

# Direct Operated 3 Port Solenoid Valve/Manifold For Air, Gas, Vacuum and Oil

## Series VVX31/32/33



■ **N.C./N.O. switchover is easy.**

(VX31C.O. type, VX32, VX33)

■ **A wide variety of applicable fluids.**

Combination of seal materials (NBR, FKM, or EPDM) can be selected freely, depending on the purpose.

■ **Able to replace valves with the piping remained unchanged.**

■ **Weight-saving aluminum base and body.**

(Not applicable to water or steam.)

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

L VH

LVD

L VQ

LQ

L VN

T I/  
T I L

PA

PAX

PB

### Variations

**Valve** ●

Normally Closed (N.C.) Normally Open (N.O.) Common (C.O.)

Port A

Port P

Port R

Normally closed (N.C.)

Normally open (N.O.)

**Electrical entry**

- Grommet
- Conduit
- DIN terminal
- Conduit terminal

**Material**

Body — Aluminum

Seal — NBR, FKM, EPDM

**Rated voltage** ●

AC

Standard — 100 V, 200 V

Option — 48 V, 110 V, 220 V, 240 V

DC

Standard — 24 V

Option — 12 V

**Manifold** ●

Manifold — B mount

Seal — 2 to 10 stations

**Model**

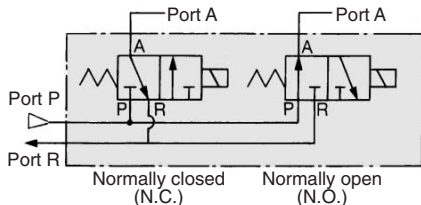
Model	Port A	Port P	Port R
VVX311-stations	1/8	1/4	1/4
VVX312-stations	1/4		
VVX321-stations	1/8		
VVX322-stations	1/4		
VVX331-stations	1/8		
VVX332-stations	1/4		

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## Normally Closed (N.C.), Normally Open (N.O.), Common (C.O.)

### JIS Symbol



### Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power (VA)		Power consumption (W) (Holding)	Temperature rise (°C) (Rated voltage)
			Inrush	Holding		
VX31	AC	50	20	11	5	50
		60	17	7	3.5	45
	AC (Full wave rectification)	50/60	-	7.5	6	55
VX32	AC	50	42	18	7.5	55
		60	37	12	6	45
	AC (Full wave rectification)	50/60	-	10	8.5	60
VX33	AC	50	55	22	11	60
		60	47	18	9.5	50
	AC (Full wave rectification)	50/60	-	14	11.5	60
	DC	-	-	-	11.5	60

- Note • They are values in an ambient temperature of 20°C ± 5°C and application of rated voltage.
- AC coil for air (-X44) comes with full wave rectifier.
  - 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.
  - Allowable voltage fluctuation is ± 10% of the rated voltage.

### Operating Fluid and Ambient Temperature

Temp. conditions	Power source	Operating fluid temperature (°C)					Ambient temp. (°C)
		Water (Std.)	Oil (Std.)	High temp. water (X, E, N, P)	Oil (D, N)	Steam (S, Q)	
Maximum	AC	60	60	99	120	183	60
	DC	40	40	-	-	-	40
Minimum	AC, DC	1	-5	-	-	-	-20

Temp. conditions	Power source	Operating fluid temp. (°C)		Ambient temperature (°C)
		Air	Vacuum	
Maximum	AC/DC	60	40	40
Minimum	AC/DC	-10	-10	-20

### Tightness of Valve (Leak rate)

Seal material	Fluid			Non-leak <sup>(2)</sup> Vacuum
	Air	Liquid		
NBR, FKM, EPDM	1 cm <sup>3</sup> /min or less	0.1 cm <sup>3</sup> /min or less <sup>(1)</sup>		10 <sup>-6</sup> Pa·m <sup>3</sup> /s or less

- Note 1) Differs depending on the operating conditions such as pressure, etc.  
 Note 2) Value on option "V", "R", "Y" (Non-leak, Vacuum).

### Manifold Specifications

Manifold	B Mount	
Manifold type	Common supply, Common exhaust, Individual out	
Number of valves	2 to 10 stations	
Blanking plate (with gasket, screws)	VVX31	VX011-004
	VVX32/33	VX011-005

### Manifold Base and Applicable Solenoid Valve Part No.

Manifold base	A port	Applicable solenoid valve	Base weight (g)
VVX311-stations	Rc 1/8	VX31□ $\frac{1}{8}$ -00-□□	n x 100 + 50
VVX312-stations	Rc 1/4		
VVX321-stations	Rc 1/8	VX32□5-00-□□	n x 160 + 60
VVX322-stations	Rc 1/4		
VVX331-stations	Rc 1/8	VX33□5-00-□□	n x 160 + 60
VVX332-stations	Rc 1/4		

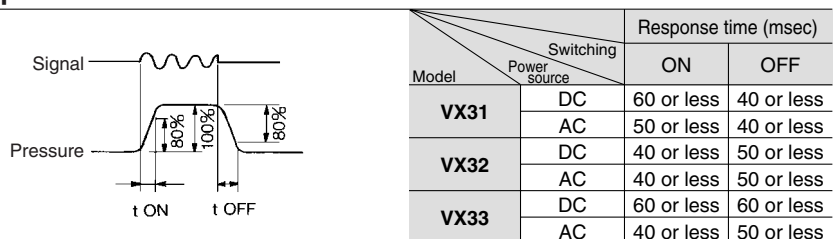
### Model/Valve Specifications (Fluids: Oil)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics		Max. system pressure (MPa)	Weight (g)
		N.O., N.C.	C.O.	Oil			
				AC	AC, DC		
1.5	VX311 $\frac{1}{8}$ -00	1.0	0.6	1.9	0.08	1.0	220
	VX312 $\frac{1}{8}$ -00	0.5	0.3	3.8	0.16		220
2.2	VX3225-00	-	0.6	4.6	0.19	1.0	370
	VX3325-00	-	1.0				530
	VX313 $\frac{1}{8}$ -00	0.3	0.2	5.8	0.24		220
3	VX3235-00	-	0.3	7.9	0.33	1.0	370
	VX3335-00	-	0.6				530
	VX3245-00	-	0.15	12	0.5		1.0
VX3345-00	-	0.3	530				

### Model/Valve Specifications (Fluids: Air, Vacuum, Inert gas)

Orifice size (mmø)	Model	Max. operating pressure differential (MPa)		Flow characteristics			Max. system pressure (MPa)	Weight (g)
		C.O.	AC/DC	Air				
				C [dm <sup>3</sup> /(s·bar)]	b	Cv		
1.5	VX3115-00	0.6	0.6	0.29	0.32	0.08	1.0	220
	VX3125-00	0.3	0.3	0.60	0.25	0.15		220
2.2	VX3225-00	0.6	0.6	0.64	0.40	0.17	1.0	370
	VX3325-00	1.0	1.0					530
	VX3135-00	0.2	0.2	0.82	0.20	0.20		220
3	VX3235-00	0.3	0.3	1.1	0.25	0.27	1.0	370
	VX3335-00	0.6	0.6					530
	VX3245-00	0.15	0.15	1.6	0.20	0.38		1.0
VX3345-00	0.3	0.3	530					

### Response Characteristics



- Note) The value is the case of no grease applied on armature.

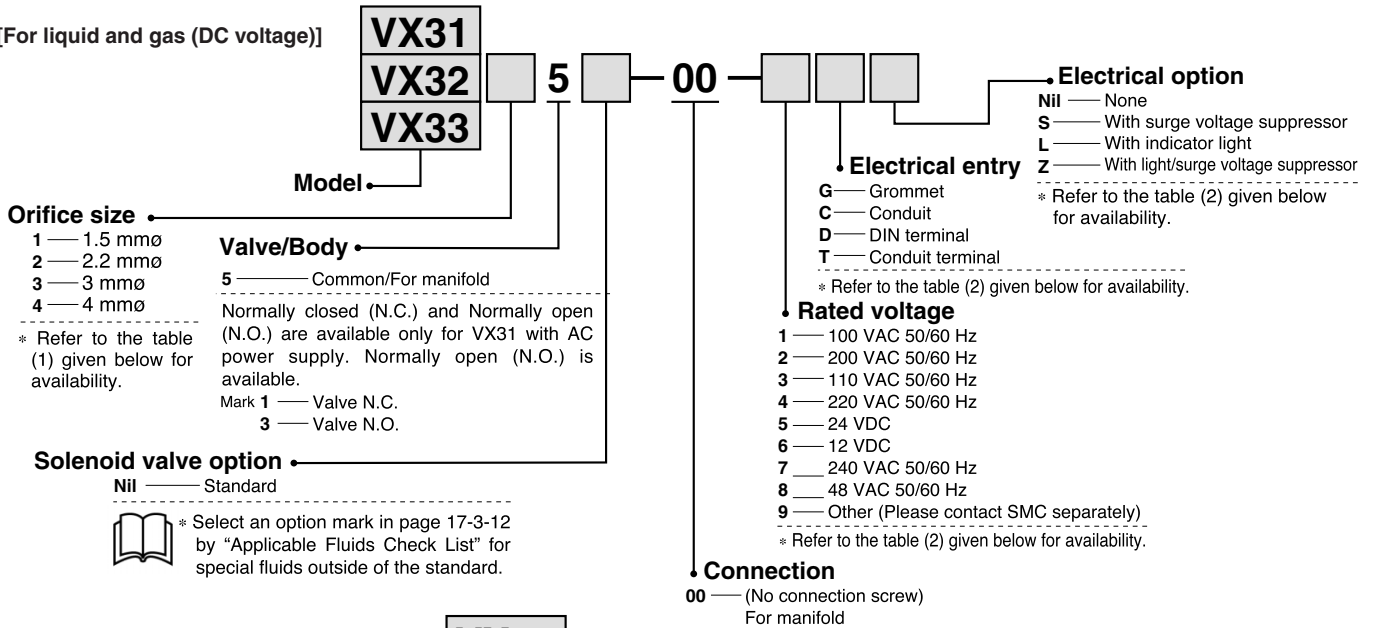
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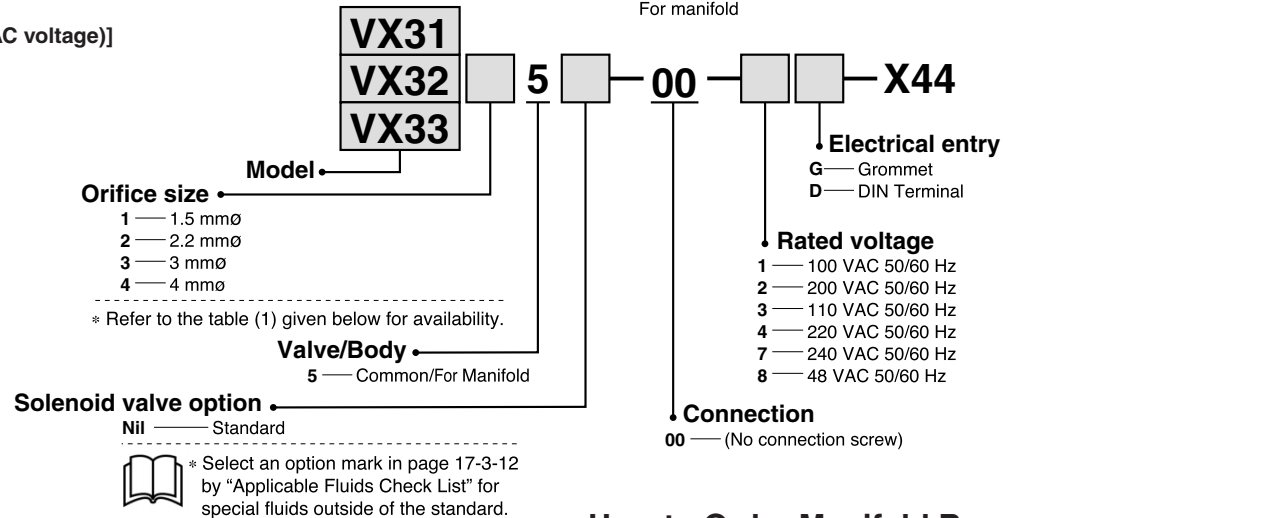
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## How to Order Solenoid Valves for Manifold

[For liquid and gas (DC voltage)]



[For gas (AC voltage)]



## How to Order Manifold Base

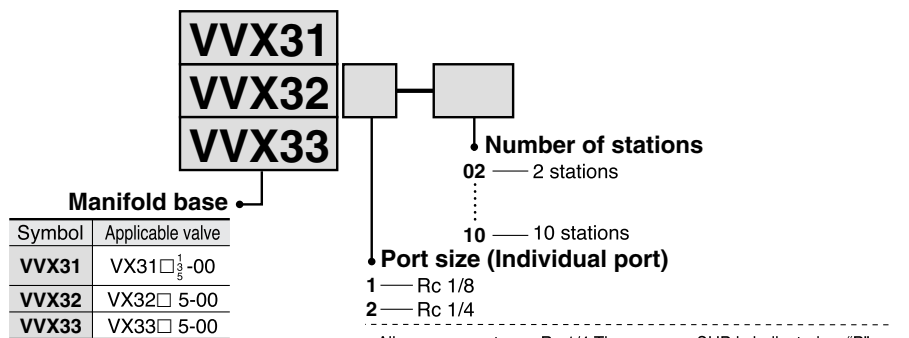
Table (1) Orifice Size

Solenoid valve model	Orifice size (No.)			
	1 (1.5 mm $\phi$ )	2 (2.2 mm $\phi$ )	3 (3 mm $\phi$ )	4 (4 mm $\phi$ )
VX31	●	●	●	—
VX32	—	●	●	●
VX33	—	●	●	●

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

Insulation type	Class B				Class H		
	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)	●	●	●	●	●	●
DC	7 (240 V)	●	●	—	●	—	—
	8 (48 V)	●	●	—	—	●	—
	5 (24 V)	●	●	●	—	—	—
	6 (12 V)	●	●	—	—	—	—

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



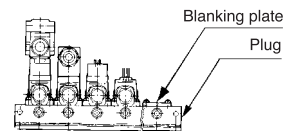
## How to Order Manifold

Write both the base part number and the solenoid valve to be mounted or blanking plate part number.

(Example) 7 stations of VX31 common SUP, individual port Rc 1/8.

(Base P/N) VVX311-07..... 1 pc.  
 (Solenoid valve P/N) VX3111-00-1G.....6 pcs.  
 (Blanking plate P/N) VX011-004..... 1 pc.

## Arrangement of solenoid



The standard arrangements of manifolds should be placed on an individual port on this side, each solenoid valve from the left side and a blank plate in the right side. The right side of the common port provides plug.

VC □

VDW

VQ

VX2

VX □

VX3

VXA

VN □

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/  
TIL

PA

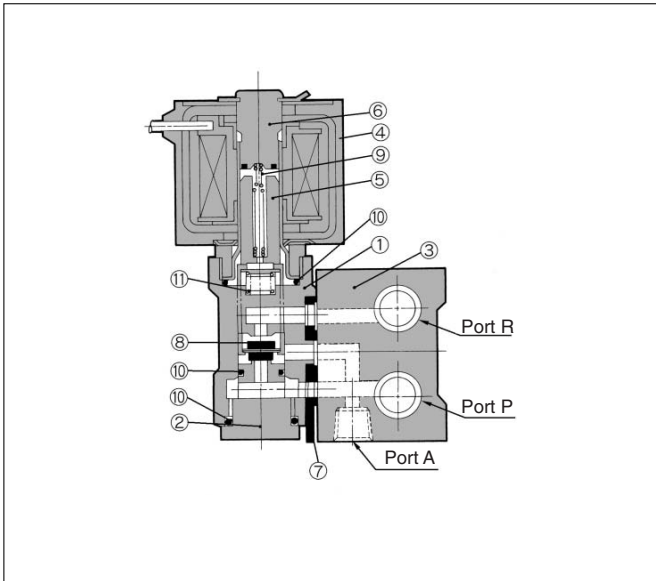
PAX

PB

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## Construction/Principal Parts Material



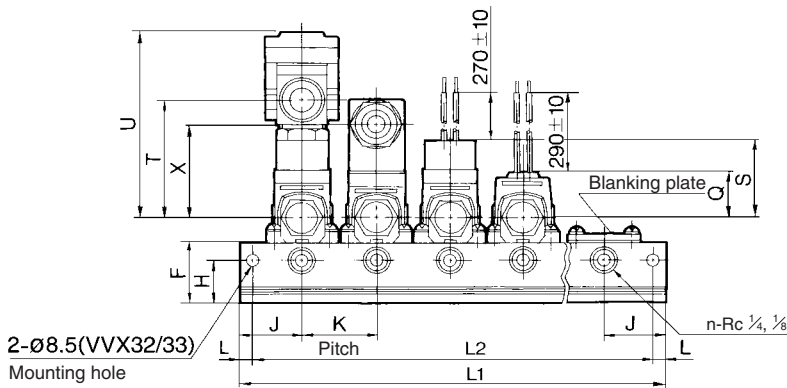
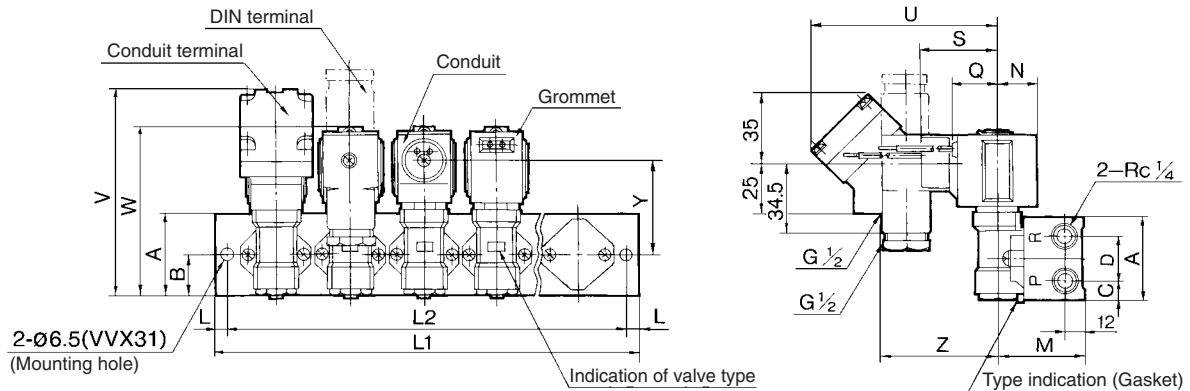
No.	Description	Material	
		Standard	Option
①	Manifold body	Aluminum	Brass
②	Retainer	Aluminum	Brass
③	Manifold base	Aluminum	—
④	Coil assembly	Class B molded	Class H molded
⑤	Armature	Stainless steel	—
⑥	Core assembly	Stainless steel, Copper	Stainless steel, Silver
⑦	Gasket	NBR	FKM/EPDM
⑧	Valve assembly	Polyacetal, NBR	Stainless steel FKM/EPDM
⑨	Return spring	Stainless steel	—
⑩	O-ring	NBR	FKM/EPDM
⑪	Support spring	Stainless steel	—

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## Dimensions



Model	Symbol	Stations									
		2	3	4	5	6	7	8	9	10	
VVX31	L <sub>1</sub>	96	132	168	204	240	276	312	348	384	
	L <sub>2</sub>	84	120	156	192	228	264	300	336	372	
VVX32	L <sub>1</sub>	126	172	218	264	310	356	402	448	494	
VVX33	L <sub>2</sub>	108	154	200	246	292	338	384	430	476	

Model	A	B	C	D	F	H	J	K	L	M	N	Q	S	T	U	V	W	X	Y	Z
VVX31	40	20	9	22	33	24	30	36	6	45.5	20	23	39	59	92	102	83	47	47	59
VVX32	44	22	10	24	34	25	40	46	9	50.5	23	25	41	62	95	114	99	48	58	62
VVX33	44	22	10	24	34	25	40	46	9	50.5	25.5	28	44	64	97	123	106	51	67	64

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