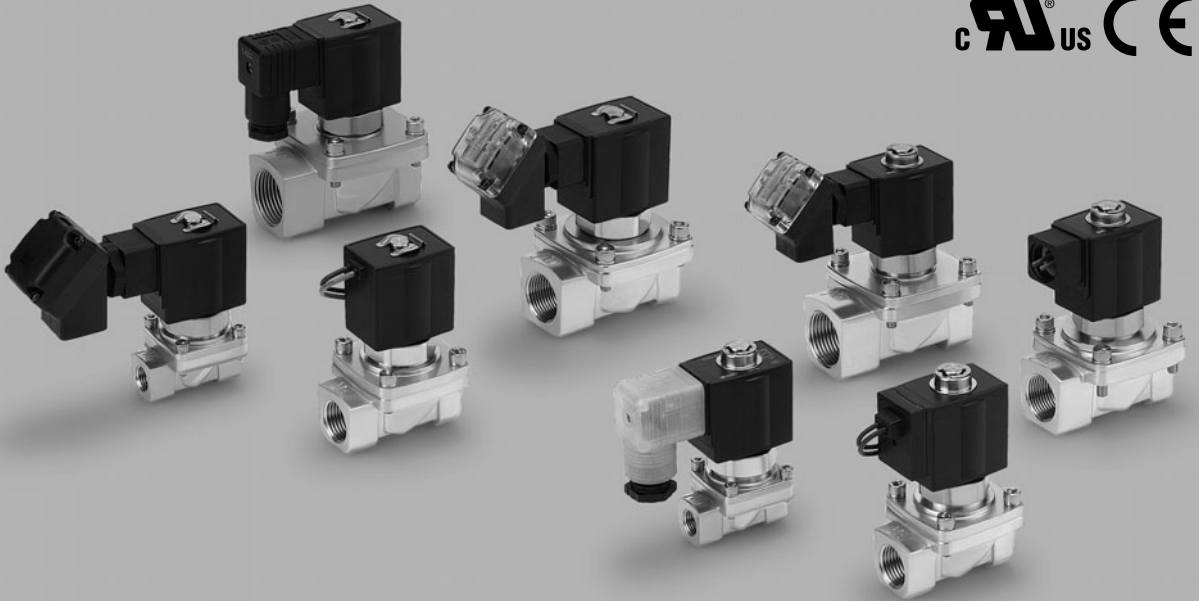


# Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve

## Series VXZ22/23

For Air, Water, Oil



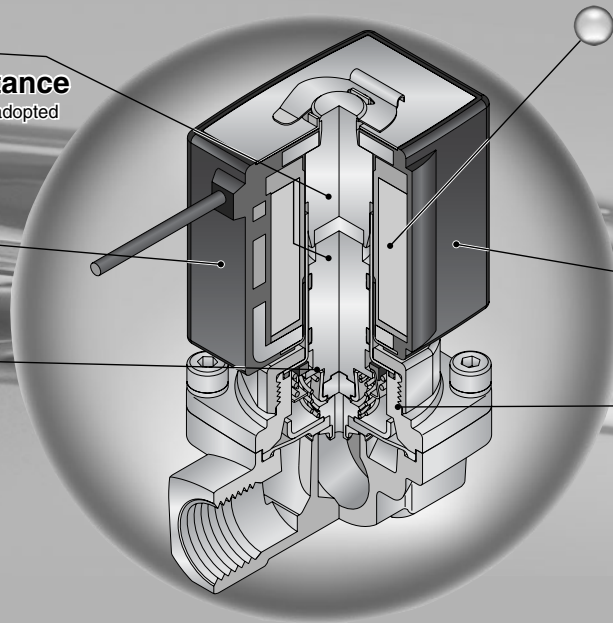
- VX2
- VXD
- VXZ**
- VXE
- VXP
- VXR
- VXH
- VXF
- VX3
- VXA
- VCH□
- VDW
- VQ
- LVM
- VCA
- VCB
- VCL
- VCS
- VCW

### Solenoid valves for various fluids used in a wide variety of applications

**Improved corrosion resistance**  
Special magnetic material adopted

**Enclosure: IP65**

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



**Reduced power consumption (DC spec.)**  
VXZ22: 8 W → 7 W  
VXZ23: 11.5 W → 10.5 W

**Flame resistance UL94V-0 conformed**  
Flame resistant mold coil material

**Improved maintenance performance**  
Maintenance is performed easily due to the threaded assembly.



# Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve

## Series VXZ22/23

For Air, Water, Oil



### Valve

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

### Solenoid Coil

Coil: Class B, Class H

### Rated Voltage

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

### Material

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



### Electrical Entry

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

Model		VXZ223 <sub>2</sub>	VXZ224 <sub>2</sub>	VXZ235 <sub>2</sub>	VXZ236 <sub>2</sub>
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)

