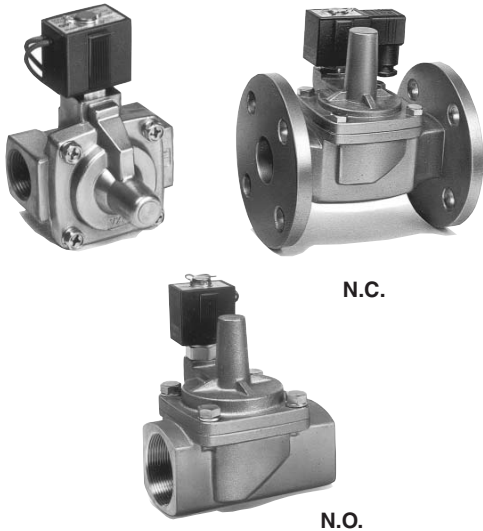


# Pilot Operated 2 Port Solenoid Valve For Air, Gas, Steam, Water and Oil

## Series VXP21/22/23



### Wide variations of combination

Able to control a wide variety of fluids.

Valve can be matched to particular application through selection of body materials (Brass/BC6 or Stainless steel), seal material (NBR, PTFE, EPDM or FKM) and solenoid coil (Class B or H).

### Easy to disassemble and reassemble in a short time.

### Flange for threaded ports available.

(32A to 50A)

VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

L VH

LVD

L VQ

LQ

L VN

TI/  
TIL

PA

PAX

PB

### Variations

**Valve**

Normally closed (N.C.)

Normally open (N.O.)

**Solenoid coil**

Coil: Class B, Class H

**Rated voltage**

AC  
Standard — 100 V, 200 V  
Option — 48 V, 110 V, 220 V, 240 V

DC  
Standard — 24 V  
Option — 12 V

**Material**

Body — Brass/BC6, Stainless steel  
Seal — NBR, FKM, EPDM, PTFE

**Electrical entry**

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

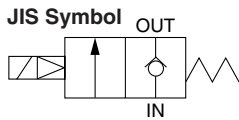
**Model**

Model	Port size	Orifice size (mmØ)
<b>Threaded type</b>		
VXP2130	Rc 1/4, 3/8, 1/2	10
VXP2140	Rc 3/8, 1/2	15
VXP2150	Rc 3/4	20
VXP2260	Rc 1	25
VXP2270	Rc 1 1/4	35
VXP2380	Rc 1 1/2	40
VXP2390	Rc 2	50
<b>Flange type</b>		
VXP2270	32A	35
VXP2380	40A	40
VXP2390	50A	50

# Series VXP21/22/23

The VX\* series will be revised shortly.

## Normally Closed (N.C.)



### Fluid

Standard specifications	Option <sup>(1)</sup>	Made to Order <sup>(2)</sup>
Water (Standard)	Steam ..... (S)	Air ..... X44
Turbine oil	High temperature water ..... (D, E)	
	High temperature oil ..... (D, N)	



Note 1) Refer to page 17-3-10 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

Note 2) Please contact SMC for details.

## Model/Valve Specifications

Connection Thread	Orifice size (mm)	Model	Min. operating pressure differential (MPa)	Maximum operating pressure differential (MPa)								Flow characteristics					Max. system pressure (MPa)	Weight (g)
				Water		Air		Oil		Steam	Water, Oil, Steam		Air					
				AC	DC	AC	DC	AC	DC	AC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	C [dm <sup>3</sup> /(s·bar)]	b	Cv			
1/4	10	VXP2130-02	0.04	0.7	0.5	0.9	0.7	0.5	0.4	0.9	46	1.9	8.5	0.35	2.0	Water, Air, Oil 1.5 Steam 1.0	420	
	10	VXP2130-03	0.04	0.7	0.5	0.9	0.7	0.5	0.4	0.9	58	2.4	9.2	0.35	2.4			420
3/8	15	VXP2140-03	0.04	1.0	1.0	1.0	1.0	0.7	0.7	1.0	100	4.2	18	0.35	5.0		740	
	10	VXP2130-04	0.04	0.7	0.5	0.9	0.7	0.5	0.4	0.9	58	2.4	9.2	0.35	2.4		500	
1/2	15	VXP2140-04	0.04	1.0	1.0	1.0	1.0	0.7	0.7	1.0	130	5.3	20	0.35	5.5		740	
	20	VXP2150-06	0.04	1.0	1.0	1.0	1.0	0.7	0.7	1.0	220	9.2	38	0.30	9.2		1300	

Connection Thread Flange	Orifice size (mm)	Model	Min. operating pressure differential (MPa)	Maximum operating pressure differential (MPa)								Flow characteristics				Max. system pressure (MPa)	Weight (g)
				Water		Air		Oil		Steam	Water, Oil, Steam		Air				
				AC	DC	AC	DC	AC	DC	AC	Av x 10 <sup>-6</sup> m <sup>2</sup>	Cv converted	Effective area (mm <sup>2</sup> )				
1	25	VXP2260-10	0.04	1.0	1.0	1.0	1.0	0.7	0.7	1.0	290	12	215	Water Air Oil 1.5 Steam 1.0	1810		
1 1/4	35	VXP2270-12	0.03	1.0	1.0	1.0	1.0	0.7	0.7	1.0	550	23	415		3300		
1 1/2	40	VXP2380-14	0.03	1.0	1.0	1.0	1.0	0.7	0.7	1.0	740	31	560		4200		
2	50	VXP2390-20	0.03	1.0	1.0	1.0	1.0	0.7	0.7	1.0	1200	49	880		5400		
— 32A	35	VXP2270-32	0.03	1.0	1.0	1.0	1.0	0.7	0.7	1.0	550	23	415		5900		
— 40A	40	VXP2380-40	0.03	1.0	1.0	1.0	1.0	0.7	0.7	1.0	740	31	560		7300		
— 50A	50	VXP2390-50	0.03	1.0	1.0	1.0	1.0	0.7	0.7	1.0	1200	49	880	9200			



Note) Weight 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" on page 17-3-15 for detail of max. operating pressure differential and max. system pressure.
- VXP2130: Option "C", "K", "Q", "S" only.

## Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VXP21	AC	50	20 (32)	11	4.5	45
		60	17 (28)	7	3.2	35
	DC	—	—	—	6	55
VXP22	AC	50	40	18	7.5	60
		60	35	12	6	50
	DC	—	—	—	8	60
VXP23	AC	50	50	21	11	65
		60	45	17	9.5	60
	DC	—	—	—	11.5	65



- The return voltage is 20% or more of the rated voltage for AC and 2% or more for DC.
- The allowable voltage fluctuation rate is ±10% of the rated voltage value for both AC and DC.
- When the ambient temperature is 20°C ± 5°C and rated voltage is applied.
- Changing coils from AC to DC and vice versa is impossible, because of different core shapes.  
VXP21<sub>1</sub>0, 22<sub>2</sub>0, 23<sub>3</sub>0 are possible to exchange coil from AC to DC, but impossible from DC to AC.  
(Hum sound may generate because of no shading coil for DC.)
- ( ) : VXP2130

## Operating Fluid and Ambient Temperature

Temperature conditions	Power source	Operating fluid temperature (°C)						Ambient temperature (°C)
		Water (Standard)	Air (Standard)	Oil (Standard)	High temperature water <sup>(3)</sup> (D, E)	High temperature oil <sup>(3)</sup> (D)	Steam <sup>(3)</sup> (S)	
Maximum	AC	60	80	60	99	100	183	60
	DC	40	60	40	—	—	—	40
Minimum	AC	1	-10 <sup>(1)</sup>	-5 <sup>(2)</sup>	—	—	—	-10
	DC							



Note 1) Dew point: -10°C or less      Note 2) 50 cSt or less

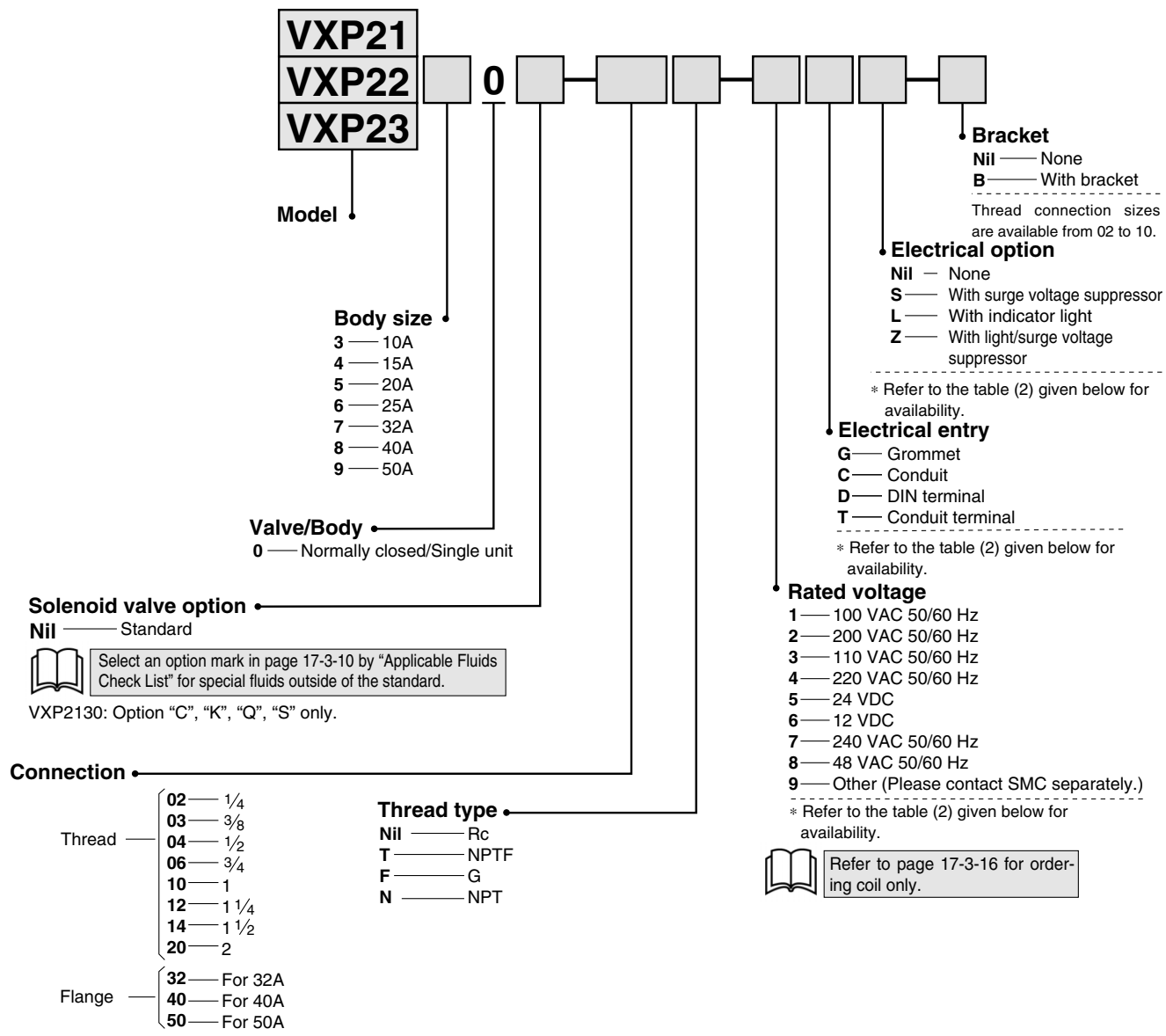
Note 3) "D", "E" etc. in parentheses are option symbols.

Note 4) VXP2130: Option "C", "K", "Q", "S" only.

# Pilot Operated 2 Port Solenoid Valve For Air, Gas, Steam and Oil Series VXP21/22/23

The VX\* series will be revised shortly.

## How to Order (Normally Closed)



- VC
- VDW
- VQ
- VX2
- VX
- VX3
- VXA
- VN
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

\* Refer to the table (1) given below for availability.

**Table(1)**  
**Connection Size and Applicable Model**

Connection	Size	Applicable model
Thread	1/4	VXP2130-02
	3/8	VXP2130-03, VXP2140-03
	1/2	VXP2130-04, VXP2140-04
	3/4	VXP2150-06
	1	VXP2260-10
	1 1/4	VXP2270-12
	1 1/2	VXP2380-14
Flange	2	VXP2390-20
	32A	VXP2270-32
	40A	VXP2380-40
	50A	VXP2390-50

**Table(2)**  
**Rated Voltage-Electrical Entry-Electrical Option**

Insulation type	Class B				Class H		
	G	C	D, T	G, C	T		
Electrical entry	G	C	D, T	G, C	T		
Electrical option	S <sup>Note)</sup>	—	S, L, Z	—	S, L, Z		
AC	1 (100 V)	●	●	●	●	●	●
	2 (200 V)	●	●	●	●	●	●
	3 (110 V)	●	●	●	●	●	●
	4 (220 V)	●	●	●	●	●	●
	7 (240 V)	●	●	●	—	●	—
DC	8 (48 V)	●	●	●	—	—	—
	5 (24 V)	●	●	●	—	—	—
	6 (12 V)	●	●	●	—	—	—

Note) Surge voltage suppressor is attached in the middle of lead wire.

### Made to Order Specifications

**Splashproof Specifications** (Based on JIS C 0920 / Based on IEC529IP-X4)

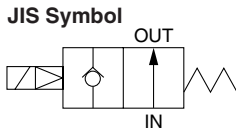
VXP [Model] — [Port size] — [Electrical entry] - X36

DIN terminal or class H coil not available.

### Ordering example

(Example) Series VXP22, Rc 1 1/4, 100 VAC Grommet  
 (Part no.) **VXP2270-12-1G**

## Normally Open (N.O.)



## Fluid

Standard specifications	Option <sup>(1)</sup>	Made to Order <sup>(2)</sup>
Water (Standard)	Steam ..... (S)	Air ..... X44
Turbine oil	High temperature water ..... (D, E)	
	High temperature oil ..... (D)	



Note 1) Refer to page 17-3-10 "Applicable Fluids Check List" for details of special fluids outside of the standard options and specifications.

Note 2) Please contact SMC for details.

## Model/Valve Specifications

Connection		Orifice size (mm)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)			Flow characteristics					Max. system pressure (MPa)	Weight (g)
Thread	Flange				Water, Air	Oil	Steam	Water, Oil, Steam		Air				
								AC/DC	AC/DC	AC	Av x 10 <sup>6</sup> m <sup>2</sup>	Cv converted		
3/8	—	15	VXP2142-03	0.04	0.7	0.6	0.7	100	4.2	18	0.35	5.0	Water, Air, Oil	760
1/2	—	15	VXP2142-04	0.04	0.7	0.6	0.7	130	5.3	20	0.35	5.5	1.5	760
3/4	—	20	VXP2152-06	0.04	0.7	0.6	0.7	220	9.2	38	0.30	9.2	Steam 1.0	1320

Connection		Orifice size (mm)	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)			Flow characteristics			Max. system pressure (MPa)	Weight (g)	
Thread	Flange				Water, Air	Oil	Steam	Water, Oil, Steam		Air			
								AC/DC	AC/DC	AC			Av x 10 <sup>6</sup> m <sup>2</sup>
1	—	25	VXP2262-10	0.04	0.7	0.6	0.7	290	12	215	Water, Air, Oil 1.5 Steam 1.0	1850	
1 1/4	—	35	VXP2272-12	0.03	0.7	0.6	0.7	550	23	415		3300	
1 1/2	—	40	VXP2382-14	0.03	0.7	0.6	0.7	740	31	560		4200	
2	—	50	VXP2392-20	0.03	0.7	0.6	0.7	1200	49	880		5400	
—	32A	35	VXP2272-32	0.03	0.7	0.6	0.7	550	23	415		5900	
—	40A	40	VXP2382-40	0.03	0.7	0.6	0.7	740	31	560		7300	
—	50A	50	VXP2392-50	0.03	0.7	0.6	0.7	1200	49	880		9200	



Note) Weight 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" on page 17-3-15 for details of max. operating pressure differential and max. system pressure.

## Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VXP21	AC	50	25	12	5	50
		60	20	8	3.5	35
	DC	—	—	—	6	50
VXP22	AC	50	45	20	8	55
		60	40	15	6.5	45
	DC	—	—	—	8	50
VXP23	AC	50	60	25	10.5	60
		60	50	20	9.5	50
	DC	—	—	—	11.5	55



Note) • They are values in an ambient temperature of 20°C ±5°C and application of rated voltage.

- Changing coils from AC to DC and vice versa is impossible, because of different core shapes.
- Return voltage is 20% or more of the rated value at AC power and 5% or more at the DC power.
- The allowable voltage fluctuation rate is ±10% of the rated voltage value for both AC and DC.

## Operating Fluid and Ambient Temperature

Temperature conditions	Power source	Operating fluid temperature (°C)					Ambient temperature (°C)	
		Water (Standard)	Air (Standard)	Oil (Standard)	High temperature water <sup>(3)</sup> (D, E)	High temperature oil <sup>(3)</sup> (D)		Steam <sup>(3)</sup> (S)
Maximum	AC	60	80	60	99	100	183	60
	DC	40	60	40	—	—	—	40
Minimum	AC	1	-10 <sup>(1)</sup>	-5 <sup>(2)</sup>	—	—	—	-10
	DC							



Note 1) Dew point: -10°C or less

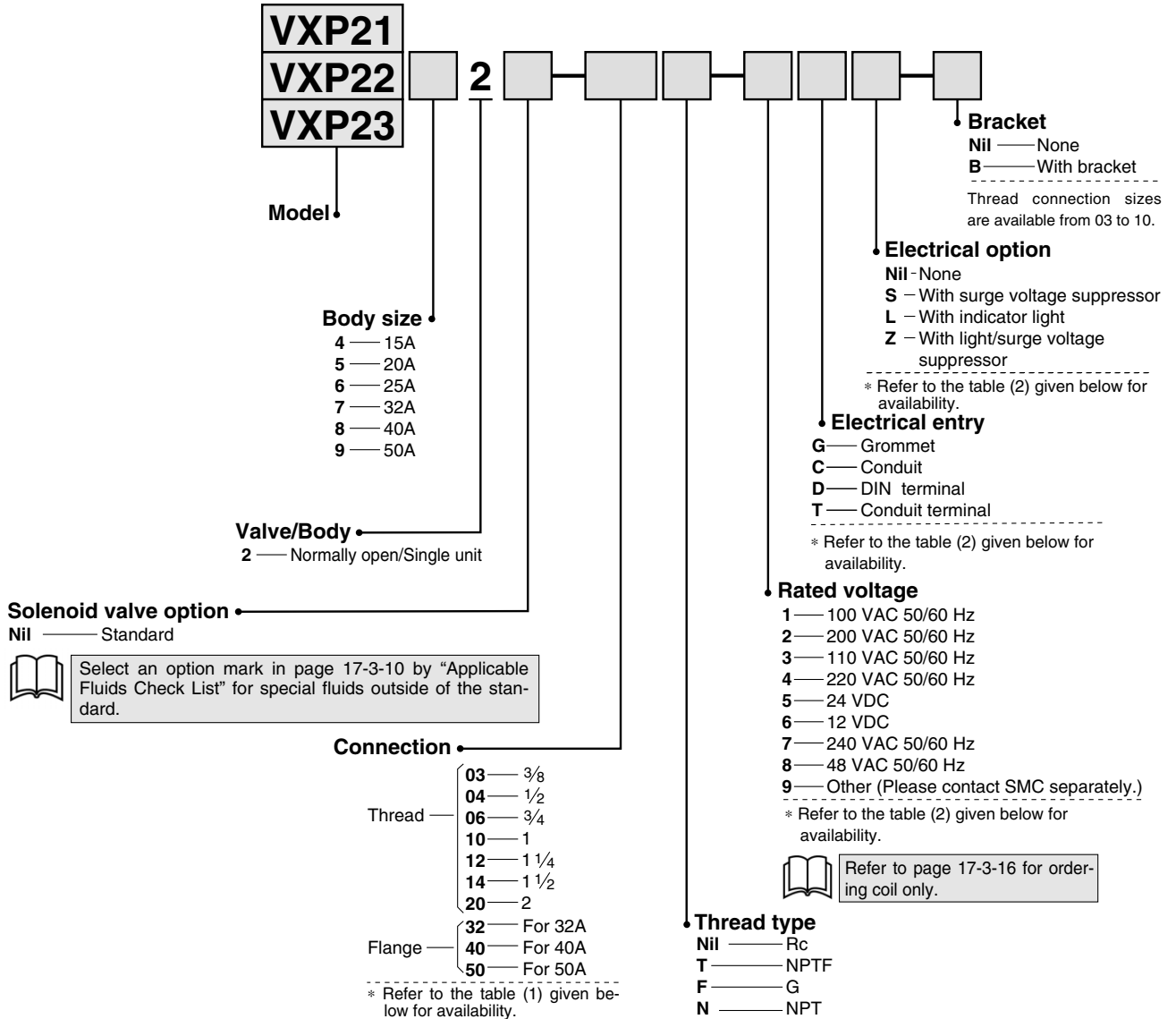
Note 2) 50 cSt or less

Note 3) "D", "E" etc. in parentheses are option symbols.

Pilot Operated 2 Port Solenoid Valve  
For Air, Gas, Steam and Oil Series **VXP21/22/23**

The VX\* series will be revised shortly.

How to Order (Normally open)



- VC
- VDW
- VQ
- VX2
- VX
- VX3
- VXA
- VN
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- Ti/TIL
- PA
- PAX
- PB

**Table (1)**  
Connection Size and Applicable Model

Connection	Size	Applicable model
Thread	3/8	VXP2142-03
	1/2	VXP2142-04
	3/4	VXP2152-06
	1	VXP2262-10
	1 1/4	VXP2272-12
	1 1/2	VXP2382-14
Flange	2	VXP2392-20
	32A	VXP2272-32
	40A	VXP2382-40
	50A	VXP2392-50

**Ordering example**

(Example) Series VXP22, 32A Flange, 200 VAC,  
DIN terminal  
(Part no.) **VXP2272-32-2D**

**Table (2)**  
Rated Voltage-Electrical Entry-Electrical Option

Insulation type	Class B				Class H		
	G	C	D, T	G, C	S	T	
AC	Electrical entry						
	Electrical option						
	1 (100 V)	●	●	●	●	●	●
	2 (200 V)	●	●	●	●	●	●
	3 (110 V)	●	●	●	●	●	●
	4 (220 V)	●	●	●	●	●	●
	7 (240 V)	●	●	—	●	—	—
	8 (48 V)	●	●	—	—	●	—
DC	Electrical entry						
	Electrical option						
5 (24 V)	●	●	●	●	—	—	
6 (12 V)	●	●	●	—	—	—	

Note) Surge voltage suppressor is attached in the middle of lead wire.

**Made to Order Specifications**

**Splashproof Specifications** (Based on JIS C 0920 / Based on IEC529IP-X4)

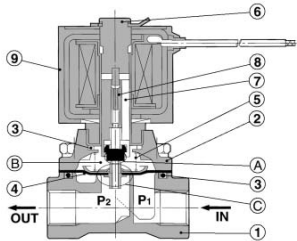
VXP  Model —  Port size —  Electrical entry - X36

DIN terminal or class H coil not available.

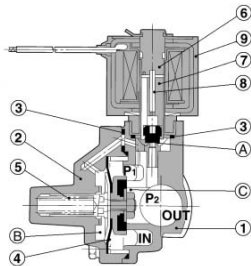
## Construction/Principle Parts Material

## Normally Closed (N.C.)

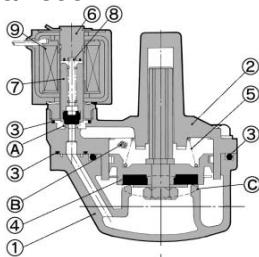
## VXP2130



## VXP2140/2150/2260



## VXP2270/2380/2390



## Operation

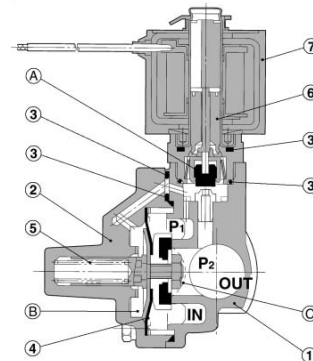
**<Valve opened>** When the coil ⑨ is energized, the armature assembly ⑦ is attracted into the core of the core assembly ⑥ and the pilot valve ① opens. Then the pressure in the pressure action chamber ② falls to open the main valve ③.

**<Valve closed>** When the coil ⑨ is not energized, the pilot valve ① is closed and the pressure in the pressure action chamber ② rises and the main valve ③ closes.

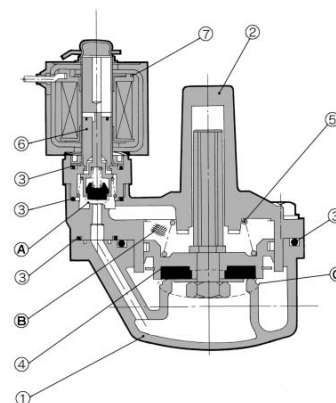
No.	Description	Size	Material	
			Standard	Option
①	Body	10A to 25A	Brass	Stainless steel
		32A to 50A	BC6	—
②	Bonnet	10A to 25A	Brass	Stainless steel
		32A to 50A	BC6	—
③	O-ring	—	NBR	FKM/EPDM
④	Disk assembly	10A to 25A	Stainless steel, FKM Stainless steel, EPDM	Stainless steel, FKM Stainless steel, EPDM
		32A to 50A	Brass, NBR	Stainless steel, Brass FKM/EPDM
⑤	Valve spring	—	Stainless steel	—
⑥	Core assembly	10A to 25A	Stainless steel, Copper	Stainless steel, Silver
		32A to 50A	—	—
⑦	Armature assembly	—	Stainless steel, NBR	Stainless steel, FKM Stainless steel, EPDM
⑧	Return spring	—	Stainless steel	—
⑨	Coil assembly	—	Class B molded	Class H molded

## Normally Open (N.O.)

## VXP2142/2152/2262



## VXP2272/2382/2392



## Operation

**<Valve opened>** When the coil ⑦ is energized, the opened pilot ① closes, the pressure in pressure action chamber ② rises and the main valve ③ closes.

**<Valve closed>** When coil ⑦ is not energized, the closed pilot valve ① opens, the pressure in pressure action chamber ② drops and the main valve ③ opens.

No.	Description	Size	Material	
			Standard	Option
①	Body	15A to 25A	Brass	Stainless steel
		32A to 50A	BC6	—
②	Bonnet	15A to 25A	Brass	Stainless steel
		32A to 50A	BC6	—
③	O-ring	—	NBR	FKM/EPDM
④	Disk assembly	15A to 25A	Stainless steel, FKM Stainless steel, EPDM	Stainless steel, FKM Stainless steel, EPDM
		32A to 50A	Brass, NBR	Stainless steel, Brass FKM/EPDM
⑤	Valve spring	—	Stainless steel	—
⑥	Core assembly	15A to 25A	Stainless steel, Copper, NBR	Stainless steel, Silver FKM/EPDM, PTFE
		32A to 50A	Polyacetal PTFE	Stainless steel, Copper, FKM/EPDM, PTFE
⑦	Coil assembly	—	Class B molded	Class H molded



# Pilot Operated 2 Port Solenoid Valve Series VXP21/22/23

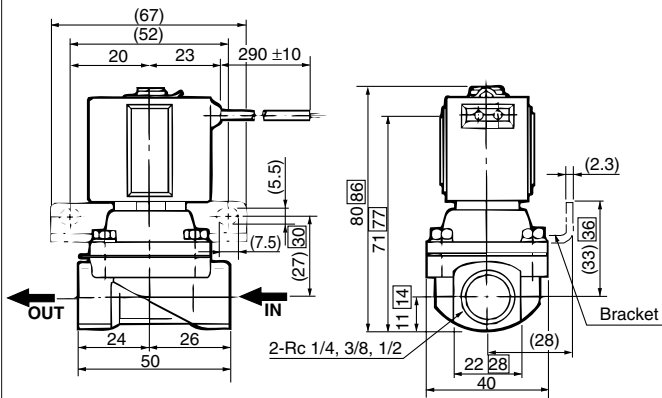
For Air, Gas, Steam and Oil

The VX\* series will be revised shortly.

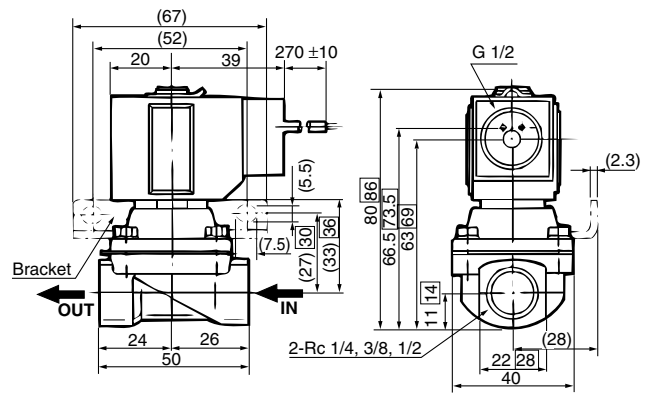
## Dimensions (Orifice Size: 10 mmø)

### Normally Closed: VXP2130

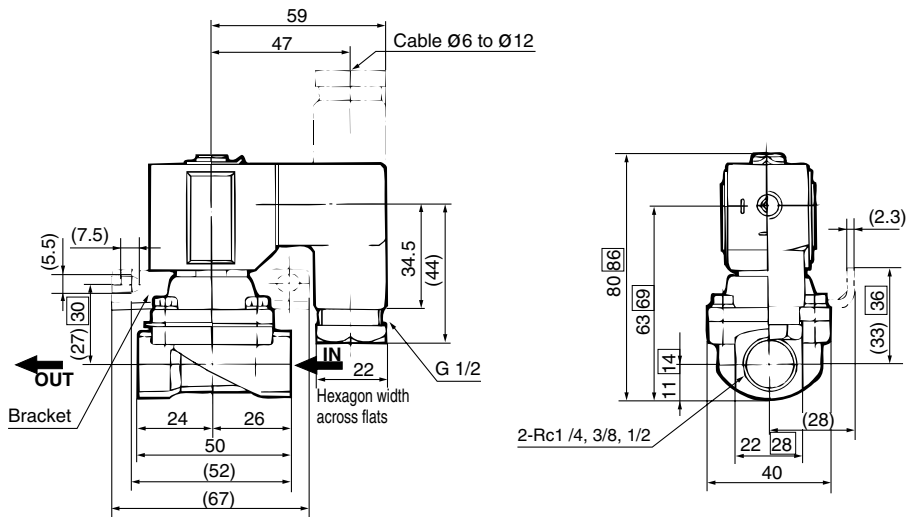
#### Grommet: G



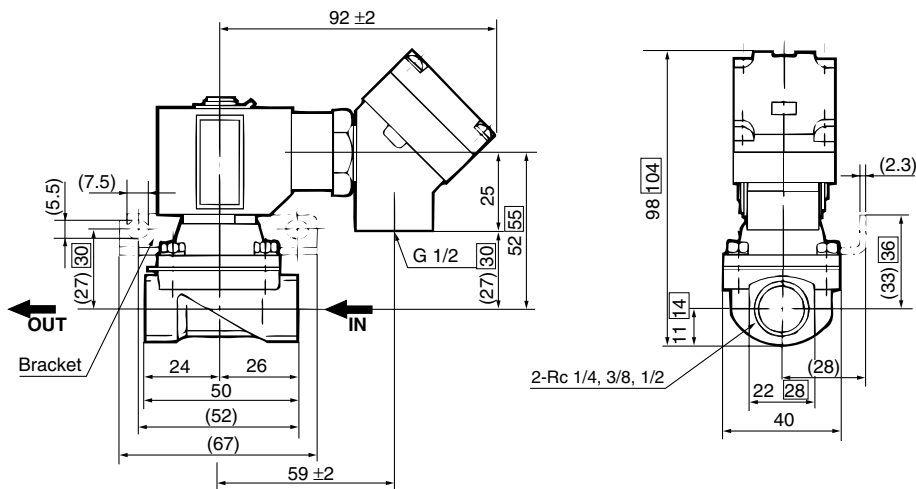
#### Conduit: C



#### DIN terminal: D



#### Conduit terminal: T



□: Port size Rc 1/2

- VC
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

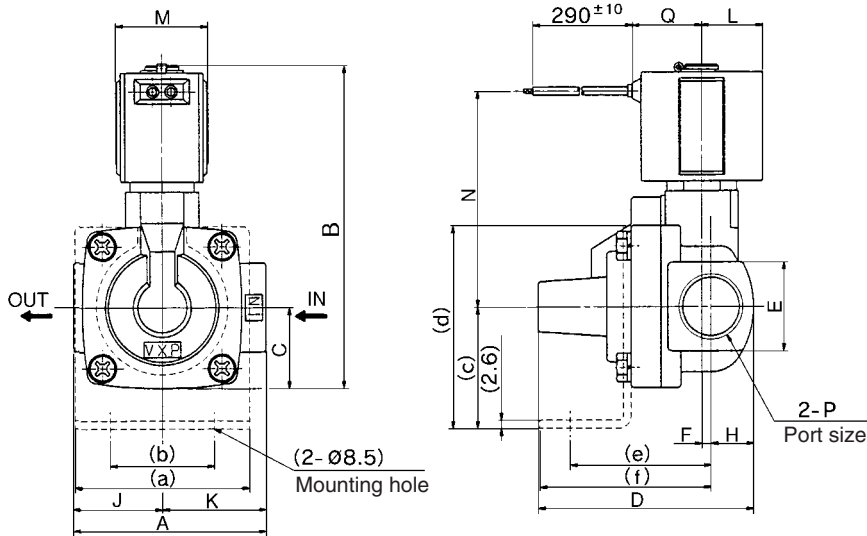
# Series VXP21/22/23

The VX\* series will be revised shortly.

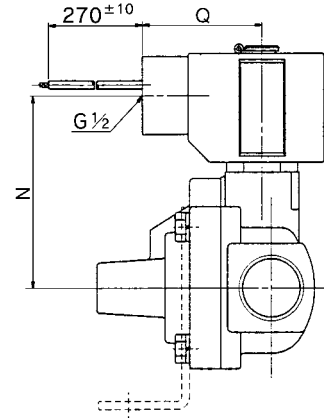
Dimensions (Orifice Size: 15 mmø, 20 mmø, 25 mmø)

Normally Closed:VXP2140/2150/2260 Normally Open:VXP2142/2152/2262

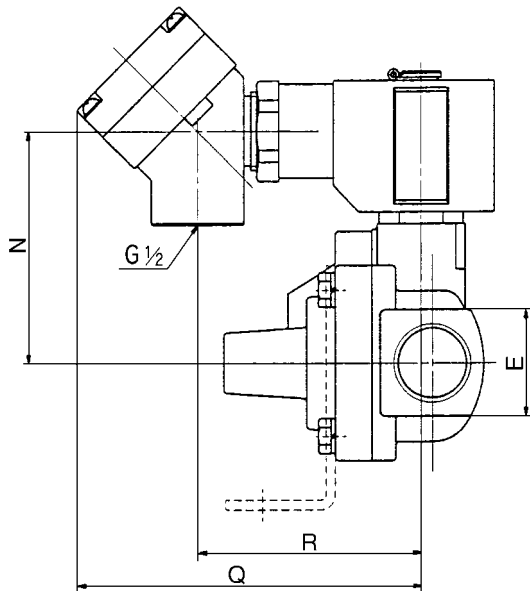
### Grommet: G



### Conduit: C



### Conduit terminal: T



Model		P Port size Rc	A	B	C	D	E	F	H	J	K	L	M	Electrical entry						Bracket						
														Grommet		Conduit		Conduit terminal		a	b	c	d	e	f	
Normally closed	Normally open													N	Q	N	Q	N	Q	R	a	b	c	d	e	f
VXP2140	VXP2142	3/8, 1/2	63	104 (116)	26	71	28	3	14	29	34	20	30	69 (76)	23	61	39	61 (68)	92	59	57	34	39	65	47	57
VXP2150	VXP2152	3/4	80	118 (136)	32.5	87	35	8	17.5	37	43	20	30	77 (84)	23	69	39	69 (76)	92	59	74	51	45.5	78	52	62
VXP2260	VXP2262	1	90	133 (150)	36.5	97	40	8	20	43	47	23	35	87 (97)	25.5	79	41.5	79 (89)	95	62	81	58	49.5	86	57	67

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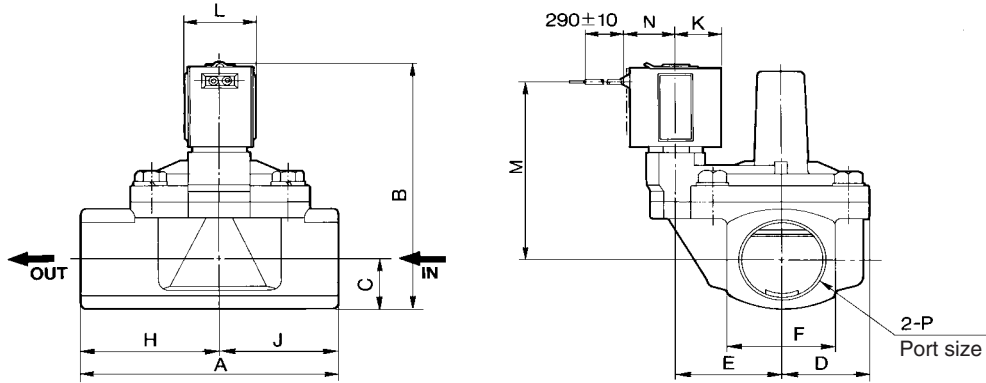
# Pilot Operated 2 Port Solenoid Valve For Air, Gas, Steam and Oil Series **VXP21/22/23**

The VX\* series will be revised shortly.

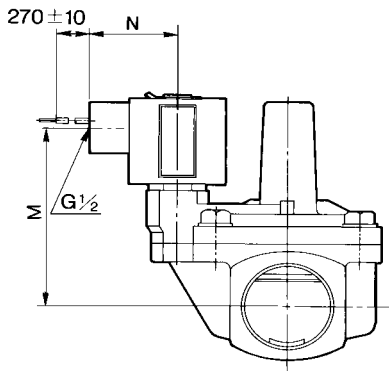
## Dimensions

Normally Closed: VXP2270/2380/2390 Normally Open: VXP2272/2382/2392

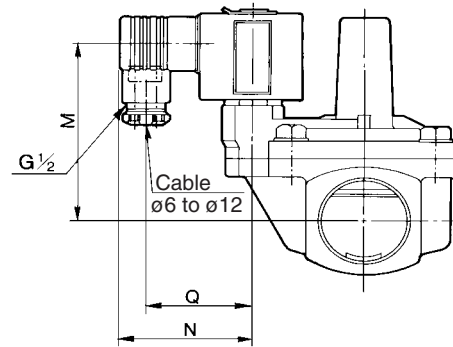
### Grommet: G



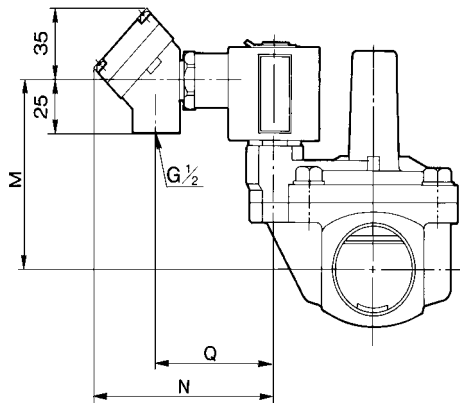
### Conduit: C



### DIN terminal: D



### Conduit terminal: T



Model		P Applicable thread Pc	A	B	C	D	E	F	H	J	K	L	Electrical entry									
													Grommet		Conduit		DIN terminal			Conduit terminal		
Normally closed	Normally open												M	N	M	N	M	N	Q	M	N	Q
VXP2270	VXP2272	1	125	128 (145)	26.5	43.5	51.5	53	67.5	57.5	23	35	92 (102)	25.5	84 (94)	41.5	84 (94)	60	48	84 (94)	95	62
VXP2380	VXP2382	1 ½	132	144 (159)	30	46.5	54.5	60	72	60	25.5	40	103 (113)	28	95 (105)	44.5	95(105)	62	50	95(105)	97	64
VXP2390	VXP2392	2	150	160 (175)	35.5	52	59	71	81	69	25.5	40	114 (124)	28	106 (117)	44.5	106(117)	62	50	106(117)	97	64

⊙ ( ): N.O.

- VC
- VDW
- VQ
- VX2
- VX**
- VX3
- VXA
- VN
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/  
TIL
- PA
- PAX
- PB

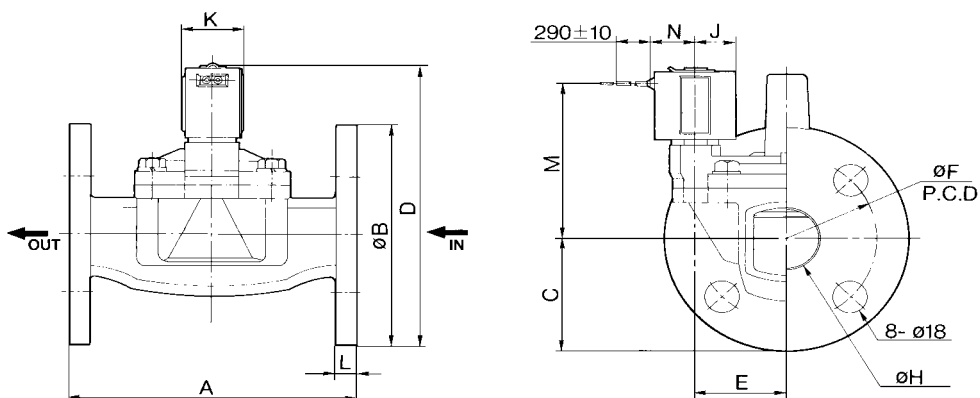
# Series VXP21/22/23

The VX\* series will be revised shortly.

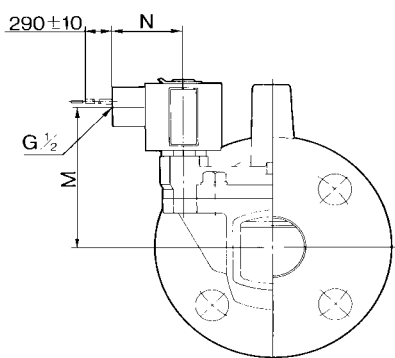
## Dimensions

Normally Closed: VXP2270/2380/2390 Normally Open: VXP2272/2382/2392

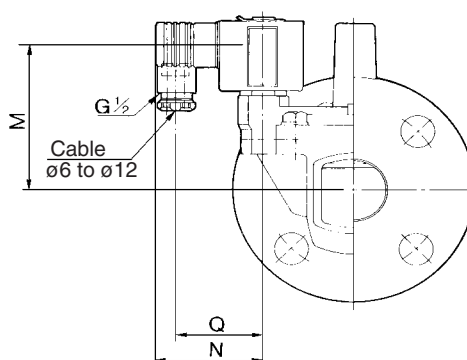
### Grommet: G



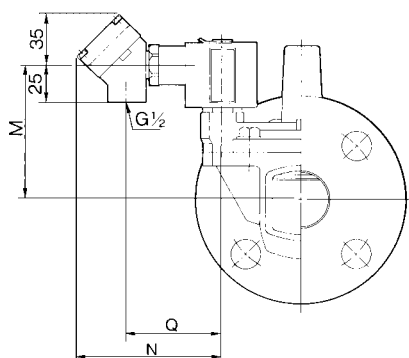
### Conduit: C



### DIN terminal: D



### Conduit terminal: T



Model		Applicable flange													Electrical entry							
Normally closed	Normally open		A	B	C	D	E	F	H	J	K	L	Grommet		Conduit		DIN terminal			Conduit terminal		
			M	N	M	N	M	N	Q	M	N	Q										
VXP2270	VXP2272	32A	160	135	67.5	169 (186.5)	51.5	100	36	23	35	12	92 (102)	25.5	84 (94)	41.5	84 (94)	60	48	84 (94)	95	62
VXP2380	VXP2382	40A	170	140	70	184 (199)	54.5	105	42	25.5	40	14	103 (113)	28	95(105)	44.5	95(105)	62	50	95(105)	97	64
VXP2390	VXP2392	50A	180	155	77.5	202.5(217.5)	59	120	52	25.5	40	14	114 (124)	28	106(117)	44.5	106(117)	62	50	106(117)	97	64

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