

Energy Saving Type

Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve

Series VXEZ22/23

For Air/Water/Oil



■ **Valve**

Normally closed (N.C.)

■ **Solenoid Coil**

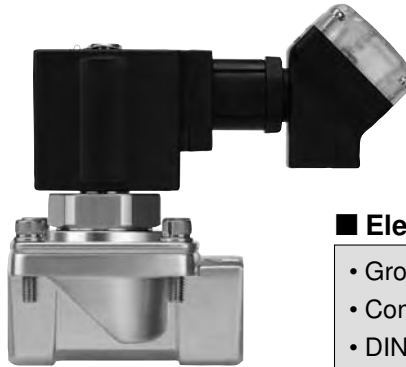
Coil: Class B

■ **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 dia.	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)

Series VXEZ22/23

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

Solenoid Coil Specifications

DC Specification (Class B coil only)

Model	Power consumption (W) (Holding)	Inrush current (A) (Inrush time: 200 ms)		Temperature increase (C°) ^{Note}
		24 VDC	12 VDC	
VXEZ22	2.3	0.29	0.58	25
VXEZ23	3	0.44	0.88	30

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

Applicable Fluid Check List / All Options

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/Fluoro-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.

Series VXEZ22/23

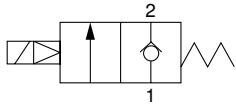
For Air

(Inert gas)

Model/Valve Specifications

N.C.

Passage symbol



Normally Closed (N.C.)

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

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)	Flow characteristics	Max. system pressure (MPa)	Weight (g)
					Effective area (mm ²)		
1 (25A)	25	VXEZ2360-10	0	0.7	215	1.5	1480

- * Weight of grommet type. Add 10 g for conduit, 30 g for DIN terminal, and 60 g for conduit terminal type respectively.
- Refer to "Glossary" on page 44 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)}	

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

Valve Leakage

Internal Leakage

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

External Leakage

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

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

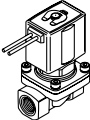
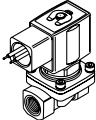
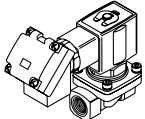
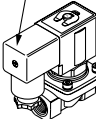
* Refer to Table (3) shown below for availability.
Refer to page 43 for ordering coil only.

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.) / Normally Open (N.O.)

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

Table (2) Solenoid Valve Option

Option symbol	Seal material	Body material	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	—

Model

VXE2

VXED2

VXEZ2

Specifications

Applications

For Air

For Water

For Oil

Construction

Dimensions

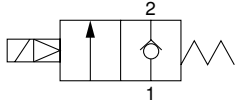
Series VXEZ22/23

For Water

Model/Valve Specifications

N.C.

Passage symbol



Normally Closed (N.C.)

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)	Weight (g)
					$Av \times 10^{-6}m^2$	Cv converted		
1/4 (8A)	10	VXEZ2230-02	0	0.7	46	1.9	1.5	550
3/8 (10A)		VXEZ2230-03			58	2.4		
1/2 (15A)	VXEZ2240-04	130			5.3			
3/4 (20A)	VXEZ2350-06	220			9.2			
1 (25A)	VXEZ2360-10	290		12.0				

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

• Refer to "Glossary" on page 44 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

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

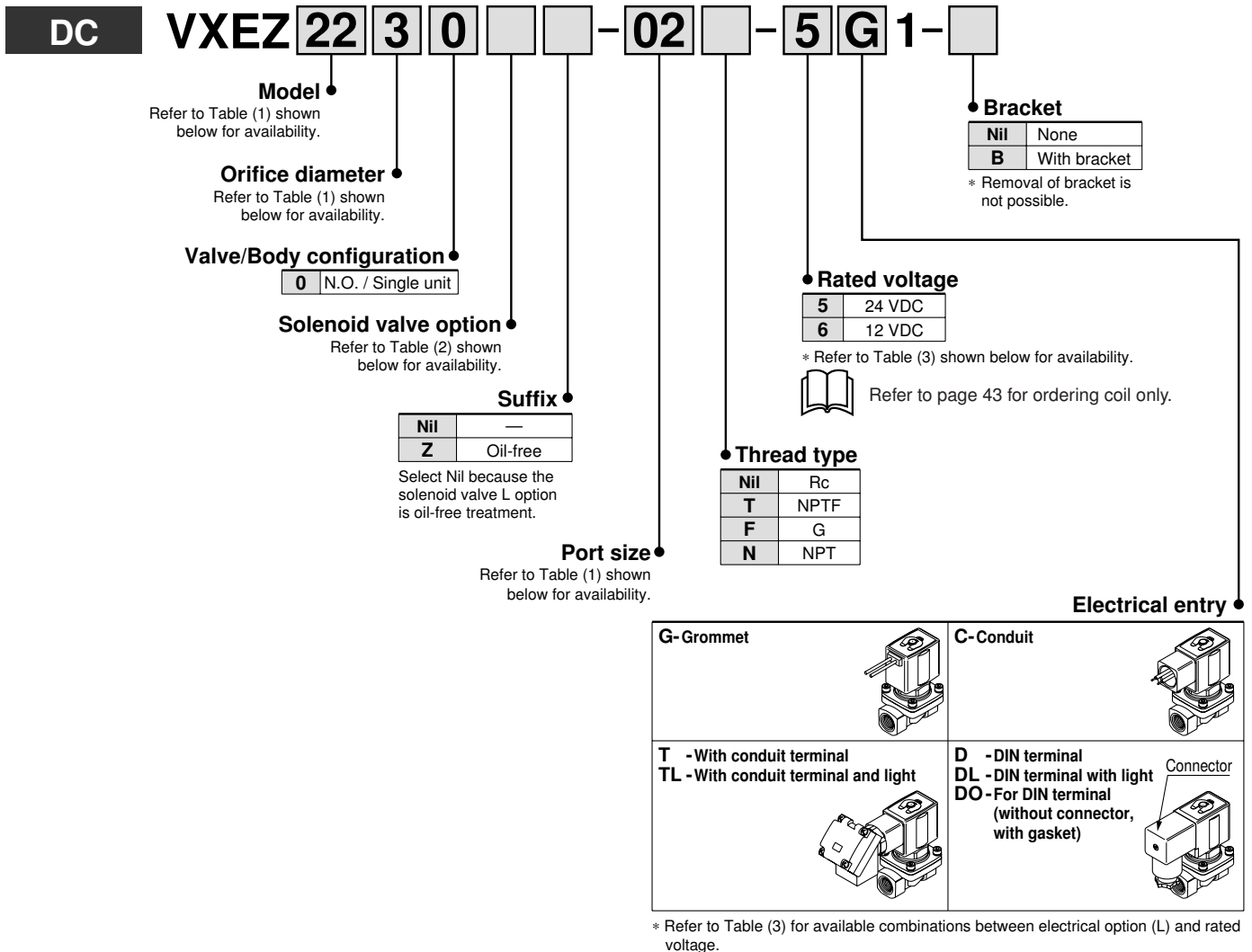


Table (1) Model/Orifice Diameter/Port Size Normally Closed (N.C.) / Normally Open (N.O.)

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

Table (2) Solenoid Valve Option

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

Table (3) Rated Voltage – Electrical Option

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

Model

VXE2

VXED2

VXEZ2

Specifications

Applications

For Air

For Water

For Oil

Construction

Dimensions

Series VXEZ22/23

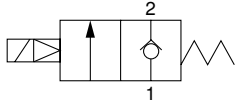
For Oil

⚠ When the fluid is oil.
The dynamic viscosity of the fluid must not exceed 50 mm²/s.

Model/Valve Specifications

N.C.

Passage symbol



Normally Closed (N.C.)

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)	Weight (g)
					Av x 10 ⁻⁶ m ²	Cv converted		
1/4 (8A)	10	VXEZ2230-02	0	0.7	46	1.9	1.5	550
3/8 (10A)		VXEZ2230-03			58	2.4		
1/2 (15A)	15	VXEZ2240-04			130	5.3		
3/4 (20A)	20	VXEZ2350-06			220	9.2		
1 (25A)	25	VXEZ2360-10			290	12.0		

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

• Refer to "Glossary" on page 44 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

Internal Leakage

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

External Leakage

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

How to Order

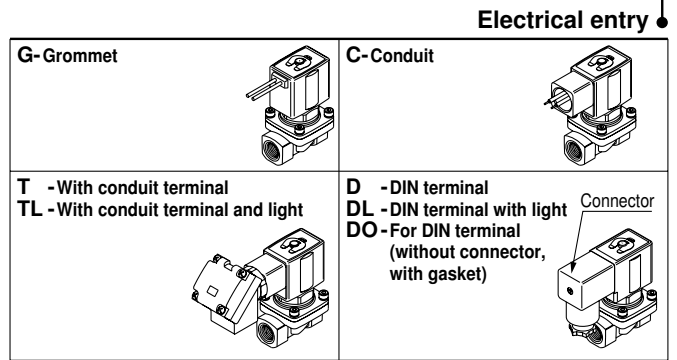
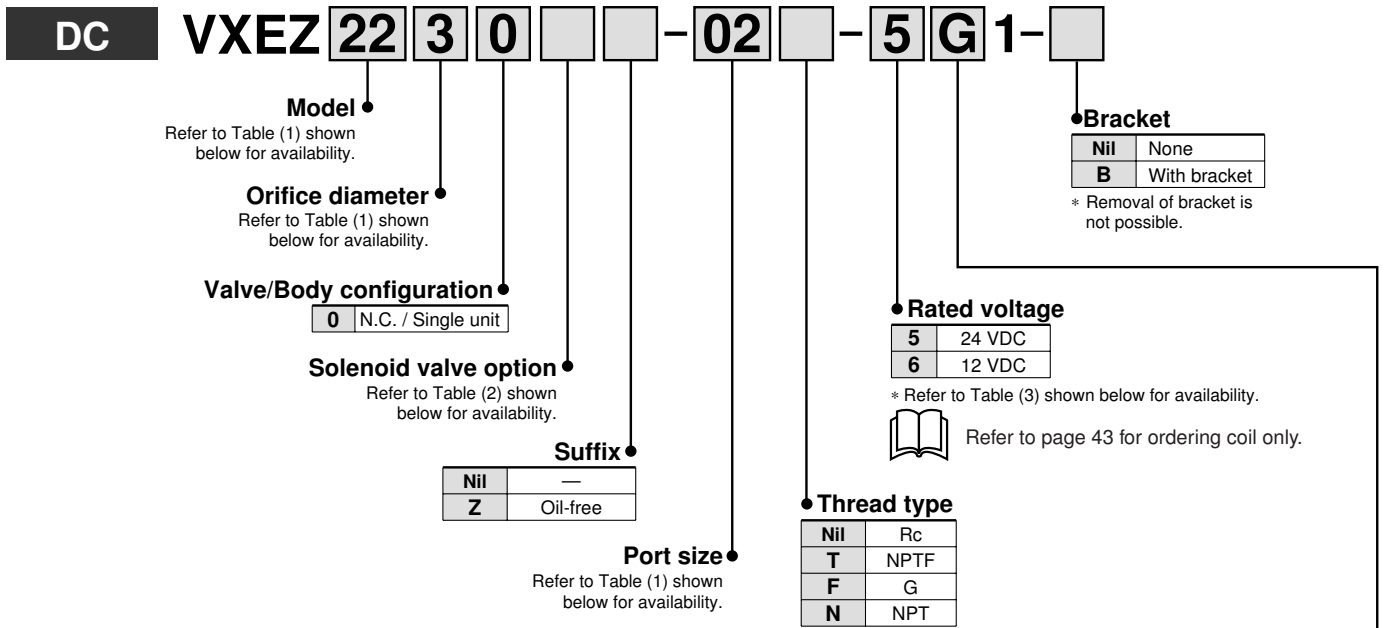


Table (1) Model/Orifice Diameter/Port Size Normally Closed (N.C.) / Normally Open (N.O.)

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	—

Model

VXE2

VXED2

VXEZ2

Specifications

Applications

For Air

For Water

For Oil

Construction

Dimensions

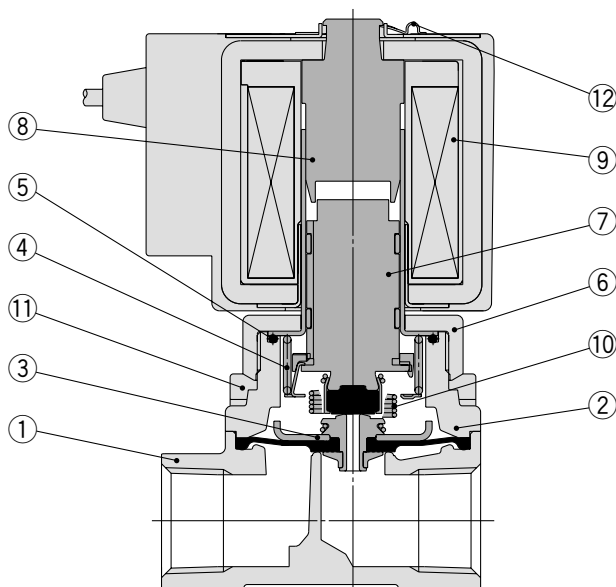
Series VXEZ22/23

For Air/Water/Oil

Construction

Normally closed (N.C.)

Body material: Brass (C37), Stainless steel



Working principle

<Valve opened – when there is pressure>

When the coil ⑨ is energized, the armature assembly ⑦ is attracted into the core of the tube assembly ⑧ and the pilot valve ① is opened.

When the pilot valve is opened and the pressure inside the pilot chamber ② decreases, resulting in the pressure difference from the inlet pressure. Then the diaphragm assembly ③ is lifted and the main valve ④ 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 ④ 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 ① is closed.

When the pilot valve is closed, the pressure inside the pilot chamber ② increases, resulting that the pressure difference from the inlet pressure is lost and the main valve ④ is closed.

Component Parts

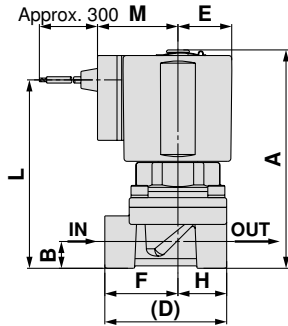
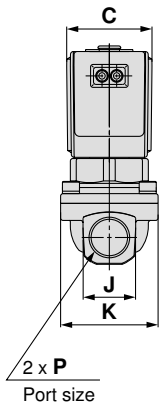
No.	Description	Material	
		Brass (C37) body specification	Stainless steel body specification
1	Body	Brass (C37)	Stainless steel
2	Bonnet	Brass (C37)	Stainless steel
3	Diaphragm assembly	(NBR, FKM, EPDM) Stainless steel	
4	Return spring	Stainless steel	
5	O-ring	(NBR, FKM, EPDM)	
6	Nut	Brass (C37)	Brass (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	Hexagon socket bolt	Stainless steel	
12	Clip	SK	

The materials in parentheses are seal materials.