## Contents

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Dimensions .....	P.89
Replacement Parts .....	P.90

VX2

VXD

**VXZ**

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW

# Common Specifications

## Standard Specifications

Valve specifications	Valve construction		Zero differential pressure type pilot operated 2 port diaphragm type
	Withstand pressure (MPa)		5.0
	Body material		Brass (C37), Stainless steel
	Seal material		NBR, FKM, EPDM
	Enclosure		Dusttight, Low jetproof (equivalent to IP65)*
	Environment		Location without corrosive or explosive gases
	Vibration resistance/Impact resistance (m/s <sup>2</sup> )		30/150 or less
Coil specifications	Rated voltage	AC (Class B coil, Built-in full-wave rectifier type)	100 VAC, 200 VAC, 110 VAC, 220 VAC, 230 VAC, 240 VAC, 48 VAC
		AC (Class H coil)	
		DC (Class B coil only)	24 VDC, 12 VDC
	Allowable voltage fluctuation		±10% of rated voltage
	Allowable leakage voltage	AC (Class B coil, Built-in full-wave rectifier type)	10% or less of rated voltage
		AC (Class H coil)	20% or less of rated voltage
		DC (Class B coil only)	2% or less of rated voltage
Coil insulation type		Class B, Class H	

\* Electrical entry: Grommet with surge voltage suppressor (GS) has a rating of IP40.

**⚠ Be sure to read "Specific Product Precautions."**

## Solenoid Coil Specifications

### DC Specification (Class B coil only)

Model	Power consumption (W)	Temperature rise (°C) <sup>Note1</sup>
VXZ22	7	45
VXZ23	10.5	60

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

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

Model	Apparent power (VA) <sup>Note 2</sup>	Temperature rise (°C) <sup>Note 1</sup>
VXZ22	9.5	60
VXZ23	12	65

Note 1) The value at ambient temperature of 20°C and when the rated voltage is applied.

Note 2) There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC (Class B coil, built-in full-wave rectifier type).


### AC Specification (Class H coil)

Model	Frequency (Hz)	Apparent power (VA)		Temperature rise (°C) <sup>Note</sup>
		Inrush	Energized	
VXZ22	50	65	33	100
	60	55	27	95
VXZ23	50	94	50	120
	60	79	41	115

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

# Applicable Fluid Check List

Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve Series VXZ22/23

All Options  Refer to pages 82, 84, and 86 for specifications and models.



VXZ2   0   -   -    1  R1 -

• Option symbol

Fluid and application	Option symbol	Seal material	Body/ Shading coil material <small>Note 5)</small>	Guide ring and push rod (N.O. only) material	Coil insulation type <small>Note 3)</small>	Note
Air	Nil	NBR	Brass (C37)/-	PPS	B	
	G		Stainless steel/-			
Water	Nil	NBR	Brass (C37)/-		B	
	G		Stainless steel/-			
Heated water	E	EPDM	Brass (C37)/Cu		H	
	P		Stainless steel/Ag			
Oil <small>Note 2)</small>	A	FKM	Brass (C37)/-		B	
	H		Stainless steel/-			
	D		Brass (C37)/Cu			
	N		Stainless steel/Ag			
High corrosive spec., Oil-free	L <small>Note 1)</small>	FKM	Stainless steel/-		B	
Copper-free, Fluorine-free <small>Note 4)</small>	J	EPDM	Stainless steel/-		B	
	P		Stainless steel/Ag	H		
Other combinations	B	EPDM	Brass (C37)/-	B		

Note 1) "L" option is the oil-free treatment.

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

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

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

Note 3) Coil insulation type Class H: AC spec. only

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

Note 5) There is no shading coil attached to the DC spec. or AC spec built-in full-wave rectifier type.

\* Please contact SMC when fluids other than above are used.

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW

# Series VXZ22/23

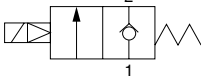
## For Air

(Inert gas)

### Model/Valve Specifications

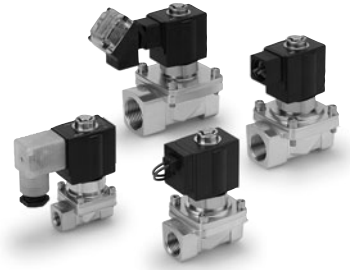
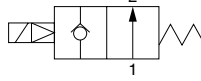
**N.C.**

Passage symbol



**N.O.**

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)	Mass (g)
				AC	DC	C	b	Cv		
1/4 (8A)	10	VXZ2230-02	0	1.0	0.7	8.5	0.44	2.4	1.5	550
3/8 (10A)		VXZ2230-03				11.0	0.42	2.8		
1/2 (15A)		VXZ2240-04				23.0	0.34	6.0		
3/4 (20A)		VXZ2350-06				38.0	0.20	9.5		

