

# 5 Port Solenoid Valve Body Ported Series VZ5000

## How to Order

**Body ported VZ5** 1 2 0 5 L [ ] [ ] 01 [ ] [ ]

**Type of actuation**

- 1: 2 position single solenoid (A) (B) 4 2 5 1 3 (R<sub>1</sub>) (P) (R<sub>2</sub>)
- 2: 2 position double solenoid (A) (B) 4 2 5 1 3 (R<sub>1</sub>) (P) (R<sub>2</sub>)
- 3: 3 position closed center (A) (B) 4 2 5 1 3 (R<sub>1</sub>) (P) (R<sub>2</sub>)
- 4: 3 position exhaust center (A) (B) 4 2 5 1 3 (R<sub>1</sub>) (P) (R<sub>2</sub>)
- 5: 3 position pressure center (A) (B) 4 2 5 1 3 (R<sub>1</sub>) (P) (R<sub>2</sub>)

**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

**Electrical entry**

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

**Manual override**

- 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

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

01	Rc 1/8
C6	One-touch fitting for ø6
C8	One-touch fitting for ø8

Note) P, R1, R2 port: Rc 1/8

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Option**

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

Note) Do not remove the factory installed bracket from models with the bracket option.

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

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

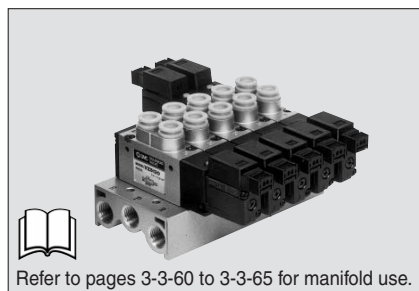
\* Not available for "GZ", "HZ" and "DOZ"

# Series VZ5000

Applicable for cylinder actuation (up to  $\phi 50$ ).

Compact size  
(Width: 18 mm)

Low power consumption:  
1.8 W DC



Refer to pages 3-3-60 to 3-3-65 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	50 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 (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>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

# 5 Port Solenoid Valve Body Ported Series VZ5000

## 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	
VZ5□20-□-01	2 position	Single	Rc 1/8	Rc 1/8	2.2	0.36	0.58	2.4	0.34	0.63	120
		Double			160						
	3 position	Closed center			1.8	0.37	0.45	2.0	0.35	0.49	160
		Exhaust center			1.2	0.50	0.34	3.0[1.3]	0.35[0.52]	0.73[0.39]	
Pressure center	3.0 [0.83]	0.37[0.50]	0.78[0.25]	1.8	0.37	0.45					
VZ5□20-□-C6	2 position	Single	Rc 1/8	C6 (One-touch fitting for ø6)	1.6	0.33	0.4	2.2	0.32	0.53	
		Double			160						
	3 position	Closed center			1.4	0.27	0.35	1.9	0.33	0.49	160
		Exhaust center			1.1	0.37	0.27	2.5[1.3]	0.32[0.54]	0.61[0.38]	
Pressure center	1.8 [0.78]	0.36[0.40]	0.45[0.22]	1.6	0.30	0.39					
VZ5□20-□-C8	2 position	Single	Rc 1/8	C8 (One-touch fitting for ø8)	2.0	0.39	0.52	2.3	0.34	0.61	
		Double			160						
	3 position	Closed center			1.7	0.35	0.42	2.0	0.29	0.49	160
		Exhaust center			1.2	0.38	0.33	2.6[1.3]	0.35[0.49]	0.67[0.38]	
Pressure center	1.9 [0.86]	0.57[0.46]	0.59[0.25]	1.7	0.39	0.42					

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

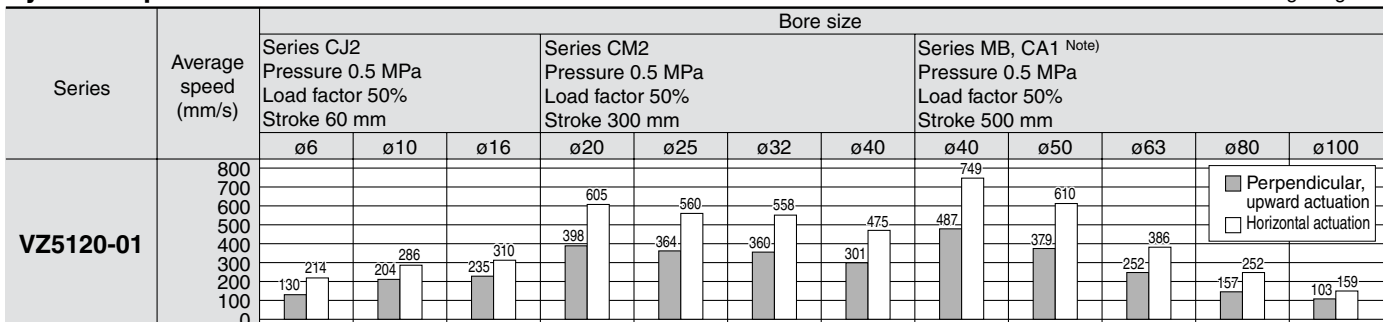
EVS

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%

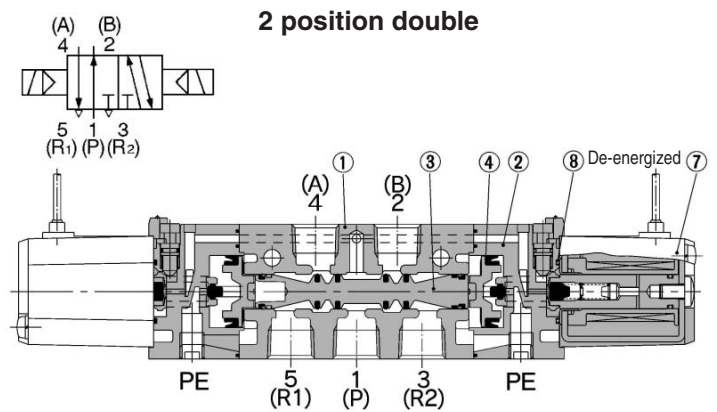
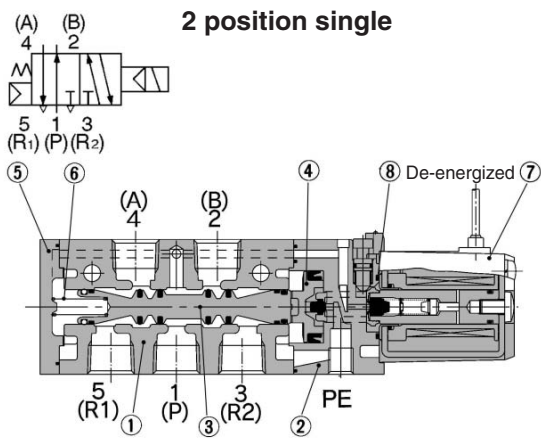
Note) The Series CA1 has been changed to the Series CA2.

## Conditions

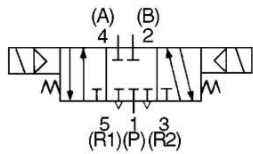
	Body ported	Series CJ2	Series CM2	Series MB
VZ5120-01	Tube bore x Length	ø6 x 1 m	ø6 x 1 m	ø12 x 1 m
	Speed controller	AS2301F-06	AS3301F-06	AS4001F-12
	Silencer	AN110-01	AN200-02	

# Series VZ5000

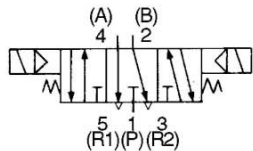
## Construction



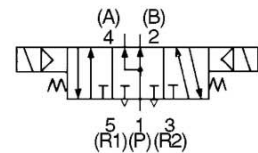
3 position closed center



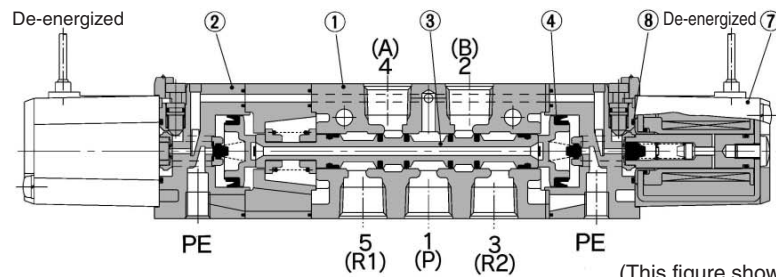
3 position exhaust center



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	Black painted
⑥	Spool spring	Stainless steel	

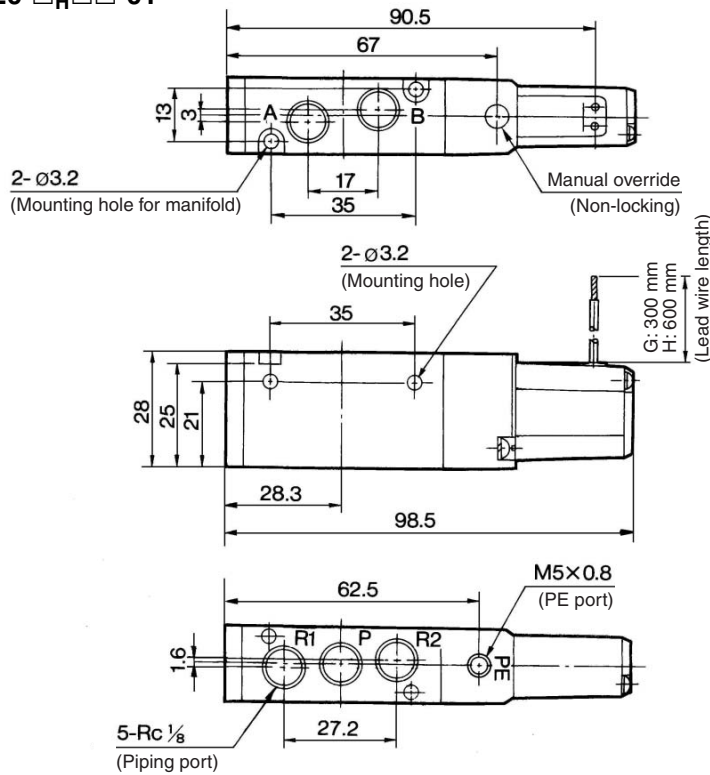
### Replacement Parts

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>3</sub> 000

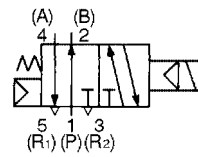
# 5 Port Solenoid Valve Body Ported Series VZ5000

## 2 Position Single

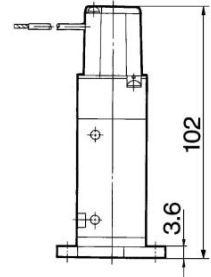
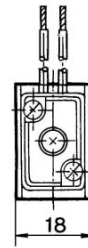
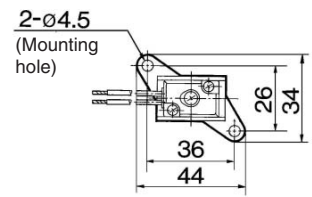
**Grommet (G), (H)**  
VZ5120-□<sup>G</sup>□□-01



VZ5120



**Foot bracket**  
VZ5120-□<sup>G</sup>□□-01-F



VK

VZ

VF

VFR

VP4

VZS

VFS

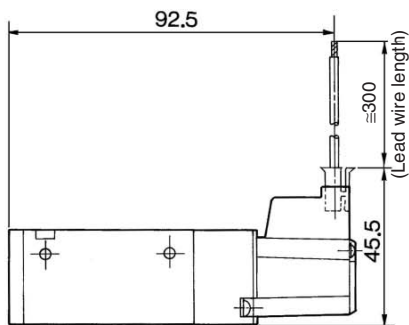
VS4

VQ7

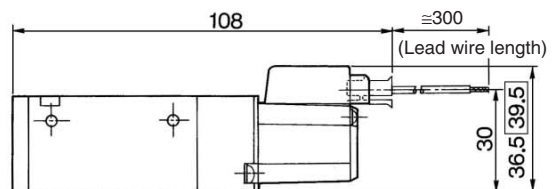
EVS

VFN

**L plug connector (L)**  
VZ5120-□L□□-01

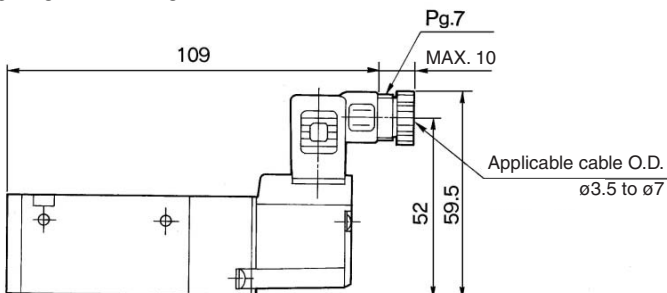


**M plug connector (M)**  
VZ5120-□M□□-01



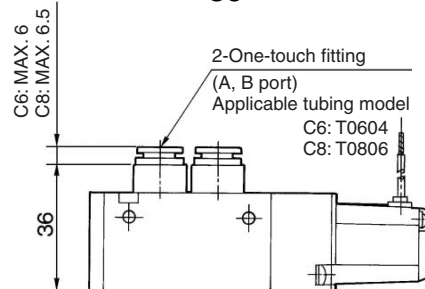
□: With light/surge voltage suppressor

**DIN terminal (D)**  
VZ5120-□D□□-01



**Built-in One-touch fittings**

VZ5120-□□□□-  
C6  
C8

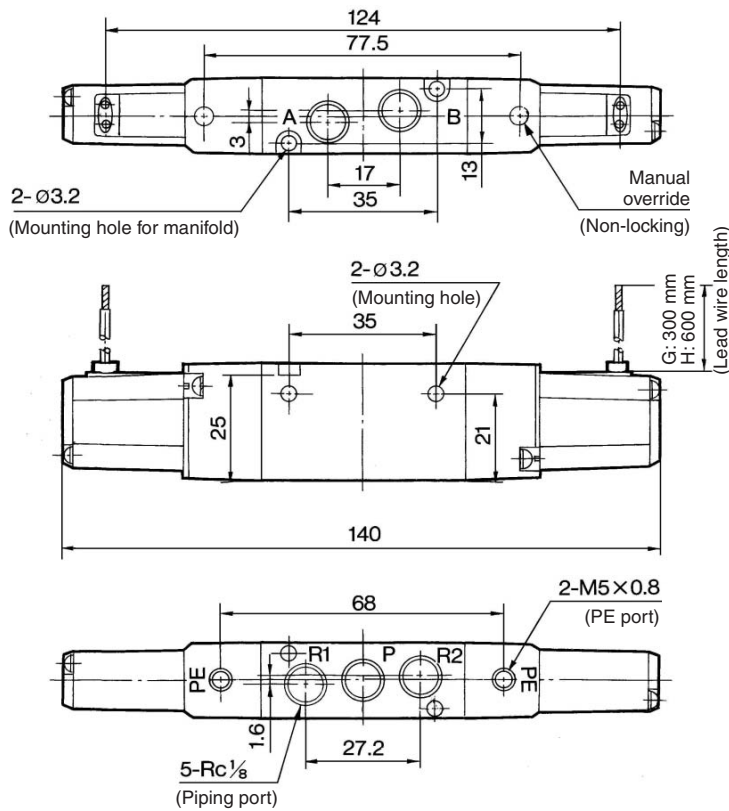


# Series VZ5000

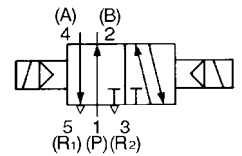


## 2 Position Double

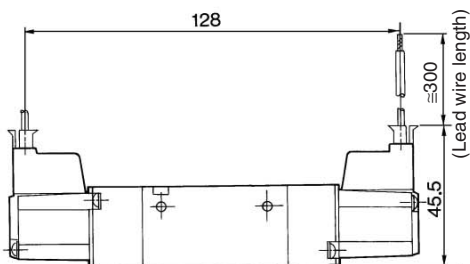
Grommet (G), (H)  
VZ5220-□<sup>G</sup>□□-01



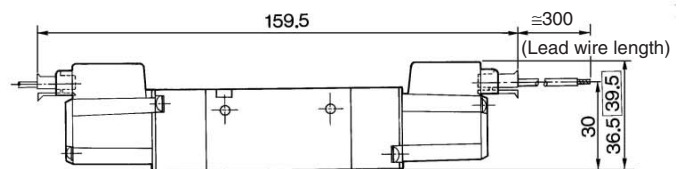
VZ5220



L plug connector (L)  
VZ5220-□L□□-01

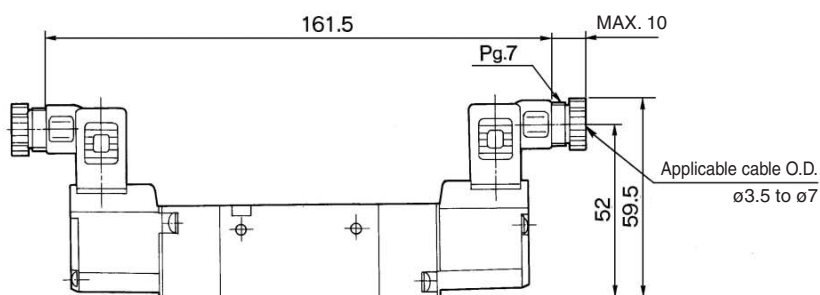


M plug connector (M)  
VZ5220-□M□□-01

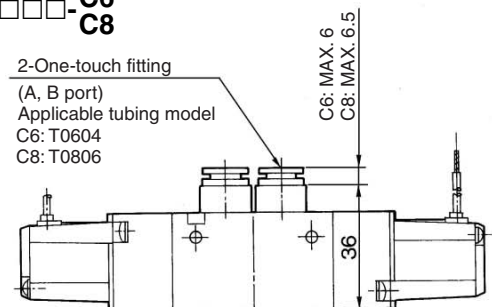


□: With light/surge voltage suppressor

DIN terminal (D)  
VZ5220-□D□□-01



Built-in One-touch fittings  
VZ5220-□□□□-<sup>C6</sup>  
C8

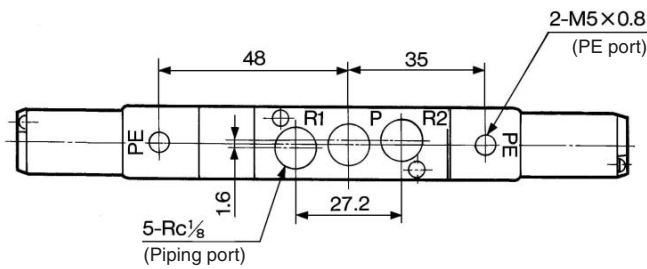
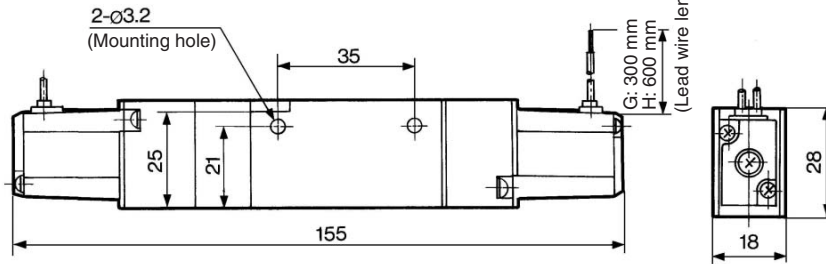
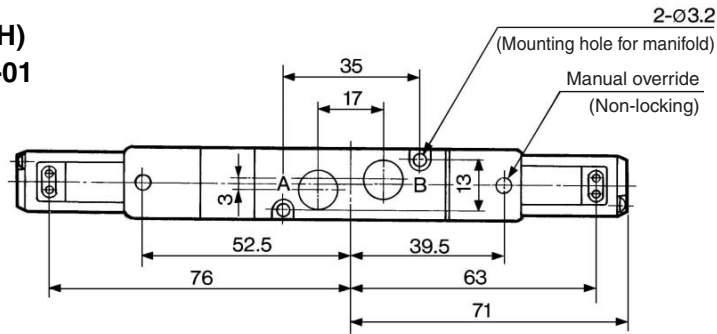


# 5 Port Solenoid Valve Body Ported Series VZ5000

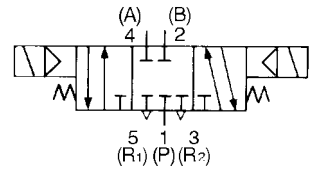


## 3 Position Closed Center/Exhaust Center/Pressure Center

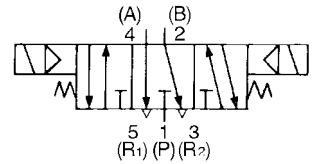
Grommet (G), (H)  
VZ5<sup>3</sup>/<sub>4</sub>20-□G□□-01



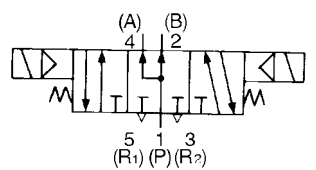
VZ5320



VZ5420

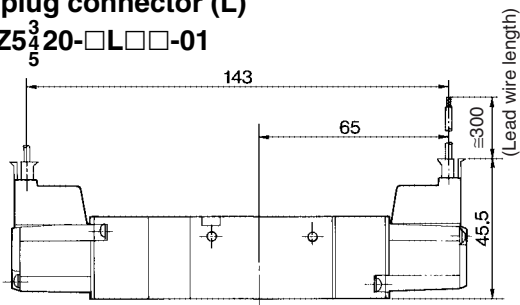


VZ5520

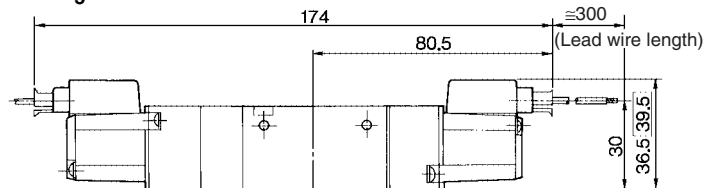


- VK
- VZ**
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

L plug connector (L)  
VZ5<sup>3</sup>/<sub>4</sub>20-□L□□-01

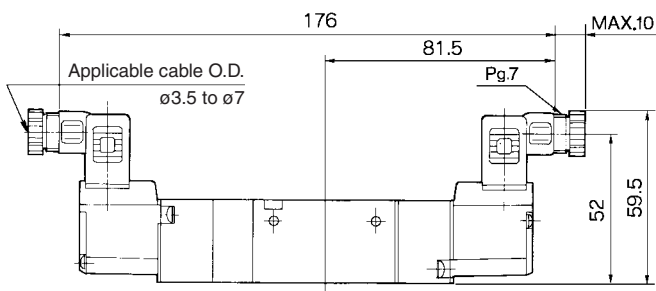


M plug connector (M)  
VZ5<sup>3</sup>/<sub>4</sub>20-□M□□-01

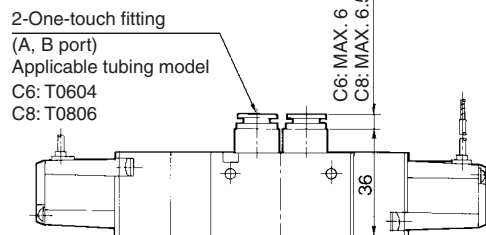


□: With light/surge voltage suppressor

DIN terminal (D)  
VZ5<sup>3</sup>/<sub>4</sub>20-□D□□-01



Built-in One-touch fittings  
VZ5<sup>3</sup>/<sub>4</sub>20-□□□□-C6  
C8



# 5 Port Solenoid Valve Base Mounted Series VZ5000

## How to Order

**Plug-in** VZ5 1 4 3 — 5 F Z

**Non plug-in** VZ5 1 4 0 — 5 L

**Type of actuation**

- 1: 2 position single solenoid
- 2: 2 position double solenoid
- 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
<b>G:</b> Lead wire length 300 mm	<b>L:</b> With lead wire (Length 300 mm)	<b>M:</b> With lead wire (Length 300 mm)	<b>MN:</b> Without lead wire	<b>D:</b> With connector
<b>H:</b> Lead wire length 600 mm	<b>LN:</b> Without lead wire	<b>LO:</b> Without connector	<b>MO:</b> Without connector	<b>DO:</b> Without connector

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

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Port size**

- Nil: Without sub-plate
- 01: Rc 1/8 With sub-plate <sup>Note</sup>
- 02: Rc 1/4 With sub-plate

Note 5(R1), 3(R2) port: Rc 1/4

**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

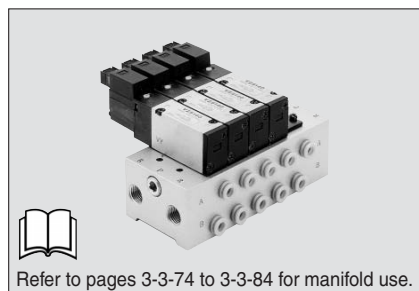


# Series VZ5000

Applicable for cylinder actuation (up to  $\varnothing 50$ ).

Compact size  
(Width: 18 mm)

Low power consumption:  
1.8 W DC



Refer to pages 3-3-74 to 3-3-84 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	50 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	Individual pilot exhaust, Common exhaust (pilot and main valve) Common exhaust port for the pilot and main valve	
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 8374-1981. (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

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]	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 <sup>(2)</sup>		
Indicator light	DC: LED (Red), AC: Neon bulb		



Note 1) At rated voltage

Note 2) Plug-in should be ZNR

# 5 Port Solenoid Valve Base Mounted Series VZ5000

## Flow Characteristics/Weight

Valve model	Type of actuation		Port size		Flow characteristics <sup>(1)</sup>						Weight (g) <sup>(2)</sup>
			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	
VZ5□40-□-01	2 position	Single	Rc 1/8	Rc 1/8	2.3	0.45	0.57	2.8	0.37	0.71	200(120)
		Double									240(160)
	3 position	Closed center			1.9	0.36	0.48	2.1	0.46	0.57	240(160)
		Exhaust center			1.2	0.48	0.35	3.4[1.3]	0.36[0.57]	0.86[0.41]	
		Pressure center			3.3[0.85]	0.43[0.54]	0.78[0.25]	2.1	0.45	0.56	
VZ5□40-□-02	2 position	Single	Rc 1/4	Rc 1/4	2.3	0.41	0.61	2.9	0.35	0.74	200(120)
		Double									240(160)
	3 position	Closed center			1.9	0.46	0.50	2.2	0.44	0.60	240(160)
		Exhaust center			1.3	0.45	0.35	3.7[1.4]	0.27[0.56]	0.87[0.43]	
		Pressure center			3.6[0.83]	0.23[0.55]	0.84[0.25]	2.1	0.47	0.58	

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

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

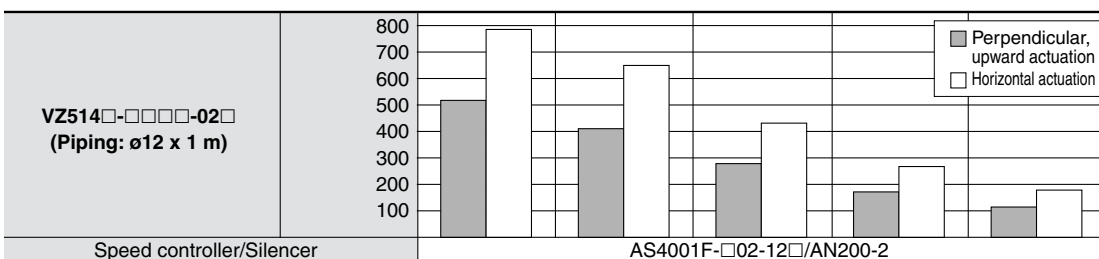
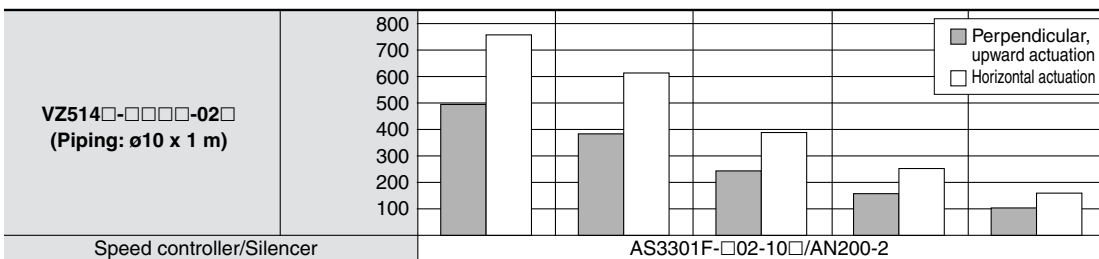
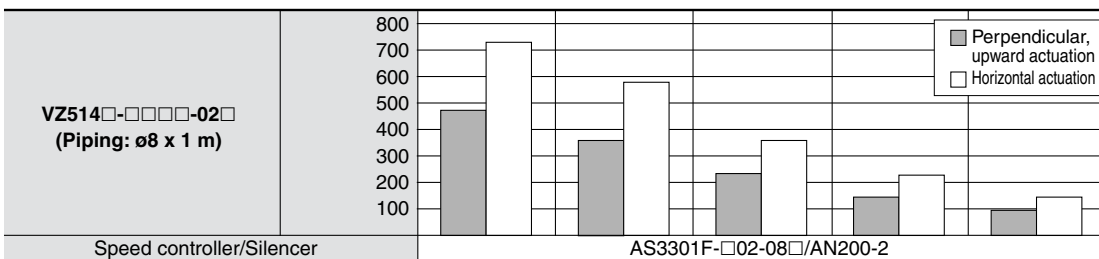
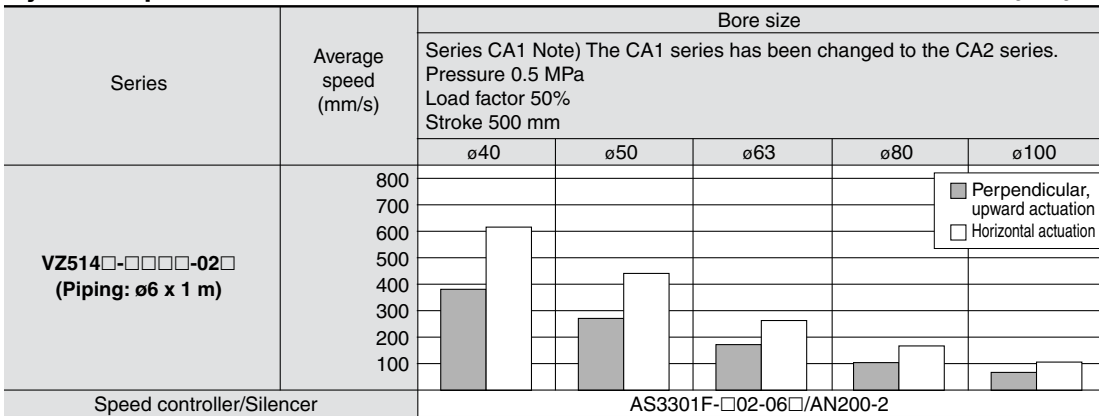
VQ7

EVS

VFN

## Cylinder Speed Chart

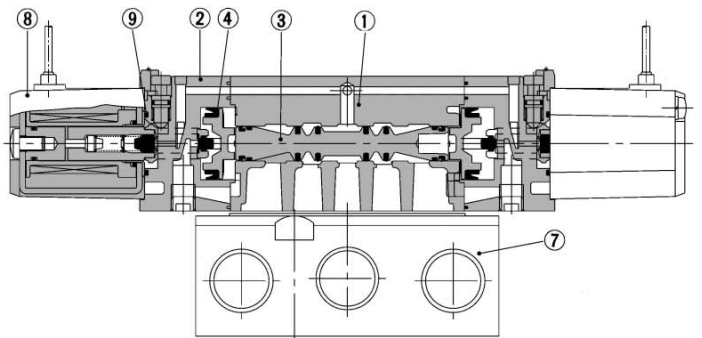
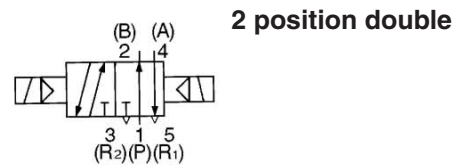
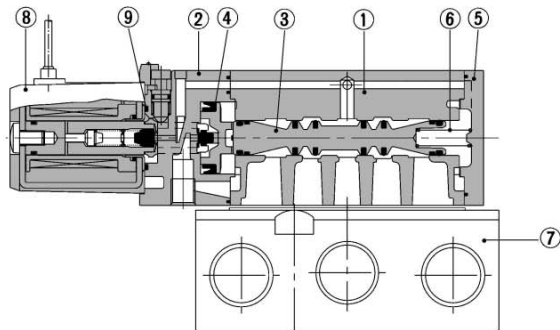
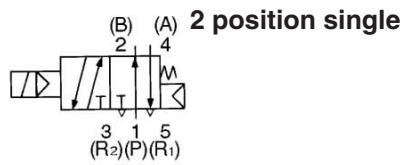
Use as a guide for selection.  
 Please confirm the actual conditions with SMC Sizing Program.



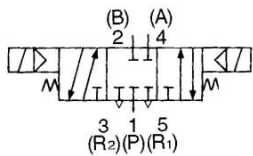
\* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.  
 \* The average velocity of the cylinder is what the stroke is divided by the total stroke time.  
 \* Load factor: ((Load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

# Series VZ5000

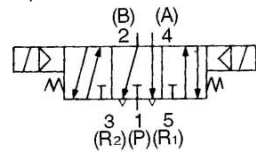
## Construction



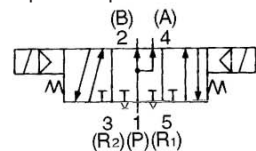
3 position closed center



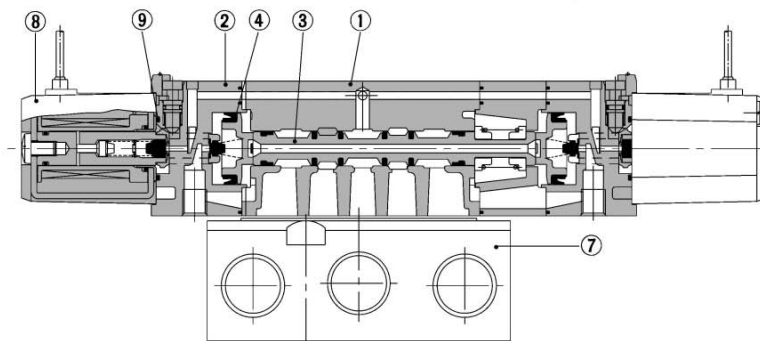
3 position exhaust center



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	Aluminum, HNBR	
④	Spool valve	Resin	
⑤	End cover	Resin	Black painted
⑥	Spool spring	Stainless steel	

## Replacement Parts

No.	Description	Material	Part no.	Note
⑦	Sub-plate	Aluminum die-casted	DXT199-7-1*P DXT199-7-2*P	Rc 1/8 Rc 1/4
⑧	Solenoid assembly	Epoxy/Stainless steel	DXT170-C-□□□	
⑨	O-ring	NBR	13 x 11 x 1	Common with Series VZ <sub>3</sub> 000

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

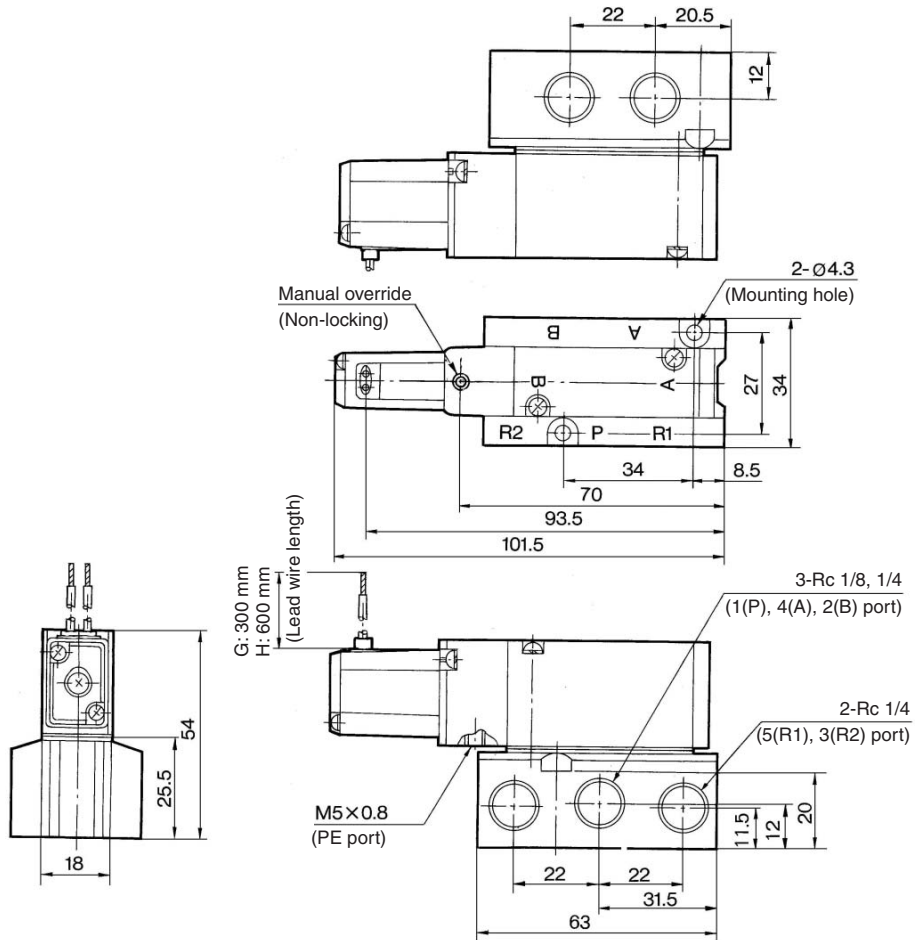
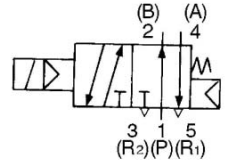
# 5 Port Solenoid Valve Base Mounted Series VZ5000



## 2 Position Single

Grommet (G), (H)  
VZ5140-□G□□-01

VZ5140



VK

VZ

VF

VFR

VP4

VZS

VFS

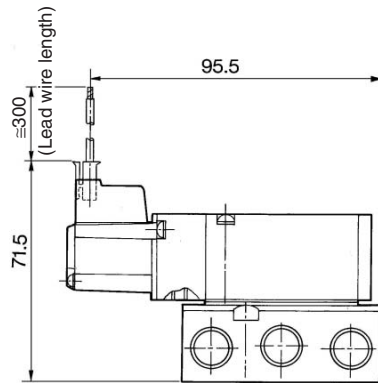
VS4

VQ7

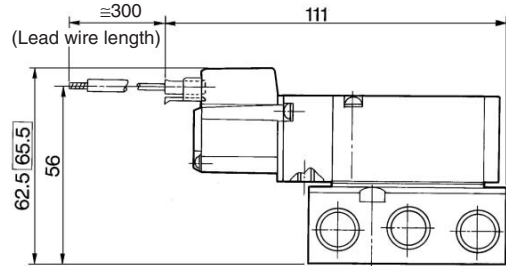
EVS

VFN

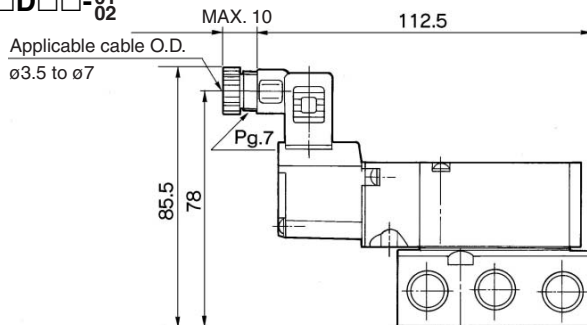
L plug connector (L)  
VZ5140-□L□□-01



M plug connector (M)  
VZ5140-□M□□-01



DIN terminal (D)  
VZ5140-□D□□-01



□: With light/surge voltage suppressor

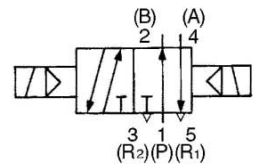
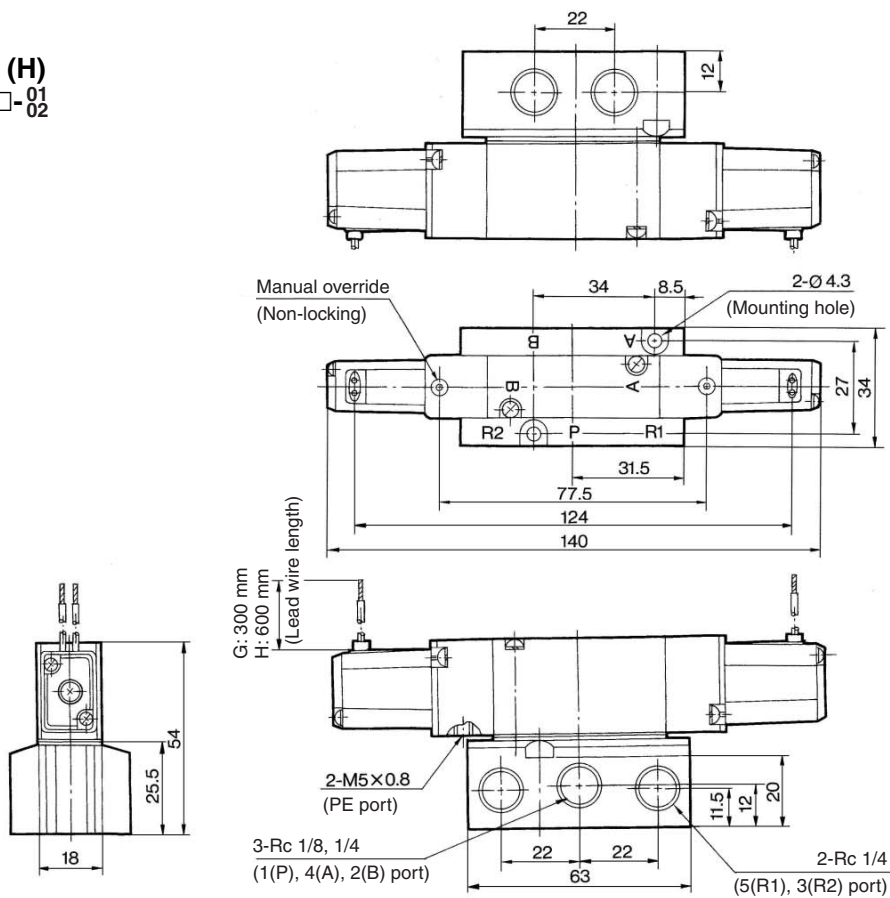
# Series VZ5000



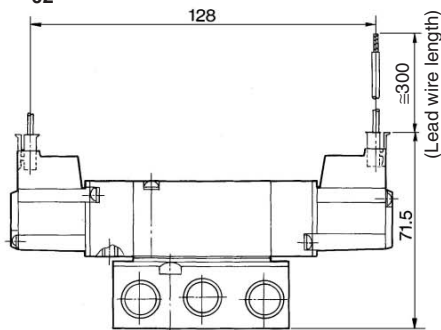
## 2 Position Double

Grommet (G), (H)  
VZ5240-□G□□-01  
□H□□-02

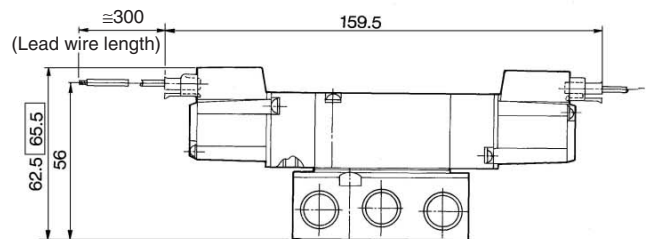
VZ5240



L plug connector (L)  
VZ5240-□L□□-01  
□□□□-02

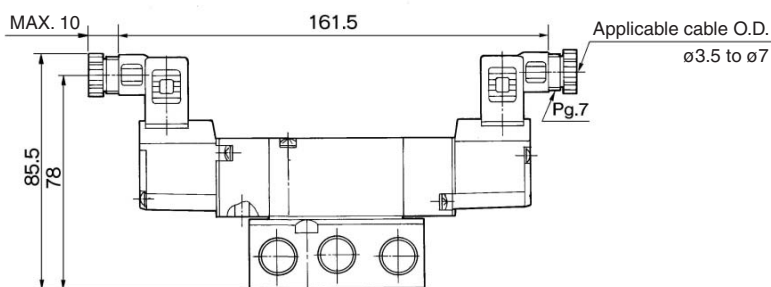


M plug connector (M)  
VZ5240-□M□□-01  
□□□□-02



□: With light/surge voltage suppressor

DIN terminal (D)  
VZ5240-□D□□-01  
□□□□-02

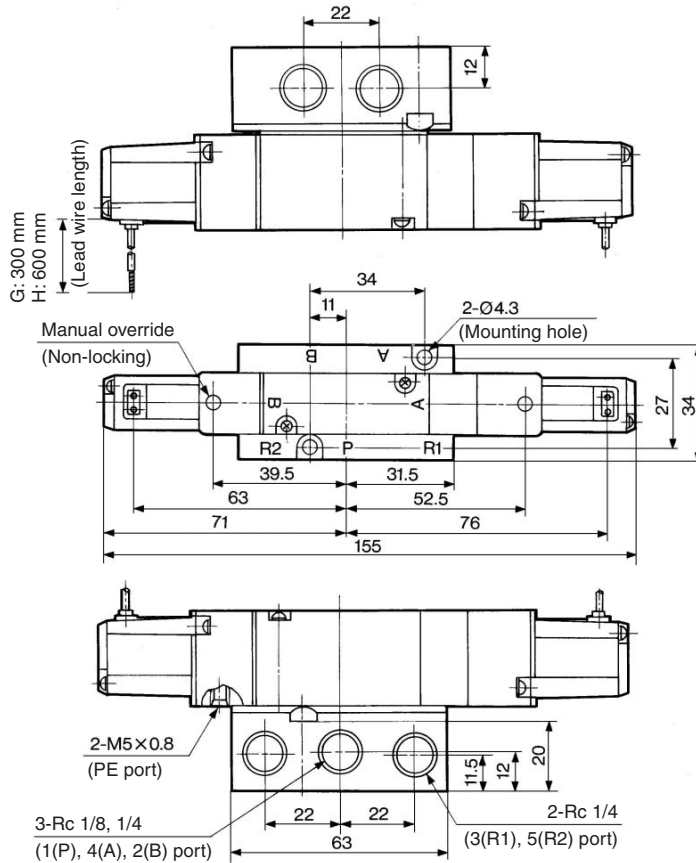


# 5 Port Solenoid Valve Base Mounted Series VZ5000

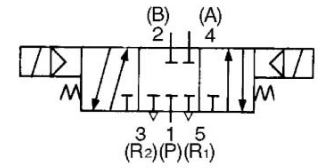


## 3 Position Closed Center/Exhaust Center/Pressure Center

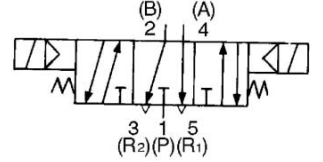
**Grommet (G), (H)**  
VZ5<sup>3</sup>/<sub>4</sub>40-□G□□-01  
5



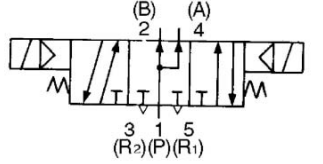
VZ5340



VZ5440



VZ5540



VK

VZ

VF

VFR

VP4

VZS

VFS

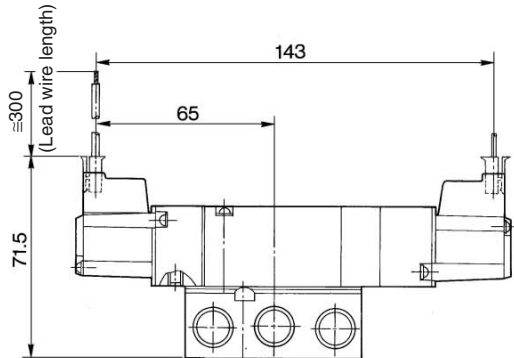
VS4

VQ7

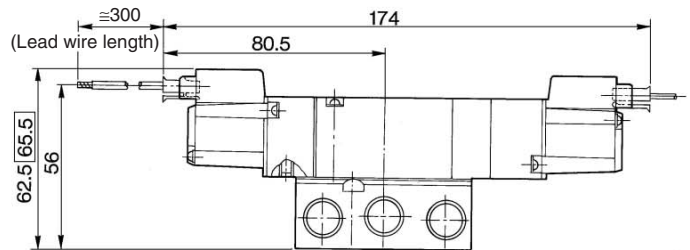
EVS

VFN

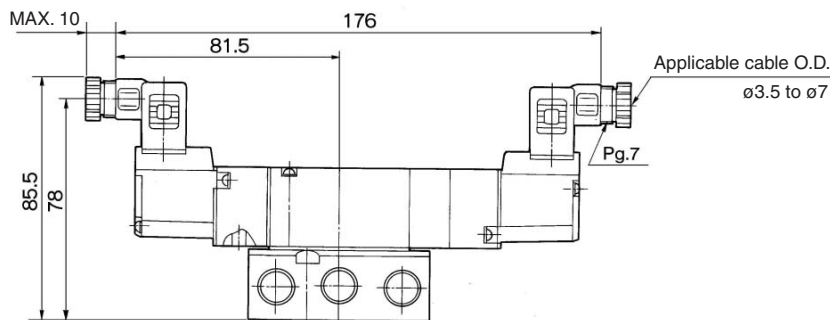
**L plug connector (L)**  
VZ5<sup>3</sup>/<sub>4</sub>40-□L□□-01  
5



**M plug connector (M)**  
VZ5<sup>3</sup>/<sub>4</sub>40-□M□□-01  
5



**DIN terminal (D)**  
VZ5<sup>3</sup>/<sub>4</sub>40-□D□□-01  
5



□: With light/surge voltage suppressor