

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

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"

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.

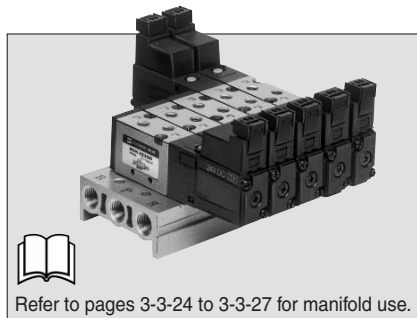
- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

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) ⁽¹⁾ (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 ⁽²⁾	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^2) ⁽³⁾	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) ^{Note)} [Current mA]	DC	1.8 (With indicator light 2.1) [24 VDC: 75 (With indicator light 87.5)]	
Apparent power (VA) ^{Note)} [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 ⁰
Silencer	AN120-M5	Noise reduction: 21dB or more ($\phi 8 \times 17$ mm)

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Flow Characteristics/Weight

Valve model	Type of actuation		Port size		Flow characteristics ^{Note)}						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 ³ /(s·bar)]	b	Cv	C [dm ³ /(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	Grommet 75 120
		Double									
	3 position	Closed center			0.49	0.44	0.13	0.44	0.40	0.12	
		Exhaust center									
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	Grommet 75 120
		Double									
	3 position	Closed center			0.69	0.40	0.19	0.43	0.40	0.12	
		Exhaust center									
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	Grommet 75 120
		Double									
	3 position	Closed center			0.72	0.37	0.19	0.44	0.34	0.12	
		Exhaust center									
		Pressure center	0.67	0.54	0.19	0.41 [0.41]	0.38 [0.38]	0.11 [0.11]			
		Pressure center	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

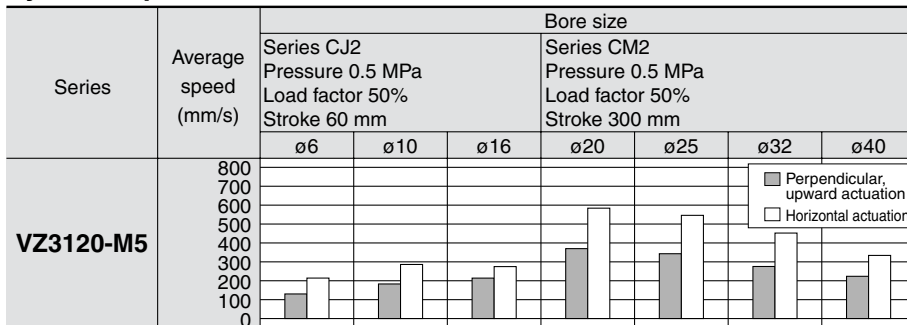
EVS

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%

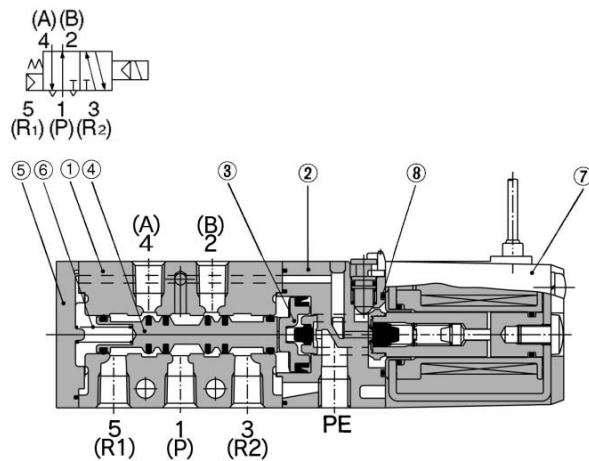
Conditions

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	

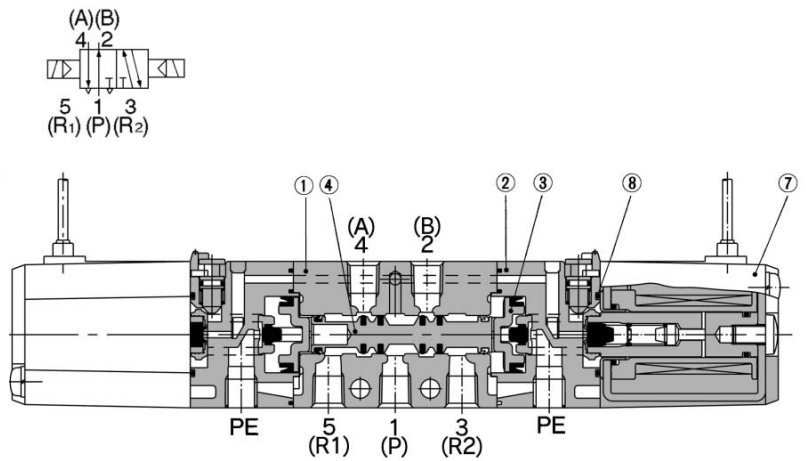
Series VZ3000

Construction

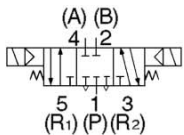
2 position single



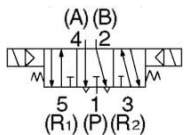
2 position double



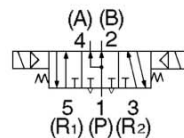
3 position closed center



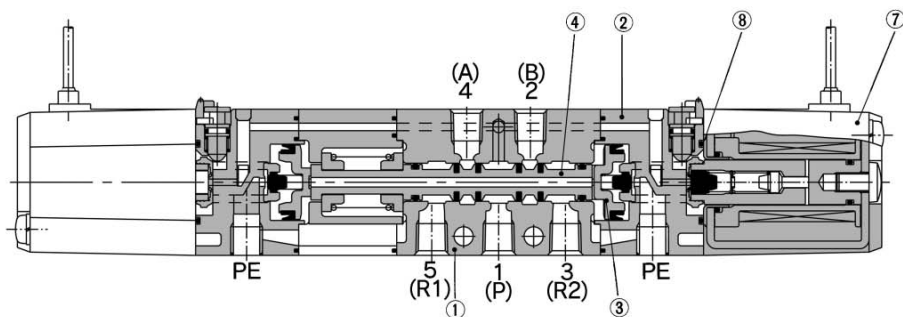
3 position exhaust center



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	

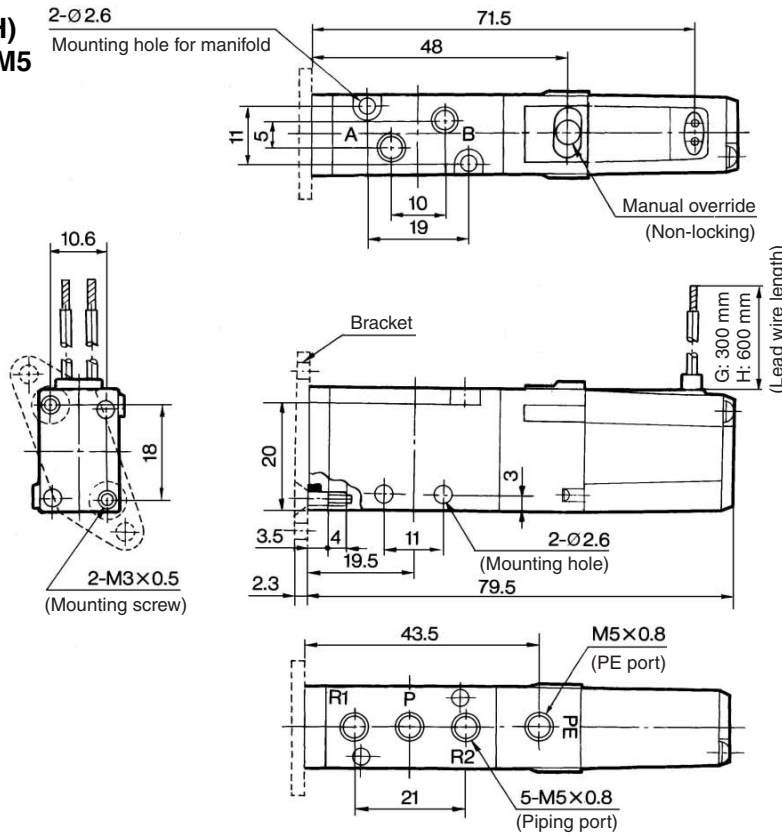
Replacement Parts

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 ₅ 000

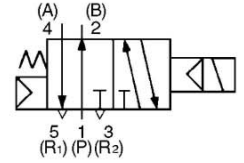
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2 Position Single

Grommet (G), (H)
VZ3120-□G□□-M5



VZ3120



VK

VZ

VF

VFR

VP4

VZS

VFS

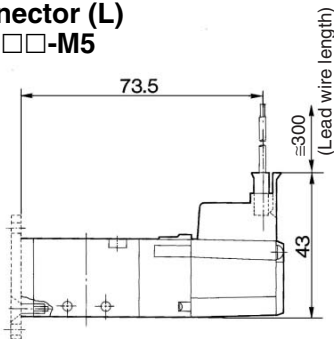
VS4

VQ7

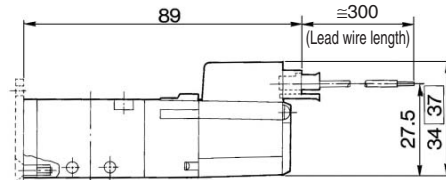
EVS

VFN

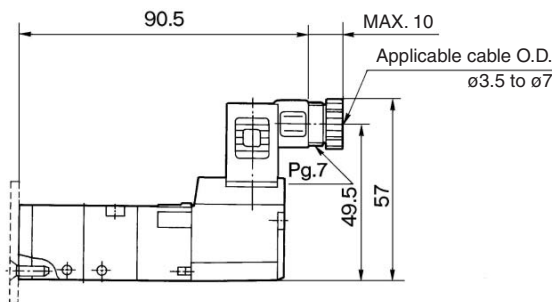
L plug connector (L)
VZ3120-□L□□-M5



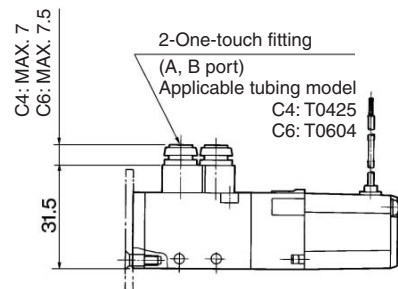
M plug connector (M)
VZ3120-□M□□-M5



DIN terminal (D)
VZ3120-□D□□-M5



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



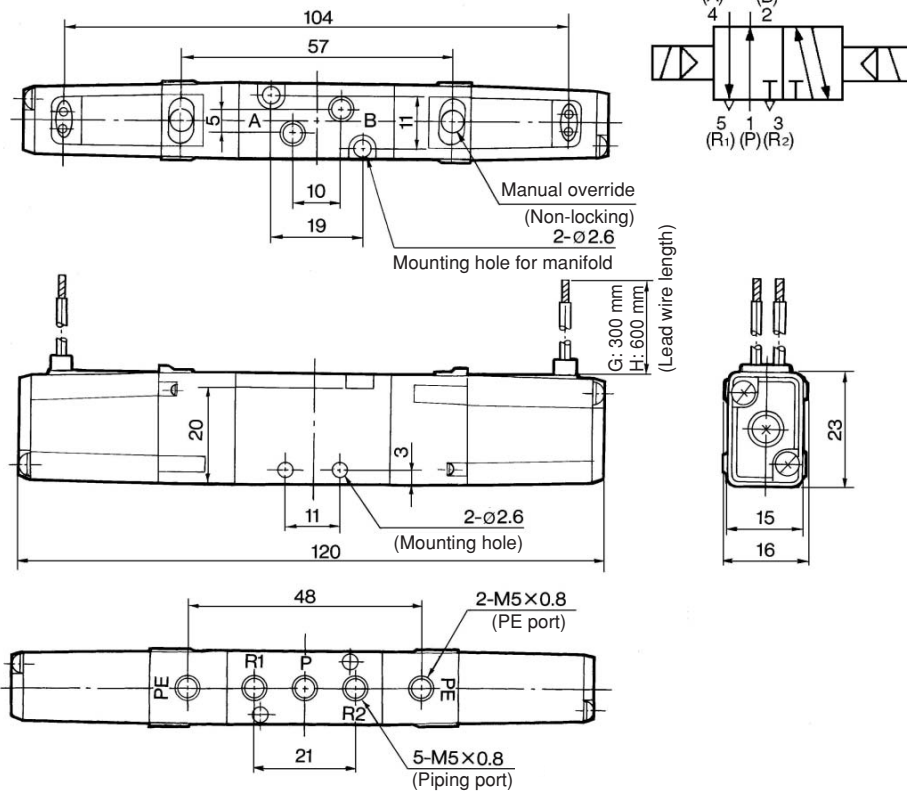
□: With light/surge voltage suppressor

Series VZ3000

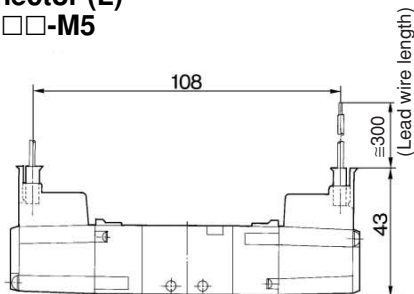


2 Position Double

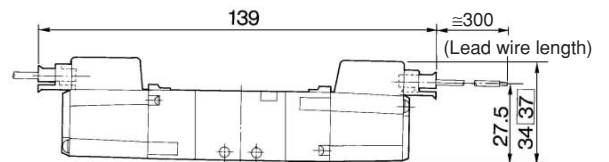
Grommet (G), (H)
VZ3220-□G□□-M5



L plug connector (L)
VZ3220-□L□□-M5

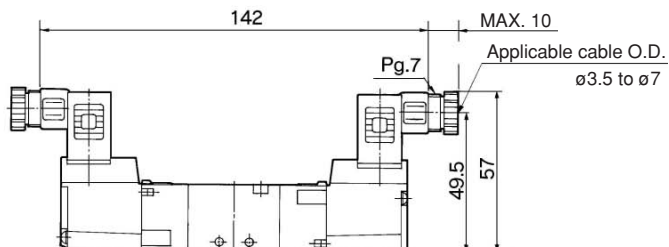


M plug connector (M)
VZ3220-□M□□-M5

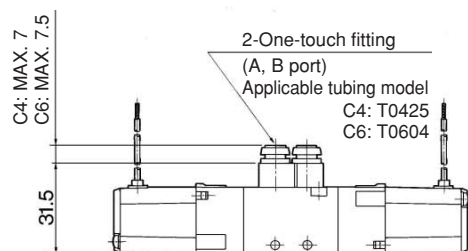


□: With light/surge voltage suppressor

DIN terminal (D)
VZ3220-□D□□-M5



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

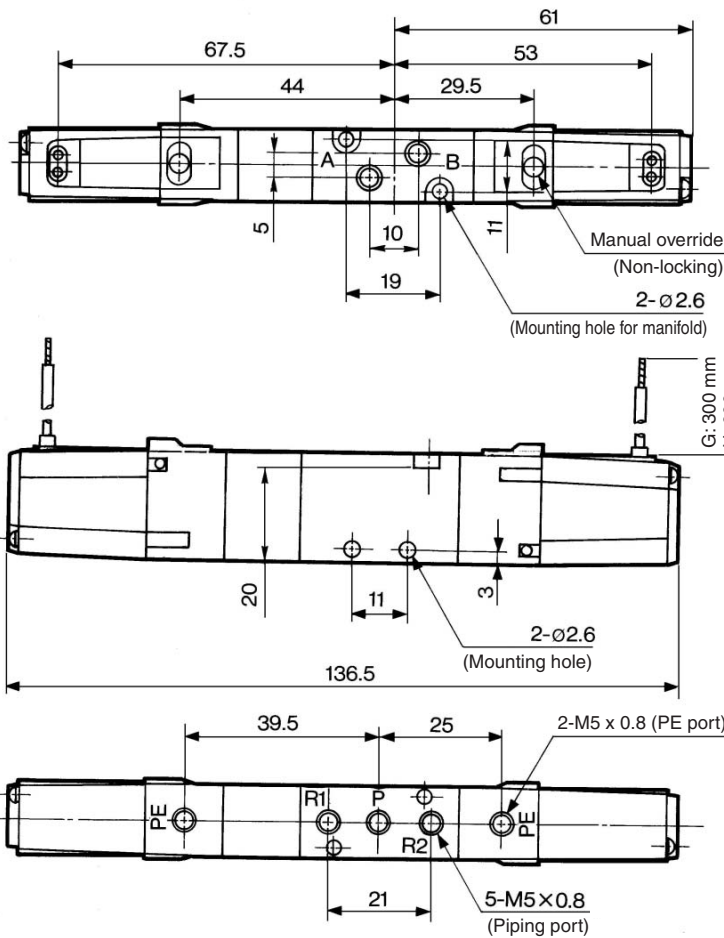


5 Port Solenoid Valve Body Ported Series VZ3000

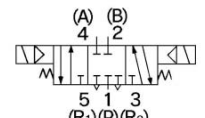
3 Position Closed Center/Exhaust Center/Pressure Center



Grommet (G), (H)
VZ3³/₄20-□□□□-M5



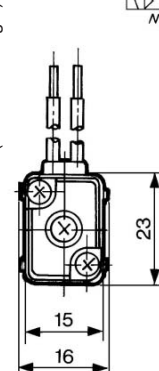
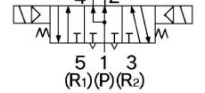
VZ3320



VZ3420

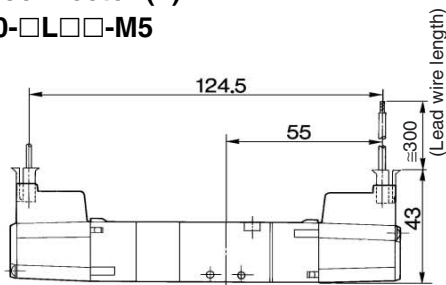


VZ3520

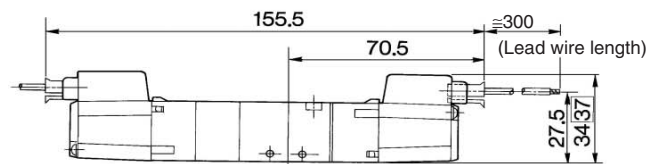


- VK
- VZ**
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

L plug connector (L)
VZ3³/₄20-□□□□-M5

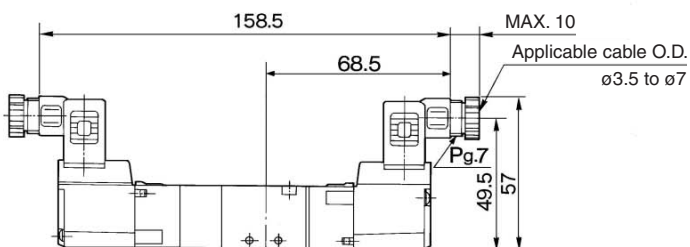


M plug connector (M)
VZ3³/₄20-□□□□-M5

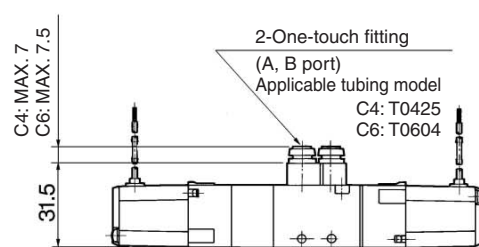


□: With light/surge voltage suppressor

DIN terminal (D)
VZ3³/₄20-□□□□-M5



Built-in One-touch fittings
VZ3³/₄20-□□□□-C₄
C₆



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

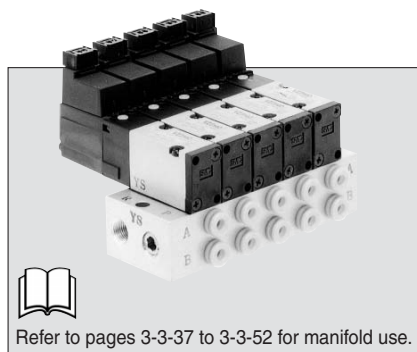
* Type "LN", "MN": With 2 sockets.

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) ⁽¹⁾ (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 ⁽²⁾	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 ²) ⁽³⁾	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) ⁽¹⁾ [Current mA]	DC	
	1.8 (With indicator light 2.1) [24 VDC: 75 (With indicator light 87.5)]	
Apparent power (VA) ⁽¹⁾ [Current mA] ^{Note)}	AC	Inrush
		Holding
		4.5/50 Hz, 4.2/60 Hz [100 VAC: 45/50 Hz, 42/60 Hz 200 VAC: 22.5/50 Hz, 15/60 Hz]
		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 ⁽²⁾	
Indicator light	DC: LED (Red), AC: Neon bulb	

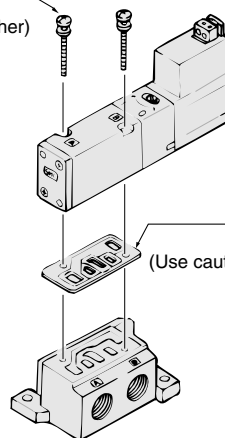


Note 1) At rated voltage

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

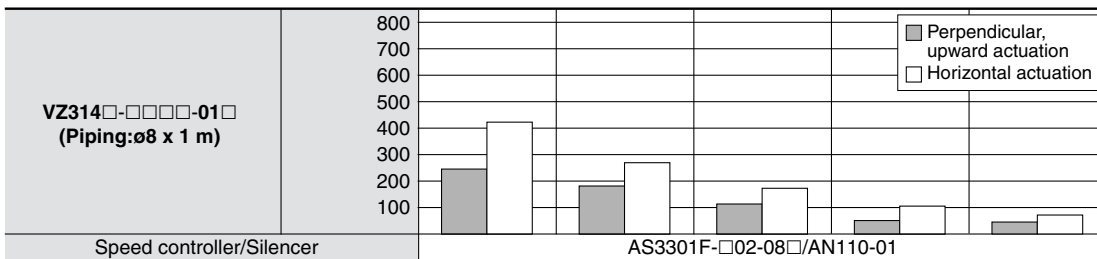
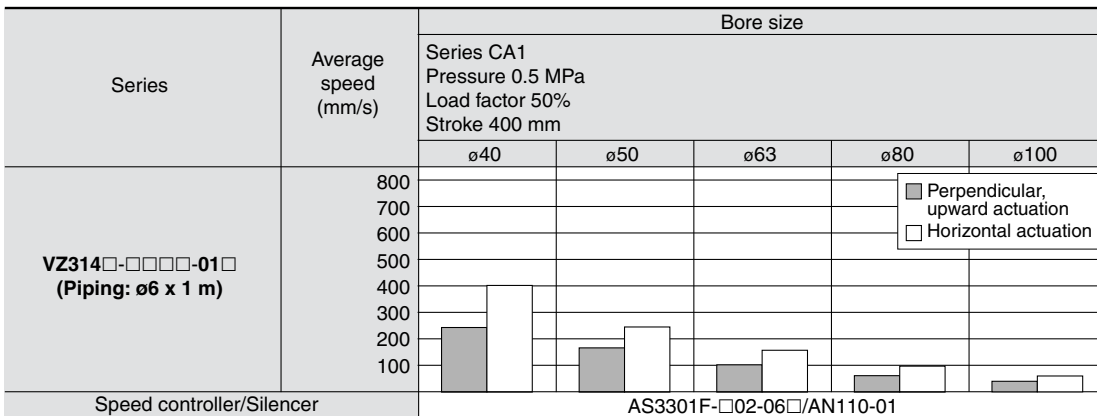
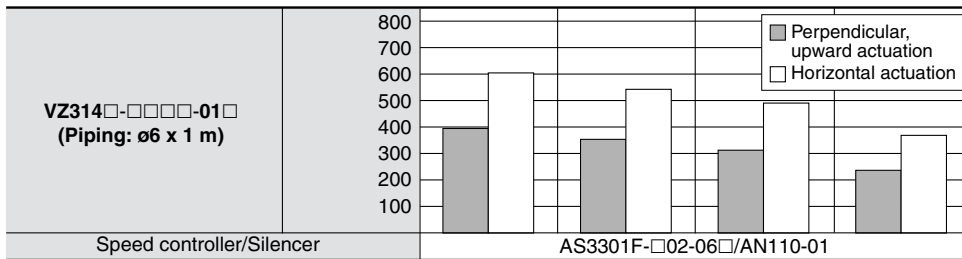
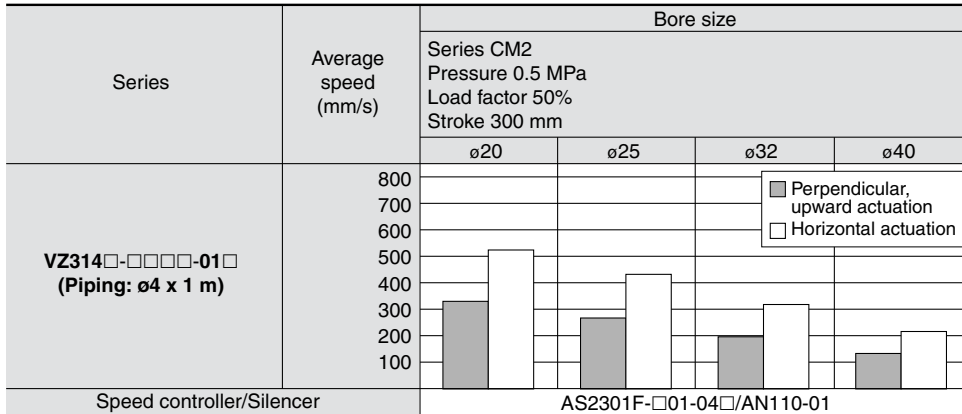
Valve model	Type of actuation		Port size		Flow characteristics ⁽¹⁾						Weight (g)
			1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)			
					C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
VZ3□40-□-01	2 position	Single	Rc 1/8	Rc 1/8	0.79	0.21	0.19	0.83	0.32	0.21	Grommet
		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%

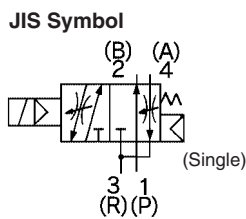
- VK
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- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

Series VZ3000

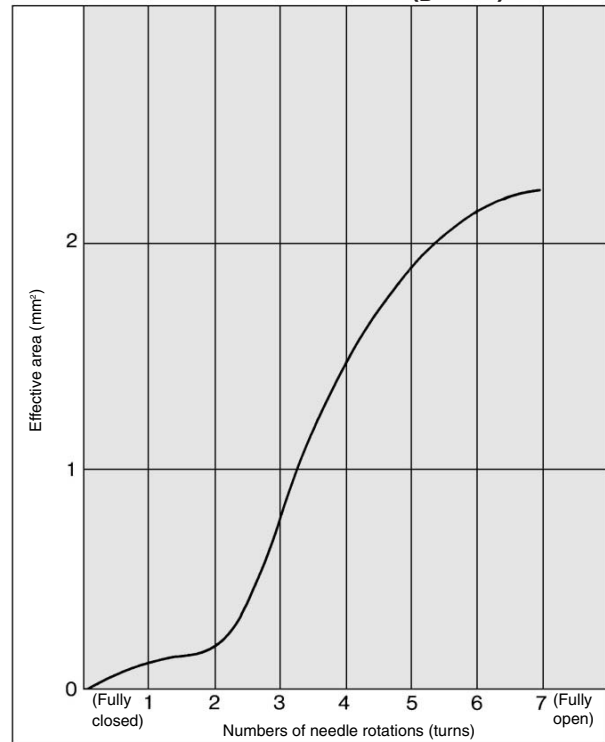
Built-in Speed Controllers

VZ3□5□

- An exhaust throttle valve is built into the solenoid valve itself, enabling a simple speed adjustment of the cylinder.
- If it is mounted on a manifold base, the exhaust air will converge in the common EXH port at the manifold base, thus simplifying the handling of the exhaust air.

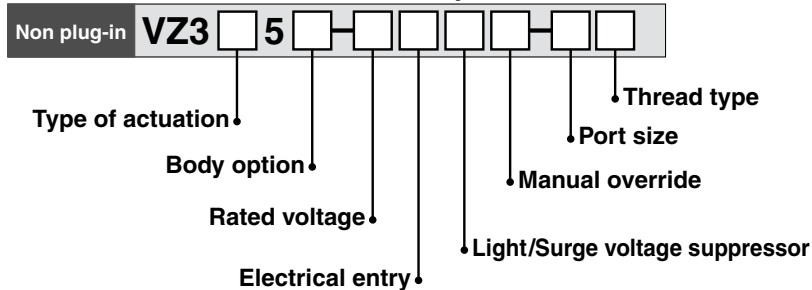


Throttle Valve Characteristics ($\frac{A}{B} \rightarrow R$)



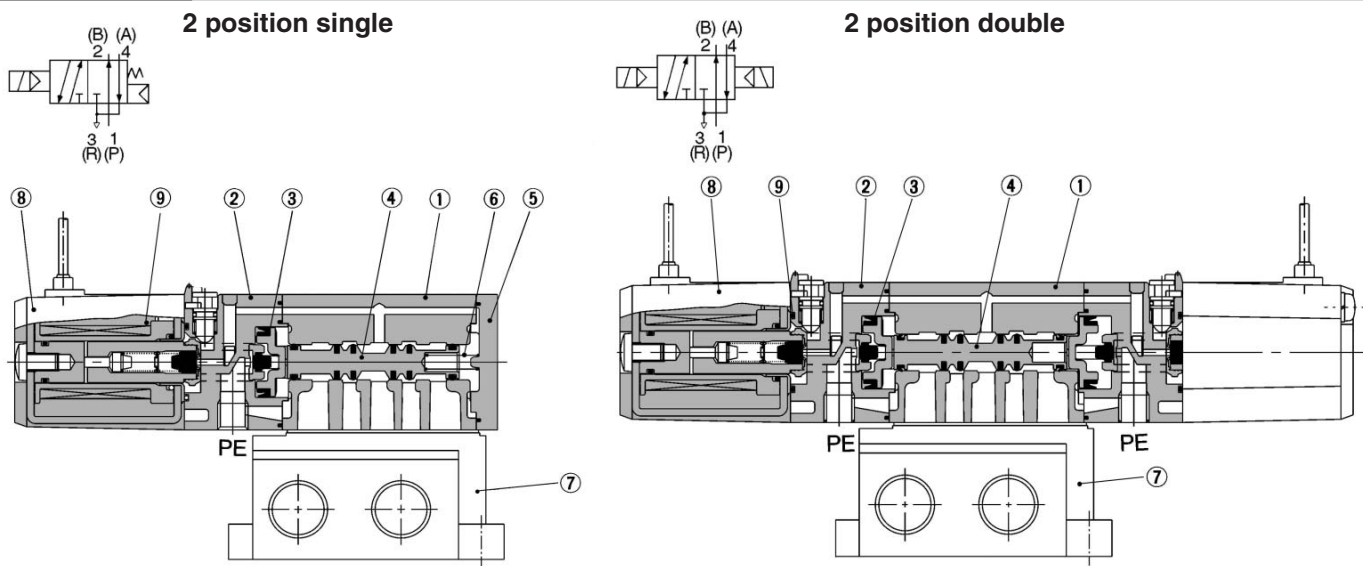
- Note)
- To use the VZ3□53, open the throttle valve one turn or more from the fully closed position.
 - To adjust the throttle valve apply torque of 0.3 N·m or less.
 - Be careful not to open the throttle valve excessively as this could cause the throttle valve to fly out.

How to Order Valve with Built-in Speed Controller



5 Port Solenoid Valve Base Mounted Series VZ3000

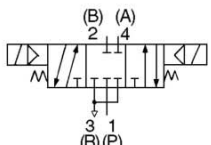
Construction



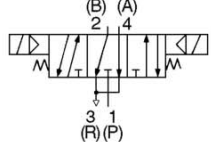
- VK
- VZ**
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

3 position closed center/exhaust center/pressure center

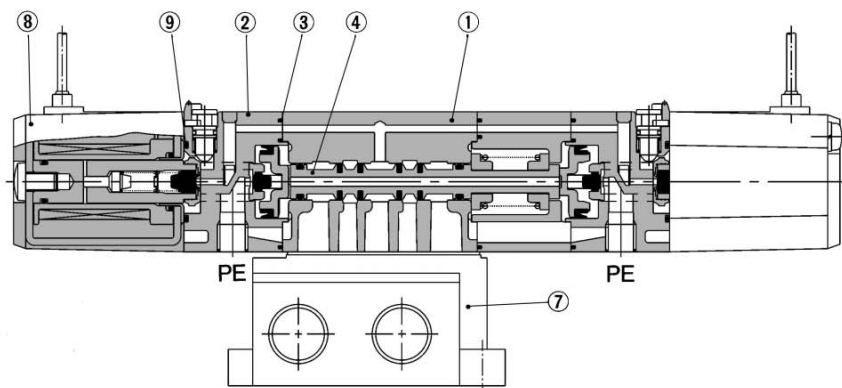
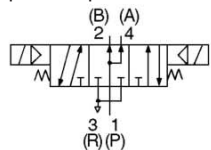
3 position closed center



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

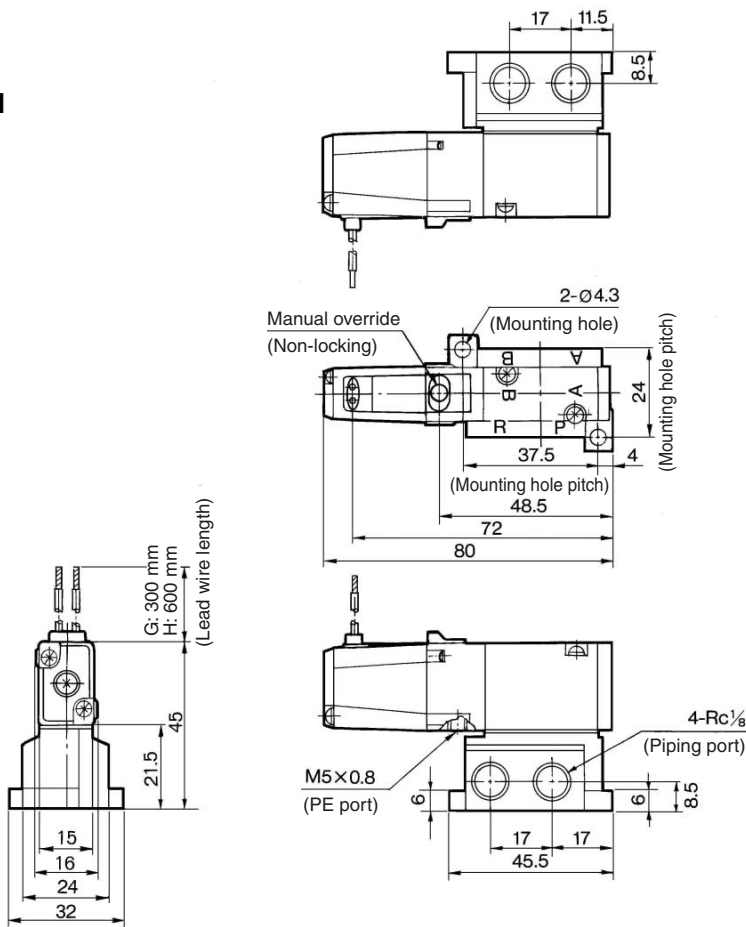
* Thread type
Nil: Rc
F: G
N: NPT
T: NPTF

Series VZ3000

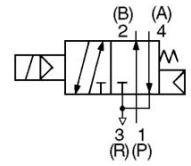


2 Position Single

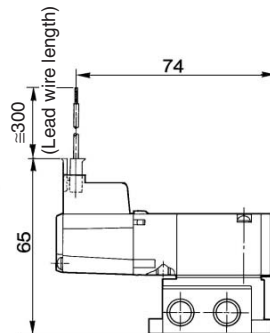
Grommet (G), (H)
VZ3140-□G□□-01



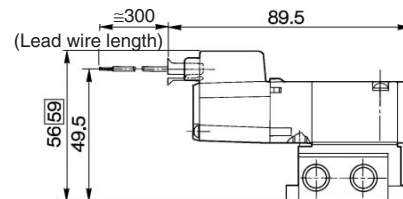
VZ3140



L plug connector (L)
VZ3140-□L□□-01



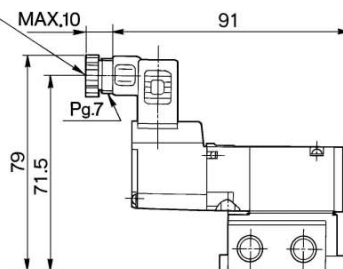
M plug connector (M)
VZ3140-□M□□-01



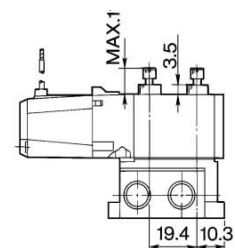
□: With light/surge voltage suppressor

DIN terminal (D)
VZ3140-□D□□-01

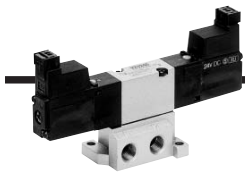
Applicable cable O.D.
 ø3.5 to ø7



Built-in speed controllers
VZ3150-□□□□

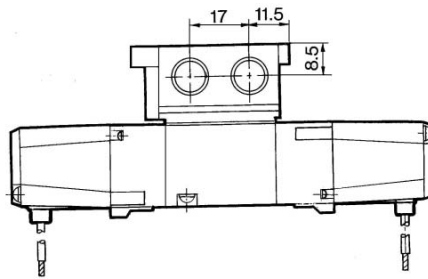


5 Port Solenoid Valve Base Mounted Series VZ3000

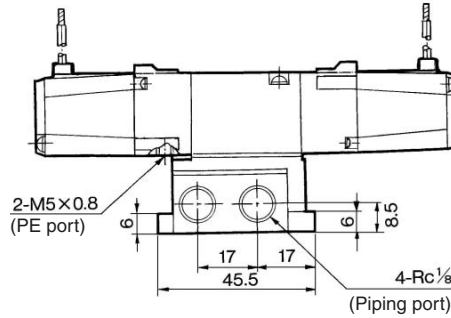
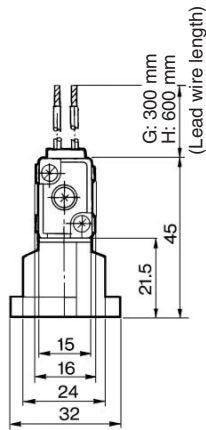
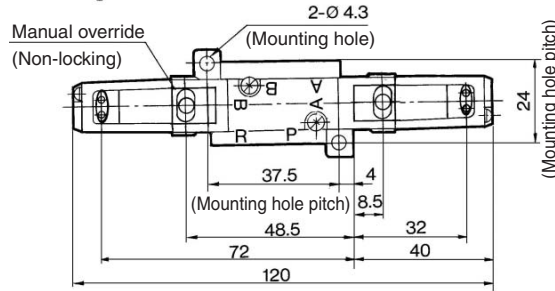
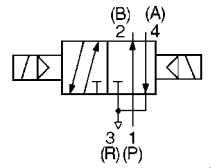


2 Position Double

Grommet (G), (H)
VZ3240-□G□□-01



VZ3240



VK

VZ

VF

VFR

VP4

VZS

VFS

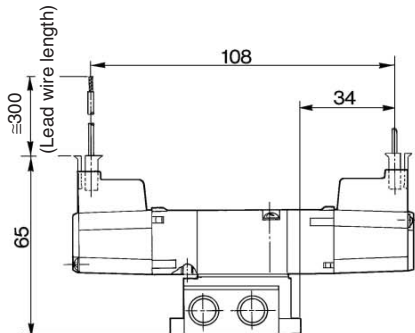
VS4

VQ7

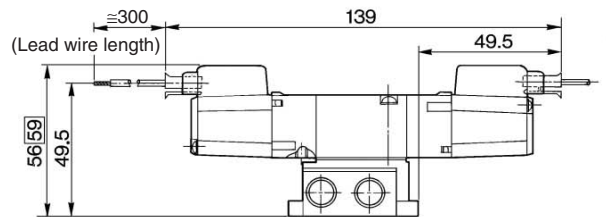
EVS

VFN

L plug connector (L)
VZ3240-□L□□-01

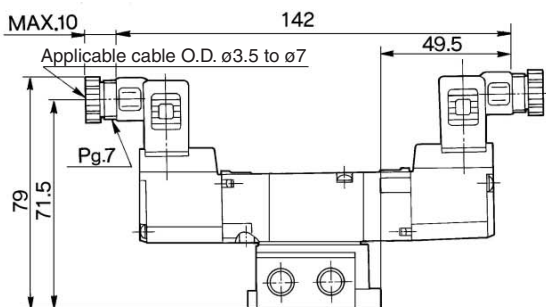


M plug connector (M)
VZ3240-□M□□-01

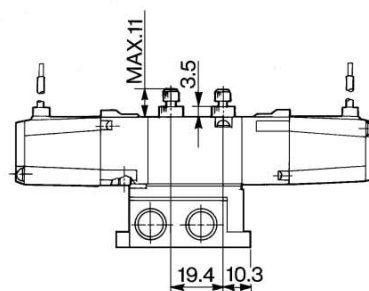


□: With light/surge voltage suppressor

DIN terminal (D)
VZ3240-□D□□-01



Built-in speed controllers
VZ3250-□□□□

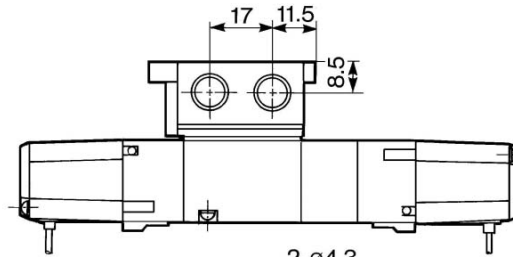


Series VZ3000

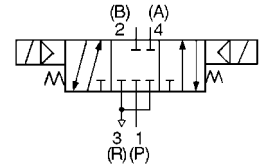


3 Position Closed Center/Exhaust Center/Pressure Center

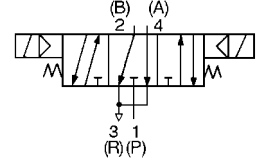
Grommet (G), (H)
VZ3³₄20-□G□□-01



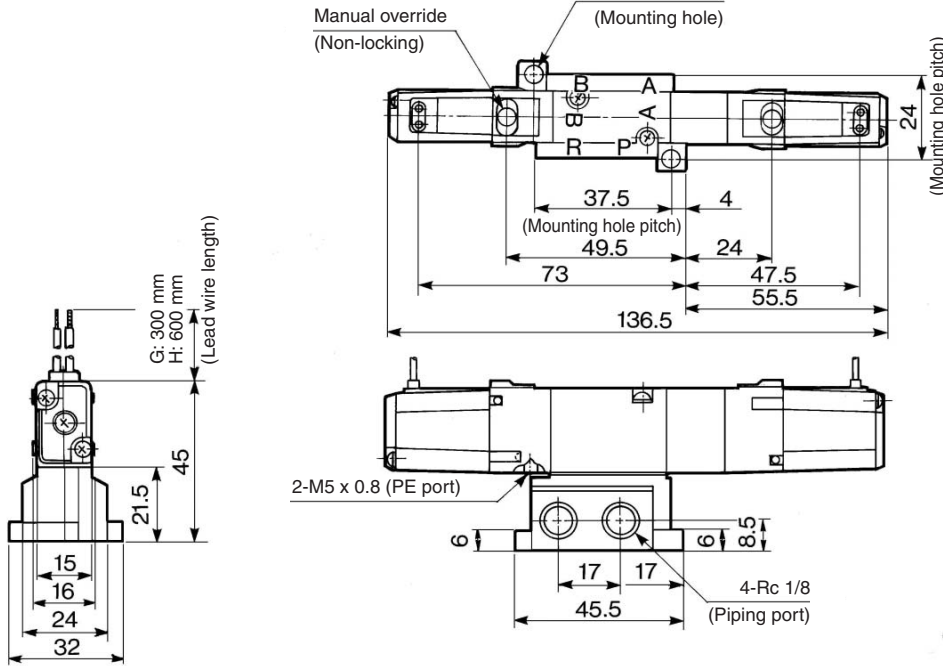
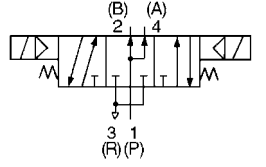
VZ3340



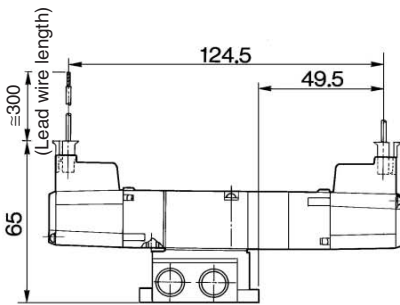
VZ3440



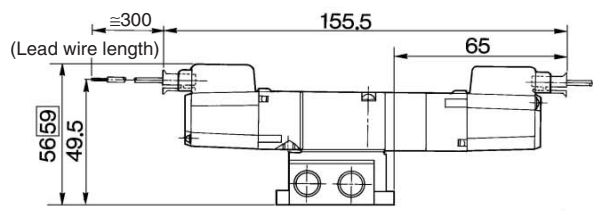
VZ3540



L plug connector (L)
VZ3³₄40-□L□□-01

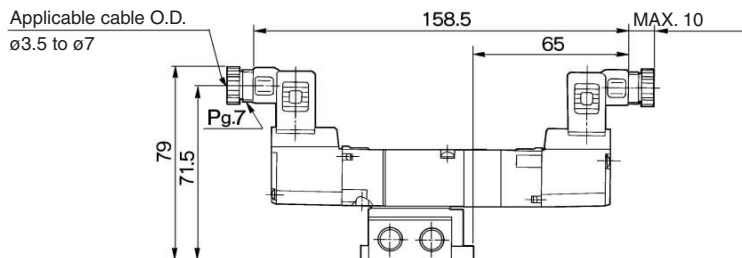


M plug connector (M)
VZ3³₄40-□M□□-01

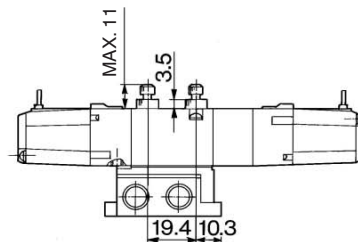


□: With light/surge voltage suppressor

DIN terminal (D)
VZ3³₄40-□D□□-01



Built-in speed controllers
VZ3³₄50-□□□□



Series VZ

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.

VZ₅³ □ □ 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

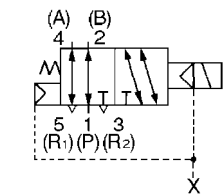
VZ3000: 8 mm longer

VZ5000: 8 mm longer

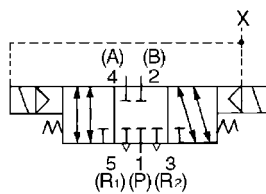
JIS Symbol

Body ported

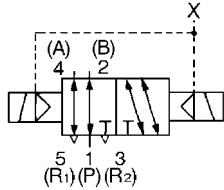
2 position single



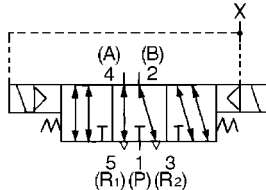
3 position closed center



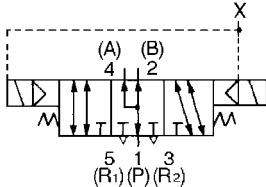
2 position double



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:

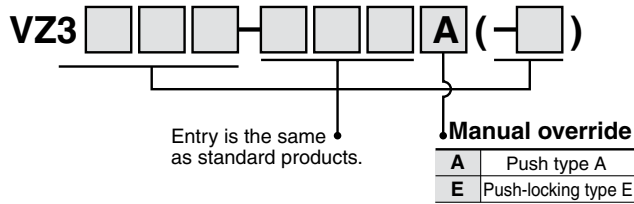
Please contact SMC for detailed specifications, dimensions, and delivery.

2. Solenoid Valve: Special Manual Override

Applicable solenoid valve series

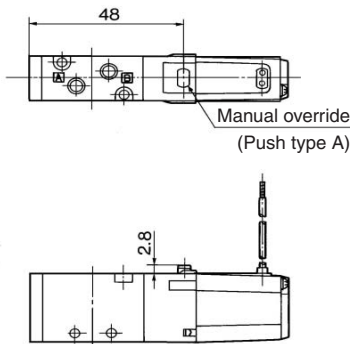
VZ3000
(Non plug-in type only)

Model no.

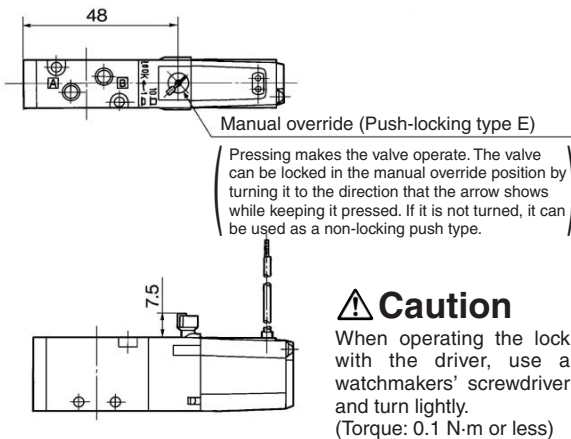


Dimensions: Single

Push type A



Push-locking type E



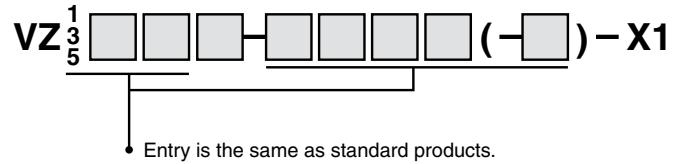
Note) Because the manual override unit protrudes, the manual override could activate unintentionally if the protrusion is touched or an object falls on it. Therefore, take the proper preventative measures.

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