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)		Flow characteristics	Max. system pressure (MPa)	Mass (g)
				AC	DC	Effective area (mm <sup>2</sup> )		
1 (25A)	25	VXZ2360-10	0	1.0	1.0	215	1.5	1480

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

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

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

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)		Flow characteristics			Max. system pressure (MPa)	Mass (g)
				AC	DC	C	b	Cv		
1/4 (8A)	10	VXZ2232-02	0	0.7	0.6	8.5	0.44	2.4	1.5	600
3/8 (10A)		VXZ2232-03				11.0	0.42	2.8		
1/2 (15A)		VXZ2242-04				23.0	0.34	6.0		
3/4 (20A)		VXZ2352-06				38.0	0.20	9.5		

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)		Flow characteristics	Max. system pressure (MPa)	Mass (g)
				AC	DC	Effective area (mm <sup>2</sup> )		
1 (25A)	25	VXZ2362-10	0	0.7	0.6	215	1.5	1550

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

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

### Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option symbol		
	Nil, G		
AC/Class B coil	-10 to 60 <sup>Note)</sup>		-10 to 60
DC	-10 to 60 <sup>Note)</sup>		-10 to 60

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

### Valve Leakage Rate

#### Internal Leakage

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

#### External Leakage

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

# Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve Series **VXZ22/23**

For Air



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

## How to Order

**DC**

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

**VXZ 22 3 0 [ ] [ ] - 02 [ ] - 5 G 1 - [ ]**

**VXZ 22 3 0 [ ] [ ] - 02 [ ] - 1 G R1 - [ ]**

**VX2**

**VXD**

**VXZ**

**VXE**

**VXP**

**VXR**

**VXH**

**VXF**

**VX3**

**VXA**

**VCH □**

**VDW**

**VQ**

**LVM**

**VCA**

**VCB**

**VCL**

**VCS**

**VCW**

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

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

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

**Suffix** •

Nil	—
Z	Oil-free spec.

**Thread type** •

Nil	Rc
T	NPTF
F	G
N	NPT

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

**Bracket**

Nil	None
B	With bracket

\* Bracket is not removable.

**Built-in full-wave rectifier type**

**Electrical entry** •

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

**Rated voltage** •

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

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

Refer to page 90 for ordering coil only.

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

Model	Solenoid valve (Port size)		Orifice symbol (Diameter)				Material	
	VXZ22	VXZ23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)	Body	Seal
Port no. (Port size)	02 (1/4)	—	●	—	—	—	Brass (C37), Stainless steel	NBR
	03 (3/8)	—	●	—	—	—		
	04 (1/2)	—	—	●	—	—		
	—	06 (3/4)	—	—	●	—		
	—	10 (1)	—	—	—	●		

**Table (2) Solenoid Valve Option**

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

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

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

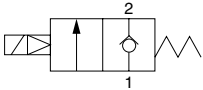
\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

## For Water

### Model/Valve Specifications

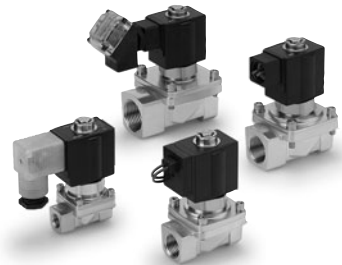
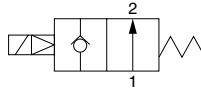
N.C.

Passage symbol



N.O.

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)	Mass (g)
				AC	DC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted		
1/4 (8A)	10	VXZ2230-02	0	1.0	0.7	46	1.9	1.5	550
3/8 (10A)		VXZ2230-03				58	2.4		
1/2 (15A)	VXZ2240-04	130				5.3			
3/4 (20A)	VXZ2350-06	220				9.2			
1 (25A)	VXZ2360-10	290				12.0			

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


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

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Mass (g)
				AC	DC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted		
1/4 (8A)	10	VXZ2232-02	0	0.7	0.6	46	1.9	1.5	600
3/8 (10A)		VXZ2232-03				58	2.4		
1/2 (15A)	VXZ2242-04	130				5.3			
3/4 (20A)	VXZ2352-06	220				9.2			
1 (25A)	VXZ2362-10	290				12.0			

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

### Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option symbol		
	Ni, G, L	E, P	
AC/Class B coil	1 to 60	—	-10 to 60
AC/Class H coil	—	1 to 99	-10 to 60
DC	1 to 60	—	-10 to 60

