

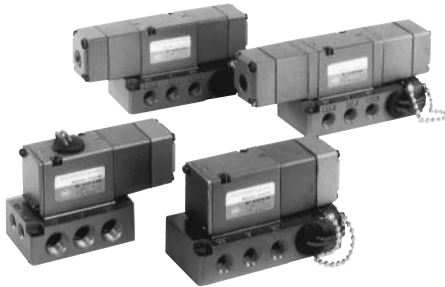
# Direct Operated Solenoid Valve Metal Seal

# Series VS4 □ 10

## Model

Number of positions	JIS Symbol	Model	Port size Rc (Nominal size)	Flow characteristics						Max. (1) operating cycle (cpm)		Response (2) time (ms)		Weight (3) (kg)	
				P → A/B			A/B → EA/EB			AC	DC	AC	DC	AC	DC
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv						
2 (Single)		VS4110-01	1/8 (6A)	3.2	0.42	0.86	3.2	0.37	0.80	1,200	180	13 or less	45 or less	0.7	0.82
		VS4110-02	1/4 (8A)	4.0	0.17	0.91	3.4	0.47	0.89						
		VS4110-03	3/8 (10A)	4.1	0.19	0.96	3.9	0.35	1.00						
2 (Double)		VS4210-01	1/8 (6A)	3.2	0.42	0.86	3.2	0.37	0.80	1,200	180	13 or less	40 or less	0.9	1.14
		VS4210-02	1/4 (8A)	4.0	0.17	0.91	3.4	0.47	0.89						
		VS4210-03	3/8 (10A)	4.1	0.19	0.96	3.9	0.35	1.00						
3 (3 position)		VS4310-01	1/8 (6A)	3.1	0.37	0.80	3.2	0.35	0.82	360	180	15 or less	45 or less	0.98	1.22
		VS4310-02	1/4 (8A)	3.8	0.23	0.89	3.6	0.33	0.89						
		VS4310-03	3/8 (10A)	4.2	0.23	1.00	3.8	0.32	0.99						
		VS4410-01	1/8 (6A)	3.1	0.28	0.77	3.0	0.28	0.75	360	180	15 or less	45 or less	0.98	1.22
		VS4410-02	1/4 (8A)	3.9	0.22	0.94	3.5	0.27	0.84						
		VS4410-03	3/8 (10A)	4.0	0.26	1.00	3.7	0.32	0.94						

- Note 1) Min. operating frequency is once every 30 days. (Based on JIS B 8375.)
- Note 2) Based on JIS B 8375-1981. (At the pressure of 0.5 MPa, without surge suppressor)
- Note 3) Electrical entry: From sub-plate
- Note 4) "Note 1)" and "Note 2)" are with controlled clean air.



## Standard Specifications

Fluid	Air/Inert gas	
Operating pressure range	0 to 1.0 MPa	
Ambient and fluid temperature	-20 to 60°C*	
Manual override	Possible	
Electrical entry	Grommet, Conduit, DIN terminal, Conduit terminal	
Lubrication	Non-lube	Usable with non-lube
	Lubrication	Use turbine oil Class 1 (ISO VG32), if lubricated.
Impact/Vibration resistance (m/s <sup>2</sup> )	150/50 (Note)	
Manifold	Possible	

- \* Use dry air (Dew point: -20°C or less). If using a lubricant, be sure to use a lubricant for low temperatures.
- Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)
- Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

## Caution

For Safety Instructions and Solenoid Valve Precautions, refer to page 3-13-2.

## How to Calculate the Flow Rate

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

## Solenoid Specifications

Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC
Allowable voltage fluctuation	-15 to +10% of rated voltage
Coil insulation type	Class B or equivalent (130°C) (Note)

Note) Based on JIS C 4003

## How to Order

VS 4 1 1 0 - 02 1 C L - □

Direct operated/Metal seal solenoid valve

4, 5 port valve

Type of actuation

1	Single
2	Double
3	3 position (Closed center)
4	3 position (Exhaust center)

Body size: 1/8 standard

Piping

0	Side ported
1	Bottom ported
4	Without sub-plate (For manifold)

Port size (Nominal size)

00	Without sub-plate
01	Rc 1/8 (6A)
02	Rc 1/4 (8A)
03	Rc 3/8 (10A)

Voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
5	24 VDC
9	Other

Electrical entry

Symbol	Electrical entry position	Electrical entry
C	Sub-plate	Conduit
T	Sub-plate	Conduit with terminal
U	Valve body	Grommet
D	Valve body	DIN terminal

Thread type

Nil	Rc
N *	NPT
T *	NPTF
F *	—

\* Option

Accessory

L	Indicator light (DC is possible only for DL.)
P	Manual override

# Series VS4□10

## Apparent Power (Power Consumption)

Apparent power (VA) (Power consumption (W))	AC	Inrush	50 Hz	51 VA (64 VA *)
			60 Hz	45 VA (55 VA *)
		Holding	50 Hz	17 VA (5.3/5.5 W)
			60 Hz	11 VA (2.9/3.2 W)
Power consumption (W)	DC			5.5



\* In the case of 3 position type.

## Option Specifications

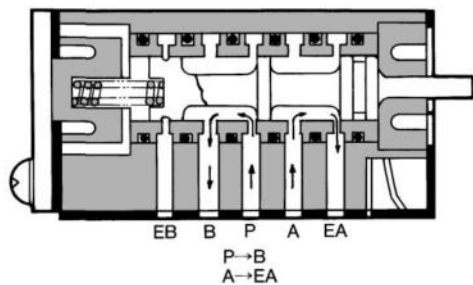
- Bottom ported (Sub-plate)
- Coil rated voltage (110/220 VAC, 12/100 VDC)

## Enclosure (Based on JIS C 0920)

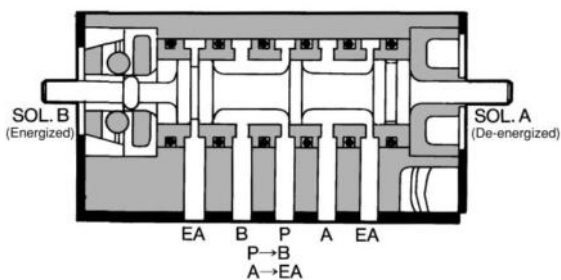
Electrical entry	Grommet Sub-plate/ Valve body	Conduit	DIN terminal	Conduit terminal
Dustproof	Standard	Standard	Standard	Standard
Dripproof	—	Option	Option	Option

## Construction Principle

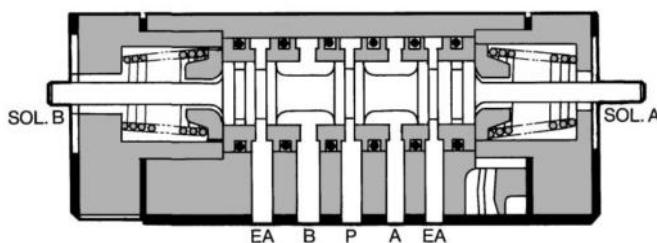
### VS4110



### VS4210



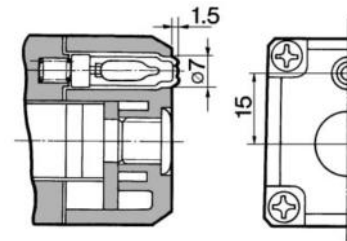
### VS4310 (Closed center)



## Accessory (Option)

### 1. Indicator light (AC)

When solenoid gets energized, indicator light illuminates, thus electrical states of the solenoid can be seen from the outside.



With rubber plug	Manual override		Applicable model
	Non-locking	With lock	
SC0003-□	SC0004B-□	SC0004A-□	VS4110 VS4210
SC0013-□	SC0014B-□	SC0014A-□	VS4310 VS4410

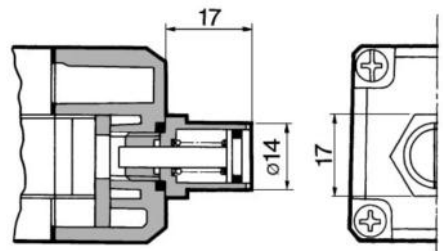
\* Indicate the voltage to be used.

### 2. Manual override

Remove rubber plug at the top of the solenoid cap to install manual override. Push the override with a screwdriver to the required stroke and the valve will shift. With the override in the same position, turn it to the right or left 90° and it will lock. Turn it back 90° to unlock.

### ⚠ Caution

Be sure to unlock it before energizing the valve electrically.

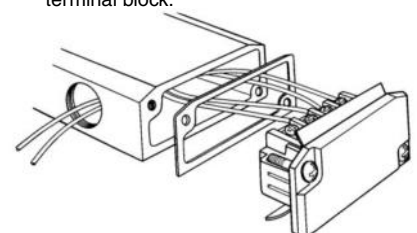


Description		Part no.	Applicable model
Manual override (With lock)	AC	PB0111	VS4110 VS4310 VS4410
	DC	PB0111-1	
Manual override (Non-locking)	AC	PB0101	VS4210
	DC	PB0101-1	

(In the case of a 2 position solenoid valve, use a non-locking manual override because it has a locking function in the main valve.)

### 3. Terminal wiring

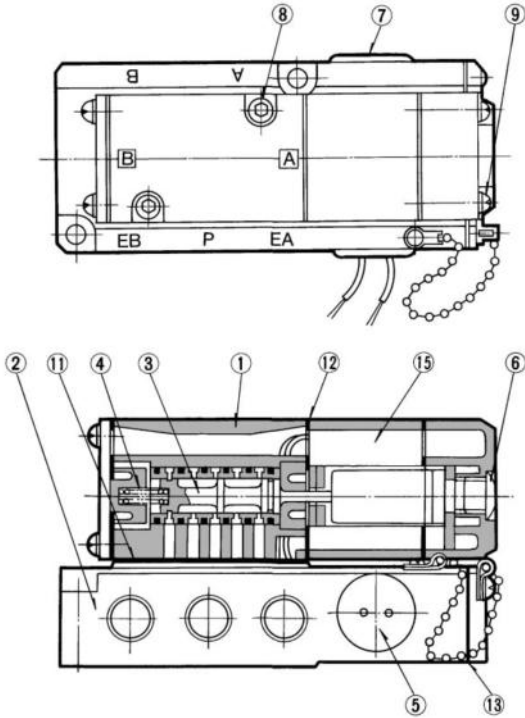
- Lead wire from the solenoid is connected to the lower terminal of the terminal block under the junction cover of sub-plate. Connect the lead wire of the power supply corresponding to the solenoid (single solenoid: A side/double solenoid: both A and B sides) to the upper terminal of the terminal block.



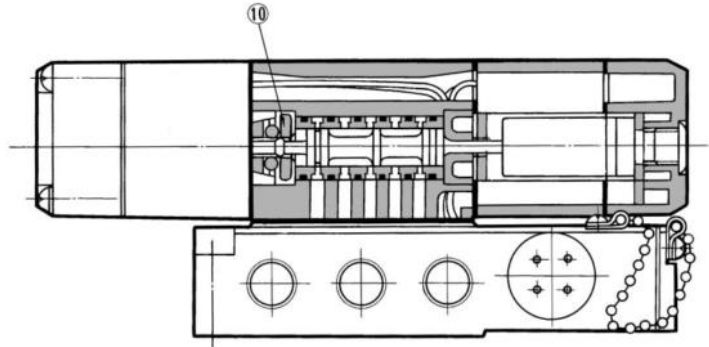
# Direct Operated Solenoid Valve Metal Seal Series VS4□10

## Construction

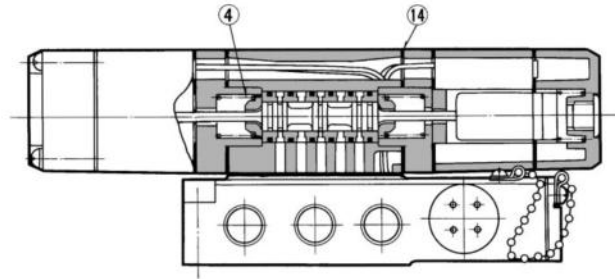
VS4110



VS4210



VS4310/4410



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

### Sub-plate Assembly Part No.

Electrical entry	Part no.
C: Conduit	VS4010-CS- <sup>01</sup> <sub>02</sub> <sub>03</sub>
T: Conduit terminal	VS4010-TS- <sup>01</sup> <sub>02</sub> <sub>03</sub>
U: Grommet, D: DIN terminal	VS4010-S- <sup>01</sup> <sub>02</sub> <sub>03</sub>

\* Mounting bolt and gasket are not included.

### Part No. for Mounting Bolt and Gasket

BG-VS4010

### 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	

### Replacement Parts

No.	Description	Material	Part no.		
			VS4110	VS4210	VS4310/VS4410
④	Spring	Piano wire	AXT333-9-3	—	AXT333-22-3
⑤	Rubber plug for wire	NBR	XT010-20	XT012-24	XT012-24
⑥	Plug for cap	NBR	AXT333-16	AXT333-16	AXT333-16
⑦	Rubber plug	NBR	AXT333-12	AXT333-12	AXT333-12
⑧	Mounting bolt	Carbon steel	AXT333-17	AXT333-17	AXT333-17
⑨	Mounting screw	Carbon steel	AXT333-19 (AXT333-31-4)	AXT333-19 (AXT333-31-4)	DXT020-36 (AXT333-31-5)
⑩	Detent assembly	NBR	—	AXT333-20	—
⑪	Gasket	NBR	AXT335-12-3	AXT335-12-3	AXT335-12-3
⑫	Gasket	NBR	AXT333-14	AXT333-14	AXT333-14
⑬	Gasket	NBR	AXT333-15	AXT333-15	AXT333-15
⑭	Gasket	NBR	—	—	AXT334-7

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### ⑮ Solenoid Capsule Assembly (With rubber plug)

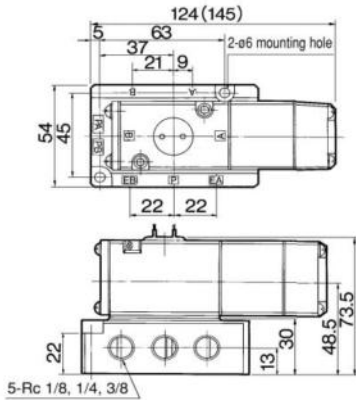
	Specifications	Part no.	
		VS4110/4210	VS4310/4410
Standard	Grommet/Conduit	SCA001-□	SCA011-□
	DIN terminal	SCAD001-□	SCAD011-□
Option	Indicator light (AC only)	SCA003-□	SCA013-□

\* Indicate the used voltage.

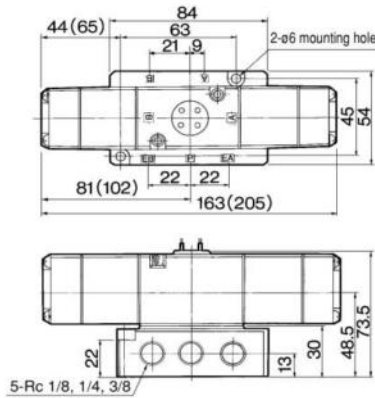
# Series VS4□10

## Dimensions

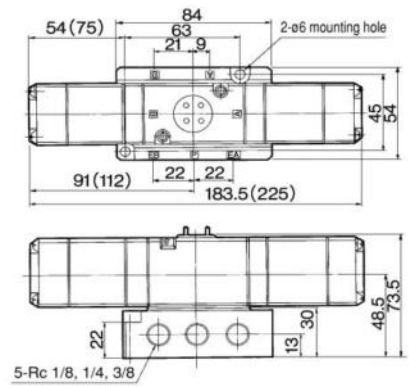
### Grommet (VS4110)



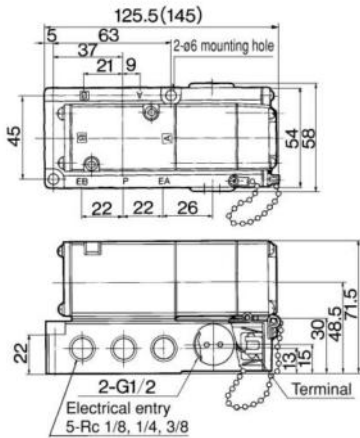
### (VS4210)



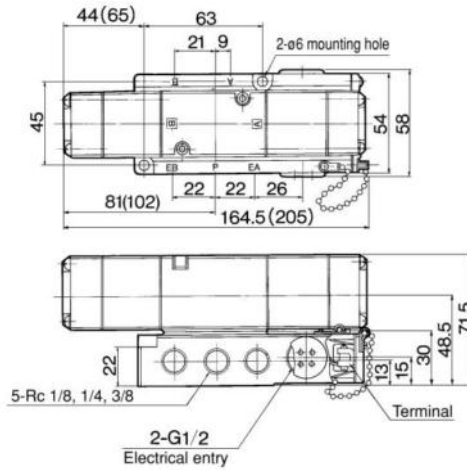
### (VS4310/4410)



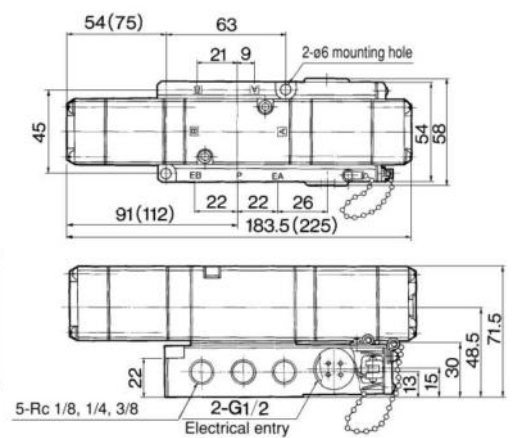
### Conduit Conduit terminal (VS4110)



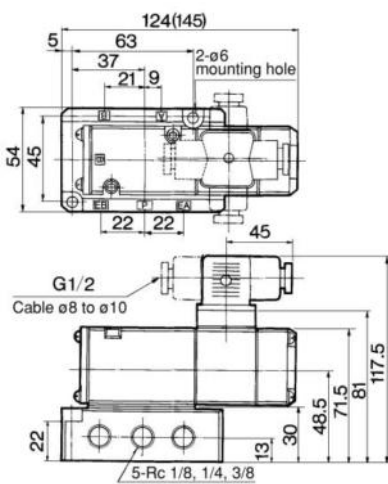
### (VS4210)



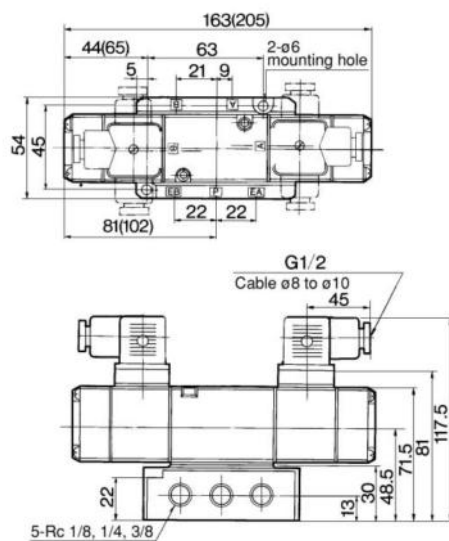
### (VS4310/4410)



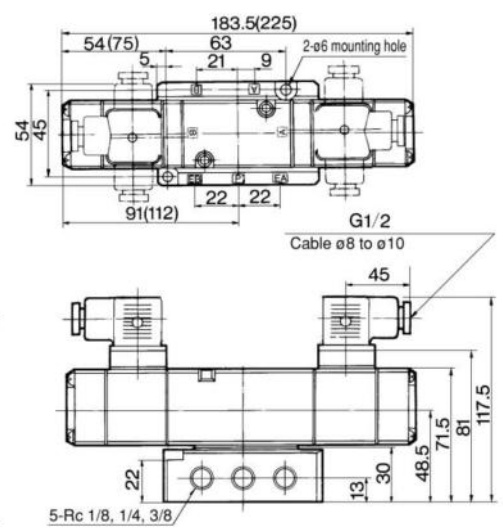
### DIN terminal (VS4110)



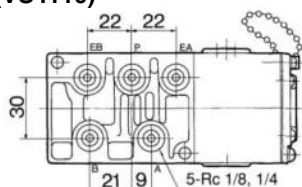
### (VS4210)



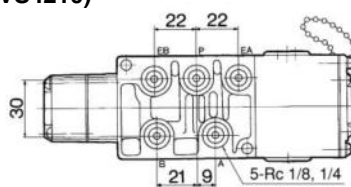
### (VS4310/4410)



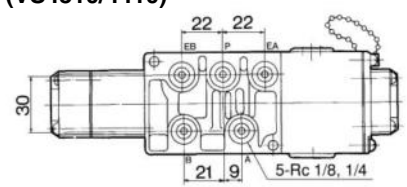
### Bottom ported (VS4110)



### (VS4210)



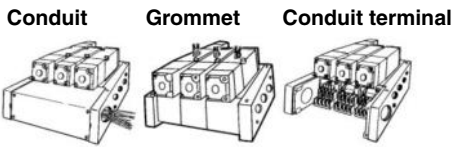
### (VS4310/4410)



( ) : DC

# Series VVS410

# Manifold Specifications



### Specifications

Applicable valve	VS4110/4210/4310/4410
Valve stations	Max. 10 stations (Standard)
Accessory	With terminal * With interface regulator * With stop valve/With flow controls

\* Option

### Standard Piping Specifications

Type	Configuration	Port size Rc			Conduit * port size G
		P	A, B	EA, EB	
Common EXH		1/4, 3/8	1/8, 1/4	1/4, 3/8	1, 1 1/4
		(Side)	(Side)	(Side)	
Individual EXH		1/4, 3/8	1/8, 1/4	1/8, 1/4	1, 1 1/4
		(Side)	(Side)	(Bottom)	

\* Optional piping: Individual SUP and different pressure SUP. But it will be the bottom porting specifications. Note) Each port size will be a big size for standard. When the small size is desired, indicate separately.

### How to Order

**VV S 4 1 0 - 05 SC 1 T**

**Valve**  
Manifold base

**Applicable valve series**

S	VS4□10
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**Applicable valve**  
4 way

**Applicable valve**  
Base size: 1/8

**Porting specifications**

Symbol	P	A, B	EA, EB
0	Side	Side	Side
1	Side	Bottom	Side
9	Other		

**Electrical entry**

Symbol	Electrical entry position
SC	Manifold block
SU	Valve body

**Manifold specifications**

Symbol	SUP	EXH
1	Common	Common
2	Common	Individual
3	Individual	Common
4	Individual	Individual
5	Dissimilar pressure	Common
6	Dissimilar pressure	Individual

**Valve stations**

02	2 stations
⋮	⋮
05	5 stations
⋮	⋮
10	10 stations

**Thread type**

Nil	Rc
N*	NPT
T*	NPTF
F*	—

\* Option

**Accessory**

T*	With terminal
S	With stop valve
R	With throttle valve

\* Type SC only.

## ⚠ Precautions

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

### Mounting

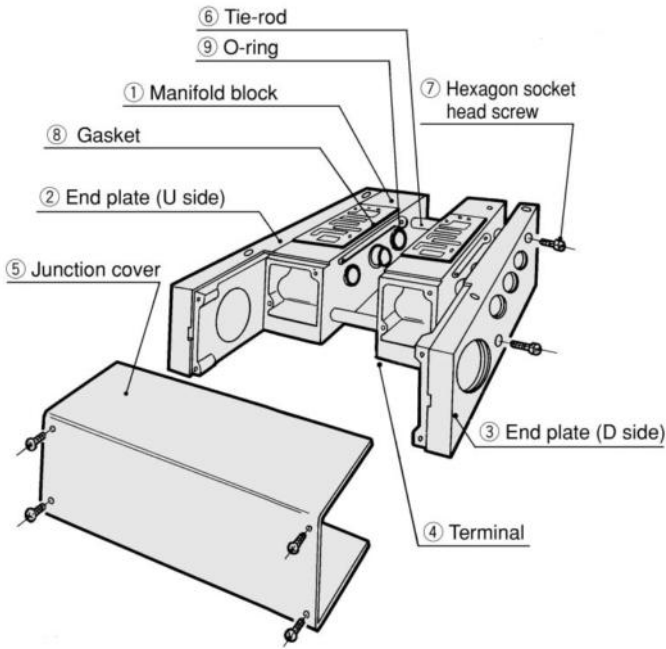
#### ⚠ Caution

1. SUP port and EXH port are positioned on both sides of manifold block. Air can be supplied from either side; however, the unused port must be plugged in this case. When operating 6 or more valve stations within a manifold at the same time, take SUP air pressure from both sides and open EXH port to the atmosphere.
2. When manifolding an exhaust center 3 position valve, use the individual EXH style manifold. (Back pressure may cause actuator to malfunction.)

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

# Series VVS4 10

## Construction



### • Replacement Parts: Sub-assembly

No.	Description	Assembly part no.	Electrical entry
①	Manifold block assembly	AXT336-1A-1 <sup>01</sup>	SC (T only)
		AXT336-1A-2 <sup>02</sup>	Type SU
		AXT336-1A-3 <sup>03</sup>	Type SC
②	End plate (U side) assembly	AXT336-2A-1 <sup>02</sup>	Type SC
		AXT336-2A-2 <sup>03</sup>	Type SU
③	End plate (D side) assembly	AXT336-3A-1 <sup>02</sup>	Type SC
		AXT336-3A-2 <sup>03</sup>	Type SU
④	Terminal assembly	AXT622-5A	
⑤	Junction cover assembly	AXT336-4A- <sup>Stations</sup>	
⑥	Tie-rod	AXT336-5- <sup>Stations</sup>	

### • Replacement Parts

No.	Description	Material	Part no.
⑦	Hexagon socket head screw	Carbon steel	M6 x 25
⑧	Gasket	NBR	AXT335-12-3
⑨	O-ring	NBR	AS568-015

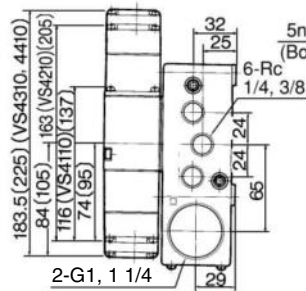
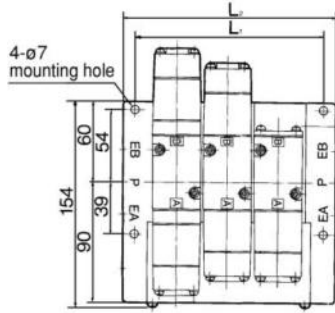
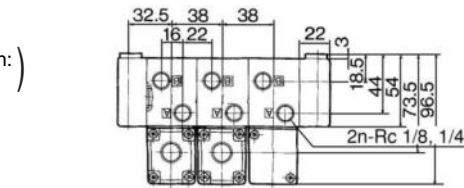
### • Manifold Optional Parts Assembly

Option	Part no.
Blanking plate	AXT336-7A
Throttle valve spacer	AXT392A
Stop valve spacer	AXT395A
Interface regulator	ARB110-00- <sup>1 (P port regulation)</sup> <sup>2 (A/B port regulation)</sup>
Block disk	AXT336-6
Rubber plug	AXT336-9

## Dimensions

### Type SC

(Electrical entry position:)  
Manifold block

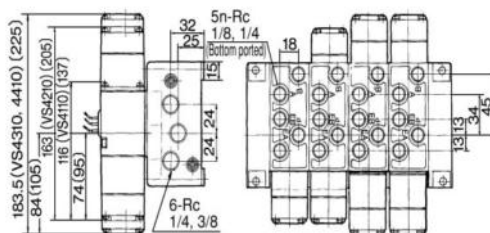
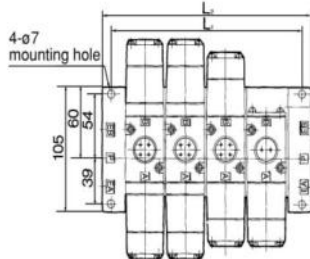
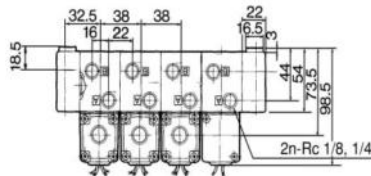


Formula/Stations	2	3	4	5	6	7
$L_1 = 38n + 27$	103	141	179	217	255	293
$L_2 = 38n + 44$	120	158	196	234	272	310

Formula for manifold weight M = 0.405n + 0.49 (kg)

### Type SU

(Electrical entry position:)  
Valve body



Formula/Stations	2	3	4	5	6	7
$L_1 = 38n + 27$	103	141	179	217	255	293
$L_2 = 38n + 44$	120	158	196	234	272	310

Formula for manifold weight M = 0.325n + 0.39 (kg)

( ): DC