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# Pilot Operated 2 Port Solenoid Valve

## Series VXD21/22/23

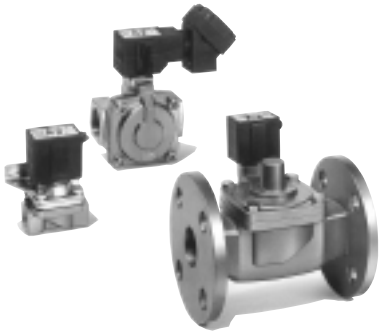
For air, gas, water, oil

Non-operation

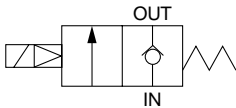
Air Blow

Air Tool

### Normally Closed Type (N.C.)



Symbol



### Models/Valve Specifications

Connection		Orifice ø mm	Flow coefficient		Model	Min. operating pressure differential MPa	Max. operating pressure differential MPa						Max. system pressure MPa	Weight* g
Thread	Flange		Cv	Effective area mm <sup>2</sup>			Water		Air		Oil			
1/4	—	10	1.9	34	VXD2130-02	0.02	0.7	0.5	0.9	0.7	0.5	0.4	1.5	420
3/8	—	10	2.4	43	VXD2130-03	0.02	0.7	0.5	0.9	0.7	0.5	0.4		420
	—	15	4.5	80	VXD2140-03	0.02	1.0	1.0	1.0	1.0	0.7	0.7		670
1/2	—	10	2.4	43	VXD2130-04	0.02	0.7	0.5	0.9	0.7	0.5	0.4		500
	—	15	5.5	100	VXD2140-04	0.02	1.0	1.0	1.0	1.0	0.7	0.7		670
3/4	—	20	9.5	170	VXD2150-06	0.02	1.0	1.0	1.0	1.0	0.7	0.7		1150
1	—	25	12.5	225	VXD2260-10	0.02	1.0	1.0	1.0	1.0	0.7	0.7		1650
—	32A	35	23	415	VXD2270-32	0.03	1.0	1.0	1.0	1.0	0.7	0.7		5400
—	40A	40	31	560	VXD2380-40	0.03	1.0	1.0	1.0	1.0	0.7	0.7		6800
—	50A	50	49	880	VXD2390-50	0.03	1.0	1.0	1.0	1.0	0.7	0.7		8400

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

### Solenoid specifications

Model	Power supply	Frequency Hz	Apparent power VA		Power consumption W (energized)	Temperature increase °C (rated voltage)
			Inrush	Energized		
VXD21	AC	50	20 (32)	11	4.5	45
		60	17 (28)	7	3.2	35
	DC	—	—	—	6	55
VXD22	AC	50	40	18	7.5	60
	DC	—	—	—	6	50
VXD23	AC	50	50	21	11	65
	DC	—	—	—	8	60

Note 1) Reset voltage is 20% or more of rated voltage for AC, and 2% or more of rated voltage for DC.

Note 2) Allowable voltage fluctuation is ±10% of rated value for both AC and DC.

Note 3) The values are for ambient temperature of 20°C ±5°C and rated voltage.

Note 4) For VXD2130, AC to DC or DC to AC coil exchange is not possible due to different armature configuration.

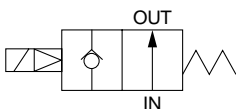
For VXD2130, 2230, 2330, AC to DC coil exchange is possible, but not DC to AC exchange. (DC will generate humming sound since it does not have a shading coil.)

Note 5) Values for apparent power inside ( ) are for VXD2130.

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



Symbol



### Models/Valve Specifications

Connection		Orifice ø mm	Flow coefficient		Model	Min. operating pressure differential MPa	Max. operating pressure differential MPa		Max. system pressure MPa	Weight* g
Thread	Flange		Cv	Effective area mm <sup>2</sup>			Water, Air	Oil		
3/8	—	15	4.5	80	VXD2142-03	0.02	0.7	0.6	1.5	690
1/2	—	15	5.5	100	VXD2142-04	0.02	0.7	0.6		690
3/4	—	20	9.5	170	VXD2152-06	0.02	0.7	0.6		1170
1	—	25	12.5	225	VXD2262-10	0.02	0.7	0.6		1690
—	32A	35	23	415	VXD2272-32	0.03	0.7	0.6		5400
—	40A	40	31	560	VXD2382-40	0.03	0.7	0.6		6800
—	50A	50	49	880	VXD2392-50	0.03	0.7	0.6		8400

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

### Solenoid Specifications

Model	Power supply	Frequency Hz	Apparent power VA		Power consumption W (energized)	Temperature increase °C (rated voltage)
			Inrush	Energized		
VXD21	AC	50	25	12	5	50
		60	20	8	3.5	35
VXD22	AC	50	45	20	8	55
		60	40	15	6.5	45
VXD23	AC	50	60	25	10.5	60
		60	50	20	9.5	50
	DC	—	—	—	11.5	55

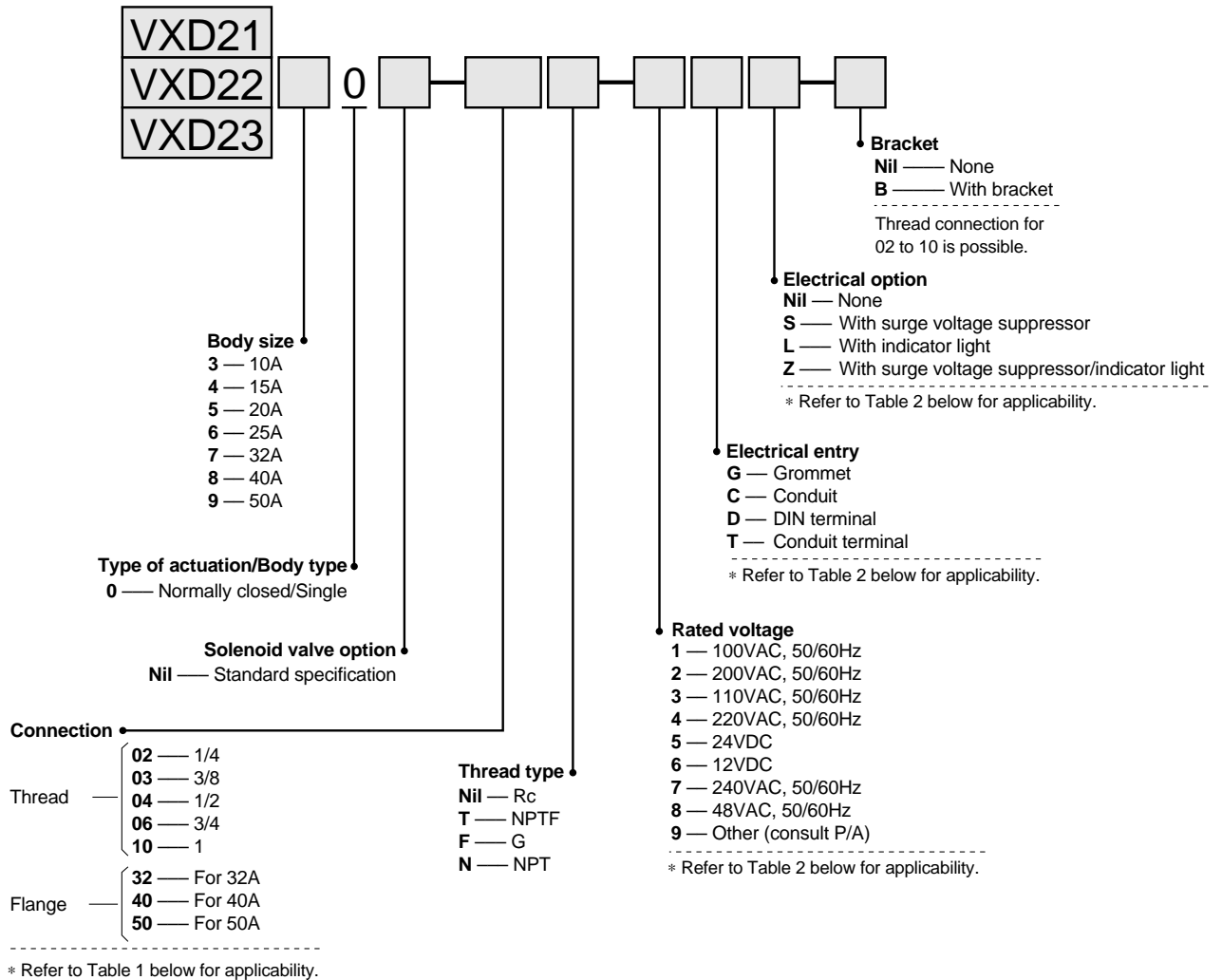
Note 1) The values are for ambient temperature of 20°C ±5°C and rated voltage.

Note 2) When in operation, AC to DC or DC to AC exchange is not possible due to different armature configuration.

Note 3) Reset voltage is 20% or more of rated voltage for AC, and 5% or more of rated voltage for DC.

Note 4) Allowable voltage fluctuation is ±10% of rated value for both AC and DC.

### How to Order (Normally Closed Type)



Directional Control Equipment

**Table 1 Connection size/Applicable models**

Connection	Size	Applicable model
Thread	1/4	VXD2130-02
	3/8	VXD2130-03, VXD2140-03
	1/2	VXD2130-04, VXD2140-04
	3/4	VXD2150-06
	1	VXD2260-10
Flange	32A	VXD2270-32
	40A	VXD2380-40
	50A	VXD2390-50

**How to order (example)**

For series VXD21, Rc 3/4, 200VAC, DIN terminal, with surge voltage suppressor (Model number) **VXD2150-06-2DS**

**Table 2 Rated voltage/Electrical entry/Electrical options**

Insulation classification	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 (100V)	●	●	●	●	●	
	2 (200V)	●	●	●	●	●	
	3 (110V)	●	●	●	●	●	
	4 (220V)	●	●	●	●	●	
	7 (240V)	●	●	—	●	●	
DC	5 (24V)	●	●	●	—	—	
	8 (48V)	●	●	—	—	—	
	6 (12V)	●	●	—	—	—	

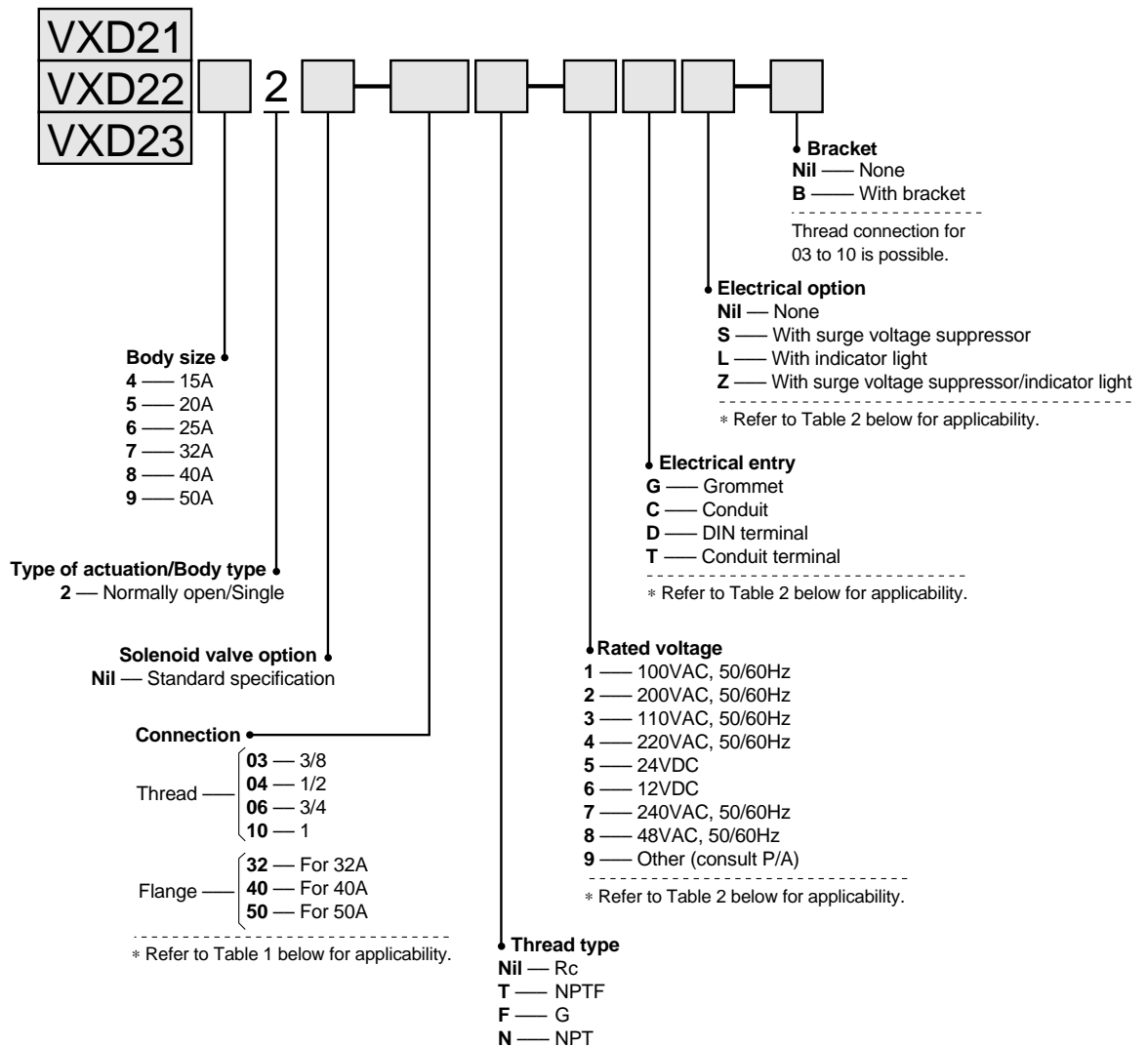
Note) Surge voltage suppressor is attached to the lead wire.

**Made to order specification**

**Splash Proof Specification** (Conforming to JIS-C-0920  
Conforming to IEC529IP-X4)

VXD Type — Bore size — Electrical specification — X36  
DIN terminal and class H coil are not available.

## How to Order (Normally Open Type)



**Table 1 Connection size/Applicable models**

Connection	Size	Applicable model
Thread	3/8	VXD2142-03
	1/2	VXD2142-04
	3/4	VXD2152-06
	1	VXD2262-10
Flange	32A	VXD2272-32
	40A	VXD2382-40
	50A	VXD2392-50

### How to order (example)

For series VXD21, Rc 1/2, 200VAC, DIN terminal, with surge voltage suppressor  
(Model number) **VXD2142-04-1TZ**

**Table 2 Rated voltage/Electrical entry/Electrical options**

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



Note) Surge voltage suppressor is attached to the lead wire.

### Made to order specification

**Splash Proof Specification** (Conforming to JIS-C-0920  
Conforming to IEC529IP-X4)

VXD Type — Bore size — Electrical specification — X36

DIN terminal and class H coil are not available.

# Direct Operated 2 Port Solenoid Valve for Air

## Series VCA

Air Blow

Air Tool

### How to Order Valves (Single Type)

**VC A 2 1 1 G 3 02**

**For air**

**Series**

2	Class 2
3	Class 3
4	Class 4

**Type of actuation**

**Fluid**

Nil	General air
A	Dry air

**Voltage**

1	100VAC
2	200VAC
3	110VAC
4	220VAC
5	24VDC
6	12VDC

\* Consult P/A regarding other voltages.

**Option**

Nil	None
F	Foot type bracket

\* When only brackets are required, refer to Table 2 below.

**Thread type (single type)**

Nil	Rc
F	G
N	NPT
T	NPTF

**Port size**

Symbol	Port size	Class 2	Class 3	Class 4
02	1/4 (8A)	○	○	—
03	3/8 (10A)	—	○	○
04	1/2 (15A)	—	—	○
06	3/4 (20A)	—	—	○

**Orifice size**

Symbol	Orifice size (mmø)	Class 2	Class 3	Class 4
3	3	○	—	—
4	4	—	○	—
5	5	○	—	○
7	7	—	○	○
10	10	—	—	○

\* Refer to the table below for orifice and port size combinations.

**Electrical entry**

G – Grommet	C – Conduit
T – With conduit terminal TL – With conduit terminal and light	D – DIN DL – DIN with light DO – DIN (without connector)

**Manual override**

Nil	None
B	Slotted locking type

**Table 1. Orifice and port size combinations**

Class	Port size	Orifice size (mmø)				
		3	4	5	7	10
2	1/4 ( 8A)	●	—	●	—	—
3	1/4 ( 8A)	—	●	—	●	—
	3/8 (10A)	—	●	—	●	—
4	3/8 (10A)	—	—	●	●	●
	1/2 (15A)	—	—	●	●	●
	3/4 (20A)	—	—	—	—	●

**Table 2. Bracket assembly part nos.**

Valve model	Bracket assembly part no.
VCA21	VCA20-12-1A
VCA31	VCA30-12-1A
VCA41	VCA40-12-1A

Directional Control Equipment

\* All types equipped with surge voltage suppressor.

## Standard Specifications



Valve specifications	Valve construction		Direct operated poppet
	Fluid		Air/Inert gas
	Withstand pressure MPa		2.0
	Body material		Al
	Seal material		HNBR
	Ambient temperature °C		-20 to 60
	Fluid temperature °C		-10 to 60 (with no freezing)
	Enclosure		Dust proof, Splash proof (equivalent to IP65)
	Environment		Location without corrosive or explosive gases
	Valve leakage cm <sup>3</sup> / min (ANR)		0.2 or less
	Mounting orientation		Free
	Vibration/Impact resistance m/s <sup>2</sup> (Note 2)		30/150 or less
Coil specifications	Rated voltage		24VDC, 12VDC, 100VAC, 110VAC, 200VAC, 220VAC (50/60Hz)
	Allowable voltage fluctuation		±10% of rated voltage
	Coil insulation type		Class B
	Power consumption	DC	VCA2: 6.5W, VCA3: 8W, VCA4: 11.5W
	Apparent power	AC (Note 1)	50Hz
60Hz			

Note 1) Since AC coil specifications include a rectifying device, there is no difference in apparent power for inrush and energized conditions.

Note 2) Vibration resistance ... Conditions when tested with one sweep of 10 to 300Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states

Impact resistance ..... Conditions when tested with a drop tester in the axial direction and at a right angle to the armature, one time each in energized and deenergized states

## Characteristic Specifications

Model	Class	Port size	Orifice size ø mm	Maximum operating pressure differential MPa	Effective area mm <sup>2</sup> (Cv factor)	Max. operating pressure MPa	Note) Weight kg
VCA (for air) 2 port solenoid valve	2	1/4 (8A)	3	1.0	6 (0.33)	1.0	0.21
			5	0.15	15 (0.83)		
	3	1/4 (8A) 3/8 (10A)	4	1.0	10 (0.55)	1.0	0.30
			7	0.15	27 (1.5)		
	4	3/8 (10A) 1/2 (15A) 3/4 (20A)	5	1.0	15 (0.83)	1.0	0.50
			7	0.3	27 (1.5)		
			10	0.15	38 (2.11)		

Note) Weight values are for the grommet type.

# 2 Port Solenoid Valve

# Series VQ20/30

For dry air, pilot operated

Air Blow

Air Tool

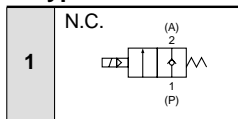
## How to Order Valves

VQ **2** **1** **A** **1** **1** **G** **C6**

### Series/Orifice size

Symbol	Series	Effective orifice
2	VQ20	ø3.4mm
3	VQ30	ø4.8mm

### Type of actuation



Note) Consult P/A for N.O. type.

### Body type

<b>A:</b> Single valve	
<b>M:</b> For manifold	

### Coil voltage

1	100VAC (50/60Hz)
2	200VAC
3	110VAC
5	24VDC
6	12VDC
9 Note)	Other, Special voltage

Note) Consult P/A for a special voltage.

### Option

<b>Nil:</b> None	
<b>F:</b> With bracket	
<b>L:</b> L type (VQ20 only)	

Note) Specify "LF" for L type with bracket.

### Port size

Symbol	Port size	VQ20	VQ30
<b>C6</b>	ø6 One-touch fitting	○	—
<b>C8</b>	ø8 One-touch fitting	○	—
<b>C10</b>	ø10 One-touch fitting	—	○
<b>C12</b>	ø12 One-touch fitting	—	○

### Manual override

<b>Nil</b>	None
<b>B</b> Note)	Slotted locking type

Note) Available only for normally closed DIN terminal in-line type.

### Indicator light/Surge voltage suppressor

<b>Nil</b>	None
<b>S</b>	With surge voltage suppressor
<b>Z</b>	With indicator light/surge voltage suppressor

Note 1) For a coil voltage of 100VAC, the unit will be with surge voltage suppressor.

Note 2) "YOZ" is not available.

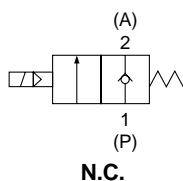
### Electrical entry

<b>G:</b> Grommet	
<b>Y:</b> DIN terminal	
<b>YO:</b> DIN terminal without connector	

## Standard Specifications



### Symbol



Series	VQ20		VQ30		
	Valve construction	Pilot operated 2 port poppet type			
Fluid	Air, Inert gas				
Minimum operating pressure	0.01MPa				
Maximum operating pressure	0.6MPa		0.5MPa		
Effective area (Cv factor/Effective orifice)	C6	7.2mm <sup>2</sup> (Cv0.4/ø3)	C10	14.4mm <sup>2</sup> (Cv0.8/ø4.3)	
	C8	9mm <sup>2</sup> (Cv0.5/ø3.4)	C12	17.5mm <sup>2</sup> (Cv1/ø4.8)	
Body orifice size	ø6		ø13.8		
Response time <sup>Note 1)</sup>	5ms or less		20ms or less		
Maximum operating frequency	100cps		30cps		
Ambient and fluid temperature	-10 to 50°C <sup>Note 2)</sup>				
Lubrication	Not required				
Manual override	Slotted locking type <sup>Note 3)</sup>				
Impact resistance/Vibration resistance	150/30m/s <sup>2</sup> <sup>Note 4)</sup>				
Enclosure	Dust proof <sup>Note 5)</sup>				
Mounting orientation	Free				
Weight	46g		80g		
Electrical specifications	Rated coil voltage		12VDC, 24VDC, 100VAC, 110VAC, 200VAC		
	Allowable voltage fluctuation		±10% of rated voltage		
	Coil insulation		Equivalent to class B		
	Power consumption (current value)	24VDC	2.5W DC (104mA)		
		12VDC	2.5W DC (208mA)		
100VAC		Inrush: 2VA (20mA), Energized: 2VA (20mA)			
Electrical entry		Grommet, DIN terminal			



Note 1) Based on JISB8375-1981 (Values for supply pressure of 0.5MPa, without indicator light/surge voltage suppressor)

Note 2) Use dry air without condensation when operating at low temperatures.

Note 3) Manual override is available for DIN terminal type only.

Note 4) Vibration resistance: No malfunction resulted in a one sweep test between 8.3 and 2000Hz. Test was performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)

Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)

Note 5) DIN terminal type is dust and splash proof (IP65) compatible.

# Pilot Operated Zero Differential Pressure Operated 2 Port Solenoid Valve

For air, gas, vacuum, water, oil

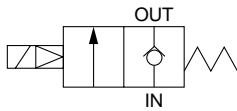
## Series VXZ

Cooling Water

### Normally Closed Type (N.C.)



Symbol



### Models/Valve specifications

Port size	Orifice ø mm	Flow coefficient		Model	Min. operating pressure differential MPa	Max. operating pressure differential MPa						Max. system pressure MPa	Weight* g
		Cv	Effective area mm <sup>2</sup>			Water		Air		Oil			
						AC	DC	AC	DC	AC	DC		
1/4	10	1.9	34	VXZ2230-02	0	1.0	0.7	1.0	0.7	0.7	0.7	1.5	550
3/8	10	2.4	43	VXZ2230-03		1.0	0.7	1.0	0.7	0.7	0.7		550
1/2	15	5.3	95	VXZ2240-04		1.0	0.7	1.0	0.7	0.7	0.7		760
3/4	20	9.2	165	VXZ2350-06		1.0	1.0	1.0	1.0	0.7	0.7		1,300
1	25	12	215	VXZ2360-10		1.0	1.0	1.0	1.0	0.7	0.7		1,480

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

### Solenoid specifications

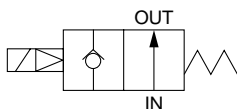
Model	Power supply	Frequency Hz	Apparent power VA		Power consumption W (energized)	Temperature increase °C (rated voltage)
			Inrush	Energized		
VXZ22	AC	50	60 (53)	18	7.5	60
		60	51 (44)	12	6	50
VXZ23	DC	—	—	—	8	60
		50	80	21	11	65
	AC	60	67	17	9.5	60
		—	—	—	11.5	65

Note 1) Reset voltage is 20% or more of rated voltage for AC, and 2% or more of rated voltage for DC.  
 Note 2) Allowable voltage fluctuation is ±10% of rated value for both AC and DC.  
 Note 3) The values are for ambient temperature of 20°C ±5°C and rated voltage.  
 Note 4) **AC to DC or DC to AC coil exchange is not possible due to different armature configuration.**  
 Note 5) Values for apparent power inside ( ) are for VXZ2230.

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



Symbol



### Models/Valve specifications

Port size	Orifice ø mm	Flow coefficient		Model	Min. operating pressure differential MPa	Max. operating pressure differential MPa						Max. system pressure MPa	Weight* g
		Cv	Effective area mm <sup>2</sup>			Water		Air		Oil			
						AC	DC	AC	DC	AC	DC		
1/4	10	1.9	34	VXZ2232-02	0	0.7	0.6	0.7	0.6	0.7	0.6	1.5	600
3/8	10	2.4	43	VXZ2232-03		0.7	0.6	0.7	0.6	0.7	0.6		600
1/2	15	5.3	95	VXZ2242-04		0.7	0.6	0.7	0.6	0.7	0.6		850
3/4	20	9.2	165	VXZ2352-06		0.7	0.6	0.7	0.6	0.7	0.6		1,370
1	25	12	215	VXZ2362-10		0.7	0.6	0.7	0.6	0.7	0.6		1,550

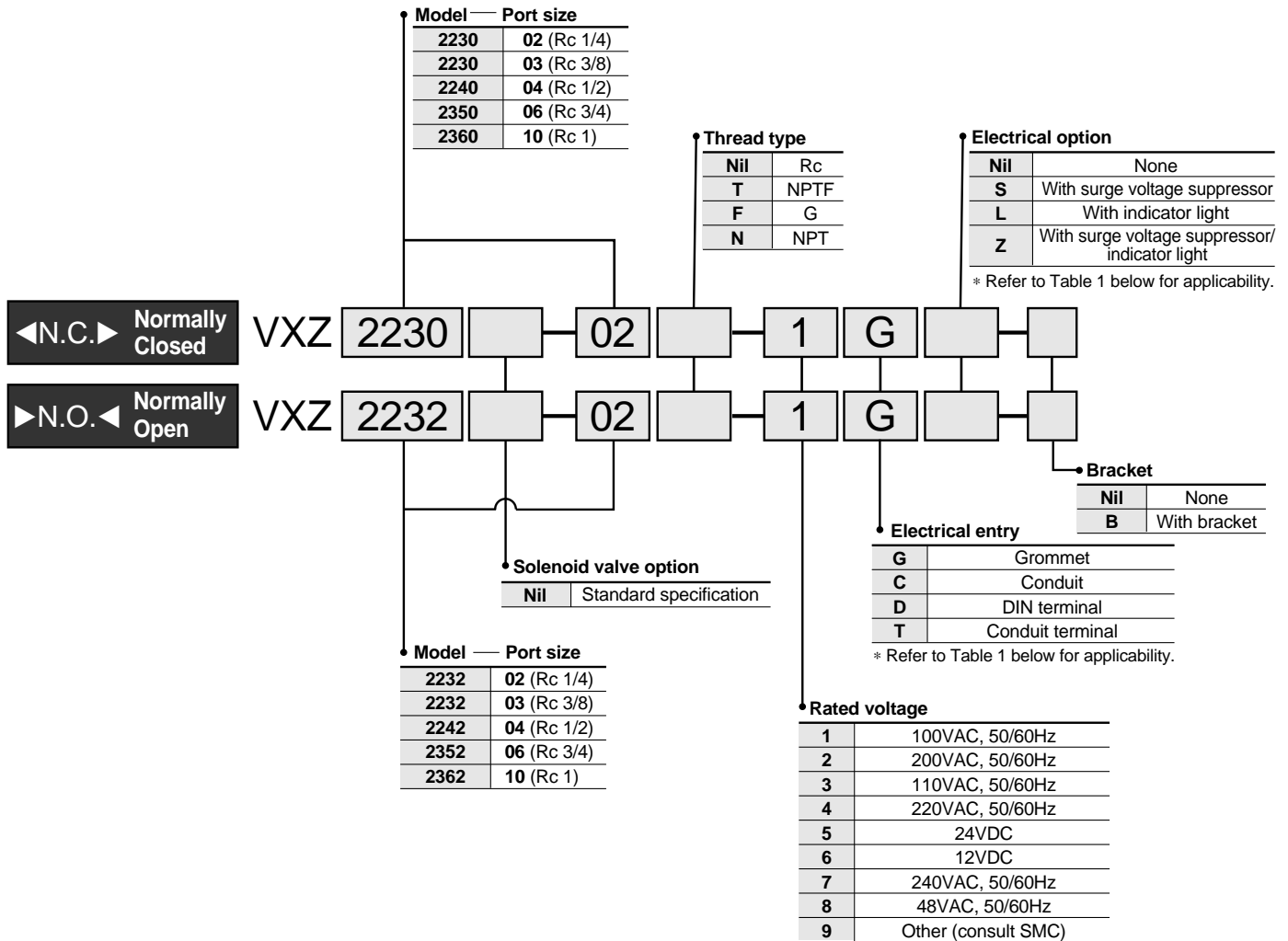
\* Weight for grommet type. Add 10g for conduit type, 30g for DIN terminal type, and 60g for terminal type.

### Solenoid specifications

Model	Power supply	Frequency Hz	Apparent power VA		Power consumption W (energized)	Temperature increase °C (rated voltage)
			Inrush	Energized		
VXZ22	AC	50	66 (60)	20	8	55
		60	57 (51)	15	6.5	45
VXZ23	DC	—	—	—	8	50
		50	93	25	11	60
	AC	60	79	20	9.5	50
		—	—	—	11.5	55

Note 1) Reset voltage is 20% or more of rated voltage for AC, and 5% or more of rated voltage for DC.  
 Note 2) Allowable voltage fluctuation is ±10% of rated value for both AC and DC.  
 Note 3) The values are for ambient temperature of 20°C ±5°C and rated voltage.  
 Note 4) **AC to DC or DC to AC coil exchange is not possible due to different armature configuration.**

## How to Order



### Fluid

Standard specifications	Option
Air (general, dry)	Air (dry)..... (T)
Vacuum (up to 1Torr)	High temperature water..... (D, E)
Turbine oil, Carbon dioxide (CO <sub>2</sub> ), Gaseous nitrogen (N <sub>2</sub> )	Argon, Helium..... (F)
Freon 11, 113, 114	∴ (Other)

### Fluid and ambient temperature

Temperature condition	Power supply	Fluid temperature °C					Ambient temperature °C
		Water (standard)	Air (standard)	Oil (standard)	High <sup>Note 3)</sup> temp. water (D.E.N.P.)	High <sup>Note 3)</sup> temp. oil (D.N.)	
Maximum	AC	60	80	60	99	100	60
	DC	40	60	40	—	—	40
Minimum	AC, DC	1	-10 <sup>Note 2)</sup>	-5 <sup>Note 3)</sup>	—	—	-10

Note 1) D.E.N.P., etc., inside ( ) indicate option codes.

Note 2) Dew point is -10°C or below.

Note 3) 50cSt or less

Table 1

Rated voltage/Electrical entry/Electrical options

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

Note) Surge voltage suppressor is attached to the lead wire.

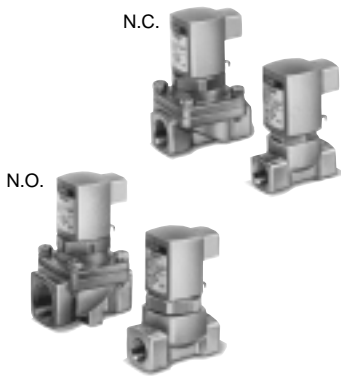
# Direct Air Operated 2 Port Valve

For air, gas, vacuum, water, oil

# Series VXA21/22

Air Purge

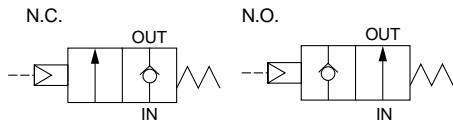
## Normally Closed (N.C.)/Normally Open (N.O.)