 Note) With no freezing

### Valve Leakage Rate

#### Internal Leakage

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

#### External Leakage

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



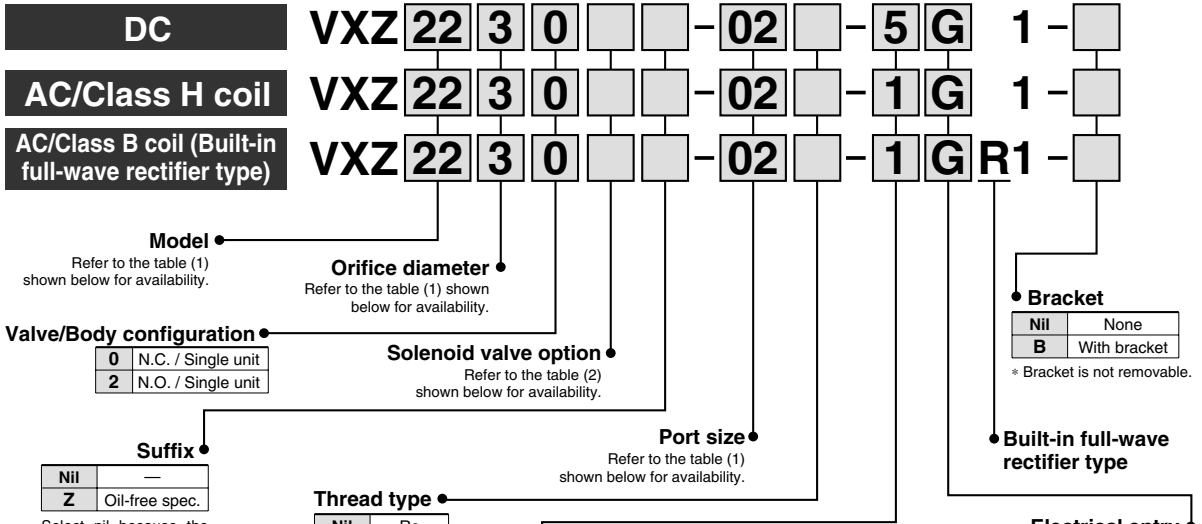
# Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve Series VXZ22/23

For Water



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

## How to Order



**Rated voltage** •

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

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

Refer to page 90 for ordering coil only.

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

Model	Solenoid valve (Port size)				Orifice symbol (Diameter)				Material	
	VXZ22	VXZ23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)	Body	Seal		
Port no. (Port size)	02 (1/4)	—	●	—	—	—	Brass (C37), Stainless steel	NBR FKM EPDM		
	03 (3/8)	—	●	—	—	—				
	04 (1/2)	—	—	●	—	—				
	—	06 (3/4)	—	—	●	—				
	—	10 (1)	—	—	—	●				

**Table (2) Solenoid Valve Option**

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

\* There is no shading coil attached to the AC/Class B coil and DC spec.

\* cULus: Option symbol "P" is not UL-compliant.

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

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

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

\* Class B and H coils cannot be interchanged in order to exchange the coils.

\* AC/Class B (with built-in full wave rectifier type) can be interchanged with DC.

# Series VXZ22/23

**⚠ When the fluid is oil.**

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

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

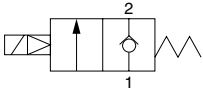
Select the DC spec. or AC spec. built-in full-wave rectifier type when the dynamic viscosity is higher than water or when the OFF response is prioritized.

## For Oil

### Model/Valve Specifications

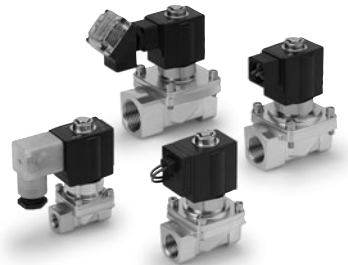
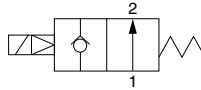
**N.C.**

Passage symbol



**N.O.**

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)	Mass (g)
				AC	DC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted		
1/4 (8A)	10	VXZ2230-02	0	0.7		46	1.9	1.5	550
3/8 (10A)		VXZ2230-03				58	2.4		
1/2 (15A)	15	VXZ2240-04				130	5.3		
3/4 (20A)	20	VXZ2350-06				220	9.2		
1 (25A)	25	VXZ2360-10				290	12.0		

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

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

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

Port size (Nominal size)	Orifice dia. (mmø)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Mass (g)
				AC	DC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted		
1/4 (8A)	10	VXZ2232-02	0	0.7	0.6	46	1.9	1.5	600
3/8 (10A)		VXZ2232-03				58	2.4		
1/2 (15A)	15	VXZ2242-04				130	5.3		
3/4 (20A)	20	VXZ2352-06				220	9.2		
1 (25A)	25	VXZ2362-10				290	12.0		

