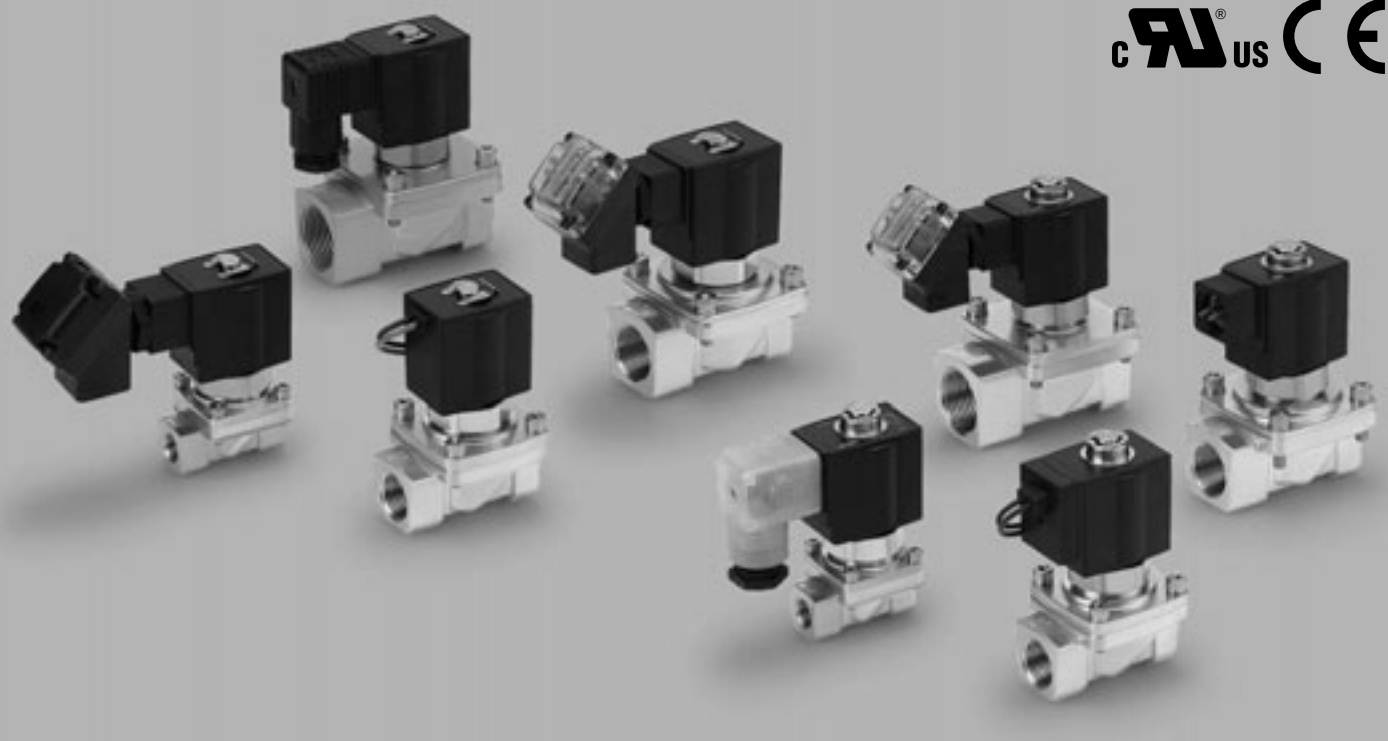
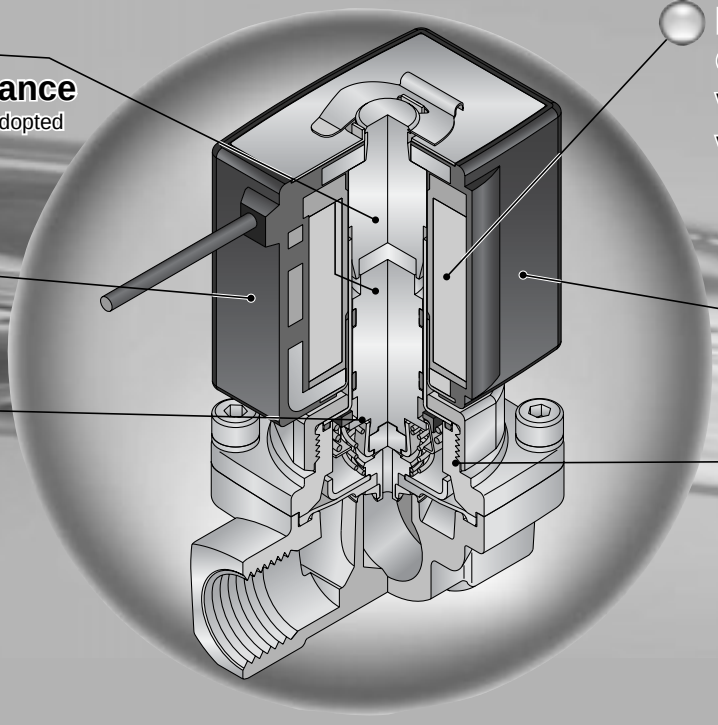
Zero Differential Pressure Type Pilot Operated 2 Port Solenoid Valve

Series VXZ22/23

For Air, Water, Oil



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

■ **Electrical Entry**

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

■ **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

Model		VXZ223$^{2}_{0}$	VXZ224$^{2}_{0}$	VXZ235$^{2}_{0}$	VXZ236$^{2}_{0}$
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

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^2)		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.

Solenoid Coil Specifications

DC Specification (Class B coil only)

Model	Power consumption (W)	Temperature rise (°C) Note)
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) Note 2)	Temperature rise (°C) Note 1)
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		Apparent power (VA)		Temperature rise (°C) Note)
	Frequency (Hz)	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□□ 0/2 □□–□□–□□□ 1/R1 –□

Option symbol

Fluid and application	Option symbol	Seal material	Body/ Shading coil material Note 5)	Guide ring and push rod (N.O. only) material	Coil insulation type Note 3)	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 Note 2)	**A**	FKM	Brass (C37)/–		B	
	H		Stainless steel/–			
	D		Brass (C37)/Cu		H	
	N		Stainless steel/Ag			
High corrosive spec., Oil-free	**L** Note 1)	FKM	Stainless steel/–		B	
Copper-free, Fluorine-free Note 4)	**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^2/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.

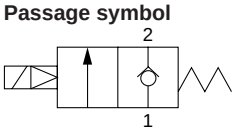
For Air

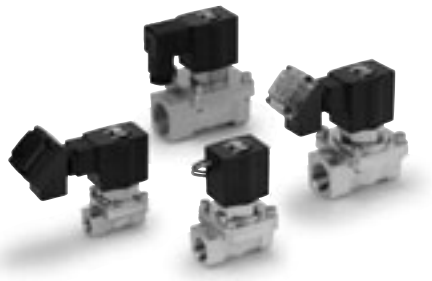
(Inert gas)

Model/Valve Specifications

N.C.

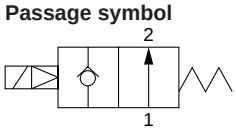
Passage symbol

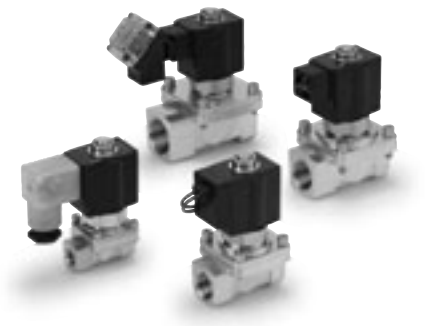




N.O.

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)	15	**VXZ2240-04**				23.0	0.34	6.0		760
3/4 (20A)	20	**VXZ2350-06**			1.0	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)	Mass (g)
				AC	DC	Effective area (mm^2)		
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)	15	**VXZ2242-04**				23.0	0.34	6.0		850
3/4 (20A)	20	**VXZ2352-06**				38.0	0.20	9.5		1370

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^2)		
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 Note)	–10 to 60
DC	–10 to 60 Note)	–10 to 60

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

Valve Leakage Rate

Internal Leakage

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

External Leakage

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

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 – □

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

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

Valve/Body configuration

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

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

Suffix

Nil	—
Z	Oil-free spec.

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

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

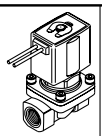
1	100 VAC 50/60 Hz	**6**	12 VDC
2	200 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
5	24 VDC		

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

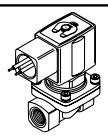
Refer to page 90 for ordering coil only.

Electrical entry

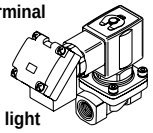
G - Grommet
GS - With grommet surge voltage suppressor



C - Conduit

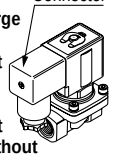


T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector



∗ DIN type is available with class B only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and rated voltage.
∗ Surge voltage suppressor is integrated into the AC/Class B, as a standard.

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

Solenoid valve (Port size)			Orifice symbol (Diameter)				Material	
Model	**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

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage 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	—	—	—	●	—	—
	J	230 V	—	—	—	●	—	—
DC	**5**	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

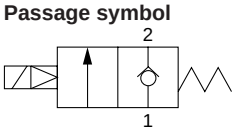
∗ Option “S”, “Z” are not available as surge voltage suppressor is integrated into the AC/Class B, as a standard.

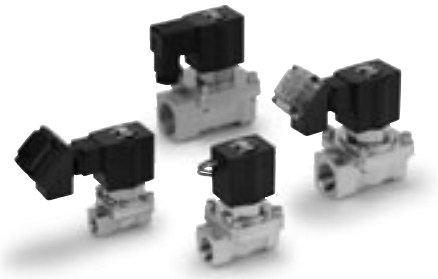
For Water

Model/Valve Specifications

N.C.

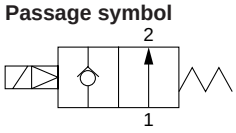
Passage symbol





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 $10^{-6}m^2$	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)	15	**VXZ2240-04**				130	5.3		760
3/4 (20A)	20	**VXZ2350-06**			1.0	220	9.2		1300
1 (25A)	25	**VXZ2360-10**				290	12.0		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	Av x $10^{-6}m^2$	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		850
3/4 (20A)	20	**VXZ2352-06**				220	9.2		1370
1 (25A)	25	**VXZ2362-10**				290	12.0		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, 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^3/min or less

External Leakage

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

How to Order

DC VXZ 22 3 0 □ □ – 02 □ – 5 G 1 – □

AC/Class H coil VXZ 22 3 0 □ □ – 02 □ – 1 G 1 – □

AC/Class B coil (Built-in full-wave rectifier type) VXZ 22 3 0 □ □ – 02 □ – 1 G R1 – □

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

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

Valve/Body configuration

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

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

Suffix

Nil	—
Z	Oil-free spec.

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

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

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

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

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

Refer to page 90 for ordering coil only.

Built-in full-wave rectifier type

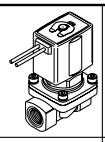
Bracket

Nil	None
B	With bracket

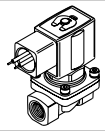
∗ Bracket is not removable.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor



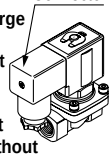
C - Conduit



T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector



∗ DIN type is available with class B only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and rated voltage.
∗ Surge voltage suppressor is integrated into the AC/Class B, as a standard.

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

Solenoid valve (Port size)			Orifice symbol (Diameter)				Material	
Model	**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
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.

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage 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	—	—	—	●	—	—
	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.
∗ 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.

⚠ When the fluid is oil.

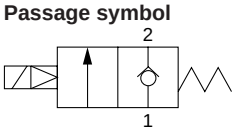
The dynamic viscosity of the fluid must not exceed 50 mm²/s.
The special construction of the armature adopted in the built-in full-wave rectifier type gives an improvement in OFF response by providing clearance on the absorbed surface when it is switched ON.
Select the DC spec. or AC spec. built-in full-wave rectifier type when the dynamic viscosity is higher than water or when the OFF response is prioritized.

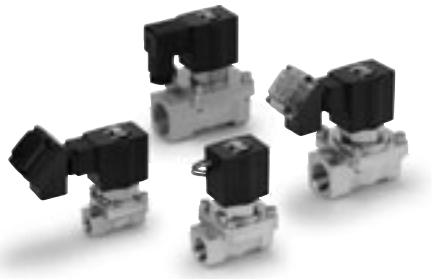
For Oil

Model/Valve Specifications

N.C.

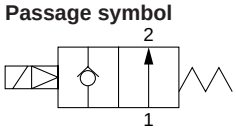
Passage symbol





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 $10^{-6}m^2$	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		760
3/4 (20A)	20	**VXZ2350-06**				220	9.2		1300
1 (25A)	25	**VXZ2360-10**				290	12.0		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	Av x $10^{-6}m^2$	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		850
3/4 (20A)	20	**VXZ2352-06**				220	9.2		1370
1 (25A)	25	**VXZ2362-10**				290	12.0		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		
	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 mm²/s or less

Valve Leakage Rate

Internal Leakage

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

External Leakage

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

How to Order

DC VXZ 22 3 0 □ □ – 02 □ – 5 G 1 – □

AC/Class H coil VXZ 22 3 0 □ □ – 02 □ – 1 G 1 – □

AC/Class B coil (Built-in full-wave rectifier type) VXZ 22 3 0 □ □ – 02 □ – 1 G R1 – □

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

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

Valve/Body configuration

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

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

Suffix

Nil	—
Z	Oil-free spec.

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

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Rated voltage

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

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

Refer to page 90 for ordering coil only.

Built-in full-wave rectifier type

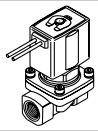
Bracket

Nil	None
B	With bracket

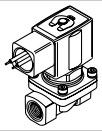
∗ Bracket is not removable.

Electrical entry

G - Grommet
GS - With grommet surge voltage suppressor



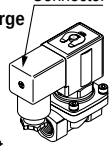
C - Conduit



T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light

D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector



∗ DIN type is available with class B only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and rated voltage.
∗ Surge voltage suppressor is integrated into the AC/Class B, as a standard.

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

Solenoid valve (Port size)			Orifice symbol (Diameter)				Material	
Model	**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
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.

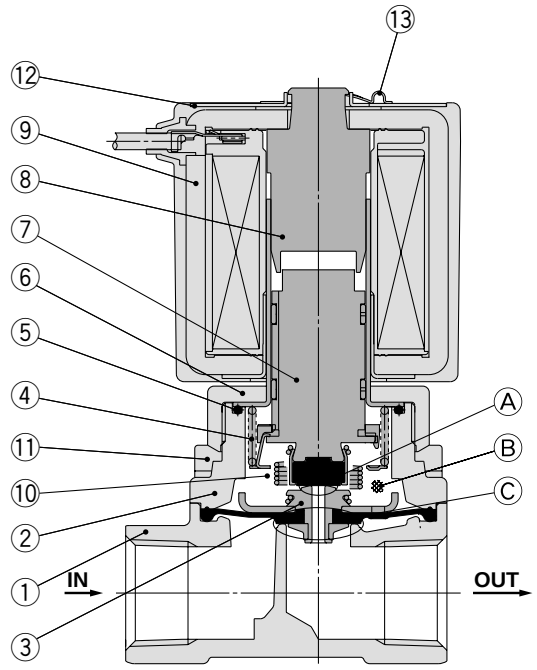
Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage 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	—	—	—	●	—	—
	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.
∗ 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.

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 attacted 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.

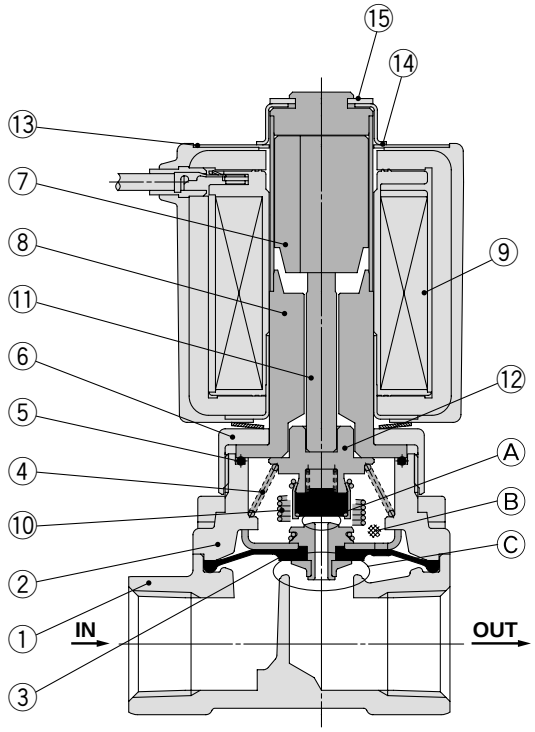
<Valve closed>
When the coil ⑨ is de-energized, the armature assembly ⑦ returns by the reacting force of the return spring ④ and the pilot valve Ⓐ is closed.
When the pilot valve is closed, the pressure inside the pilot chamber Ⓑ increases, resulting that the pressure difference from the inlet pressure is lost and the main valve Ⓒ is closed.

Component Parts

No.	Description	Material	
		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** Note)	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 attacted by the core of the tube assembly ⑧ closes the pilot valve Ⓐ via the push rod assembly ⑪.
When the pilot valve is closed, the pressure inside the pilot chamber Ⓑ increases, resulting in the pressure difference from the inlet pressure is lost and the main valve Ⓒ 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 Ⓐ is opened.
When the pilot valve is opened, the pressure inside the 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 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 Ⓒ is opened.

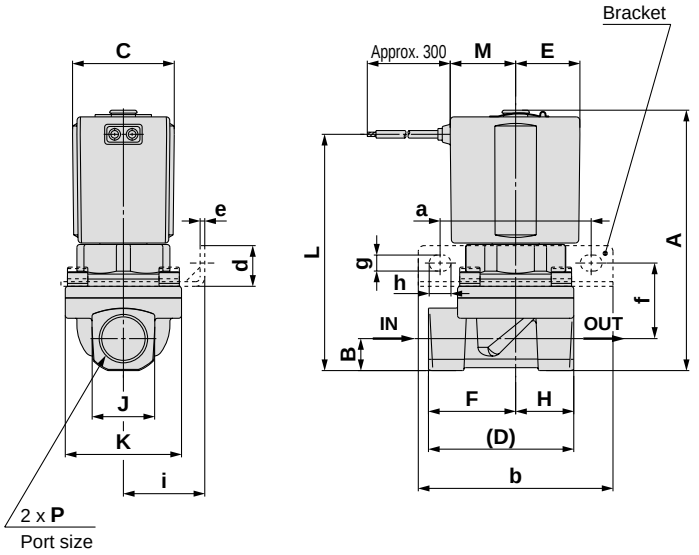
Component Parts

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** Note)	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	

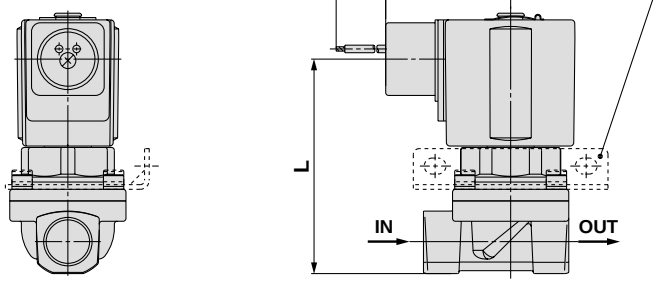
Dimensions/Body Material: Brass (C37), Stainless Steel

Normally closed (N.C.): VXZ22□0/VXZ23□0
Normally open (N.O.): VXZ22□2/VXZ23□2

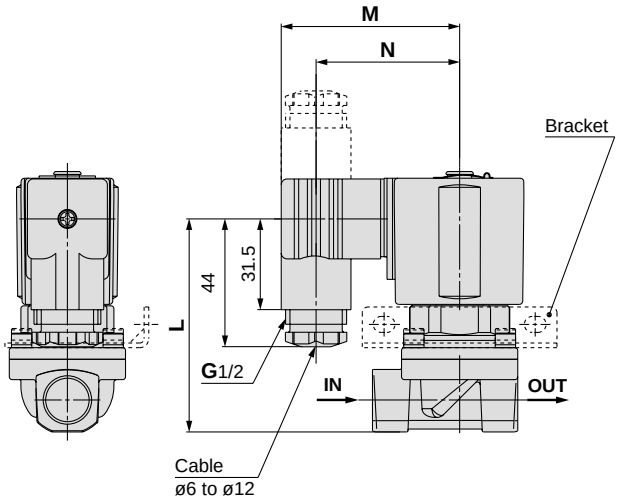
Grommet: G



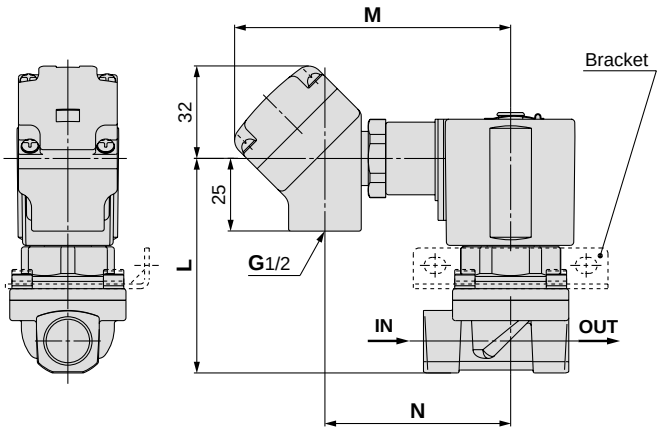
Conduit: C



DIN terminal: D



Conduit terminal: T



(mm)

Model		Port size P	A	B	C	D	E	F	H	J	K	Electrical entry (DC, AC/Class H coil)								
												Grommet		Conduit		DIN terminal			Conduit terminal		
N.C.	N.O.											L	M	L	M	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.

(mm)

Model		Port size P	a	b	d	e	f	g	h	i	Electrical entry (AC/Class B coil)*									
											Grommet		Conduit		DIN terminal			Conduit terminal		
N.C.	N.O.										L	M	L	M	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.

Replacement Parts

● Solenoid coil assembly part no.

DC

VX02 2 N − 5 G − □

Series

2	VXZ22□□
3	VXZ23□□

Rated voltage Note)

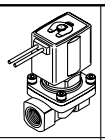
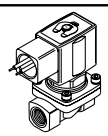
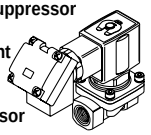
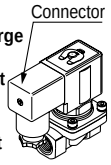
5	24 VDC
6	12 VDC

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

Valve

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

Electrical entry

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

∗ 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.)

VX02 2 N − 1 G − H − Z

Series

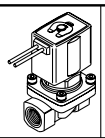
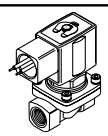
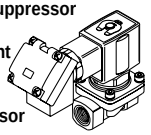
2	VXZ22□□
3	VXZ23□□

Rated voltage Note)

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
7	240 VAC 50/60 Hz
8	48 VAC 50/60 Hz
J	230 VAC 50/60 Hz

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

Electrical entry

G - Grommet **GS** - With grommet surge voltage suppressor	
C - Conduit	
T - With conduit terminal **TS** - With conduit terminal and surge voltage suppressor **TL** - With conduit terminal and light **TZ** - With conduit terminal, surge voltage suppressor and light	

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

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

VX02 2 N − 1 G R − □

Series

2	VXZ22□□
3	VXZ23□□

Rated voltage Note)

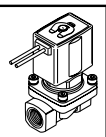
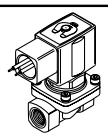
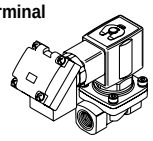
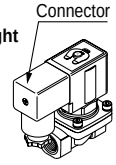
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
7	240 VAC 50/60 Hz
8	48 VAC 50/60 Hz
J	230 VAC 50/60 Hz

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

Valve

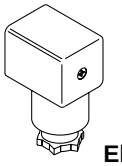
Symbol	Valve
Nil	N.C.
2	N.O.

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, gasket is included.)	Connector 

∗ 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 − □□**

Electrical option

L	With light

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

Rated voltage

1	100 VAC, 110 VAC
2	200 VAC, 220 VAC, 230 VAC, 240 VAC
5	24 VDC
6	12 VDC
15	48 VAC

● Gasket part no. for DIN connector

VCW20-1-29-1

Table (1) Rated Voltage – Electrical Option

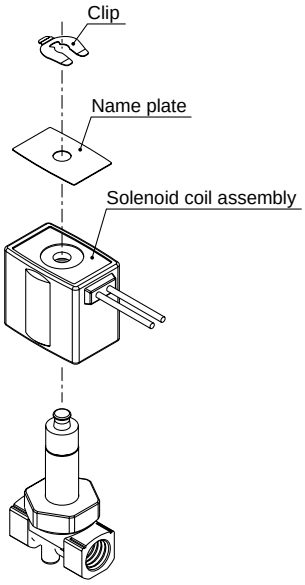
Rated voltage			Class B			Class H		
			S	L	Z	S	L	Z
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light and surge voltage suppressor	With surge voltage suppressor	With light	With light and surge voltage suppressor
AC	1	100 V	—	●	—	●	●	●
	2	200 V	—	●	—	●	●	●
	3	110 V	—	●	—	●	●	●
	4	220 V	—	●	—	●	●	●
	7	240 V	—	—	—	●	—	—
	8	48 V	—	—	—	●	—	—
	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.
∗ 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