

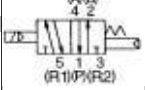
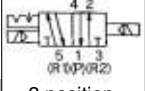

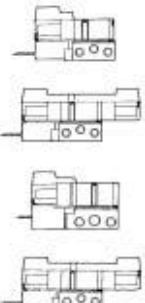












# 5 Port Pilot Operated Solenoid Valve Metal Seal Series VZS

## Series Variations

Series	Sonic conductance C [dm <sup>3</sup> /(s·bar)] 4/2 → 5/3	Type of actuation	Voltage	Electrical entry	With light/surge voltage suppressor (Option) (Note)	Manual override
<b>Plug-in Type</b> <b>Base Mounted Type (With sub-plate)</b> <b>VZS2000</b>  <b>VZS3000</b> 	Rc 1/8 Single 3 position (Closed center) Double 1.4 1.1	2 position single  2 position double  3 position closed center 	(Standard) 100 VAC, 50/60 Hz 200 VAC, 50/60 Hz 24 VDC	Plug-in (F) 	With light/surge voltage suppressor (FZ) With surge voltage suppressor (FS)	Non-locking push type (Flush)
<b>Non Plug-in Type</b> <b>Base Mounted Type (With sub-plate)</b> <b>VZS2000</b>  <b>VZS3000</b> 	Rc 1/8 Single 3 position (Closed center) Double 1.4 1.1	3 position exhaust center  3 position pressure center  3 position double check 	(Option) 24 VAC, 50/60 Hz 48 VAC, 50/60 Hz 110 VAC, 50/60 Hz 220 VAC, 50/60 Hz 6 VDC 12 VDC 48 VDC	Grommet (G)  L plug connector (L)  M plug connector (M)  K plug connector (K)  DIN terminal (D) 	With light/surge voltage suppressor L plug connector (LZ) M plug connector (MZ) K plug connector (KZ) DIN terminal (DZ) With surge voltage suppressor Grommet (GS) * L plug connector (LS) M plug connector (MS) K plug connector (KS) DIN terminal (DS)	Locking type (Tool required)



\* Protective circuit is connected in the course of the lead wire.  
 (Note) The plug-in type and K plug connector type are taken as standard with light/surge voltage suppressor.

VK
VZ
VF
VFR
VP4
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## Manifold Variations

		Manifold Option			Option Parts								Page
Valve series	Manifold type	With control unit	With serial transmission unit	With coaxial fitting	Individual SUP spacer	Individual EXH spacer	SUP block disk	EXH block disk	Throttle valve spacer	Double check spacer	Interface regulator	Blanking plate	
Plug-in Type	VZS2000	●	●	●	●	●	●	●	●	●	●	●	3-7-15
	VZS3000	●	●	●	●	●	●	●	●	●	●	●	3-7-31
Non Plug-in Type	VZS2000	●	●	●	●	●	●	●	●	●	●	●	3-7-15
	VZS3000	●	●	●	●	●	●	●	●	●	●	●	3-7-31

# Series VZS2000/3000

## ⚠ Precautions

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

### 1. How to Use Non Plug-in Type and Plug Connector

#### ⚠ Caution

##### Attaching and detaching connectors

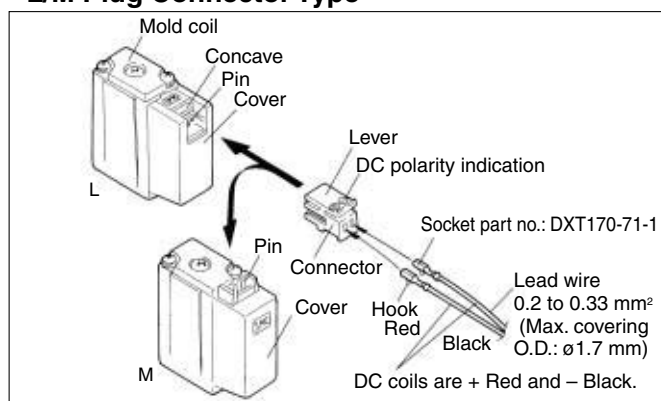
###### 1. Attaching

To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.

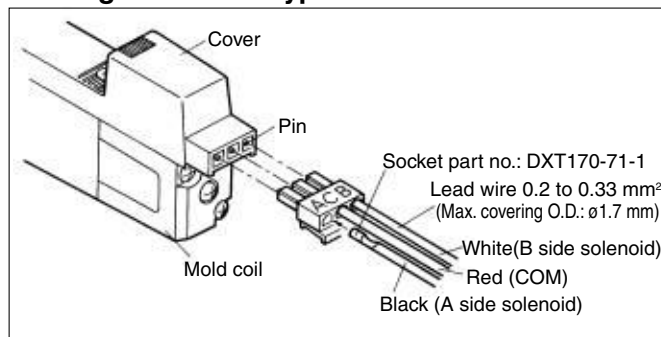
###### 2. Detaching

To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.

##### • L/M Plug Connector Type



##### • K Plug Connector Type



##### L/M plug connector assembly

DXT170—80—  A — 

Lead wire color			Lead wire length	
Symbol	Lead wire with socket	Note	Symbol	Lead wire length (mm)
Nil	Socket only (2 pcs.)	Without lead wire	Nil	300
1	Blue (2)	For 100 VAC	6	600
2	Red (2)	For 200 VAC	10	1000
3	Gray (2)	Another VAC	15	1500
4	Red: +, Black: -	For DC	20	2000
			25	2500
			30	3000

Note) When ordering a valve in which the length of the wire is more than 600 mm, be sure to indicate the model number of valve without connector and connector assembly.

Ex.) For lead wire length (1000 mm)  
VZS3150-5MO-02...3 pcs.  
DXT170-80-4A-10...3 pcs.

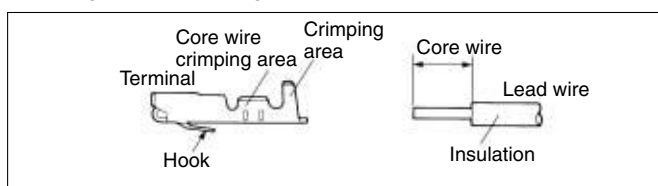
##### K plug connector assembly

AXT170—30—  A — 

Number of solenoid			Lead wire length	
Symbol	Lead wire with socket	Note	Symbol	Lead wire length (mm)
Nil	Socket only (3 pcs.)	Without lead wire	Nil	300
1	For single solenoid Black/Red	In common between AC and DC	6	600
2	Double solenoid Black: A side		10	1000
	Red: COM		15	1500
	White: B side		20	2000
			25	2500
			30	3000

##### Crimping of lead wires and sockets

Peel 3.2 to 3.7 mm of the tip of lead wire, enter the core wires neatly into a socket and crimp it with a special crimp tool. Be careful so that the cover of lead wire does not enter into the crimping part. (Crimping tool part no.: DXT170-75-1)



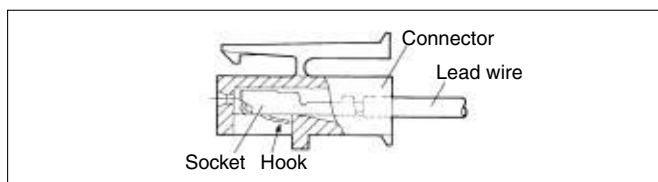
##### Attaching and detaching lead wires with sockets

###### 1. Attaching

Insert the sockets into the square holes of the connector (with + and - indication) and, continue to push the sockets all the way in until the lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

###### 2. Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.




## ⚠ Caution

### Connector assembly with protective Cover

- Connector assembly with protective cover enhances dust protection
- Effective to prevent short circuit accidents due to penetration of foreign matter into the connector section.
  - The material of cover is chloroprene rubber for electricity which is excellent in weathering and electrical insulating properties. But don't splash with cutting oil.
  - Simple and unencumbered appearance by adopting round-shaped cord.

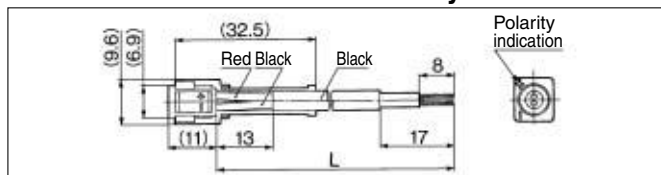
### How to Order

**DXT170-123-A** 

#### Lead wire length

Symbol	Lead wire length (L mm)
Nil	300
6	600
10	1000
15	1500
20	2000
25	2500
30	3000

### Dimensions: Connector Assembly with Cover



### How to wire DIN terminal

#### Connection

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

#### Change of electrical entry (Orientation)

After separating terminal block and housing, the cord entry direction can be changed by attaching the housing in the desired direction (4 directions in 90° increments).

\* In the case of w/ indicator light, avoid damaging the indicator light with lead wire.

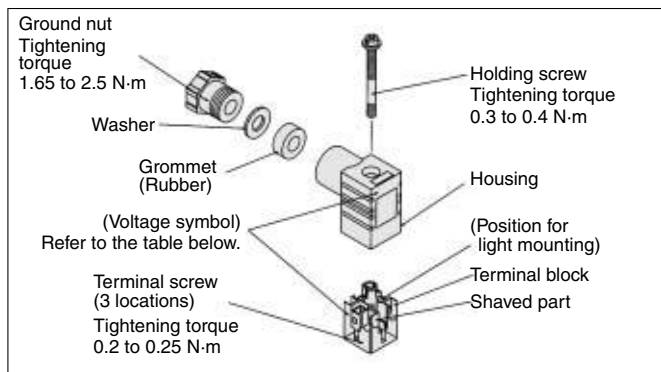
#### Precautions

Plug a connector in or out vertically, never at an angle.

#### Applicable cable

O.D.:  $\phi 3.5$  to  $\phi 7$

(Reference) 0.5 mm<sup>2</sup> 2 core and 3 core wires equivalent to JIS C 3306.



## 2. Light/Surge Voltage Suppressor

### Plug-in Base Type/K Plug Connector



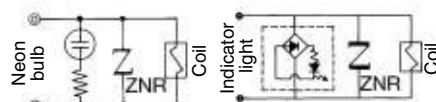
Type FZ

With indicator light (AC)



Type KZ

With indicator light (DC)

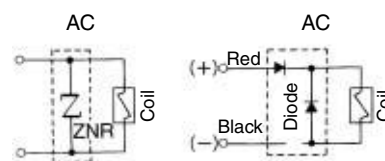


Due to the use of non-polar light, the VZS series has no polarity.

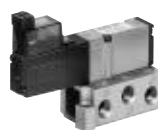
### Grommet Type



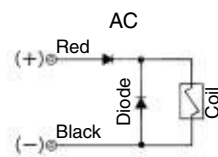
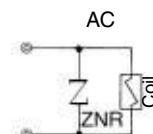
Type GS



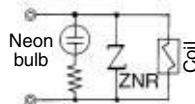
### L/M Plug Connector Type



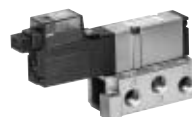
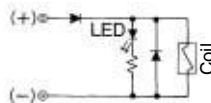
Type LZ



With indicator light (AC)



With indicator light (DC)



Type MZ

In applications where the supply voltage is DC, correctly connect the lead wires to + (positive) and - (negative) indications on the connector. For those on which the lead wires have been pre-wired, the plus side is red and minus side is black.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

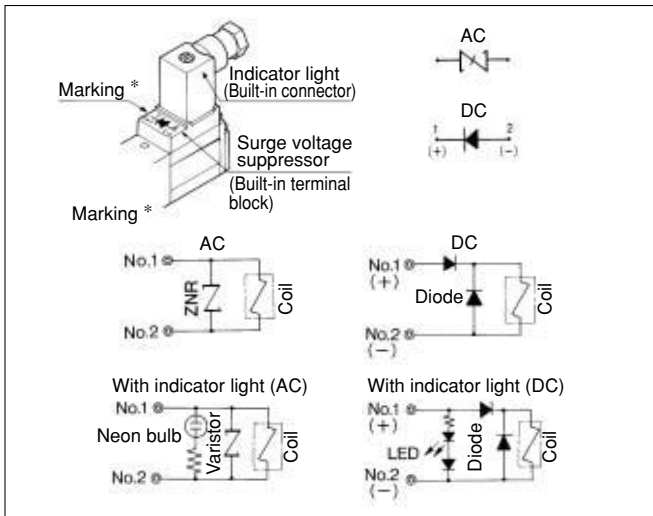
EVS

VFN

# Series VZS2000/3000

## ⚠ Caution

### DIN Terminal

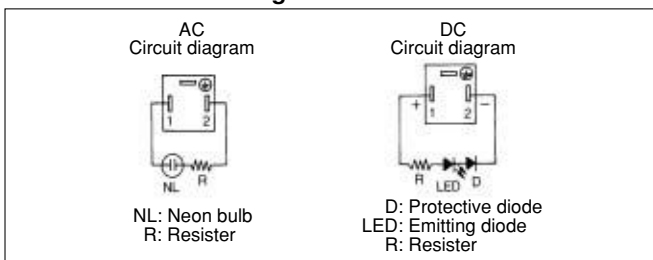


In the case of DC wiring, connect terminal no. 1 of the connector to the positive (+) side, and terminal no. 2 to the negative (-) side. (Refer to the marks on the terminal board.)

### DIN Terminal Part No.

Without indicator light		DXT170-176-1
<b>With Indicator Light</b>		
Rated voltage	Voltage symbol	Part no.
100 VAC	100V	DXT170-176-2-01
200 VAC	200V	DXT170-176-2-02
110 VAC	110V	DXT170-176-2-03
220 VAC	220V	DXT170-176-2-04
240 VAC	240V	DXT170-176-2-07
6 VDC	6VD	DXT170-176-3-51
12 VDC	12VD	DXT170-176-3-06
24 VDC	24VD	DXT170-176-3-05
48 VDC	48VD	DXT170-176-3-53

### Circuit with Indicator Light



## 3. Wiring Specifications

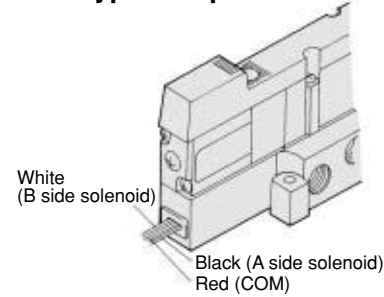
### Single unit

Since the sub-plate of plug-in base type and the lead wire of K plug connector type are connected with valves as shown in the following table, they should be connected with each power side. Since DC has no polarity, the polarity of COM is possible for either + or -.

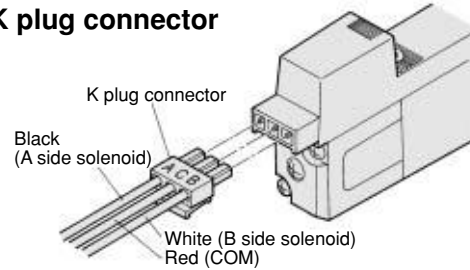
### Lead Wire Color

Valve	Single solenoid type	Double, 3 position type	
	A side solenoid	A side solenoid	B side solenoid
Lead wire color	Black: A Red: COM	Black: A Red: COM	White: B Red: COM

### Plug-in base type sub-plate



### K plug connector



Single solenoid style has 2 leads of red and blue.

## 4. Wiring Specifications

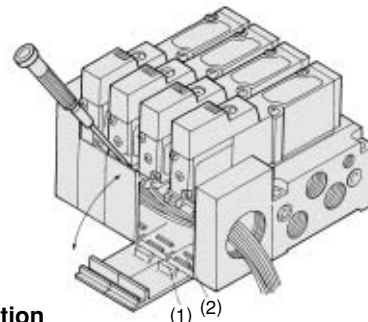
### Manifold base

#### Type 51G with D-sub connector

##### • How to open a junction cover

Open the cover by inserting a flat headed screwdriver to the upper part of junction cover as shown in the figure. For closing, close by pushing the cover until the application of the hook is heard.

Note) Forced pulling of the cover may remove it. In this case, there is no problem closing the cover to put (1) the projection into (2) the groove.

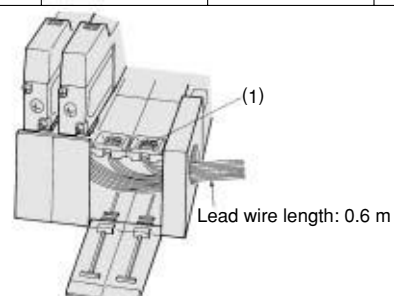


##### • Connection

Manifold block is equipped (1) attachment plug and lead wire is connected (plug-in) with the valve side as shown in the following table. The lead wires should be connected with each power side. Since DC has no polarity, the polarity of COM is possible for either + or -.

### Lead Wire Color

Valve	Single solenoid type	Double, 3 position type	
	A side solenoid	A side solenoid	B side solenoid
Lead wire color	Black: A Red: COM	Black: A Red: COM	White: B Red: COM



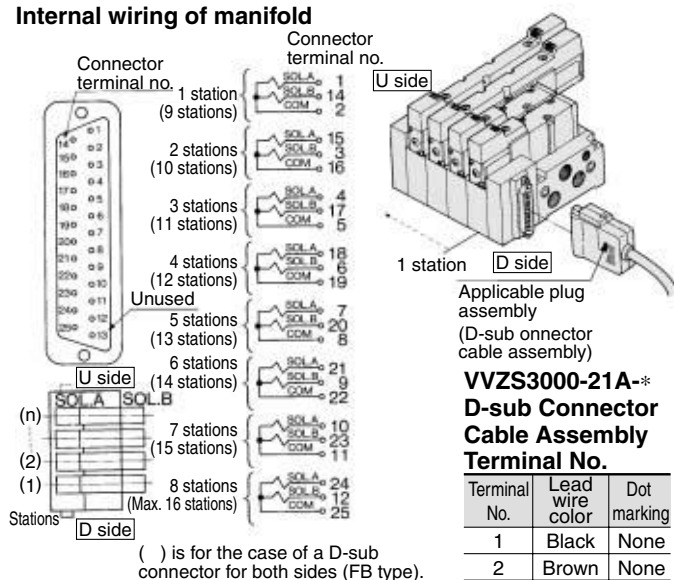


## ⚠ Caution

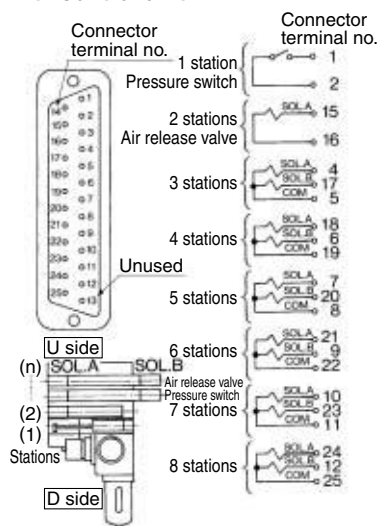
### Type 51F with D-sub connector

- Use of D-sub connector for electric connection system leads to rationalization and labor saving in the connection work. Because MIL standard D-sub connector (25 pin) is used as the connector, a wide interchangeability is obtainable.
- Wiring specifications  
The inside of the manifold is wired with connector terminals on the solenoid A side and B side according to COM specification as shown in the following diagram. Since DC has no polarity, the polarity of COM is possible for either + or -.

### Internal wiring of manifold



### Inside wiring of manifold with control unit



- Note 1) Regardless of the D-sub connector mounting position, stations are to be counted from D side as the 1st one.
- Note 2) The maximum number of stations is 8 stations in a D-sub connector one side fitting (Type F<sub>0</sub>) and is 16 stations in both sides fitting (Type FB). By COM specifications, maximum 24, stations are possible.

### Applicable Plug Assembly (D-sub connector cable assembly) (Option)

Cable length	Assembly part no.	Component parts
1.5 m	VVZS3000-21A-1	Plug MIL standard
3 m	VVZS3000-21A-2	D-sub connector
5 m	VVZS3000-21A-3	D-sub connector
8 m	VVZS3000-21A-4	Number of terminals: 25 Cable: 25 cores x 0.3 mm <sup>2</sup>

## 5. Replacement

### Replacement of solenoid valves

Loosen the fitting machine screws of solenoid valve and then pull out the solenoid valve body in a straight line.  
A clamping torque of the fitting machine screws should be 40 to 50 N·m.

### How to Calculate the Flow Rate

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

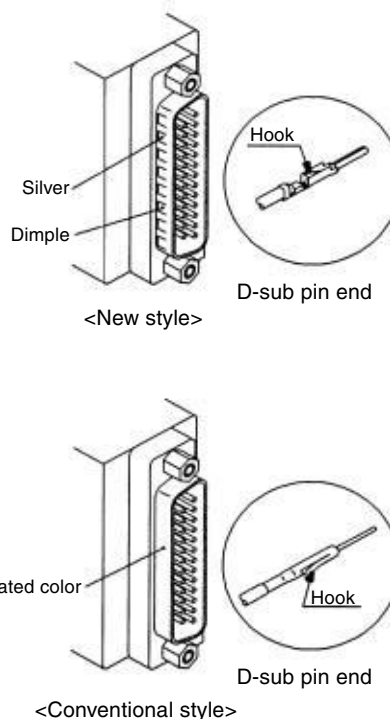
## 6. D-Sub Connector Manifold Block Assembly

### Precautions for ordering

- The shape of the D-sub pin of the lead cable assembly that is provided with the D-sub connector timer manifold block assembly has been newly changed. When ordering a manifold block assembly, verify whether it is the old or the new style, and use the part numbers listed below. All lots have been changed to the new style starting with the February, 1997 shipment (Lot no. BP).

### • New/Conventional D-sub connector

	Color	Appearance	Manufacturer
New D-sub connector	Silver	With dimple	JST Manufacturing Corp. Ltd.
Conventional D-sub connector	Chromated	Without dimple	Hirose Electric Co., Ltd.



### • New/Conventional manifold block assembly part no.

For VZS2000

New block assembly part no.  
(N) VVZS2000-1A-3-Bore size-1 (-X12)  
Conventional block assembly part no.  
(N) VVZS2000-1A-3-Bore size (-X12)

For VZS3000

New block assembly part no.  
(N) VVZS3000-1A-3-Bore size-1 (-X12)  
Conventional block assembly part no.  
(N) VVZS3000-1A-3-Bore size (-X12)

Note) "-X12" shows the part no. for all common style.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

# Series VZS2000/3000

## Caution

### 7. Part number for Screws and Gasket Assembly

#### Precautions on ordering

- The interface gasket configuration between valve manifolds has been changed in line with the configuration changes of the valve interface. When ordering screw and gasket assembly part numbers, confirm the new and old valve interface and then order with the following part number.

All lots have been changed to the new style starting with the April, 2001 shipment (Lot no. FR).

#### • How to confirm the new and old valves interface

	Valve interface
New	With gasket groove
Old	Without flat surface groove

#### • Screw, gasket assembly part no.

For VZS2000

New: BG-VZS2000-1 (Ditch groove):

Set of gasket 1 pc. and mounting screw 2 pcs.

Old: BG-VZS2000 (Plate gasket):

Set of gasket 1 pc. and mounting screw 2 pcs.

For VZS3000

New: BG-VZS3000-1 (Groove gasket):

Set of gasket 1 pc. and mounting screw 3 pcs.

Old: BG-VZS3000 (Plate gasket):

Set of gasket 1 pc. and mounting screw 3 pcs.

# 5 Port Pilot Operated Solenoid Valve

## Metal Seal, Plug-in/Non Plug-in

### Series VZS2000

#### 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 [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
2 position	Single	VZS2150	1/8	1.2	0.12	0.28	1.4	0.19	0.33	1200	17 or less	0.14
	Double	VZS2250	1/8	1.2	0.12	0.28	1.4	0.19	0.33	1200	13 or less	0.19
3 position	Closed center	VZS2350	1/8	0.90	0.23	0.21	1.1	0.17	0.27	600	22 or less	0.2
	Exhaust center	VZS2450	1/8	1.1	0.12	0.25	1.3	0.13	0.31	600	22 or less	0.2
	Pressure center	VZS2550	1/8	1.2	0.12	0.26	1.4	0.19	0.33	600	22 or less	0.2
	Double check	VZS2650	1/8	0.71	—	—	0.81	—	—	500	26 or less	0.3



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 VZS□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 15 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

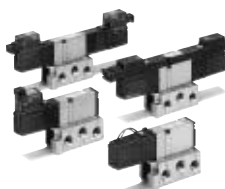
DIN terminal type: individual take out of A and B sides

**A little power consumption: 1.8 WDC**

**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

# Series VZS2000

## How to Order

**Light/Surge voltage suppressor**

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

Note) With light/surge voltage suppressor is provided as standard.

**Electrical entry**

**F:** Plug-in type

**Pilot valve manual override**

**Nil:** Non-locking push type (Flush)

**B\*:** Locking type (Tool required)

\* Option

**Port size**

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

**Plug-in** VZS2 2 50 — 1 F Z — 01

**Non plug-in** VZS2 2 50 — 5 G — 01

**Symbol**

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
6	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 surge voltage suppressor is available for grommet type only. 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
Option	<b>N</b>	NPT
	<b>T</b>	NPTF
	<b>F</b>	G

**Electrical entry**

**G:** Grommet Lead wire length: 300 mm

**L:** L plug connector With lead wire

**LN:** L plug connector Without lead wire

**LO:** L plug connector Without connector

**D:** DIN terminal

**H:** Grommet Lead wire length: 600 mm

**M:** M plug connector With lead wire

**MN:** M plug connector Without lead wire

**MO:** M plug connector Without connector

**DO:** DIN terminal

**KZ:** K plug connector With lead wire

**KZN:** K plug connector Without lead wire

**KZO:** K plug connector Without connector

## How to Order Pilot Valve Assembly

**SCZS2 A — L — 2 — 1**

**Series VZS2000**

**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		
<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		Non plug-in type
<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		

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

**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

## How to Order Light Cover Assembly

**AXT171-2 1 A — 5 FZ**

**VZS2000 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

**Plug-in type K plug connector**

**Light cover assembly**

**Pilot valve manual override**

**Nil:** Non-locking push type (Flush)

**B\*:** Locking type (Tool required)

\* Option

**Electrical entry, Light/Surge voltage suppressor**

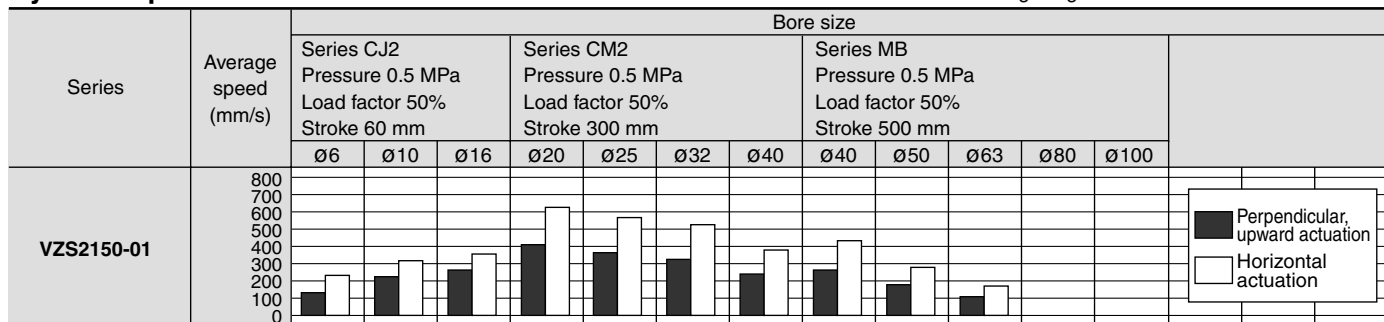
<b>FZ</b>	Plug-in With light/surge voltage suppressor
<b>FS</b>	Plug-in With surge voltage suppressor
<b>KZ</b>	K plug connector With light/surge voltage suppressor
<b>KS</b>	K plug connector With light/surge voltage suppressor



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS2000

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%

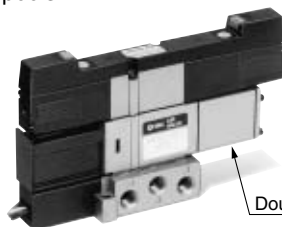
## Conditions

		Series CJ2	Series CM2	Series MB
VZS2150-01	Tube bore x Length	T0604 x 1 m		
	Speed controller	AS3001F-06		
	Silencer	AN110-1		

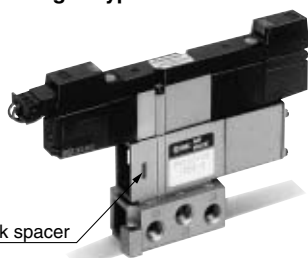
## Double Check Spacer/Specifications

### 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

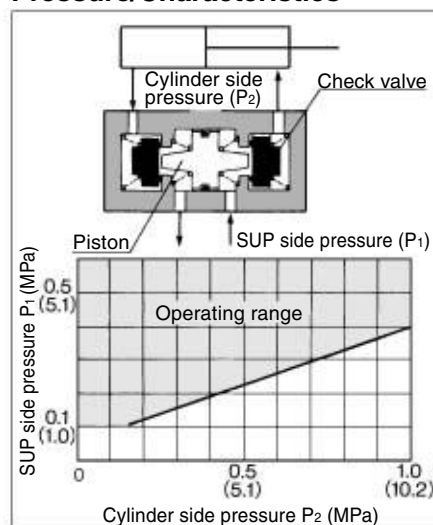
### Specifications

Double check spacer part no.	Plug-in type	Non plug-in type
	VVZS2000-22A-1	VVZS2000-22A-2
Applicable valve model	VZS2450-□FZ	VZS2450-□ G L M KZ D
Leakage (Supply pressure: 0.5 MPa)	Solenoid one side de-energized	1(P) 5(R1) 100 Ncm <sup>3</sup> /min or less 3(R2) 3(R2) 100 Ncm <sup>3</sup> /min or less
	Solenoid both sides de-energized	1(P) 5(R1) 100 Ncm <sup>3</sup> /min or less 4(A) 5(R1) 0 2(B) 3(R2)

### Caution

In the case of 3 position double check (VZS2650), 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 VZS2150, VZS2250 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

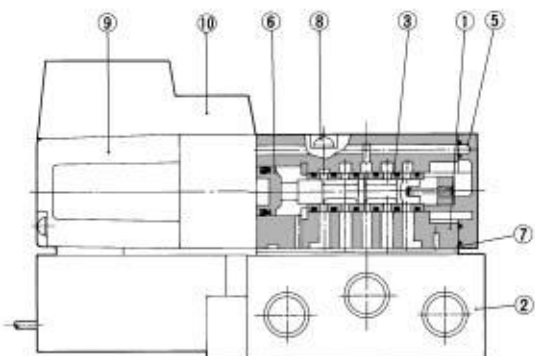
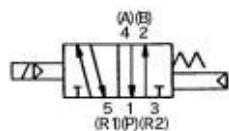
EVS

VFN

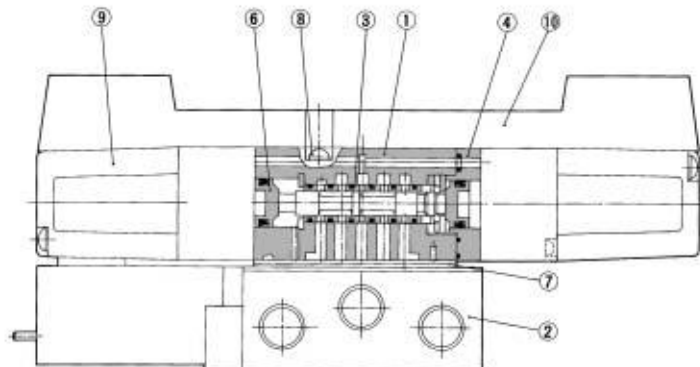
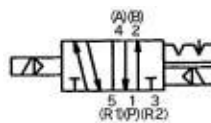
# Series VZS2000

## Construction

### 2 position single

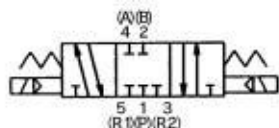


### 2 position double



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

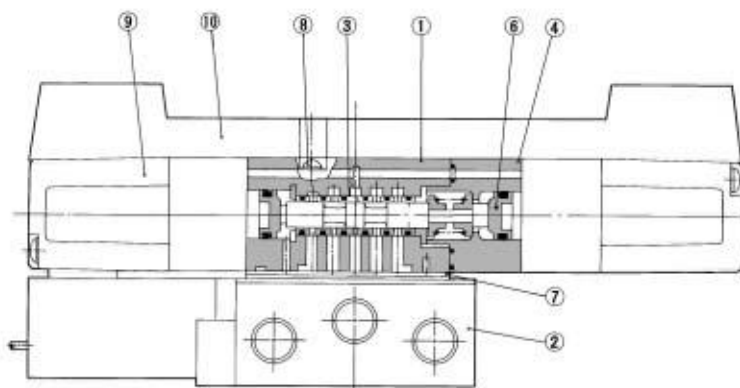
#### Closed center



#### 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-VZS2000-1 (Groove gasket 1 pc., Round head combination screw 2 pcs.)
⑧	Round head combination screw	Carbon steel	BG-VZS2000 (Gasket 1 pc., Round head combination screw 2 pcs.) <sup>Note)</sup>
⑨	Pilot valve assembly	—	Refer to "How to Order Pilot Valve Assembly" on page 3-7-8.
⑩	Light cover assembly	—	Refer to "How to Order Light Cover Assembly" on page 3-7-8.

Note) Refer to page 3-7-6.

## Sub-plate Assembly

Plug-in	VZS2000-P-01□
Non plug-in	VZS2000-S-01□



\* Mounting bolt and gasket are not attached.

\* □: Thread type

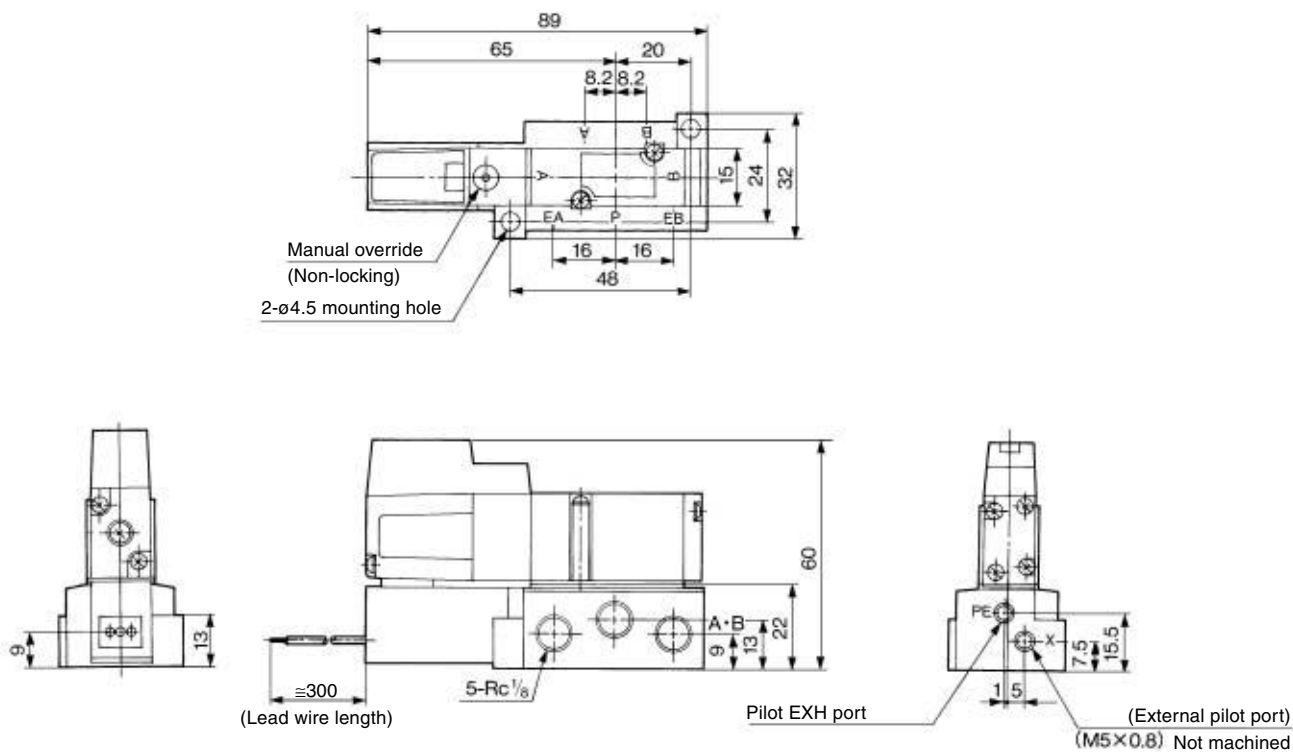
## Thread Type

Standard	Nil	Rc
	N	NPT
Option	T	NPTF
	F	G

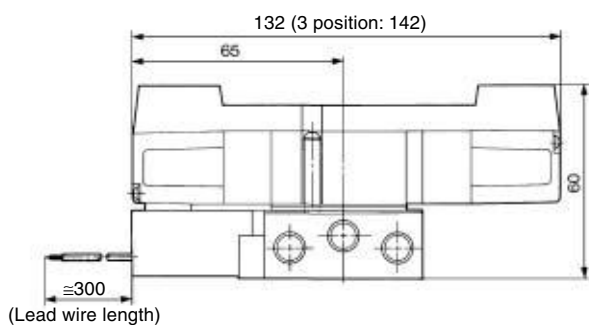
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS2000

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

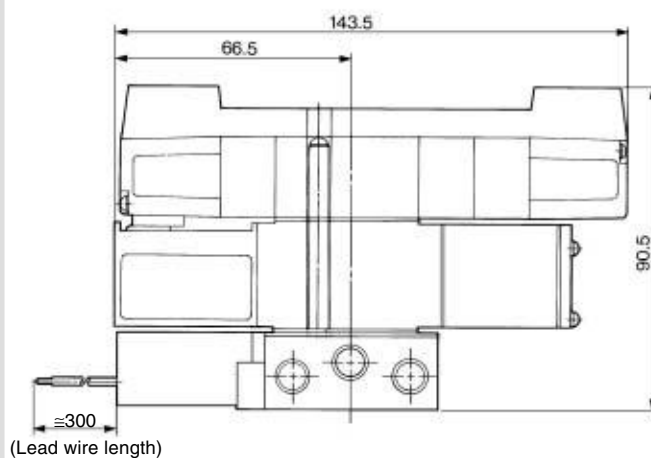
2 position single: VZS2150-□FZ-01



2 position double : VZS2250-□FZ-01  
3 position closed center : VZS2350-□FZ-01  
3 position exhaust center : VZS2450-□FZ-01  
3 position pressure center: VZS2550-□FZ-01



3 position double check: VZS2650-□FZ-01



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



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

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

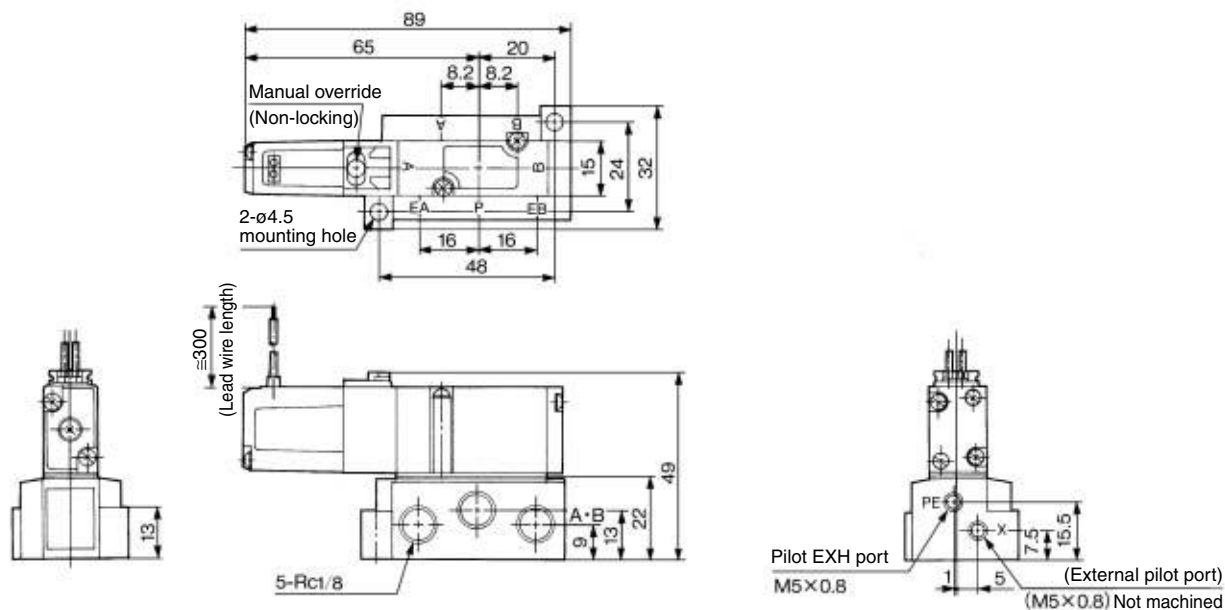
EVS

VFN

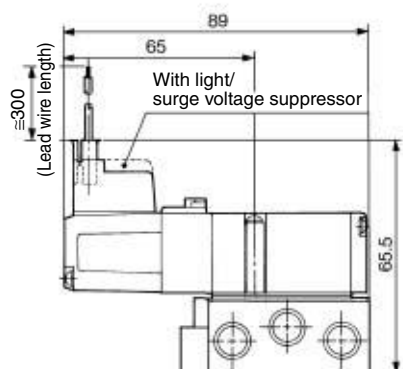
# Series VZS2000

## Non Plug-in 2 position single

Grommet: VZS2150-□<sub>H</sub>(S)-01

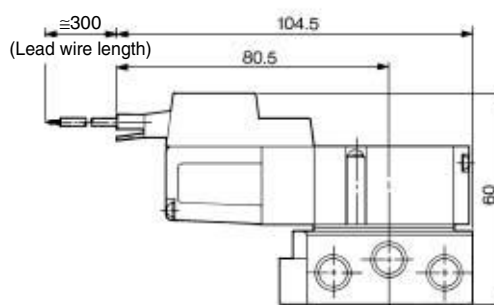


L plug connector: VZS2150-□L(Z)-01



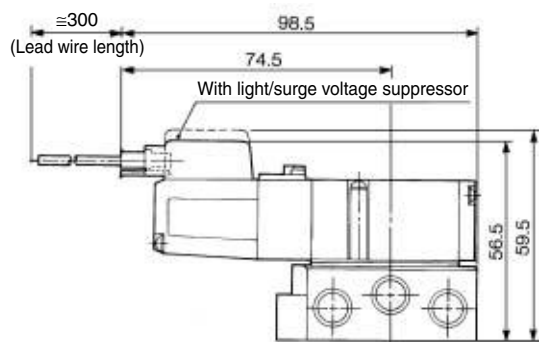
\* Other dimensions are the same as the grommet type.

K plug connector: VZS2150-□KZ-01



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

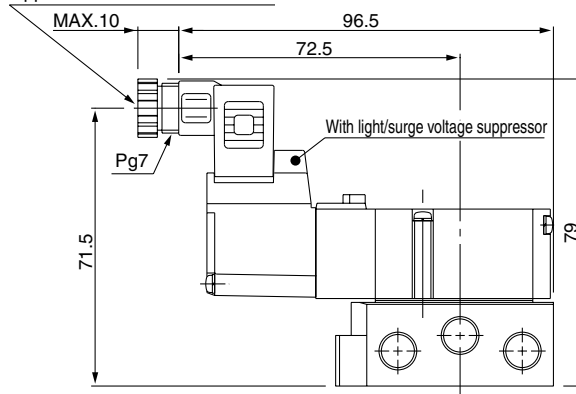
M plug connector: VZS2150-□M(Z)-01



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

DIN terminal: VZS2150-□D(Z)-01

Applicable cable O.D.:  $\phi$ 3.5 to 7



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



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS2000

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

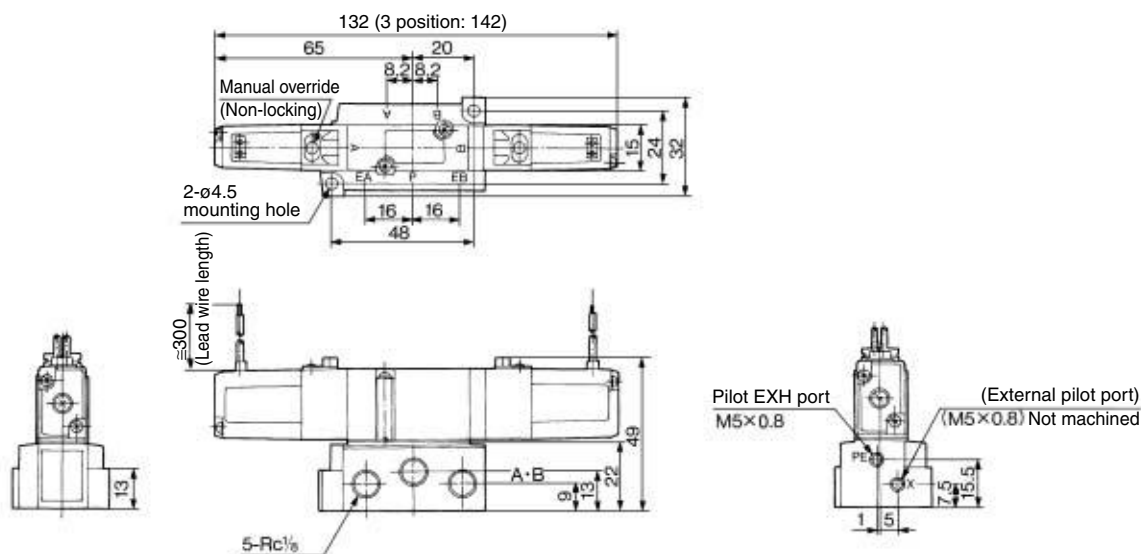
### Grommet

2 position double: VZS2250-□<sup>G</sup><sub>H</sub>(S)-01

3 position exhaust center: VZS2450-□<sup>G</sup><sub>H</sub>(S)-01

3 position closed center: VZS2350-□<sup>G</sup><sub>H</sub>(S)-01

3 position pressure center: VZS2550-□<sup>G</sup><sub>H</sub>(S)-01



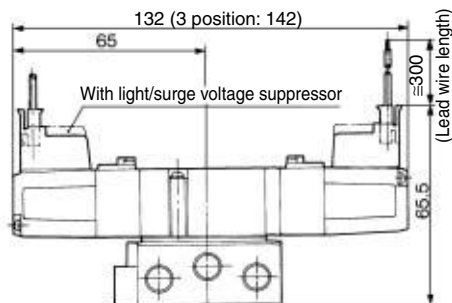
### L plug connector

2 position double: VZS2250-□L(Z)-01

3 position closed center: VZS2350-□L(Z)-01

3 position exhaust center: VZS2450-□L(Z)-01

3 position pressure center: VZS2550-□L(Z)-01



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

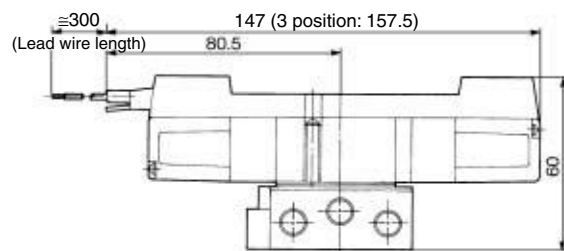
### K plug connector

2 position double: VZS2250-□KZ-01

3 position closed center: VZS2350-□KZ-01

3 position exhaust center: VZS2450-□KZ-01

3 position pressure center: VZS2550-□KZ-01



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

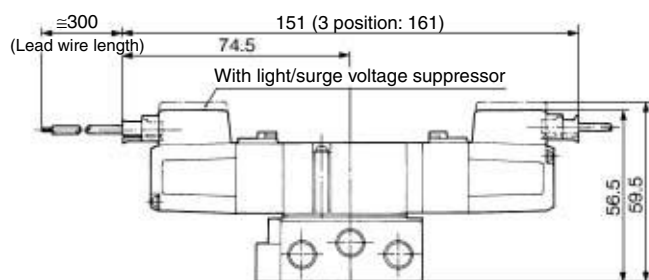
### M plug connector

2 position double: VZS2250-□M(Z)-01

3 position closed center: VZS2350-□M(Z)-01

3 position exhaust center: VZS2450-□M(Z)-01

3 position pressure center: VZS2550-□M(Z)-01



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

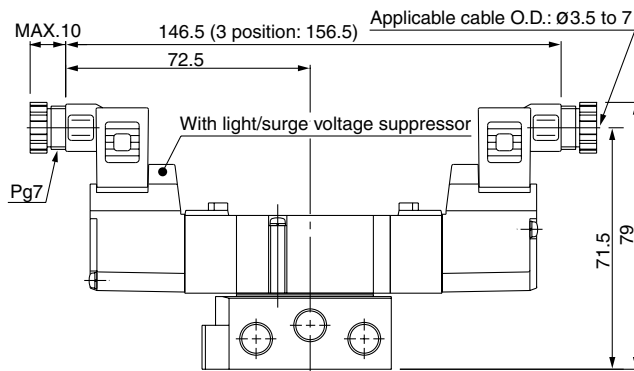
### DIN terminal

2 position double: VZS2250-□D(Z)-01

3 position closed center: VZS2350-□D(Z)-01

3 position exhaust center: VZS2450-□D(Z)-01

3 position pressure center: VZS2550-□D(Z)-01



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

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

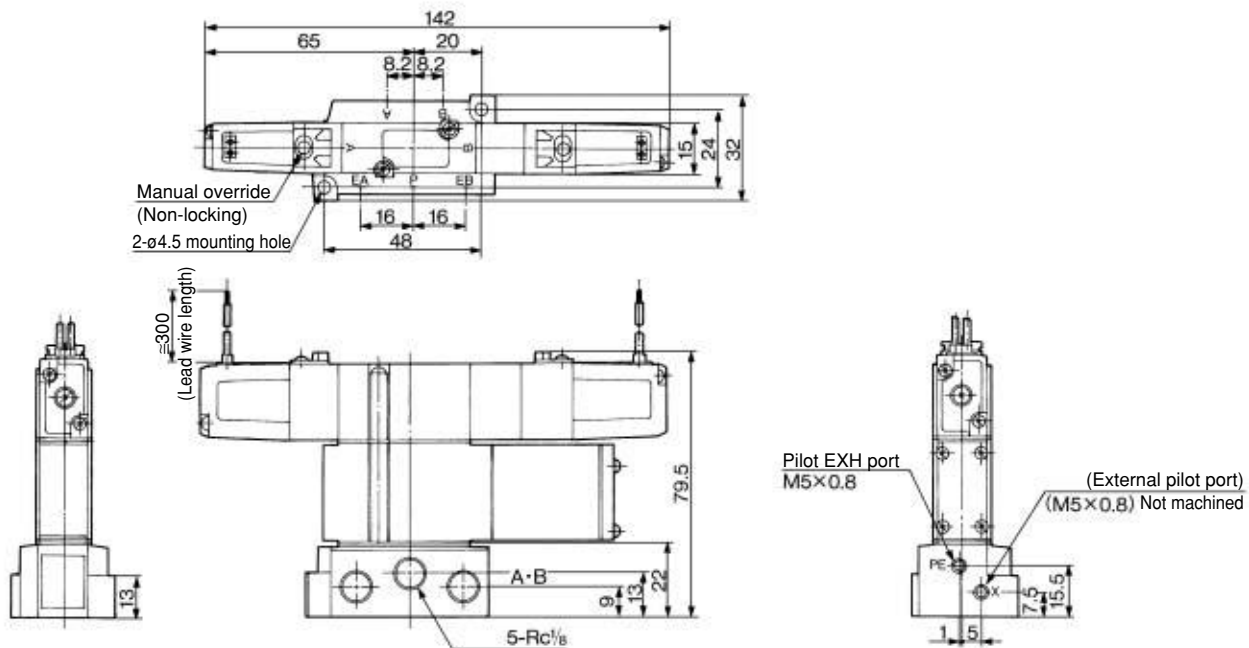
EVS

VFN

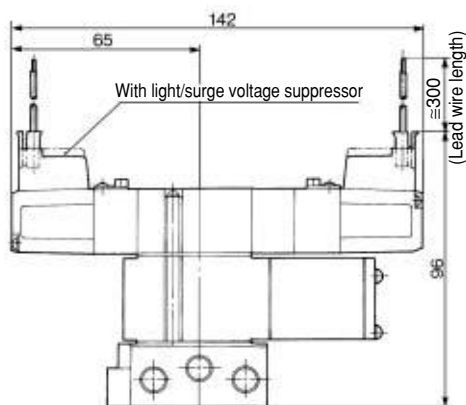
# Series VZS2000

## Non Plug-in 3 position double check

### Grommet: VZS2650-□<sup>G</sup><sub>H</sub>(S)-01

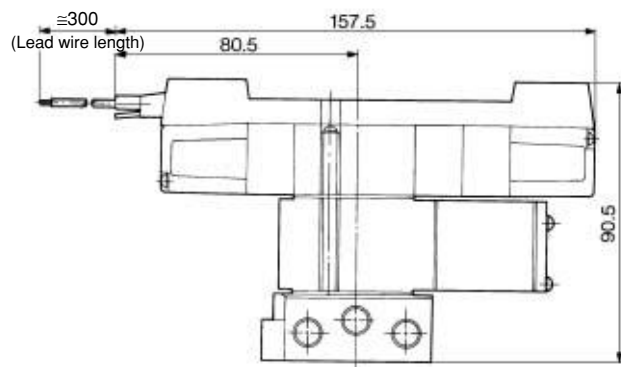


### L plug connector: VZS2650-□L(Z)-01



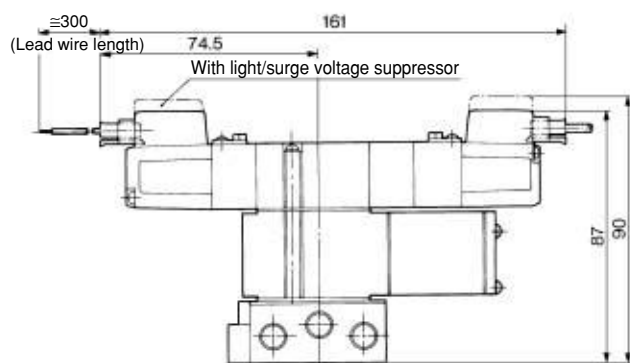
\* Other dimensions are the same as the grommet type.

### K plug connector: VZS2650-□KZ-01



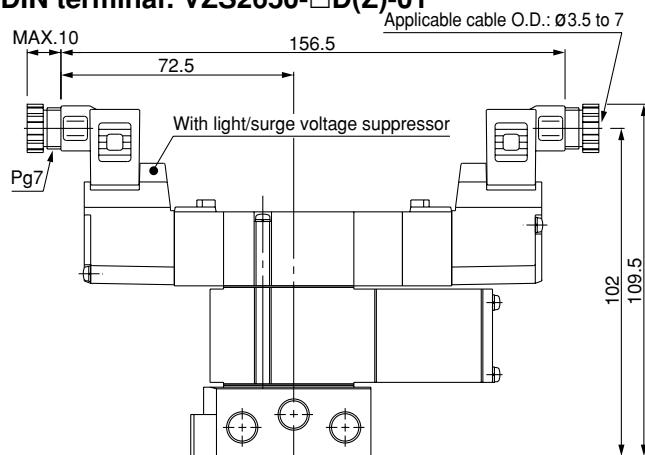
\* Other dimensions are the same as the grommet type.

### M plug connector: VZS2650-□M(Z)-01



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

### DIN terminal: VZS2650-□D(Z)-01



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

# Series VZS2000

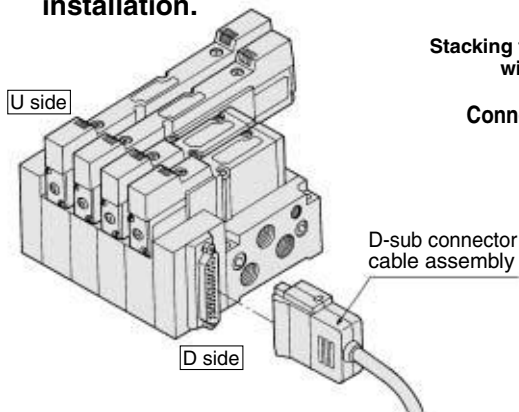
# Manifold Specifications

## Plug-in Type: Stacking Type Manifold Base with D-sub Connector



Refer to page 3-7-4 for wiring specifications.

- Wide range of interchangeability (D-sub connector (25P) conforming to MIL standard)
- Quick wiring permits easier installation.



VV5ZS2 - 51F D - 06 1 - 01

Series VZS2000  
Manifold

Plug-in type  
Stacking type manifold base  
with D-sub connector

Connector mounting direction

Symbol	Connector mounting position	Applicable stations
D	D side	2 to 8
U	U side	2 to 8
B	Both sides	9 to 16

Stations

02	2 stations
⋮	⋮
16 *	16 stations

\* Max. 16 stations.

Thread type

Standard	Nil	Rc
	N	NPT
Option	T	NPTF
	F	G

Port size

01	Rc 1/8
C4	Embedded type One-touch fitting Applicable tubing O.D.: ø4
C6	Embedded type One-touch fitting Applicable tubing O.D.: ø6

Symbol

Symbol	Passage	Porting specifications
	1(P) 5(R1), 3(R2)	4(A), 2(B)
1	Common	Common
		Side

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

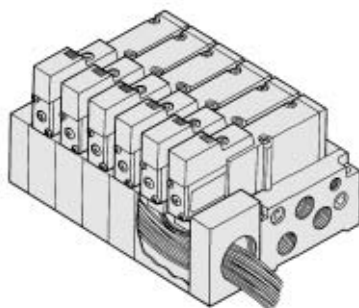
VFN

## Plug-in Type: Stacking Type Manifold Base with Attachment Plug Lead Wire



Refer to page 3-7-4 for wiring specifications.

- The insert plug is attached to the manifold block and lead wire is plugged in with valve side. Please connect with corresponding power side.



VV5ZS2 - 51G - 06 1 - C6

Series VZS2000  
Manifold

Plug-in type  
Stacking type manifold base  
with attachment plug lead wire

Stations

02	2 stations
⋮	⋮
15 *	15 stations

\* Max. 15 stations.

Thread type

Standard	Nil	Rc
	N	NPT
Option	T	NPTF
	F	G

Port size

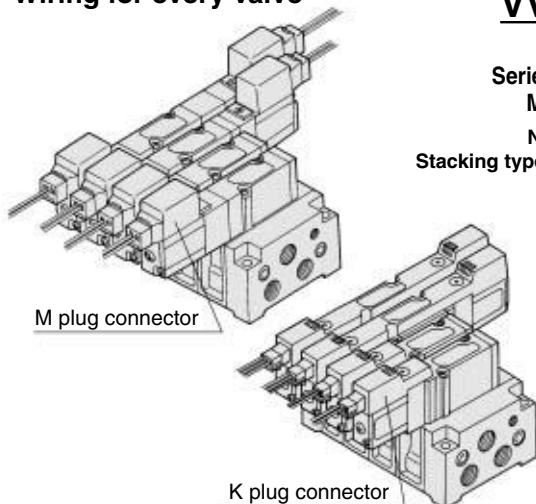
01	Rc 1/8
C4	Embedded type One-touch fitting Applicable tubing O.D.: ø4
C6	Embedded type One-touch fitting Applicable tubing O.D.: ø6

Symbol

Symbol	Passage	Porting specifications
	1(P) 5(R1), 3(R2)	4(A), 2(B)
1	Common	Common
		Side

## Non Plug-in Type: Stacking Type Manifold Base

- Wiring for every valve



VV5ZS2 - 51 - 06 1 - C4

Series VZS2000  
Manifold  
Non plug-in type  
Stacking type manifold base

Stations

02	2 stations
⋮	⋮
24 *	24 stations

\* Max. 24 stations.

Thread type

Standard	Nil	Rc
	N	NPT
Option	T	NPTF
	F	G

Port size

01	Rc 1/8
C4	Embedded type One-touch fitting Applicable tubing O.D.: ø4
C6	Embedded type One-touch fitting Applicable tubing O.D.: ø6

Symbol

Symbol	Passage	Porting specifications
	1(P) 5(R1), 3(R2)	4(A), 2(B)
1	Common	Common
		Side

# Series VZS2000

## Manifold Specifications

Base model	Wiring	Porting specifications		Port size Rc	Stations	Applicable solenoid valve
		4(A), 2(B) Port	1(P), 5(R1) 3 (R2)			
<b>Plug-in type</b> VV5ZS2-51F VV5ZS2-51G	<ul style="list-style-type: none"> <li>With D-sub connector</li> <li>With attachment plug lead wire</li> </ul>	Side	1/8	1/8	2 to 16* stations	VZS2□50-□FZ
<b>Non plug-in type</b> VV5ZS2-51	<ul style="list-style-type: none"> <li>Grommet</li> <li>L plug connector</li> <li>M plug connector</li> <li>K plug connector</li> <li>DIN terminal</li> </ul>			C4 C6	2 to 24 stations	G L M KZ D



\* With attachment plug lead wire: 15 stations max.

## How to Order Manifold Assembly

Please indicate manifold base type, corresponding valve, and option parts.

(Example)

- Plug-in type (At 6 stations)  
(Manifold base) VV5ZS2-51-061-01...1  
(2 position single) VZS2150-5FZ.....3  
(2 position double) VZS2250-5FZ .....2  
(Blanking plate) VVZS2000-10A-1 .....1

- Non plug-in type (At 6 stations)  
(Manifold base) VV5ZS2-51-061-01...1  
(2 position single) VZS2150-5G .....5  
(3 position exhaust center) VZS2450-5G ...1  
(Individual EXH spacer) VVZS2000-R-01-2 ...1

## Flow Characteristics at the Number of Manifold Stations (Operated single/double type individually)

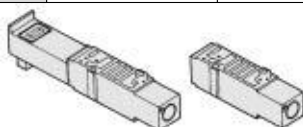
Passage/Stations		Station 1	Station 5	Station 10	Station 15	Station 20
1 → 4/2 (P → A/B)	C [dm <sup>3</sup> /(s·bar)]	1.3	1.4	1.4	1.4	1.4
	b	0.12	0.12	0.12	0.12	0.14
	Cv	0.31	0.33	0.33	0.35	0.36
4/2 → 5/3 (A/B → R1/R2)	C [dm <sup>3</sup> /(s·bar)]	1.5	1.6	1.6	1.6	1.5
	b	0.12	0.11	0.11	0.10	0.11
	Cv	0.37	0.36	0.36	0.36	0.35

## Manifold Option Parts Assembly

### Individual SUP spacer

An individual SUP spacer set on manifold block can form SUP port for every valve.

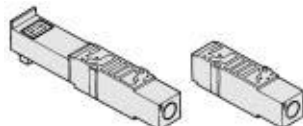
Body type	Plug-in type	Non plug-in type
Part no. Rc 1/8	VVZS2000-P-01-1	VVZS2000-P-01-2



### Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve.

Body type	Plug-in type	Non plug-in type
Part no. Rc 1/8	VVZS2000-R-01-1	VVZS2000-R-01-2



### SUP block disk

When supplying manifold with more than two different pressures, high and low, insert a block disk in between stations subjected to different pressures.

Body type	Plug-in type	Non plug-in type
Part no.	VVZS2000-26A	

### EXH block disk

When valve exhaust affects the other stations on the circuit or when the reverse pressure valve is used to standard manifold valve, insert EXH block disk in between stations to separate valve exhaust.

Body type	Plug-in type	Non plug-in type
Part no.	VVZS2000-26A	



### Blanking plate

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

Body type	Plug-in type	Non plug-in type
Part no.	VVZS2000-10A-1	VVZS2000-10A-2



### Interface regulator (P port regulation)

Spacer Interface regulators can be placed on top of the manifold block to reduce the pressure of each of the valves.

Body type	Plug-in type	Non plug-in type
Part no.	ARBZS2000-00-P-1	ARBZS2000-00-P-2

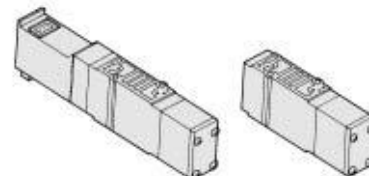


- Note) • Apply pressure from the P port of the base to operate the interface regulator.  
• To use concurrently with a double check spacer, assemble in the following order: the valve, the interface regulator, and the double check spacer.

### Double check spacer

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.

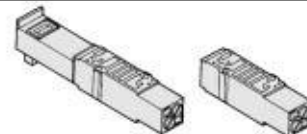
Body type	Plug-in type	Non plug-in type
Part no.	VVZS2000-22A-1	VVZS2000-22A-2



### Throttle valve spacer

Needle valve set on the manifold block can control cylinder speed by throttling exhaust.

Body type	Plug-in type	Non plug-in type
Part no.	VVZS2000-20A-1	VVZS2000-20A-2

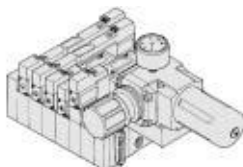


## Manifold Option

### With control unit

Plug-in type/Non plug-in type

- Filter, regulation valve, pressure switch and air release valve all combine to form one unit.
- Piping processes are eliminated.



For details, refer to pages 3-7-19 and 3-7-20.

### With serial interface unit for serial transmission

Plug-in type

- Solenoid valve wiring process reduced considerably.
- Disperse installation possible.  
Manifold solenoid valve: 32 stations (512 point) max.
- Maintenance and inspection are easy.

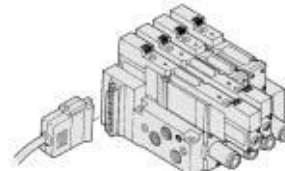


For details, refer to catalog (CAT. 02-6, 7, 8, 9).

### With coaxial fitting

Plug-in type/Non plug-in type

- Piping man-hours reduced
- One-touch piping
- 1/2 the number of tubes



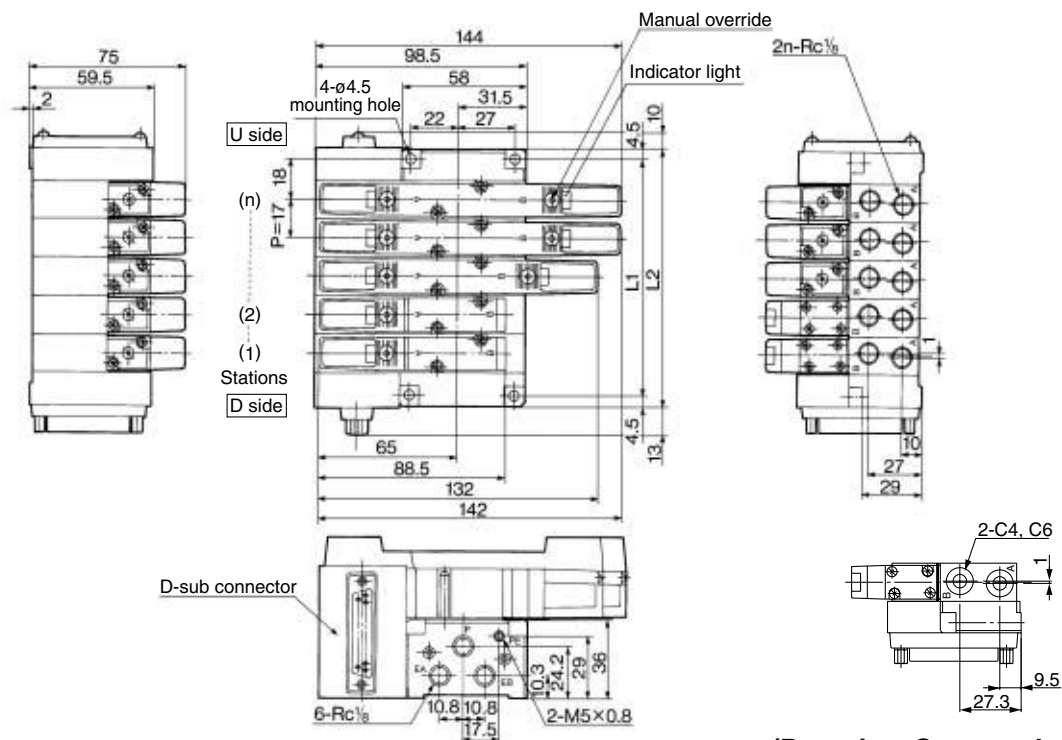
For details, refer to catalog (CAT. 02-5).



## 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **Series VZS2000**

**Manifold Plug-in type**

**With D-sub connector: VV5ZS2-51F□- Station 1- Port size**

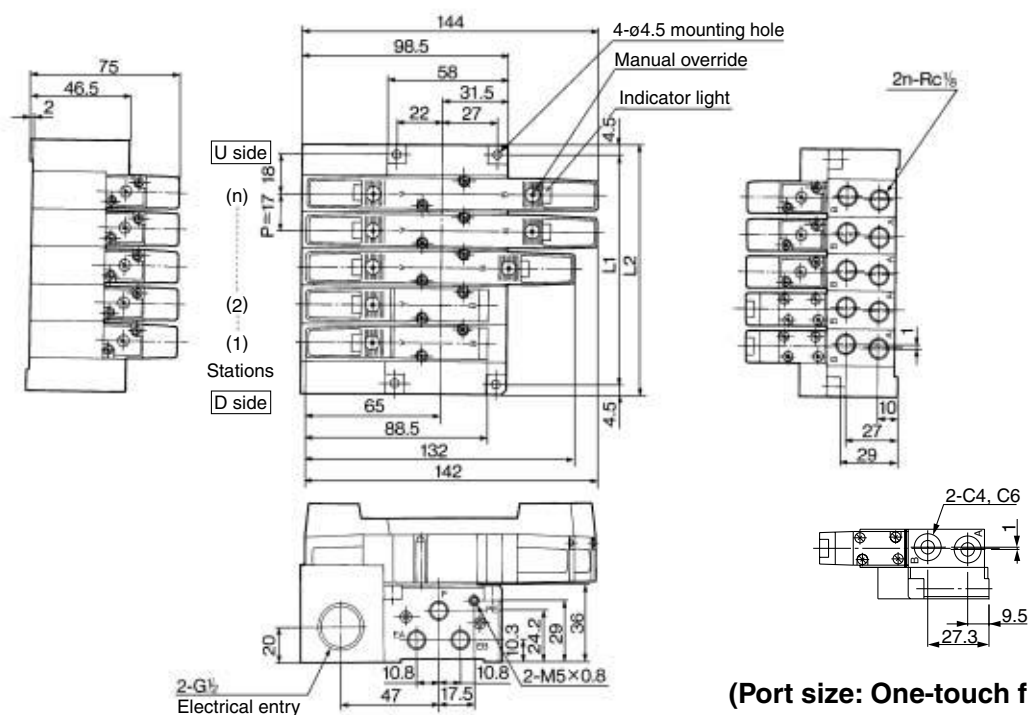


**(Port size: One-touch fitting type)**

n: Stations

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Formula
L1	53	70	87	104	121	138	155	172	189	206	223	240	257	274	291	$17n + 19$
L2	62	79	96	113	130	147	164	181	198	215	232	249	266	283	300	$17n + 28$

**With attachment plug lead wire: VV5ZS2-51G-**



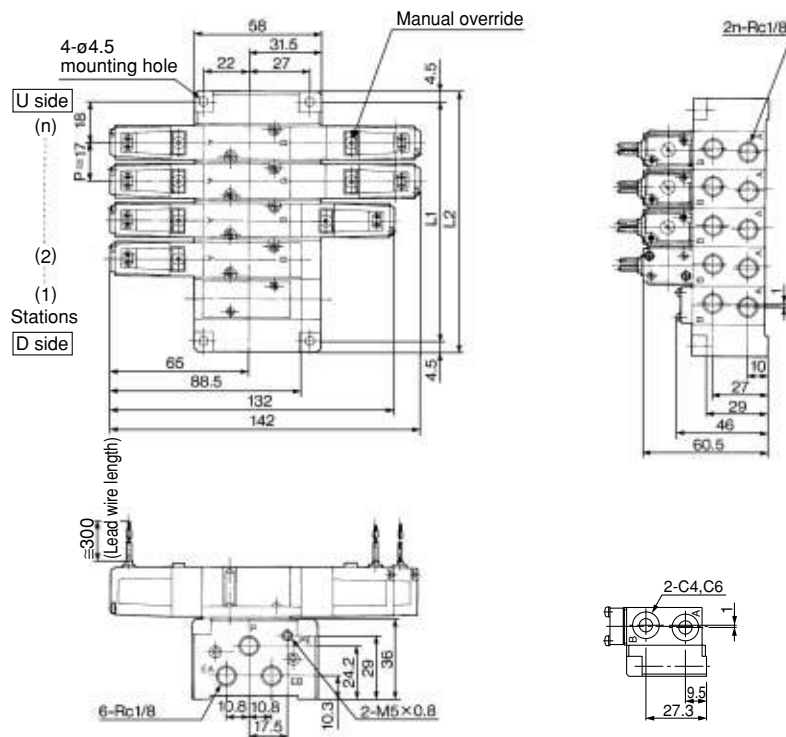
**(Port size: One-touch fitting type)**

n: Stations

L \ Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Formula
L <sub>1</sub>	53	70	87	104	121	138	155	172	189	206	223	240	257	274	17n + 19
L <sub>2</sub>	62	79	96	113	130	147	164	181	198	215	232	249	266	283	17n + 28

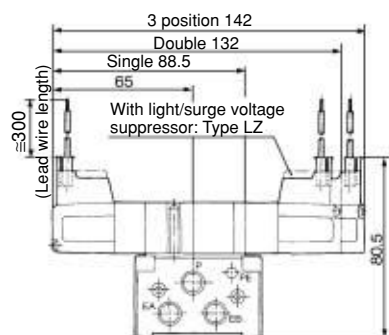
**Manifold** Non plug-in type

**VV5ZS2-51- Station 1- Port size**  
**Grommet (G)**

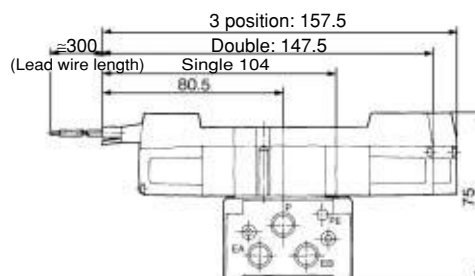


**(Port size: One-touch fitting type)**

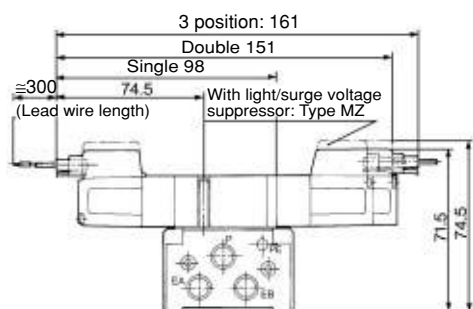
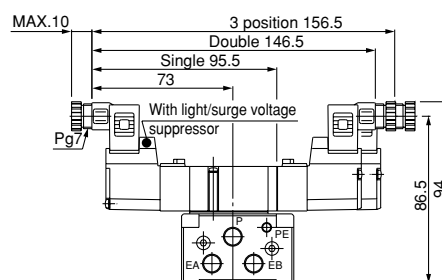
### Plug connector (L)



### Plug connector (K)



### Plug connector (M)

**DIN terminal (D)**

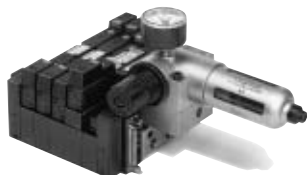
n: Stations

L	Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Formula
L <sub>1</sub>		53	70	87	104	121	138	155	172	189	206	223	240	257	274	291	308	325	342	359	376	393	410	427	17n + 19
L <sub>2</sub>		62	79	96	113	130	147	164	181	198	215	232	249	266	283	300	317	334	351	368	385	402	419	436	17n + 28

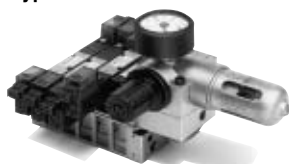
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS2000

## Manifold with Control Unit

- Control unit (Filter, Regulator, Pressure switch, Air release valve) are all standardized to the one unit, and can be mounted on the manifold base without any attachments.
- Piping processes are eliminated.



Plug-in type



Non plug-in type

### Caution

When using an air filter with auto-drain or manual override drain, mount the filter vertically.

### Manifold Specifications

Base model	Wiring	Porting specifications	Port size	Stations	Applicable valve model
		4(A), 2(B) port	1(P), 5(R1) 3 (R2)		
Plug-in type VV5ZS2-51F VV5ZS2-51G	<ul style="list-style-type: none"> <li>With D-sub connector</li> <li>With attachment plug lead wire</li> </ul>	Side	Rc 1/8	2 to 16* stations	VZS2□50-□FZ
Non plug-in type VV5ZS2-51	<ul style="list-style-type: none"> <li>Grommet</li> <li>L plug connector</li> <li>M plug connector</li> <li>K plug connector</li> </ul>		C4 C6	2 to 24 stations	VZS2□50-□ <sup>G</sup> <sub>M</sub> <sup>KZ</sup>



\* With attachment plug lead wire: 15 stations max.

### Control Unit Specifications

Air filter (With auto-drain/With manual drain)	
Filtration degree	10 μm
Regulator	
Set pressure (Outlet pressure)	0.05 to 0.7 MPa
Pressure switch	
Set pressure range: OFF	0.1 to 0.4 MPa
Differential pressure	0.08 MPa
Contact	1a
Max. switch capacity	2 VA AC, 2 W DC
Max. operating current	24 VAC, DC or less: 50 mA 100 VAC, DC: 20 mA
Operating voltage	100 VAC, DC or less
Air release valve (Single only)	
Operating pressure range	0.1 to 1.0 MPa

### Control Unit/Option

Blanking plate	MP2-1 (With control unit/Filter regulator)
	VVZS2000-15A (With pressure switch)
	VVZS2000-24A-10-1/2 (Release valve)
Filter element	XTO-1889-10
Pressure switch	Plug-in type VVZS2000-14A
	Non plug-in type IS1000-00-X204

## How to Order

**VV5ZS2-51F D-08 1-01-AP 5**

Series VZS2000  
Manifold

Base type/Electrical entry

51F	Plug-in type: Stacking type manifold base with D-sub connector
51G	Plug-in type: Stacking type manifold base with attachment plug lead wire
51	Non plug-in type: Stacking type manifold base

Connector mounting direction

Symbol	With connector	Applicable base	Applicable stations
Nil	None	51	2 to 24
		51G	2 to 15
D	D side	51F	2 to 8
U	U side		
B	Both sides		
			9 to 16

Stations

02	2 stations
⋮	⋮
24	24 stations

Note) Maximum stations  
51F... 16 stations  
51G... 15 stations  
51... 24 stations

Symbol

Symbol	Passage			Porting specifications
	1(P)	5(R1), 3(R2)	4(A), 2(B)	
1	Common	Common		Side

Thread type

Standard	Nil	Rc
	N	NPT
Option	T	NPTF
	F	G

Port size

01	Rc 1/8
C4	Embedded type One-touch fitting Applicable tubing O.D.: ø4
C6	Embedded type One-touch fitting Applicable tubing O.D.: ø6

Coil voltage of air release valve

Nil	None
1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
5	24 VDC
9*	Other

\* Option

Note)  
How to take out the lead wire of air release valve is the same method as the other valve equipped on the same manifold.

Control unit type

Symbol	Nil	A	AP	M	MP	F	G	C	E
Control equipment									
Air filter regulator with auto-drain	—	●	●	—	—	●	—	—	—
Air filter regulator with manual drain	—	—	—	●	●	—	●	—	—
Air release valve	—	●	●	●	●	—	—	●	●
Pressure switch	—	—	●	—	●	—	—	—	—
Blanking plate (Air release valve)	—	—	—	—	—	●	●	—	—
Blanking plate (Filter regulator)	—	—	—	—	—	—	—	●	—
Blanking plate (Pressure switch)	—	●	—	●	—	●	●	—	—
Number of manifold blocks required for mounting (Stations)	—	2						1	



Note) Operating voltage of pressure switch: 100 VAC, 100 VDC or less.

Please indicate manifold base type, corresponding valve, and option parts.

<Example>

- Plug-in base type with D-sub connector  
(Manifold base) VV5ZS2-51FD-091-01-MP5... 1  
(2 position single) VZS2150-5FZ... 5  
(2 position double) VZS2250-5FZ... 2
- \* 2 stations are needed to mount control unit.

- Non plug-in type  
(Manifold base) VV5ZS2-51-071-01-M5... 1  
(2 position single) VZS2150-5MZ... 5
- \* 2 stations are needed to mount control unit.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

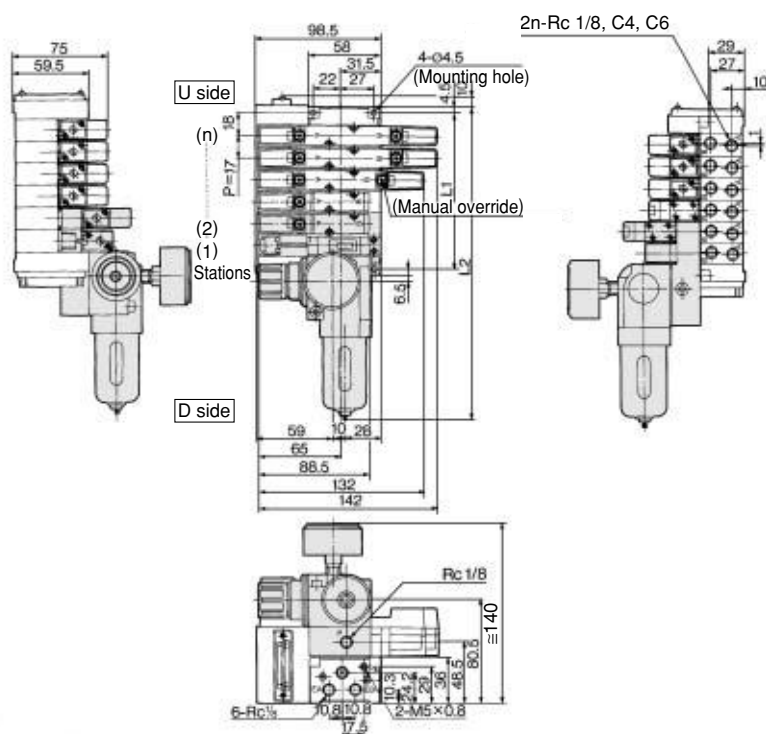
EVS

VFN

Manifold with Control Unit	Plug-in type, Non plug-in type
<p>1. <b>Model</b></p> <p>2. <b>Capacity</b></p> <p>3. <b>Pressure</b></p> <p>4. <b>Temperature</b></p> <p>5. <b>Material</b></p> <p>6. <b>Accessories</b></p> <p>7. <b>Installation</b></p> <p>8. <b>Operation</b></p> <p>9. <b>Maintenance</b></p> <p>10. <b>Warranty</b></p>	<p>1. <b>Model</b></p> <p>2. <b>Capacity</b></p> <p>3. <b>Pressure</b></p> <p>4. <b>Temperature</b></p> <p>5. <b>Material</b></p> <p>6. <b>Accessories</b></p> <p>7. <b>Installation</b></p> <p>8. <b>Operation</b></p> <p>9. <b>Maintenance</b></p> <p>10. <b>Warranty</b></p>

### Plug-in base type:

**VV5ZS2-51F** - **Station 1** - **Port size** - **Classification of control unit**

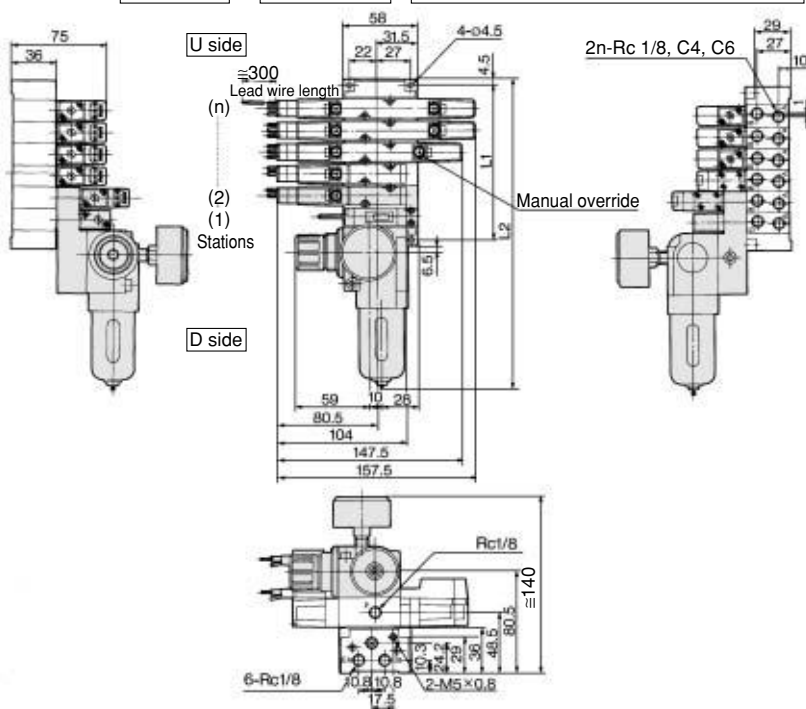


n: Stations

L Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Formula
L1	70	87	104	121	138	155	172	189	206	223	240	257	274	291	$17n + 19$
L2 (MP)	195.5	212.5	229.5	246.5	263.5	280.5	297.5	314.5	331.5	348.5	365.5	382.5	399.5	416.5	$17n + 144.5$
L2 (AP)	215.5	232.5	249.5	266.5	283.5	300.5	317.5	334.5	351.5	368.5	385.5	402.5	419.5	436.5	$17n + 164.5$

### Non plug-in base type:

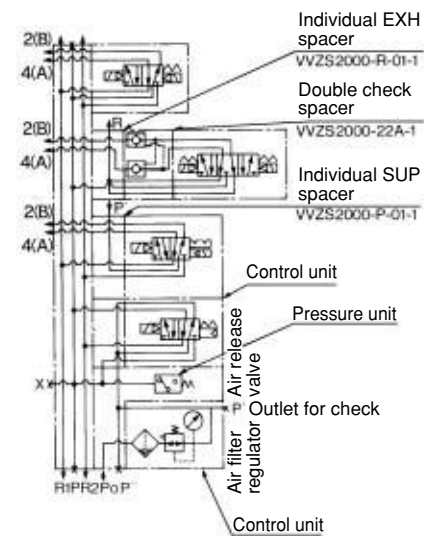
VV5ZS2-51-	Station 1-	Port size	-	Classification of control unit
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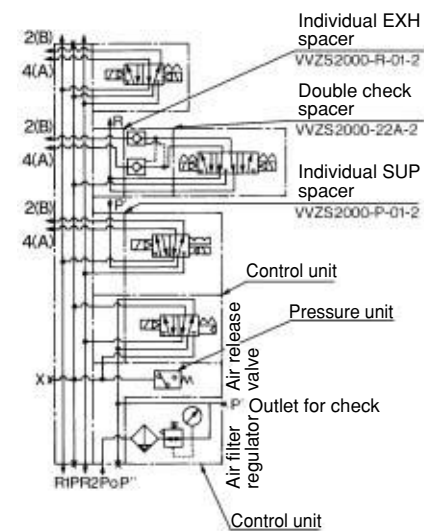
n: Stations

n: Stations																								
L	Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Formula
L1		70	87	104	121	138	155	172	189	206	223	240	257	274	291	308	325	342	359	376	393	410	427	17n + 19
L2 (MP)		195.5	212.5	229.5	246.5	263.5	280.5	297.5	314.5	331.5	348.5	365.5	382.5	399.5	416.5	433.5	450.5	467.5	484.5	501.5	518.5	535.5	552.5	17n + 144.5
L2 (AP)		215.5	232.5	249.5	266.5	283.5	300.5	317.5	334.5	351.5	368.5	385.5	402.5	419.5	436.5	453.5	470.5	487.5	504.5	521.5	538.5	555.5	572.5	17n + 164.5

### Example for manifold



### Example for manifold





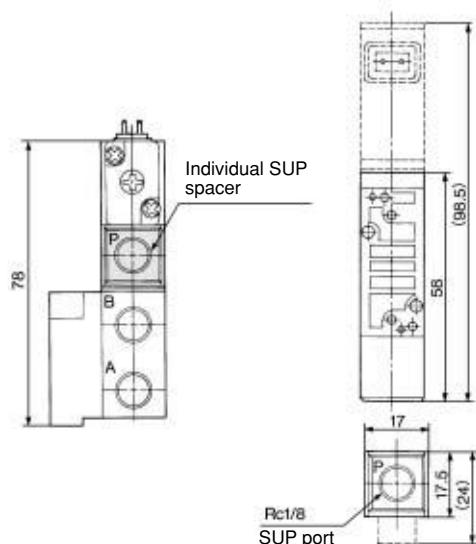
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS2000

## Manifold Option Parts Plug-in type, Non plug-in type

### Individual SUP spacer

Plug-in type: VVZS2000-P-01-1

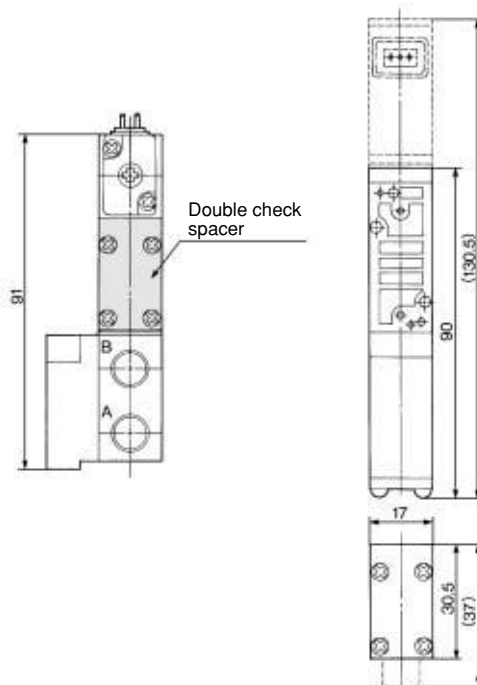
Non plug-in type: VVZS-2000-P-01-2



### Double check spacer

Plug-in type: VVZS2000-22A-1

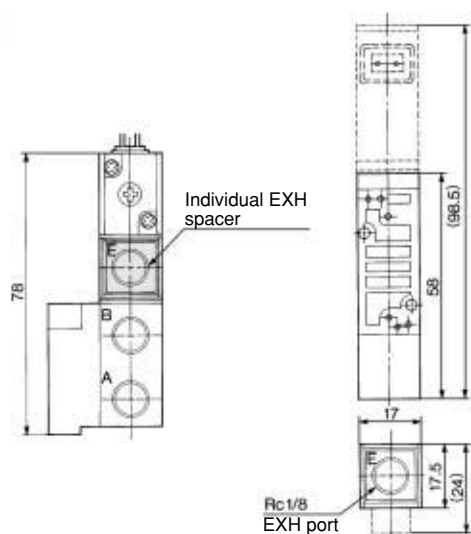
Non plug-in type: VVZS2000-22A-2



### Individual EXH spacer

Plug-in type: VVZS2000-R-01-1

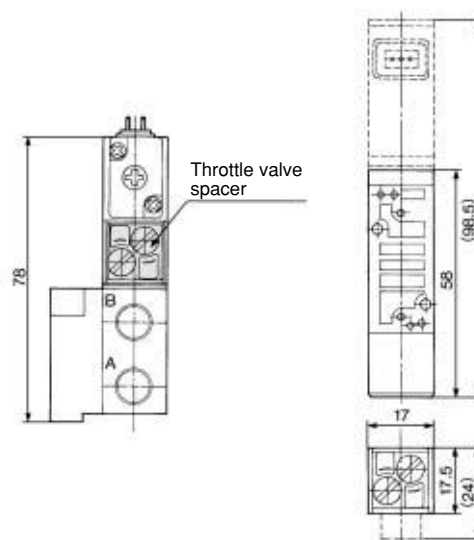
Non plug-in type: VVZS2000-R-01-2



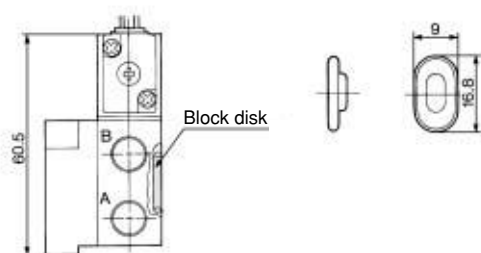
### Throttle valve spacer

Plug-in type: VVZS2000-20A-1

Non plug-in type: VVZS2000-20A-2



### SUP block disk EXH blocking plate: VVZS2000-26A



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

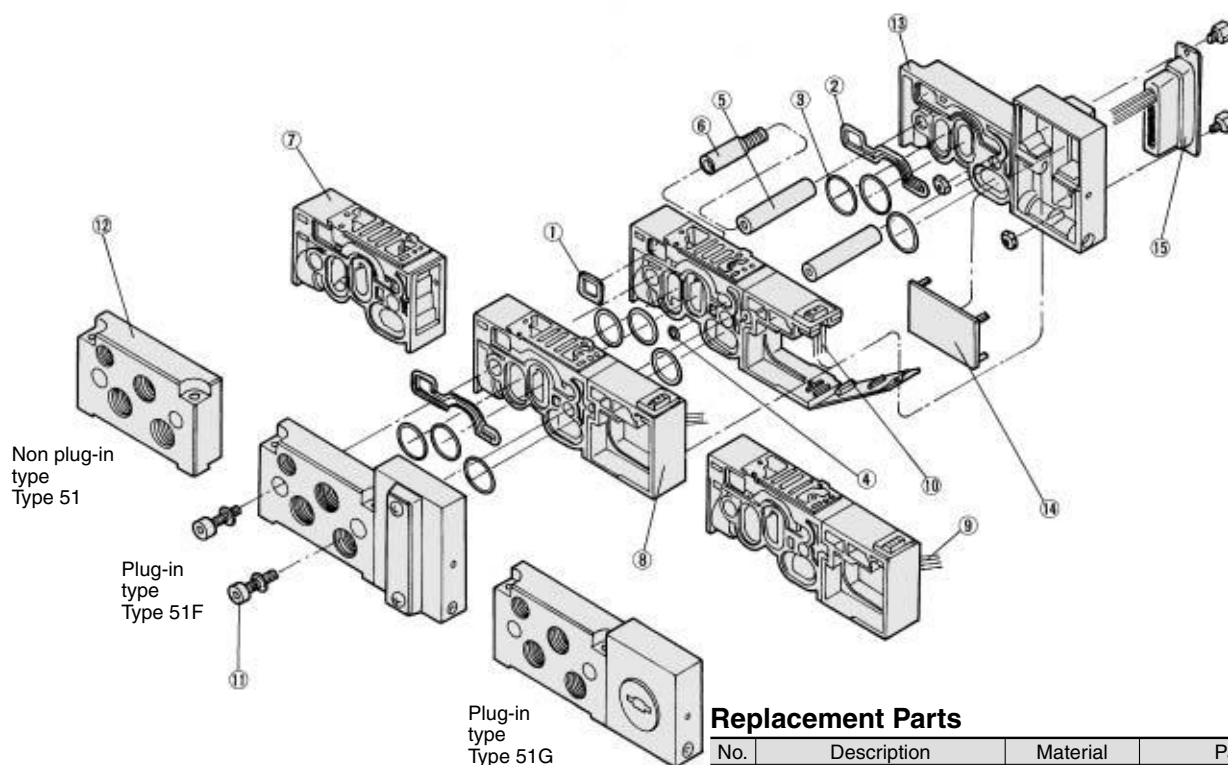
VFN



( ): Plug-in base type

# Series VZS2000

## Exploded View of Manifold



### Replacement Parts

No.	Description	Material	Part no.
①	Seal A	NBR	VVZS3000-4-1
②	Seal B	NBR	VVZS2000-4
③	O-ring	NBR	14.4 x 12 x 1.2
④	O-ring	NBR	7.5 x 4.5 x 1.5
⑤	Tie-rod	Carbon steel	VVZS2000-11-n <sup>(1)</sup>
⑥	Tie-rod for station addition	Carbon steel	VVZS2000-11-1-1 <sup>(2)</sup>

Note 1) n: Stations

Note 2) Manifold block assembly is attached with tie-rod for increasing stations.

Description	Applicable manifold base	Assembly part no.	Component parts
Manifold block assembly	Plug-in type With attachment plug lead wire: Type 51G	VVZS2000-1A-1-Port size <sup>(1)</sup>	Manifold block ⑦, Junction box ⑧, Lead wire assembly ⑨ Tie-rod ⑥, O-ring ③, ④, Seal A ①
	Non plug-in type: Type 51	VVZS2000-1A-2-Port size <sup>(1)</sup>	Manifold block ⑦, Tie-rod ⑥, O ring ③, ④, Seal A ①
	Plug-in type With D-sub connector: Type 51F*	VVZS2000-1A-3-Port size <sup>(1)</sup> (-1) <sup>(2)</sup>	Manifold block ⑦, Junction box ⑧, Lead wire assembly ⑩ Tie-rod ⑥, O-ring ③, ④, Seal A ①



Note 1) Bore-01: Rc 1/8, -C4: Embedded type One-touch fitting for ø4, -C6: Embedded type One-touch fitting for ø6.

Note 2) Refer to page 3-7-5 for the model of D-sub connector type manifold block assembly.

### How to Increase Manifold Base

Arrange an applied manifold block assembly.

1. Loosen the bolt ⑪ and remove the end plate ⑫ or ⑬ in the side added with manifold block.

2. Joint the tie-rod ⑥ to increase stations and add manifold block assembly. (Put packing B ② on the surface contacting to the end plate.)

3. For a style with a D-sub connector, open the cover ⑭ and insert the pin of lead wire assembly ⑩ as shown in the right figure.

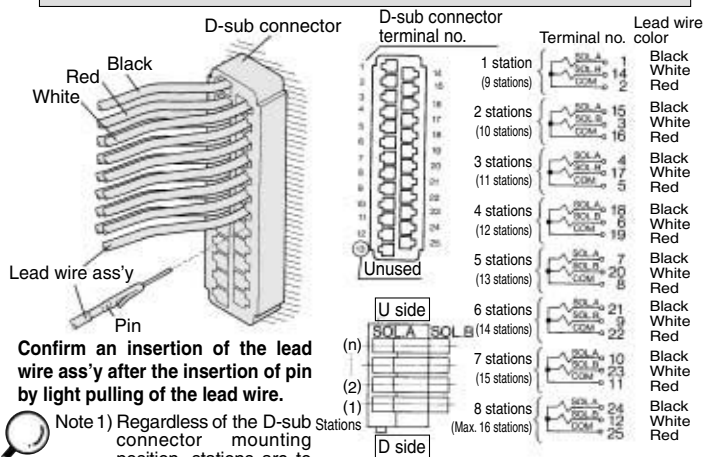
4. Mount the end plate ⑫ and ⑬ and tighten the bolt ⑪.



Note 1) Be careful that the packing and the O-ring do not fall out of the groove.

Note 2) The tightening torque of bolt ⑪ should be 2 to 2.2 N.

### Insertion Method for Pin of D-Sub Connector



Confirm an insertion of the lead wire ass'y after the insertion of pin by light pulling of the lead wire.



Note 1) Regardless of the D-sub connector mounting position, stations are to be counted from D side as the 1st one.

Note 2) D-sub connector can use up to 8 stations in on side fitting (Type FB). More than 9 stations are for both sides fitting (Type FB).

( ) is for the case of a D-sub connector for both sides (Type FB).

# 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 [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
2 position	Single	VZS3150	1/4	2.6	0.17	0.58	2.4	0.09	0.53	1200	18 or less	0.22
	Double	VZS3250	1/4	2.6	0.17	0.58	2.4	0.09	0.53	1200	13 or less	0.27
3 position	Closed center	VZS3350	1/4	2.5	0.17	0.56	2.4	0.11	0.52	500	26 or less	0.28
	Exhaust center	VZS3450	1/4	2.5	0.17	0.56	2.4	0.11	0.49	500	26 or less	0.28
	Pressure center	VZS3550	1/4	2.8	0.12	0.60	2.4	0.16	0.53	500	26 or less	0.28
	Double check	VZS3650	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□□□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/s²)	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

# Series VZS3000

## How to Order

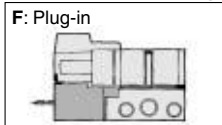
### Light/Surge voltage suppressor

<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



F: Plug-in

### Pilot valve manual override

**Nil**: Non-locking push type (Flush)

**B\***: Locking type (Tool required)



\* Option

### Port size

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

### 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> <small>Note</small>	Plug-in	Plug-in type
<b>G</b>	Grommet	
<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	Non plug-in type
<b>M</b>	M plug connector	
<b>MZ</b>	M plug connector, With light/surge voltage suppressor	
<b>K</b> <small>Note</small>	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

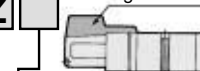
### Voltage

<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

Plug-in type  
K plug connector

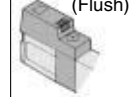
### Light cover assembly



### Pilot valve manual override

**Nil**: Non-locking push type (Flush)

**B**: Locking type (Tool required)



\* Option

### Electrical entry, Light/Surge voltage suppressor

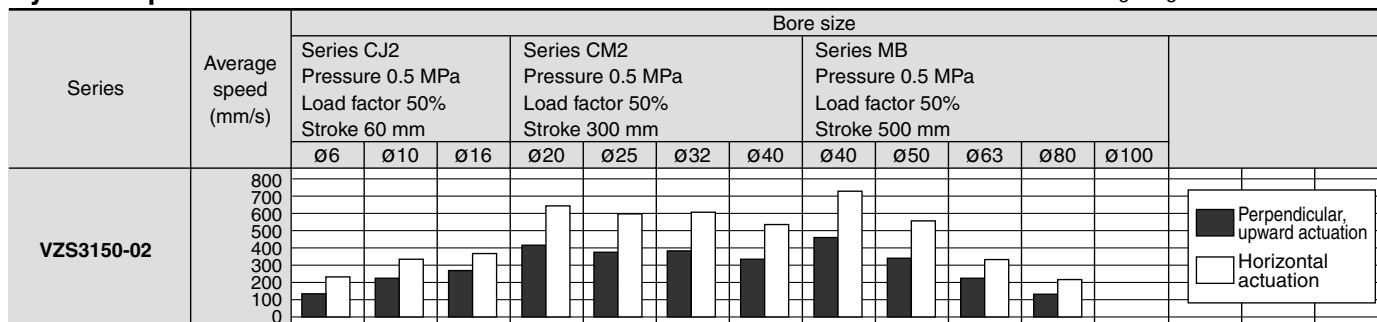
<b>FZ</b>	Plug-in With light/surge voltage suppressor
<b>FS</b>	Plug-in With surge voltage suppressor
<b>KZ</b>	K plug connector With light/surge voltage suppressor
<b>KS</b>	K plug connector With light/surge voltage suppressor



# 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%

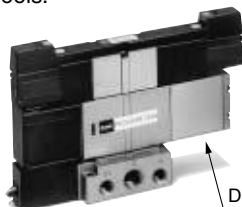
## Conditions

		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		

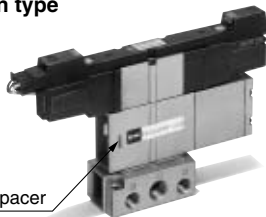
## Double Check Spacer/Specifications

### 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

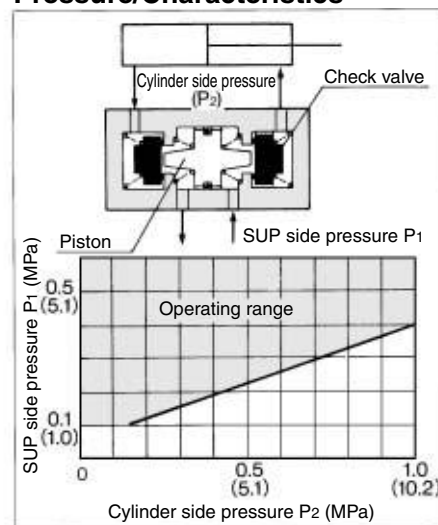
### Specifications

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

### 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

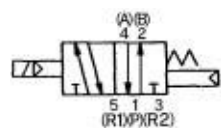
EVS

VFN

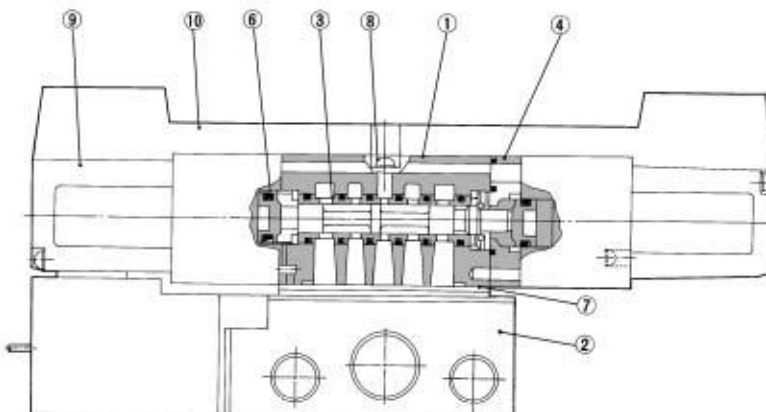
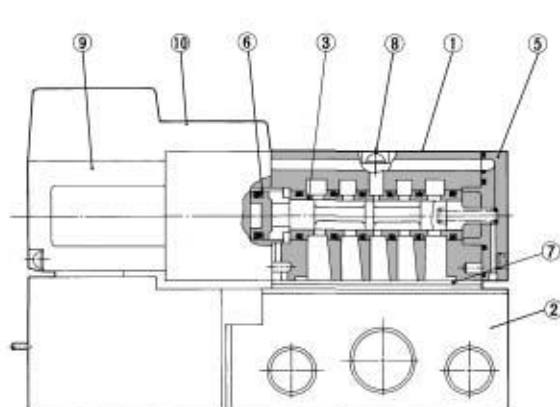
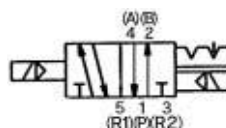
# Series VZS3000

## Construction

2 position single

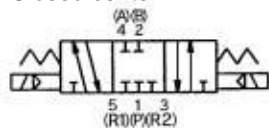


2 position double

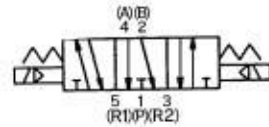


3 position closed center/exhaust center/pressure center

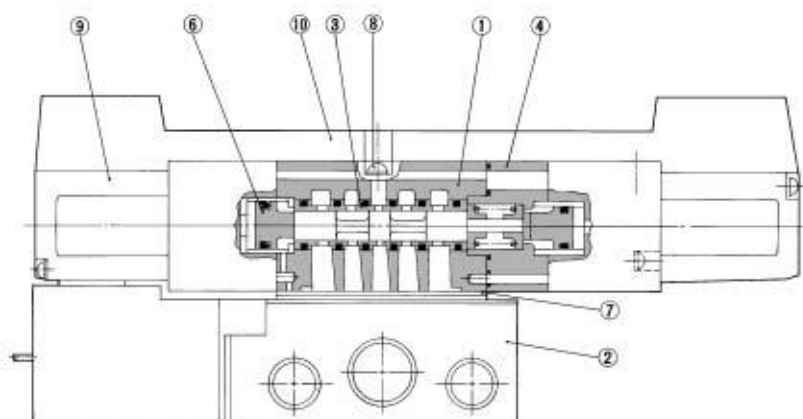
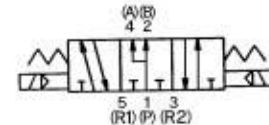
Closed center



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	—

### 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

### Replacement Parts

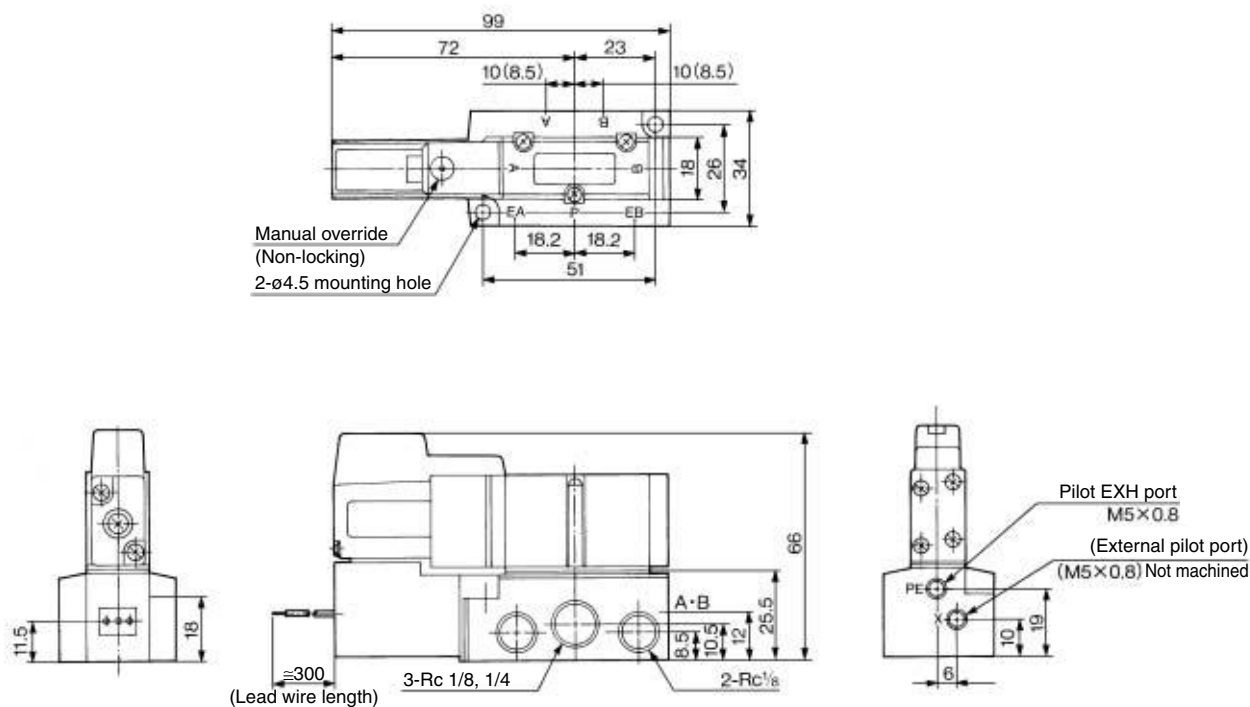
No.	Description	Material	Part no.
⑦	Gasket	NBR	BG-VZS3000-1 (Groove gasket 1 pc. Round head combination screw 2 pcs.)
⑧	Round head combination screw	Carbon steel	BG-VZS3000 (Gasket 1 pc., Round head combination screw 3 pcs.) <small>Note)</small>
⑨	Pilot valve assembly	—	Refer to "How to Order Pilot Valve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

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

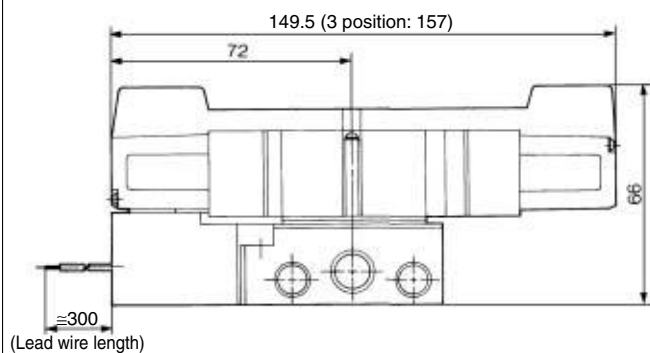
**Plug-in** 2 position single/double, 3 position closed center/exhaust center/pressure center/double check

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



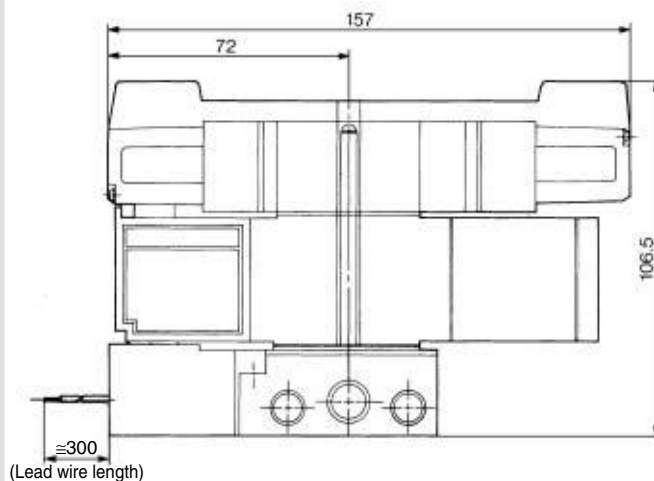
( ) : Rc 1/8

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>



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

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



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

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

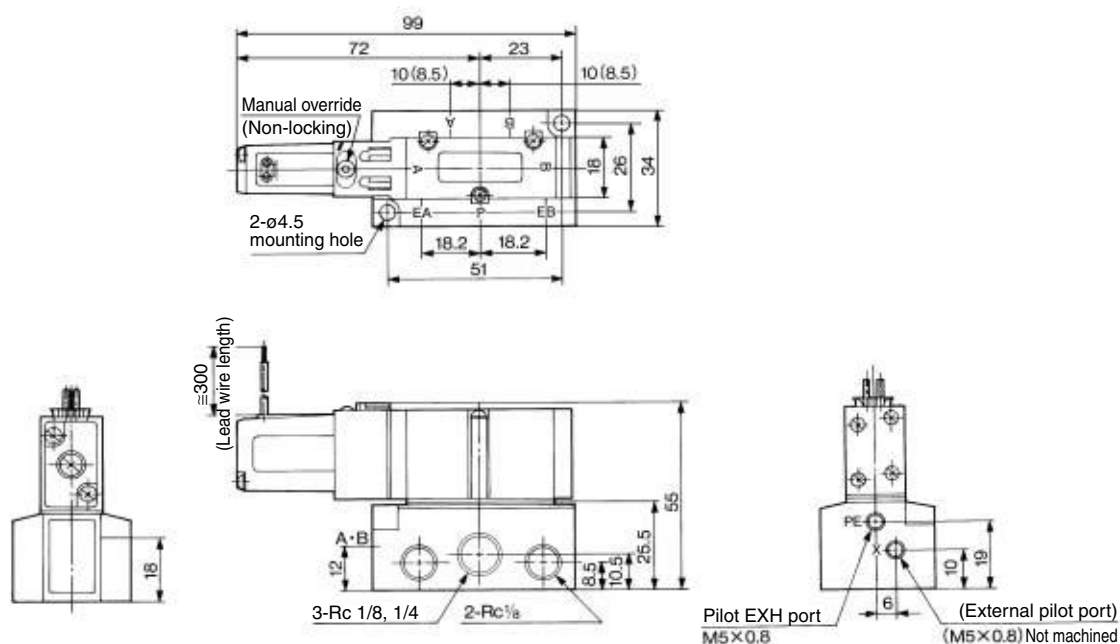
EVS

VFN

# Series VZS3000

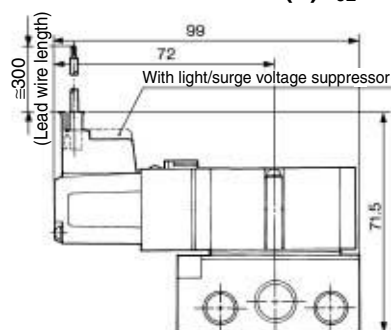
## Non Plug-in 2 position single

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



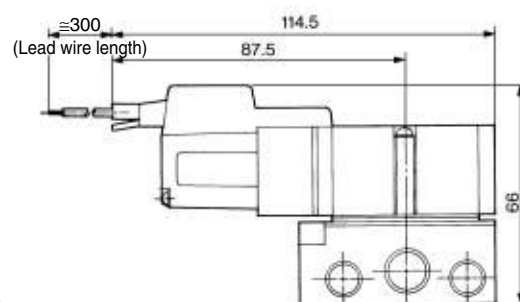
( ): Rc 1/8

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



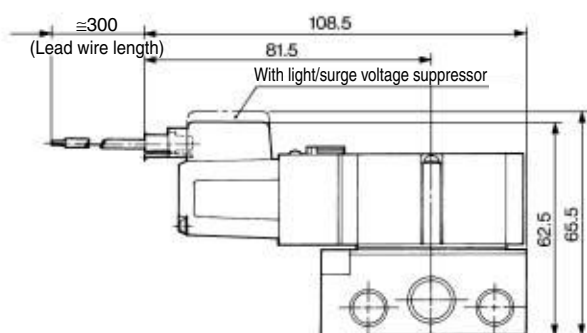
\* Other dimensions are the same as the grommet type.

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



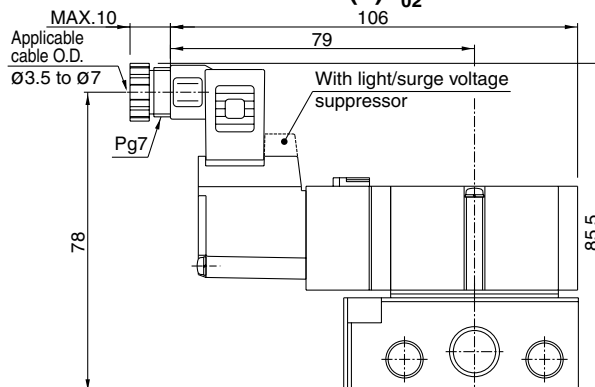
\* Other dimensions are the same as the grommet type.

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

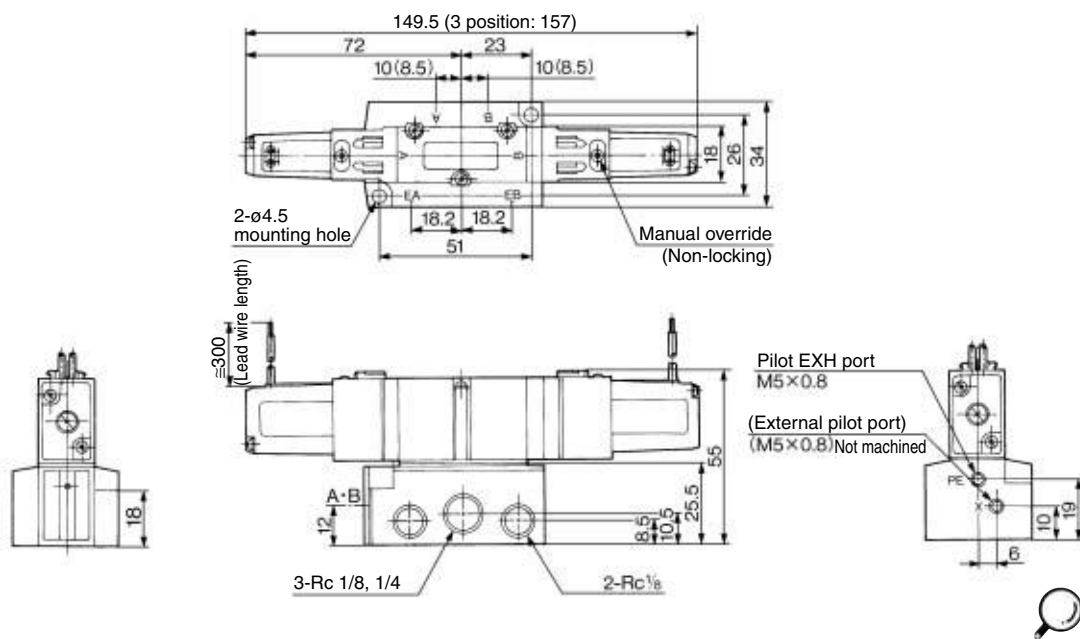
### Grommet

2 position double: VZS3250-□ $\square_{H(S)}^{01}_{02}$

3 position exhaust center: VZS3450-□ $\square_{H(S)}^{01}_{02}$

3 position closed center: VZS3350-□ $\square_{H(S)}^{01}_{02}$

3 position pressure center: VZS3550-□ $\square_{H(S)}^{01}_{02}$



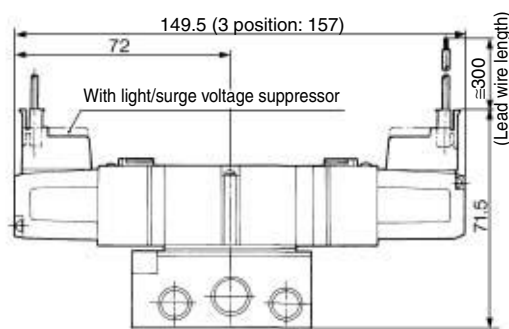
### L plug connector

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

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

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

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



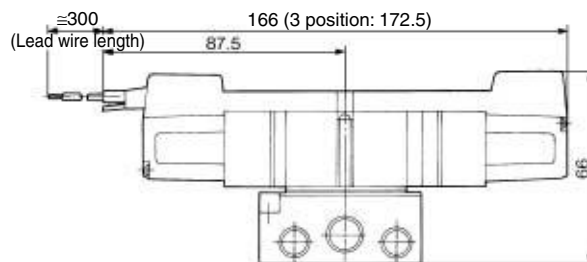
### K plug connector

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

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

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

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



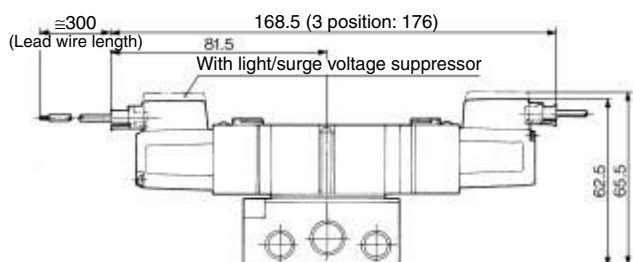
### M plug connector

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

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

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

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



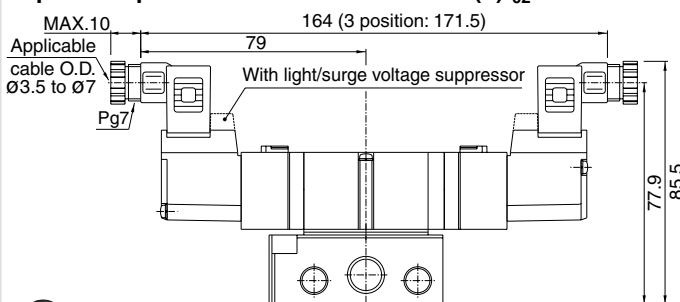
### DIN terminal

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

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

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

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



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

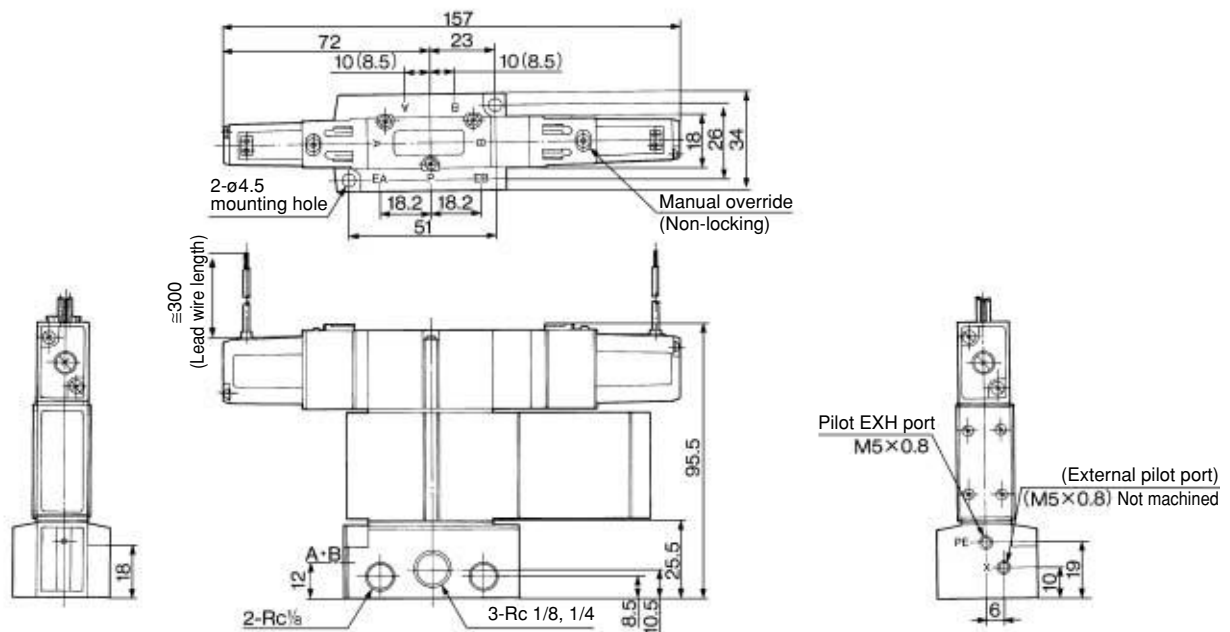
VQ7


EVS

VFN

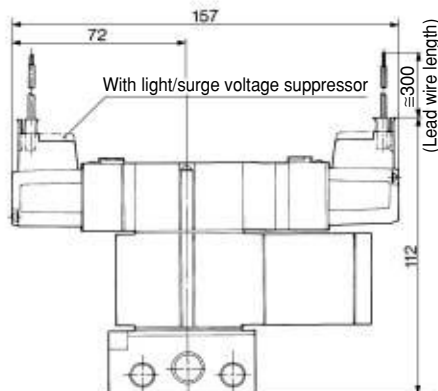
### Non Plug-in 3 position double check

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



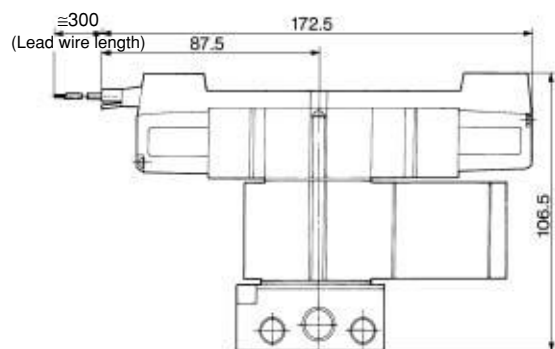
 ( ): Rc 1/8

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



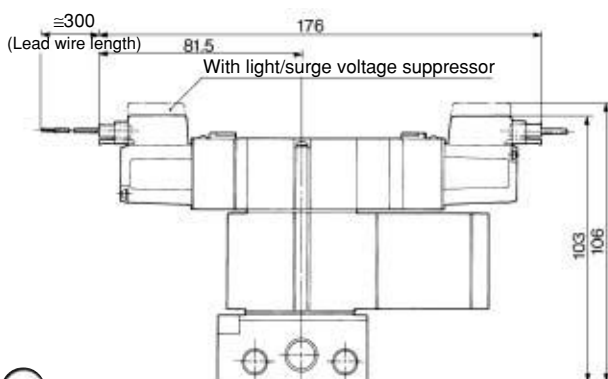
\* Other dimensions are the same as the grommet type.

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



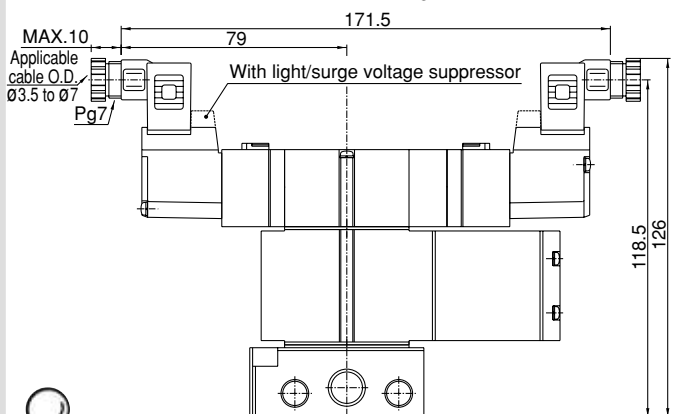
\* Other dimensions are the same as the grommet type.

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



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

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



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

# Series VZS3000

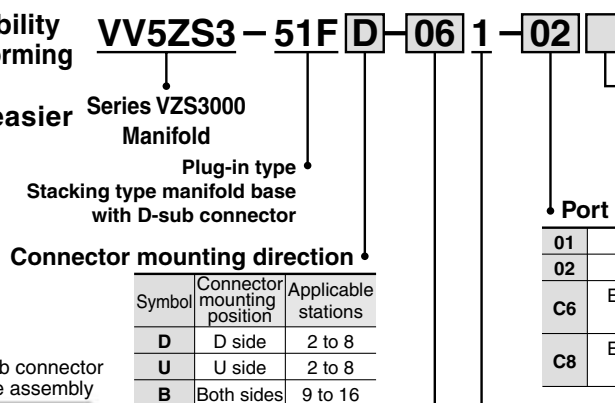
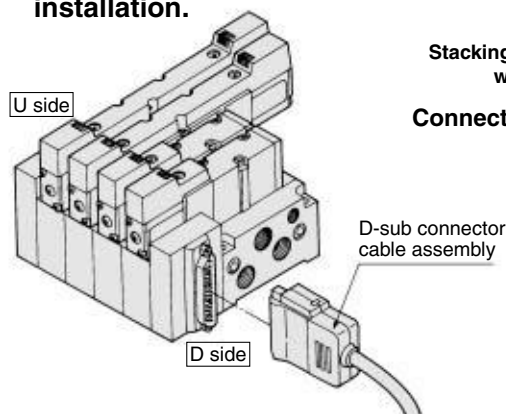
# Manifold Specifications

## Plug-in Type: Stacking Type Manifold Base with D-sub Connector



Refer to page 3-7-4 for wiring specifications.

- Wide range of interchangeability (D-sub connector (25P) conforming to MIL standard)
- Quick wiring permits easier installation.

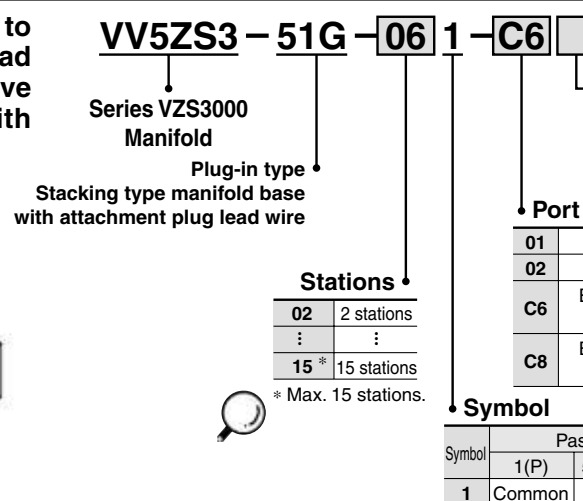
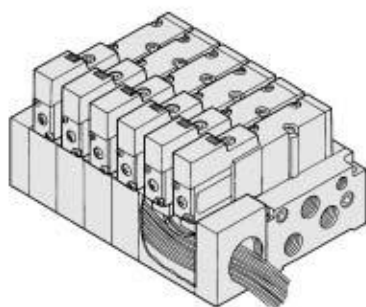


## Plug-in Type: Stacking Type Manifold Base with Attachment Plug Lead Wire



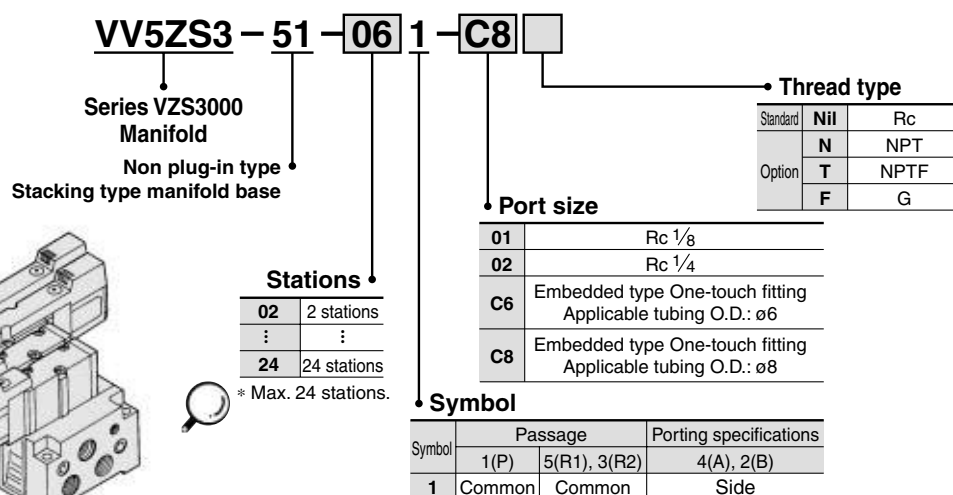
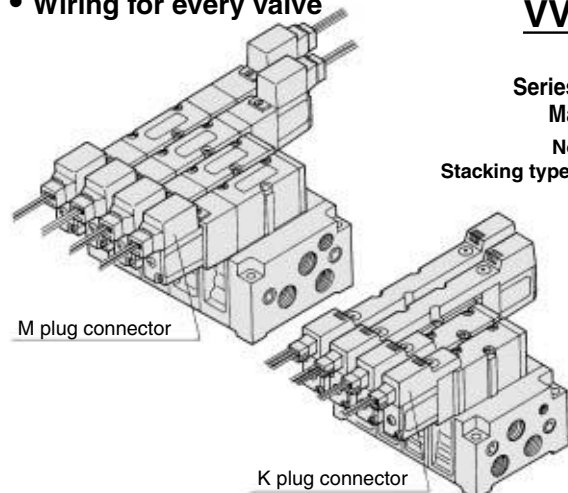
Refer to page 3-7-4 for wiring specifications.

- The insert plug is attached to the manifold block and lead wire is plugged in with valve side. Please connect with corresponding power side.



## Non Plug-in Type: Stacking Type Manifold Base

- Wiring for every valve



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

# Series VZS3000

## Manifold Specifications

Base model	Wiring	Porting specifications		Port size Rc	Stations	Applicable valve model
		4(A), 2(B) Port	1(P), 5(R1) 3(R2)			
<b>Plug-in type</b> VV5ZS3-51F VV5ZS3-51G	<ul style="list-style-type: none"> <li>• With D-sub connector</li> <li>• With attachment plug lead wire</li> </ul>	Side	1/4	1/8, 1/4	2 to 16 stations	VZS3□50-□FZ
<b>Non plug-in type</b> VV5ZS3-51	<ul style="list-style-type: none"> <li>• Grommet</li> <li>• L plug connector</li> <li>• M plug connector</li> <li>• K plug connector</li> <li>• DIN terminal</li> </ul>			C4 C6	2 to 24 stations	VZS3□50-□ G L M KZ D



\* With attachment plug lead wire terminal: 15 stations max.

## Flow Characteristics at the Number of Manifold Stations (Operated single/double type individually)

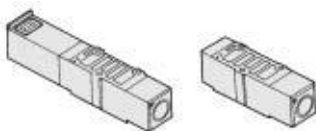
Passage/Stations		Station 1	Station 5	Station 10	Station 15	Station 20
1 → 4/2 (P → A/B)	C [dm <sup>3</sup> /(s·bar)]	2.7	2.7	2.7	2.7	2.6
	b	0.15	0.16	0.16	0.15	0.20
	Cv	0.62	0.61	0.61	0.61	0.63
4/2 → 5/3 (A/B → R1/R2)	C [dm <sup>3</sup> /(s·bar)]	2.8	2.8	2.9	2.9	2.9
	b	0.10	0.12	0.12	0.12	0.12
	Cv	0.65	0.66	0.66	0.66	0.66

## Manifold Option Parts Assembly

### Individual SUP spacer

An individual SUP spacer set on manifold block can form SUP port for every valve.

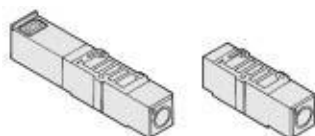
Body type	Plug-in type	Non plug-in type
Part no. Rc 1/8	VVZS3000-P-01-1	VVZS3000-P-01-2
Rc 1/4	VVZS3000-P-02-1	VVZS3000-P-02-2



### Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve.

Body type	Plug-in type	Non plug-in type
Part no. Rc 1/4	VVZS3000-R-02-1	VVZS3000-R-02-2



### SUP block disk

When supplying manifold with more than two different pressures, high and low, insert a block disk in between stations subjected to different pressures.

Body type	Plug-in type	Non plug-in type
Part no.	AXT625-12A	



### EXH block disk

When valve exhaust affects the other stations on the circuit or when the reverse pressure valve is used to standard manifold valve, insert EXH block disk in between stations to separate valve exhaust.

Body type	Plug-in type	Non plug-in type
Part no.	AXT625-12A	



### Interface regulator (P port regulation)

Spacer Interface regulators can be placed on top of the manifold block to reduce the pressure of each of the valves.

Body type	Plug-in type	Non plug-in type
Part no.	ARBZS3000-00-P-1	ARBZS3000-00-P-2



- Note) • Apply pressure from the P port of the base to operate the interface regulator.  
• To use concurrently with a double check spacer, assemble in the following order: the valve, the interface regulator, and the double check spacer.

## How to Order Manifold Assembly

Please indicate manifold base type, corresponding valve, and option parts.

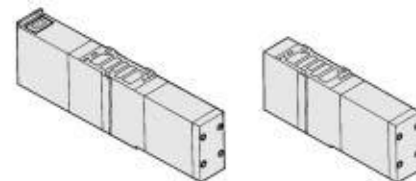
(Example)

- Plug-in type (At 6 stations)  
(Manifold base) VV5ZS3-51FD-061-01.....1  
(2 position single) VZS3150-5FZ.....3  
(2 position double) VZS3250-5FZ.....2  
(Blanking plate) VVZS3000-10A-1.....1
- Non plug-in type (At 6 stations)  
(Manifold base) VV5ZS3-51-061-01.....1  
(2 position single) VZS3150-5G.....5  
(3 position exhaust center) VZS3450-5G.....1  
(Individual EXH spacer) VVZS3000-R-02-2.....1

### Double check spacer

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.

Body type	Plug-in type	Non plug-in type
Part no.	VVZS3000-22A-1	VVZS3000-22A-2



### Blanking plate

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

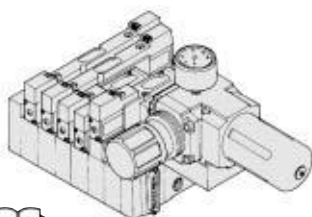
Body type	Plug-in type	Non plug-in type
Part no.	VVZS3000-10A-1	VVZS3000-10A-2



## Manifold Option

### With control unit

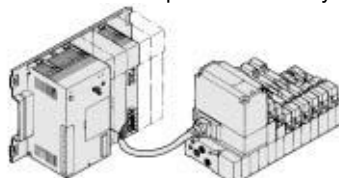
- Plug-in base type/Non plug-in base type
- Filter, regulation valve, pressure switch and air release valve all combine to form one unit.
  - Piping processes are eliminated.



For details, refer to pages 3-7-35 and 3-7-36.

### With serial interface unit for serial transmission

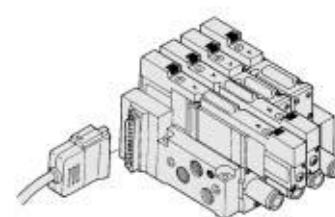
- Plug-in base type
- Solenoid valve wiring process reduced considerably.
  - Disperse installation possible.  
Manifold solenoid valve: 32 stations (512 points) max.
  - Maintenance and inspection are easy.



For details, please contact SMC.

### With coaxial fitting

- Plug-in base type/Non plug-in base type
- Piping man-hours reduced
  - One-touch piping
  - 1/2 the number of tubes



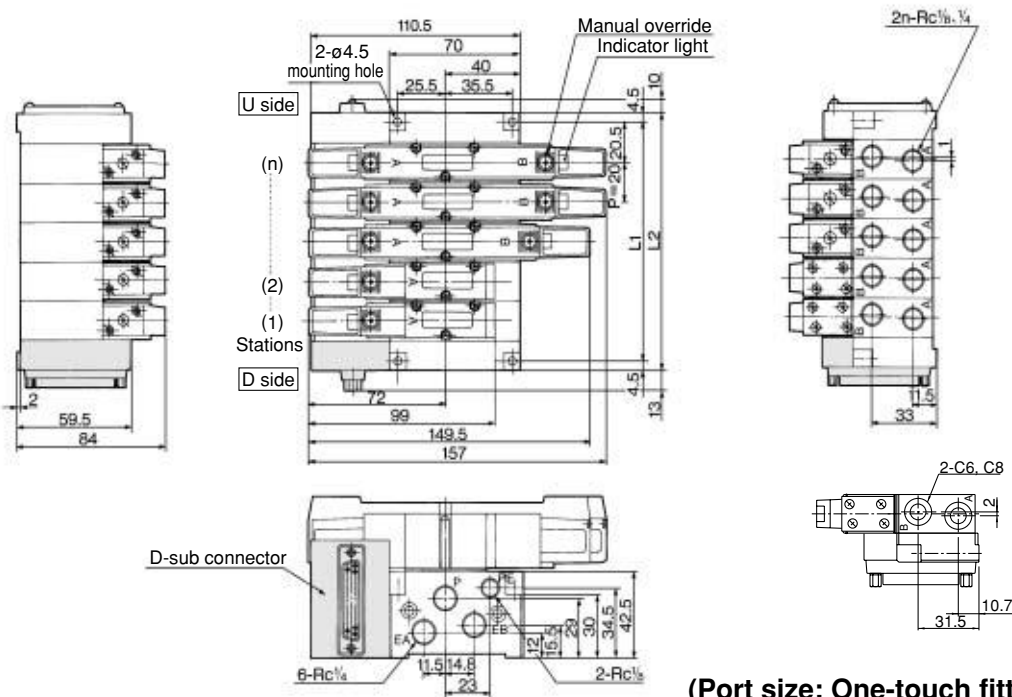
For details, please contact SMC.



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

## Manifold Plug-in type

With D-sub connector: VV5ZS2-51F□- Station 1- Port size

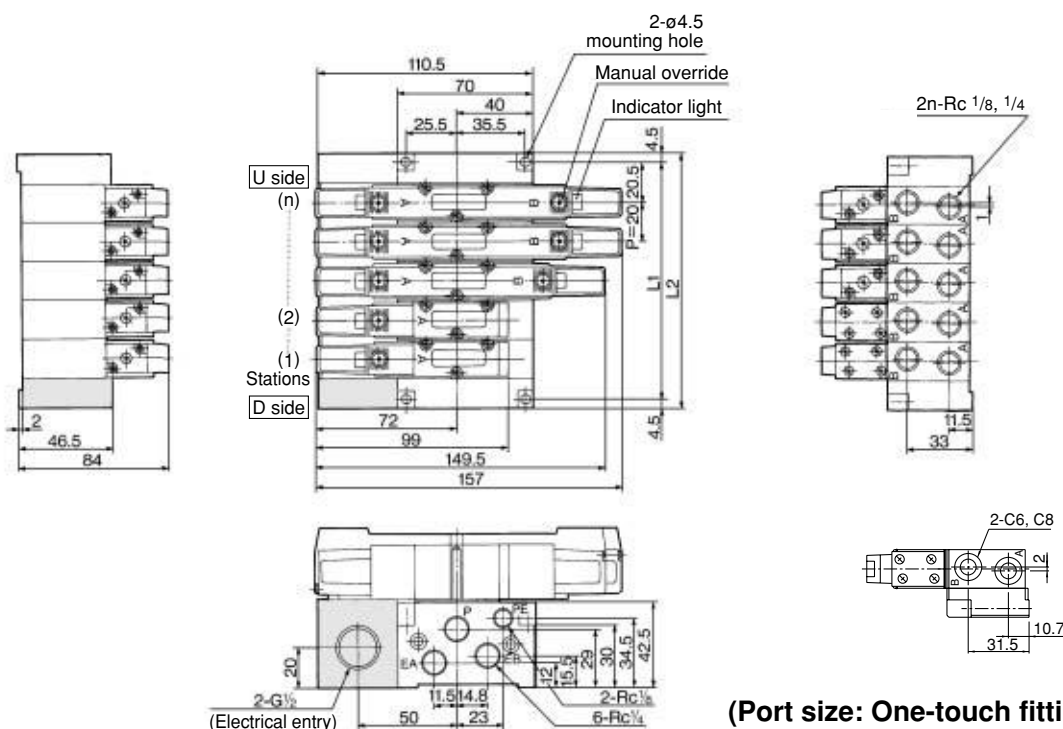


(Port size: One-touch fitting type)

n: Stations

L	Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Formula
L1		61	81	101	121	141	161	181	201	221	241	261	281	301	321	341	20n + 21
L2		70	90	110	130	150	170	190	210	230	250	270	290	310	330	350	20n + 30

Insert plug with lead wire: VV5ZS2-51G□- Station 1- Port size



(Port size: One-touch fitting type)

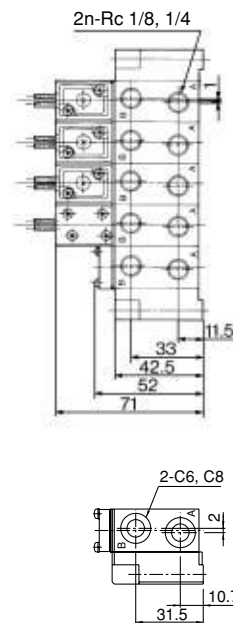
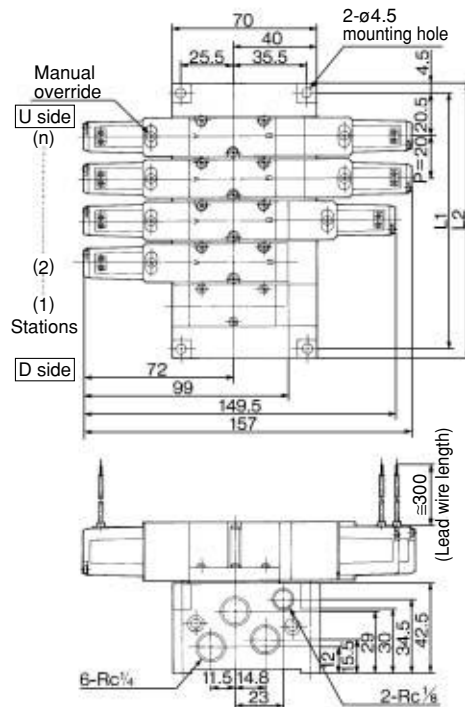
n: Stations

L	Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Formula
L1		61	81	101	121	141	161	181	201	221	241	261	281	301	321	20n + 21
L2		70	90	110	130	150	170	190	210	230	250	270	290	310	330	20n + 30

## Series VZS3000

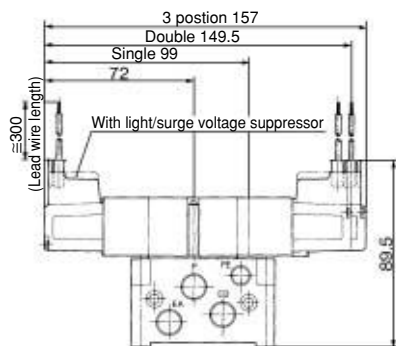
Manifold	Non plug-in type
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
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90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

**VV5ZS3-51-** **Station** 1- **Port size**  
**Grommet (G)**

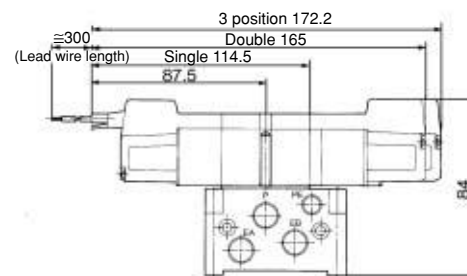


**(Port size: One-touch fitting type)**

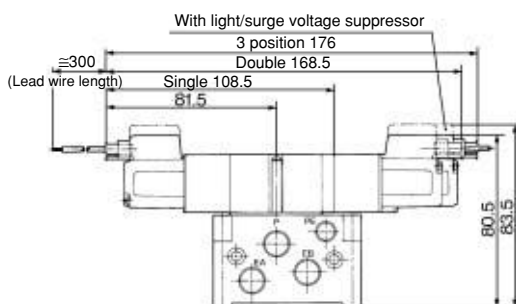
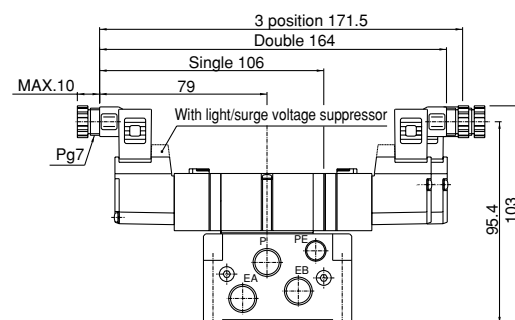
### Plug connector (L)



### Plug connector (K)



### Plug connector (M)

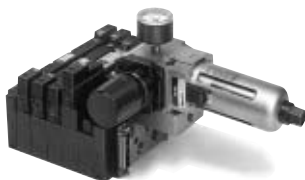
**DIN terminal (D)**

n: Stations																								
L \ Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Formula
L1	61	81	101	121	141	161	181	201	221	241	261	281	301	321	341	361	381	401	421	441	461	481	501	$20n + 21$
L2	70	90	110	130	150	170	190	210	230	250	270	290	310	330	350	370	390	410	430	450	470	490	510	$20n + 30$

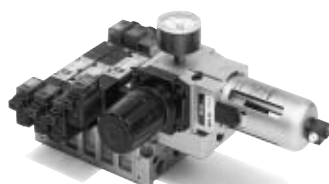
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS3000

## Manifold with Control Unit

- Control unit (Filter, Regulator, Pressure switch, Air release valve) are all standardized in the one unit, and can be mounted on the manifold base without any attachments.
- Piping processes are eliminated.



Plug-in type



Non plug-in type

### Caution

When using an air filter with auto-drain or manual override drain, mount the filter vertically.

### Manifold Specifications

Base model	Wiring	Porting specifications	Port size		Stations	Applicable valve model
		A, B port	P, EA, EB	A, B		
<b>Plug-in type</b> VV5ZS3-51F VV5ZS3-51G	<ul style="list-style-type: none"> <li>With D-sub connector</li> <li>With attachment plug lead wire</li> </ul>	Side	Rc 1/4	Rc 1/8, 1/4	* 2 to 16 stations	VZS3□50-□FZ
<b>Non plug-in type</b> VV5ZS3-51	<ul style="list-style-type: none"> <li>Grommet</li> <li>L plug connector</li> <li>M plug connector</li> <li>K plug connector</li> </ul>			C6 C8	2 to 24 stations	VZS3□50-□ <sup>G</sup> <sub>L</sub> M KZ



\* With attachment plug lead wire: 15 stations max.

### Control Unit Specifications

Air filter (With auto-drain/With manual drain)	
Filtration degree	5 μm
Regulator	
Set pressure (Outlet pressure)	0.05 to 0.85 MPa
Pressure switch	
Set pressure range: OFF	0.1 to 0.4 MPa
Differential pressure	0.08 MPa
Contact	1a
Max. switch capacity	2 VA AC, 2 W DC
Max. operating current	24 VAC, DC or less: 50 mA 100 VAC, DC: 20 mA
Operating voltage	100 VAC, DC or less
Air release valve (Single only)	
Operating pressure range	0.1 to 1.0 MPa

### Control Unit/Option

Blanking plate	MP2-2 (With control unit/Filter regulator)
	VVZS2000-15A (With pressure switch)
	VVZS3000-24A-10-1/2 (Release valve)
Filter element	111511-5B
Pressure switch	Plug-in type VVZS2000-14A
	Non plug-in type IS1000-00-X204

## How to Order

**VV5ZS3-51F D-08 1-01-AP 5**

### Series VZS3000 Manifold

#### Base type/Electrical entry

<b>51F</b>	Plug-in type: Stacking type manifold base with D-sub connector
<b>51G</b>	Plug-in type: Stacking type manifold base with attachment plug lead wire
<b>51</b>	Non plug-in type: Stacking type manifold base

#### Connector mounting direction

Symbol	With connector	Applicable base	Applicable stations
<b>Nil</b>	None	51	2 to 24
<b>D</b>	D side	51G	2 to 15
<b>U</b>	U side	51F	2 to 8
<b>B</b>	Both sides		9 to 16

#### Stations

<b>02</b>	2 stations
<b>24</b>	24 stations

Note) Maximum stations  
51F...16 stations  
51G...15 stations  
51...24 stations

#### Symbol

Symbol	Passage		Porting specifications
	1(P)	5(R1), 3(R2)	4(A), 2(B)
<b>1</b>	Common	Common	Side

#### Coil voltage of air release valve

Nil	None
<b>1</b>	100 VAC, 50/60 Hz
<b>2</b>	200 VAC, 50/60 Hz
<b>5</b>	24 VDC
<b>9*</b>	Other

\* Option

Note)  
How to take out the lead wire of air release valve is the same method as the other valve equipped on the same manifold.

#### Control unit types

Symbol	Nil	A	AP	M	MP	F	G	C	E
Control equipment									
Air filter regulator with auto-drain	—	●	●	—	—	●	—	—	—
Air filter regulator with manual drain	—	—	—	●	●	—	●	—	—
Air release valve	—	●	●	●	—	—	—	●	●
Pressure switch	—	—	●	—	●	—	—	—	—
Blanking plate (Air release valve)	—	—	—	—	—	●	●	—	—
Blanking plate (Filter regulator)	—	—	—	—	—	—	—	●	—
Blanking plate (Pressure switch)	—	●	—	●	—	●	●	—	—
Number of manifold blocks required for mounting (Stations)	—	2							1



Note) Operating voltage of pressure switch: 100 VAC, 100 VDC or less.

#### Thread type

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

#### Port size

<b>01</b>	Rc 1/8
<b>02</b>	Rc 1/4
<b>C6</b>	Embedded type One-touch fitting Applicable tubing O.D.: ø6
<b>C8</b>	Embedded type One-touch fitting Applicable tubing O.D.: ø8

Please indicate manifold base type, corresponding valve, and option parts.

<Example>

- Plug-in type with D-sub connector (Manifold base) VV5ZS3-51FD-091-01-MP5...1 (2 position single) VZS3150-5FZ... 5 (2 position double) VZS3250-5FZ... 2

\* 2 stations are needed to mount control unit.

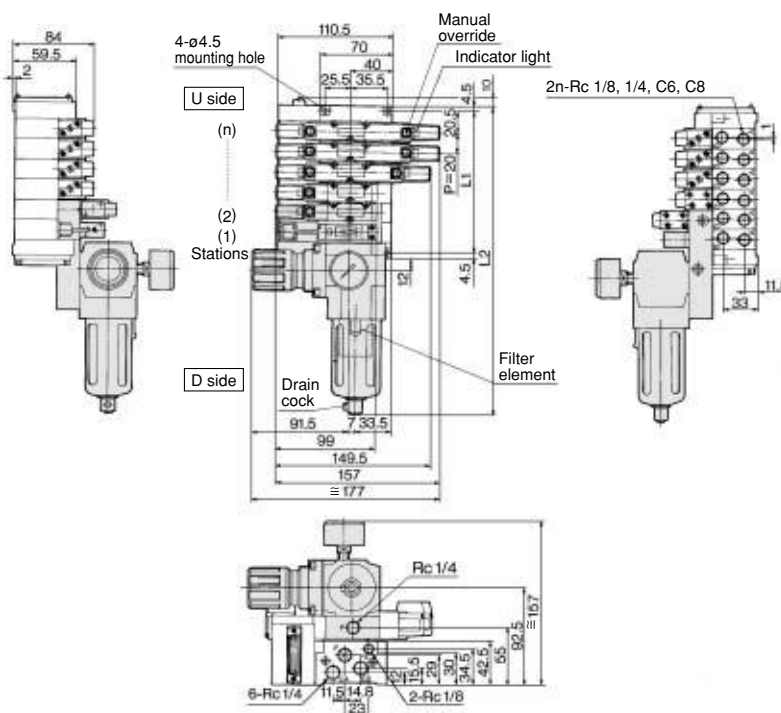
- Non plug-in type (Manifold base) VV5ZS3-50-071-01-M5... 1 (2 position single) VZS3150-5G... 5

\* 2 stations are needed to mount control unit.

Manifold with Control Unit	Plug-in type, Non plug-in type
----------------------------	--------------------------------

### Plug-in type

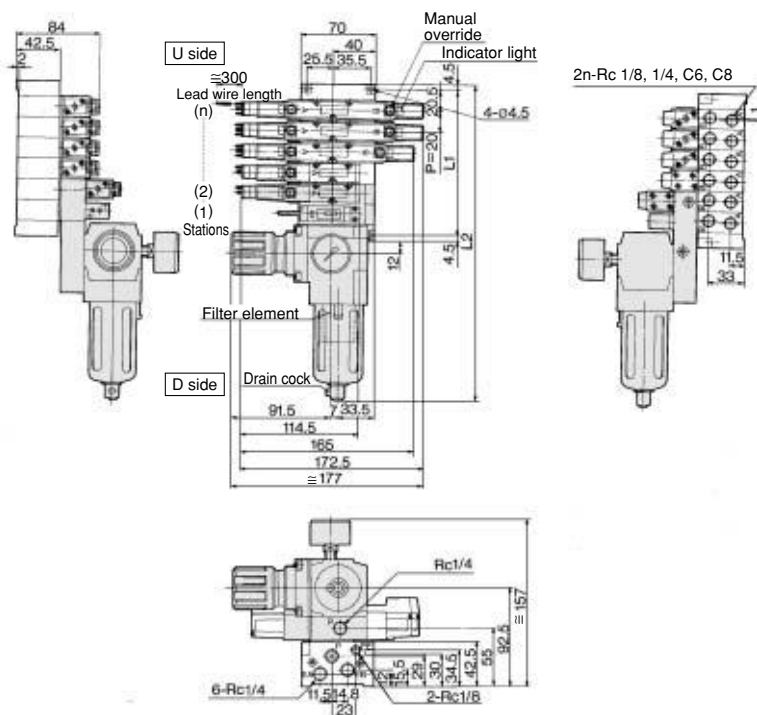
**VV5ZS3-51F** - **Station** 1- **Port size** - **Classification of control unit**



n: Stations															
L Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Formula
L1	81	101	121	141	161	181	201	221	241	261	281	301	321	341	20n + 21
L2 (MP)	236	256	276	296	316	336	356	376	396	416	436	456	476	496	20n + 176
L2 (AP)	292.5	312.5	332.5	352.5	372.5	392.5	412.5	432.5	452.5	472.5	492.5	512.5	532.5	552.5	20n + 232.5

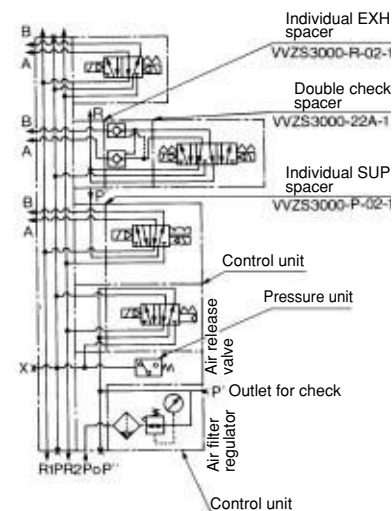
### Non plug-in type

**VV5ZS3-51- Station 1- Port size - Classification of control unit**

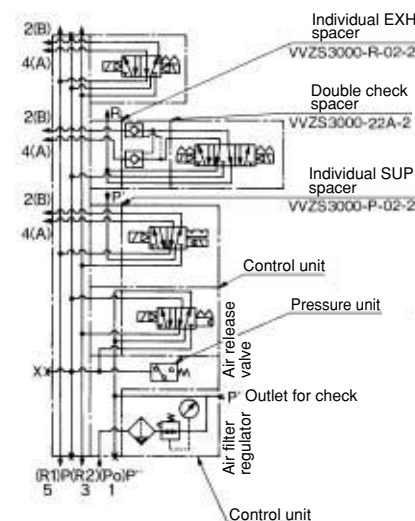


n: Stations																							
L \ Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Formula
<b>L1</b>	81	101	121	141	161	181	201	221	241	261	281	301	321	341	361	381	401	421	441	461	481	501	$20n + 21$
<b>L2 (MP)</b>	236	256	276	296	316	336	356	376	396	416	436	456	476	496	516	536	556	576	596	616	636	656	$20n + 176$
<b>L2 (AP)</b>	292.5	312.5	332.5	352.5	372.5	392.5	412.5	432.5	452.5	472.5	492.5	512.5	532.5	552.5	572.5	592.5	612.5	632.5	652.5	672.5	692.5	712.5	$20n + 232.5$

### Example for manifold



### Example for manifold





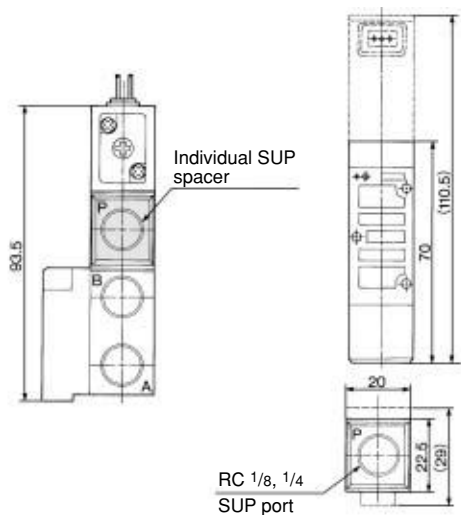
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VZS3000

## Manifold Option Parts Plug-in type, Non plug-in type

### Individual SUP spacer

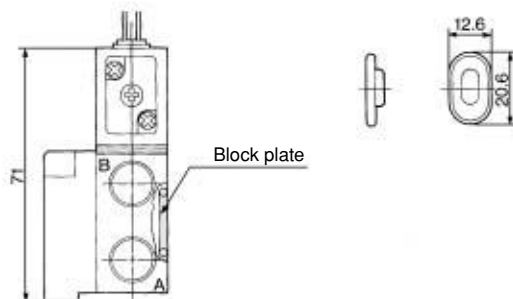
Plug-in type: VVZS3000-P-<sup>01</sup><sub>02</sub>-1

Non plug-in type: VVZS3000-P-<sup>01</sup><sub>02</sub>-2



### SUP block disk

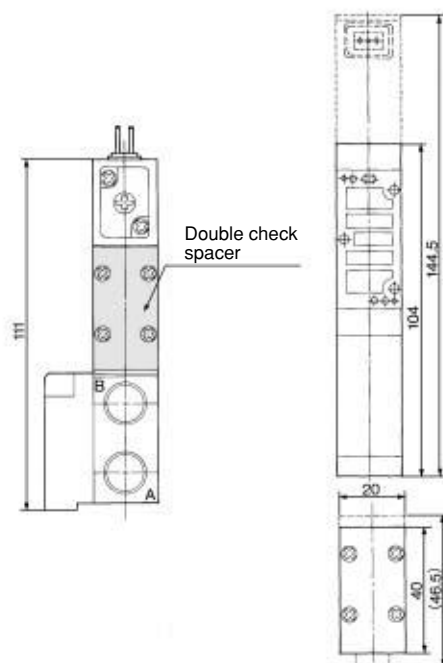
EXH blocking plate : AXT625-12A



### Double check spacer

Plug-in type: VVZS3000-22A-1

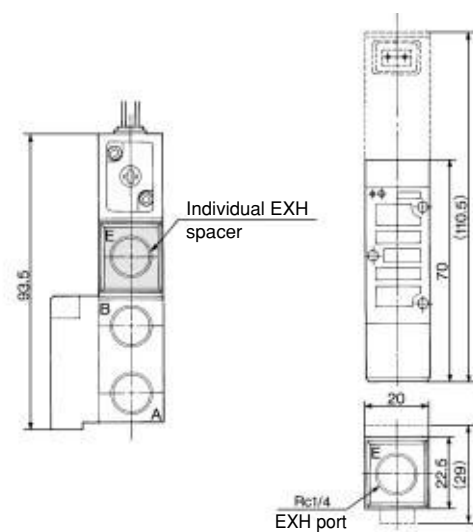
Non-plug-in type: VVZS3000-22A-2



### Individual EXH spacer

Plug-in type: VVZS3000-R-02-1

Non plug-in type: VVZS3000-R-02-2



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

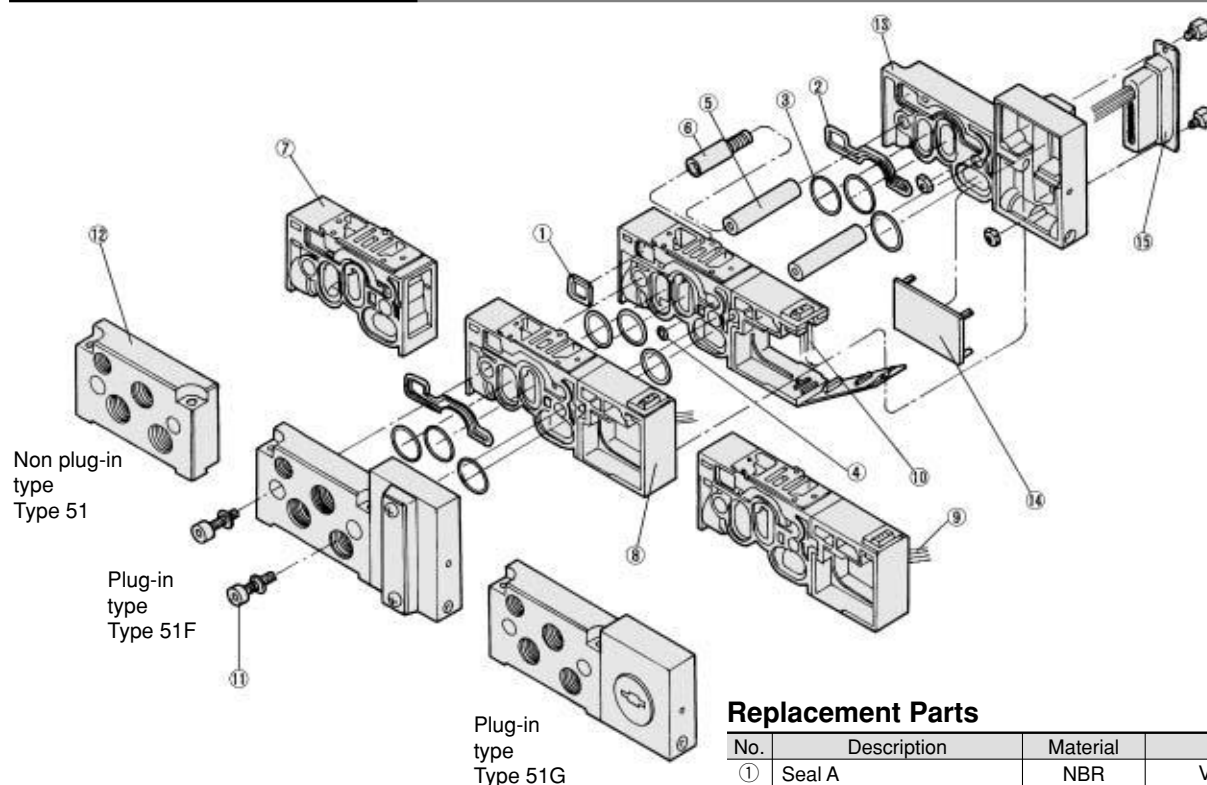
EVS

VFN

( ) : Plug-in type

# Series VZS3000

## Exploded View of Manifold



### Replacement Parts

No.	Description	Material	Part no.
①	Seal A	NBR	VVZS3000-4-1
②	Seal B	NBR	VVZS3000-4-2
③	O-ring	NBR	18 x 15 x 1.5
④	O-ring	NBR	7.5 x 4.5 x 1.5
⑤	Tie-rod	Carbon steel	VVZS3000-5-n <sup>(1)</sup>
⑥	Tie-rod for station addition	Carbon steel	VVZS3000-5-1-1 <sup>(2)</sup>

Note 1) n: Stations

Note 2) Manifold block assembly is attached with tie-rod for increasing stations.

Description	Applicable manifold base	Assembly part no.	Component parts
Manifold block assembly	Plug-in type With attachment plug lead wire: Type 51G	VVZS3000-4-1-Port size <sup>(1)</sup>	Manifold block ⑦, Junction box ⑧, Lead wire assembly ⑨ Tie-rod ⑥, O-ring ③, ④, Seal A ①
	Non plug-in base type: Type 51	VVZS3000-1A-2-Port size <sup>(1)</sup>	Manifold block ⑦, Tie-rod ⑥, O-ring ③, ④, Seal A ①
	Plug-in type With D-sub connector: Type 51F*	VVZS3000-1A-3-Port size <sup>(1)</sup> (-1) <sup>(2)</sup>	Manifold block ⑦, Junction box ⑧, Lead wire assembly ⑩ Tie-rod ⑥, O-ring ③, ④, Seal A ①



Note 1) Bore -01: Rc 1/8, -C6: Embedded type One-touch fitting for ø6, -C8: Embedded type One-touch fitting for ø8.

Note 2) Refer to page 3-7-5 for the model of D-sub connector type manifold block assembly.

### How to Increase Manifold Base

Arrange an applied manifold block assembly.

1. Loosen the bolt ⑪ and remove the end plate ⑫ or ⑬ in the side added with manifold block.

2. Joint the tie-rod ⑥ to increase stations and add manifold block assembly. (Put packing B ② on the surface contacting to the end plate.)

3. For a style with a D-sub connector, open the cover ⑭ and insert the pin of lead wire assembly ⑩ as shown in the right figure.

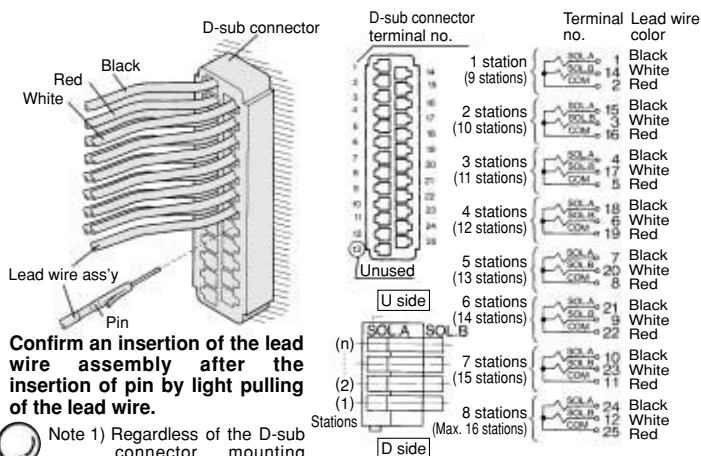
4. Mount the end plate ⑫ and ⑬ and tighten the bolt ⑪.



Note 1) Be careful that the packing and the O-ring do not fall out of the groove.

Note 2) The tightening torque of bolt ⑪ should be 2 to 2.2 N.

### Insertion Method for Pin of D-Sub Connector



Confirm an insertion of the lead wire assembly after the insertion of pin by light pulling of the lead wire.



Note 1) Regardless of the D-sub connector mounting position, stations are to be counted from D side as the 1st one.

Note 2) D-sub connector can use up to 8 stations in on side fitting (Type F<sub>U</sub><sup>D</sup>). More than 9 stations are for both sides fitting (Type FB).