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

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

### Fluid and Ambient Temperature

Power source	Fluid temperature (°C)		Ambient temperature (°C)
	Solenoid valve option symbol		
	A, H	D, N	
AC/Class B coil	-5 to 60	—	-10 to 60
AC/Class H coil	—	-5 to 100	-10 to 60
DC	-5 to 60	—	-10 to 60

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

### Valve Leakage Rate

#### Internal Leakage

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

#### External Leakage

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

# Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve Series **VXZ22/23**

For Oil

## How to Order



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

**DC**

**AC/Class H coil**

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

**VXZ 22 3 0 [ ] [ ] - 02 [ ] - 5 G 1 - [ ]**

**VXZ 22 3 0 [ ] [ ] - 02 [ ] - 1 G 1 - [ ]**

**VXZ 22 3 0 [ ] [ ] - 02 [ ] - 1 G R1 - [ ]**

**VX2**

**VXD**

**VXZ**

**VXE**

**VXP**

**VXR**

**VXH**

**VXF**

**VX3**

**VXA**

**VCH**

**VDW**

**VQ**

**LVM**

**VCA**

**VCB**

**VCL**

**VCS**

**VCW**

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

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

**Valve/Body configuration** •

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

**Suffix** •

NII	—
Z	Oil-free spec.

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

NII	Rc
T	NPTF
F	G
N	NPT

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

**Thread type** •

NII	Rc
T	NPTF
F	G
N	NPT

**Rated voltage** •

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

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

Refer to page 90 for ordering coil only.

**Bracket**

NII	None
B	With bracket

\* Bracket is not removable.

**Built-in full-wave rectifier type**

**Electrical entry** •

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

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

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

\* cULus: Symbols "G", "GS", "C", "DO" only

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

Model	Solenoid valve (Port size)		Orifice symbol (Diameter)				Material	
	VXZ22	VXZ23	3 (10 mmø)	4 (15 mmø)	5 (20 mmø)	6 (25 mmø)	Body	Seal
Port no. (Port size)	02 (1/4)	—	●	—	—	—	Brass (C37), Stainless steel	FKM
	03 (3/8)	—	●	—	—	—		
	04 (1/2)	—	—	●	—	—		
	—	06 (3/4)	—	—	●	—		
	—	10 (1)	—	—	—	●		

**Table (2) Solenoid Valve Option**

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

\* There is no shading coil attached to the AC/Class B coil and DC spec.  
\* cULus: Option symbols "A" and "H" only

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

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

\* Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.  
\* Class B and H coils cannot be interchanged in order to exchange the coils.  
\* AC/Class B (with built-in full wave rectifier type) can be interchanged with DC.

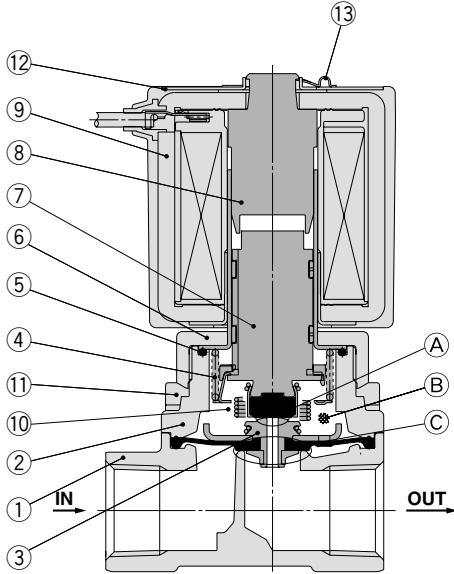
# Series VXZ22/23

For Air, Water, Oil

## Construction

### Normally closed (N.C.)

Body material: Brass (C37), Stainless steel



### Working principles

<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

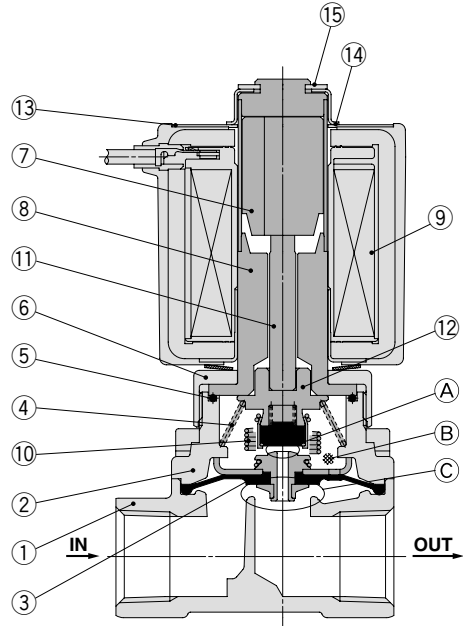
No.	Description	Material	
		Body material brass (C37) specification	Body material stainless steel specification
1	Body	Brass (C37)	Stainless steel
2	Bonnet	Brass (C37)	Stainless steel
3	Diaphragm assembly	Stainless steel (NBR, FKM, EPDM)	
4	Return spring	Stainless steel	
5	O-ring	(NBR, FKM, EPDM)	
6	Nut	Brass (C37)	Brass (C37), Ni plated
7	Armature assembly	Stainless steel	
8	Tube assembly <sup>(Note)</sup>	Stainless steel, Cu	Stainless steel, Ag
9	Solenoid coil	—	
10	Lift spring	Stainless steel	
11	Hexagon socket bolt	Stainless steel	
12	Name plate	Aluminum	
13	Clip	SK	

The materials in parentheses are the seal materials.

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

### Normally open (N.O.)

Body material: Brass (C37), Stainless steel



### Working principles

<Valve closed>

When the coil ⑨ is energized, the armature attached by the core of the tube assembly ⑧ closes the pilot valve ① via the push rod assembly ⑪. When the pilot valve is closed, the pressure inside the pilot chamber ② increases, resulting in the pressure difference from the inlet pressure is lost and the main valve ④ is closed.

<Valve opened – when there is pressure>

The coil ⑨ is de-energized, the armature returns by the reacting force of the return spring ④ via the push rod assembly ⑪ and the pilot valve ① is opened.

When the pilot valve is opened, the pressure inside the 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 push rod assembly ⑪ and the diaphragm assembly ③ are connected with each other with the lift spring ⑩. When the push rod assembly returns, the diaphragm assembly is pulled up and the main valve ④ is opened.

### Component Parts

No.	Description	Material	
		Body material brass (C37) specification	Body material stainless steel specification
1	Body	Brass (C37)	Stainless steel
2	Bonnet	Brass (C37)	Stainless steel
3	Diaphragm assembly	Stainless steel (NBR, FKM, EPDM)	
4	Return spring	Stainless steel	
5	O-ring	NBR	FKM, EPDM
6	Nut	Brass (C37)	Brass (C37), Ni plated
7	Armature assembly	Stainless steel	
8	Tube assembly <sup>(Note)</sup>	Stainless steel, Cu	Stainless steel, Ag
9	Solenoid coil	—	
10	Lift spring	Stainless steel	
11	Push rod assembly	PPS, Stainless steel, NBR	Stainless steel, FKM, EPDM
12	Valve assembly	Aluminum	
13	Name plate	Stainless steel	
14	Cover	Stainless steel	
15	Clip	Stainless steel	

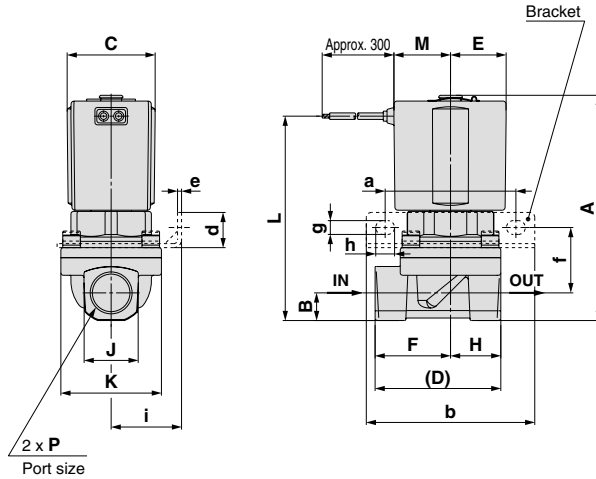
Zero Differential Pressure Type  
Pilot Operated 2 Port Solenoid Valve **Series VXZ22/23**  
For Air, Water, Oil

