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# 5 Port Direct Operated Poppet Solenoid Valve, Rubber Seal

## Series VK3000

**C: 0.54 dm<sup>3</sup>/(s·bar)**

(Passage {4/2 → 5/3 (A/B → R1/R2)})

**Compact: Width 18 x  
Length 68 (mm)**

**Low power consumption**

4 W DC (Standard type)

2 W DC (Low wattage type)

**Suitable for copper-free applications**

All the parts in contact with fluid are non-copper materials



Base mounted

Body ported

**JIS Symbol**

Body ported

Base mounted

### Mounting with VK300



Series VK3000 can be mounted on the same manifold base VV5K3 of VK3000 series. For details, refer to the page 3-2-4.

### Used as a 3 Port Valve

Series VK3000 can be used as 3 port valve, as a N.C. or N.O. type, by plugging either "A" or "B" cylinder Port. Make sure not to plug the exhaust port "R".

Plug position	B port	A port
Type of actuation	N. C.	N. O.
JIS symbol		

### Specifications

Type of actuation	Direct operated type 2 position single solenoid
Fluid	Air
Ambient and fluid temperature	-10 to 50°C (No freezing. Refer to page 3-13-4.)
Response time (at the pressure of 0.5 MPa) <sup>(1)</sup>	10 ms or less (Standard), 15 ms or less (Low wattage type)
Manual override	Non-locking push type
Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated.)
Mounting orientation	Unrestricted
Impact/Vibration resistance <sup>(2)</sup>	300/50 m/s <sup>2</sup>
Enclosure	Dustproof



Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

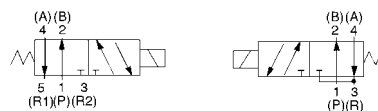
Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

### Solenoid Specifications

Electrical entry	Grommet (G), DIN terminal (D)	
Rated voltage (V)	AC	100, 110, 200, 220, 240
	DC	6, 12, 24, 48
Allowable voltage fluctuation	±10% of rated voltage	
Apparent power (AC)*	Inrush	9.5 VA/50 Hz, 8 VA/60 Hz
	Holding	7 VA/50 Hz, 5 VA/60 Hz
Power consumption (DC)*	W/o indicator light	4 W (Standard), 2 W (Low wattage)
	W/ indicator light	4.3 W (Standard), 2.3 W (Low wattage)
Surge voltage suppressor	AC	Varistor
	DC	Diode (12 VDC or less: Varistor)
Indicator light	AC	Neon bulb
	DC	LED



\* At the rated voltage



### Flow Characteristics/Weight

Valve model	Operating pressure range (MPa)	Port size	Flow characteristics						Weight (g)
			1 → 4/2 (P → A/B)		4/2 → 5/3 (A/B → R1/R2)		Grommet		
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]		b	Cv
Body ported	0 to 0.7	M5 x 0.8	0.45	0.37	0.12	0.43	0.37	0.12	90
			1/8	0.84	0.10	0.19	0.40	0.33	
1/8		0.38	0.30	0.09	0.40	0.34	0.10		
		0.48	0.11	0.11	0.35	0.38	0.10		
Base mounted (with sub-plate)	0 to 0.7	1/8	0.63	0.10	0.14	0.54	0.12	0.12	130
			0.50	0.12	0.11	0.48	0.19	0.12	

## How to Order

### Electrical entry

<b>G:</b> Grommet (Lead wire length: 300 mm)	<b>H:</b> Grommet (Lead wire length: 600 mm)	<b>D:</b> DIN terminal	<b>DO:</b> DIN terminal (Without connector)
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\* For connector part number, refer to page 3-2-11.

### Rated voltage

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

\* Option



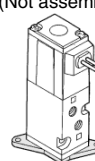
### Port size (P, A and B port)

<b>M5</b>	M5 x 0.8
<b>01</b>	Rc 1/8

\* R1, R2: M5

### Option

<b>Nil</b>	None
<b>F</b>	With bracket (Not assembled)



### Option Part No.

Description	Part no.	Note
Bracket	VK300-43-2A	With screw

### Body ported

**VK3120** [ ] **1** **G** [ ] **M5** [ ] [ ]

### Base mounted

**VK3140** [ ] **1** **G** [ ] **01** [ ] [ ]

### Thread type

<b>Nil</b>	Rc
<b>F</b>	G
<b>N</b>	NPT
<b>T</b>	NPTF

### Valve option

<b>Nil</b>	Standard
<b>Y</b> *	For low wattage (2 W DC)

\* Option



### Port size

<b>01</b>	Rc 1/8 (With sub-plate)
<b>Nil</b>	Without sub-plate

### Light/Surge voltage suppressor

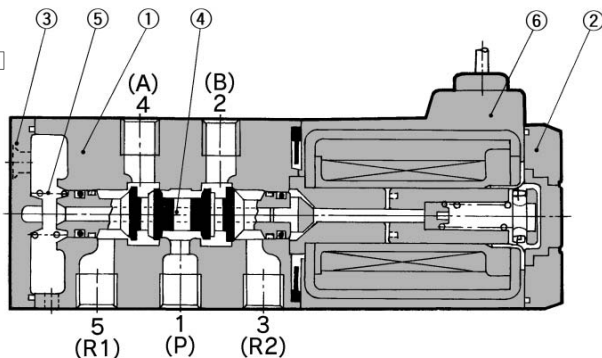
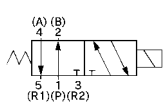
<b>Nil</b>	None
<b>S</b>	With surge voltage suppressor
<b>Z</b>	With light/surge voltage suppressor (Type D only)



\* Since the indicator light is built in the connector, thus, "DOZ" is not available.