## Models/Valve specifications

Port size Rc	Orifice ø mm	Flow coefficient		Model	Max. operating pressure differential MPa	Max. system pressure MPa	Proof pressure MPa	Weight g
		Cv	Effective area mm <sup>2</sup>					
1/8 (6A)	3	0.33	6	VXA212 <sup>2</sup> / <sub>0</sub>	1.0	1.0	1.5	170
	4.5	0.61	11	VXA213 <sup>2</sup> / <sub>0</sub>	0.5			
1/4 (8A)	3	0.33	6	VXA212 <sup>2</sup> / <sub>0</sub>	1.0			
	4.5	0.61	11	VXA213 <sup>2</sup> / <sub>0</sub>	0.5			
	6	1.05	19	VXA224 <sup>2</sup> / <sub>0</sub>	1.0			
	8	1.7	31	VXA225 <sup>2</sup> / <sub>0</sub>	0.6			
	10	1.9	34	VXA226 <sup>2</sup> / <sub>0</sub>	0.1			
3/8 (10A)	4.5	0.61	11	VXA223 <sup>2</sup> / <sub>0</sub>	1.0	0.4	1.5	340
	6	1.05	19	VXA224 <sup>2</sup> / <sub>0</sub>	0.6			
	8	1.7	31	VXA225 <sup>2</sup> / <sub>0</sub>	0.2			
1/2 (15A)	10	2.4	43	VXA226 <sup>2</sup> / <sub>0</sub>	0.1	1.0	1.5	250
	10	2.4	43	VXA226 <sup>2</sup> / <sub>0</sub>	0.1			
				VXA226 <sup>2</sup> / <sub>0</sub>	0.1			420

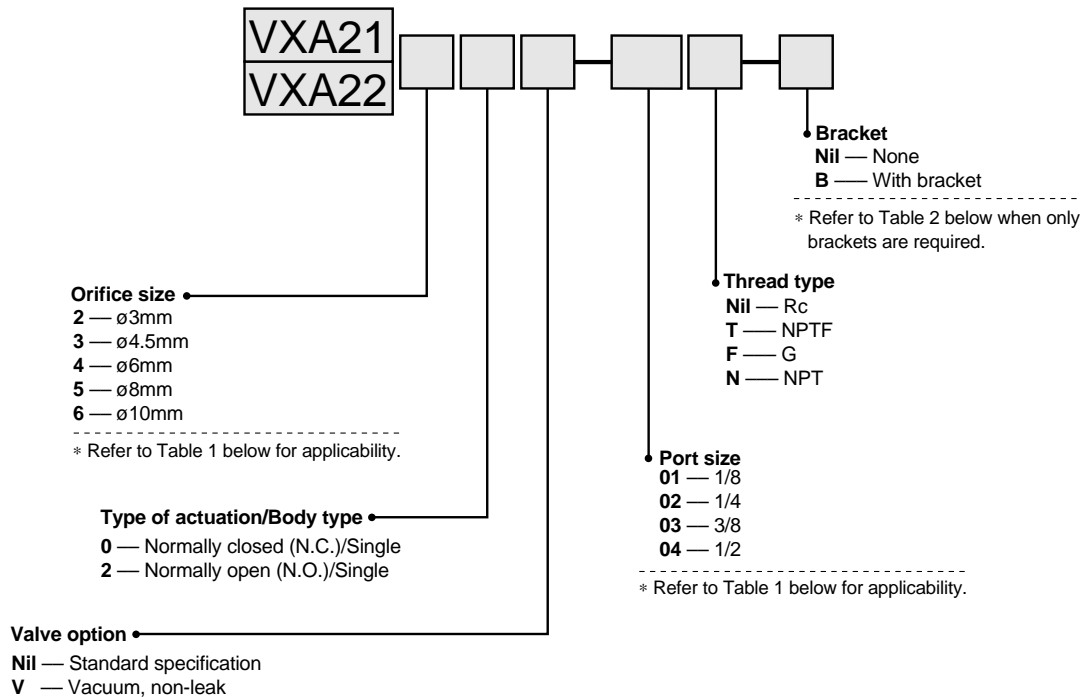
## Symbols



## Pilot pressure

Model	Pressure MPa
VXA21□□	0.25 to 0.7
VXA22□□	

## How to Order



**Table 1 Model/Port size/Orifice**

Model		Orifice (symbol)				
VXA21	VXA22	2 (ø3mm)	3 (ø4.5mm)	4 (ø6mm)	5 (ø8mm)	6 (ø10mm)
01 (1/8)	—	●	—	—	—	—
02 (1/4)	—	●	●	—	—	—
—	02 (1/4)	—	●	●	●	●
—	03 (3/8)	—	●	●	●	●
—	04 (1/2)	—	—	—	—	●

**Table 2 Bracket part numbers**

Model	Part no.
VXA212□ VXA213□	VX070-020
VXA223□ VXA224□	VX070-022
VXA225□ VXA226□	VX070-029

## Ordering example:

For series VXA21, orifice of ø4.5mm, normally open, Rc1/4  
(Model number) **VXA2130-02**

# Rubber Seal Pilot Operated Poppet Type 3 Port Solenoid Valve

## Series VP300/500/700

Air Purge

Paint Stirring

### High flow capacity:

Cv1.0 (VP300), Cv2.3 (VP500), Cv4.0 (VP700)

### Low power consumption: 1.8W(DC)

Can be used as a selector valve or divider valve


Can be changed from N.C. to N.O.

### Vacuum operation is possible.

Up to -101.2kPa (1Torr)


### Models

Series		Series VP300		Series VP500		Series VP700	
Model	Body ported	VP342		VP542		VP742	
	Base mounted	VP344		VP544		VP744	
Port size Rc		1/8	1/4	1/4	3/8	3/8	1/2
Effective area mm <sup>2</sup> (Cv factor)		16.2 (0.9)	18 (1.0)	36 (2)	41.4 (2.3)	62 (3.4)	72 (4)
Weight kg (Body ported/Base mounted) <sup>Note)</sup>		0.19/0.25		0.33/0.43		0.64/0.75	

 Note) Values for grommet type. Values for body ported type do not include brackets.

### Specifications

Fluid	Air		
Type of actuation	N.C. or N.O. (changeable)		
Pilot type	Internal pilot type	External pilot type	
Operating pressure range MPa	0.2 to 0.8	Supply pressure	-101.2kPa to 0.8
		External pilot pressure	Equivalent to supply pressure, Minimum 0.2
Ambient and fluid temperature °C	Maximum 50		
Response time ms <sup>Note 1)</sup>	30 or less (at 0.5MPa)		
Maximum operating frequency Hz	5		
Lubrication	Not required (If lubricated, use turbine oil class 1, ISOVG32)		
Manual override	Non-locking push type		
	Slotted locking type*, Locking type*		
Mounting orientation	Free		
Impact resistance/Vibration resistance m/s <sup>2</sup> <sup>Note 2)</sup>	300/50		

 Note 1) Based on dynamic performance test JIS B8374-1981 (at coil temperature of 20°C, rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)


Vibration resistance: No malfunction resulted in a one sweep test between 8.3 and 2000Hz. Test was performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)



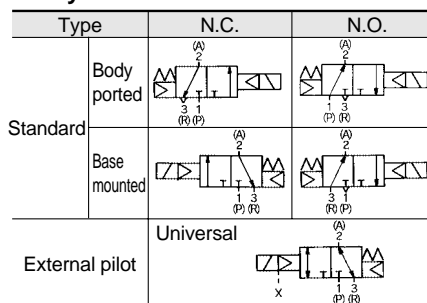
### Options

Description	Series	Part no.
Bracket (screws included)	VP342	VP300-27-1A
	VP542	VP500-27-1A
	VP742	VP700-27-1A

Electrical entry	Grommet (G), Grommet terminal (E), Conduit terminal (T), DIN terminal (D)		
Rated coil voltage V	AC (50/60Hz)	100, 120, 12*, 24*, 48*, 110 to 120*, 220*, 240* <sup>Note 1)</sup>	
	DC	24, 6*, 12*, 48*, 100*, 110* <sup>Note 1)</sup>	
Allowable voltage fluctuation	-15% to +10% of rated voltage		
Apparent power VA <sup>Note 2)</sup>	AC	Inrush	5.6 (50Hz), 5.0 (60Hz)
		Energized	3.4 (50Hz), 2.3 (60Hz)
Power consumption W <sup>Note 2)</sup>	DC	1.8 or 2 (with indicator light)	

 Note 1) Values indicated by an asterisk (\*) are optional.  
Note 2) At rated voltage

### JIS symbols



### External Pilot Type (Optional)

Use the external pilot type for the following cases.

- Vacuum or low pressure of 0.2MPa or less
- Consult SMC for holding vacuum.
- When P port is largely restricted
- When using A port for atmospheric release while blowing, etc.
- When using on a manifold, the external pilot piping can be centralized on the manifold

**How to Order**

**VP 3 4 2 1 E B 01 A**

**VP solenoid valve**

**Body size**

3	1/4 standard
5	3/8 standard
7	1/2 standard

**Type of actuation**

4	N.C./N.O. common (pilot type)
---	-------------------------------

**Body type**

2	Body ported
4	Base mounted

**Valve option**

Nil	Standard (Internal pilot type)
R*	External pilot type

\* Optional

**Rated voltage**

1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110 to 120VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240VAC, 50/60Hz
9*	Other

\* Optional

**Option**

F	With bracket
---	--------------

(For VP342, 542, 742 only)

**Flow passage**

A	Normally closed
B	Normally open

**Port size**

Symbol	Port size Rc	VP342 VP344	VP542 VP544	VP742 VP744
Nil*	Without sub-plate	●	●	●
01	1/8	●		
02	1/4	●	●	
03	3/8		●	●
04	1/2			●

\* For VP344, VP544, VP744 only

**Manual override**

Nil	Push type
B*	Slotted locking type
C*	Locking type

\* Optional

**Indicator light/Surge voltage suppressor**

Nil	None
Z*	With indicator light/surge voltage suppressor (for "E", "T", "D" only)
S*	With surge voltage suppressor (for "G" only)

\* Optional

**Electrical entry**

G	Grommet
E	Grommet terminal
T	Conduit terminal
D	DIN terminal

Directional Control  
Equipment

**How to Order Pilot Valve Assemblies**

**SF4 - 1 E Z B - 50**

**Rated voltage**

1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110 to 120VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240VAC, 50/60Hz
9*	Other

\* Optional

**Manual override**

Nil	Push type
B*	Slotted locking type
C*	Locking type

\* Optional

**Indicator light/Surge voltage suppressor**

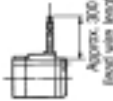
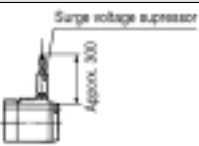
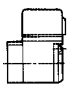
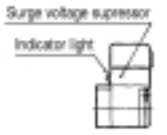
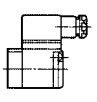
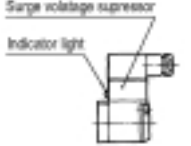
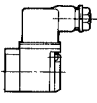
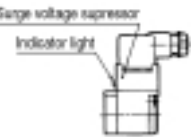
Nil	None
Z*	With indicator light/surge voltage suppressor (for "E", "T", "D" only)
S*	With surge voltage suppressor (for "G" only)

\* Optional

**Electrical entry**

G	Grommet
E	Grommet terminal
T	Conduit terminal
D	DIN terminal

**Pilot valve assemblies/Electrical entry**

Symbol	Electrical entry	Symbol	Electrical entry
G		GS	
E		EZ	
T		TZ	
D		DZ	

# Rubber Seal Pilot Operated Poppet Type 3 Port Solenoid Valve

## Series VG342

Non-operation

Air Purge

**Light weight: 1.1kg**  
**Valve capacity: Rc 1/Cv13.1**

**Low power consumption:**  
4.8W DC (standard)  
2W DC (low power consumption type)

**No lubrication required**

**Can be used in vacuum or with low pressure**

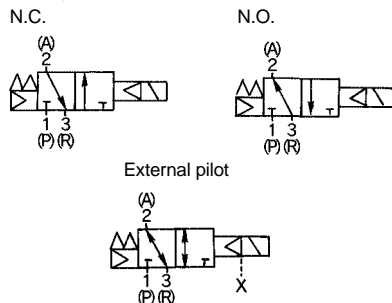
External pilot type — Vacuum: up to 101.2kPa  
Low pressure: 0 to 0.2MPa

**Changeable actuation: N.C., N.O., external pilot**

**Can be used as a selector or divider valve (external pilot)**



### JIS symbols



### Specifications

Type of actuation	N.C., N.O. common	
Operation	Internal pilot type	External pilot type
Operating pressure range	0.2 to 0.9MPa	-101.2kPa to 0.9MPa
External pilot pressure	—	Equivalent to operating pressure, Minimum 0.2MPa
Response time <sup>Note 1)</sup>	30ms or less (at 0.5MPa)	
Maximum operating frequency	5 cycles/sec (min. operating frequency of 1 cycle/30 days based on JIS B8374-1981)	
Ambient and fluid temperature	Maximum 50°C	
Lubrication	Not required (If lubricated, use turbine oil class 1, ISO VG32.)	
Manual override	Push type (non-locking type)	
Mounting orientation	Free	
Impact resistance/Vibration resistance $m/s^2$ <sup>Note 2)</sup>	150/50	
Weight	1.1kg <sup>Note 3)</sup>	

Note 1) Based on dynamic performance test JIS B8374-1981 (at coil temperature of 20°C, rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)

Vibration resistance: No malfunction resulted in a one sweep test between 45 and 1000Hz. Test was performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)

Note 3) For grommet type

### Effective area/Cv factor

Port size		Rc 1/2	Rc 3/4	Rc 1
Effective area $mm^2$	P → A	140	185	210
	A → R	145	195	235
Cv factor	P → A	7.8	10.3	11.7
	A → R	8.1	10.8	13.1

### Pilot valve assembly specifications

Electrical entry	Grommet (G), Grommet terminal (E) Conduit terminal (T), DIN terminal (D)		
Lead wire color	100VAC: Blue, 200VAC: Red, 24VDC: Red/Black		
Enclosure	Dust proof		
Rated coil voltage V	AC (50/60Hz)	100, 200, 24*, 48*, 110*, 220*, 240* <sup>Note 1)</sup>	
	DC	24, 6*, 12*, 48*, 100* <sup>Note 1)</sup>	
Allowable voltage fluctuation	-15% to +10% of rated voltage		
Apparent power VA (Hz) <sup>Note 2)</sup>	AC	Inrush	12.7 (50), 10.7 (60)
		Energized	7.6 (50), 5.4 (60)
Power consumption <sup>Note 2)</sup>	DC	4.8W or 5W (with indicator light)	

Note 1) Values indicated by an asterisk (\*) are optional.

Note 2) At rated voltage

### Option specification

**Low power consumption type: VG342□-□□□-□□□-Y**

Consider this specification when an electronic control, etc., requires low power consumption.

The following specification is different from the standard.

Power consumption	2W DC or 2.2W (with indicator light)*
-------------------	---------------------------------------

\* 100VDC is 2.4W, with indicator light 2.6W.

**Continuous energization type: VG342□-□□□-□□□-E**

Consider this specification when operating valves in a continuously energized state for a long period of time.

The following specification is different from the standard.

Apparent power VA (Hz) <sup>Note)</sup>	AC	Inrush	7.9 (50), 6.2 (60)
		Energized	5.8 (50), 3.5 (60)
Power consumption <sup>Note)</sup>	DC	2W or 2.2W (with indicator light)	

Note) At rated voltage

### How to Order

VG342 1 G 04 A

**Valve type**

Nil	Internal pilot
R	External pilot

**Rated voltage**

1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240VAC, 50/60Hz
9*	Other

\* Optional

**Electrical entry**

G	Grommet
D	DIN terminal
E	Grommet terminal
T	Conduit terminal

**Pilot valve option**

Nil	Standard
Y*	Low power consumption
E*	Continuous energization

\* Optional

**Flow passage**

Nil	External pilot
A	N.C. (Normally closed)
B	N.O. (Normally open)

**Thread type**

Nil	Rc
F*	G
N*	NPT
T*	NPTF

\* Optional

**Port size**

04	Rc 1/2
06	Rc 3/4
10	Rc 1

**Indicator light/Surge voltage suppressor**

Nil	None
S	With surge voltage suppressor (for grommet type only)
Z	With indicator light/surge voltage suppressor (except grommet type)

### How to Order Pilot Valve Assemblies

VO307 1 G X84

**Valve option**

Nil	Standard
Y*	Low power consumption
E*	Continuous energization

\* Optional

**Rated voltage**

1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240V, 50/60Hz
9*	Other

\* Optional

**Indicator light/Surge voltage suppressor**

Nil	None
S	With surge voltage suppressor (for grommet type only)
Z	With indicator light/surge voltage suppressor (except grommet type)

**Electrical entry**

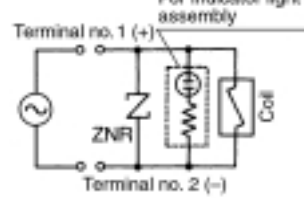
G	Grommet
D	DIN terminal
E	Grommet terminal
T	Conduit terminal

**Pilot valve assembly for VG342**

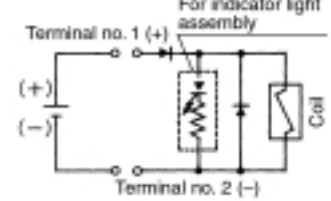
### ⚠ Caution

#### Indicator Light/ Surge Voltage Suppressor

100VAC/DC or more



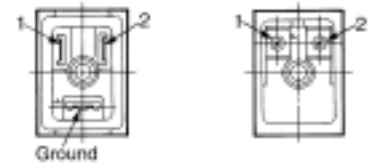
48VDC or less



#### Electrical Connection

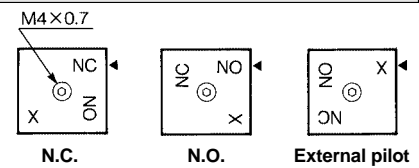
The internal connections for DIN terminal and terminal (with indicator light/surge voltage suppressor circuit) are as shown below. Connect each to the power supply side.

With DIN terminal block      With terminal block



Terminal no.	1	2
DIN terminal	+	-
Terminal	+	-

#### Changing the Flow Passage



When changing the flow passage, confirm that pressure has been removed from the valve.

Loosen the hexagon socket head cap screw M4 x 0.7 in the switching plate and match the mark on the adapter plate with a character symbol on the switching plate. Perform piping as shown in the table below.

#### Piping

Flow passage \ Port	P	A	R
<b>N.C.</b>	Primary	Secondary	Exhaust side (Plug for 2 port valve)
<b>N.O.</b>	Exhaust side (Plug for 2 port valve)	Secondary	Primary
<b>External</b>	Universal porting (Piping of primary side is possible anywhere.)		

Note 1) When operating with internal pilot, confirm that the X port is plugged. If it is not plugged, use an R 1/8 plug.

Note 2) When operating with external pilot, pressurize from the X port.

# Rubber Seal Large 3 Port Solenoid Valve

## Series VP3145/3165/3185

Non-operation

Air Purge

### Large flow capacity, small exhaust resistance

(Refer to Cv factor values in "Models" table.)

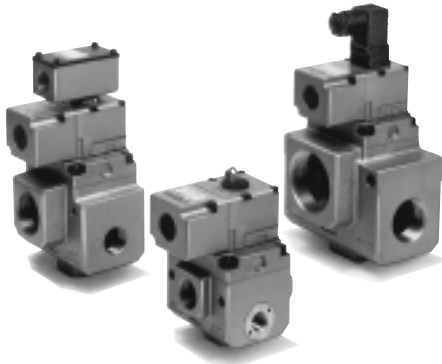
### Easy conversion to N.C. or N.O.

The switching plate enables conversion to N.C. or N.O. without changing ports.

### Can be used in vacuum or with low pressure

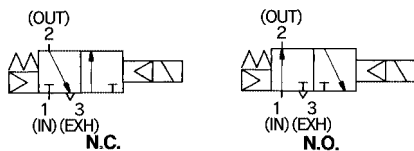
External pilot type — Vacuum: up to 101.2kPa  
Low pressure: 0 to 0.2MPa

### Unrestricted mounting orientation

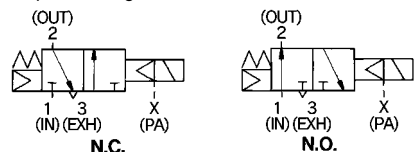


### JIS symbols

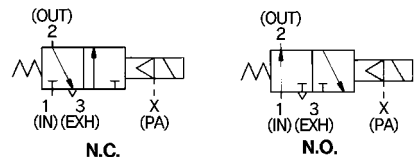
Internal pilot type  
<Standard>



External pilot type  
<For pressurizing>



<For vacuum>



Note) In the case of the N.O. specification, it operates as a normally open valve only when the proper pressure is applied to the pilot chamber.

### Models

Model		VP3145 VPA3145			VP3165 VPA3165			VP3185 VPA3185		
Port size Rc	IN, OUT	3/8	1/2	3/4	3/4	1	1 1/4	1 1/4	1 1/2	2
	EXT	3/4			1 1/4			2		
Cv factor	IN → OUT	5.0	5.6	6.1	12.8	15.6	17.2	31.7	36.1	36.1
	OUT → EXT	7.2	8.9	11.7	15.6	17.2	18.3	36.1	37.2	37.2
Effective area mm <sup>2</sup>	IN → OUT	90	100	110	230	280	310	570	650	650
	OUT → EXT	130	160	210	280	310	330	650	670	670
Weight kg <sup>Note)</sup>		1.5			2.0			2.8		

Note) For grommet type.  
Add 0.2kg for conduit terminal type.  
Subtract 0.5kg for air operated type.

### Specifications

Fluid	Air					
Type of actuation	N.C. or N.O. (changeable)					
Pilot type	Internal pilot type		External pilot type			
	General		Vacuum/ Low pressure		General	
Operating pressure range MPa	Main pressure	0.2 to 0.8		-101.2kPa to 0.2		0.2 to 0.8
	Pilot pressure			0.2 to 0.3		See the graph on next page.
Ambient and fluid temperature °C		0 (no freezing) to 60				
Response time ms (at 0.5MPa) <sup>Note 1)</sup>	ON	AC	30 or less	OFF	AC	30 or less
		DC	40 or less		DC	30 or less
Maximum operating frequency Hz	3					
Lubrication <sup>Note 2)</sup>	Required (equivalent to turbine oil class 1, ISO VG32)					
Manual override	Non-locking type					
Mounting orientation	Free					
Impact resistance/Vibration resistance m/s <sup>2</sup> <sup>Note 3)</sup>	150/50					

Note 1) Based on dynamic performance test JIS B8374-1981 (at coil temperature of 20°C, rated voltage, without surge voltage suppressor)

Note 2) Since this solenoid valve is a lubricating type, use a lubricant equivalent to turbine oil class 1 (ISO VG32).

Note 3) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)

Vibration resistance: No malfunction resulted in a one sweep test between 45 and 1000Hz. Test was performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states. (The value is for the initial stage.)

### Solenoid specifications

Electrical entry	Standard	Grommet (G), Conduit terminal (T), DIN terminal (D)
	Options	Conduit terminal with indicator light (TL), Conduit terminal with surge voltage suppressor (TS), Conduit terminal with indicator light/surge voltage suppressor (TZ), DIN terminal with indicator light (DL), DIN terminal with surge voltage suppressor (DS), DIN terminal with indicator light/surge voltage suppressor (DZ)
Rated coil voltage	AC (50/60 Hz)	100V, 200V, 110V*, 220V*, 240V* <sup>Note 1)</sup>
	DC	12V*, 24V, 48V*, 100V* <sup>Note 1)</sup>
Allowable voltage fluctuation	-15% to +10% of rated voltage	
Apparent power <sup>Note 2)</sup>	AC	Inrush 73VA (50Hz), 58VA (60Hz)
	Energized	28VA (50Hz), 17VA (60Hz)
Power consumption <sup>Note 2)</sup>	DC	12W

Note 1) Values indicated by an asterisk (\*) are optional.

Note 2) At rated voltage

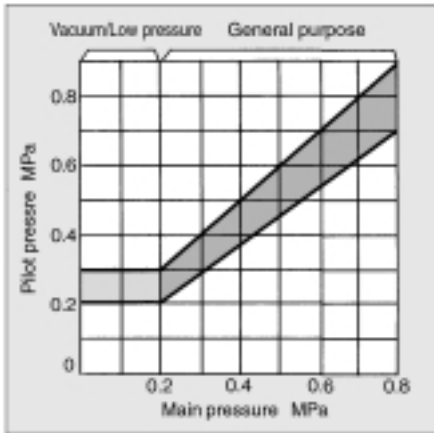
## External Pilot Type

Use an external pilot model in the following cases:

- Vacuum or low pressure of 0.2MPa or less:  
External pilot for vacuum/low pressure
- Operation with restricted supply port:  
External pilot for general purpose
- Slow build up of supply port air pressure:  
External pilot for general purpose
- Low resistance in the secondary side as in the case of air blowing or filling an air tank, etc.:  
External pilot for general purpose

Note 1) Use external pilot pressure within the range shown in the graph below.

Note 2) Changing from an internal pilot to an external pilot or vice versa is not possible.



## How to Order

**VP3 1 4 5** — **04 1 G A**

**VP 3 port solenoid valve**

**No. of solenoids**

1	Single
---	--------

**Body size**

4	1/2
6	1
8	1 1/2

**Body type**

5	Body ported
---	-------------

**Valve option**

Nil	General
V	Vacuum/Low pressure

**Port size (IN/OUT port)**

Symbol	Port size Rc (Nominal size)	VP3145	VP3165	VP3185
03	3/8 (10A)	●		
04	1/2 (15A)	●		
06	3/4 (20A)	●	●	
10	1 (25A)		●	
12	1 1/4 (32A)		●	●
14	1 1/2 (40A)			●
20	2 (50A)			●

**Pilot option**

Nil	Standard (Internal pilot)
1	External pilot

**Type of actuation**

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

**Electrical entry**

G	Grommet
T	Conduit terminal
D	DIN terminal
TL*	Conduit terminal with indicator light
TS*	Conduit terminal with surge voltage suppressor
TZ*	Conduit terminal with indicator light/surge voltage suppressor
DL*	DIN terminal with indicator light
DS*	DIN terminal with surge voltage suppressor
DZ*	DIN terminal with indicator light/surge voltage suppressor

\* Optional

**Rated coil voltage**

1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240VAC, 50/60Hz
9*	Other

\* Optional

Directional Control Equipment

## How to Order Pilot Valve Assemblies

**VT3113 - 00 1 G**

**Rated coil voltage**

1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240VAC, 50/60Hz
9*	Other

\* Optional

**Electrical entry**

G	Grommet
T	Conduit terminal
D	DIN terminal
TL*	Conduit terminal with indicator light
TS*	Conduit terminal with surge voltage suppressor
TZ*	Conduit terminal with indicator light/surge voltage suppressor
DL*	DIN terminal with indicator light
DS*	DIN terminal with surge voltage suppressor
DZ*	DIN terminal with indicator light/surge voltage suppressor

\* Optional

# 3 Port Micro Mechanical Valve

## Series VM1000

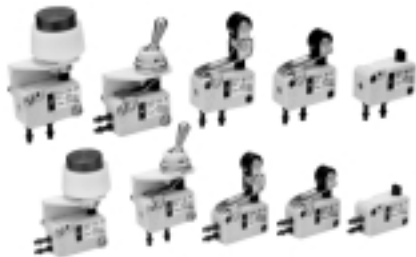
Air Purge

Miniature construction requires minimal mounting space.

Easy tubing connection with built-in hose nipple.

Port options: Side ported  
Bottom ported

Large over travel after actuation (mechanically operated type)



### Standard specifications

Valve type	N.C. poppet type
Number of ports	3 port
Total travel (T.T.)	4.8mm (Basic type)
Piping	Side ported or Bottom ported
Fluid	Air
Operating pressure	5 to 0.8MPa
Ambient and operating air temperature	-5 to 60°C (with no freezing)
Effective area (Cv factor)	1mm <sup>2</sup> (0.055)
Lubrication	Not required (If lubricated, use turbine oil class 1, ISO VG32.)
Fitting	With hose nipple
Weight (Basic type)	6g

### Option specifications

Total travel (T.T.)	2.5mm (Basic type)
---------------------	--------------------

- A commercially available actuator for the V micro switch can be installed.
- However, be aware that there are different types of micro switch such as P.T., O.T. or F.O.F.
- Total travel of 2.5mm is only available for the basic type.

Note) T.T.: Total travel (From free position to total travel position)

P.T.: Pre-travel (From free position to initial valve operating position)

O.T.: Over travel (From initial valve operating position to total travel position)

F.O.F.: Full operating force (Required force to total travel position)

### Models

	Actuator	Port type	No. of ports	Applicable tube		Note
				T0425	TU0425/T0403	
Mechanical operation	Basic type	Side ported	3 port	VM1000-4N-00	VM1000-4NU-00	
		Bottom ported	3 port	VM1010-4N-00	VM1010-4NU-00	
	Roller lever	Side ported	3 port	VM1000-4N-01	VM1000-4NU-01	
		Bottom ported	3 port	VM1010-4N-01	VM1010-4NU-01	
One way roller lever	Side ported	3 port	VM1000-4N-02	VM1000-4NU-02		
	Bottom ported	3 port	VM1010-4N-02	VM1010-4NU-02		
Manual operation	Toggle lever	Side ported	3 port	VM1000-4N-08	VM1000-4NU-08	
		Bottom ported	3 port	VM1010-4N-08	VM1010-4NU-08	
	Push button	Side ported	3 port	VM1000-4N-32R	VM1000-4NU-32R	Red
		Bottom ported	3 port	VM1010-4N-32R	VM1010-4NU-32R	Red
		Side ported	3 port	VM1000-4N-32B	VM1000-4NU-32B	Black
		Bottom ported	3 port	VM1010-4N-32B	VM1010-4NU-32B	Black
		Side ported	3 port	VM1000-4N-32G	VM1000-4NU-32G	Green
		Bottom ported	3 port	VM1010-4N-32G	VM1010-4NU-32G	Green

# 3 Port Mechanical Valve

# Series VM100

Air Purge

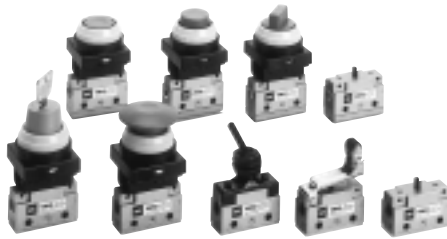
Compact size equivalent to micro switch

Port options: Side ported  
Bottom ported

A variety of actuators available

## Specifications

Piping	Side ported	Bottom ported
Fluid	Air	
Operating pressure	-100kPa to 1.0MPa	
Ambient and operating air temperature	-5 to 60°C (with no freezing)	
Effective area (Cv factor)	2.5mm <sup>2</sup> (0.14)	
Lubrication	Not required (If lubricated, use turbine oil class 1, ISO VG32.)	
Port size (Nominal size)	Rc 1/8 (6A)	M5 x 0.8
Weight (Basic type)	95g	110g



## Models

	Actuator	Piping		Actuator part no.	Application	
		No. of ports	Side ported			Bottom ported
Mechanical operation	Basic type	3 port	VM130-01-00 VM131-01-00	VM132-M5-00 VM133-M5-00	—	
	Roller lever	3 port	VM130-01-01 VM131-01-01S	VM133-M5-01 VM133-M5-01S	— —	Polyacetal roller Hard steel roller
	One way roller lever	3 port	VM131-01-02 VM131-01-02S	VM133-M5-02 VM133-M5-02S	— —	Polyacetal roller Hard steel roller
	Straight plunger	3 port	VM130-01-05	VM132-M5-05	VM-05B	—
	Roller plunger	3 port	VM130-01-06 VM130-01-06S	VM132-M5-06 VM132-M5-06S	VM-06B VM-06BS	Polyacetal roller Hard steel roller
	Cross roller plunger	3 port	VM130-01-07 VM130-01-07S	VM132-M5-07 VM132-M5-07S	VM-07B VM-07BS	Polyacetal roller Hard steel roller
	Toggle lever	3 port	VM130-01-08	VM132-M5-08	VM-08B	—
	Push button (Mushroom)	3 port	VM130-01-30R VM130-01-30B VM130-01-30G VM130-01-30Y	VM132-M5-30R VM132-M5-30B VM132-M5-30G VM132-M5-30Y	VM-30AR VM-30AB VM-30AG VM-30AY	Red Black Green Yellow
	Push button (Extended)	3 port	VM130-01-32R VM130-01-32B VM130-01-32G VM130-01-32Y	VM132-M5-32R VM132-M5-32B VM132-M5-32G VM132-M5-32Y	VM-32AR VM-32AB VM-32AG VM-32AY	Red Black Green Yellow
	Push button (Flush)	3 port	VM130-01-33	VM132-M5-33	VM-33A	A set of Red, Black, Green, and Yellow included.
Manual operation	Selector (2 position)	3 port	VM130-01-34R VM130-01-34B VM130-01-34G VM130-01-34Y	VM132-M5-34R VM132-M5-34B VM132-M5-34G VM132-M5-34Y	VM-34AR VM-34AB VM-34AG VM-34AY	Red Black Green Yellow
	Key selector (2 position)	3 port	VM130-01-36	VM132-M5-36	VM-36A	—
	Selector (3 position)	3 port	VM151-01-35R VM151-01-35B VM151-01-35G VM151-01-35Y	VM153-M5-35R VM153-M5-35B VM153-M5-35G VM153-M5-35Y	— — — —	Red Black Green Yellow
		(5 port)	VM151-01-35R VM151-01-35B VM151-01-35G VM151-01-35Y	VM153-M5-35R VM153-M5-35B VM153-M5-35G VM153-M5-35Y	— — — —	Red Black Green Yellow
		(5 port)	VM151-01-35R VM151-01-35B VM151-01-35G VM151-01-35Y	VM153-M5-35R VM153-M5-35B VM153-M5-35G VM153-M5-35Y	— — — —	Red Black Green Yellow
		(5 port)	VM151-01-35R VM151-01-35B VM151-01-35G VM151-01-35Y	VM153-M5-35R VM153-M5-35B VM153-M5-35G VM153-M5-35Y	— — — —	Red Black Green Yellow



Note) Actuator replacement is available except for roller lever, one way roller lever, and 3 position selector types.

Directional Control Equipment

# 3 Port Mechanical Valve

## Series VM200

Air Purge

Large flow capacity

A variety of actuators available



### Specifications

Fluid	Air
Operating pressure	0 to 1.0MPa
Ambient and operating air temperature	-5 to 60°C (with no freezing)
Effective area (Cv factor)	19mm <sup>2</sup> (1.0)
Lubrication	Not required (If lubricated, use turbine oil class 1, ISO VG32.)
Port size (Nominal size)	Rc 1/4 (8A)
Weight (Basic type)	111g

### Models

		No. of ports	3 port	Actuator part no.	Application
Mechanical operation	Actuator				
	Basic type		<b>VM230-02-00</b>	—	—
	Roller lever		<b>VM230-02-01</b>	VM-01A	Polyacetal roller
			<b>VM230-02-01S</b>	VM-01AS	Hard steel roller
	One way roller lever		<b>VM230-02-02</b>	VM-02A	Polyacetal roller
			<b>VM230-02-02S</b>	VM-02AS	Hard steel roller
	Straight plunger		<b>VM230-02-05</b>	VM-05A	—
	Roller plunger		<b>VM230-02-06</b>	VM-06A	Polyacetal roller
			<b>VM230-02-06S</b>	VM-06AS	Hard steel roller
	Cross roller plunger		<b>VM230-02-07</b>	VM-07A	Polyacetal roller
		<b>VM230-02-07S</b>	VM-07AS	Hard steel roller	
Manual operation	Toggle lever		<b>VM230-02-08</b>	VM-08A	—
	Push button (Mushroom)		<b>VM230-02-30R</b>	VM-30AR	Red
			<b>VM230-02-30B</b>	VM-30AB	Black
			<b>VM230-02-30G</b>	VM-30AG	Green
			<b>VM230-02-30Y</b>	VM-30AY	Yellow
	Push button (Extended)		<b>VM230-02-32R</b>	VM-32AR	Red
			<b>VM230-02-32B</b>	VM-32AB	Black
			<b>VM230-02-32G</b>	VM-32AG	Green
	Push button (Flush)		<b>VM230-02-32Y</b>	VM-32AY	Yellow
			<b>VM230-02-33</b>	VM-33A	A set of Red, Black, Green, and Yellow included.
		Selector (2 position)		<b>VM230-02-34R</b>	VM-34AR
			<b>VM230-02-34B</b>	VM-34AB	Black
			<b>VM230-02-34G</b>	VM-34AG	Green
			<b>VM230-02-34Y</b>	VM-34AY	Yellow
	Key selector (2 position)		<b>VM230-02-36</b>	VM-36A	—
Selector (3 position)		<b>VM230-02-35R</b>	—	Red	
		<b>VM230-02-35B</b>	—	Black	
		<b>VM230-02-35G</b>	—	Green	
		<b>VM230-02-35Y</b>	—	Yellow	
Foot pedal		<b>VM230-02-40</b>	—	—	



Note) Actuator replacement is available except for 3 position selector and foot pedal types.

# 3 Port Mechanical Valve

## Series VM400

Air Purge

N.C. or N.O. models available

### Piping connection to any port

(Proper countermeasures can be taken for applications in which noise or dirt from exhaust could cause a problem to the environment.)




### Specifications

Fluid	Air
Operating pressure	-100kPa to 1.0MPa
Ambient and operating air temperature	-5 to 60°C (with no freezing)
Effective area (Cv factor)	7mm <sup>2</sup> (0.38)
Lubrication	Not required (If lubricated, use turbine oil class 1, ISO VG32.)
Port size (Nominal size)	Rc 1/8 (6A)
Weight (Basic type)	110g

### Models

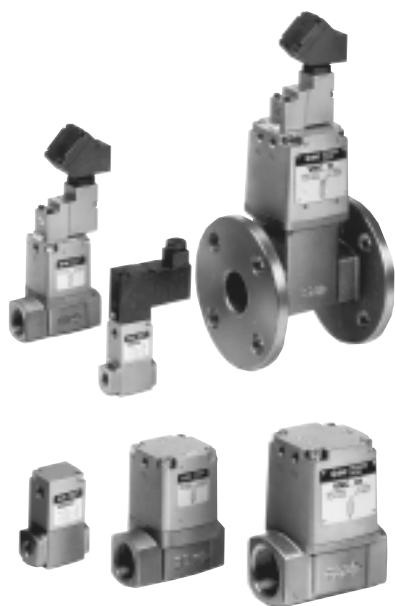
	Actuator	Model	Actuator part no.	Application
Mechanical operation	Basic type	<b>VM430-01-00</b>	—	—
	Roller lever	<b>VM430-01-01</b>	VM-01A	Polyacetal roller
		<b>VM430-01-01S</b>	VM-01AS	Hard steel roller
	One way roller lever	<b>VM430-01-02</b>	VM-02A	Polyacetal roller
		<b>VM430-01-02S</b>	VM-02AS	Hard steel roller
	Straight plunger	<b>VM430-01-05</b>	VM-05A	—
	Roller plunger	<b>VM430-01-06</b>	VM-06A	Polyacetal roller
		<b>VM430-01-06S</b>	VM-06AS	Hard steel roller
	Cross roller plunger	<b>VM430-01-07</b>	VM-07A	Polyacetal roller
		<b>VM430-01-07S</b>	VM-07AS	Hard steel roller
Toggle lever	<b>VM430-01-08</b>	VM-08A	—	
Manual operation	Push button (Mushroom)	<b>VM430-01-30R</b>	VM-30AR	Red
		<b>VM430-01-30B</b>	VM-30AB	Black
		<b>VM430-01-30G</b>	VM-30AG	Green
		<b>VM430-01-30Y</b>	VM-30AY	Yellow
	Push button (Extended)	<b>VM430-01-32R</b>	VM-32AR	Red
		<b>VM430-01-32B</b>	VM-32AB	Black
		<b>VM430-01-32G</b>	VM-32AG	Green
		<b>VM430-01-32Y</b>	VM-32AY	Yellow
	Push button (Flush)	<b>VM430-01-33</b>	VM-33A	A set of Red, Black, Green, and Yellow included.
	Selector (2 position)	<b>VM430-01-34R</b>	VM-34AR	Red
		<b>VM430-01-34B</b>	VM-34AB	Black
		<b>VM430-01-34G</b>	VM-34AG	Green
		<b>VM430-01-34Y</b>	VM-34AY	Yellow
Key selector (2 position)	<b>VM430-01-36</b>	VM-36A	—	

 Note) Actuator replacement is available.

Directional Control Equipment

# Coolant Valve Solenoid/Air Operated Type *Series VNC*

Coolant



## Models

Model	Piping port		Orifice ø mm	Flow coefficient		Weight kg	
	Rc	Flange <sup>Note)</sup>		Cv	Effective area mm <sup>2</sup>	Air operated type	Solenoid type
VNC1□□□-6A	1/8	—	7	0.7	13	0.2	0.3
VNC1□□□-8A	1/4	—		1	18		
VNC1□□□-10A				1.3	23		
VNC2□4□-10A	3/8	—	11	2.5	45	0.5	0.7
VNC2□□□-10A			15	3.8	70		
VNC2□4□-15A	1/2	—	11	3	55		
VNC2□□□-15A			15	5	90	0.8	1.0
VNC3□4□-20A	3/4	—	14	5	90		
VNC3□□□-20A			20	8	140		
VNC4□4□-25A	1	—	16	7	130	1.2	1.4
VNC4□□□-25A			25	12	220		
VNC5□4□-32A	1 1/4	—	22	11	210		
VNC5□□□-32A			32	18	320	2.2	2.4
VNC5□4□-32F	—	32	22	11	210		
VNC5□□□-32F			32	18	320		
VNC6□4□-40A	1 1/2	—	28	19	330	3.6	3.8
VNC6□□□-40A			40	28	500		
VNC6□4□-40F	—	40	28	19	330		
VNC6□□□-40F			40	28	500	6.8	7.0
VNC7□4□-50A	2	—	33	29	520		
VNC7□□□-50A			50	43	770		
VNC7□4□-50F	—	50	33	29	520	10.2	10.4
VNC7□□□-50F			50	43	770		
VNC814□-65F	—	65	45	49	880		
VNC811□-65F			65	70	1260	—	15.7
VNC914□-80F	—	80	56	73	1400		
VNC911□-80F			80	100	1800		



Note) The flange is equivalent to JIS B 2210 10K (regular type).

## Symbols

Valve type Operation	N.C.	N.O.
Air operated	VNC□0□□	VNC□02□□
External pilot solenoid type	VNC□0□□	VNC□12□□

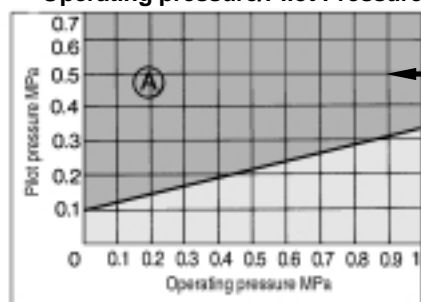
## Valve specifications

Fluid		Coolant
Fluid temperature	VNC□□□A	-5 to 60°C*
	VNC□□□B	-5 to 99°C* (air operated type only)
Ambient temperature		-5 to 50°C* (60°C for air operated type)
Proof pressure		1.5MPa
Operating pressure range	VNC□□□1□	0 to 0.5MPa
	VNC□□□2□	0 to 1MPa
External pilot air	Pressure	VNC□□□1□ 0.25 to 0.7MPa
		VNC□□□2 0.1 to 0.7MPa (Refer to Table 1.)
	Lubrication	Not required (If lubricated, use turbine oil class 1, ISO VG32.)
Temperature		-5 to 50°C* (60°C for air operated type)



\* With no freezing

**Table 1  
Operating pressure/Pilot Pressure**



Use pilot pressure that is within range (A) with respect to the operating pressure.

## Pilot solenoid valve specifications

Model	VNC1□□□□	VNC2□□□□ to 9□□□□		
Pilot solenoid valve	SF4-□□□-23	VO301-00□□□-X302		
Electrical entry	Grommet	Conduit terminal		
	Grommet terminal Conduit terminal DIN terminal			
Rated coil voltage V	AC (50/60Hz)	100V, 200V, other (option)		
	DC	24V, other (option)		
Allowable pressure fluctuation	-15% to +10% of rated voltage			
Coil insulation type	Equivalent to class B (130°C)			
Temperature increase	35°C or less (at rated voltage)	70°C or less (at rated voltage)		
Apparent power	AC	Inrush	5.6VA (50Hz) 5.0VA (60Hz)	12VA (50Hz) 10.5VA (60Hz)
		Energized	3.4VA (50Hz) 2.3VA (60Hz)	7.5VA (50Hz) 6VA (60Hz)
Power consumption	DC	1.8W	4.8W	
Manual override		Push type, other (option)	Non-locking push type	

## How to Order

Seal material	
A	NBR seal
B	FPM seal

Bracket	
Nil	None
B	With bracket

For valve sizes 1, 2, 3, and 4 only

Air Operated Type

**VNC 2 0 1 A 15A** (Except valve sizes 8 and 9)

External Pilot Solenoid Type

**VNC 2 1 1 A 15A 1 T**

**Valve size**





Symbol	Orifice size (mm)	Symbol			Symbol	Port size Rc
		1	2	4		
		N.C. 0.5MPa	N.O. 1MPa	N.C. 1MPa		
1	ø7	—	●	●	6A	1/8
		—	●	●	8A	1/4
		—	●	●	10A	3/8
2	ø15 (ø11)	●	●	●	10A	3/8
		●	●	●	15A	1/2
3	ø20 (ø14)	●	●	●	20A	3/4
4	ø25 (ø16)	●	●	●	25A	1
		●	●	●	32A	1 1/4
5	ø32 (ø22)	●	●	●	32F	1 1/4B Flange
		●	●	●	40A	1 1/2
6	ø40 (ø28)	●	●	●	40F	1 1/2B Flange
		●	●	●	50A	2
7	ø50 (ø33)	●	●	●	50F	2B Flange
		●	—	●	65F	2 1/2B Flange
8	ø65 (ø45)	●	—	●	80F	2B Flange
9	ø80 (ø56)	●	—	●		

**Rated voltage**

Nil	Air operated type
1	100VAC, 50/60Hz
2	200VAC, 50/60Hz
3*	110VAC, 50/60Hz
4*	220VAC, 50/60Hz
5	24VDC
6*	12VDC
7*	240VAC, 50/60Hz
9*	Other

\* Optional

**Manual override**

Nil: Push type  A: Projecting style push type  B: Slotted locking type 	Valve size 1
Nil: Push type 	Valve sizes 2 to 9

**Electrical entry and indicator light/surge voltage suppressor**

Nil	Air operated type	
G	Grommet	Valve size 1
GS	Grommet with surge voltage suppressor	
E	Grommet terminal	
EZ	Grommet terminal with indicator light/surge voltage suppressor	
T	Conduit terminal	Valve sizes 2 to 9
TZ	Conduit terminal with indicator light/surge voltage suppressor	
D	DIN terminal	
DZ	DIN terminal with indicator light/surge voltage suppressor	
T	Conduit terminal	
TS	Conduit terminal with surge voltage suppressor	
TZ*	Conduit terminal with indicator light/surge voltage suppressor	
TL*	Conduit terminal with indicator light	

\* Except rated voltages 6, 7, and 9

Values inside ( ) are for N.C. at 1MPa.

Actuators

# Flow Switching 2 Port Air Operated Valve

Special Order Product

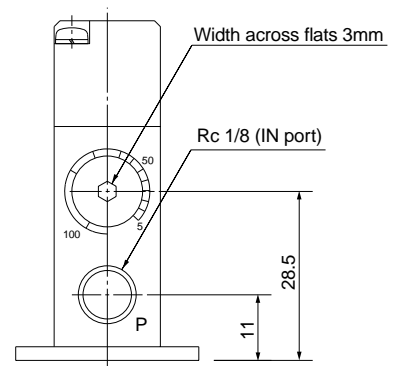
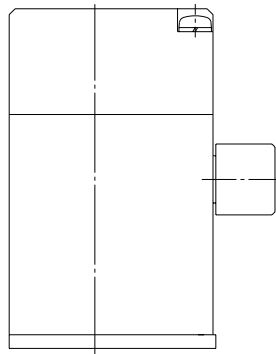
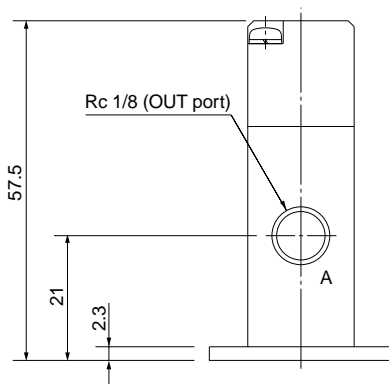
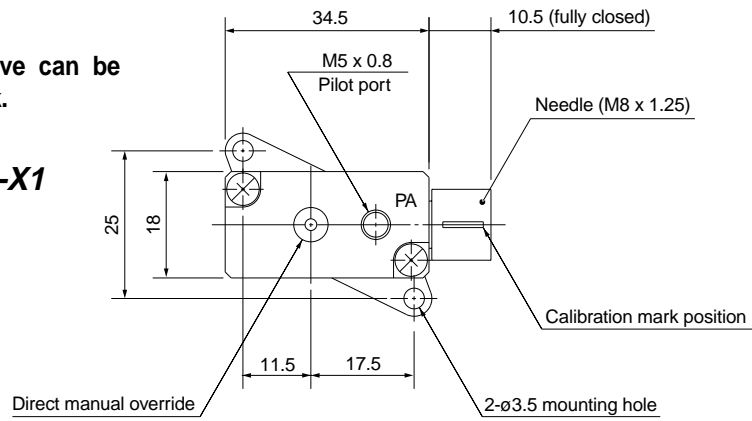
Paint Stirring

Air operated 2 port valve with compact metering valve

Metering valve construction with reproducibility (adjustable between 0 to 300°)

Effective area for single valve can be detected with calibration mark.

**VKFA332-1-01-X1**



## Specifications

Valve type	Poppet	
Fluid	Air, Inert gas	
Operating pressure range	0 to 0.7MPa	
Pilot pressure	0.15 to 0.7MPa	
Effective area	OFF	4mm <sup>2</sup> (Cv factor: 0.22)
	ON	Adjustable type: 0 to 4mm <sup>2</sup> (at 5/6 rotation from fully closed state)

# Booster Valve

# Series VBA 1110 to 4200

Hydraulic Clamp

## Specifications

Intensified pressure ratio	VBA1110 VBA2□00 VBA4□00	Maximum 2
	VBA1111	Maximum 4
Fluid		Compressed air
Proof pressure	VBA1110 VBA1111	3.0MPa
	VBA2□00 VBA4□00	1.5MPa
		1.0MPa
Maximum supply pressure		1.0MPa
Set pressure range	VBA1110 VBA1111	0.2 to 2.0MPa
	VBA2□00 VBA4□00	0.2 to 1.0MPa
Ambient and fluid temperature		2 to 50°C (with no freezing)
Lubrication		None
Mounting orientation		Horizontal
Pressure adjustment mechanism		Relieving type

## Models

Model	Knob operated type				Air operated type	
	VBA1110-02	VBA1111-02	VBA2100-03	VBA4100-04	VBA2200-03	VBA4200-04
Max. flow rate /min (ANR) <sup>Note</sup>	400	60	1000	1900	1000	1900
Port size Rc	1/4 (IN, OUT)		3/8 (IN, OUT)	1/2 (IN, OUT)	3/8 (IN, OUT)	1/2 (IN, OUT)
Exhaust port size Rc	1/4		3/8	1/2	3/8	1/2
Pilot port size Rc	—				1/8	
Pilot pressure range	—				0.1 to 0.5MPa	
Weight kg	0.85	0.98	3.8	7.5	3.8	7.5

Note) Flow conditions — IN/OUT: 1.0MPa for VBA1110, IN/OUT: 0.5MPa for VBA1111, VBA2□00, 4□00  
Refer to flow characteristics graphs on page 1.13-2 of "Best Pneumatics No. 4" when selecting a model.

## Accessory (option) part nos.

Description	Model	Part no.				
		VBA1110-1111	VBA2100	VBA4100	VBA2200	VBA4200
Pressure gauge		G27-20-R1 ... 2 pcs.	G27-10-R1-X209 ... 2 pcs.	G46-10-01 ... 2 pcs.	G27-10-R1-X209 ... 2 pcs.	G46-10-01 ... 2 pcs.
Silencer		AN200-02	AN300-03	AN400-04	AN300-03	AN400-04

## How to Order



**Series VBA1000** VBA 1 1 1 0 - 02 GN

**Series VBA2000/4000** VBA 2 1 0 0 - 03 GN

**Pressure adjustment**  
1 Knob operated type

**Body size**  
1 1/4 standard

**Pressure**  
1 2.0MPa

**Intensified pressure ratio**  
0 Double  
1 Quadruple

**Port size**  
Symbol Port size  
02 Rc 1/4

**Body size**  
2 3/8 standard  
4 1/2 standard

**Option**  
G Pressure gauge  
N Silencer

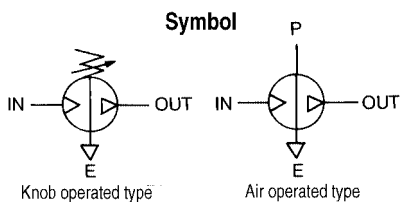
**Pressure adjustment**  
1 Knob operated type  
2 Air operated type

**Pressure**  
0 1.0MPa

**Port size**  
Symbol Port size Applicable series  
03 Rc 3/8 VBA2100/2200  
04 Rc 1/2 VBA4100/4200

## Related products

Description	Model	VBA1110/1111	VBA2100/2200	VBA4100/4200	Note
Mist separator		AM250-02	AM450-04, 06	AM550-06, 10	Page 4.6-1 (Best Pneumatics No.4)
Exhaust cleaner		AMC310-03	AMC510-06	AMC610-10	35dB or more noise reduction
Air tank		VBAT05 (5./ Directly connected to booster valve)	VBAT20 (20./ Directly connected to booster valve) VBAT38 (38./ Directly connected to booster valve)		—
		VBAT10 (10./ Directly connected to booster valve)			



Directional Control Equipment