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

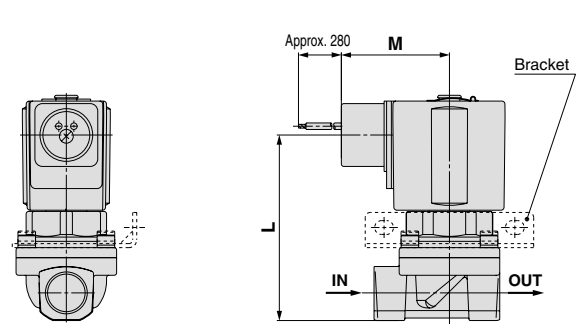
Normally closed (N.C.): VXZ22□0/VXZ23□0

Normally open (N.O.): VXZ22□2/VXZ23□2

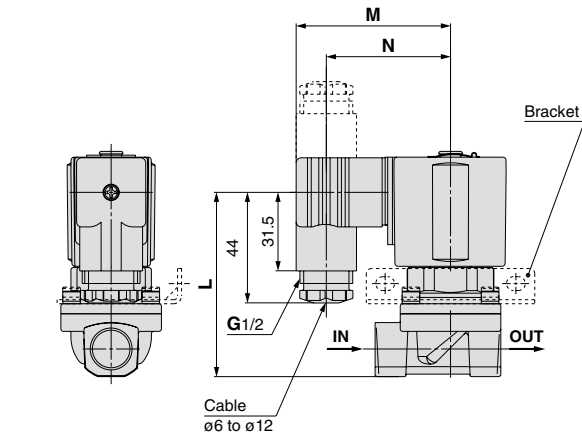
**Grommet: G**



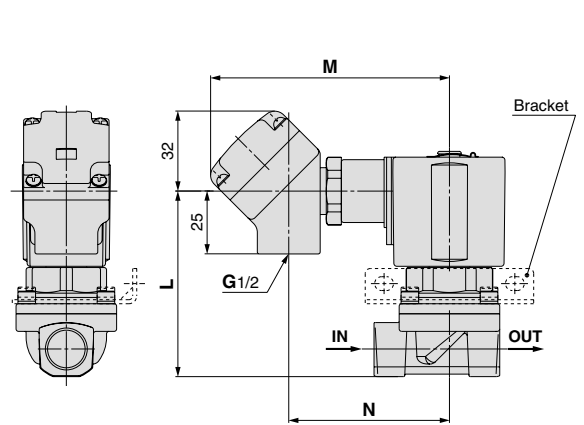
**Conduit: C**



**DIN terminal: D**



**Conduit terminal: T**



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

Model		Port size P	Mechanical dimensions (mm)										Electrical entry (DC, AC/Class H coil)									
N.C.	N.O.		A	B	C	D	E	F	H	J	K	Grommet			Conduit		DIN terminal			Conduit terminal		
L	M		L	M	L	M	N	L	M	N	L	M	N	L	M	N						
VXZ2230	VXZ2232	1/4, 3/8	89(97)	11	35	50	22.5	30	20	22	40	81(83)	22.5	73.5(75.5)	43	73(75)	61.5	49.5	73.5(75.5)	95	64	
VXZ2240	VXZ2242	1/2	97(104.5)	14	35	63	22.5	37	26	29.5	52	89.5(90.5)	22.5	81(83)	43	80.5(82.5)	61.5	49.5	81(83)	95	64	
VXZ2350	VXZ2352	3/4	111(119)	18	40	80	25	47.5	32.5	36	65	103(103)	25.5	96(96)	46	95(95)	64	52	96(96)	98	66.5	
VXZ2360	VXZ2362	1	118.5(125.5)	21	40	90	25	55	35	40.5	70	110.5(110.5)	25.5	105.5(105.5)	46	106.5(106.5)	64	52	105.5(105.5)	98	66.5	

( ) denotes the value for N.O.

Model		Port size P	Mechanical dimensions (mm)									Electrical entry (AC/Class B coil)*									
N.C.	N.O.		a	b	d	e	f	g	h	i	Grommet			Conduit		DIN terminal			Conduit terminal		
L	M		L	M	L	M	N	L	M	N	L	M	N	L	M	N					
VXZ2230	VXZ2232	1/4, 3/8	52	67	14	1.6	26	5.5	7.5	28	77(79)	33	72(74)	51.5	73(75)	68.5	56.5	72(74)	103.5	72.5	
VXZ2240	VXZ2242	1/2	60	75	17	2.3	33	6.5	8.5	35	84.5(84.5)	33	80(80)	51.5	81(81)	68.5	56.5	80(80)	103.5	72.5	
VXZ2350	VXZ2352	3/4	68	87	22	2.6	40	6.5	9	43	99.5(99.5)	36	94.5(94.5)	54	95.5(95.5)	71	59	94.5(94.5)	106	75	
VXZ2360	VXZ2362	1	73	92	22	2.6	45.5	6.5	9	45	107(107)	36	102(102)	54	103(103)	71	59	102(102)	106	75	

\* Coil with built-in full-wave rectifier (electrical option "R")

( ) denotes the value for N.O.

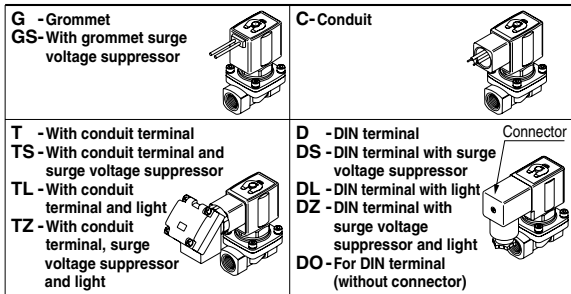
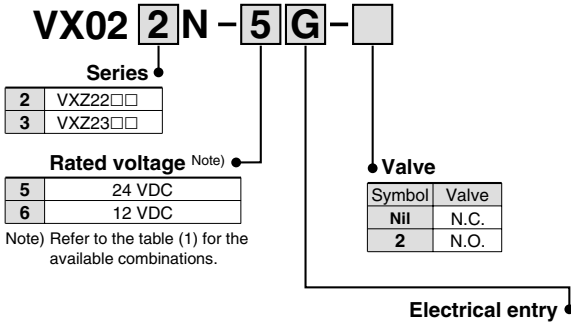
# Series VXZ22/23

For Air, Water, Oil

## Replacement Parts

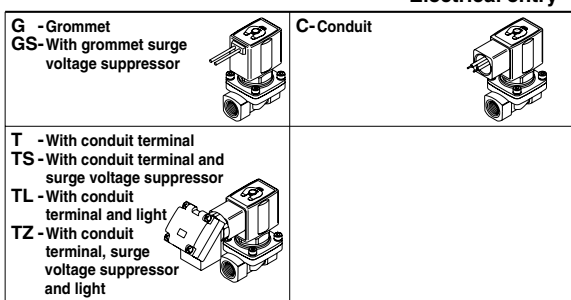
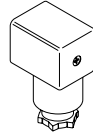
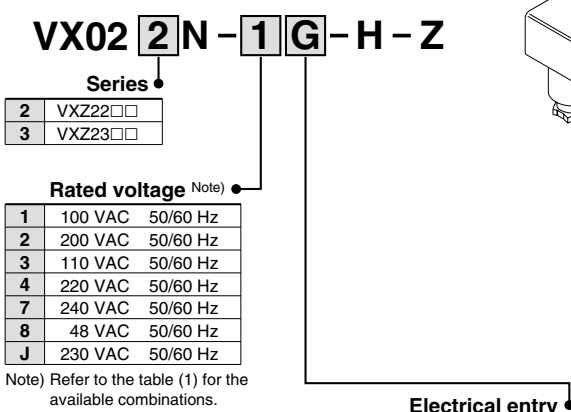
### ● Solenoid coil assembly part no.

DC



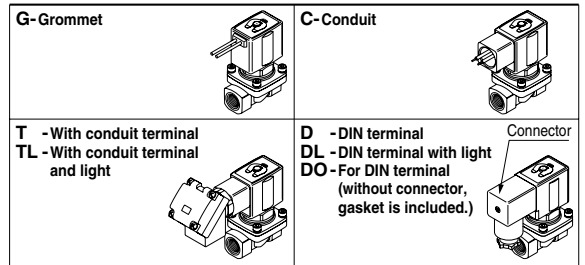
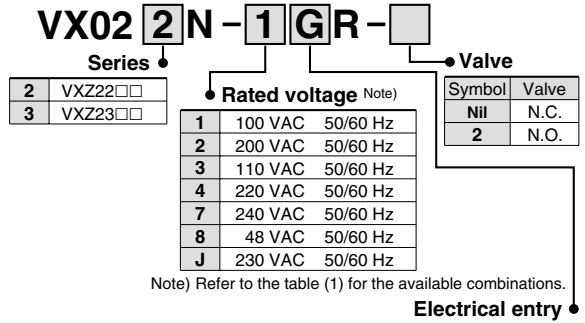
\* Refer to the table (1) for the available combinations between each electrical option and rated voltage.

### AC/Class H coil (DIN terminal is not available.)



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

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



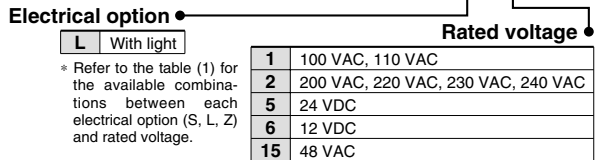
\* Refer to the table (1) for the available combinations between each electrical option and rated voltage.

\* The rectifier and the surge voltage suppressor are integrated as a standard.

### ● DIN connector part no.

Without electrical option **GDM2A**

With electrical option **GDM2A** -      



### ● Gasket part no. for DIN connector

**VCW20-1-29-1**

Table (1) Rated Voltage – Electrical Option

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

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

\* Replacement of solenoid coils:

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

● Name plate part no.

**AZ-T-** Valve model

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

● Clip part no. (For N.C.)

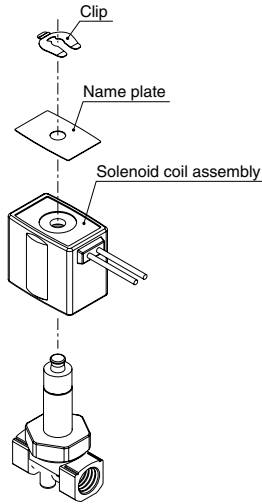
For VXZ22: **VX022N-10**

For VXZ23: **VX023N-10**

● Clip part no. (For N.O.)

For VXZ22: **ETW-8**

For VXZ23: **ETW-9**



VX2

VXD

**VXZ**

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW