electrical entry

G - Grommet 

C - Conduit 

T - With conduit terminal
TL - With conduit terminal and light 

D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, with gasket)
Connector 

∗ 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	
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	—

For Oil

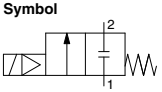
⚠ When the fluid is oil.

The dynamic viscosity of the fluid must not exceed 50 mm²/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 Note 2) (MPa)	Flow rate characteristics		Max. system pressure Note 2) (MPa)	Weight Note 1) (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)	15	**VXEZ2240-04**			4.6	5.3		760
3/4 (20A)	20	**VXEZ2350-06**			7.8	9.2		1300
1 (25A)	25	**VXEZ2360-10**			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	
A, H	
–5 to 60	–10 to 60

Note) Dynamic viscosity: 50 mm²/s or less

Valve Leakage Rate

Internal Leakage

Seal material	Leakage (Oil) Note 1) 2)
FKM	0.1 cm³/min or less

External Leakage

Seal material	Leakage (Oil) Note 1)
FKM	0.1 cm³/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

DC **VXEZ** [22] [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.

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

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

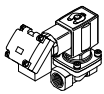
∗ Removal of bracket is not possible.

Electrical entry

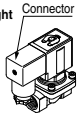
G - Grommet

C - Conduit

T - With conduit terminal
TL - With conduit terminal and light



D - DIN terminal
DL - DIN terminal with light
DO - For DIN terminal (without connector, 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 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

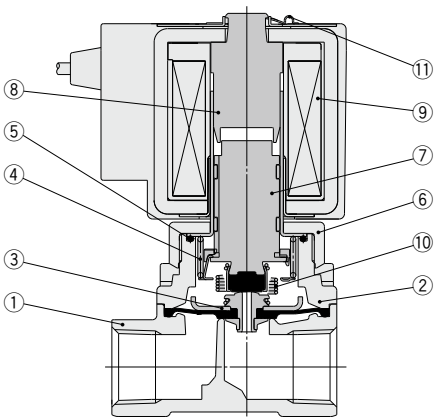
Option symbol	Seal material	Body material
A	FKM	Brass (C37)
H		Stainless steel

Table (3) Rated Voltage – Electrical Option

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

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 Ⓐ is opened.
When the pilot valve is opened and the pressure inside the pilot chamber Ⓑ decreases, resulting in the pressure difference from the inlet pressure. Then the diaphragm assembly ③ is lifted and the main valve Ⓒ 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 Ⓒ 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 Ⓐ is closed.
When the pilot valve is closed, the pressure inside the pilot chamber Ⓑ increases, resulting that the pressure difference from the inlet pressure is lost and the main valve Ⓒ is closed.

Component Parts

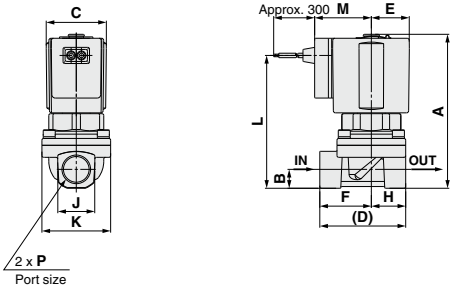
No.	Description	Material	
		Brass (C37) body specification	Stainless steel body specification
1	**Body**	Brass (C37)	Stainless steel
2	**Bonnet**	Brass (C37)	Stainless steel
3	**Diaphragm assembly**	(NBR, FKM, EPDM) Stainless steel	
4	**Return spring**	Stainless steel	
5	**O-ring**	(NBR, FKM, EPDM)	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

The materials in parentheses are seal materials.

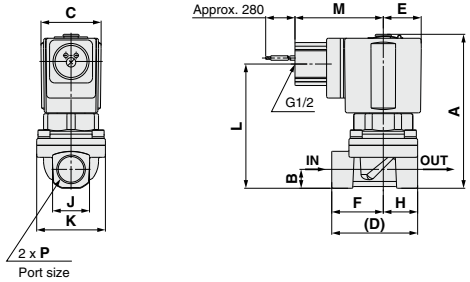
Dimensions: Body Material: Brass (C37), Stainless Steel

VXEZ22□0/23□0

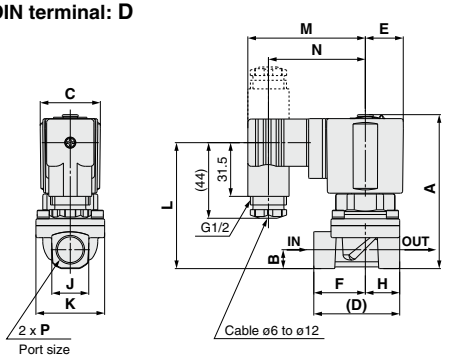
Grommet: G



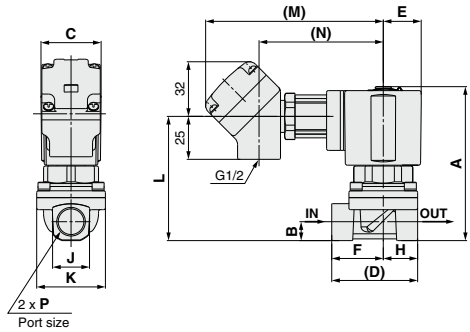
Conduit: C



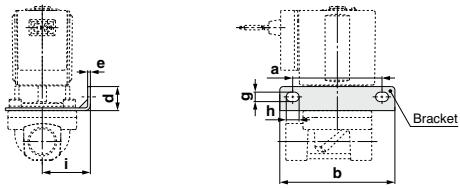
DIN terminal: D



Conduit terminal: T



With bracket



(mm)

Model / N.C.	Port size P	A	B	C	D	E	F	H	J	K
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 / N.C.	Port size P	a	b	d	e	f	g	h	i	Electrical entry: Grommet L	Grommet M	Conduit L	Conduit M	DIN terminal L	DIN terminal M	DIN terminal N	Conduit terminal L	Conduit terminal M	Conduit terminal N
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

Replacement Parts

● Solenoid coil assembly part no.

VXE02 1 N – 1 G E – □

Series

1	VXE□21
2	VXE□22□□
3	VXE□23□□

Valve

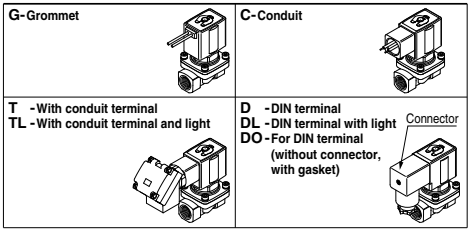
Symbol	Model
Z	VXED2130
Nil	Others

Rated voltage Note)

5	24 VDC
6	12 VDC

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

Electrical entry

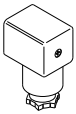


∗ Refer to Table (1) for available combinations between electrical option and rated voltage.

● DIN connector part no.

Without electrical option **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

● 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).

● Clip part no.

For VXE□21: VX021N-10
For VXE□22: VX022N-10
For VXE□23: VX023N-10

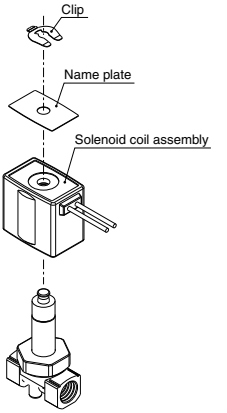


Table (1) Rated Voltage – Electrical Option

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

VXE Series
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)

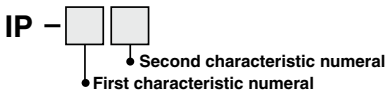
Electrical Terminology

1. Apparent power (VA)
Volt-ampere is the product of voltage (V) and current (A).
Power consumption (W): For AC, W = V·A·cosθ. For DC, W = V·A.
Note) cosθ shows power factor. cosθ = 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 ø and greater
2	Protected against solid foreign objects of 12 mm ø and greater
3	Protected against solid foreign objects of 2.5 mm ø and greater
4	Protected against solid foreign objects of 1.0 mm ø 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 () Port 1 (IN) and Port 2 (OUT) are shown in a blocked condition (), 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.