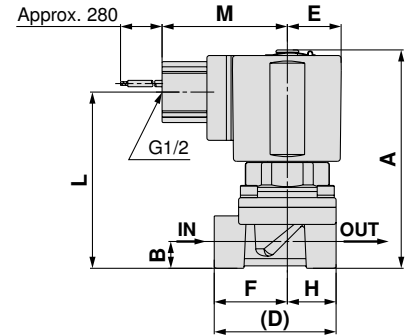
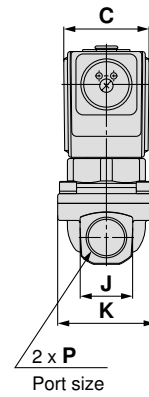
Dimensions: Body Material: Brass (C37), Stainless Steel

VXEZ22□0/23□0

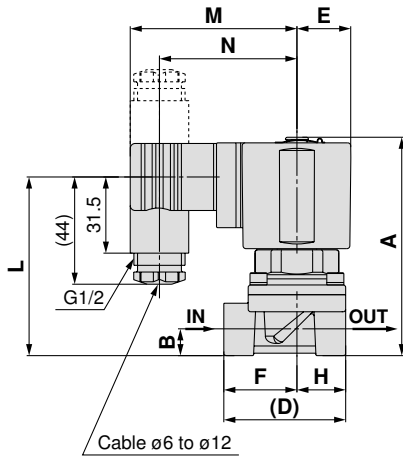
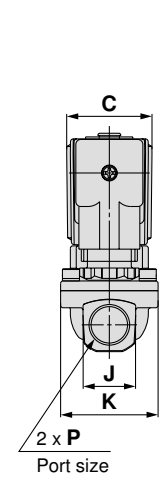
Grommet: G



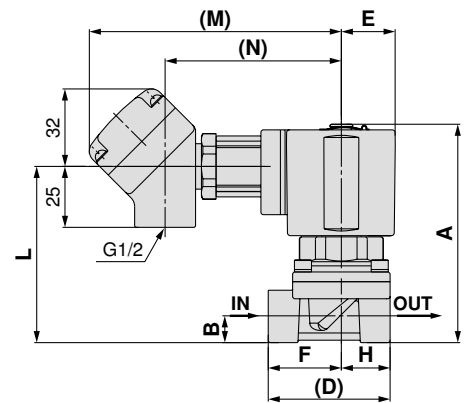
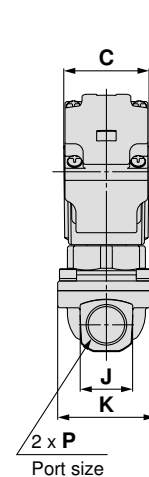
Conduit: C



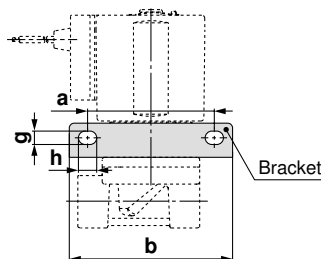
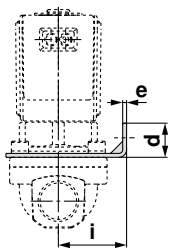
DIN terminal: D



Conduit terminal: T



With bracket



(mm)

Model	Port size P	A	B	C	D	E	F	H	J	K
N.C.										
VXEZ2230	1/4, 3/8	90	11	35	50	22.5	30	20	22	40
VXEZ2240	1/2	98	14	35	63	22.5	37	26	29.5	52
VXEZ2350	3/4	110	18	40	80	25	47.5	32.5	36	65
VXEZ2360	1/1	116.5	21	40	90	25	55	35	40.5	70

(mm)

Model	Port size P	a	b	d	e	f	g	h	i	Electrical entry							
										Grommet		Conduit		DIN terminal		Conduit terminal	
N.C.										L	M	L	M	L	M	N	
VXEZ2230	1/4, 3/8	52	67	14	1.6	26	5.5	7.5	28	77.5	33	72.5	51.5	73.5	68.5	56.5	72.5
VXEZ2240	1/2	60	75	17	2.3	33	6.5	8.5	35	85.5	33	80.5	51.5	81.5	68.5	56.5	80.5
VXEZ2350	3/4	68	87	22	2.6	40	6.5	9	43	97.5	36	92.5	54	93.5	71	59	92.5
VXEZ2360	1/1	73	92	22	2.6	45.5	6.5	9	45	104	36	99	54	100	71	59	99