## Construction

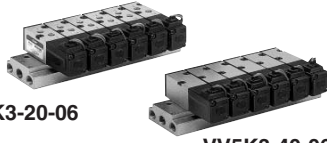
### JIS Symbol



### Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Cover	Resin	Black
③	End cover	Resin	Black
④	Spool valve assembly	Aluminum, NBR	
⑤	Return spring	Stainless steel	
⑥	Molded coil	Resin	Black

# Series VK3000 Manifold Specifications



VV5K3-20-06

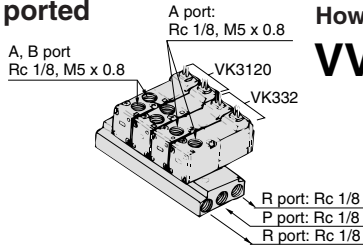
VV5K3-40-06-M5

## Specifications

Valve stations		1 to 20
Piping method	Common SUP, Common EXH	Body ported, Base mounted
	Common SUP, Individual EXH	Body ported

### Common SUP/Common EXH

#### Type 20: Body ported (A, B port top ported)



#### How to Order

VV5K3-20-05

Valve stations	
01	1 station
⋮	⋮
20	20 stations

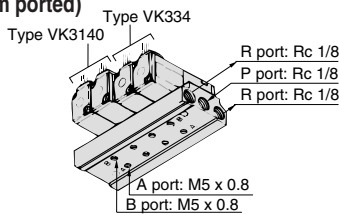
#### Thread type

Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve  
VK3120□-□□□-M5  
VK3120□-□□□-01  
VK332□-□□□-M5  
VK332□-□□□-01

Applicable blanking  
plate assembly  
VK3000-7-1A

#### Type 40: Base mounted (A, B port bottom ported)



#### How to Order

VV5K3-40-05-M5

Valve stations	
01	1 station
⋮	⋮
20	20 stations

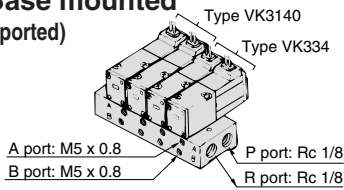
#### Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve  
VK3140□-□□□  
VK334□-□□□

Applicable blanking  
plate assembly  
VK3000-7-1A

#### Type 41: Base mounted (A, B port side ported)



#### How to Order

VV5K3-41-05-M5

Solenoid direction	
Nil	Solenoid on same side of A and B port
S	Solenoid on same side of A and B port

#### Valve stations

01	1 station
⋮	⋮
20	20 stations

#### Port size

M5	M5 x 0.8
C4	ø4 cassette

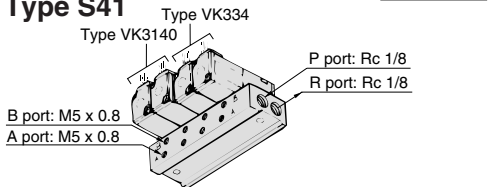
#### Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

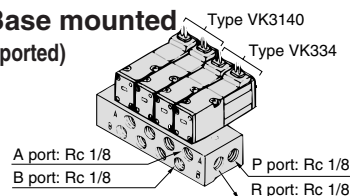
Applicable solenoid valve  
VK3140□-□□□  
VK334□-□□□

Applicable blanking  
plate assembly  
VK3000-7-1A

#### Type S41



#### Type 42: Base mounted (A, B port side ported)



#### How to Order

VV5K3-42-05-01

Solenoid direction	
Nil	Solenoid on same side of A and B port
S	Solenoid on same side of A and B port

#### Valve stations

01	1 station
⋮	⋮
20	20 stations

#### Port size

01	Rc 1/8
C6	ø6 cassette

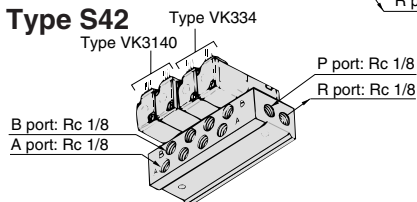
#### Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve  
VK3140□-□□□  
VK334□-□□□

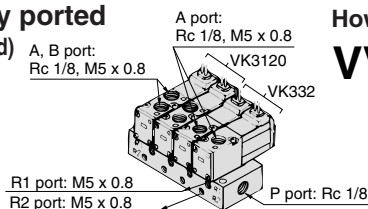
Applicable blanking  
plate assembly  
VK3000-7-1A

#### Type S42



### Common SUP/Individual EXH

#### Type 21: Body ported (A, B port top ported)



#### How to Order

VV5K3-21-05

Valve stations	
01	1 station
⋮	⋮
20	20 stations

#### Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

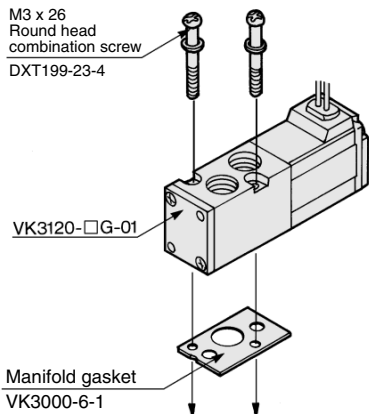
Applicable solenoid valve  
VK3120□-□□□-M5  
VK3120□-□□□-01  
VK332□-□□□-M5  
VK332□-□□□-01

Applicable blanking  
plate assembly  
VK3000-7-1A

# Series VK3000

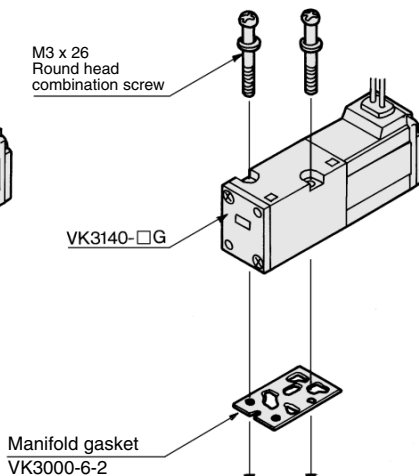
## Combinations of Solenoid Valve, Manifold Gasket and Manifold Base

### 5 port body ported: VK3120



Applicable base  
Type VV5K3-20 } Manifold base  
Type VV5K3-21 }

### 5 port base mounted: VK3140



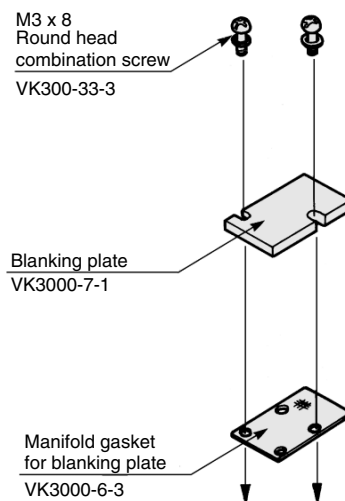
Applicable base  
VK3000-9-1 Sub-plate } Manifold base  
Type VV5K3-40 }  
Type VV5K3-(S)41 }  
Type VV5K3-(S)42 }

	Body ported	Base mounted
Manifold gasket	VK3000-6-1A	VK3000-6-2A
Screw assembly		

**Caution** Mounting Screw Tightening Torques  
M3: 0.6 N·m

## Combination of Blanking Plate Assembly and Manifold Base

### Blanking plate assembly: VK3000-7-1A

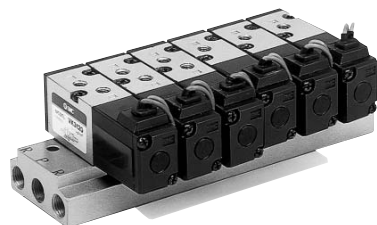


Applicable base: In common for all types of VV5K3 models

**Caution** Mounting Screw Tightening Torques  
M3: 0.6 N·m

Note) Mounting direction is not flexible. Make sure to mount them in the right direction.

## Mixed Mounting of VK300 and Manifold Base of Series VK3000



### 1. In the case of VV5K3-20/40

When installing the 3 port valve on the manifold base, plug the "R" port at the corresponding mark side with the rubber plug (VK3000-8-1) as shown in the figures on the right.

### 2. Other manifold

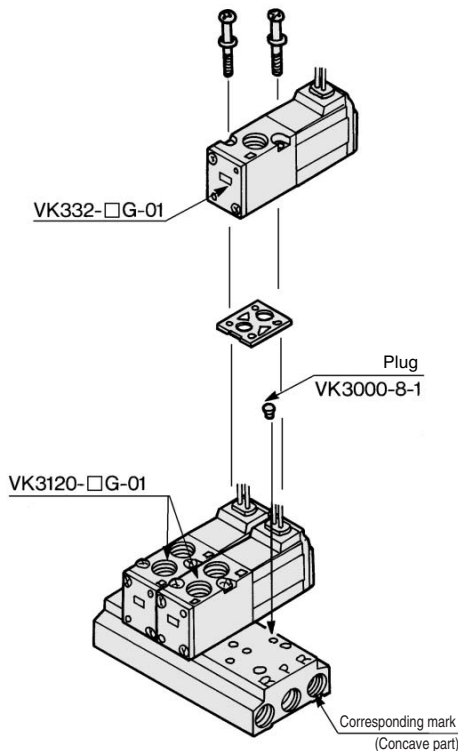
3 port valve except VV5K3-20 and 40 types can be mounted without any work.

Note 1) Remove the plug if changing the 3 port valve to a 5 port valve.

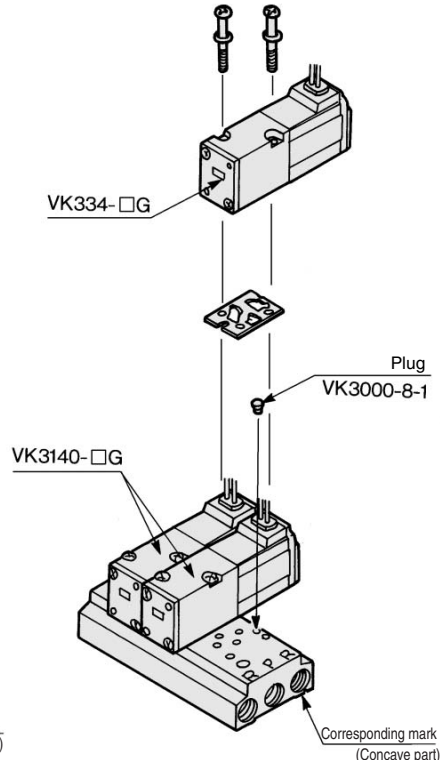
Note 2) In case a 3 port valve VK300 is mounted on the manifold base for a 5 port valve VK3000, switching type is normally closed (N.C.). If requiring a normally open type (N.O.), plug the "A" port on the 5 port valve.

Note 3) "A" port of a 3 port valve for base mounted type becomes "A" port of a 5 port valve. Plug that "A" port to avoid mistaking "B" port for the "A" port.

### Type VV5K3-20



### Type VV5K3-40

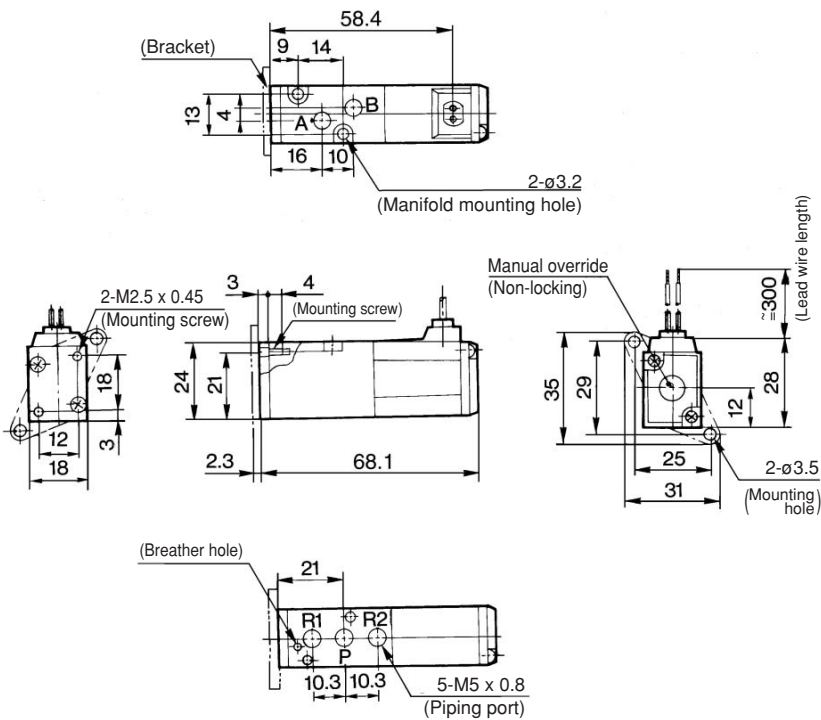


**Caution** Mounting Screw Tightening Torques  
M3: 0.6 N·m

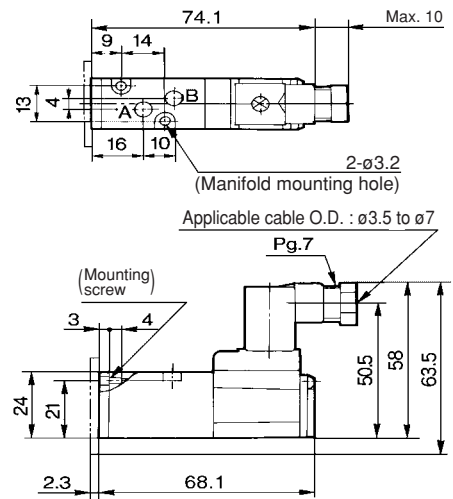
# 5 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series VK3000

## Dimensions: Body Ported

**Grommet: VK3120-□G-M5**  
**Port size: M5**

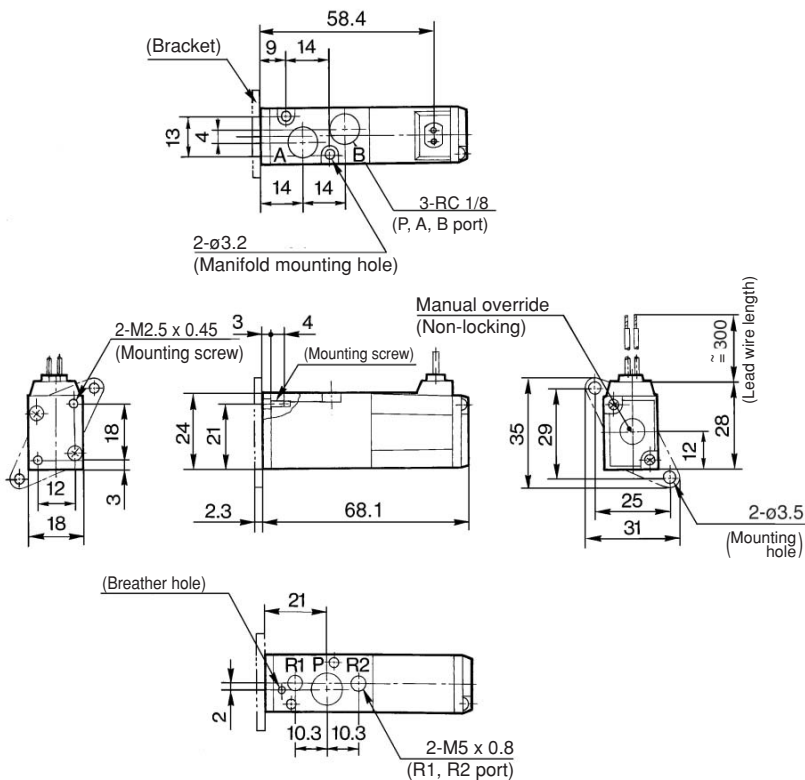


**DIN terminal: VK3120-□D-M5**

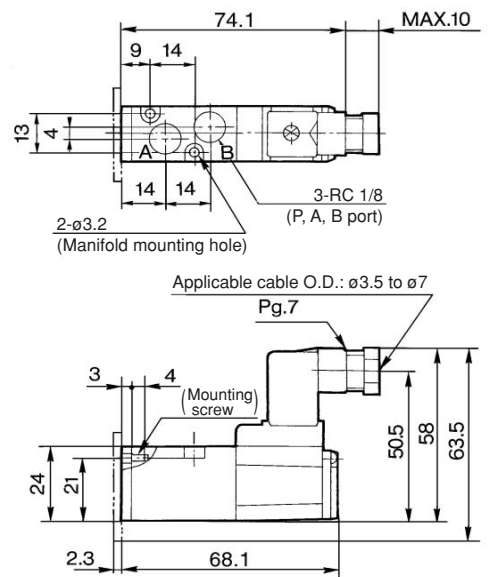


Refer to grommet type for other dimensions.

**Grommet: VK3120-□G-01**  
**Port size: Rc 1/8**



**DIN terminal: VK3120-□D-01**



Refer to grommet type for other dimensions.

**VK**

**VZ**

**VF**

**VFR**

**VP4**

**VZS**

**VFS**

**VS4**

**VQ7**

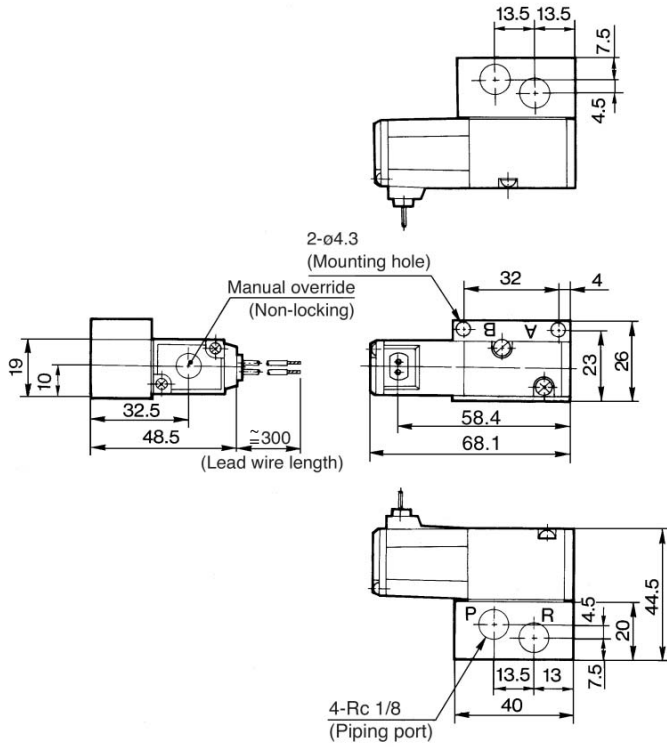
**EVS**

**VFN**

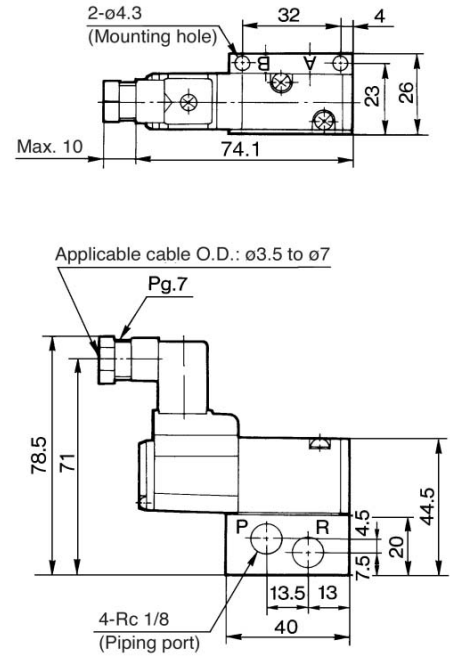
# Series VK3000

## Dimensions: Base Mounted

Grommet: VK3140-□G-01



DIN terminal: VK3140-□D-01



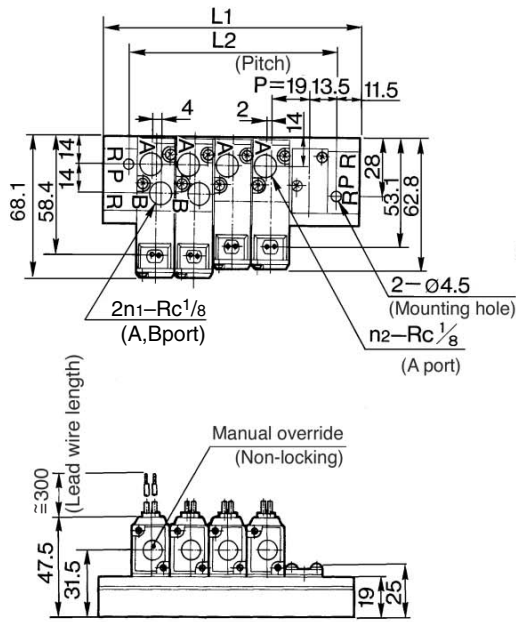
Refer to grommet type for other dimensions.

# 5 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series VK3000

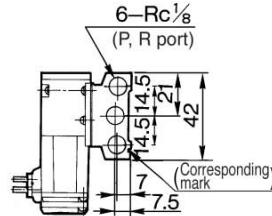
## Type 20 Manifold Body ported (Top ported)

VV5K3-20- Station

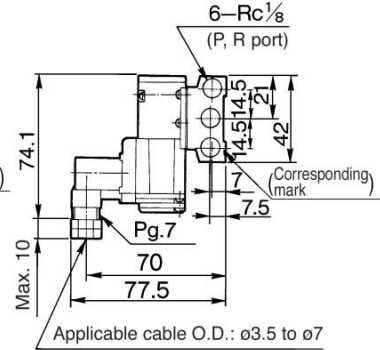
n1 = Number of VK3000  
n2 = Number of VK300



Grommet: G



DIN terminal: D



### L Dimension

n: Stations

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	50	69	88	107	126	145	164	183	202	221	240	259	278	297	316	335	354	373	392	411
L <sub>2</sub>	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

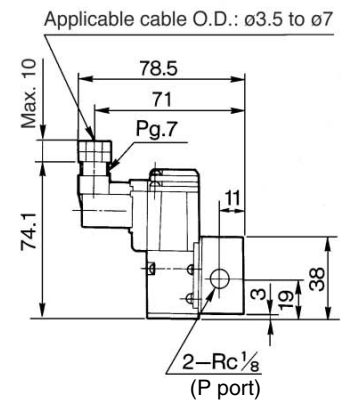
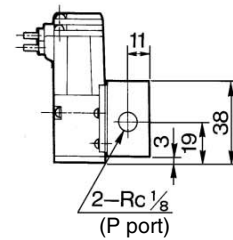
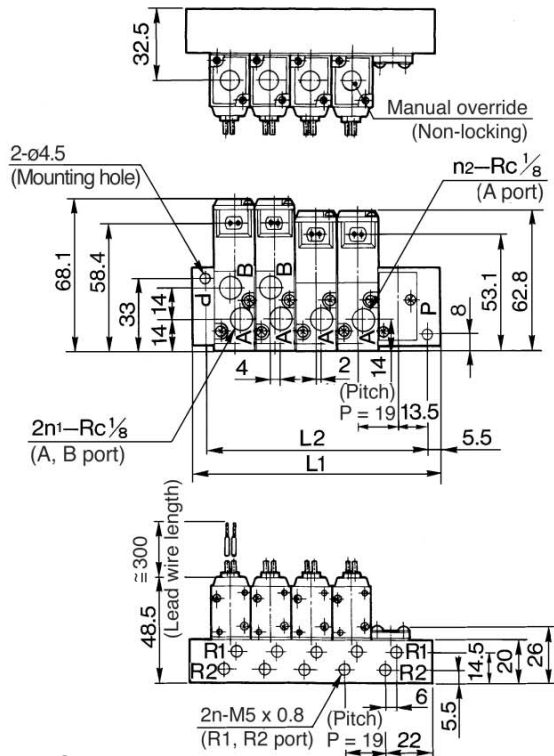
- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

## Type 21 Manifold Body ported (Top ported)

VV5K3-21- Station

Grommet: G

DIN terminal: D



n1 = Number of VK3000  
n2 = Number of VK300

### L Dimension

n: Stations

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380	399
L <sub>2</sub>	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

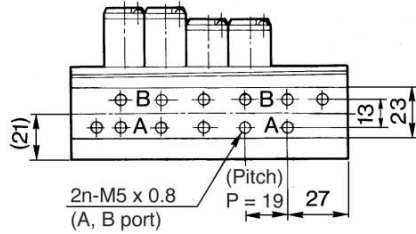
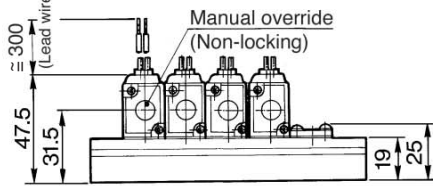
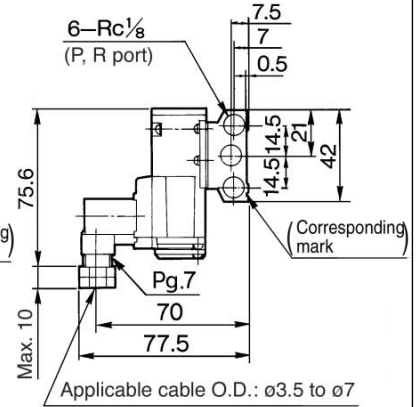
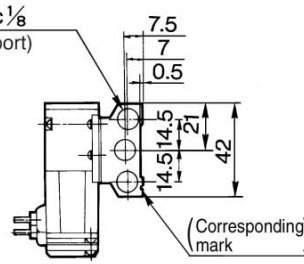
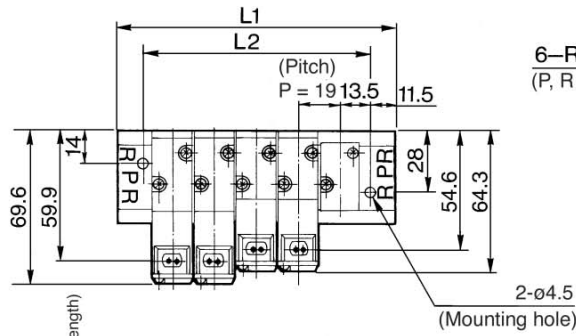
# Series VK3000

## Type 40 Manifold Base mounted (Bottom ported)

VV5K3-40-Station-M5

Grommet: G

DIN terminal: D



### L Dimension

n: Stations

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	50	69	88	107	126	145	164	183	202	221	240	259	278	297	316	335	354	373	392	411
L <sub>2</sub>	27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388



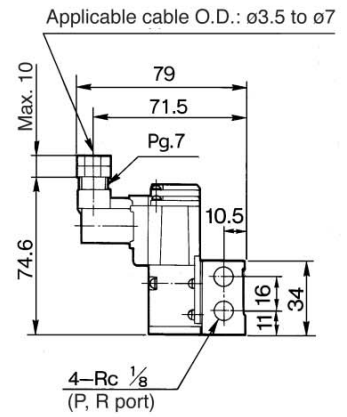
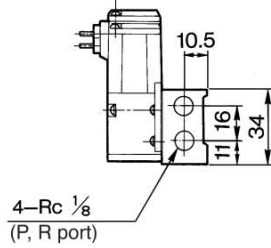
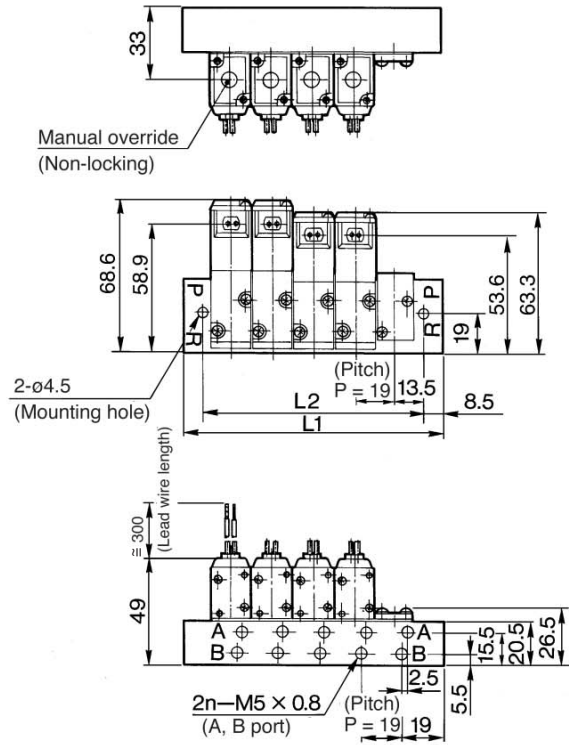
# 5 Port Direct Operated Poppet Solenoid Valve Rubber Seal Series **VK3000**

## Type 41 Manifold Base mounted (Side ported)

**VV5K3-41-Station-M5**

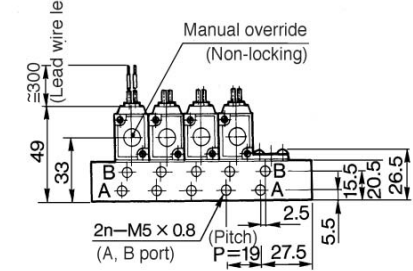
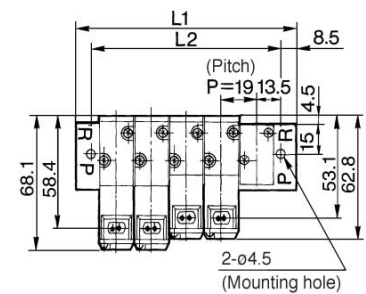
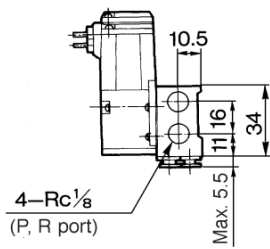
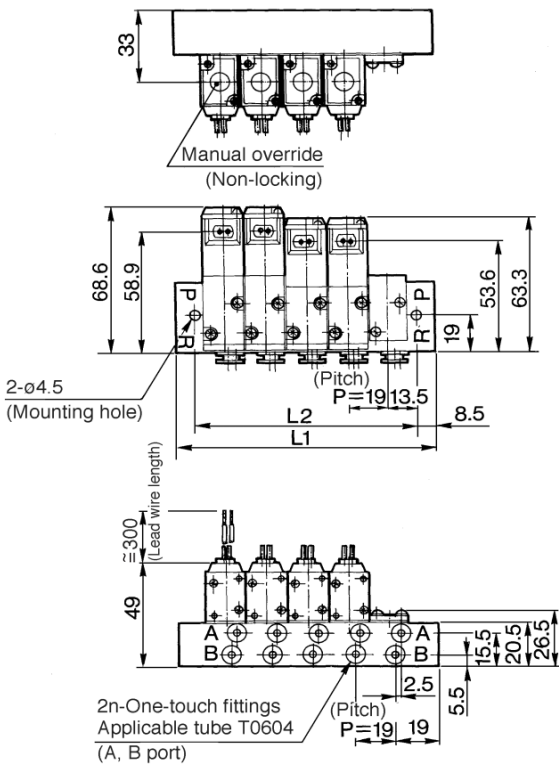
Grommet: G

DIN terminal: D



### Built-in One-touch fitting: VV5K3-41-Station-C4

### Solenoid is at the same side as A port: VV5K3-S41-Station-□



Refer to the above drawing for DIN terminal dimensions.

Refer to the above drawing for other dimensions.

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$L_1$		44	63	82	101	120	139	158	177	196	215	234	253	272	291	310	329	348	367	386	405
$L_2$		27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

- VK**
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

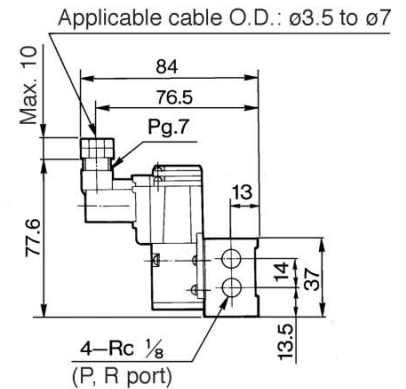
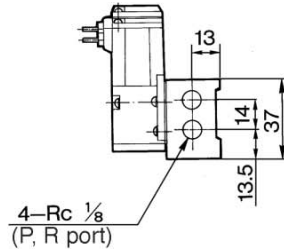
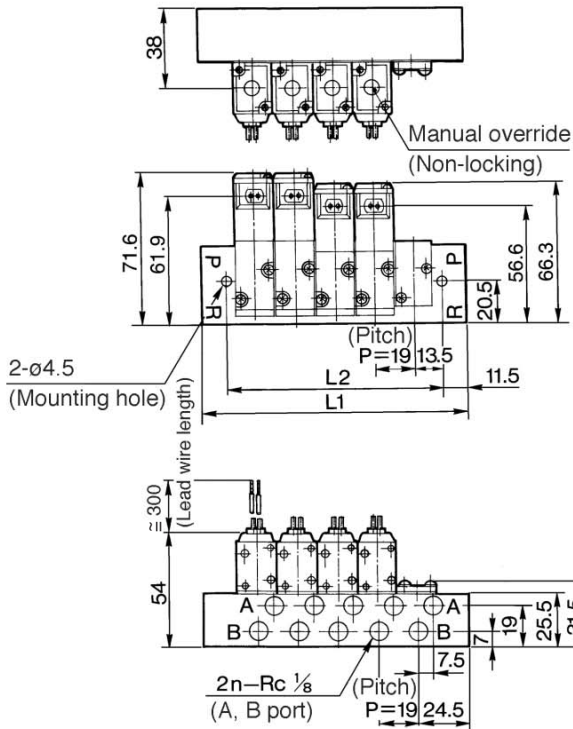
# Series VK3000

## Type 42 Manifold Base mounted (Side ported)

VV5K3-42-Station-01

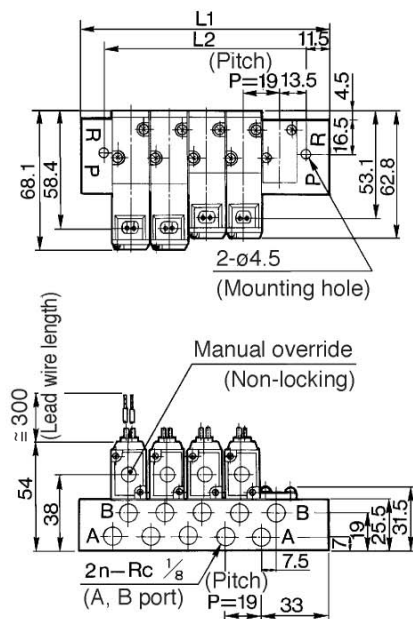
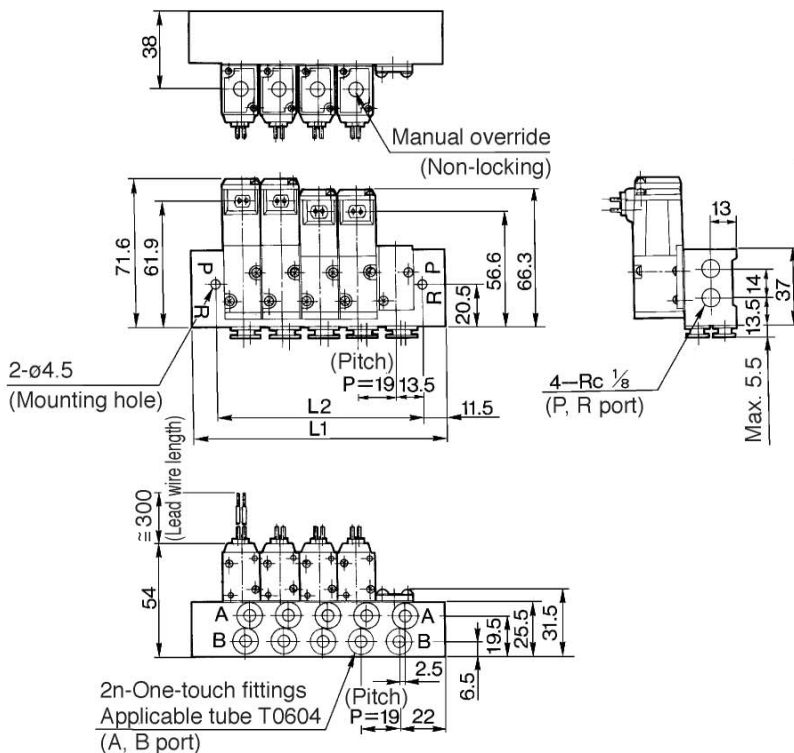
Grommet: G

DIN terminal: D



Built-in One-touch fitting: VV5K3-42-Station-C6

Solenoid is at the same side as A port: VV5K3-S42-Station-□



Refer to the above drawing for DIN terminal dimensions.



Refer to the above drawing for other dimensions.

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>		50	69	88	107	126	145	164	183	202	221	240	259	278	297	316	335	354	373	392	411
L <sub>2</sub>		27	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

## ⚠ Precautions

Be sure to read before handling. For Safety Instructions and Solenoid Valve Precautions, refer to page 3-13-2.

### How to Wire DIN Terminal

#### ⚠ Caution

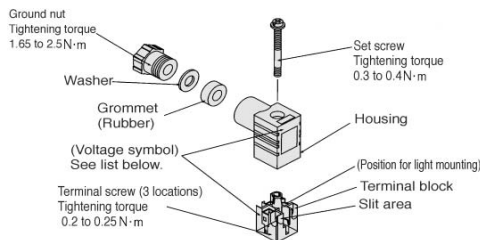
- Connection
- 1. Loosen the set screw and pull out the connector from the terminal block of the solenoid.
- 2. Remove screw and insert screwdriver into the slit area near the bottom of terminal block to separate block and housing.
- 3. Loosen the terminal screws (slotted screws) on the terminal block, insert the core of the lead wire into the terminal, and attach securely with the terminal screws.
- 4. Tighten the ground nut to secure the wire.

#### ⚠ Caution

Use caution in wiring because it will not meet the IP65 (enclosure) standard if you use the other cord than prescribed heavy-duty cord of size (ø3.5 to ø7.5).  
Tighten the ground nut and set screw within the specified range of torque.

- **Change of electrical entry (Orientation)**  
After separating terminal block and housing, the cord entry direction can be changed by attaching the housing in the desired direction (4 directions in 90 increments).  
\* In the case of w/indicator light, avoid damaging the light with lead wire.

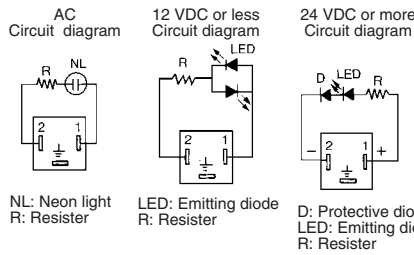
- **Precautions**  
Plug a connector in or out vertically, never at an angle.
- **Applicable cable**  
O.D. ø3.5 to ø7  
(Reference)  
0.5 mm<sup>2</sup> 2 core and 3 core wires equivalent to JIS C 3306



- **Connector part no.: VK300-82-1**
- **Part no. of connector with light**

Rated voltage	Voltage symbol	Part no.
100 VAC	100V	VK300-82-2-01
110 VAC	110V	VK300-82-2-03
200 VAC	200V	VK300-82-2-02
220 VAC	220V	VK300-82-2-04
240 VAC	240V	VK300-82-2-07
6 VDC	6V	VK300-82-4-51
12 VDC	12V	VK300-82-4-06
24 VDC	24VD	VK300-82-3-05
48 VDC	48VD	VK300-82-3-53

#### • Circuit with light



### Light/Surge Voltage Suppressor

#### ⚠ Caution

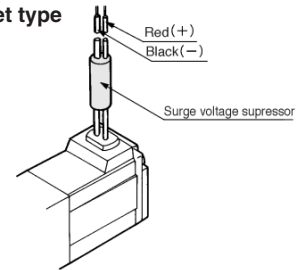
Rated voltage	Grommet type (G)	DIN terminal (D)	Part no. symbol
AC	With indicator light		S
	None		Z
24 V	With indicator light		S
	None		Z
DC	With indicator light		S
	None		Z
6 V	With indicator light		S
	None		Z
12 V	With indicator light		S
	None		Z

Precautions on connection for 24 VDC or more Grommet type should be connected as following; Red lead wire for (+) side, Black lead wire for (-) side respectively.

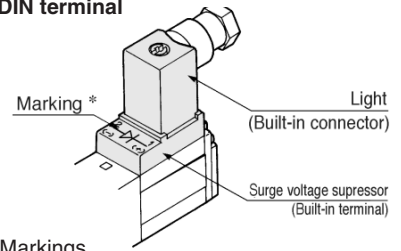
With the DIN terminal, connect the positive (+) side to the connector's no. 1 terminal, and the negative (-) side to the no. 2 terminal. [Refer to the marks on the terminal board.]

\* For 12 VDC or below, there is no positive (+) or negative (-) directionality.

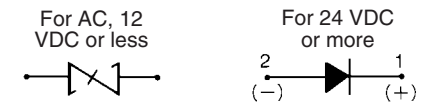
#### • Grommet type



#### • DIN terminal



#### \* Markings



### Valve Mounting Direction

#### ⚠ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., those mounting directions are determined. If mounted in the wrong direction, the equipment to be connected may cause malfunction. Refer to external dimensions in pages 3-2-4 to 3-2-10, and then mount it.

### How to Calculate the Flow Rate

For obtaining the flow rate, refer to page 3-1-10.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN