



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VZS3000**

## Model

Type of actuation	Model	Port size Rc	Flow characteristics						Max. operating cycle (CPM) <sup>(1)</sup>	Response time (ms) <sup>(2)</sup>	Weight (kg) <sup>(3)</sup>	
			1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)						
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv				
2 position	Single	<b>VZS3150</b>	1/4	2.6	0.17	0.58	2.4	0.09	0.53	1200	18 or less	0.22
	Double	<b>VZS3250</b>	1/4	2.6	0.17	0.58	2.4	0.09	0.53	1200	13 or less	0.27
3 position	Closed center	<b>VZS3350</b>	1/4	2.5	0.17	0.56	2.4	0.11	0.52	500	26 or less	0.28
	Exhaust center	<b>VZS3450</b>	1/4	2.5	0.17	0.56	2.4	0.11	0.49	500	26 or less	0.28
	Pressure center	<b>VZS3550</b>	1/4	2.8	0.12	0.60	2.4	0.16	0.53	500	26 or less	0.28
	Double check	<b>VZS3650</b>	1/4	1.1	—	—	1.2	—	—	420	32 or less	0.43



Note 1) Min. operating cycle is based on JIS B 8375 (One time per 30 days).  
 Note 2) Response time is based on JIS B 8375-1981. (0.5 MPa, without light/surge voltage suppressor)  
 Note 3) For VZS3□50-□FZ-01  
 Note 4) "Note 1" and "Note 2" are with controlled clean air.

**Reduction of wiring cost**  
**MIL standard D-sub connector**  
**with one-touch connection**  
 (Plug-in type)

**Compact and large valve capacity: Width 18 mm**  
**Flexible to increase and decrease manifold stations**  
 (Stacking type manifold base)

**High frequency/Long service life (more than 30 mil. times)**  
**Possible to use in non-lubrication and dry air**  
 (Metal seal structure)

**Different variations for connection**  
 Grommet type  
 L, M plug connector type: Individual take out of A and B sides  
 K plug connector type: Common take out of A and B sides  
 DIN terminal type: Individual take out of A and B sides

**A little power consumption:**  
**1.8 W DC**  
**For serial transmission**



Plug-in type



Non plug-in type

## Standard Specifications

Valve specifications	Fluid	Air/Inert gas		
	Maximum operating pressure	1.0 MPa		
	Minimum operating pressure	0.1 MPa		
	Proof pressure	1.5 MPa		
	Ambient and fluid temperature	-10 to 50°C <sup>(1)</sup>		
	Lubrication	Non-lube <sup>(2)</sup>		
	Pilot valve manual override	Non-locking push type (Flush)		
	Shock/Vibration resistance (m/s <sup>2</sup> )	150/50 <sup>(3)</sup>		
Electricity specifications	Enclosure	Dustproof (Degrees of protection 0) <sup>(4)</sup>		
	Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC		
	Allowable voltage fluctuation	-15 to +10% of rated voltage		
	Coil insulation type	Class E or equivalent (120°C) <sup>(5)</sup>		
	Apparent power (AC)	Inrush	4.5 VA/50 Hz, 4.2 VA/60 Hz	
		Holding	3.5 VA/50 Hz, 3 VA/60 Hz	
	Power consumption (DC)	1.8 W		
	Electrical entry	Plug-in type (FZ)		
Non plug-in type Grommet (G), Plug connector (L, M, KZ) DIN terminal (D)				

Note 1) Use dry air at low temperatures.  
 Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.  
 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 8.3 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)

Note 4) Based on JIS C 0920.  
 Note 5) Based on JIS C 4003.

## Option Specifications

Coil rated voltage	24, 48, 110, 220 VAC (50/60 Hz)
	6, 12, 48 VDC
Manual override	Locking type (Tool required)
Option	With light/surge voltage suppressor <sup>Note)</sup>

Note) Plug-in, K plug connector type is standard with light/surge voltage suppressor.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

## How to Order

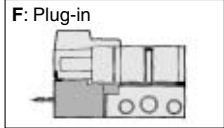
### Light/Surge voltage suppressor

<b>Z</b>	With light/surge voltage suppressor
<b>S</b>	With surge voltage suppressor

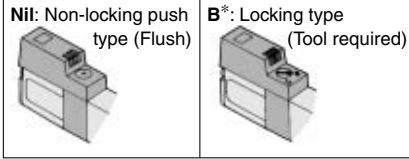
Note) Light/Surge voltage suppressor is provided as standard.



### Electrical entry



### Pilot valve manual override



\* Option

### Port size

<b>Nil</b>	Without sub-plate
<b>01</b>	Rc 1/8
<b>02</b>	Rc 1/4

### Plug-in

**VZS3 2 50 - 1 F Z 01**

### Non plug-in

**VZS3 2 50 - 5 G 01**

### Symbol

<b>1</b>	2 position single
<b>2</b>	2 position double
<b>3</b>	3 position closed center
<b>4</b>	3 position exhaust center
<b>5</b>	3 position pressure center
<b>6</b>	3 position double check

### Coil rated voltage

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

\* Option

### Option

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



Note) Indicator light is not available for grommet type. With light/surge voltage suppressor is provided as standard for K plug connector type.

\* "DOZ" is not available.

### Thread type

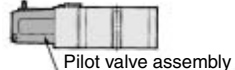
Standard	<b>Nil</b>	Rc
	<b>N</b>	NPT
Option	<b>T</b>	NPTF
	<b>F</b>	G

### Electrical entry

<b>G:</b> Grommet Lead wire length 300 mm	<b>L:</b> L plug connector With lead wire	<b>LN:</b> L plug connector Without lead wire	<b>LO:</b> L plug connector Without connector	<b>D:</b> DIN terminal
<b>H:</b> Grommet Lead wire length 600 mm	<b>M:</b> M plug connector With lead wire	<b>MN:</b> M plug connector Without lead wire	<b>MO:</b> M plug connector Without connector	<b>DO:</b> DIN terminal
	<b>KZ:</b> K plug connector With lead wire	<b>KZN:</b> K plug connector Without lead wire	<b>KZO:</b> K plug connector Without connector	

## How to Order Pilot Valve Assembly

**SCZS3 A L 2 - 1**



### Series VZS3000

### Applicable model

<b>A</b>	Single/Double A side
<b>B</b>	Double B side
<b>3A</b>	3 position A side
<b>3B</b>	3 position B side

### Electrical entry, Light/Surge voltage suppressor

Symbol	Electrical entry	Body type
<b>F</b> Note)	Plug-in	Plug-in type
<b>G</b>	Grommet	Non plug-in type
<b>GS</b>	Grommet, With surge voltage suppressor	
<b>L</b>	L plug connector	
<b>LZ</b>	L plug connector, With light/surge voltage suppressor	
<b>M</b>	M plug connector	
<b>MZ</b>	M plug connector, With light/surge voltage suppressor	
<b>K</b> Note)	K plug connector	
<b>D</b>	DIN terminal	
<b>DZ</b>	DIN terminal, With light/surge voltage suppressor	

### Coil rated voltage

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

\* Option

### Manual override

<b>Nil</b>	Non-locking push type (Flush)
<b>B*</b>	Locking type (Tool required)

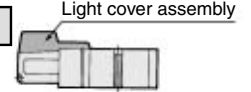
\* Option



Note) Since F and K types are attached without lamp cover, it should be arranged separately.

## How to Order Light Cover Assembly

**AXT171-3 1 A - 5 FZ**



### VZS3000 Light cover assembly

### Applicable model

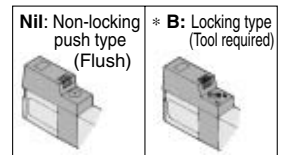
<b>1</b>	2 position single
<b>2</b>	2 position double
<b>3</b>	3 position closed center
<b>4</b>	3 position exhaust center
<b>5</b>	3 position pressure center
<b>6</b>	3 position double check

### Voltage

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

\* Option

### Pilot valve manual override



\* Option

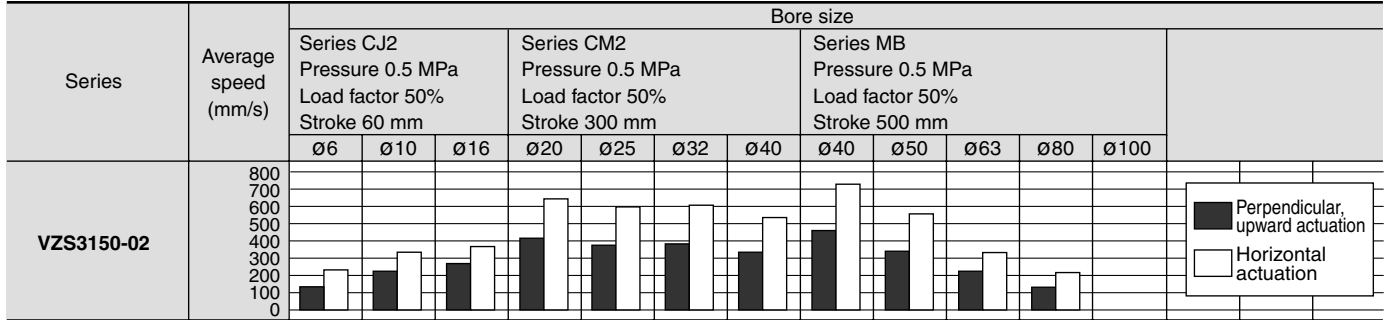
### Electrical entry, Light/Surge voltage suppressor

<b>FZ</b>	Plug-in With light/surge voltage suppressor
<b>FS</b>	Plug-in With surge voltage suppressor
<b>KZ</b>	K plug connector With light/surge voltage suppressor
<b>KS</b>	K plug connector With light/surge voltage suppressor

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS3000

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

## Cylinder Speed Chart



- ⦿ \* 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%

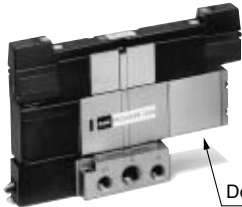
## Conditions

		Series CJ2	Series CM2	Series MB
VZS3150-02	Tube bore x Length	T0604 x 1 m	T0806 x 1 m	
	Speed controller	AS3001F-06	AS3001F-08	
	Silencer	AN101-01		

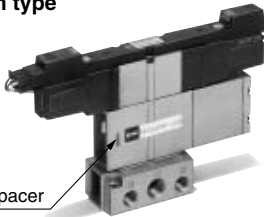
## Double Check Spacer/Specifications

### Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



Plug-in type



Non plug-in type

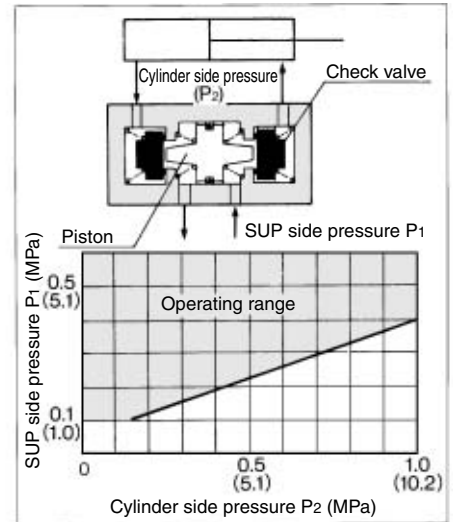
### Specifications

Double check spacer part no.	Plug-in type	Non plug-in type		
		VVZS3000-22A-1	VVZS3000-22A-2	
Applicable valve model	VZS3450-□FZ	VZS3450-□ <sup>G</sup> <sub>L</sub> <sup>M</sup> <sub>KZ</sub> <sup>D</sup>		
Leakage 0.5 MPa	Solenoid one side energized	1(P)	5(R1) 3(R2)	210 Ncm <sup>3</sup> / min or less
		4(A) 2(B)	5(R1) 3(R2)	0
	Solenoid both sides energized	1(P)	5(R1) 3(R2)	210 Ncm <sup>3</sup> / min or less
		4(A) 2(B)	5(R1) 3(R2)	0

### ⚠ Caution

In the case of 3 position double check (VZS3650), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.

### Check Valve Operating Pressure/Characteristics



- The combination of VZS3150, VZS3250 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

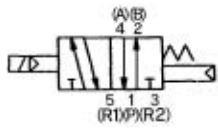
EVS

VFN

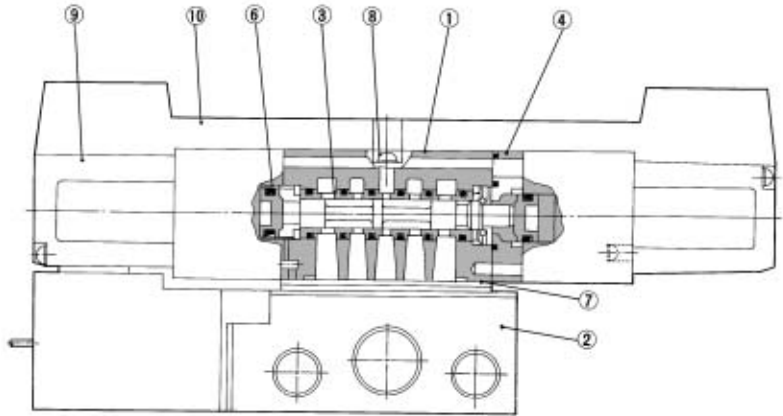
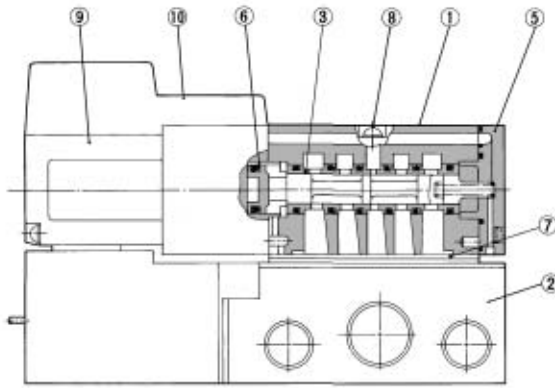
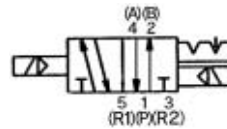
# Series VZS3000

## Construction

### 2 position single

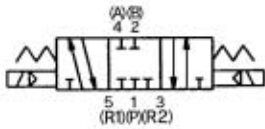


### 2 position double

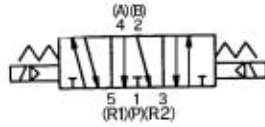


### 3 position closed center/exhaust center/pressure center

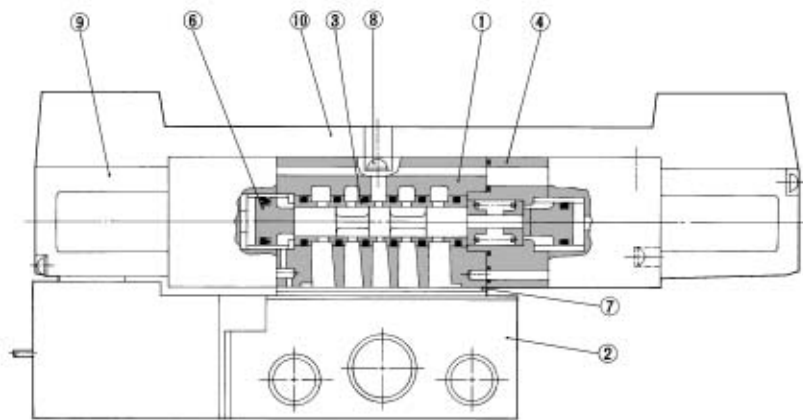
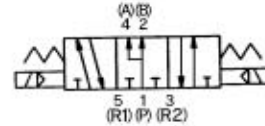
#### Closed center



#### 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	Sub-plate	Aluminum die-casted	Platinum silver
③	Spool/Sleeve	Stainless steel	—
④	Adapter plate	Resin	Black
⑤	End plate	Resin	Black
⑥	Piston	Resin	—

### Replacement Parts

No.	Description	Material	Part no.
⑦	Gasket	NBR	BG-VZS3000-1 (Groove gasket 1 pc. Round head combination screw 2 pcs.)
⑧	Round head combination screw	Carbon steel	BG-VZS3000 (Gasket 1 pc., Round head combination screw 3 pcs.) <small>Note</small>
⑨	Pilot valve assembly	—	Refer to "How to Order Pilot Valve Assembly" on page 3-7-24.
⑩	Light cover assembly	—	Refer to "How to Order Light Cover Assembly" on page 3-7-24.

Note) Refer to page 3-7-6.

### Sub-plate Assembly

Plug-in	VZS3000-P <sup>01</sup> <sub>02</sub> □
Non plug-in	VZS3000-S <sup>01</sup> <sub>02</sub> □

\* Mounting bolt and gasket are not attached.

□: Thread type

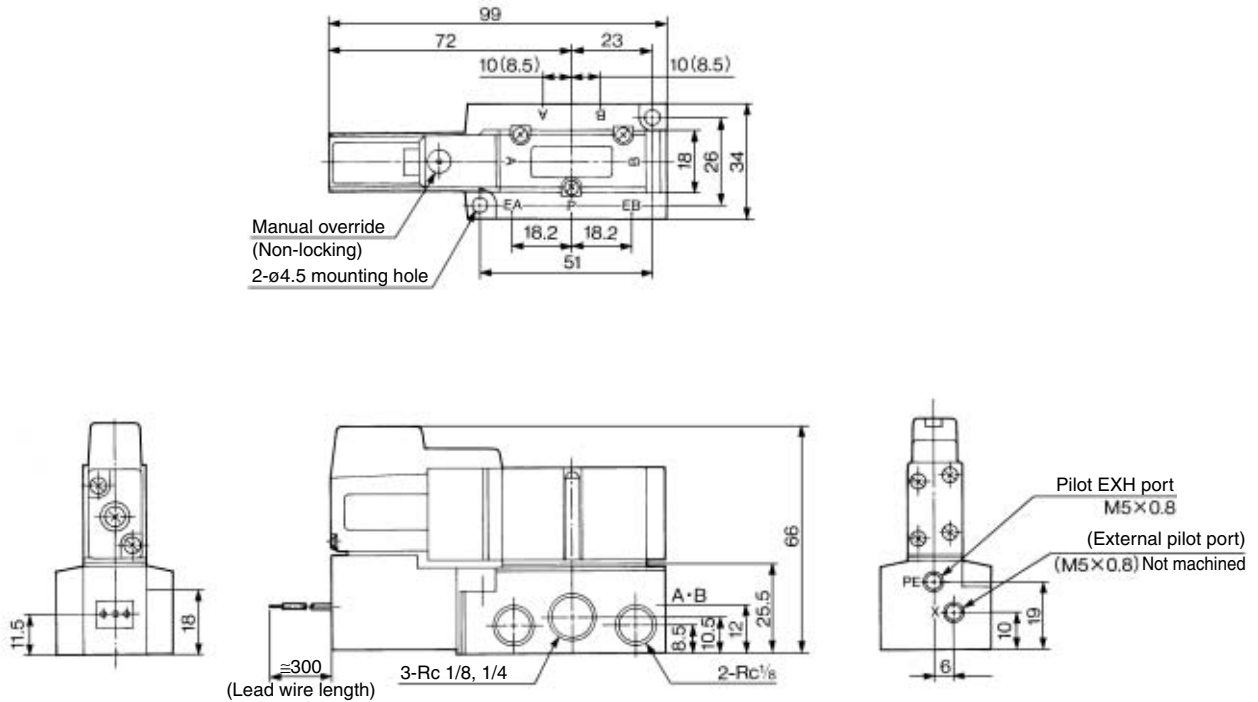
#### Thread Type

Standard	Nil	Rc
	N	NPT
Option	T	NPTF
	F	G

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS3000

**Plug-in** 2 position single/double, 3 position closed center/exhaust center/pressure center/double check

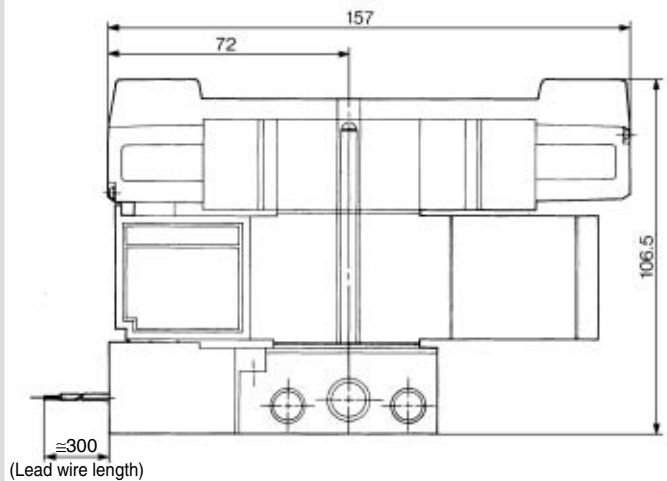
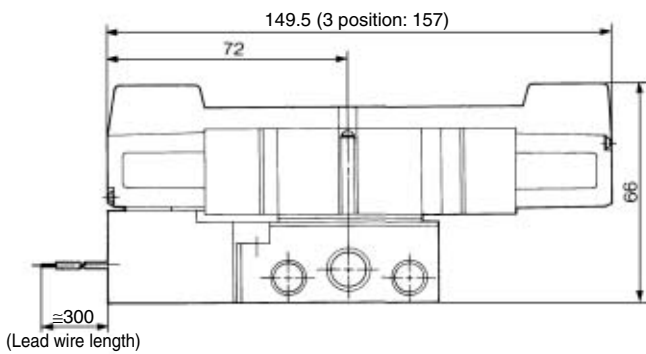
2 position single: VZS3150-□FZ-<sup>01</sup>/<sub>02</sub>



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

2 position double: VZS3250-□FZ-<sup>01</sup>/<sub>02</sub>  
 3 position closed center: VZS3350-□FZ-<sup>01</sup>/<sub>02</sub>  
 3 position exhaust center: VZS3450-□FZ-<sup>01</sup>/<sub>02</sub>  
 3 position pressure center: VZS3550-□FZ-<sup>01</sup>/<sub>02</sub>

3 position double check: VZS3650-□FZ-<sup>01</sup>/<sub>02</sub>



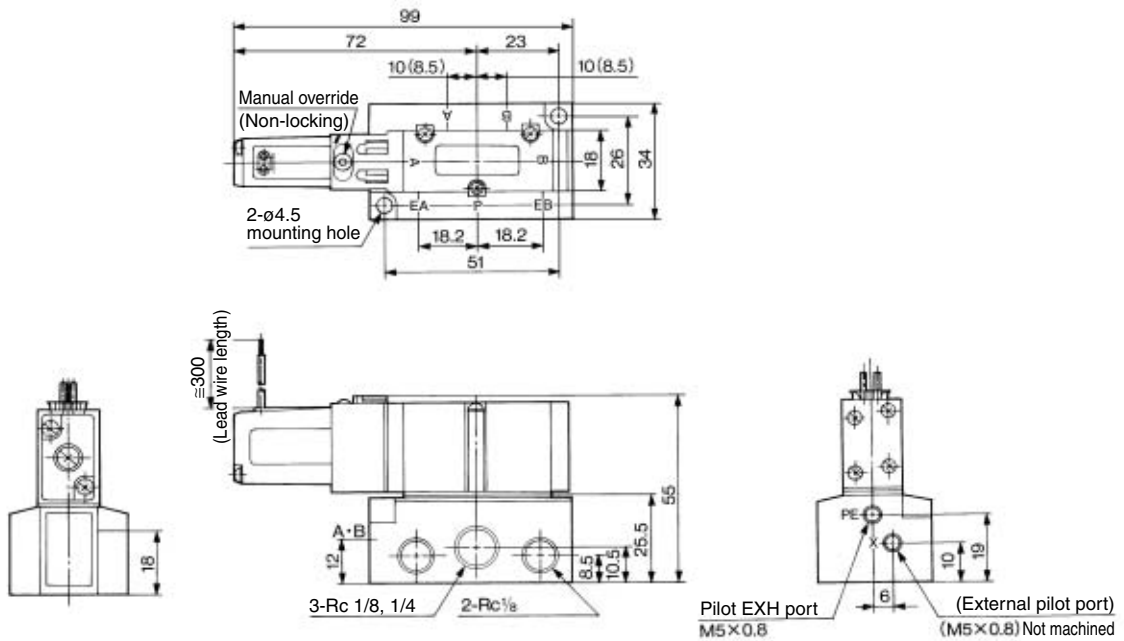
\* Other dimensions are the same as the single type.

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# Series VZS3000

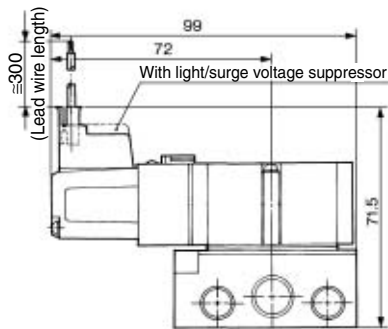
## Non Plug-in 2 position single

Grommet: VZS3150-□<sub>H</sub>(S)<sup>01</sup>/<sub>02</sub>



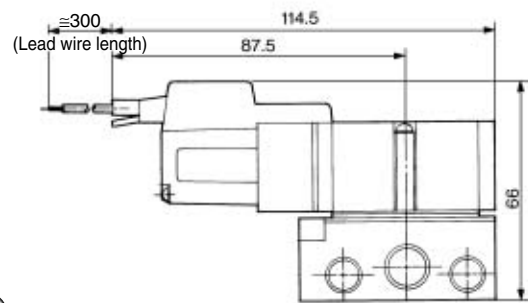
( ) : Rc 1/8

L plug connector: VZS3150-□L(Z)<sup>01</sup>/<sub>02</sub>



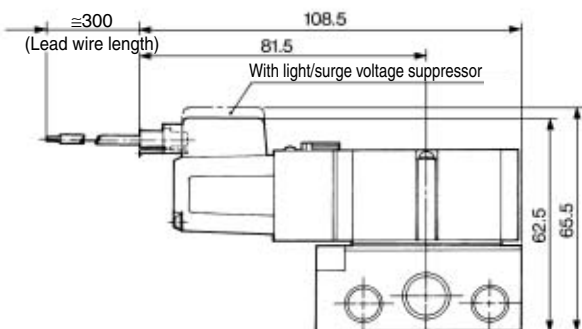
\* Other dimensions are the same as the grommet type.

K plug connector: VZS3150-□KZ<sup>01</sup>/<sub>02</sub>



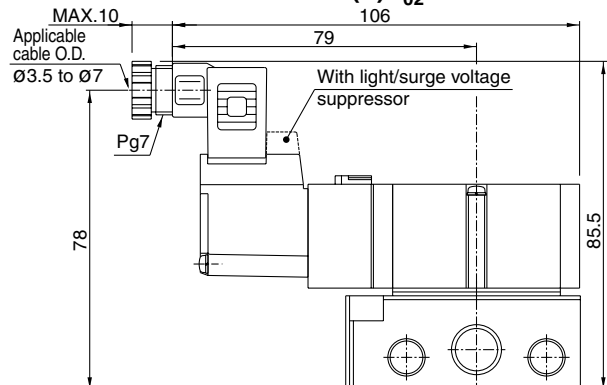
\* Other dimensions are the same as the grommet type.

M plug connector: VZS3150-□M(Z)<sup>01</sup>/<sub>02</sub>



\* Other dimensions are the same as the grommet type.

DIN terminal: VZS3150-□D(Z)<sup>01</sup>/<sub>02</sub>



\* Other dimensions are the same as the grommet type.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS3000

## Non Plug-in 2 position double, 3 position closed center/exhaust center/pressure center

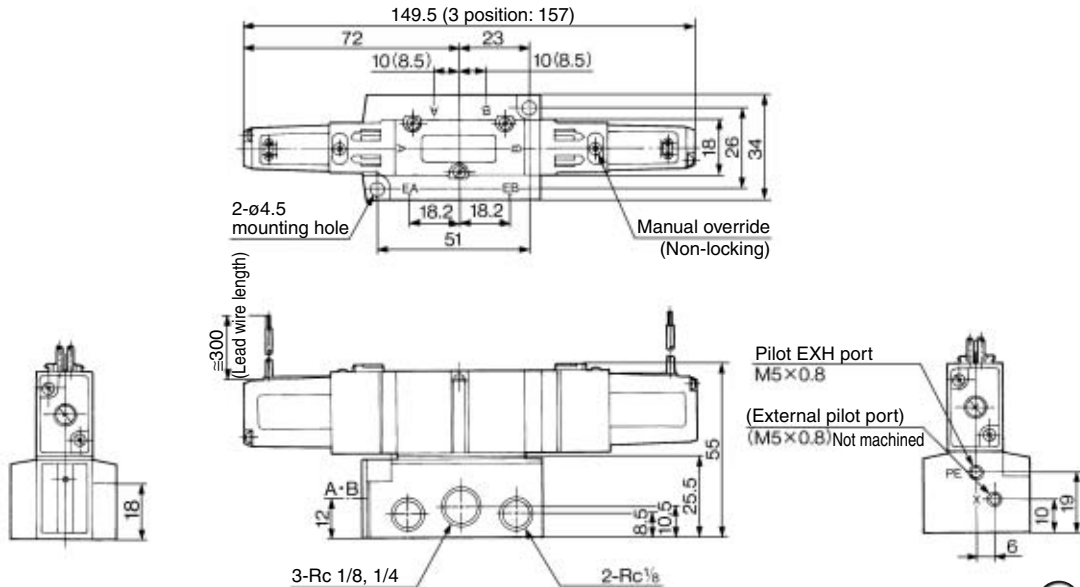
### Grommet

2 position double: VZS3250-□ $G_H(S)$ - $01_{02}$

3 position exhaust center: VZS3450-□ $G_H(S)$ - $01_{02}$

3 position closed center: VZS3350-□ $G_H(S)$ - $01_{02}$

3 position pressure center: VZS3550-□ $G_H(S)$ - $01_{02}$



\* ( ) : Rc 1/8

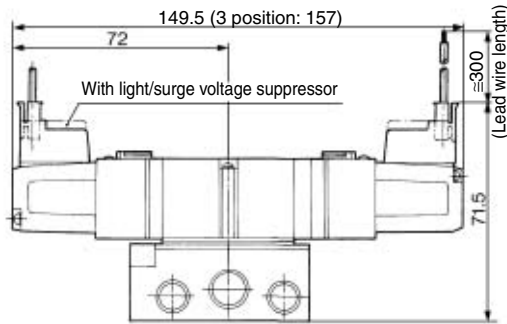
### L plug connector

2 position double: VZS3250-□L(Z)- $01_{02}$

3 position closed center: VZS3350-□L(Z)- $01_{02}$

3 position exhaust center: VZS3450-□L(Z)- $01_{02}$

3 position pressure center: VZS3550-□L(Z)- $01_{02}$



\* Other dimensions are the same as the grommet type.

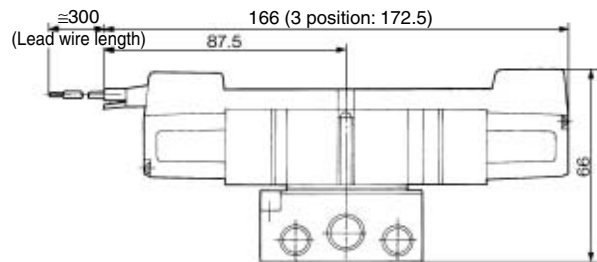
### K plug connector

2 position double: VZS3250-□KZ- $01_{02}$

3 position closed center: VZS3350-□KZ- $01_{02}$

3 position exhaust center: VZS3450-□KZ- $01_{02}$

3 position pressure center: VZS3550-□KZ- $01_{02}$



\* Other dimensions are the same as the grommet type.

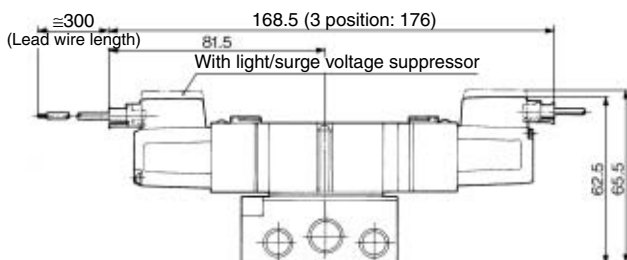
### M plug connector

2 position double: VZS3250-□M(Z)- $01_{02}$

3 position closed center: VZS3350-□M(Z)- $01_{02}$

3 position exhaust center: VZS3450-□M(Z)- $01_{02}$

3 position pressure center: VZS3550-□M(Z)- $01_{02}$



\* Other dimensions are the same as the grommet type.

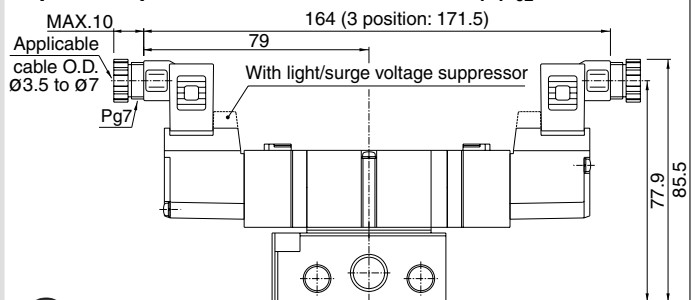
### DIN terminal

2 position double: VZS3250-□D(Z)- $01_{02}$

3 position closed center: VZS3350-□D(Z)- $01_{02}$

3 position exhaust center: VZS3450-□D(Z)- $01_{02}$

3 position pressure center: VZS3550-□D(Z)- $01_{02}$



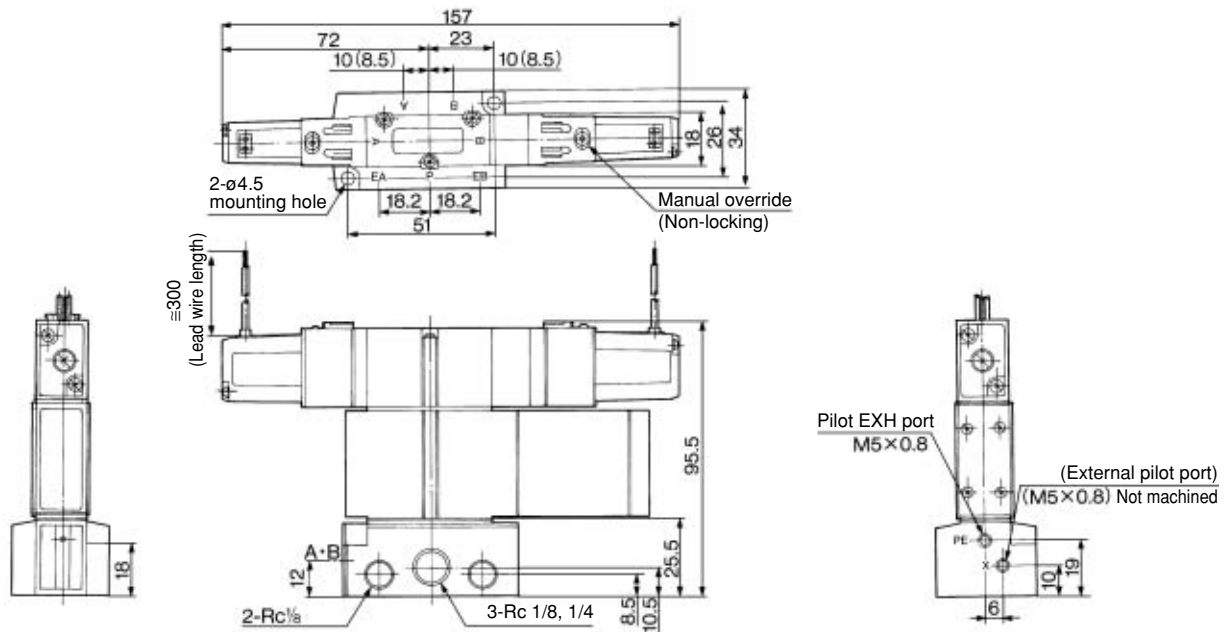
\* Other dimensions are the same as the grommet type.

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

# Series VZS3000

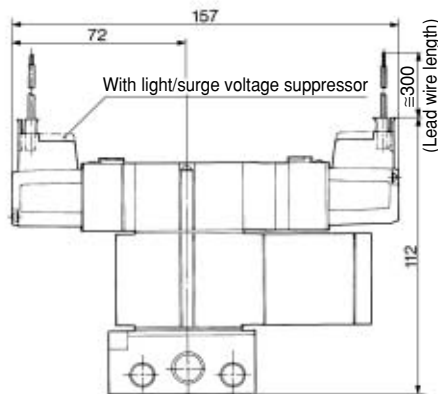
## Non Plug-in 3 position double check

Grommet: VZS3650-□<sup>G</sup><sub>H(S)</sub>-<sup>01</sup><sub>02</sub>



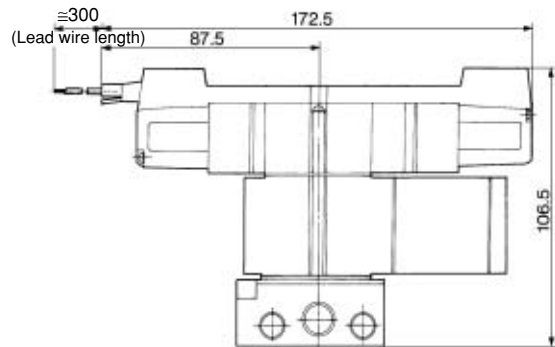
( ) : Rc 1/8

L plug connector: VZS3650-□<sup>L(Z)</sup>-<sup>01</sup><sub>02</sub>



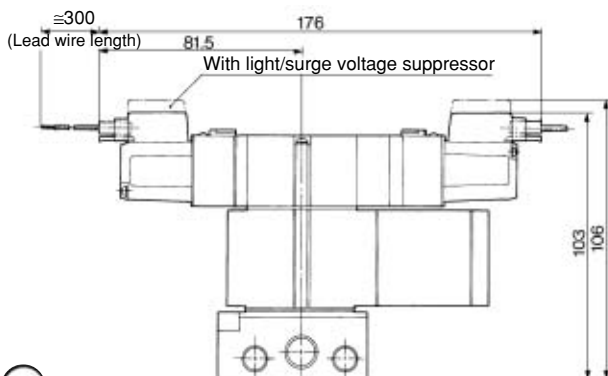
\* Other dimensions are the same as the grommet type.

K plug connector: VZS3650-□<sup>KZ</sup>-<sup>01</sup><sub>02</sub>



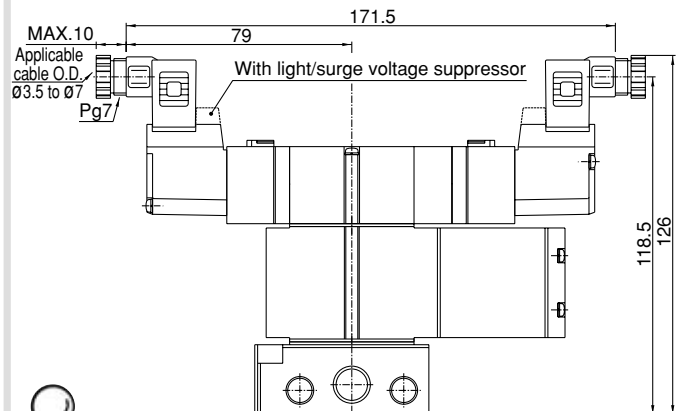
\* Other dimensions are the same as the grommet type.

M plug connector: VZS3650-□<sup>M(Z)</sup>-<sup>01</sup><sub>02</sub>



\* Other dimensions are the same as the grommet type.

DIN terminal: VZS3650-□<sup>D(Z)</sup>-<sup>01</sup><sub>02</sub>



\* Other dimensions are the same as the grommet type.