

# 5 Port Solenoid Valve Body Ported Series VZ3000

## How to Order

**Body ported VZ3** 1 2 0 5 L [ ] [ ] M5 [ ]

**Type of actuation**

1	2 position single 
2	2 position double 
3	3 position closed center 
4	3 position exhaust center 
5	3 position pressure center 

**Body option**

0: Individual exhaust for the pilot valve

3: Common exhaust type for main and pilot valve

**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
9*	Other

\* Option

**Electrical entry**

Grommet	L plug connector	M plug connector		DIN terminal
G: Lead wire length 300 mm 	L: With lead wire (Length 300 mm) 	M: With lead wire (Length 300 mm) 	MN: Without lead wire 	D: With connector 
H: Lead wire length 600 mm 	LN: Without lead wire 	LO: Without connector 	MO: Without connector 	DO: Without connector 

\* Type "LN", "MN": With 2 sockets.

**Option**

F: With foot bracket (2 position single type only)

U: With silencer

K: With foot bracket and silencer (2 position single only)

Note: The bracket and silencer are not assembled.

**4(A), 2(B) port size**

M5	M5 x 0.8
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6

Note 1(P), 5(R1), 3(R2) port: M5 x 0.8

**Manual override**

Nil: Non-locking push type

C: Locking type C (Manual)

B: Locking type B (Slotted)

**Light/Surge voltage suppressor**

Nil	None
Z*	With light/surge voltage suppressor
S	With surge voltage suppressor

\* Not available for "GZ", "HZ" and "DOZ"

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

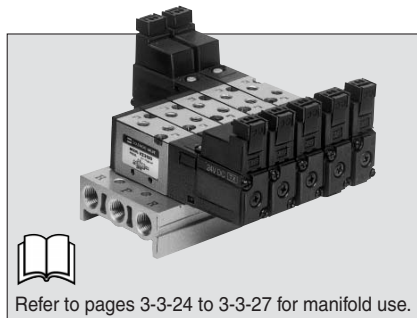
VFN

# Series VZ3000

Applicable for cylinder actuation (up to  $\phi 40$ ).

Compact size  
(Width: 15 mm)

Low power consumption:  
1.8 W DC



**Made to Order Specifications**  
(For details, refer to page 3-3-85.)

## Specifications

Fluid	Air	
Operating pressure range (MPa)	2 position single	0.15 to 0.7
	2 position double	0.1 to 0.7
	3 position	0.15 to 0.7
Ambient and fluid temperature ( $^{\circ}\text{C}$ )	-10 to 50 $^{\circ}\text{C}$ (No freezing. Refer to page 3-13-4.)	
Response time (ms) <sup>(1)</sup> (at the pressure of 0.5 MPa)	2 position single, double	20 or less
	3 position	35 or less
Max. operating frequency (Hz)	2 position single, double	10
	3 position	3
Effective area	Refer to the table below.	
Manual override <sup>(2)</sup>	Non-locking push type, Locking slotted type, Locking lever type	
Pilot exhaust method	Individual pilot exhaust type, Common exhaust (pilot and main valve) type	
Lubrication	Not required	
Mounting orientation	Unrestricted	
Impact/Vibration resistance ( $\text{m/s}^2$ ) <sup>(3)</sup>	300/50	
Enclosure	Dustproof	



Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20 $^{\circ}\text{C}$ , at rated voltage, without surge suppressor)

Note 2) When operating the locking type manually, apply torque of 0.2 N·m or less.

Note 3) 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 and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

## Solenoid Specifications

\* Option

Electrical entry	Grommet (G)/(H), L plug connector (L), M plug connector (M), DIN terminal (D)		
Coil rated voltage (V)	AC 50/60 Hz	100, 200, 24*, 48*, 110*, 220*	
	DC	24, 6*, 12*, 48*	
Allowable voltage fluctuation (%)	-15 to +10% of rated voltage		
Power consumption (W) <sup>Note)</sup> [Current mA]	DC	1.8 (With indicator light 2.1) [24 VDC: 75 (With indicator light 87.5)]	
Apparent power (VA) <sup>Note)</sup> [Current mA]	AC	Inrush	4.5/50 Hz, 4.2/60 Hz [100 VAC: 45/50 Hz, 42/60 Hz 200 VAC: 22.5/50 Hz, 21/60 Hz]
		Holding	3.5/50 Hz, 3/60 Hz [100 VAC: 35/50 Hz, 30/60 Hz 200 VAC: 17.5/50 Hz, 15/60 Hz]
Surge voltage suppressor	DC: Diode, AC: ZNR		
Indicator light	DC: LED (Red), AC: Neon bulb		



Note) At rated voltage

## Option

Description	Part no.	Note
With foot bracket	DXT170-34-1B	For VZ312 <sup>0</sup>
Silencer	AN120-M5	Noise reduction: 21dB or more ( $\phi 8 \times 17$ mm)

# 5 Port Solenoid Valve Body Ported Series VZ3000

## Flow Characteristics/Weight

Valve model	Type of actuation		Port size		Flow characteristics <sup>Note)</sup>						Weight (g)					
			1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)								
					C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv						
VZ3□20-□-M5	2 position	Single	M5 x 0.8	M5 x 0.8	0.47	0.41	0.13	0.47	0.41	0.13	75					
		Double									120					
	3 position	Closed center			0.49	0.44	0.13	0.44	0.40	0.12	0.47 [0.39]	0.43 [0.35]	0.13 [0.10]	130		
		Exhaust center														
Pressure center	0.49 [0.39]	0.51 [0.38]	0.14 [0.10]	0.45											0.42	0.12
VZ3□20-□-C4	2 position	Single	M5 x 0.8	C4 (One-touch fitting for ø4)	0.69	0.39	0.18	0.44	0.39	0.12	75					
		Double									120					
	3 position	Closed center			0.69	0.40	0.19	0.43	0.40	0.12	0.41 [0.41]	0.37 [0.37]	0.10 [0.11]	130		
		Exhaust center														
Pressure center	0.57 [0.41]	0.4 [0.37]	0.15 [0.10]	0.41											0.37	0.10
VZ3□20-□-C6	2 position	Single	M5 x 0.8	C6 (One-touch fitting for ø6)	0.70	0.36	0.19	0.47	0.40	0.12	75					
		Double									120					
	3 position	Closed center			0.72	0.37	0.19	0.44	0.34	0.12	0.41 [0.41]	0.38 [0.38]	0.11 [0.11]	130		
		Exhaust center														
Pressure center	0.67	0.54	0.19	0.41											0.36	0.11
	0.82 [0.44]	0.41 [0.39]	0.23 [0.12]	0.41											0.36	0.11

Note) [ ]: Denotes the normal position. Exhaust center: 4/2 → 5/3, Pressure center: 1 → 4/2

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

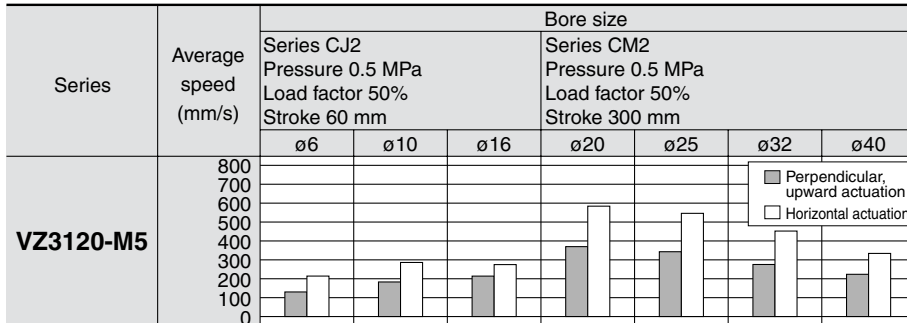
VQ7

EVS

VFN

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.



- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is what the stroke is divided by the total stroke time.
- \* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

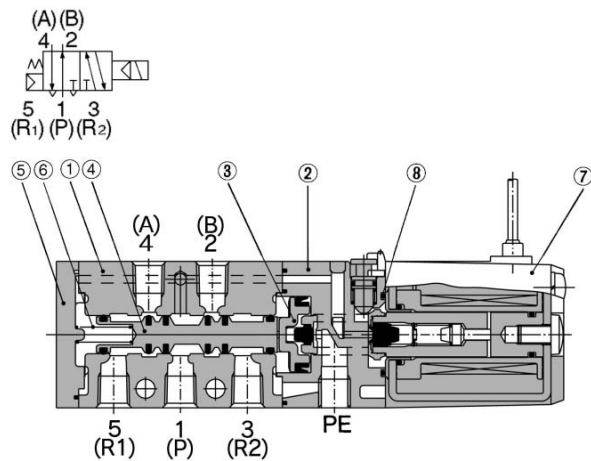
## Conditions

Body ported		Series CJ2	Series CM2	Series MB
SZ3120-M5	Tube bore x Length	ø4 x 1 m	ø6 x 1 m	ø8 x 1 m
	Speed controller	AS1301F-04	AS3301F-06	AS3301F-08
	Silencer	AN120-M5	AN110-01	

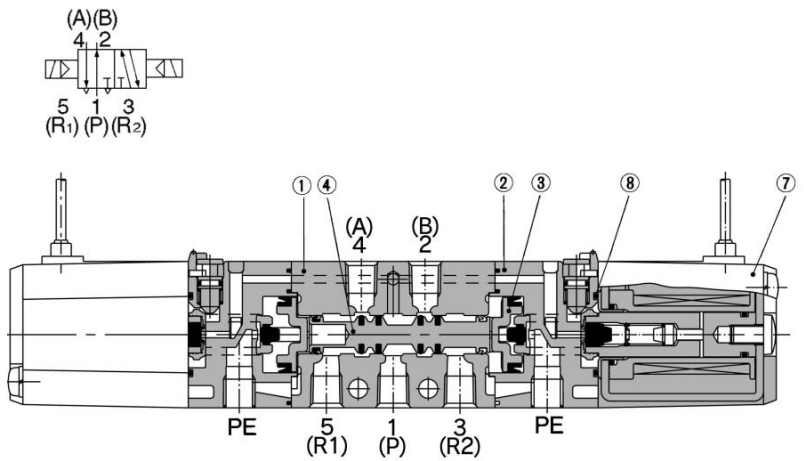
# Series VZ3000

## Construction

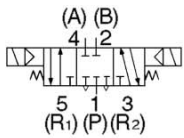
### 2 position single



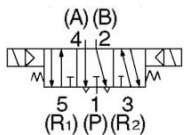
### 2 position double



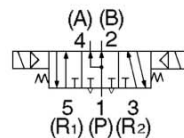
### 3 position closed center



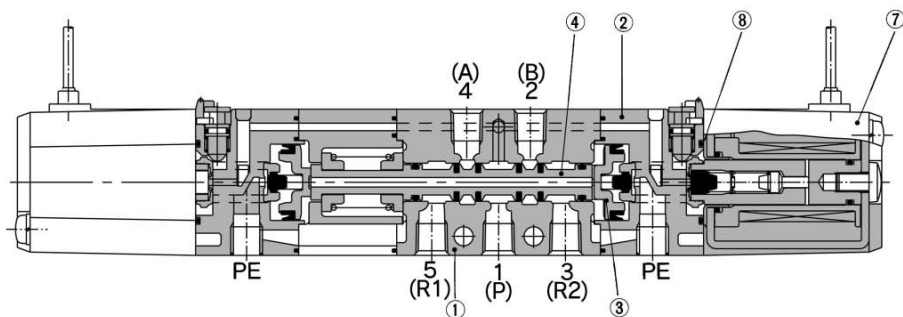
### 3 position exhaust center



### 3 position pressure center



### 3 position closed center/exhaust center/pressure center



(This figure shows a closed center type.)

## Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Piston plate	Resin	Black
③	Piston	Resin	
④	Spool valve	Aluminum, HNBR	
⑤	End cover	Resin	
⑥	Spool spring	Stainless steel	

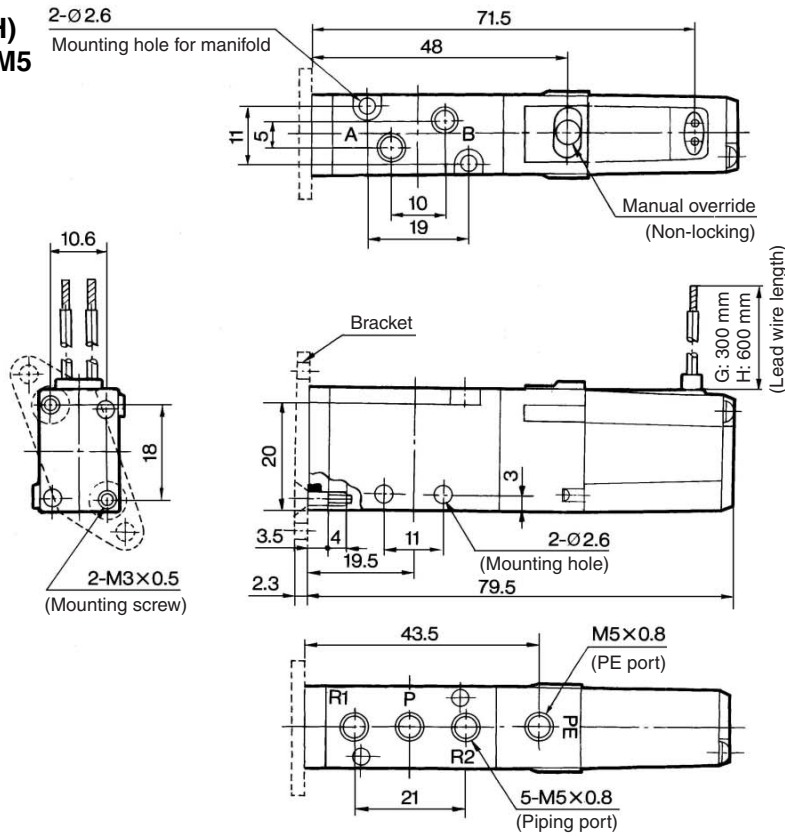
## Replacement Parts

No.	Description	Material	Part no.	Note
⑦	Solenoid assembly	Epoxy/Stainless steel	DXT170-C-□□□	
⑧	O-ring	NBR	13 x 11 x 1	Common with Series VZ <sub>5</sub> 000

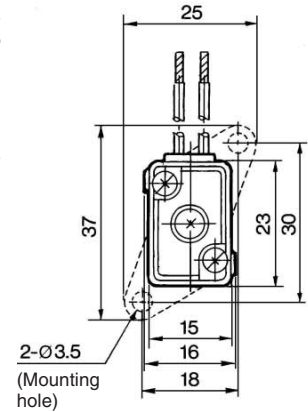
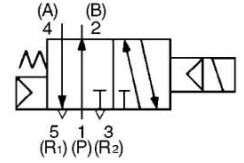
# 5 Port Solenoid Valve Body Ported Series VZ3000

## 2 Position Single

**Grommet (G), (H)**  
VZ3120-□□□□-M5



VZ3120



VK

VZ

VF

VFR

VP4

VZS

VFS

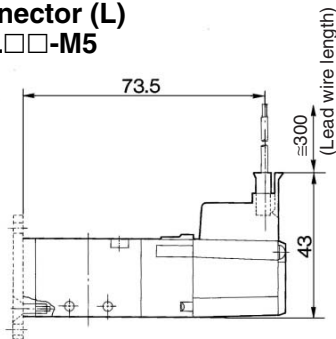
VS4

VQ7

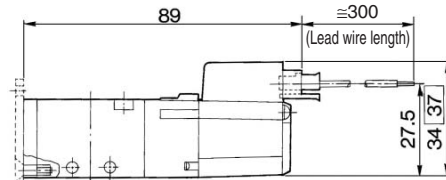
EVS

VFN

**L plug connector (L)**  
VZ3120-□L□□-M5

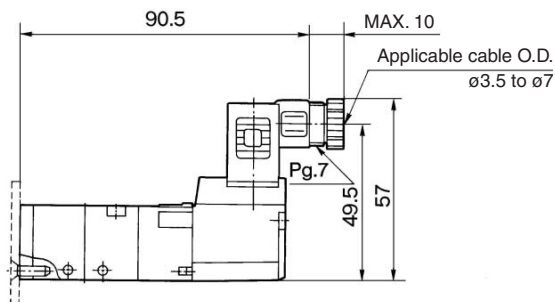


**M plug connector (M)**  
VZ3120-□M□□-M5

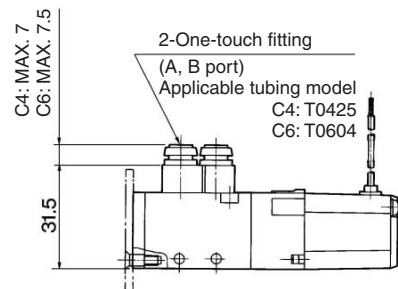


□: With light/surge voltage suppressor

**DIN terminal (D)**  
VZ3120-□D□□-M5



**Built-in One-touch fittings**  
VZ3120-□□□□-C4

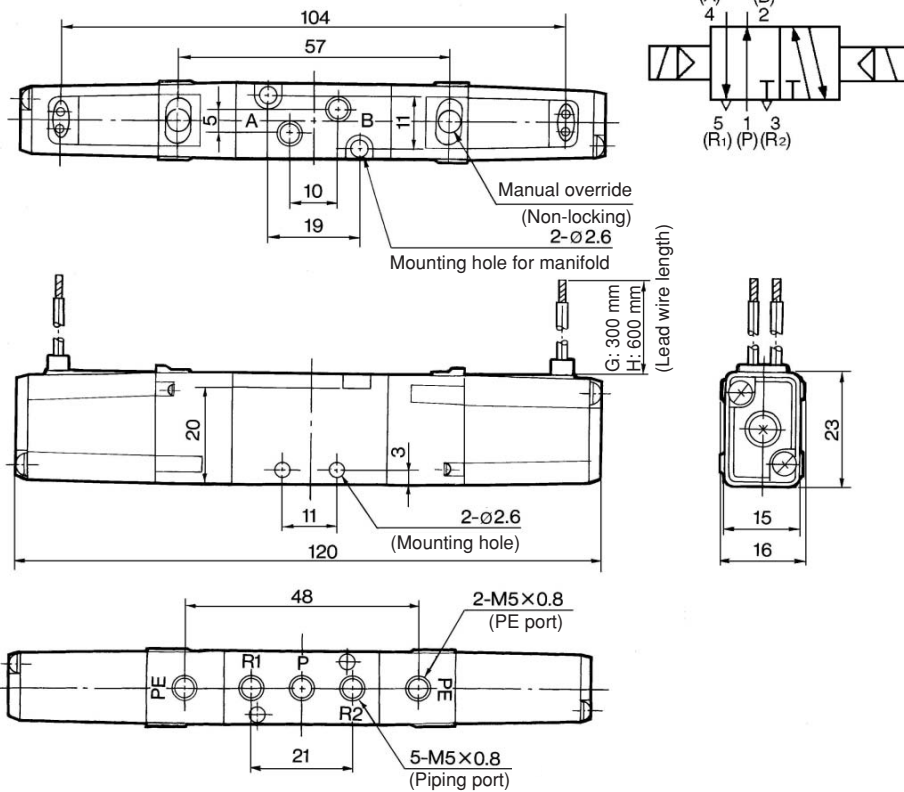


# Series VZ3000

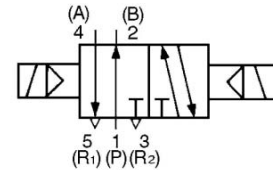


## 2 Position Double

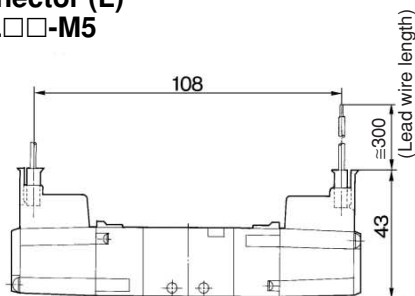
Grommet (G), (H)  
VZ3220-□G□□-M5



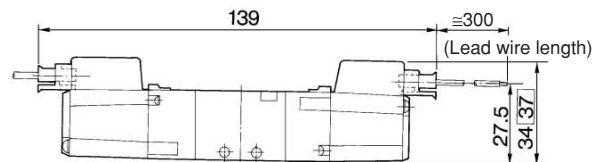
VZ3220



L plug connector (L)  
VZ3220-□L□□-M5

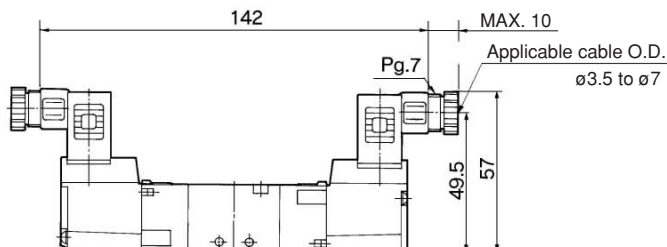


M plug connector (M)  
VZ3220-□M□□-M5

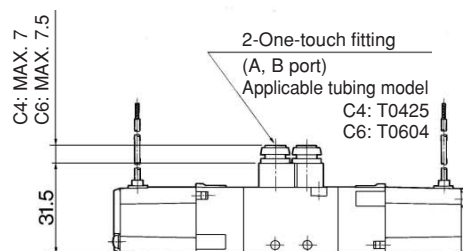


□: With light/surge voltage suppressor

DIN terminal (D)  
VZ3220-□D□□-M5



Built-in One-touch fittings  
VZ3220-□□□□-C4  
C6



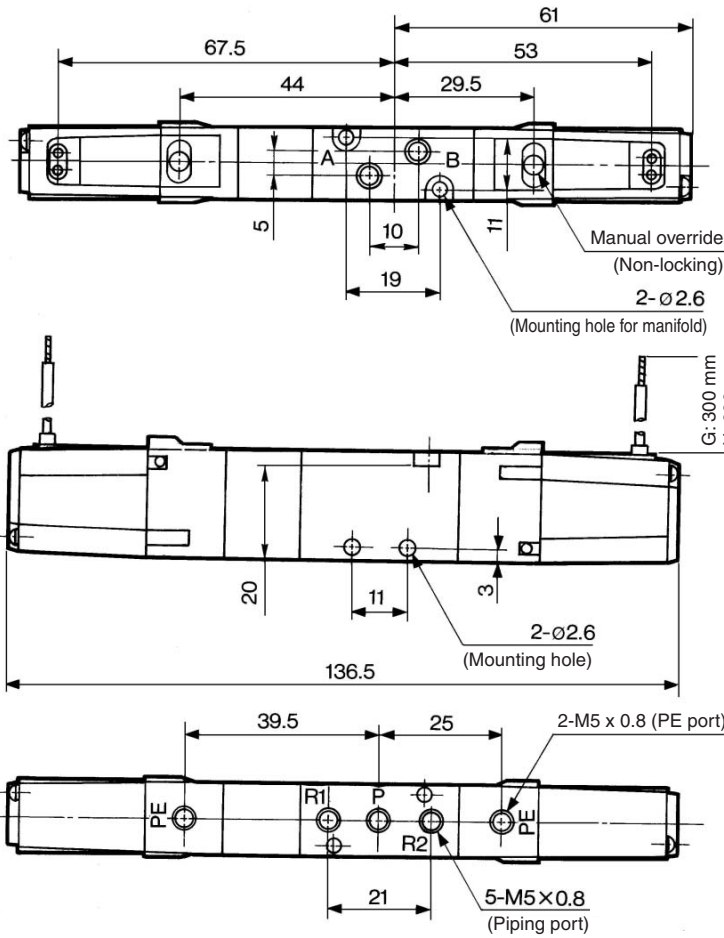


# 5 Port Solenoid Valve Body Ported Series VZ3000

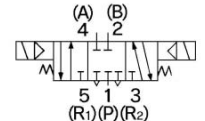
## 3 Position Closed Center/Exhaust Center/Pressure Center



Grommet (G), (H)  
VZ3<sup>3</sup>/<sub>4</sub>20-□□□-M5



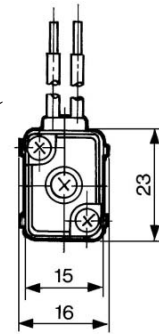
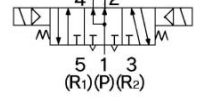
VZ3320



VZ3420



VZ3520



VK

VZ

VF

VFR

VP4

VZS

VFS

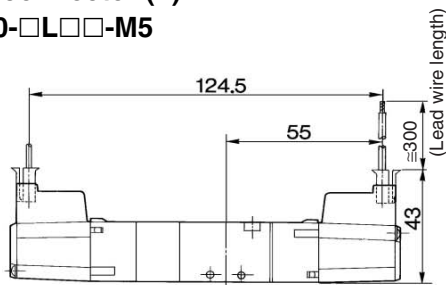
VS4

VQ7

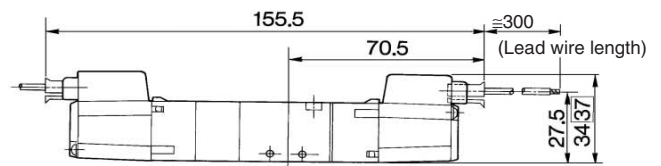
EVS

VFN

L plug connector (L)  
VZ3<sup>3</sup>/<sub>4</sub>20-□□□-M5

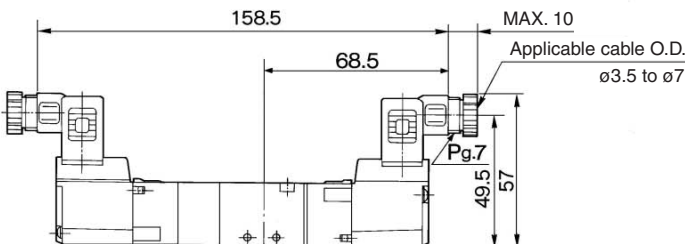


M plug connector (M)  
VZ3<sup>3</sup>/<sub>4</sub>20-□□□-M5

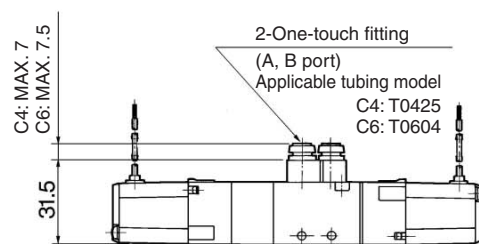


□: With light/surge voltage suppressor

DIN terminal (D)  
VZ3<sup>3</sup>/<sub>4</sub>20-□□□-M5



Built-in One-touch fittings  
VZ3<sup>3</sup>/<sub>4</sub>20-□□□□-C<sub>4</sub>  
C<sub>6</sub>



# 5 Port Solenoid Valve Base Mounted Series VZ3000

## How to Order

**Plug-in** VZ3 1 4 3 - 5 F Z

**Non plug-in** VZ3 1 4 0 - 5 L

**Type of actuation**

1	2 position single	
2	2 position double	
3	3 position closed center	
4	3 position exhaust center	
5	3 position pressure center	

**Body option**

- 0: Individual exhaust for the pilot valve
- 3: Common exhaust type for main and pilot valve

**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
9*	Other

\* Option

**Electrical entry**

Grommet	L plug connector	M plug connector	MN: Without lead wire	DIN terminal
G: Lead wire length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire	D: With connector
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Port size**

Nil: Without sub-plate    01: Rc 1/8 With sub-plate

**Manual override/Plug-in type**

Nil: Non-locking push type    B: Locking type B (Slotted)    C: Locking type C (Manual)

**Manual override/Non plug-in type**

Nil: Non-locking push type    B: Locking type B (Slotted)    C: Locking type C (Manual)

**Light/Surge voltage suppressor**

Nil	None
Z*	With light/surge voltage suppressor
S	With surge voltage suppressor

\* Not available for "GZ", "HZ" and "DOZ"

Note) Please contact SMC in the case of without indicator light.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

\* Type "LN", "MN": With 2 sockets.

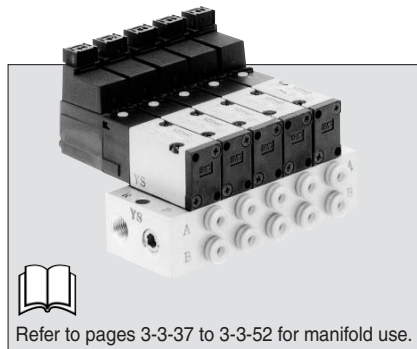


# Series VZ3000

Applicable for cylinder actuation (up to  $\varnothing 40$ ).

Compact size  
(Width: 15 mm)

Low power consumption:  
1.8 W DC



Refer to pages 3-3-37 to 3-3-52 for manifold use.



**Made to Order Specifications**  
(For details, refer to page 3-3-85.)

## Specifications

Fluid		Air
Operating pressure range (MPa)	2 position single	0.15 to 0.7
	2 position double	0.1 to 0.7
	3 position	0.15 to 0.7
Ambient and fluid temperature (°C)	-10 to 50°C (No freezing. Refer to page 3-13-4.)	
Response time (ms) <sup>(1)</sup> (at the pressure of 0.5 MPa)	2 position single, double	20 or less
	3 position	35 or less
Max. operating frequency (Hz)	2 position single, double	10
	3 position	3
Manual override <sup>(2)</sup>	Non-locking push type, Locking slotted type, Locking lever type	
Pilot exhaust method	Individual pilot exhaust type, Common exhaust (pilot and main valve) type	
Lubrication	Not required	
Mounting orientation	Unrestricted	
Impact/Vibration resistance (m/s <sup>2</sup> ) <sup>(3)</sup>	300/50	
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) When operating the locking type manually, apply torque of 0.2 N·m or less.

Note 3) 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 and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

## Solenoid Specifications

\* Option

Electrical entry	Grommet (G)/(H), L plug connector (L), M plug connector (M), DIN terminal (D)	
Coil rated voltage (V)	AC 50/60 Hz	100, 200, 24*, 48*, 110*, 220*
	DC	24, 6*, 12*, 48*
Allowable voltage fluctuation (%)	-15 to +10% of rated voltage	
Power consumption (W) <sup>(1)</sup> [Current mA]	DC	
	1.8 (With indicator light 2.1) [24 VDC: 75 (With indicator light 87.5)]	
Apparent power (VA) <sup>(1)</sup> [Current mA] <sup>Note</sup>	AC	Inrush
		Holding
Surge voltage suppressor		DC: Diode, AC: ZNR <sup>(2)</sup>
Indicator light		DC: LED (Red), AC: Neon bulb

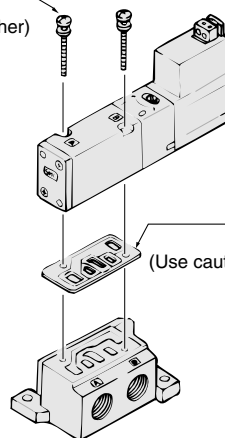


Note 1) At rated voltage

Note 2) Plug-in should be ZNR.

## Combinations of Solenoid Valve and Gasket

Round head combination screw  
M2.5 x 25  
(With spring washer)



Gasket

DXT192-10-5  
(Use caution to the orientation.)

# 5 Port Solenoid Valve Base Mounted Series VZ3000

## Flow Characteristics/Weight

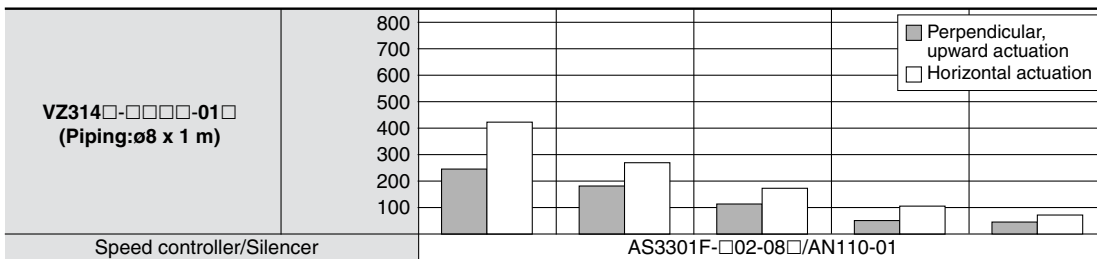
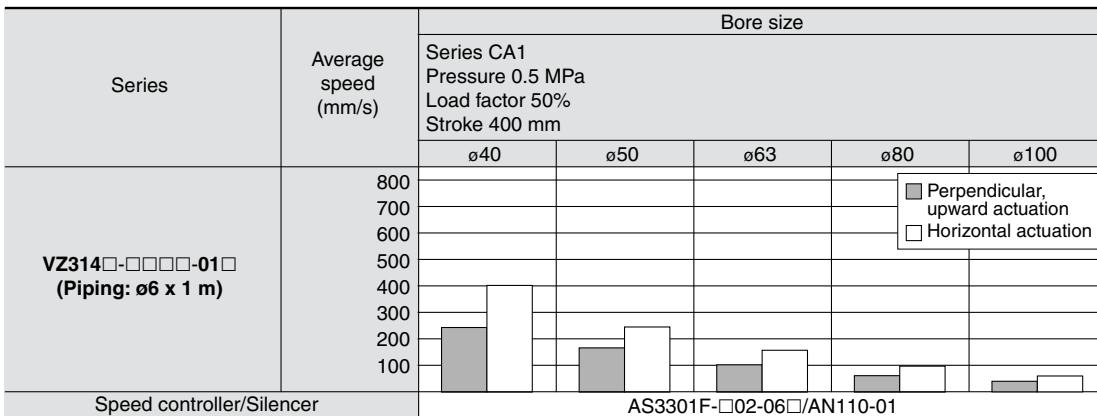
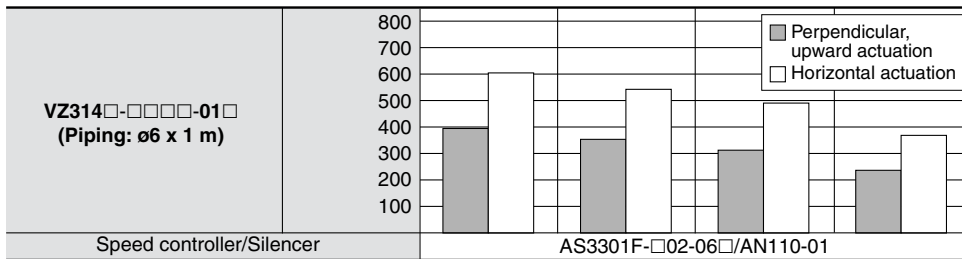
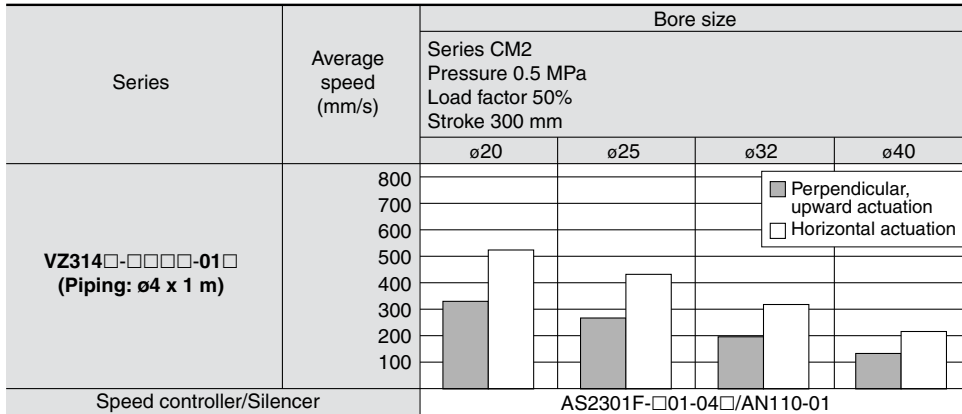
Valve model	Type of actuation		Port size		Flow characteristics <sup>(1)</sup>						Weight (g)
			1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)			
					C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
VZ3□40-□-01	2 position	Single	Rc 1/8	Rc 1/8	0.79	0.21	0.19	0.83	0.32	0.21	Grommet
		Double									125 (75)
	3 position	Closed center			0.80	0.28	0.18	0.86	0.34	0.20	180 (130)
		Exhaust center			0.71	0.26	0.18	1.1 [0.60]	0.24 [0.44]	0.26 [0.18]	
		Pressure center			0.99 [0.47]	0.29 [0.38]	0.24 [0.12]	0.72	0.38	0.18	



Note 1) [ ]: Denotes the normal position. Exhaust center: 4/2 → 5/3, Pressure center: 1 → 4/2  
 Note 2) ( ): Without sub-plate.

## Cylinder Speed Chart

Use as a guide for selection.  
 Please confirm the actual conditions with SMC Sizing Program.



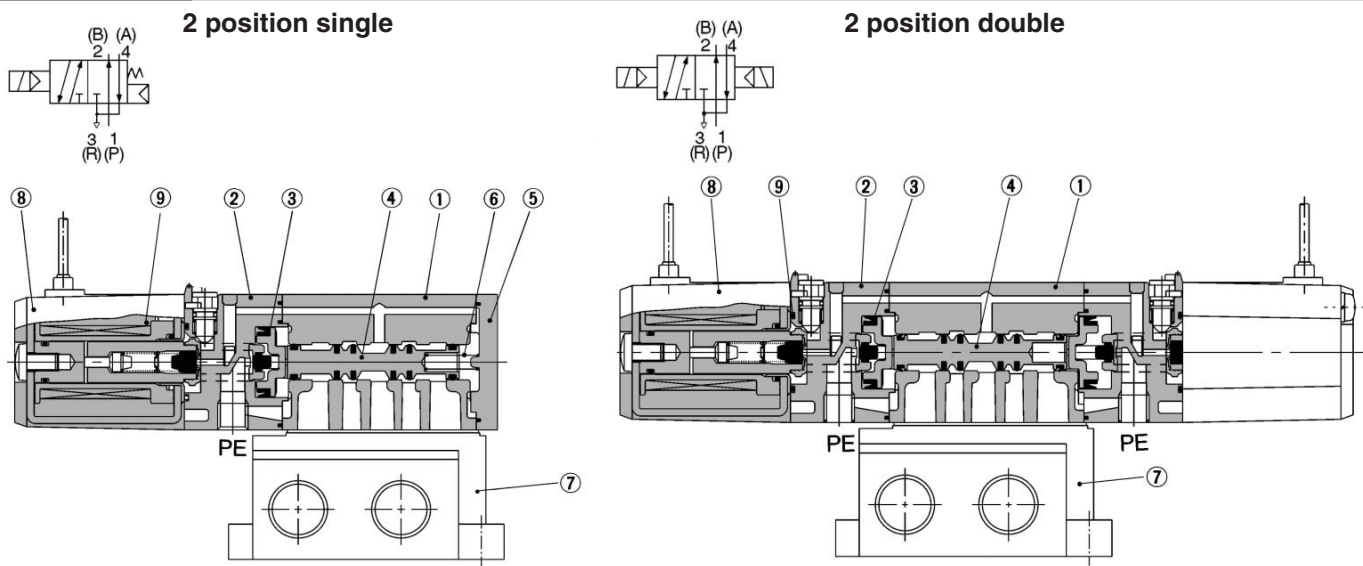
\* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.  
 \* The average velocity of the cylinder is what the stroke is divided by the total stroke time.  
 \* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

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



# 5 Port Solenoid Valve Base Mounted Series VZ3000

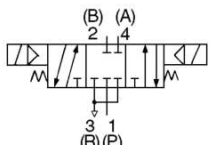
## Construction



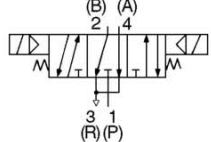
- VK
- VZ**
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

### 3 position closed center/exhaust center/pressure center

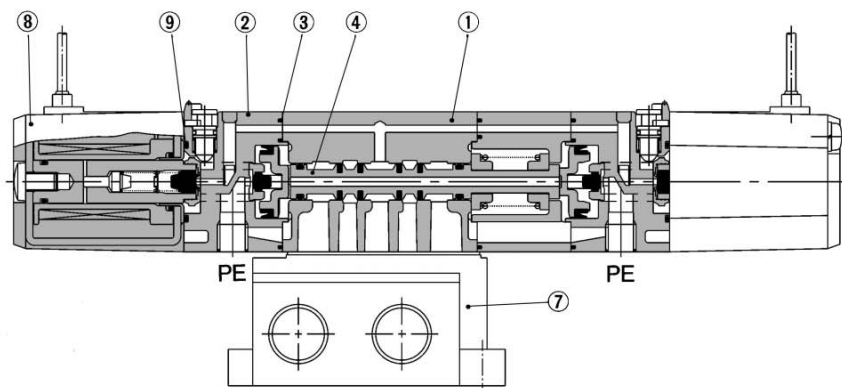
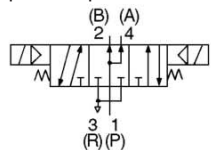
3 position closed center



3 position exhaust center



3 position pressure center



(This figure shows a closed center type.)

## Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Piston plate	Resin	Black
③	Piston	Resin	
④	Spool valve	Aluminum, HNBR	
⑤	End cover	Resin	
⑥	Spool spring	Stainless steel	

## Replacement Parts

No.	Description	Material	Part no.	Note
⑦	Sub-plate	Aluminum die-casted	DXT192-14-1*P	Platinum silver
⑧	Solenoid assembly	Epoxy/Stainless steel	DXT170-C-□□□	
⑨	O-ring	NBR	13 x 11 x 1	Common with Series VZ $\frac{1}{2}$ 000

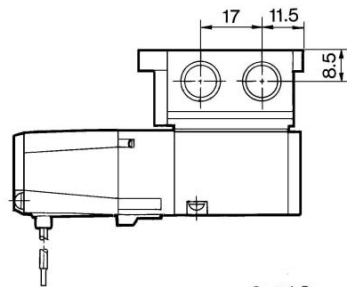
\* Thread type  
Nil: Rc  
F: G  
N: NPT  
T: NPTF

# Series VZ3000

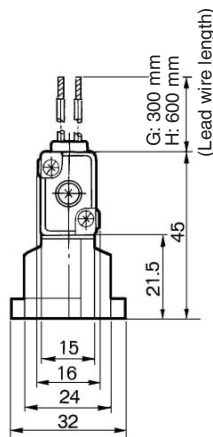
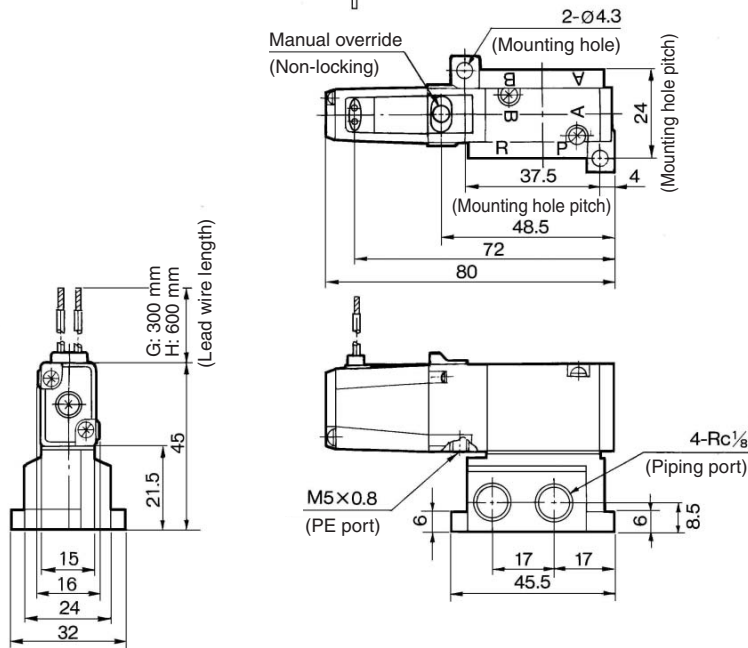
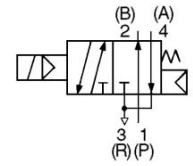


## 2 Position Single

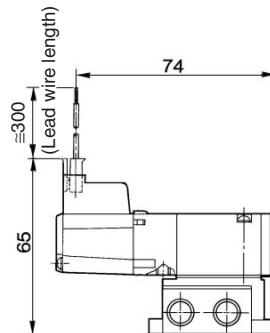
Grommet (G), (H)  
VZ3140-□G□□-01



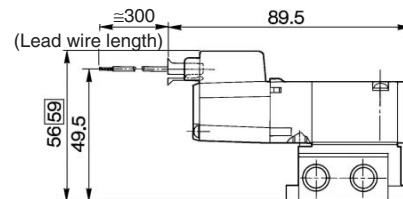
VZ3140



L plug connector (L)  
VZ3140-□L□□-01



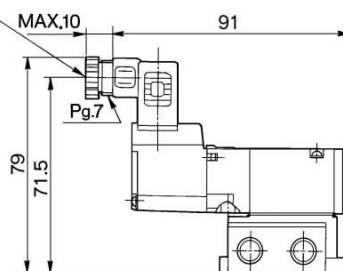
M plug connector (M)  
VZ3140-□M□□-01



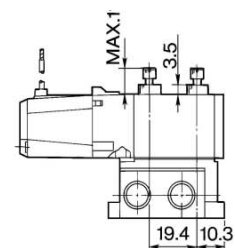
□: With light/surge voltage suppressor

DIN terminal (D)  
VZ3140-□D□□-01

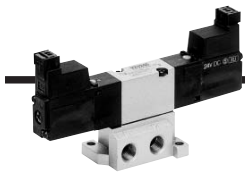
Applicable cable O.D.  
ø3.5 to ø7



Built-in speed controllers  
VZ3150-□□□□

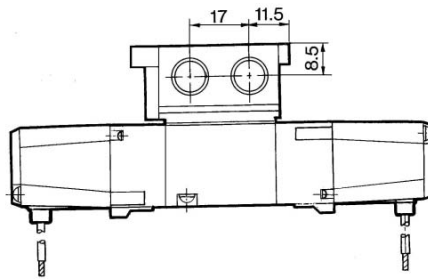


# 5 Port Solenoid Valve Base Mounted Series VZ3000

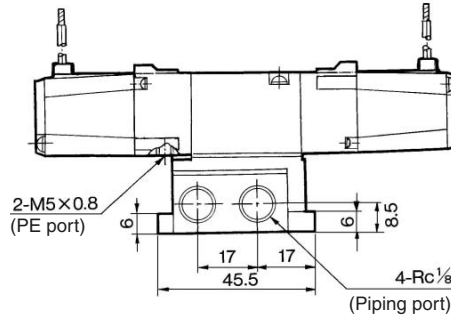
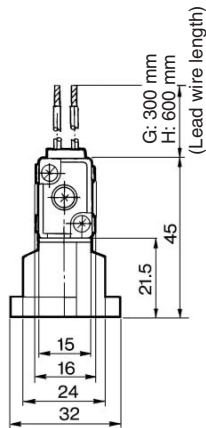
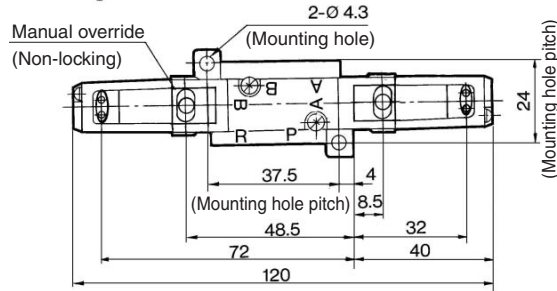
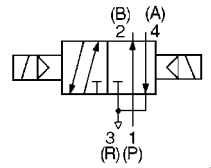


## 2 Position Double

**Grommet (G), (H)**  
VZ3240-□G□□-01

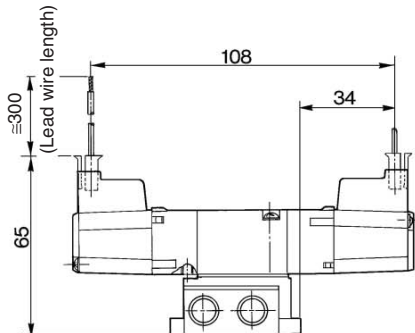


VZ3240

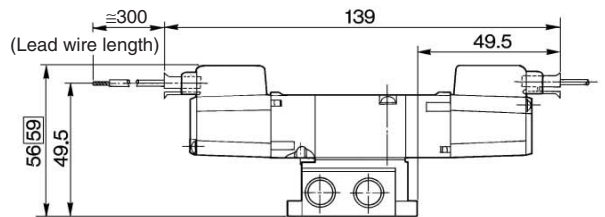


- VK
- VZ**
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

**L plug connector (L)**  
VZ3240-□L□□-01

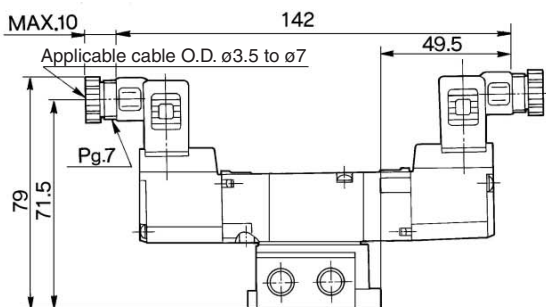


**M plug connector (M)**  
VZ3240-□M□□-01

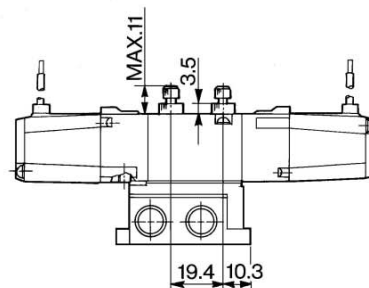


□: With light/surge voltage suppressor

**DIN terminal (D)**  
VZ3240-□D□□-01



**Built-in speed controllers**  
VZ3250-□□□□



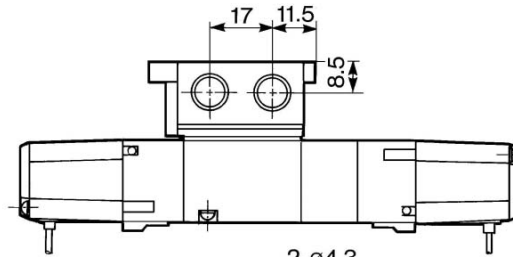


# Series VZ3000

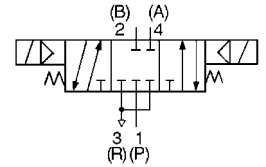


## 3 Position Closed Center/Exhaust Center/Pressure Center

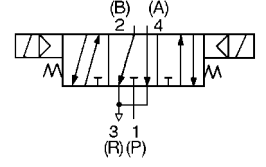
**Grommet (G), (H)**  
**VZ3<sup>3</sup><sub>4</sub>20-□G□□-01**



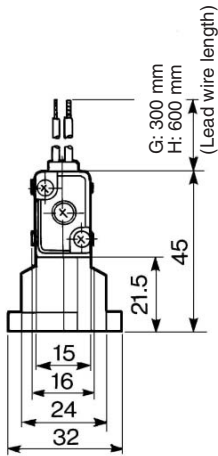
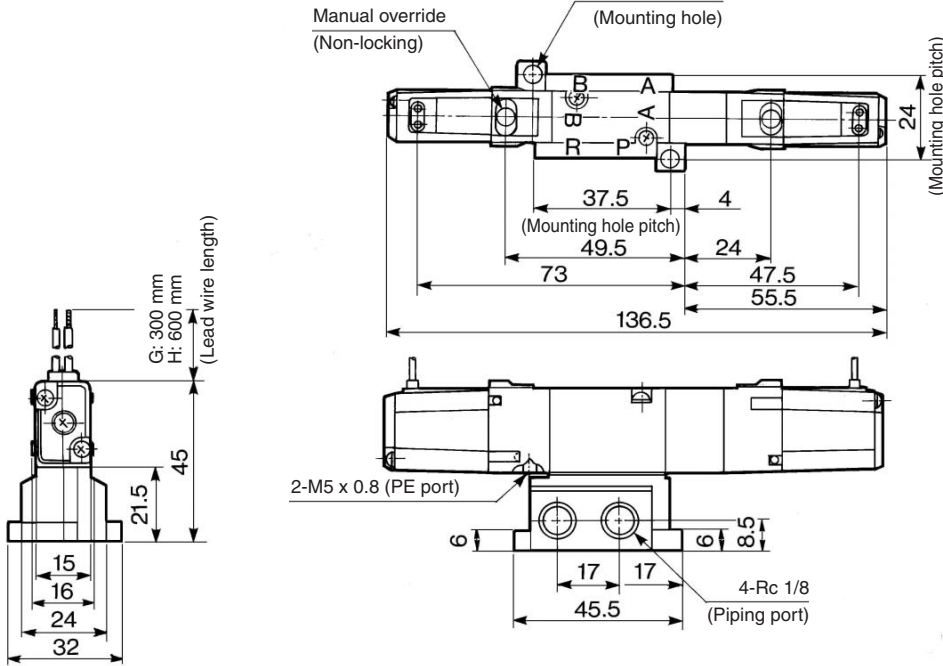
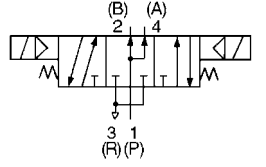
**VZ3340**



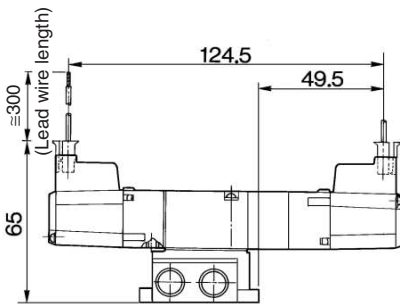
**VZ3440**



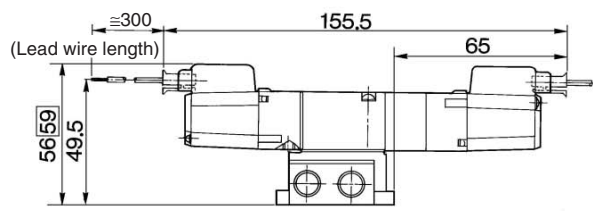
**VZ3540**



**L plug connector (L)**  
**VZ3<sup>3</sup><sub>4</sub>40-□L□□-01**

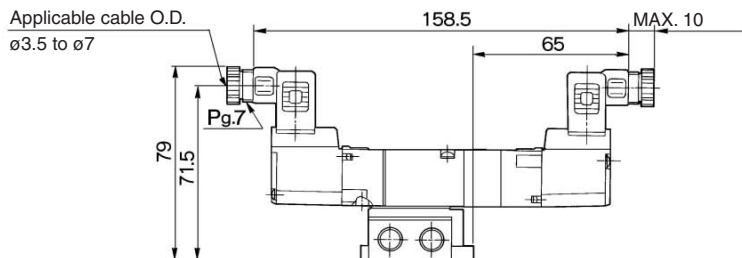


**M plug connector (M)**  
**VZ3<sup>3</sup><sub>4</sub>40-□M□□-01**

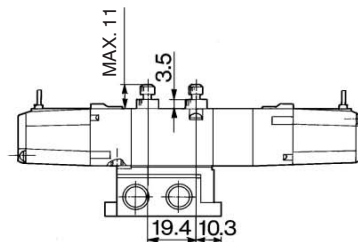


□: With light/surge voltage suppressor

**DIN terminal (D)**  
**VZ3<sup>3</sup><sub>4</sub>40-□D□□-01**



**Built-in speed controllers**  
**VZ3<sup>3</sup><sub>4</sub>50-□□□□**



# Made to Order Specifications:

Please contact SMC for detailed specifications, dimensions, and delivery.

## 1. Solenoid Valve: External Pilot Specifications

### Applicable solenoid valve series

VZ3000/5000

(Non plug-in type only)

### Model no.

VZ<sub>5</sub><sup>3</sup> □ □ 0-□ □ □ □ (-□) - X20

Entry is the same as standard products.

### Specifications

Operating pressure range (MPa)	Main pressure	-100 kPa to 0.7
	External pilot pressure	0.15 to 0.7
Pilot exhaust method		Pilot valve individual exhaust

### Dimensions

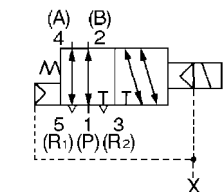
VZ3000: 8 mm longer

VZ5000: 8 mm longer

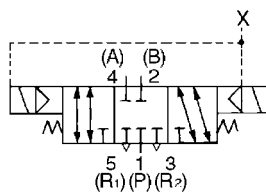
### JIS Symbol

Body ported

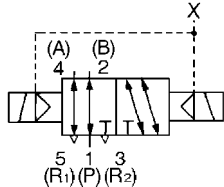
2 position single



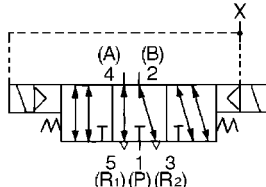
3 position closed center



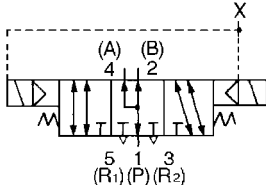
2 position double



3 position exhaust center



3 position pressure center



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

# Series VZ

# Made to Order Specifications:

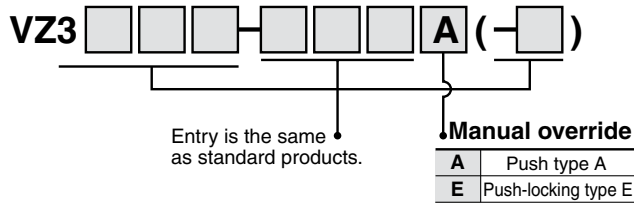
Please contact SMC for detailed specifications, dimensions, and delivery.

## 2. Solenoid Valve: Special Manual Override

### Applicable solenoid valve series

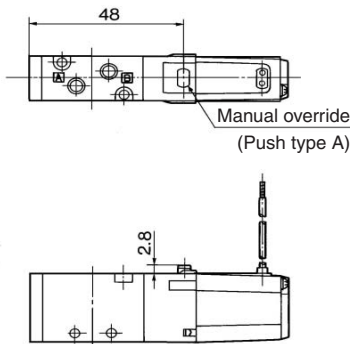
VZ3000  
(Non plug-in type only)

### Model no.

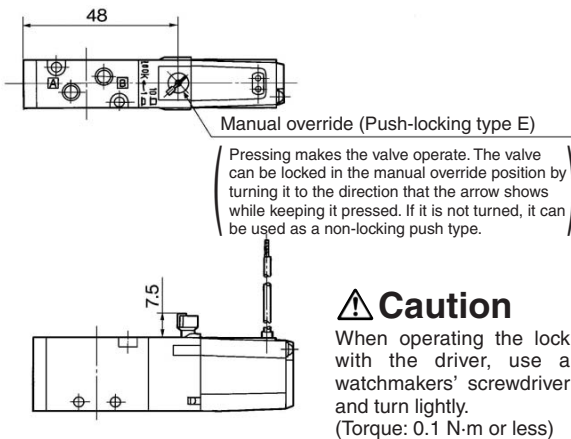


### Dimensions: Single

#### Push type A



#### Push-locking type E



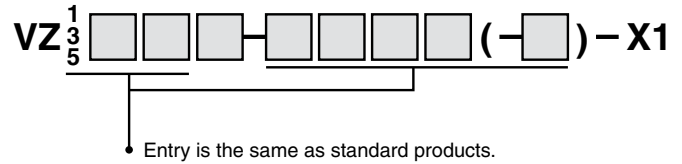
Note) Because the manual override unit protrudes, the manual override could activate unintentionally if the protrusion is touched or an object falls on it. Therefore, take the proper preventative measures.

## 3. Solenoid Valve: Opposite Mount of Solenoid Assembly

### Applicable solenoid valve series

VZ1000/3000/5000  
(Non plug-in type only)

### Model no.



### Dimensions: VZ1120-□G-M5-X1

