

# 5 Port Pilot Operated Solenoid Valve Rubber Seal *Series VF1000/3000/5000*

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

**Large flow capacity**  
Yet compact size.

**Low power consumption**  
1.8 W (DC)

**Exhausting equipment for pilot valve not required.**  
Common exhaust port for main and pilot valve (VF1000/3000)



**VF5000**  
C: 12 dm<sup>3</sup>/(s·bar)  
{4/2 → 5/3 (A/B → EA/EB)}  
32 mm width

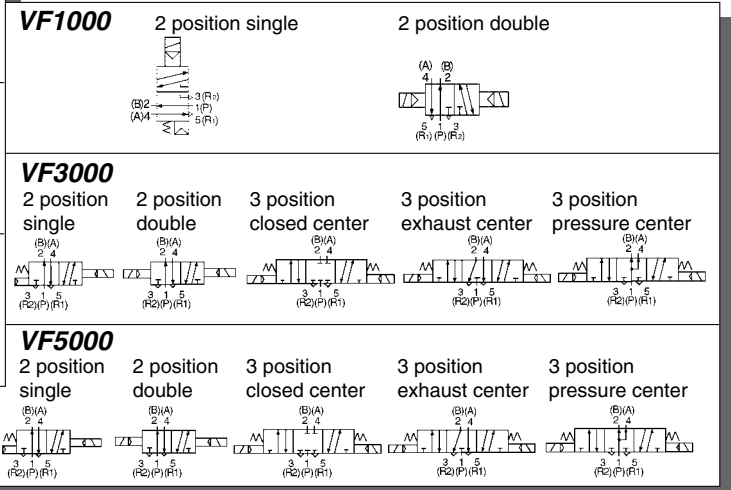
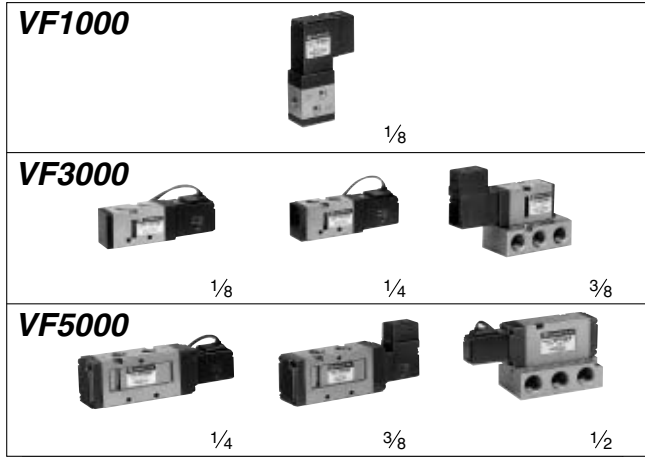
**VF3000**  
C: 3.1 dm<sup>3</sup>/(s·bar)  
{4/2 → 5/3 (A/B → EA/EB)}

**VF1000**  
C: 0.53 dm<sup>3</sup>/(s·bar) 26.4 mm width  
{4/2 → 5/3 (A/B → EA/EB)}  
26.4 mm width

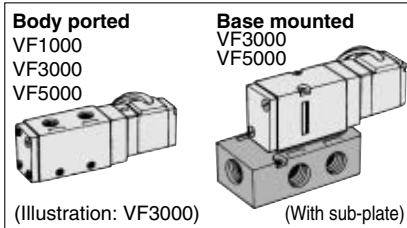
# Series VF1000/3000/5000

Many combinations available to fit your needs.

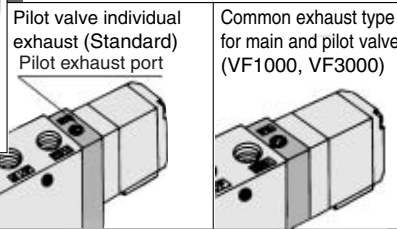
## Series Variations/Port Size



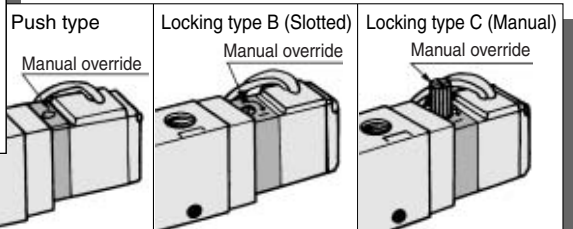
## Piping



## Pilot Exhaust



## Manual Override

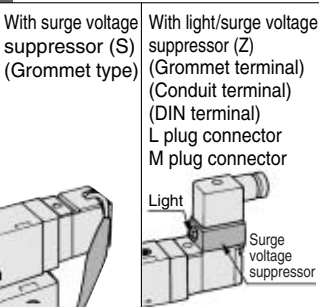


## Rated Voltage

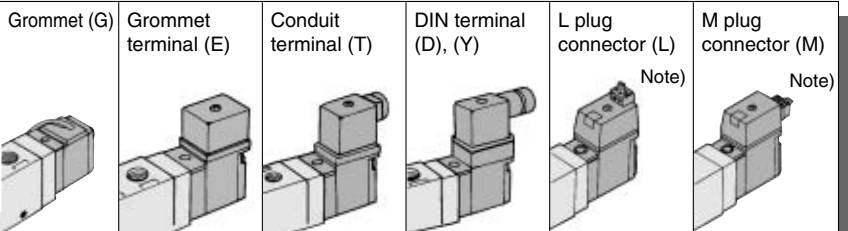
**AC/**  
100 V, 200 V, 12 V\*,  
24 V\*, 48 V\*,  
110 V\*, 220 V\*  
240 V\*

**DC/**  
24 V, 6 V\*, 12 V\*  
48 V\*, 100 V\*  
110 V\*  
(\* Option)

## Surge Voltage Suppressor/Indicator Light



## Electrical Entry



Note) VF1000/VF3000 only.

## Manifold Variations

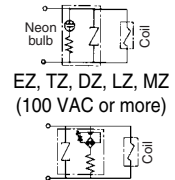
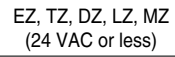
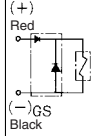
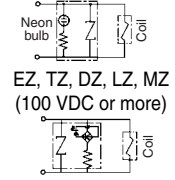
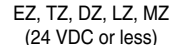
<b>VF1000</b>			<b>VF3000</b>			<b>VF5000</b>		
<b>VV5F1-30</b>			<b>VV5F3-30</b>			<b>VV5F5-20</b>		
Manifold type	A, B port	EXH type	Manifold type	CYL port	EXH type	Manifold type	A, B port	EXH type
B mount	Valve	Common, Individual	B mount	Valve, Base	Common, Individual	S mount	Valve	Common, Individual
						B mount	Valve, Base	Common

## ⚠ Precautions

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

### Light/Surge Voltage Suppressor

#### ⚠ Caution

Voltage model	Circuit	Symbol	Grommet (G)
	Surge voltage suppressor	S	Grommet terminal (E) Conduit terminal (T) DIN terminal (Y) L plug connector (L) M plug connector (M)
AC	Light/Surge voltage suppressor	Z	 EZ, TZ, DZ, LZ, MZ (100 VAC or more)  EZ, TZ, DZ, LZ, MZ (24 VAC or less)
	Surge voltage suppressor	S	
DC	Light/Surge voltage suppressor	Z	 EZ, TZ, DZ, LZ, MZ (100 VDC or more)  EZ, TZ, DZ, LZ, MZ (24 VDC or less)

Note) W/surge voltage suppressor is available only for grommet type.

### Common Exhaust Type for Main and Pilot

Exhaust air from pilot valve will flow to main valve exhaust port. Exhaust air from main valve will not flow to pilot valve side due to a check valve.

#### Purpose

- Not to exhaust mist from PE (Pilot Exhaust) port to protect the surrounding environment
- To lower the exhaust noise from PE port when switching valve.
- To prevent silencer mounted to PE port from getting plugged in dusty environments.

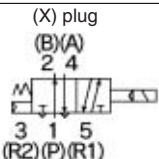
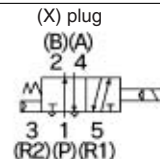
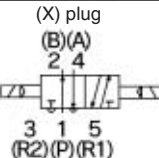
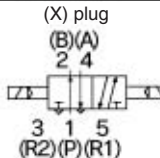
#### Caution

Common exhaust valves are effective for use with common exhaust manifolds, however an exhaust cleaner (Series AMC) should be installed when used in this manner. Make sure the exhaust port operates properly after installing the exhaust cleaner.

### Used as a 3 Port Valve

Plugging one of the cylinder ports (A or B) enables use as a normally closed (N.C.) or normally open (N.O.) 3 port valve.

It is convenient when 3 port valve is needed on a manifold, etc., but it can't be used in special applications such as using as a non-leakage valve. Use it with the exhaust port leaving open.

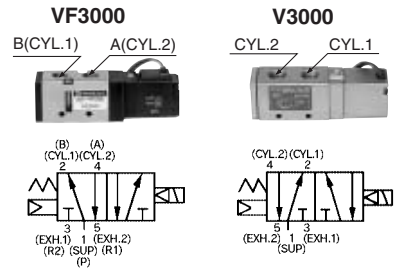
Plug	B port (CYL. 1 port)	A port (CYL. 2 port)
Type of actuation	N.C.	N.O.
Number of solenoids	Single  (X) plug (B/A) 2 4 3 1 5 (R2)(P)(R1)	Single  (X) plug (B/A) 2 4 3 1 5 (R2)(P)(R1)
	Double  (X) plug (B/A) 2 4 3 1 5 (R2)(P)(R1)	Double  (X) plug (B/A) 2 4 3 1 5 (R2)(P)(R1)

### Interchangeability with V1000 and V3000

V1000 and V3000 are respectively interchangeable with VF1000 and VF3000. Mounts are the same however, care must be taken because the main valve switching differs from the VF3000 to the V3000.

#### 1. When cylinder port is body ported.

Port position of CYL1 and CYL2 are opposites. Make sure of the port symbol and pipe so that back actuation does not occur.



#### 2. When cylinder port is base mounted.

When the VF3000 is installed on sub-plate or base mounted manifold (B1, B2) in the same position with V3000, air flow will be reversed. Follow either of these installation procedures.

- Install the VF3000 on the sub-plate or manifold base in the opposite direction.
- Install the VF3000 in the same position as the V3000 but reverse the piping of the CYL port.

### Wiring

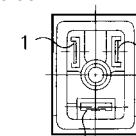
Grommet with surge voltage suppressor at DC voltage has +/- direction. Connect to the power source as follows. DIN connection and Terminal connection are free from +/- direction. Connect no. 1 and 2 terminals to the power source.

#### For Grommet

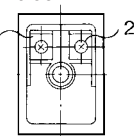
Lead wire color	Red	Black
Wiring	+	-

#### DIN terminal and Terminal

With DIN terminal block



With terminal block



Ground

- Applicable cable O.D.  
Type D :  $\phi 6$  to  $\phi 8$  mm  
Type Y :  $\phi 4.5$  to  $\phi 7$  mm  
Type T :  $\phi 6$  to  $\phi 8$  mm  
Type E :  $\phi 2.3$  to  $\phi 2.8$  mm
- Applicable crimp terminal  
Type E, T : 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S  
("Type R" or "Type Y" crimp terminal) can not be used in "Type D, Y".

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

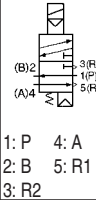
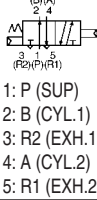
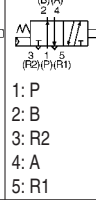
EVS

VFN

# Series VF1000/3000/5000

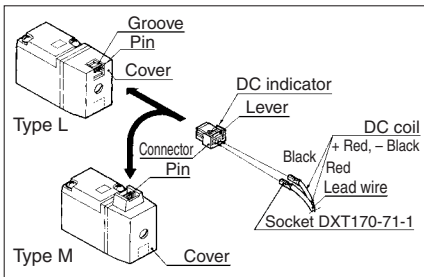
## Port Symbol

### Caution

	VF1000	VF3000	VF5000
Supply	P	P (SUP)	P
Cylinder	A, B	A (CYL2) B (CYL1)	A, B
EXH outlet	EA, EB	R1 (EXH2) R2 (EXH1)	R1, R2
JIS symbol (Single solenoid)		 1: P (SUP) 2: B (CYL.1) 3: R2 (EXH.1) 4: A (CYL.2) 5: R1 (EXH.2)	 1: P 2: B 3: R2 4: A 5: R1

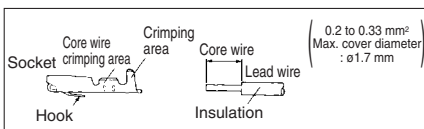
## Attaching and Detaching Connectors

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



## Crimping the Lead Wire and Socket

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.



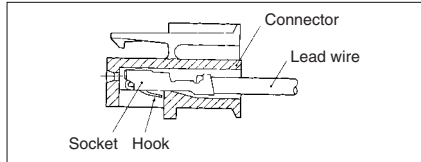
## Attaching and Detaching Lead Wires with Sockets

### 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.



## Plug Connector Lead Wire Length

Standard length is 300 mm, but the following lengths are also available.

## How to Order Connector Assembly

DXT170-80-□A-□

Lead wire color      Lead wire length

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

## How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector. (Example) 2000 mm lead wire length.

VF3230-5M0-02.....3 pcs.  
DXT170-80-4A-20.....6 pcs.

## Mounting of Solenoid Valve and Pilot

Install so that there is no slippage of a gasket, nor deformation, then tighten with the following tightening torque.

Model	Tightening torque
Pilot valve	0.6 N·m
Series VF1000	1.4 N·m
Series VF3000	1.4 N·m
Series VF5000	1.4 N·m

## Mounting Screw, Manifold Gasket

Model	Mounting screw	Gasket
VF1□30		DXT144-12
VF1□33	Round head combination screw	
VF3□30	DXT031-44-1	DXT155-25-1
VF3□33	M4 x 39.5	
VF3□40	With washer	DXT031-30-2
VF3□43		
VF3□50		
VF5□20	Hexagon socket head screw	DXT156-9-1
VF5□44	AXT620-32-1 M4 x 48 With washer	DXT156-9-2

## How to Calculate the Flow Rate

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

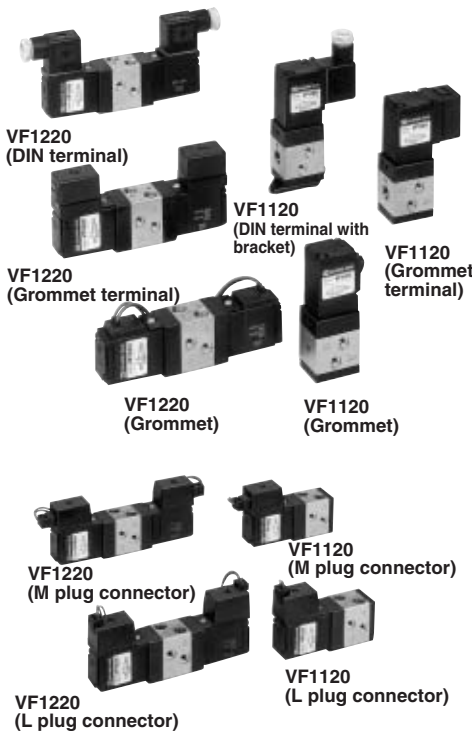
# 5 Port Pilot Operated Solenoid Valve Rubber Seal

## Series VF1000

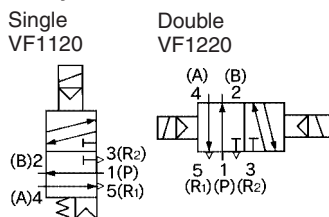
Compact and lightweight:  
26.4 mm width

Compact yet provides a large flow capacity:  
Sonic conductance  
C: 0.53 dm<sup>3</sup>/(s·bar)  
{4/2 → 5/3 (A/B → EA/EB)}

Low power consumption:  
1.8 W (DC)



### JIS Symbol



### Specifications

Fluid	Air	
Operating pressure range	2 position single	0.15 to 0.9 MPa
	2 position double	0.1 to 0.9 MPa
Ambient and fluid temperature	-10 to 50°C (No freezing. Refer to page 3-13-4.)	
Response time <sup>(1)</sup>	20 ms or less (at the pressure of 0.5 MPa)	
Max. operating frequency	10 Hz	
Lubrication	Not required	
Manual override	Non-locking push, Locking slotted, Locking knob	
Mounting orientation	Unrestricted	
Shock/Vibration resistance <sup>(2)</sup>	300/50 m/s <sup>2</sup>	
Enclosure	Dustproof	
Pilot valve EXH	Individual exhaust, Common exhaust for main valve and pilot valve	

Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

Note 2) 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)

Electrical entry	Grommet, Grommet terminal, Conduit terminal DIN terminal, L plug connector, M plug connector		
Coil rated voltage (V)	AC 50/60 Hz	100, 200, 12*, 24*, 48*, 110*, 220*, 240*	
	DC	24, 6*, 12*, 48*, 100*, 110*	
Allowable voltage fluctuation	-15 to +10% of rated voltage		
Apparent power <sup>Note)</sup>	AC	Inrush	5.6 VA (50 Hz), 5.0 VA (60 Hz)
		Holding	3.4 VA (50 Hz), 2.3 VA (60 Hz)
Power consumption <sup>Note)</sup>	DC	1.8 W, 2 W (With indicator light)	
Light/Surge voltage suppressor	AC	ZNR (Varistor), Neon bulb (LED100 V or less)	
	DC	ZNR (Varistor), LED (Neon bulb100 V or more)	

\* Option Note) At rated voltage

### Option

Description	Part no.	Note
Bracket	DXT144-8-1A	For VF1220
	DXT144-8-3A	For VF1120
Silencer	AN120-M5	M5 x 0.8
Throttle valve	DXT154-34-1A	With element

### Flow Characteristics/Weight

Valve model	Type of actuation	Port size	Flow characteristics						Weight <sup>Note)</sup> (kg)	
			1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)				
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv		
Body ported	VF1120	2 position single	1/8	0.76	0.22	0.17	0.53	0.28	0.13	0.16
	VF1220	2 position double	1/8	0.76	0.22	0.17	0.53	0.28	0.13	0.25

Note) Weight stands for grommet type.

### Manifold

Model <sup>Note)</sup>	Applicable manifold type		
	Type	Exhaust	A, B port
VF1□30-□□-01	B mount	Type 30	Common Valve
		Type 31	Individual Valve

Note) For common exhaust type for main and pilot valve, model number will be VF113□□, VF123□□.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

# Series VF1000

## How to Order

**Port size (P, A, B)**

M5	M5 x 0.8
01	1/8

EA, EB port: M5 x 0.8

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

Only when 01 (1/8)

**Option**

F	With bracket
☐	Not installed when delivered

**Body ported** VF1 1 2 0 1 L ☐ ☐ - 01 ☐ ☐

**Manifold** VF1 1 3 0 - 1 L ☐ ☐ - 01 ☐ ☐

**Type of actuation**

1	Single solenoid
2	Double solenoid

**Body option**

0	Standard
3*	Common exhaust type for main and pilot valve

\* Option

**Coil rated voltage**

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 V to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option  
L, M plug connector: Max. 220 VAC

**Electrical entry**

G	Grommet (Lead wire: 300 mm)
H	Grommet (Lead wire: 600 mm)
E	Grommet terminal
T	Conduit terminal
D	DIN terminal
DO	terminal
L	L plug connector
LN	L plug connector
LO	L plug connector
M	M plug connector
MN	M plug connector
MO	M plug connector

**Manual override**

Nil	Non-locking push type
B	Locking type B
C	Locking type C

**Light/Surge voltage suppressor**

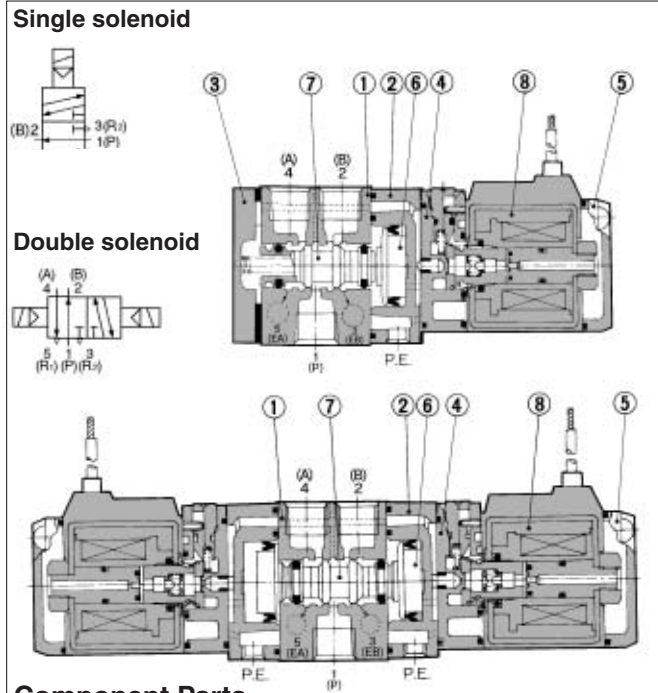
Nil	None
Z*	With light/surge voltage suppressor
S*	With surge voltage suppressor

\* Indicator light is not available for grommet type. W/surge voltage suppressor is available for grommet type only.

**Port size (A, B)**

M5	M5 x 0.8
01	1/8

### Construction



### Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Adapter plate	Resin	Black
③	End cover	Aluminum die-casted	Black
④	Pilot body	Resin	
⑤	Pilot cover	Resin	
⑥	Piston	Resin	
⑦	Spool valve	Aluminum, NBR	

### Replacement Parts

No.	Description	Material	Part no.
⑧	Pilot valve assembly (Note)	—	SF4-□□□-50

Note) Refer to "How to Order Pilot Valve Assembly" on the right above.

### How to Order Pilot Valve Assembly

SF4 - 1 DZ ☐ - 50

(A) (B) (C)

#### (A) Coil rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option

#### (C) Manual override

Nil	Non-locking push type
B	Locking type B
C	Locking type C

#### (B) Electrical entry, Light/surge voltage suppressor

Symbol	Electrical entry	Light/Surge voltage suppressor
G	Grommet Lead wire length 300 mm	None
GS		With surge voltage suppressor
H	Grommet Lead wire length 600 mm	None
HS		With surge voltage suppressor
E	Grommet terminal	None
EZ	Grommet terminal	With light/surge voltage suppressor
T	Conduit terminal	None
TZ	Conduit terminal	With light/surge voltage suppressor
D	DIN terminal	With connector
DZ		With light/surge voltage suppressor
DO	terminal	Without connector
DOZ		With light/surge voltage suppressor
L	L plug connector	With lead wire
LZ		With light/surge voltage suppressor
LN	L plug connector	Without lead wire
LNZ		With light/surge voltage suppressor
LO	L plug connector	Without connector
LOZ		With light/surge voltage suppressor
M	M plug connector	With lead wire
MZ		With light/surge voltage suppressor
MN	M plug connector	Without lead wire
MNZ		With light/surge voltage suppressor
MO	M plug connector	Without connector
MOZ		With light/surge voltage suppressor

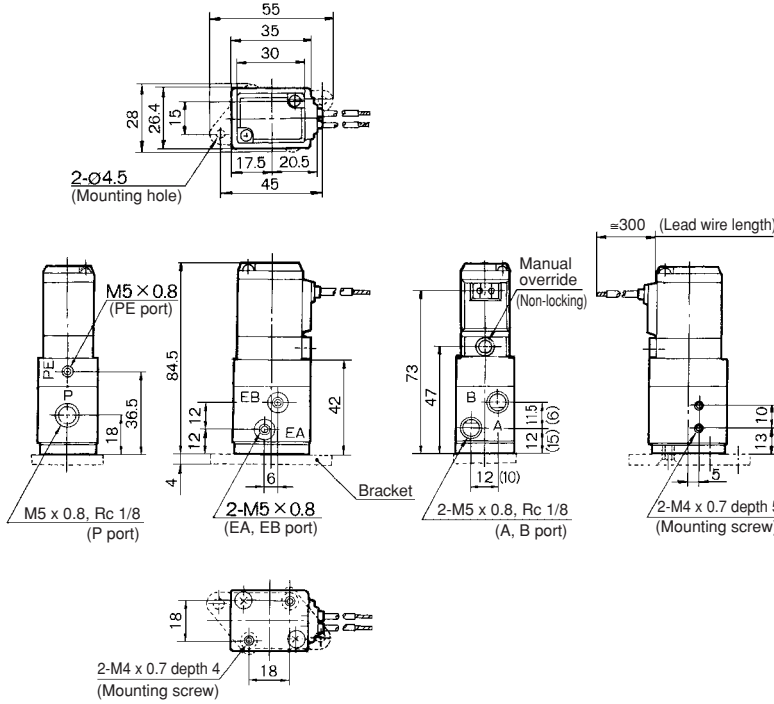


Note) Interchangeable with the previous model DXT154-A-□□□□

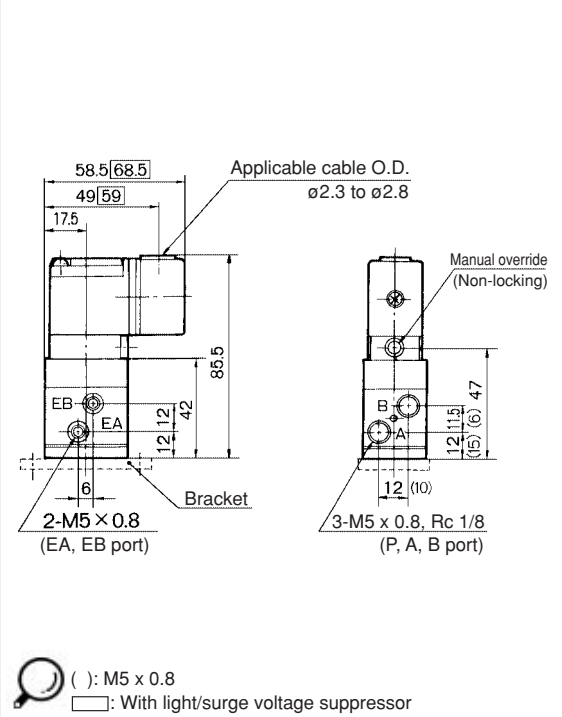
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF1000

## 2 Position Single Solenoid

Grommet: VF1120-□G-M5<sub>01</sub>

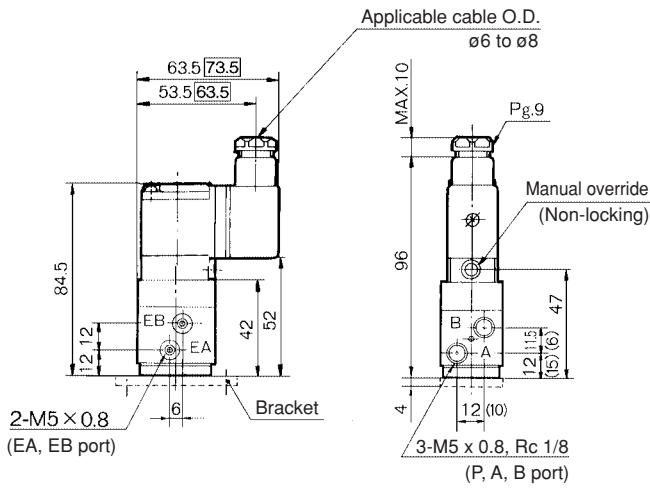


Grommet terminal: VF1120-□E-M5<sub>01</sub>

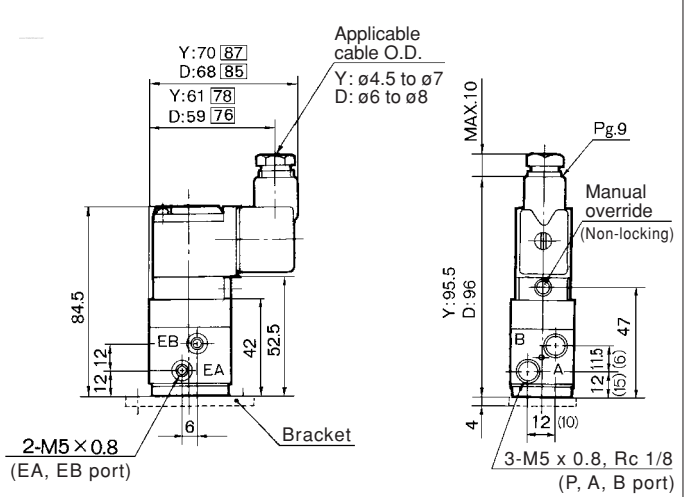


- VK
- VZ
- VF**
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

Conduit terminal: VF1120-□T-M5<sub>01</sub>



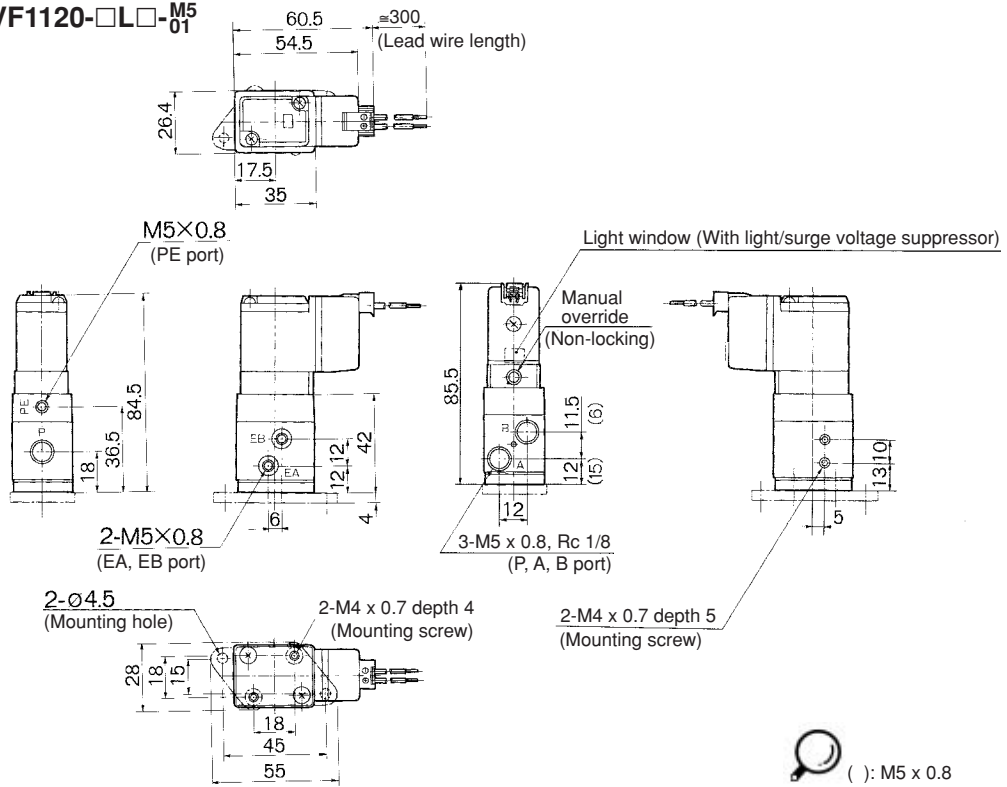
DIN terminal: VF1120-□D-M5<sub>01</sub>  
VF1120-□Y-M5<sub>01</sub>



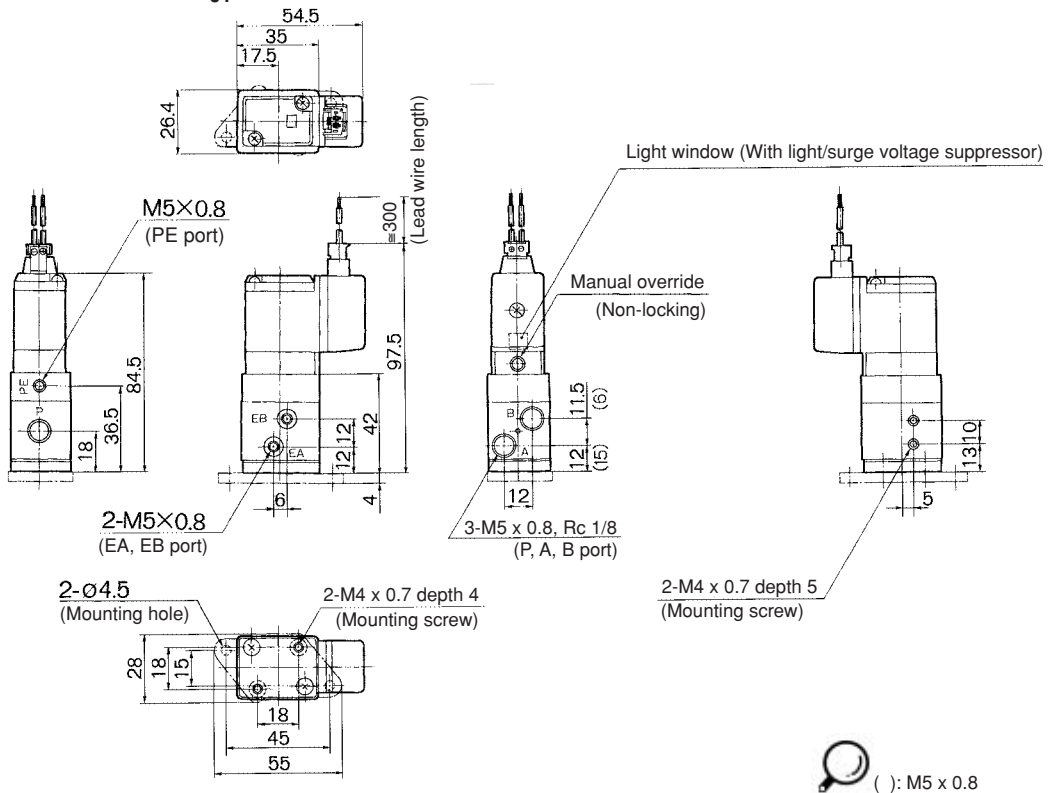
# Series VF1000

## 2 Position Single Solenoid

L plug connector: VF1120-□L□-M5<sub>01</sub>



M plug connector: VF1120-□M□-M5<sub>01</sub>

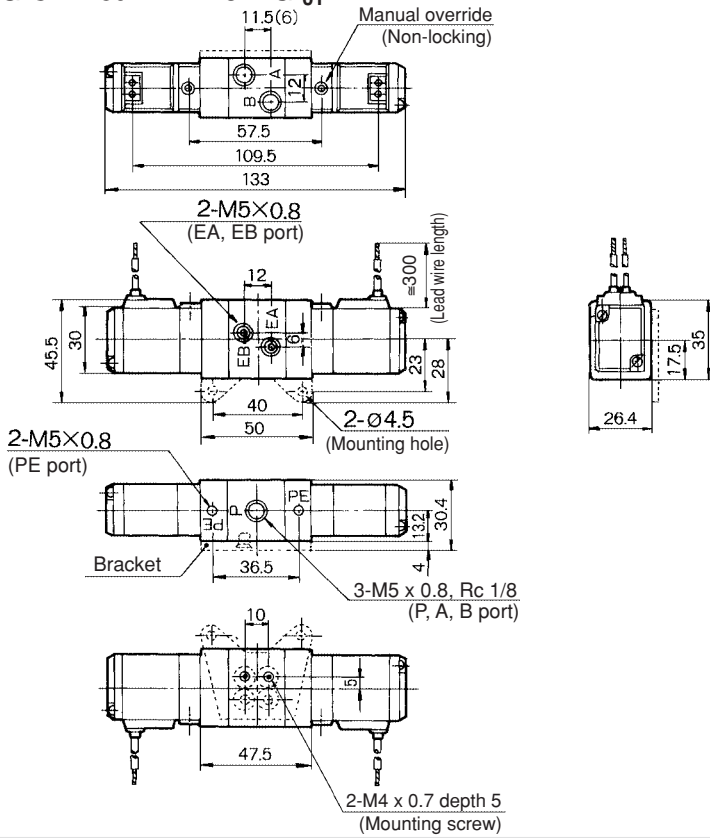




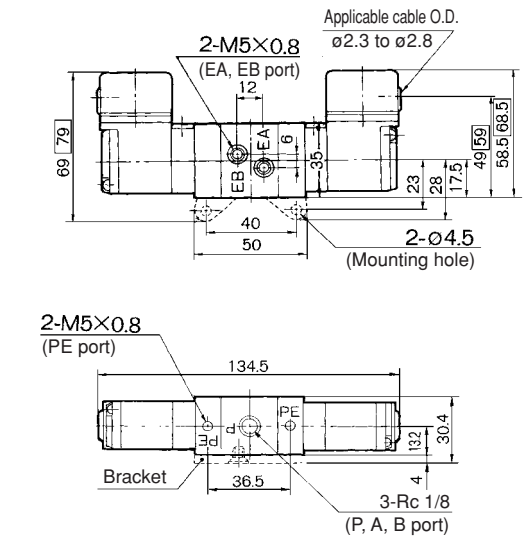
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF1000

## 2 Position Double Solenoid

Grommet: VF1220-□G-M<sup>5</sup><sub>01</sub>

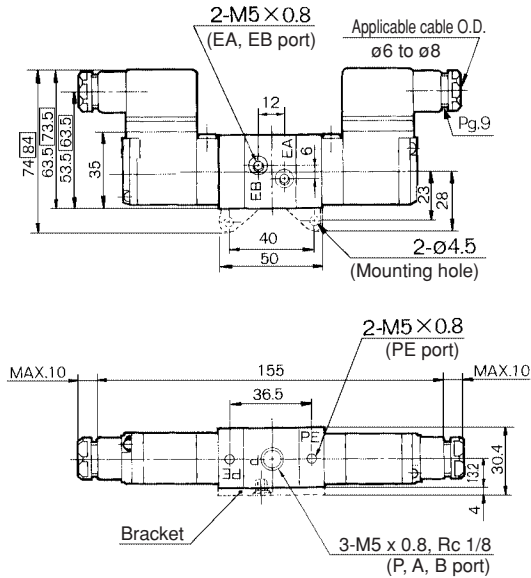


Grommet terminal: VF1220-□E-M<sup>5</sup><sub>01</sub>



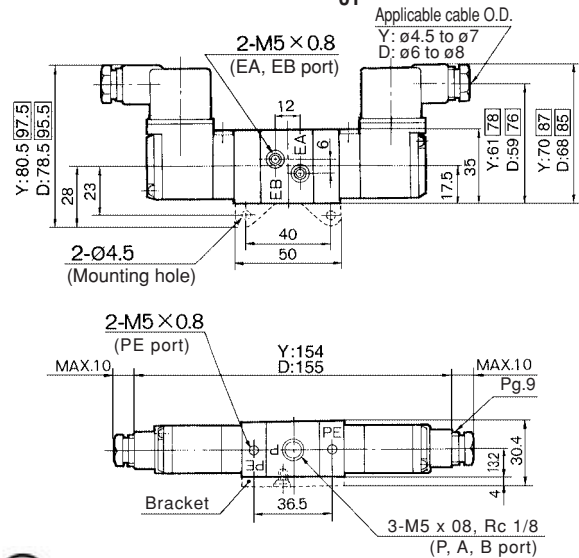
⊙ ( ) : M5 x 0.8  
□ : With light/surge voltage suppressor

Conduit terminal: VF1220-□T-M<sup>5</sup><sub>01</sub>



⊙ □ : With light/surge voltage suppressor

DIN terminal: VF1220-□D-M<sup>5</sup><sub>01</sub>  
VF1220-□Y-M<sup>5</sup><sub>01</sub>



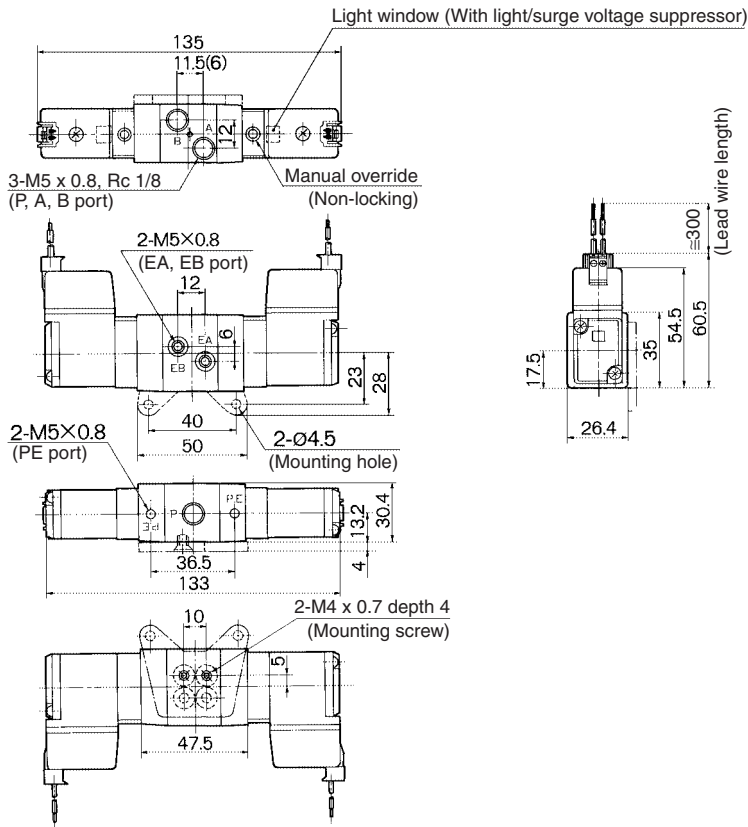
⊙ □ : With light/surge voltage suppressor

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

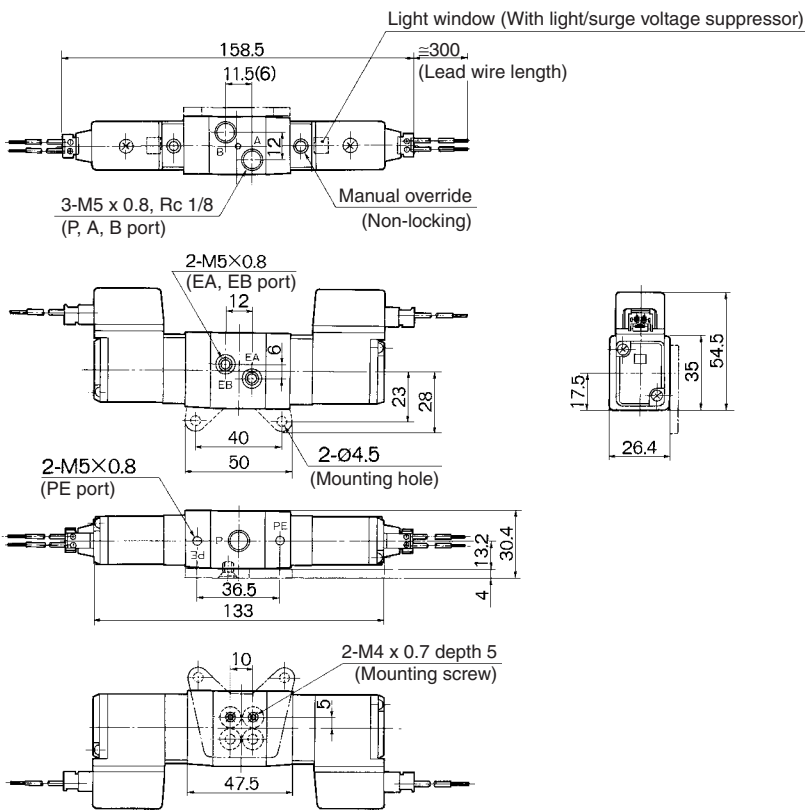
# Series VF1000

## 2 Position Double Solenoid

**L plug connector: VF1220-□L□-M5<sub>01</sub>**



**M plug connector: VF1220-□M□-M5<sub>01</sub>**



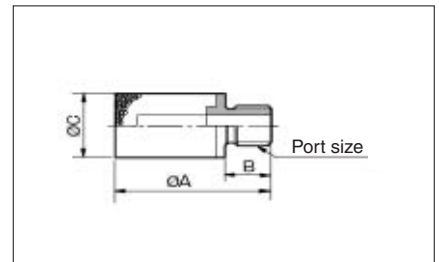
### Option

### Specifications: Silencer

Model	AN120-M5	AN110-01
Maximum operating pressure	1.0 MPa	1.0 MPa
Fluid temperature	5 to 60°C	5 to 60°C
Noise reduction*	18 dB or more	21 dB or more
Effective area	5 mm <sup>2</sup>	35 mm <sup>2</sup>
Port size	M5 x 0.8	R 1/8
Material	Body	BC-6
Weight	3.3 g	20 g
Application	Single unit, Manifold (Individual EXH type)	Manifold (Common EXH type)

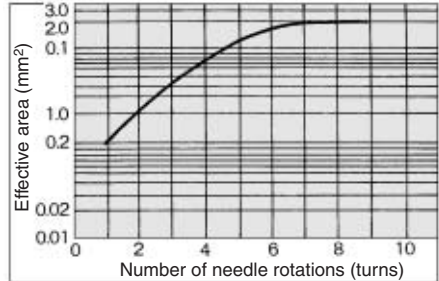
\* At 0.5 MPa

### Dimensions: Silencer



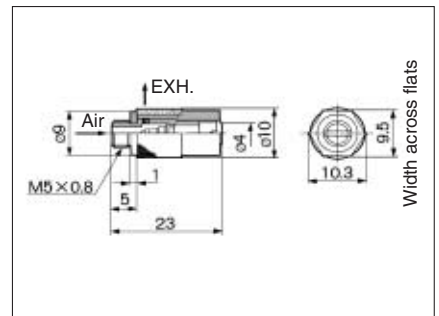
Type	AN120-M5	AN110-01	
Dimensions	A	17	38
	B	5	6
	C	8	13

### Flow Characteristics: Throttle Valve DXT154-34-1A



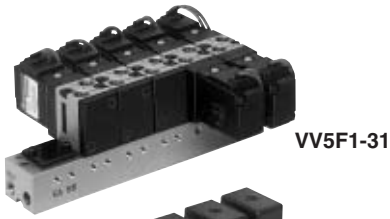
Effective area: S = 2.2 mm<sup>2</sup>, Cv = 0.12  
Air passage: A port → EA port (Throttle valve)

### Dimensions: Throttle Valve DXT154-34-1A



# Series VF1000

# Manifold Specifications



VV5F1-31



VV5F1-30

### Manifold Specifications

Manifold type	B mount (Single base type)
Max. number of stations	Max. 20 stations <sup>(Note)</sup>

Note) For more than 8 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Manifold base model	Exhaust port type	Piping/Port location			Port size			Applicable valve model
		P	R (E)	A, B	P	R (E)	A, B	
VV5F1-30	Common EXH	Side Base	Side Base	Top Valve	1/8	1/8	1/8	VF1□30 VF1□33
VV5F1-31	Individual EXH	Side Base	Side Base	Top Valve	1/8	M5	1/8	

Note 1) Supply (P port) is common.  
Note 2) Direction of single solenoid: Same side of P(SUP) port.

### Option

Description	Part no.	Applicable manifold model
Throttle valve	DXT154-34-1A	VV5F1-31
Silencer	AN120-M5	VV5F1-31
	AN110-01	VV5F1-30
Blanking plate assembly	DXT144-13-2A	VV5F1-30/31

### How to Order Manifold

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example) VV5F1-30-051 ..... 1 pc. (Manifold base)

\*VF1230-1G-01 ..... 2 pcs. (Valve)

\*VF1130-1G-01 ..... 2 pcs. (Valve)

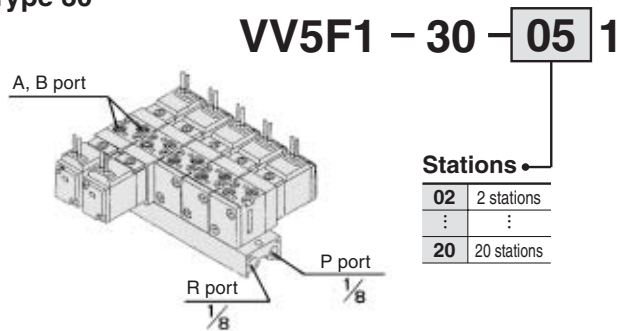
\*DXT144-13-2A ..... 1 pc. (Blanking plate assembly)

—The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

### B Mount (Integrated type)

#### Common SUP/Individual EXH type

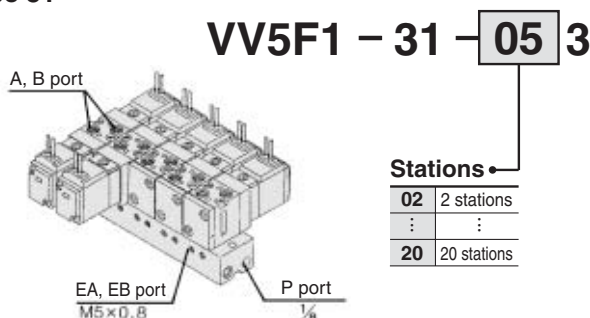
#### Type 30



**Applicable solenoid valve**  
VF1½30-□□□□-□  
VF1½33-□□□□-□

#### Common SUP/Individual EXH type

#### Type 31



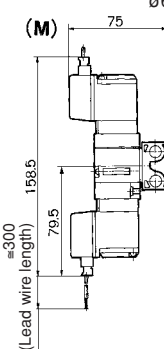
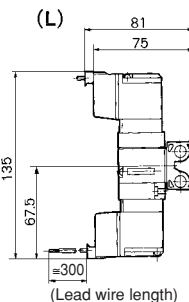
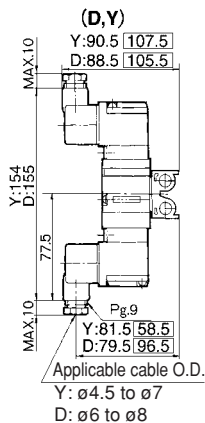
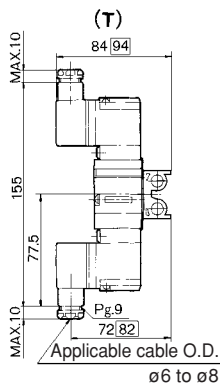
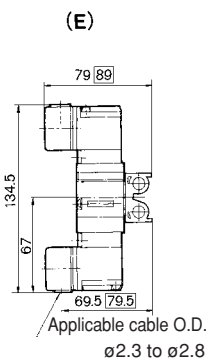
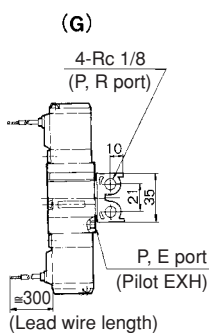
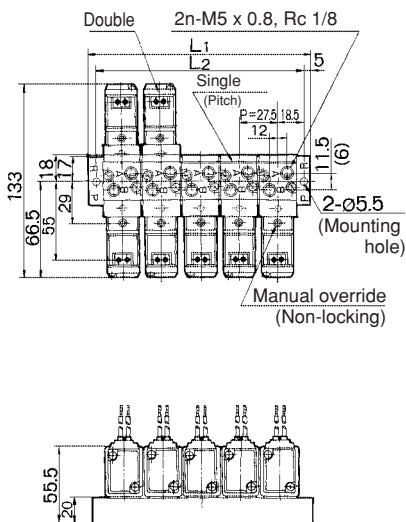
**Applicable blanking plate assembly**  
DXT144-13-2A

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

# Series VF1000

## Manifold

### Common EXH: VV5F1-30-□□□



### L Dimension

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>		74.5	102	129.5	157	184.5	212	239.5	267	294.5	322	349.5	377	404.5	432	459.5	487	514.5	542	569.5
L <sub>2</sub>		64.5	92	119.5	147	174.5	202	229.5	257	284.5	312	339.5	367	394.5	422	449.5	477	504.5	532	559.5

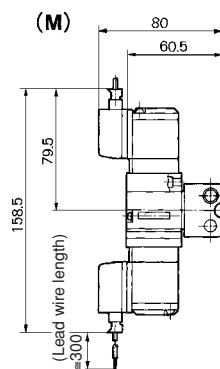
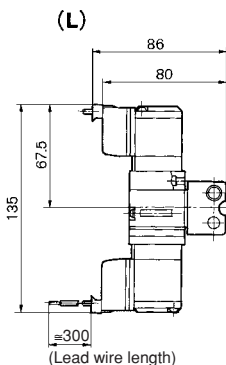
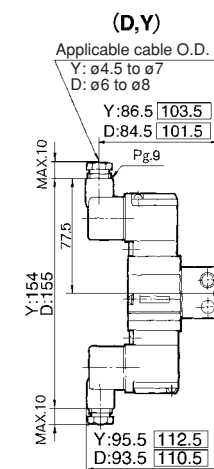
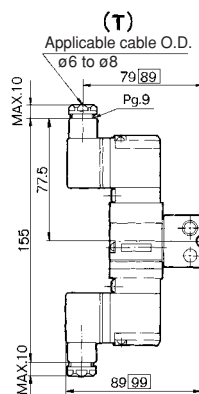
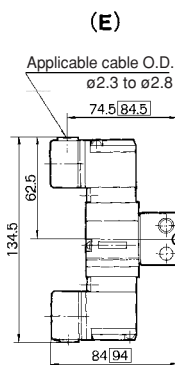
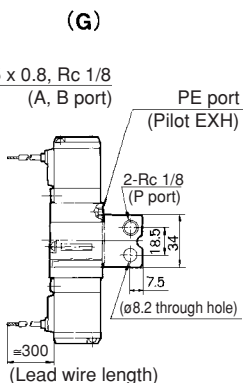
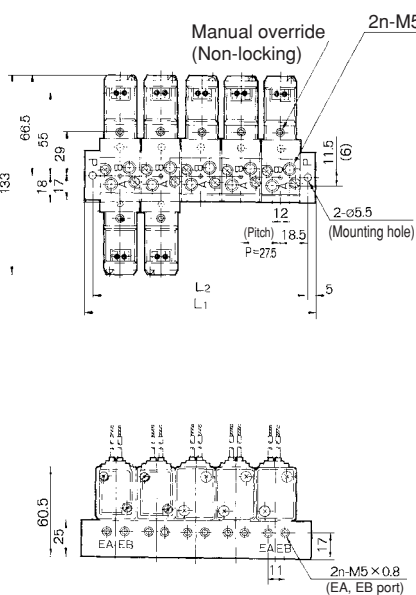


( ) : M5 x 0.8

□ : With light/surge voltage suppressor

n: Stations

### Individual EXH: VV5F1-31-□□□



### L Dimension

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>		74.5	102	129.5	157	184.5	212	239.5	267	294.5	322	349.5	377	404.5	432	459.5	487	514.5	542	569.5
L <sub>2</sub>		64.5	92	119.5	147	174.5	202	229.5	257	284.5	312	339.5	367	394.5	422	449.5	477	504.5	532	559.5



( ) : M5 x 0.8

□ : With light/surge voltage suppressor

n: Stations

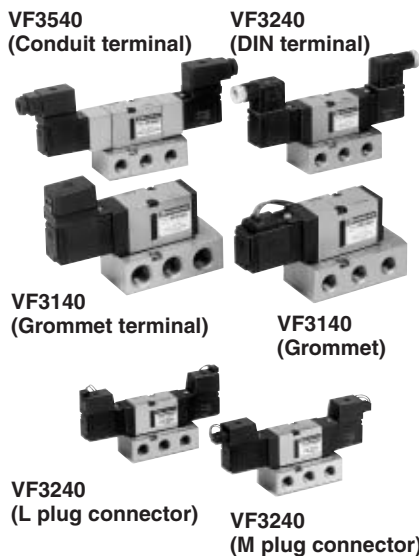
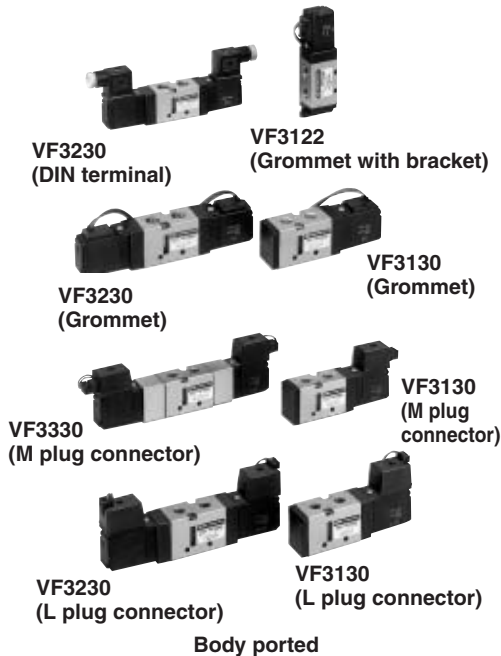
# 5 Port Pilot Operated Solenoid Valve Rubber Seal

## Series VF3000

Compact and lightweight:  
26.4 mm width

Compact yet provides a large flow capacity:  
Sonic conductance  
C: 3.1 dm<sup>3</sup>/(s·bar)  
{4/2 → 5/3 (A/B → EA/EB)}

Low power consumption:  
1.8 W (DC)



### Specifications

Fluid	Air	
Operating pressure range	2 position single/3 position	0.15 to 0.9 MPa
	2 position double	0.1 to 0.9 MPa
Ambient and fluid temperature	-10 to 50°C (No freezing. Refer to page 3-13-4.)	
Response time <sup>(1)</sup>	2 position single/double	20 ms or less (at the pressure of 0.5 MPa)
	3 position	40 ms or less (at the pressure of 0.5 MPa)
Max. operating frequency	2 position single/double	10 Hz
	3 position	3 Hz
Lubrication	Not required	
Manual override	Non-locking push, Locking slotted, Locking knob	
Mounting orientation	Unrestricted	
Shock/Vibration resistance <sup>(2)</sup>	300/50 m/s <sup>2</sup>	
Enclosure	Dustproof	
Pilot valve EXH	Individual exhaust, Common exhaust for main valve and pilot valve	



Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

Note 2) 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)

Electrical entry	Grommet, Grommet terminal, Conduit terminal DIN terminal, L plug connector, M plug connector		
Coil rated voltage (V)	AC 50/60 Hz	100, 200, 12*, 24*, 48*, 110*, 220*, 240*	
	DC	24, 6*, 12*, 48*, 100*, 110*	
Allowable voltage fluctuation	-15 to +10% of rated voltage		
Apparent power <sup>Note)</sup>	AC	Inrush	5.6 VA (50 Hz), 5.0 VA (60 Hz)
		Holding	3.4 VA (50 Hz), 2.3 VA (60 Hz)
Power consumption <sup>Note)</sup>	DC	1.8 W, 2 W (With indicator light)	
Light/Surge voltage suppressor	AC	ZNR (Varistor), Neon bulb (LED 100 V or less)	
	DC	ZNR (Varistor), LED (Neon bulb 100 V or more)	



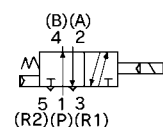
\* Option      Note) At rated voltage

### Option

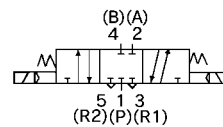
Description	Part no.	Applicable valve model
Bracket	DXT031-40-3A	For VF3122 only
Silencer	AN110-01	R 1/8

### JIS Symbol

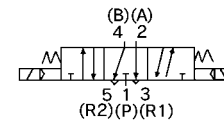
Single  
VF3130



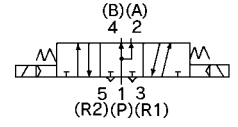
Closed center  
VF3330



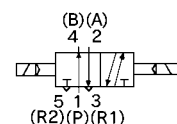
Exhaust center  
VF3430



Pressure center  
VF3530



Double  
VF3230



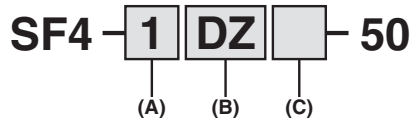
# Series VF3000

## Flow Characteristics/Weight

Model <sup>(1)</sup>	Type of actuation	Port size <sup>(2)</sup>	Flow characteristics						Weight <sup>(4)</sup> (kg)		
			1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)					
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv			
Body ported	VF3122-□□-01-F	2 position single	1/8	3.0	0.38	0.78	2.8	0.30	0.67	0.24	
				3.0	0.38	0.78	2.8	0.30	0.67	0.21	
				3.0	0.38	0.78	2.8	0.30	0.67	0.29	
	VF3□30-□□-01	2 position double		2.4	0.31	0.64	1.8	0.37	0.46	0.44	
				2.6	0.37	0.70	3.0 [2.5]	0.32 [0.28]	0.76 [0.62]	0.44	
				3.0 [1.4]	0.42 [0.44]	0.83 [0.39]	2.4	0.27	0.59	0.44	
	VF3122-□□-02-F	2 position single	1/4	4.0	0.36	1.0	3.1	0.32	0.75	0.24	
				4.0	0.36	1.0	3.1	0.32	0.75	0.21	
				4.0	0.36	1.0	3.1	0.32	0.75	0.29	
	VF3□30-□□-02	2 position double		2.4	0.45	0.68	1.9	0.37	0.47	0.44	
				3.0	0.42	0.82	3.1 [2.7]	0.36 [0.29]	0.79 [0.66]	0.44	
				5.5 [1.4]	0.37 [0.50]	1.4 [0.40]	2.6	0.32	0.64	0.44	
Base mounted <sup>(3)</sup>	VF3□40-□□-02	2 position single	1/4	2.8	0.14	0.64	2.5	0.18	0.57	0.38	
				2.8	0.14	0.64	2.5	0.18	0.57	0.47	
				2.1	0.22	0.49	1.6	0.26	0.41	0.61	
		3 position closed center		2.3	0.21	0.53	2.8 [2.1]	0.23 [0.26]	0.66 [0.50]	0.61	
				3 position exhaust center	2.9 [1.1]	0.16 [0.45]	0.67 [0.32]	2.1	0.23	0.49	0.61
					3 position pressure center	3.1	0.24	0.76	2.6	0.23	0.62
	VF3□40-□□-03	2 position single	3/8			3.1	0.24	0.76	2.6	0.23	0.62
				2.2		0.33	0.57	1.6	0.34	0.40	0.61
				2.6	0.27	0.61	2.8 [2.3]	0.30 [0.28]	0.68 [0.55]	0.61	
		2 position double		3.4 [1.3]	0.29 [0.48]	0.80 [0.38]	2.2	0.31	0.52	0.61	
				3 position closed center							
					3 position exhaust center						
3 position pressure center											

- Note 1) For common exhaust type for main and pilot valve, model number will be VVF3□43, VF3□43
- Note 2) In the case of body ported, exhaust port is only Rc 1/8.
- Note 3) With sub-plate
- Note 4) Weight stands for grommet type.
- Note 5) [ ] : Denotes normal position.

## How to Order Pilot Valve Assembly



### (A) Coil rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3 *	110 to 120 VAC, 50/60 Hz
4 *	220 VAC, 50/60 Hz
5	24 VDC
6 *	12 VDC
7 *	240 VAC, 50/60 Hz
9 *	Other

### (C) Manual override

Nil	Non-locking push type
B	Locking type B
C	Locking type C

\* Option

### (B) Electrical entry, Light/Surge voltage suppressor

Symbol	Electrical entry	Light/Surge voltage suppressor
G	Grommet	None
GS		With surge voltage suppressor
H		None
HS		With surge voltage suppressor
E	Grommet terminal	None
EZ		With light/surge voltage suppressor
T	Conduit terminal	None
TZ		With light/surge voltage suppressor
D	DIN terminal	None
DZ		With light/surge voltage suppressor
DO		None
DOZ		With light/surge voltage suppressor
L	L plug connector	None
LZ		With light/surge voltage suppressor
LN		None
LNZ		With light/surge voltage suppressor
LO		None
LOZ		With light/surge voltage suppressor
M	M plug connector	None
MZ		With light/surge voltage suppressor
MN		None
MNZ		With light/surge voltage suppressor
MO		None
MOZ		With light/surge voltage suppressor

\* Interchangeable with the previous model, "DXT154-A-□□□□".

## Manifold

Model <sup>(Note)</sup>	Manifold type			
	Type	EXH	A, B (CYL) port	
VF3□30-□□-01-02	B mount	Type 30	Common	Valve
VF3□40-□□		Type 40	Common	Base
VF3□50-□□		Type 50	Individual	Base
VF3□60-□□-01-02	S mount	Type 60, 61	Common	Valve
VF3□70-□□-01-02		Type 70, 71	Individual	Valve

Note) For common exhaust type for main and pilot valve, model number will be VF3□33, VF3□43, VF3□63.

# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

## How to Order

**Body option**

0	Standard
3*	Common exhaust type for main and pilot valve

\* Option

**Port size (P, A, B port)**

01	1/8
02	1/4

Rt, R2, Rc 1/8

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Body ported single solenoid with bracket**

**VF3122**    — 1 G    — 02 — F

**Body ported For type 30 manifold**

**VF3 1 3 0** — 1 G    — 02

**Base mounted For type 40 manifold**

**VF3 1 4 0** — 1 G    — 02

**For type 50 manifold**

**VF3 1 50** — 1 G    — 02

**For type 60, 61 manifold**

**VF3 1 6 0** — 1 G    — 02

**For type 70, 71 manifold**

**VF3 1 6 0** — 1 G    — 02

**Type of actuation**

1	Single solenoid
2	Double solenoid
3	Closed center
4	Exhaust center
5	Pressure center

**Rated voltage**

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 V to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option  
L, M plug connector: Max. 220 VAC

**Manual override**

Nil	Non-locking push type
B	Locking type B
C	Locking type C

**Body type**

6	For type 60 and 61 manifolds
7	For type 70 and 71 manifolds

**Body option**

0	Standard
Note) 3*	Common exhaust type for main and pilot valve

\* Option  
Note) VF3□63 only

**Port size (A, B port)**

01	1/8
02	1/4
03	3/8

R port of "VF3□70" 1/4 is Rc.

**Light/Surge voltage suppressor**

Nil	None
Z*	With light/surge voltage suppressor
S*	With surge voltage suppressor

\* Indicator light is not available for grommet type. W/surge voltage suppressor is available for grommet type only.

**Electrical entry**

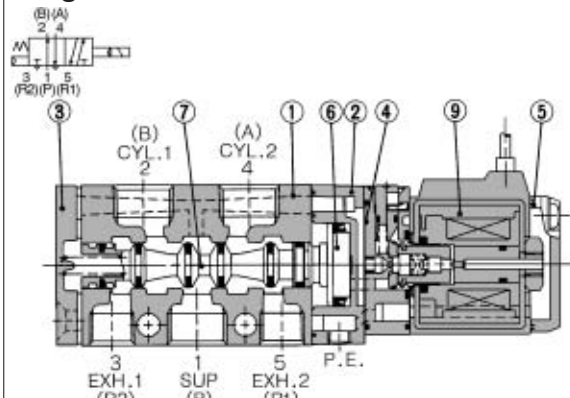
G	Grommet (Lead wire: 300 mm)	
H	Grommet (Lead wire: 600 mm)	
E	Grommet terminal	
T	Conduit terminal	
D	DIN terminal	With connector
DO		Without connector
L	L plug connector	With lead wire
LN		Without lead wire
LO	M plug connector	Without connector
M		With lead wire
MN	Without lead wire	
MO	Without connector	

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

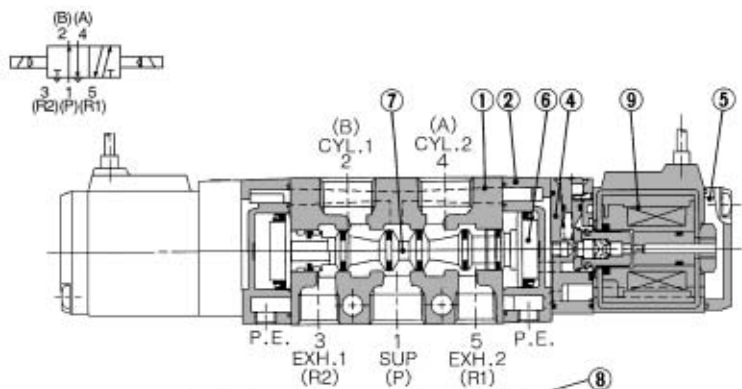
# Series VF3000

## Construction

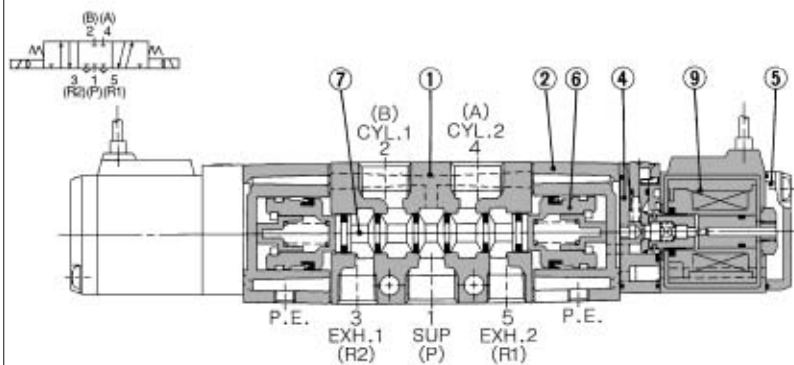
### Single solenoid



### Double solenoid



### 3 position closed center



### Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Adapter plate	Resin <sup>(1)</sup>	Black <sup>(3)</sup>
③	End cover	Aluminum die-casted	Black
④	Pilot body	Resin	
⑤	Pilot cover	Resin	
⑥	Piston	Resin <sup>(2)</sup>	
⑦	Spool valve	Aluminum, NBR	

### Replacement Parts

No.	Description	Part no.	Note
⑧	Sub-plate	DXT031-41-3□P	3/8 Aluminum die-casted
		DXT031-41-4□P	1/4 Aluminum die-casted
⑨	Pilot valve assembly	SF4-□□□-50	Refer to "How to Order" on page 3-4-14.

Note 1) 3 position: Zinc die-casted  
 Note 2) 3 position: Aluminum  
 Note 3) 3 position: Metallic paint

### Sub-plate Part No.

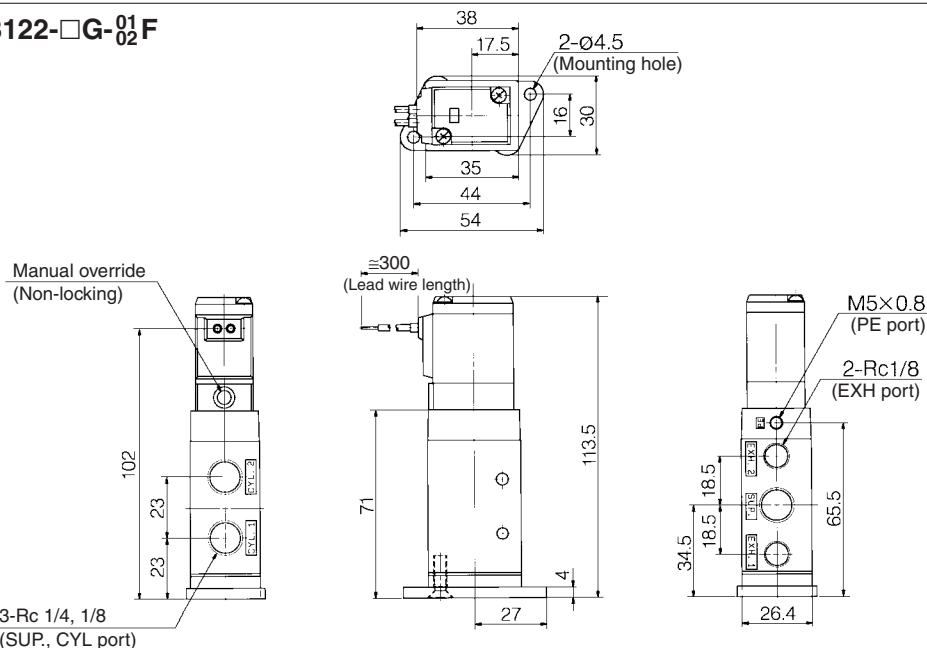
**DXT031-41-3□P**

### Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

## With Bracket/Body Ported: 2 Position Single Solenoid

### Grommet: VF3122-□G-0<sup>1</sup>/<sub>2</sub>F

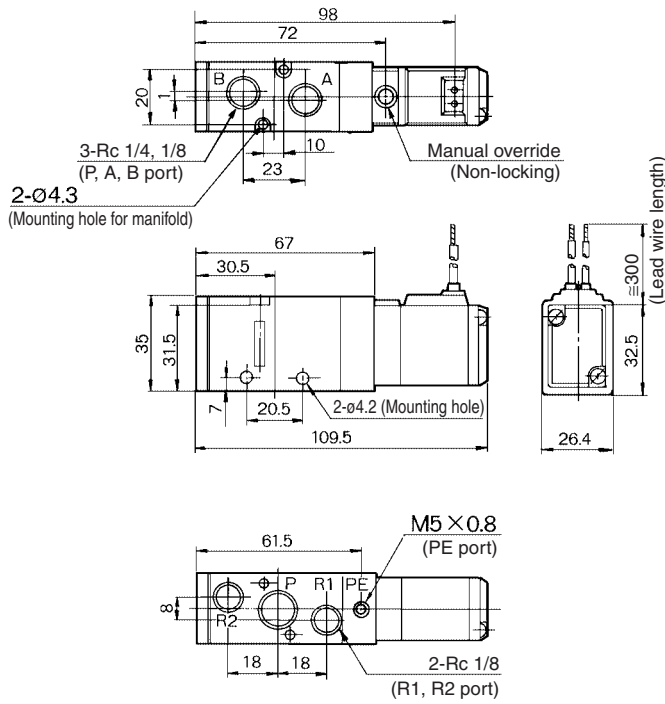




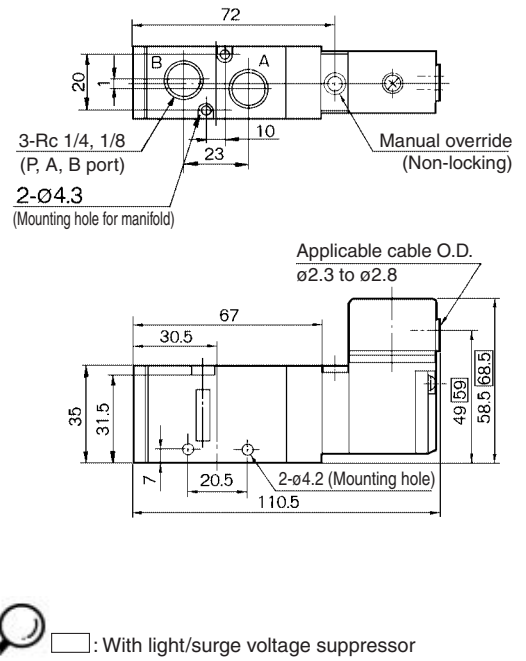
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

## Body Ported: 2 Position Single Solenoid

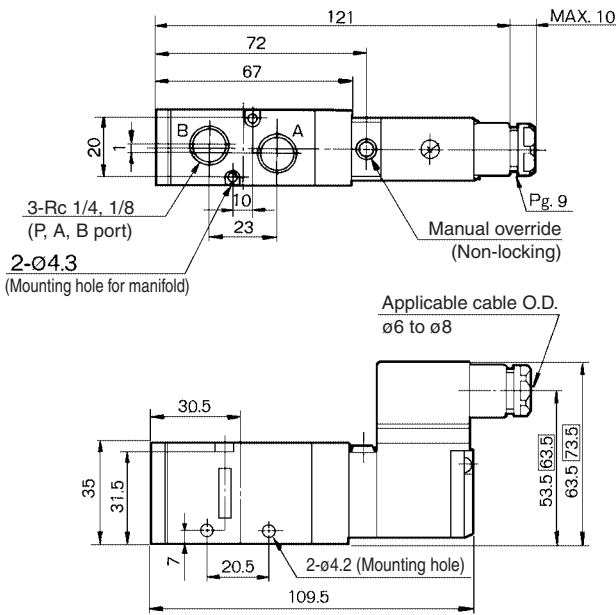
Grommet: VF3130-□G-01/02



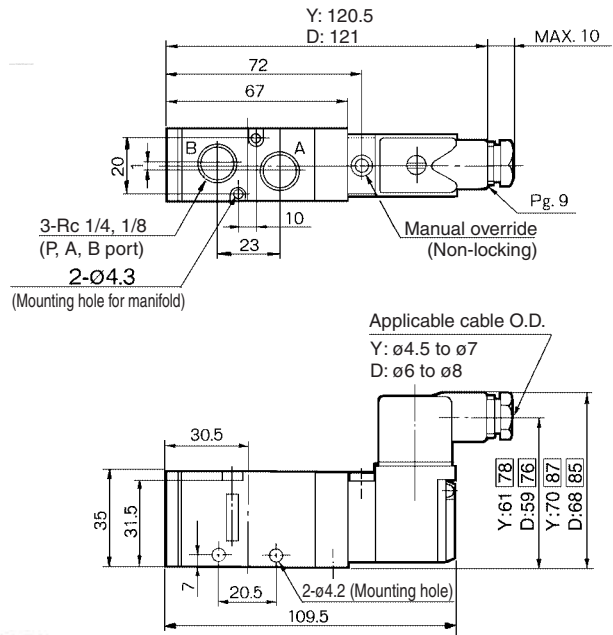
Grommet terminal: VF3130-□E-01/02



Conduit terminal: VF3130-□T-01/02



DIN terminal: VF3130-□D-01/02  
VF3130-□Y-01/02

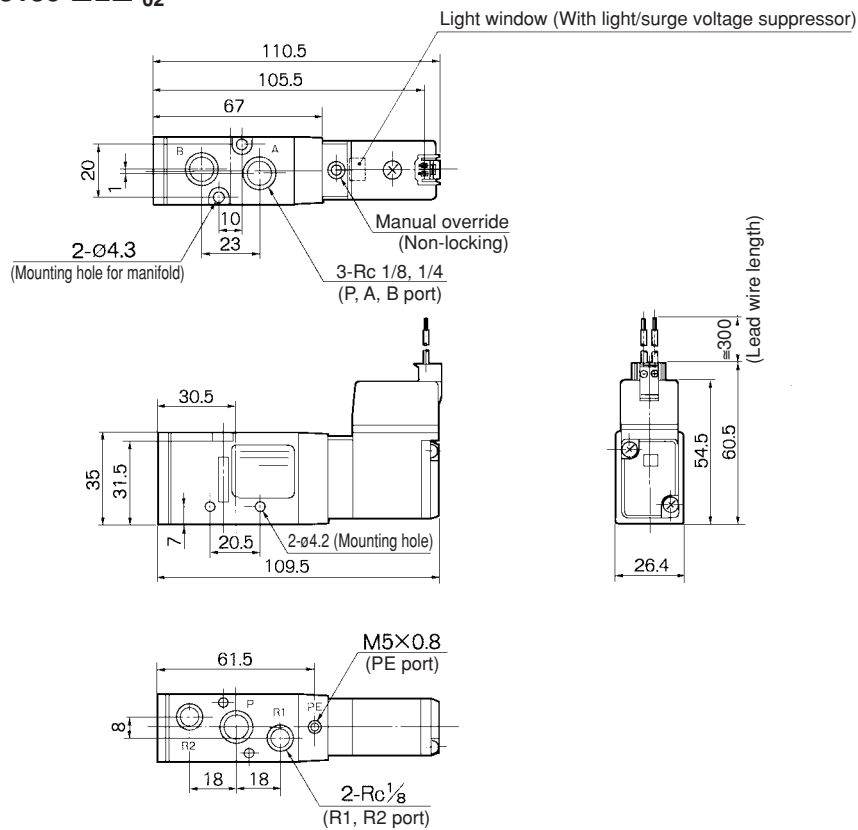


- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

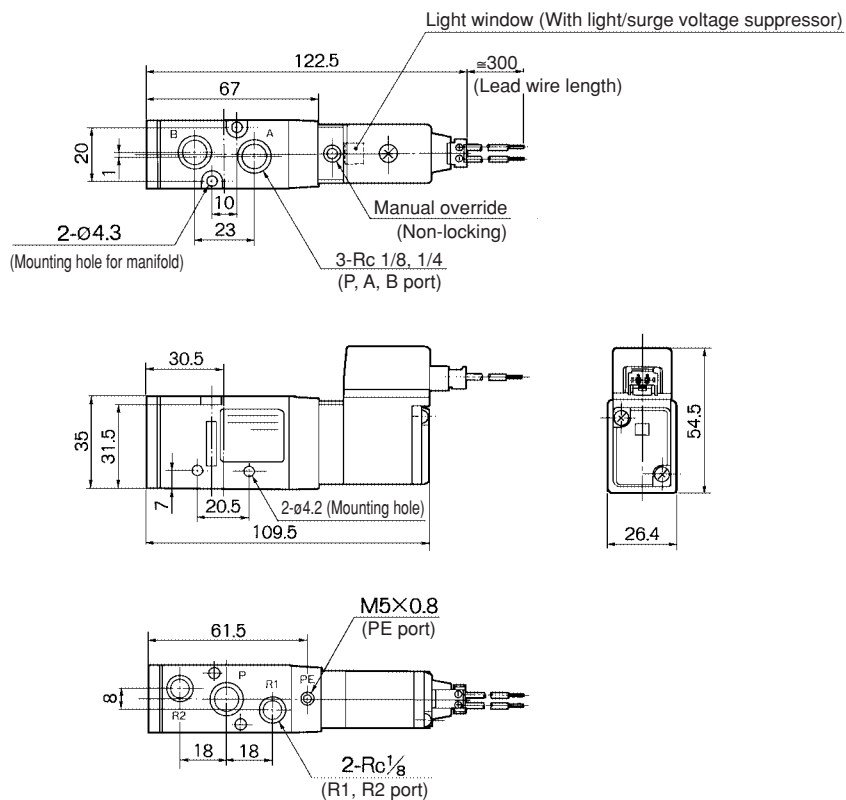
# Series VF3000

## Body Ported: 2 Position Single Solenoid

L plug connector: VF3130-□L□-01/02



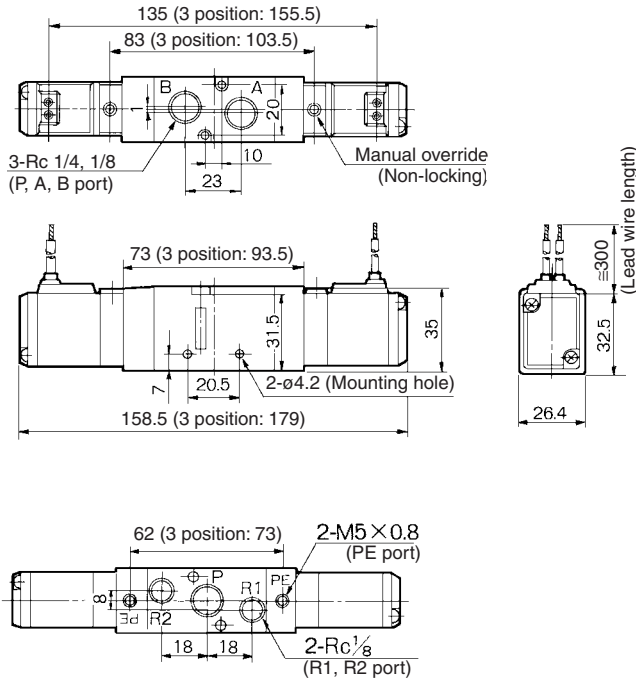
M plug connector: VF3130-□M□-01/02



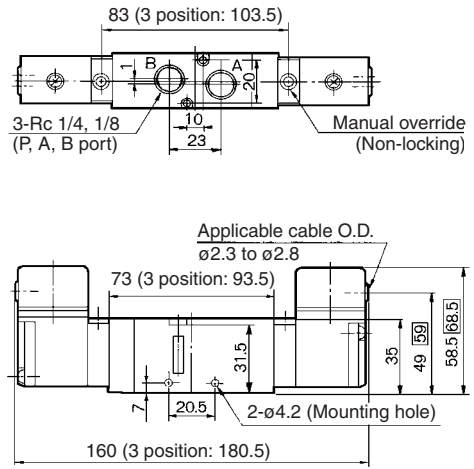
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

**Body Ported: 2 Position Double solenoid, 3 Position Closed Center/Exhaust Center/Pressure Center**

**Grommet: VF3□30-□G-<sup>01</sup>/<sub>02</sub>**

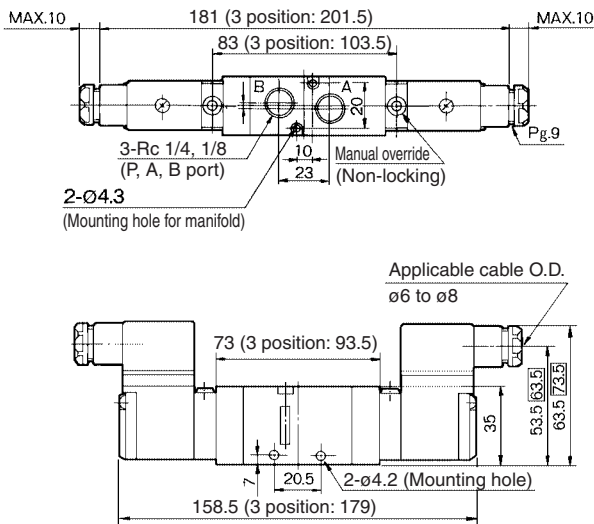


**Grommet terminal: VF3□30-□E-<sup>01</sup>/<sub>02</sub>**



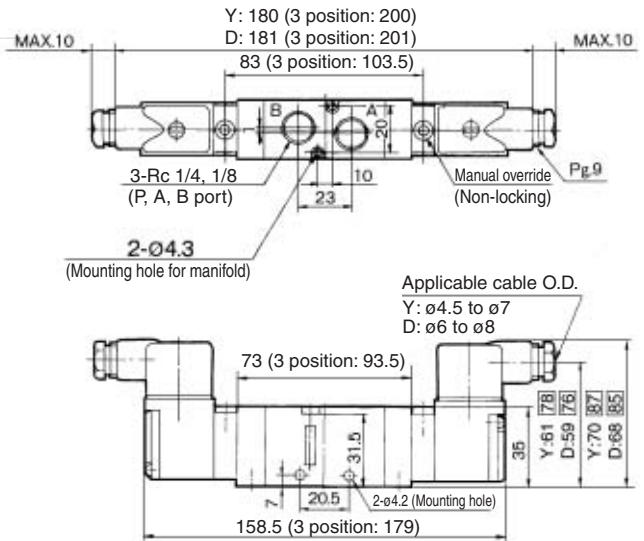
: With light/surge voltage suppressor

**Conduit terminal: VF3□30-□T-<sup>01</sup>/<sub>02</sub>**



: With light/surge voltage suppressor

**DIN terminal: VF3□30-□D-<sup>01</sup>/<sub>02</sub>  
VF3□30-□Y-<sup>01</sup>/<sub>02</sub>**



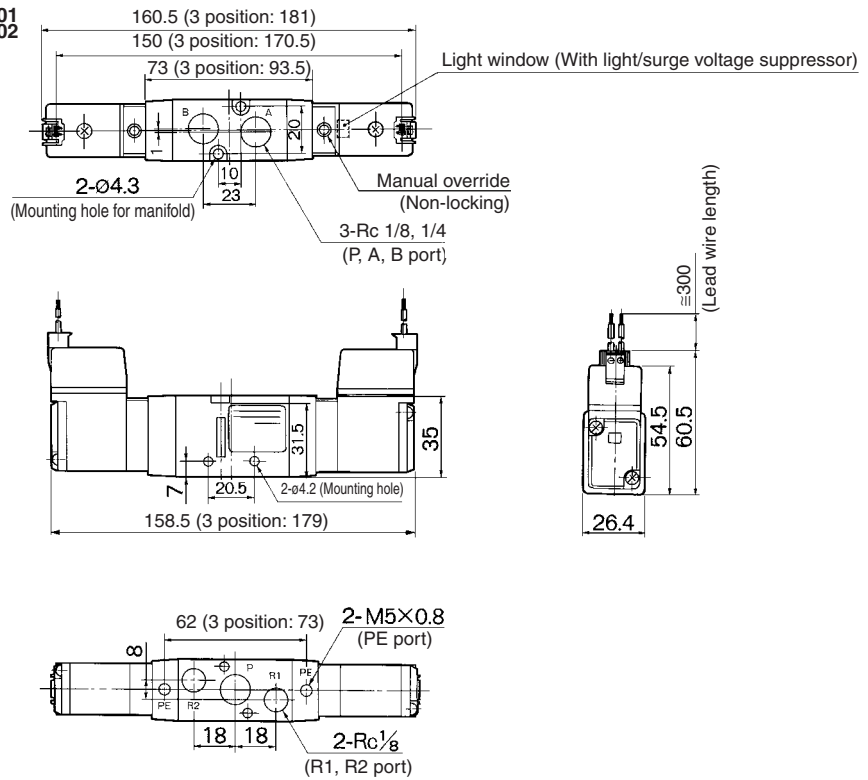
: With light/surge voltage suppressor

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

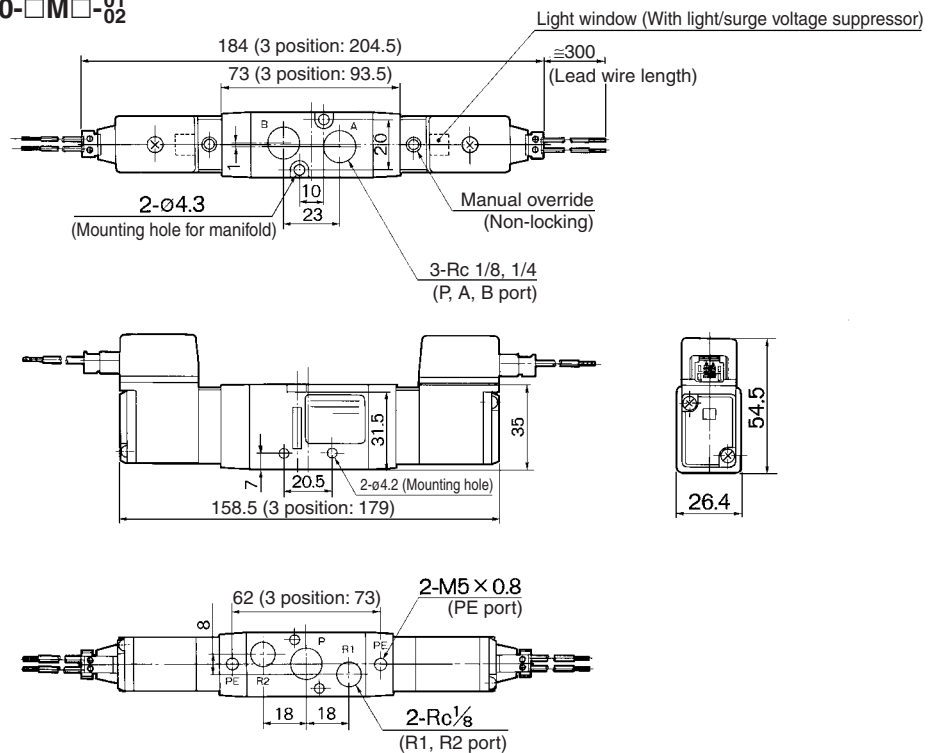
# Series VF3000

## Body Ported: 2 Position Double Solenoid, 3 Position Closed Center/Exhaust Center/Pressure Center

### L plug connector: VF3□30-□L□-01



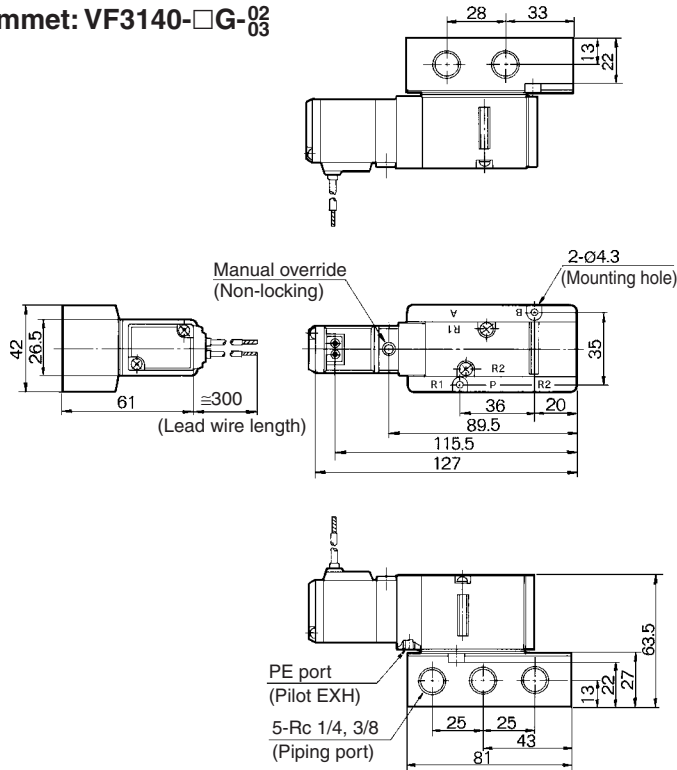
### M plug connector: VF3□30-□M□-01



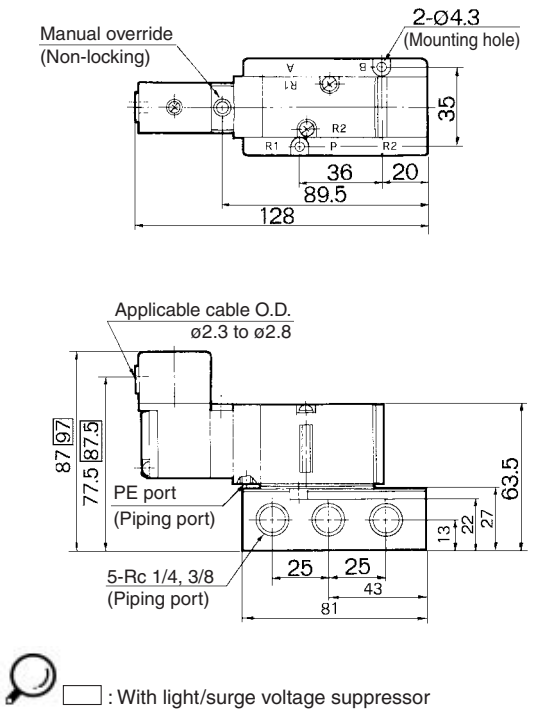
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

## Base Mounted (With sub-plate): 2 Position Single Solenoid

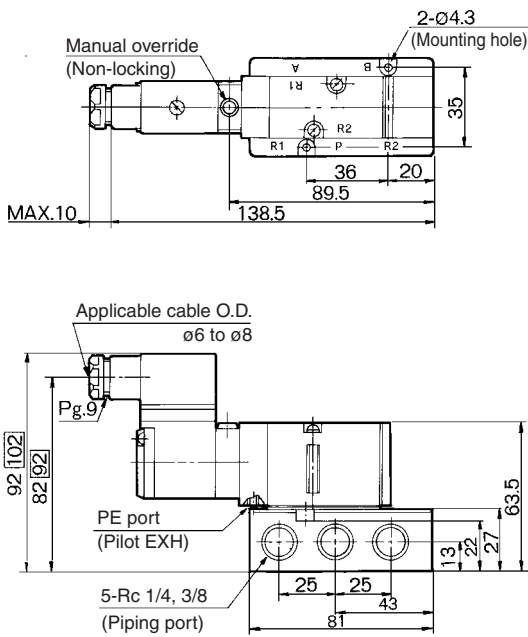
Grommet: VF3140-□G-02/03



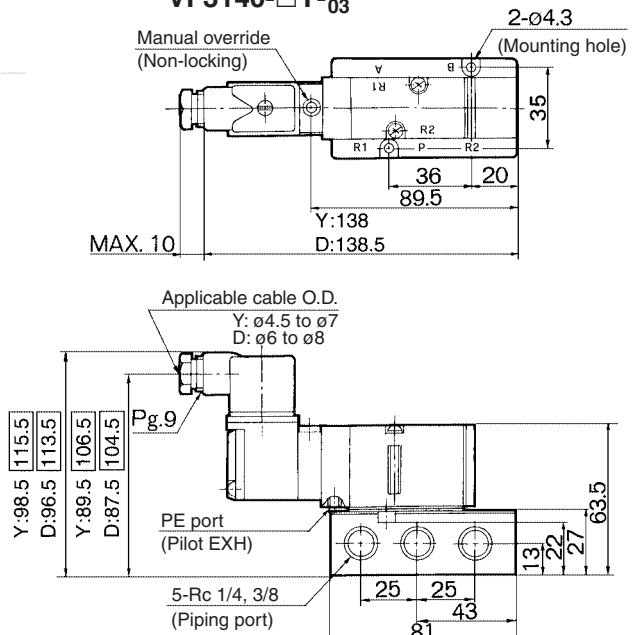
Grommet terminal: VF3140-□E-02/03



Conduit terminal: VF3140-□T-02/03



DIN terminal: VF3140-□D-02/03  
VF3140-□Y-02/03



□ : With light/surge voltage suppressor

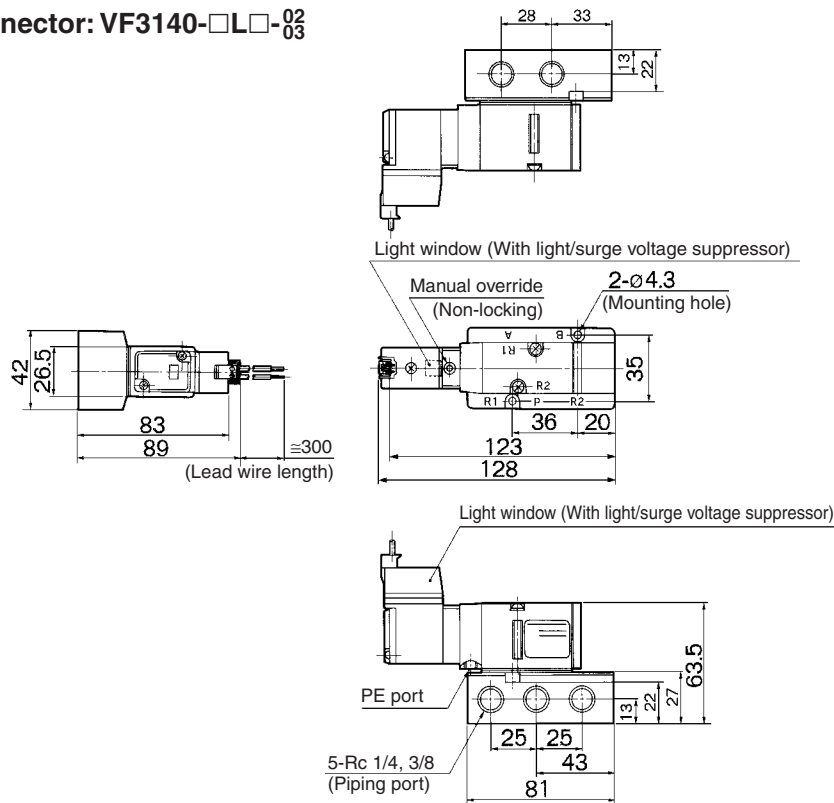
□ : With light/surge voltage suppressor

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

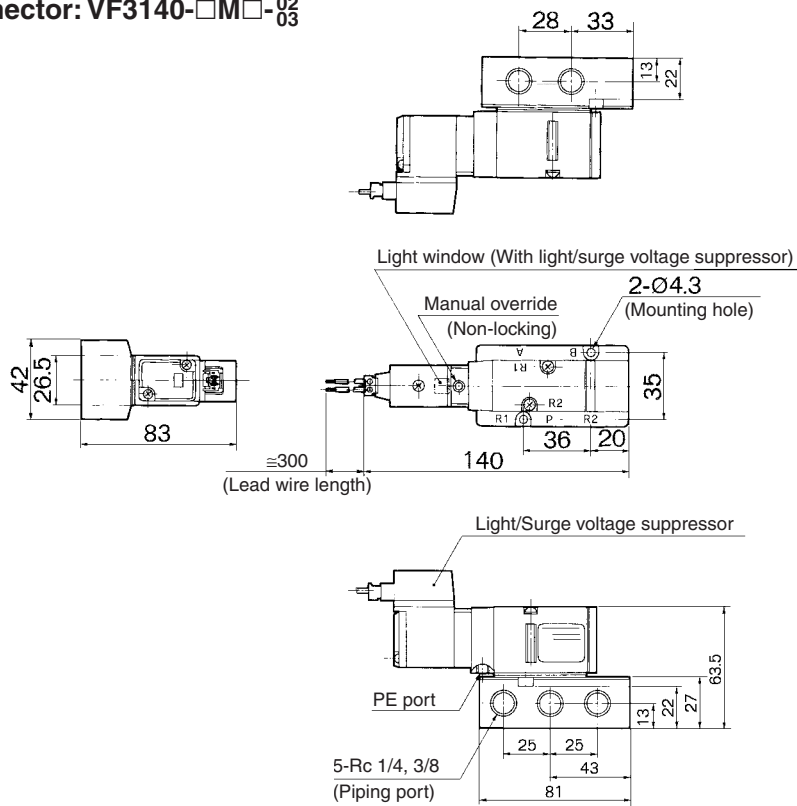
# Series VF3000

## Base Mounted (With sub-plate): 2 Position Single Solenoid

L plug connector: VF3140-□L□- $\frac{02}{03}$



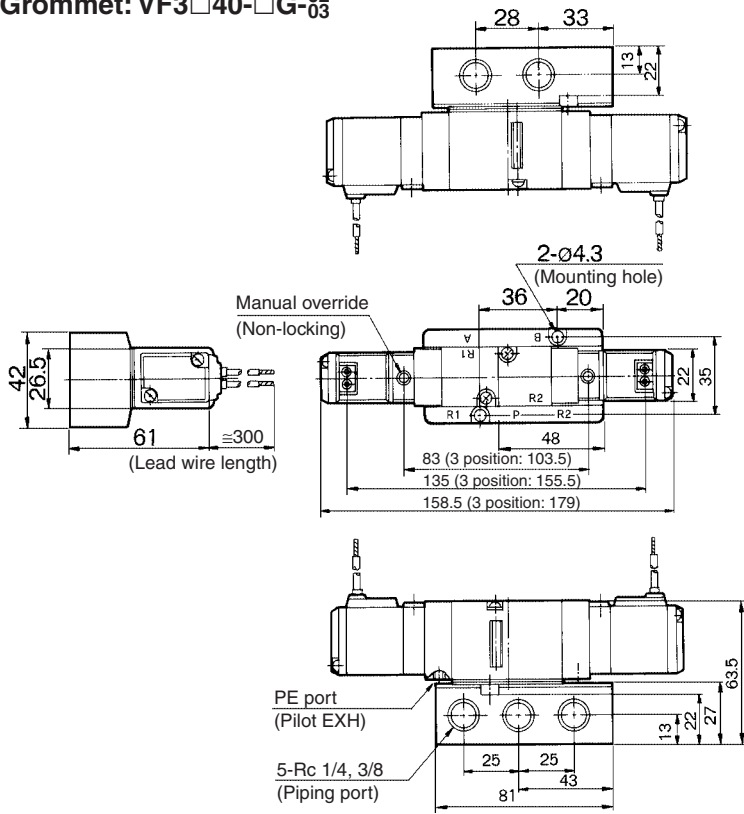
M plug connector: VF3140-□M□- $\frac{02}{03}$



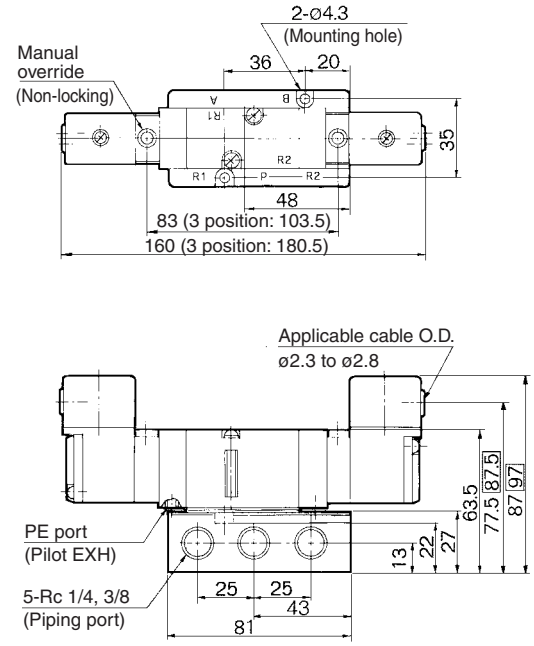
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

Base Mounted (With sub-plate): 2 Position Double Solenoid, 3 Position Closed Center/Exhaust Center/Pressure Center

Grommet: VF3□40-□G-02



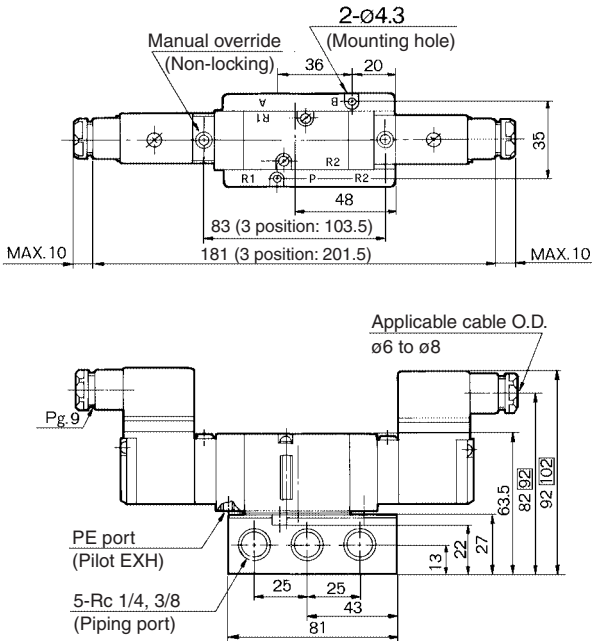
Grommet terminal: VF3□40-□E-02



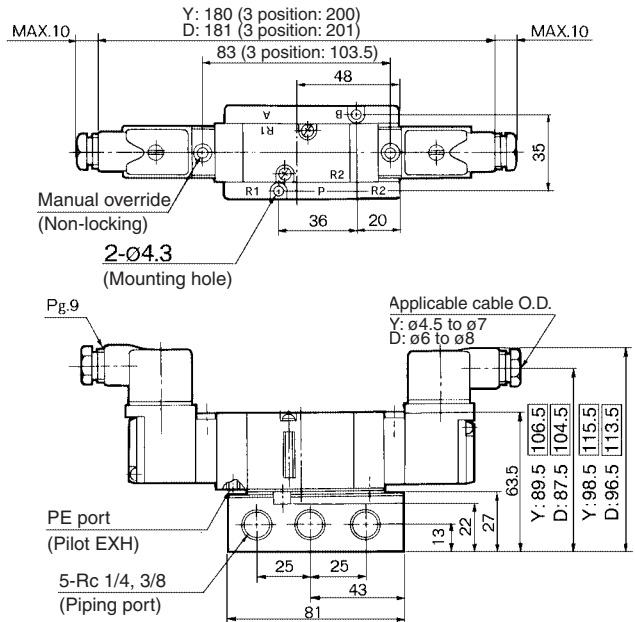
□ : With light/surge voltage suppressor

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

Conduit terminal: VF3□40-□T-02



DIN terminal: VF3□40-□D-02  
VF3□40-□Y-02

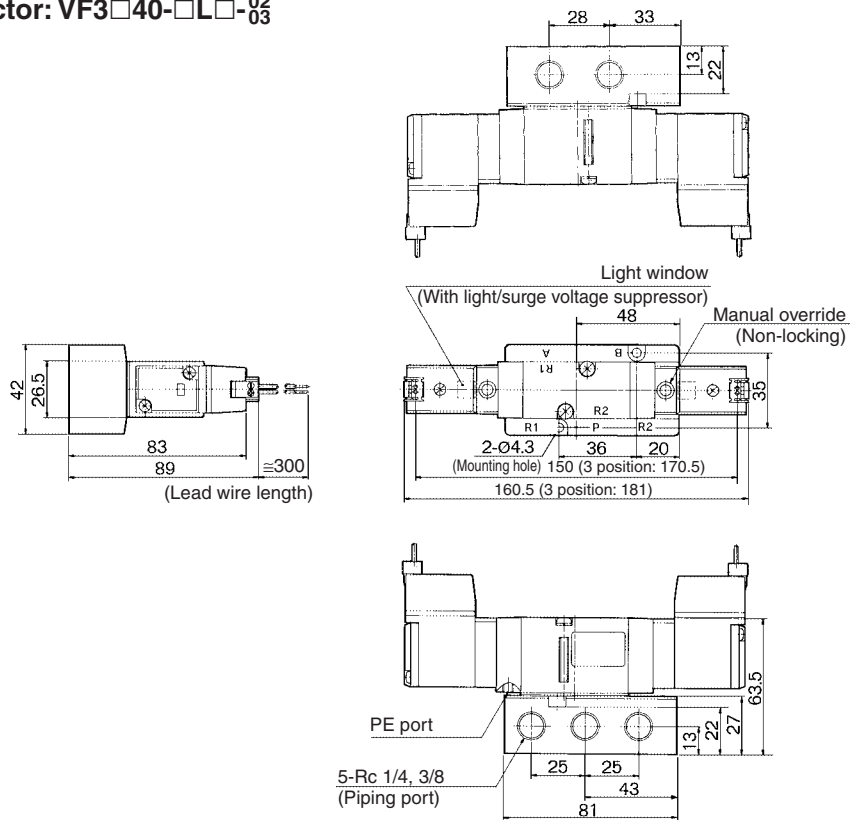


□ : With light/surge voltage suppressor

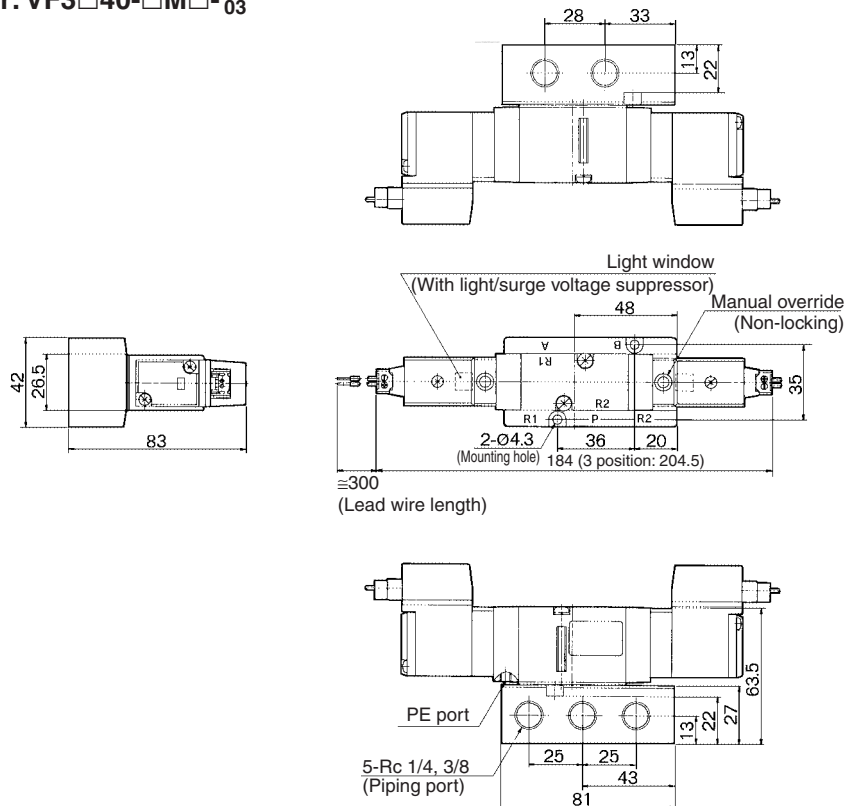
# Series VF3000

Base Mounted (With sub-plate): 2 Position Double Solenoid, 3 Position Closed Center/Exhaust Center/Pressure Center

L plug connector: VF3□40-□L□- $\frac{02}{03}$



M plug connector: VF3□40-□M□- $\frac{02}{03}$



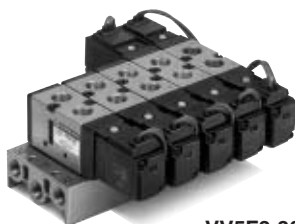


## Series VF3000

## Manifold Specifications



VV5F3-40



VV5F3-30



VV5F3-71



VV5F3-60

## Manifold Specifications

Manifold type	B mount (Single base type)		S mount	
Exhaust port type	Common	Individual	Common	Individual
Max. number of stations <sup>Note)</sup>	20 stations		10 stations	

Note) In the case of more than 8 stations for B mount or more than 4 stations for S mount, supply air from both sides of P (SUP) port and exhaust from both sides of R (EXH) port.

Style	Manifold base model	R (EXH) type <sup>(1)</sup>	Piping/Port location			Port size			Applicable valve model <sup>(2)</sup>
			P (SUP)	R (EXH)	A, B (CYL)	P (SUP)	R (EXH)	A, B (CYL)	
B mount	VV5F3-30	Common	Side Base	Side Base	Top Valve	1/4	1/4	1/8 1/4	VF3□30 VF3□33
	VV5F3-40	Common	Side Base	Side Base	Bottom Base	1/4	1/4	1/4	VF3□40 VF3□43
	VV5F3-50	Individual	Side Base	Top Valve	Bottom Base	1/4	1/4	1/4	VF3□50
S mount	VV5F3-60	Common	Side Side plate	Top Side plate	Top Valve	1/4	1/4	1/8 1/4	VF3□60 VF3□63
	VV5F3-61	Common	Side Side plate	Side Side plate	Side Valve	1/4	1/4	1/8 1/4	VF3160 VF3163 (Single solenoid only)
	VV5F3-70	Individual	Side Side plate	Bottom Valve	Top Valve	1/4	1/4	1/8 1/4	VF3□70
	VV5F3-71	Individual	Side Side plate	Side Valve	Side Valve	1/4	1/4	1/8 1/4	VF3170 (Single solenoid only)

Note 1) Supply (P port) is common.

Note 2) Common exhaust type for main and pilot valve is possible only in the valves of common exhaust.

## Option

Description	Part no.	Applicable manifold model
Individual EXH spacer assembly <sup>Note)</sup>	DXT155-17-1A	VV5F3-30/40
Blanking plate assembly	DXT031-38-1A	VV5F3-30/40/50

Note) Used to exhaust air individually from certain valves mounted on common exhaust manifolds "Type 30" and "Type 40".

## How to Order Manifold

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example) VV5F3-40-052-02...1 pc. (Manifold base)

\*VF3140-1G.....2 pcs. (Valve)

\*VF3240-1G.....2 pcs. (Valve)

\*DXT031-38-1A.....1 pc. (Blanking plate assembly)

\*The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

## B Mount (Integrated type)

## Top ported/Common EXH type

Type 30

Diagram labels: A, B port; R port 1/4; P port 1/4.

Model: VV5F3-30-051

Stations	
02	2 stations
⋮	⋮
20	20 stations

## Applicable solenoid valve

VF3□30-□□□□-01

VF3□30-□□□□-02

VF3□33-□□□□-01

VF3□33-□□□□-02

## Applicable blanking plate assembly

DXT031-38-1A

## Applicable individual EXH spacer assembly

DXT155-17-1A

## Bottom ported/Common EXH type

Type 40

Diagram labels: R port 1/4; P port 1/4; A, B port 1/4.

Model: VV5F3-40-052-02

Stations	
02	2 stations
⋮	⋮
20	20 stations

## Applicable solenoid valve

VF3□40-□□□□

VF3□43-□□□□

## Applicable blanking plate assembly

DXT031-38-1A

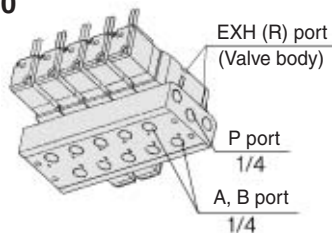
## Applicable individual EXH spacer assembly

DXT155-17-1A

# Series VF3000

## B Mount (Integrated type)

### Bottom ported/Individual EXH type Type 50



VV5F3 - 50 - **05** 4 - 02

Stations	
02	2 stations
⋮	⋮
20	20 stations

#### Applicable solenoid valve

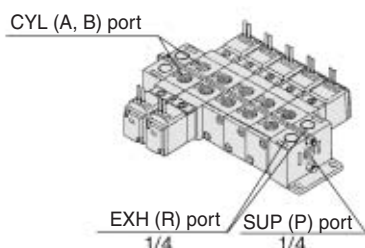
VF3□50-□□□□

#### Applicable blanking plate assembly

DXT031-38-1A

## S Mount (Separated type)

### Top ported/Common EXH type Type 60



VV5F3 - 60 - **05** 1

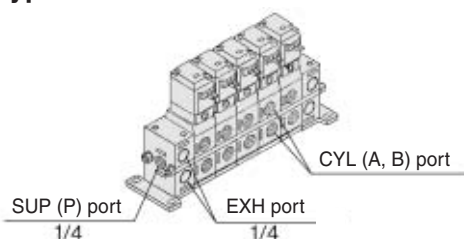
Stations	
02	2 stations
⋮	⋮
10	20 stations

#### Applicable solenoid valve

VF3□60-□□□□-01□

VF3□63-□□□□-01□

### Side ported/Common EXH type Type 61



VV5F3 - 61 - **05** 1

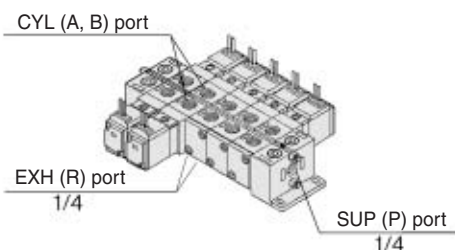
Stations	
02	2 stations
⋮	⋮
10	20 stations

#### Applicable solenoid valve

VF3160-□□□□-01□

VF3163-□□□□-01□

### Top ported/Individual EXH type Type 70



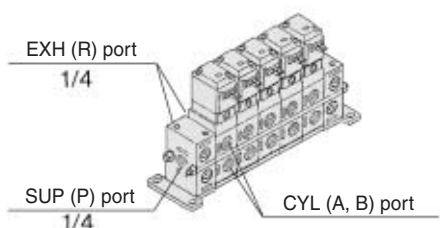
VV5F3 - 70 - **05** 3

Stations	
02	2 stations
⋮	⋮
10	20 stations

#### Applicable solenoid valve

VF3□70-□□□□-01□

### Side ported/Individual EXH type Type 71



VV5F3 - 71 - **05** 3

Stations	
02	2 stations
⋮	⋮
10	20 stations

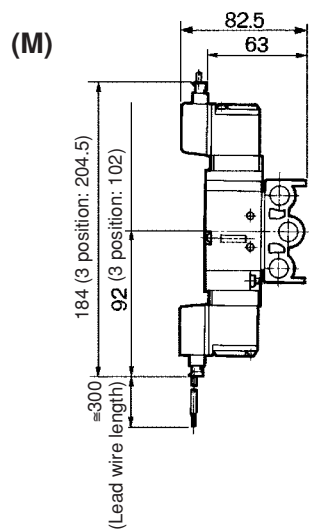
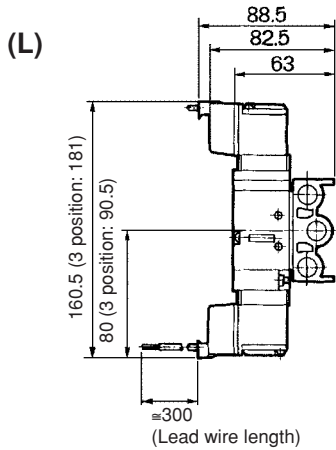
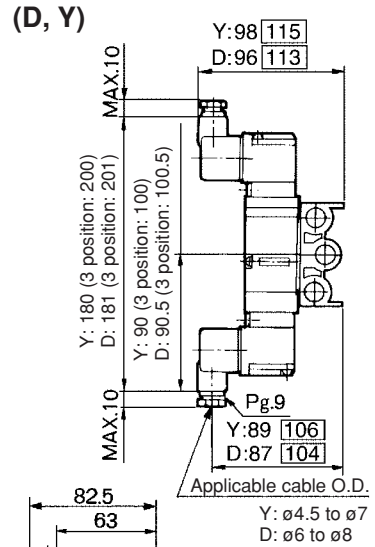
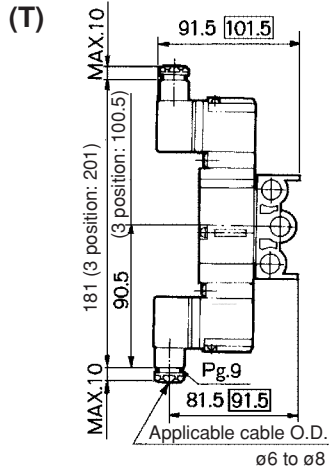
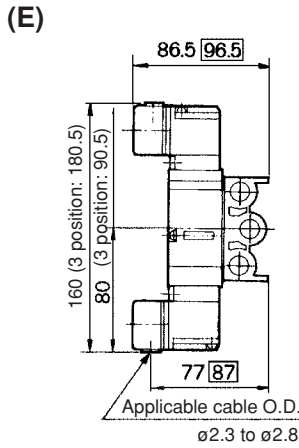
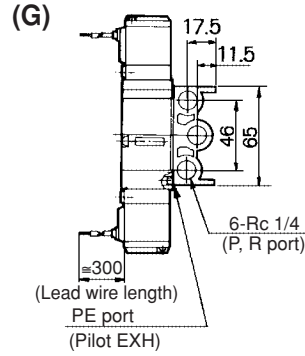
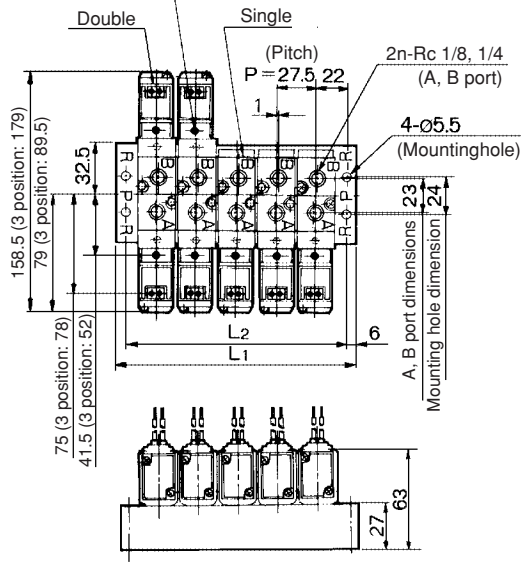
#### Applicable solenoid valve

VF3170-□□□□-01□

# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

**B Mount: VV5F3-30**

**Common EXH: VV5F3-30□□1** Manual override (Non-locking)



**L Dimension**

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L <sub>2</sub>	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5	429	456.5	484	511.5	539	566.5



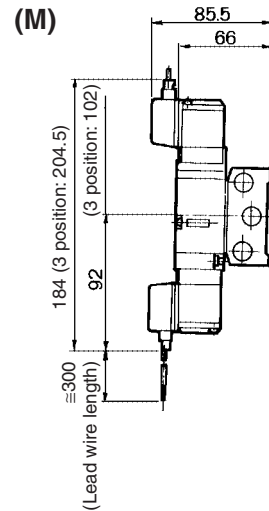
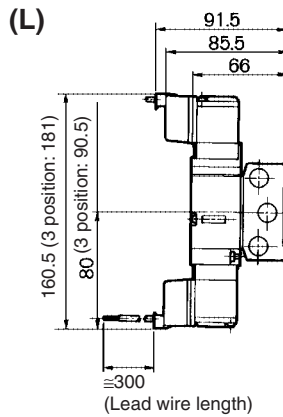
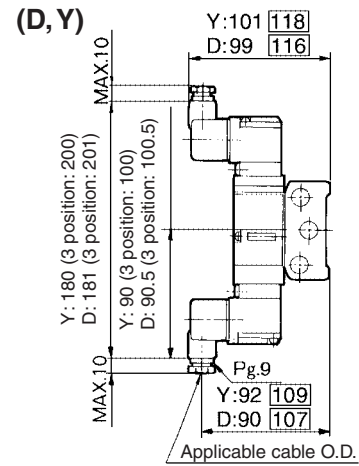
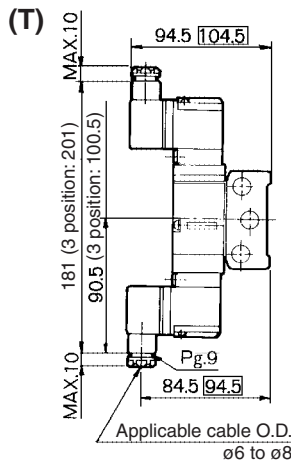
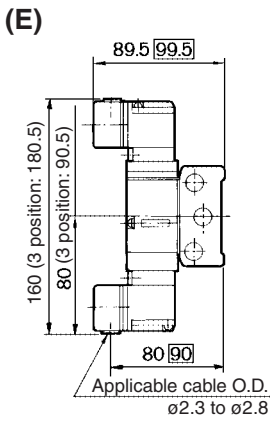
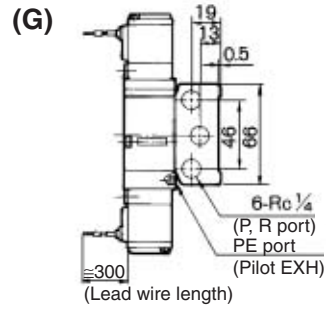
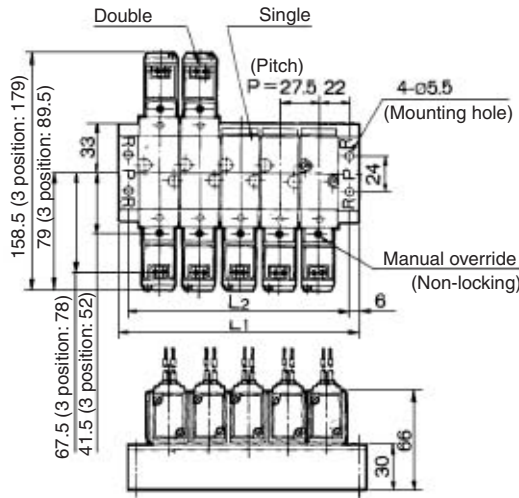
□ : With light/surge voltage suppressor

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

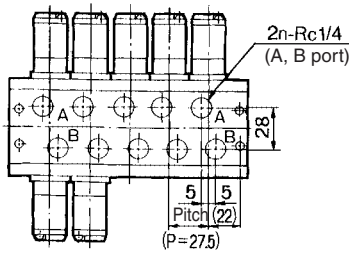
# Series VF3000

B Mount: VV5F3-30, VV5F3-40

Common EXH: VV5F3-40□□2-02



Bottom ported



### L Dimension

n: Stations

n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L <sub>2</sub>	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5	429	456.5	484	511.5	539	566.5

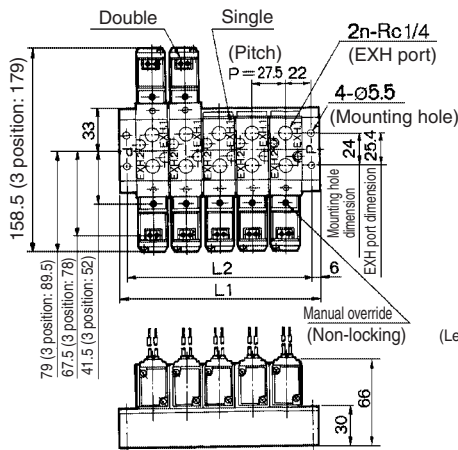


□ : With light/surge voltage suppressor

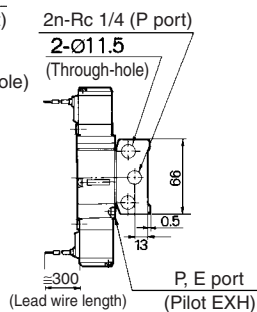
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

## B Mount: VV5F3-50, Spacer for Individual Exhaust

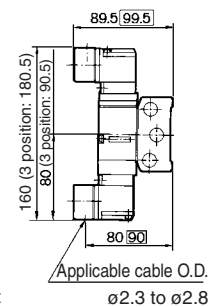
### Individual EXH: VV5F3-50-□□4-02



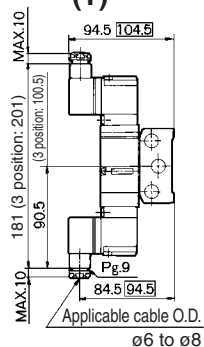
### (G)



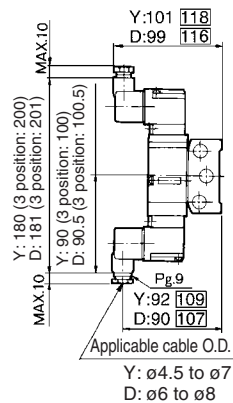
### (E)



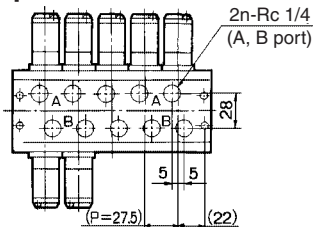
### (T)



### (D, Y)



### Bottom ported



### L Dimension

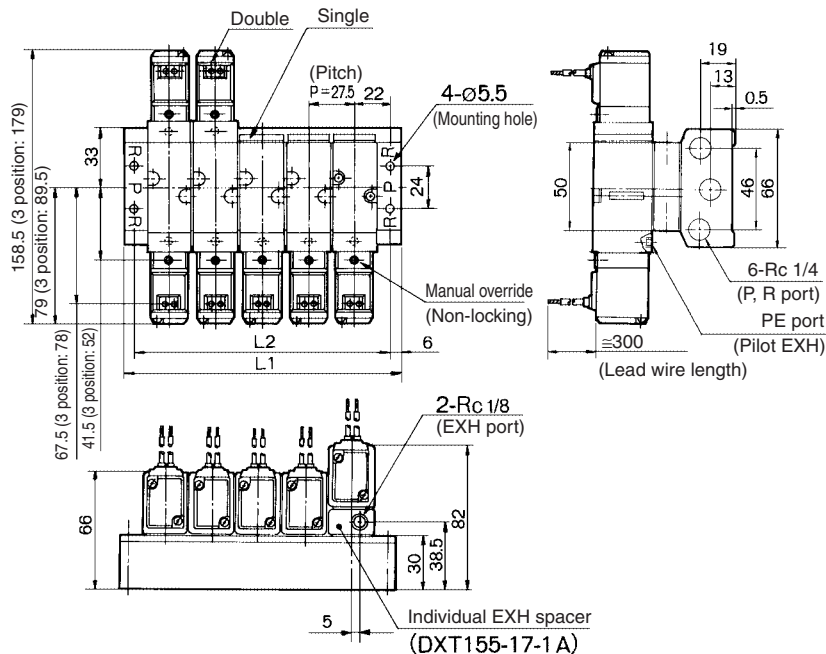
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L <sub>2</sub>	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5	429	456.5	484	511.5	539	566.5

n: Stations



□ : With light/surge voltage suppressor

## Spacer for individual EXH/Applicable model: VV5F3-30, VV5F3-40



### L Dimension

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L <sub>1</sub>	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5	441	468.5	496	523.5	551	578.5
L <sub>2</sub>	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5	429	456.5	484	511.5	539	566.5

n: Stations

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

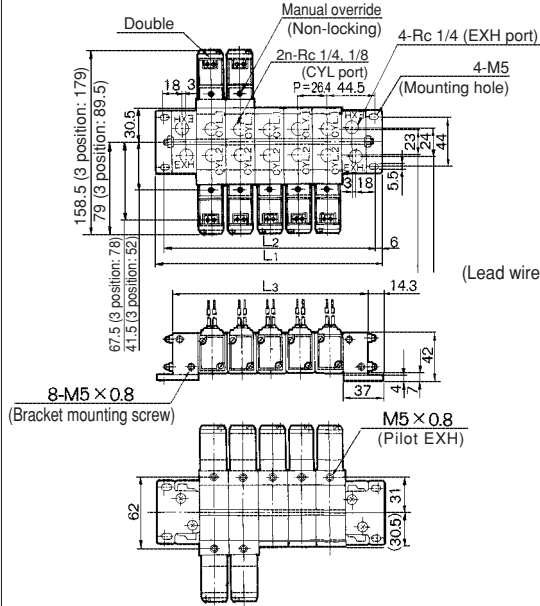
EVS

VFN

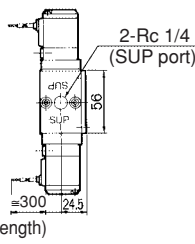
# Series VF3000

## S Mount: VV5F3-60, VV5F3-61

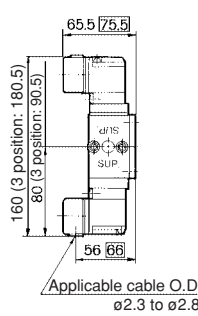
### Common EXH: VV5F3-60-□□1



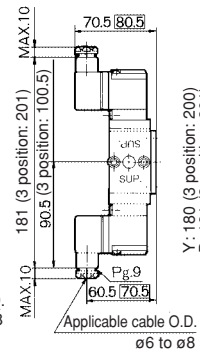
### (G)



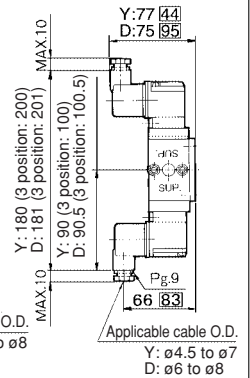
### (E)



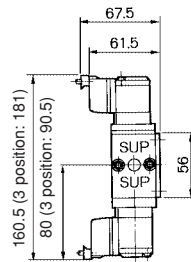
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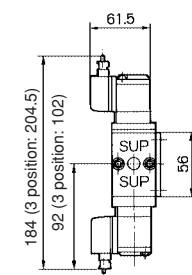
### (D, Y)



### (L)



### (M)



### L Dimension

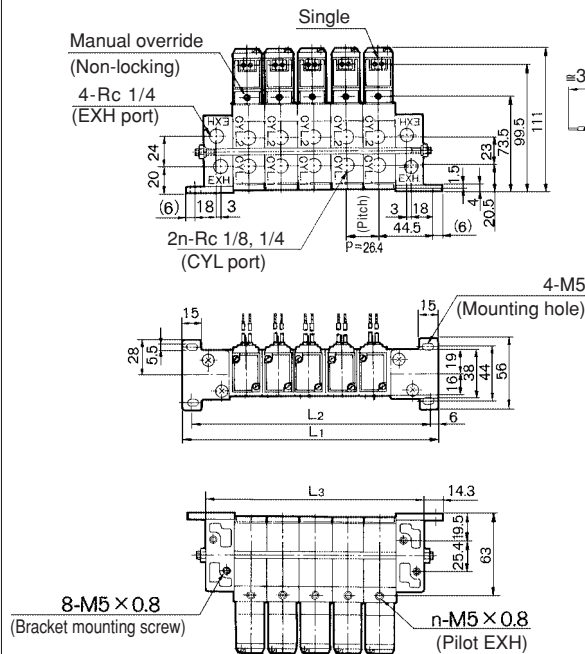
n: Stations

L	n	2	3	4	5	6	7	8	9	10
L <sub>1</sub>		127.5	154	180	206.5	233	259.5	286	312	338.5
L <sub>2</sub>		115.5	142	168	194.5	221	247.5	274	300	326.5
L <sub>3</sub>		99	125	151.5	178	204.5	231	257	283.5	310

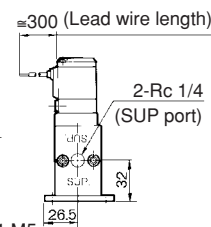


□ : With light/surge voltage suppressor

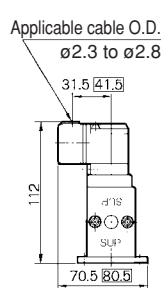
### Common EXH: VV5F3-61-□□1



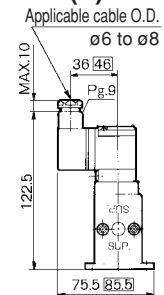
### (G)



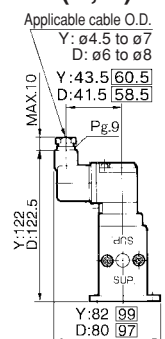
### (E)



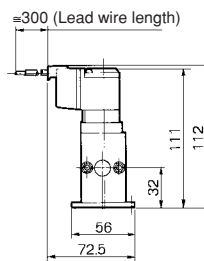
### (T)



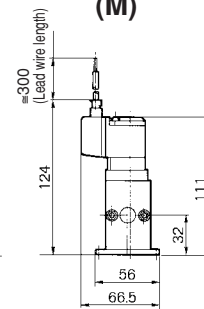
### (D, Y)



### (L)



### (M)



### L Dimension

n: Stations

L	n	2	3	4	5	6	7	8	9	10
L <sub>1</sub>		127.5	154	180	206.5	233	259.5	286	312	338.5
L <sub>2</sub>		115.5	142	168	194.5	221	247.5	274	300	326.5
L <sub>3</sub>		99	125	151.5	178	204.5	231	257	283.5	310

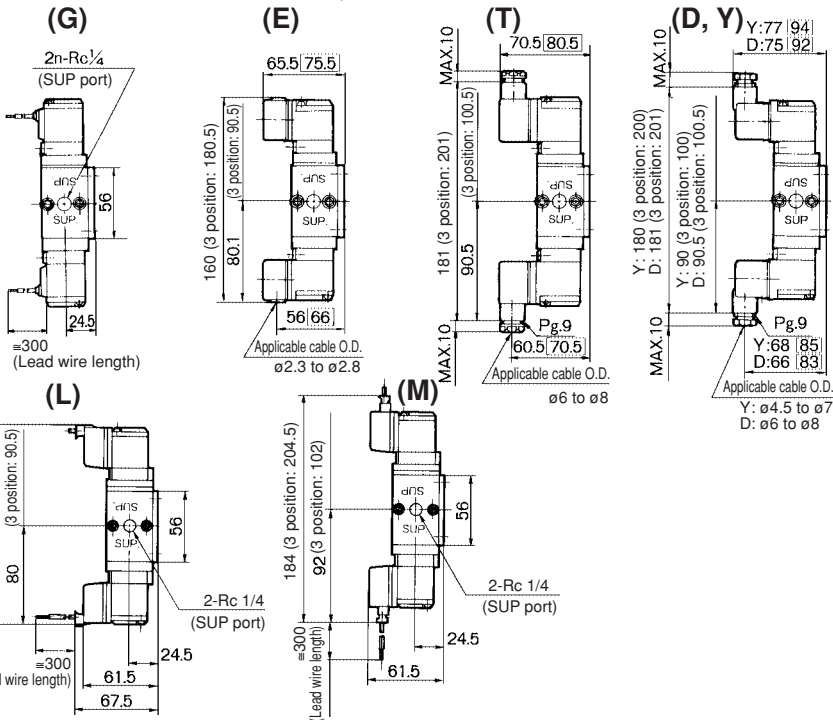
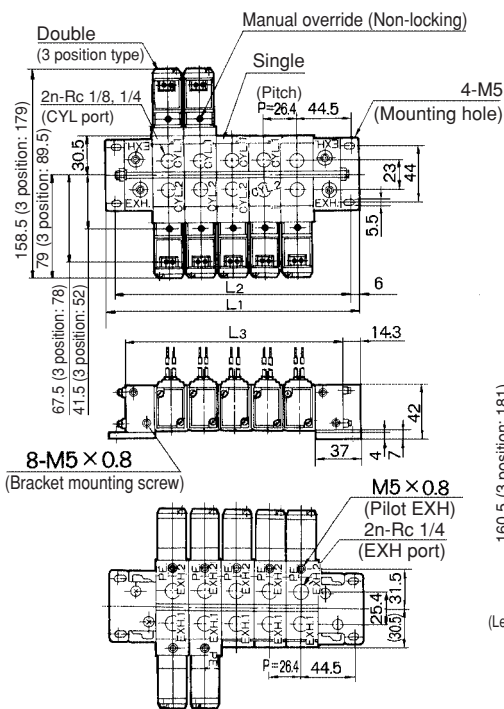


□ : With light/surge voltage suppressor

# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF3000

## S Mount: VV5F3-70, VV5F3-71

### Individual EXH: VV5F3-70-□□3



### L Dimension

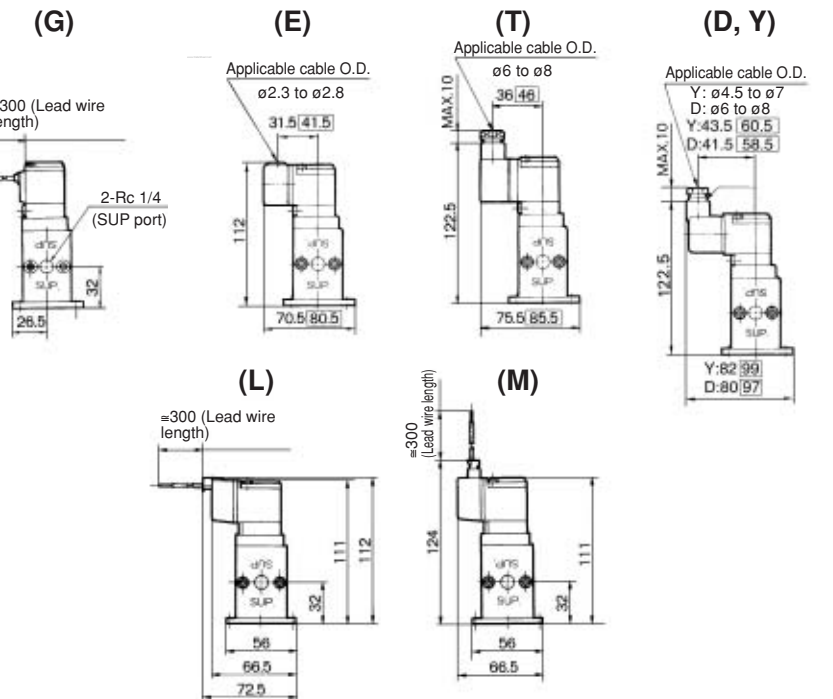
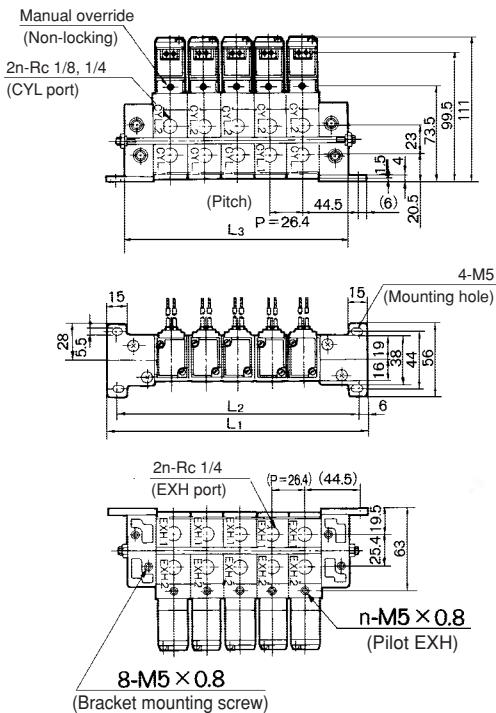
n: Stations

L	n	2	3	4	5	6	7	8	9	10
L <sub>1</sub>		127.5	154	180	206.5	233	259.5	286	312	338.5
L <sub>2</sub>		115.5	142	168	194.5	221	247.5	274	300	326.5
L <sub>3</sub>		99	125	151.5	178	204.5	231	257	283.5	310



□: With light/surge voltage suppressor

### Individual EXH: VV5F3-71-□□3



### L Dimension

n: Stations

L	n	2	3	4	5	6	7	8	9	10
L <sub>1</sub>		127.5	154	180	206.5	233	259.5	286	312	338.5
L <sub>2</sub>		115.5	142	168	194.5	221	247.5	274	300	326.5
L <sub>3</sub>		99	125	151.5	178	204.5	231	257	283.5	310



□: With light/surge voltage suppressor

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



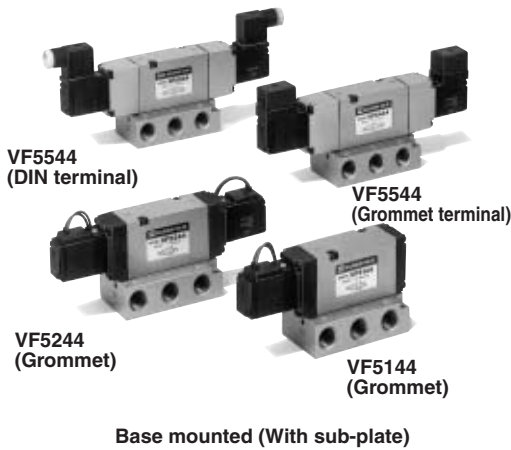




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# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF5000

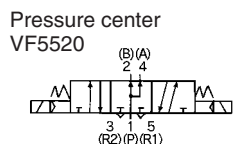
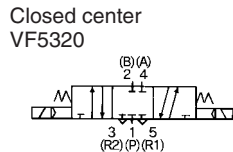
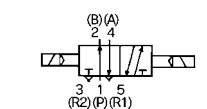
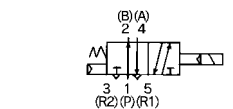
**Compact and lightweight:  
32 mm width**  
**Compact yet provides a large flow capacity:  
Sonic conductance  
C: 12 dm<sup>3</sup>/(s·bar)  
{4/2 → 5/3(A/B → EA/EB)}**  
**Low power consumption: 1.8 W (DC)**



**JIS Symbol**

Single  
VF5120

Double  
VF5220



**Specifications**

Fluid		Air
Operating pressure range	2 position single/3 position	0.15 to 0.9 MPa
	2 position double	0.1 to 0.9 MPa
Ambient and fluid temperature		-10 to 50°C (No freezing. Refer to page 3-13-4.)
Response time <sup>(1)</sup>	2 position single/double	30 ms or less (at the pressure of 0.5 MPa)
	3 position	50 ms or less (at the pressure of 0.5 MPa)
Max. operating frequency	2 position single/double	5 Hz
	3 position	3 Hz
Lubrication		Not required
Manual override	Non-locking push type, Locking type B*, Locking type C*	
Mounting orientation	Unrestricted	
Shock/Vibration resistance <sup>(2)</sup>	300/50 m/s <sup>2</sup>	
Enclosure	Dustproof	

Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)  
Note 2) 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)

Electrical entry	Grommet, Grommet terminal Conduit terminal, DIN terminal		
Coil rated voltage (V)	AC50/60 Hz	100, 200, 12*, 24*, 48*, 110*, 220*, 240*	
	DC	24, 6*, 12*, 48*, 100*, 110*	
Allowable voltage fluctuation	-15 to +10% of rated voltage		
Apparent power <sup>Note)</sup>	AC	Inrush	5.6 VA (50 Hz), 5.0 VA (60 Hz)
		Holding	3.4 VA (50 Hz), 2.3 VA (60 Hz)
Power consumption <sup>Note)</sup>	DC	1.8 W, 2 W (With indicator light)	
Light/Surge voltage suppressor	AC	ZNR (Varistor), Neon bulb (LED100 V or less)	
	DC	ZNR (Varistor), LED (Neon bulb100 V or more)	

\* Option Note) At rated voltage

**Flow Characteristics/Weight**

Valve model	Type of actuation	Port size	Flow characteristics						Weight <sup>(2)</sup> (kg)				
			1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)							
			C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv					
Body ported	VF5□20-□□-02	1/4	2 position single	7.1	0.46	1.9	7.7	0.51	2.2	0.38			
			2 position double	7.1	0.46	1.9	7.7	0.51	2.2	0.45			
			3 position closed center	6.7	0.46	1.8	6.6	10.41	1.8	0.56			
			3 position exhaust center	7.1	0.42	1.9	8.0 [7.4]	0.45 [0.47]	2.2 [2.1]	0.56			
			3 position pressure center	6.8 [2.7]	0.51 [0.50]	2.0 [0.78]	5.7	0.37	1.4	0.56			
			2 position single	8.8	0.44	2.4	10	0.49	2.9	0.38			
	VF5□20-□□-03	3/8	2 position double	8.8	0.44	2.4	10	0.49	2.9	0.45			
			3 position closed center	7.5	0.43	2.0	7.5	0.38	1.9	0.56			
			3 position exhaust center	8.3	0.40	2.2	10 [8.7]	0.48 [0.46]	3.0 [2.4]	0.56			
			3 position pressure center	9.2 [3.0]	0.50 [0.49]	2.6 [0.85]	6.1	0.35	1.6	0.56			
			Base mounted <sup>(1)</sup>	VF5□44-□□-02	1/4	2 position single	7.3	0.49	2.1	7.3	0.50	2.0	0.57
						2 position double	7.3	0.49	2.1	7.3	0.50	2.0	0.65
3 position closed center	6.6	0.35				1.7	6.3	0.31	1.6	0.74			
3 position exhaust center	7.4	0.33				1.9	8.1 [7.4]	0.35 [0.34]	2.1 [1.9]	0.74			
3 position pressure center	8.0 [2.9]	0.35 [0.48]				2.1 [0.85]	5.6	0.31	1.5	0.74			
VF5□44-□□-03	3/8	2 position single				8.4	0.34	2.2	8.9	0.29	2.3	0.57	
		2 position double	8.4	0.34	2.2	8.9	0.29	2.3	0.65				
		3 position closed center	7.3	0.34	2.0	7.1	0.28	1.8	0.74				
		3 position exhaust center	8.1	0.27	2.0	14 [8.3]	0.26 [0.31]	3.4 [2.2]	0.74				
		3 position pressure center	8.1 [2.5]	0.33 [0.48]	2.0 [0.74]	5.7	0.31	1.4	0.74				
		VF5□44-□□-04	1/2	2 position single	9.4	0.43	2.7	12	0.32	3.0	0.62		
2 position double	9.4			0.43	2.7	12	0.32	3.0	0.69				
3 position closed center	7.1			0.41	2.1	7.4	0.32	2.0	0.79				
3 position exhaust center	8.6			0.39	2.4	13 [8.9]	0.21 [0.40]	3.1 [2.5]	0.79				
3 position pressure center	11 [2.6]			0.18 [0.47]	2.6 [0.78]	6.1	0.35	1.6	0.79				

Note 1) With sub-plate  
Note 2) Weight stands for grommet type.

Note 3) [ ]: Normal position



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

# Series VF5000

## How to Order

**Body ported** VF5 **1** 20 — **1** **G** **03**

**Base mounted** VF5 **1** 44 — **1** **G** **03**

**Port size**

02	1/4
03	3/8

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Type of actuation**

1	Single solenoid
2	Double solenoid
3	Closed center
4	Exhaust center
5	Pressure center

**Manual override**

Nil	Non-locking push type
B	Locking type B
C	Locking type C

**Port size**

Nil	Without sub-plate
02	1/4
03	3/8
04	1/2


**Coil rated voltage**

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option

**Light/Surge voltage suppressor**

Nil	None
Z*	With light/surge voltage suppressor
S*	With surge voltage suppressor

 \* Indicator light is not available for grommet type. W/surge voltage suppressor is available for grommet type only.

**Electrical entry**

G	Grommet (Lead wire length: 300 mm)	
H	Grommet (Lead wire length: 600 mm)	
E	Grommet terminal	
T	Conduit terminal	
D	DIN terminal	With connector
DO		Without connector

## How to Order Pilot Valve Assembly

SF4 — **1** **DZ** — 50

(A) (B) (C)

### (A) Coil rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 to 120 VAC, 50/60 Hz
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz
9*	Other

\* Option

### (B) Electrical entry, Light/Surge voltage suppressor

Symbol	Electrical entry	Light/Surge voltage suppressor
G	Grommet	None
GS		With surge voltage suppressor
H	Grommet	None
HS		With surge voltage suppressor
E	Grommet terminal	None
EZ		With light/surge voltage suppressor
T	Conduit terminal	None
TZ		With light/surge voltage suppressor
D	DIN terminal	None
DZ		With light/surge voltage suppressor
DO		None
DOZ		With light/surge voltage suppressor

### (C) Manual override

Nil	Non-locking push type
B	Locking type B
C	Locking type C

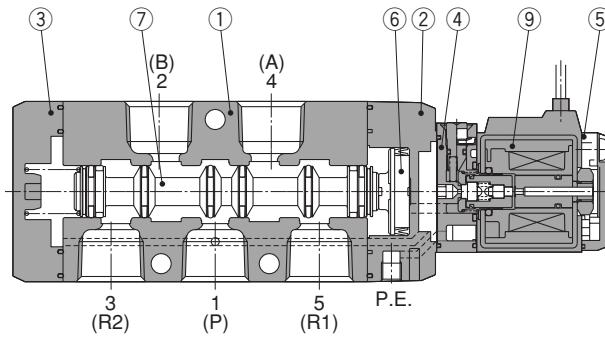
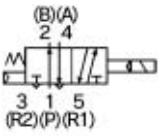


\* Interchangeable with the previous model, "DXT154-A-□□□□".

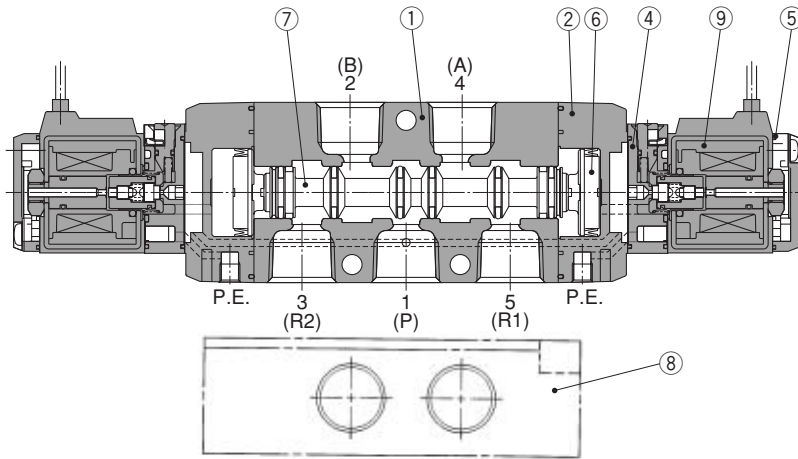
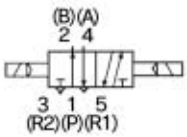
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF5000

## Construction

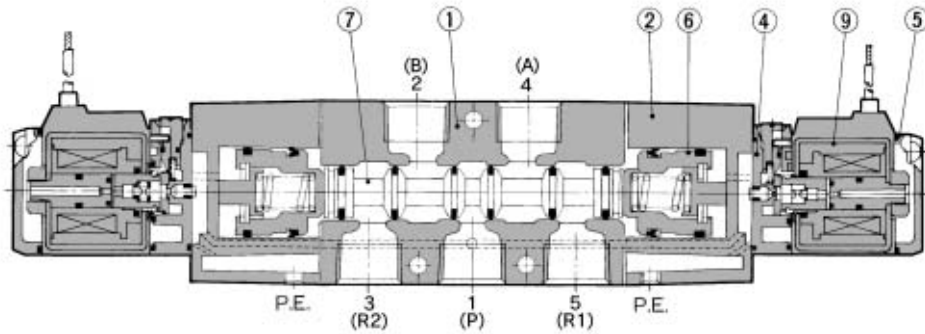
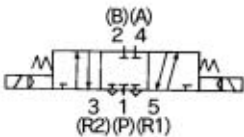
### Single solenoid



### Double solenoid



### 3 position closed center



### Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Adapter plate	Resin <sup>(1)</sup>	Black <sup>(3)</sup>
③	End cover	Resin <sup>(1)</sup>	Black
④	Pilot body	Resin	
⑤	Pilot cover	Resin	
⑥	Piston	Resin <sup>(2)</sup>	
⑦	Spool valve	Aluminum, HNBR	

- Note 1) 3 position: Aluminum die-casted
- Note 2) 3 position: Aluminum
- Note 3) 3 position: Metallic paint

### Replacement Parts

No.	Description	Part no.	Note
⑧	Sub-plate	DXT156-24-1□P	1/4
		DXT156-24-2□P	3/8
		DXT156-24-3□P	1/2
⑨	Pilot valve assembly	SF4-□□□-50	Refer to "How to Order" on page 3-4-34.

### Sub-plate Part No.

**DXT156-24- $\frac{1}{3}$ □P**

### Thread type

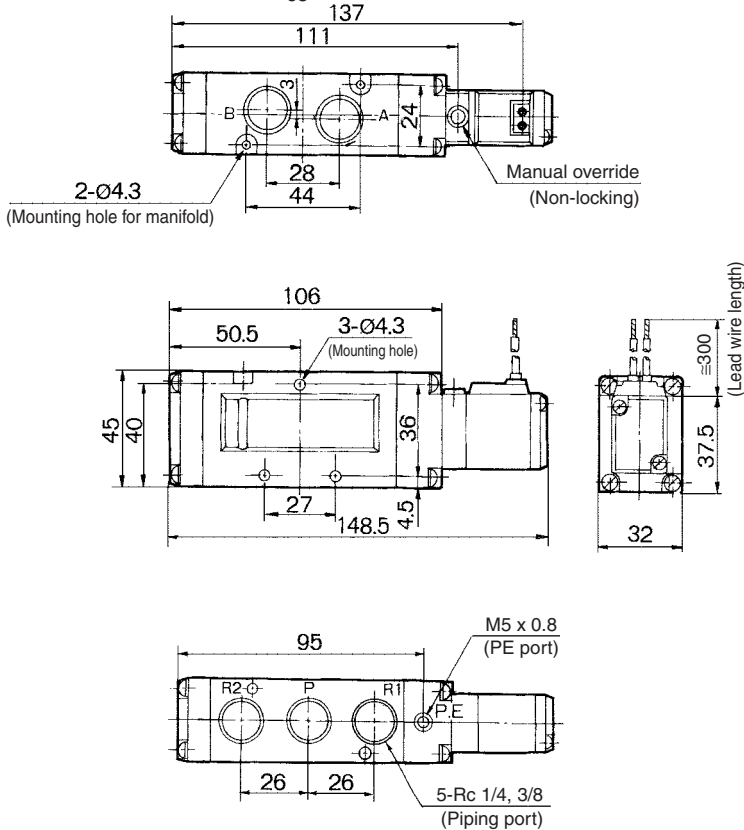
Nil	Rc
F	G
N	NPT
T	NPTF

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

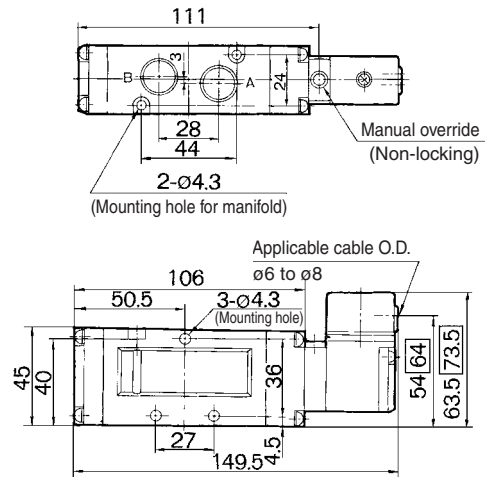
# Series VF5000

## Body Ported: 2 Position Single Solenoid

Grommet: VF5120-□G-<sup>02</sup>/<sub>03</sub>

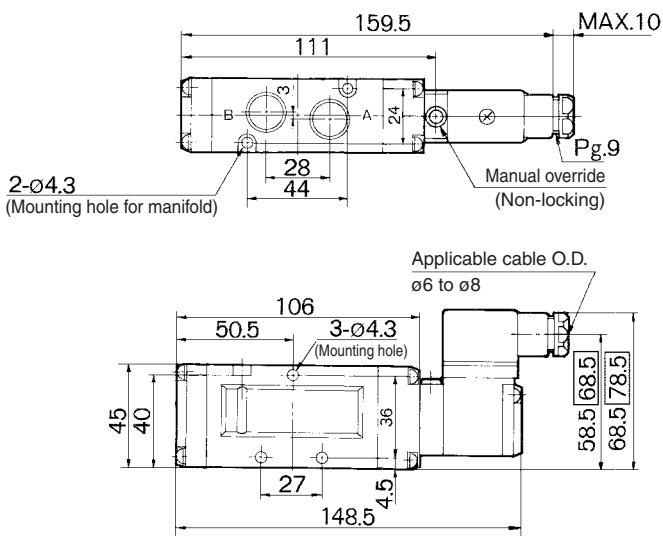


Grommet terminal: VF5120-□E-<sup>02</sup>/<sub>03</sub>



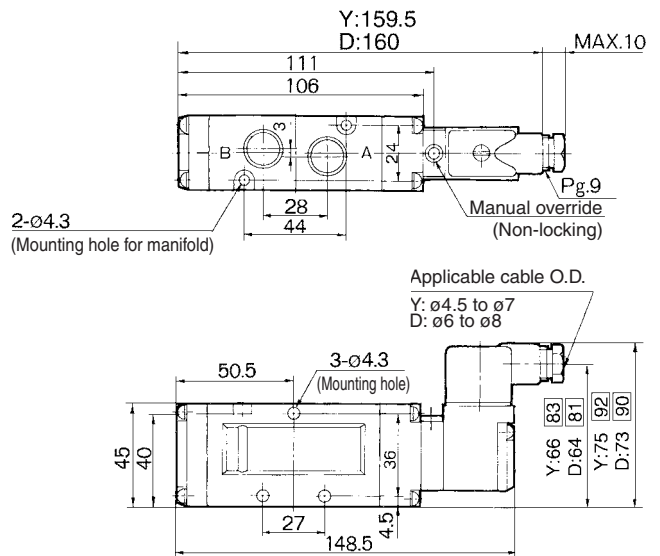
□ : With light/surge voltage suppressor

Conduit terminal: VF5120-□T-<sup>02</sup>/<sub>03</sub>



□ : With light/surge voltage suppressor

DIN terminal: VF5120-□D-<sup>02</sup>/<sub>03</sub>  
VF5120-□Y-<sup>02</sup>/<sub>03</sub>

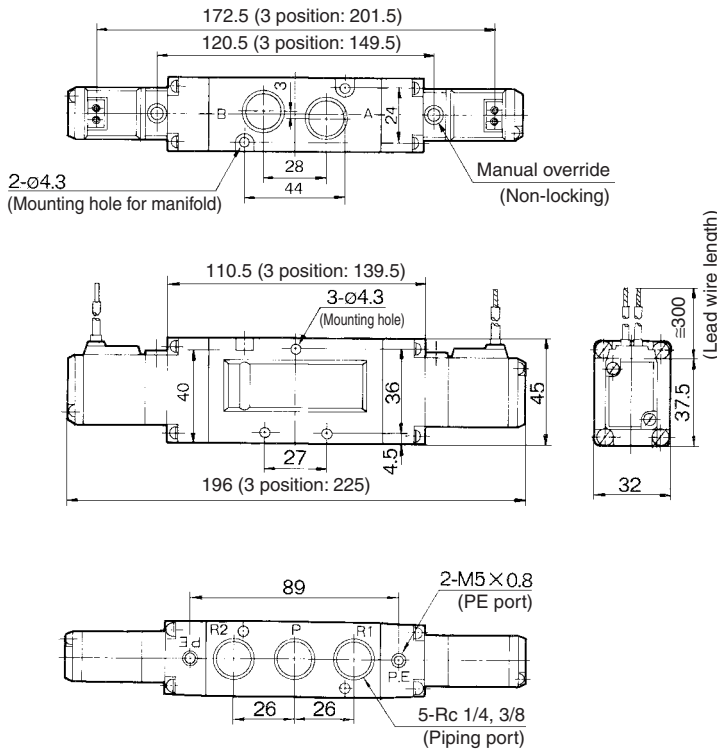


□ : With light/surge voltage suppressor

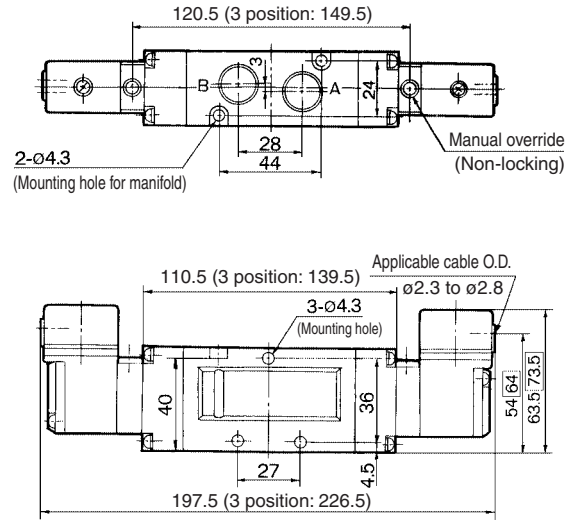
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF5000

## Body Ported: 2 Position Double Solenoid, 3 Position Closed Center/Exhaust Center/Pressure Center

Grommet: VF5□20-□G-<sup>02</sup>/<sub>03</sub>



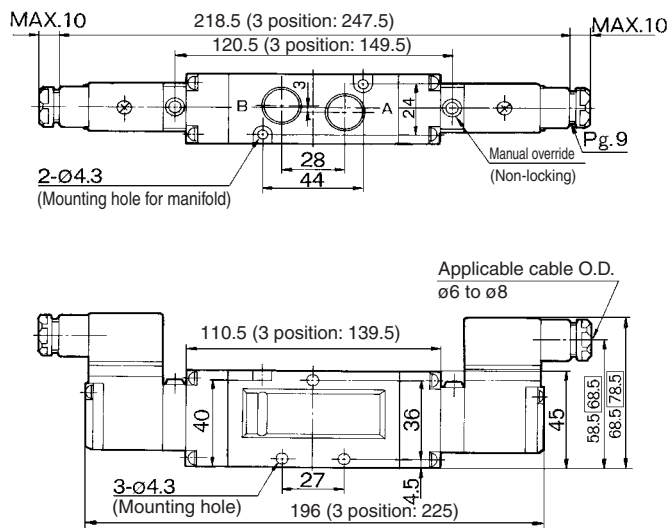
Grommet terminal: VF5□20-□E-<sup>02</sup>/<sub>03</sub>



□ : With light/surge voltage suppressor

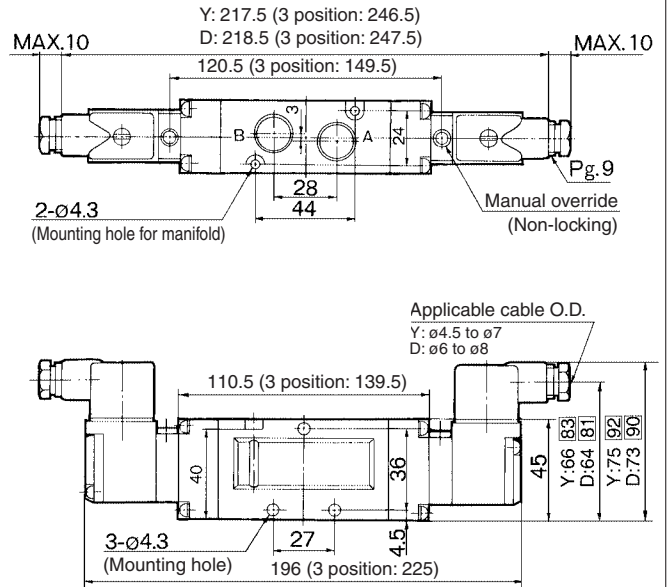
- VK
- VZ
- VF**
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

Conduit terminal: VF5□20-□T-<sup>02</sup>/<sub>03</sub>



□ : With light/surge voltage suppressor

DIN terminal: VF5□20-□D-<sup>02</sup>/<sub>03</sub>  
VF5□20-□Y-<sup>02</sup>/<sub>03</sub>

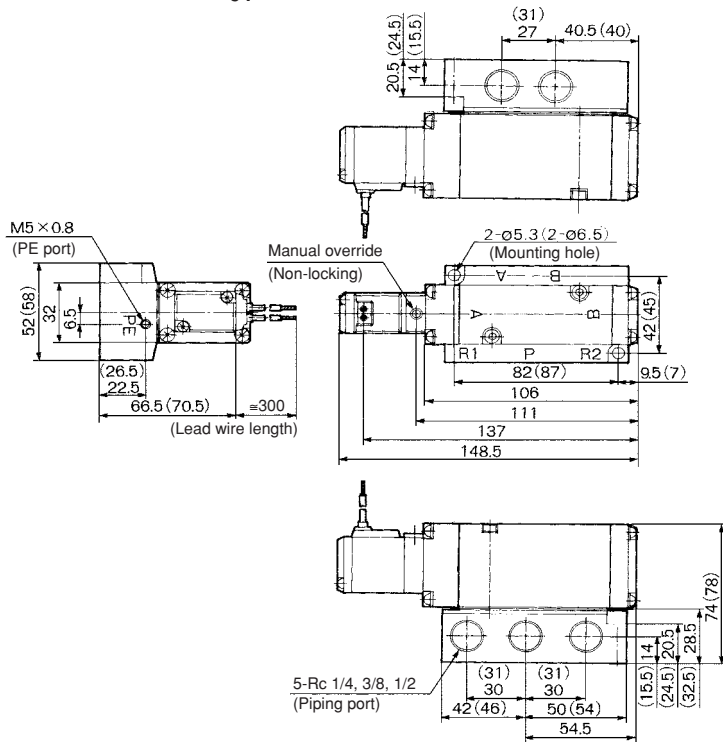


□ : With light/surge voltage suppressor

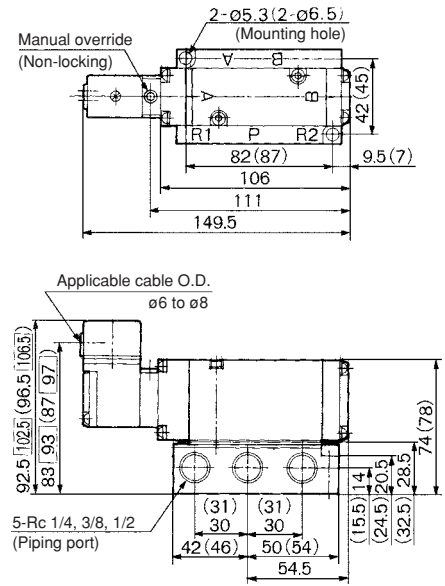
# Series VF5000

## Base Mounted: 2 Position Single Solenoid

Grommet: VF5144-□G-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



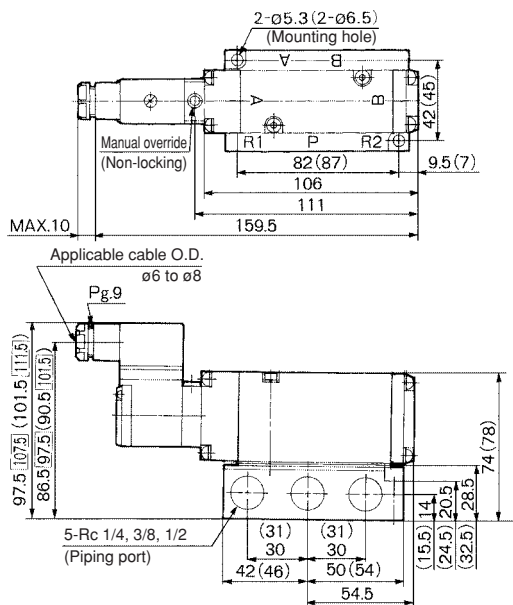
Grommet terminal: VF5144-□E-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



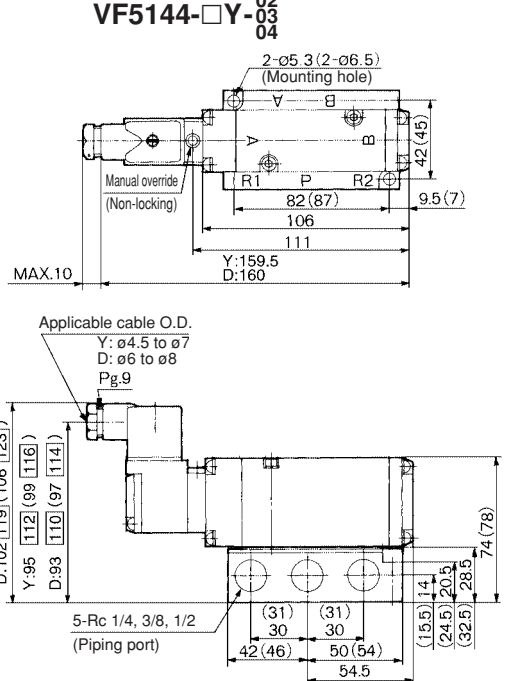
( ) : VF5144-□G-04

( ) : VF5144-□E-04  
 □ : With light/surge voltage suppressor

Conduit terminal: VF5144-□T-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



DIN terminal: VF5144-□D-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



VF5144-□Y-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>

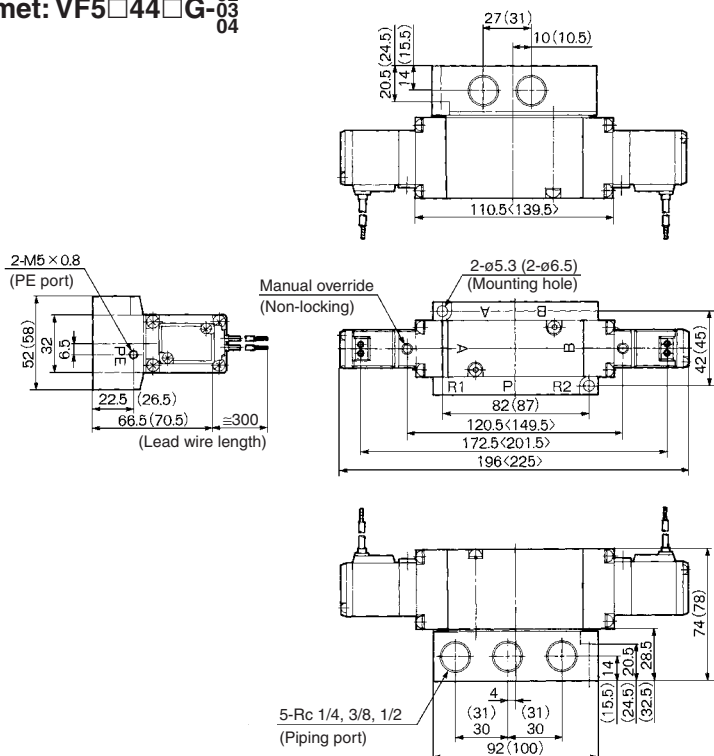
( ) : VF5144-□T-04  
 □ : With light/surge voltage suppressor

( ) : VF5144-□D-04  
 □ : With light/surge voltage suppressor

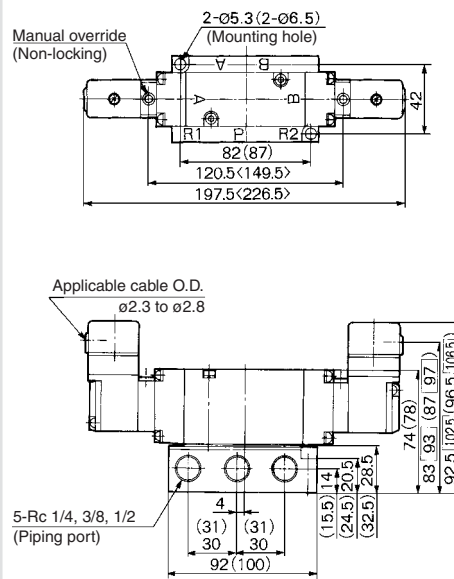
# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF5000

Base Mounted: 2 Position Double Solenoid, 3 Position Closed Center/Exhaust Center/Pressure Center

Grommet: VF5□44□G-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



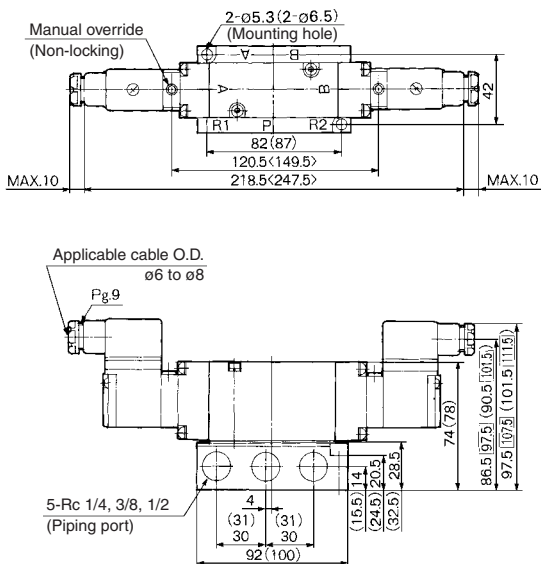
Grommet terminal: VF5□44□E-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



( ) : VF5□44□G-04  
< > : 3 position

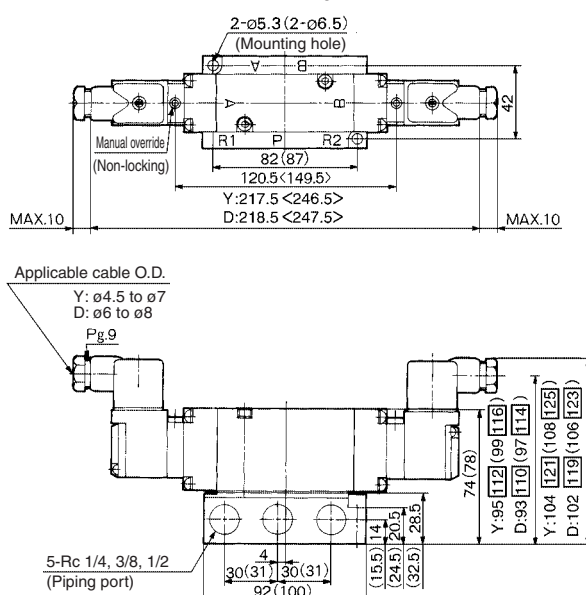
( ) : VF5□44□E-04  
□ : With light/surge voltage suppressor  
< > : 3 position

Conduit terminal: VF5□44□T-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



( ) : VF5□44□T-04  
□ : With light/surge voltage suppressor  
< > : 3 position

DIN terminal: VF5□44□D-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>  
VF5□44□Y-<sup>02</sup>/<sub>03</sub>/<sub>04</sub>



( ) : VF5□44□D-04  
□ : With light/surge voltage suppressor  
< > : 3 position

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

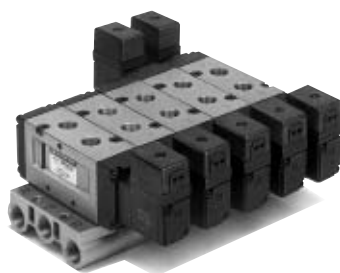
VFN

## Series VF5000

# Manifold Specifications



VV5F5-21



VV5F5-20

### Manifold Specifications

Manifold type	B mount (Single base type)
Exhaust port type	Common EXH
Max. number of stations*	10 (15 for 21 type w/side block)



\* For more than 5 stations for type 20 and 40 or more than 8 station for type 21, supply air from both sides of supply (P) port and exhaust air from both sides of exhaust (R) port.

Manifold base model	R (EXH) <sup>(1)</sup> port type	Piping/Port location			Port size Rc			Applicable <sup>(2)</sup> valves model
		P	R	A, B	P	R	A, B	
VV5F5-20	Common	Side Base	Side Base	Top Valve	3/8	3/8	1/4 3/8	VF5□20
VV5F5-21	Common	Side Side block	Side Side block	Top Valve	1/2	1/2	1/4 3/8	
VV5F5-40*	Common	Side Base	Side Base	Bottom Base	3/8	3/8	1/4	VF5□44



\* Its flow characteristics is 80% of that with sub-plate.

Note 1) P (SUP) port is all common.

Note 2) Model number for valve unit is that for application manifold.

### Option

Description	Part no.	Applicable manifold model
Individual EXH spacer assembly <sup>Note)</sup>	DXT156-20-1A	VV5F5-20/21
	DXT156-20-3A	VV5F5-40
Blanking plate assembly	DXT156-19-1A	VV5F5-20/21
	DXT156-19-2A	VV5F5-40



Note) Spacer is used when it is necessary to exhaust from certain valves individually.

### How to Order Manifold

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example) VV5F5-20-051..... 1 pc. (Manifold base)

\*VF5120-1G-03.....2 pcs. (Valve)

\*VF5220-1G-03.....2 pcs. (Valve)

\*DXT156-19-1A.....1 pc. (Blanking plate assembly)

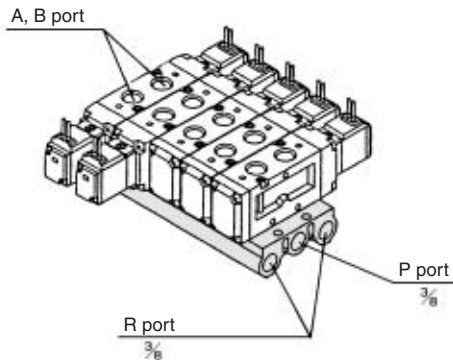
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.



# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF5000

## B Mount (Integrated type)

### Top ported/Common EXH type Type 20



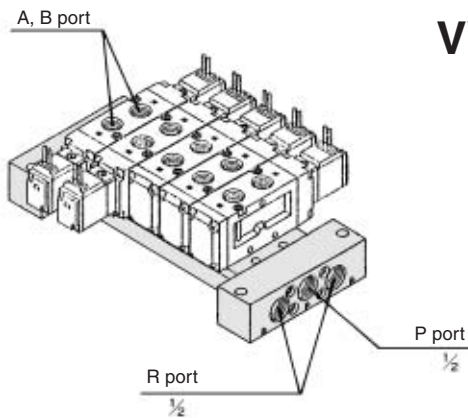
**VV5F5 - 20 - 05 1**

Stations

02	2 stations
:	:
10	10 stations

**Applicable solenoid valve**  
VF5□20-□□□□- $\frac{02}{03}$ □  
**Applicable individual EXH spacer assembly**  
DXT156-20-1A  
**Applicable blanking plate assembly**  
DXT156-19-1A

### Top ported/Common EXH type Type 21



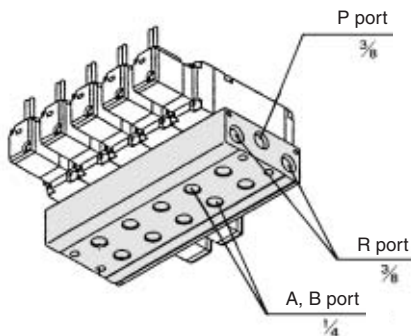
**VV5F5 - 21 - 05 1**

Stations

02	2 stations
:	:
15	15 stations

**Applicable solenoid valve**  
VF5□20-□□□□- $\frac{02}{03}$ □  
**Applicable individual EXH spacer assembly**  
DXT156-20-1A  
**Applicable blanking plate assembly**  
DXT156-19-1A

### Bottom ported/Common EXH type Type 40



**VV5F5 - 40 - 05 2 - 02**

Stations

02	2 stations
:	:
10	10 stations

**Applicable solenoid valve**  
VF5□44-□□□□  
**Applicable individual EXH spacer assembly**  
DXT156-20-3A  
**Applicable blanking plate assembly**  
DXT156-19-2A

VK

VZ

**VF**

VFR

VP4

VZS

VFS

VS4

VQ7

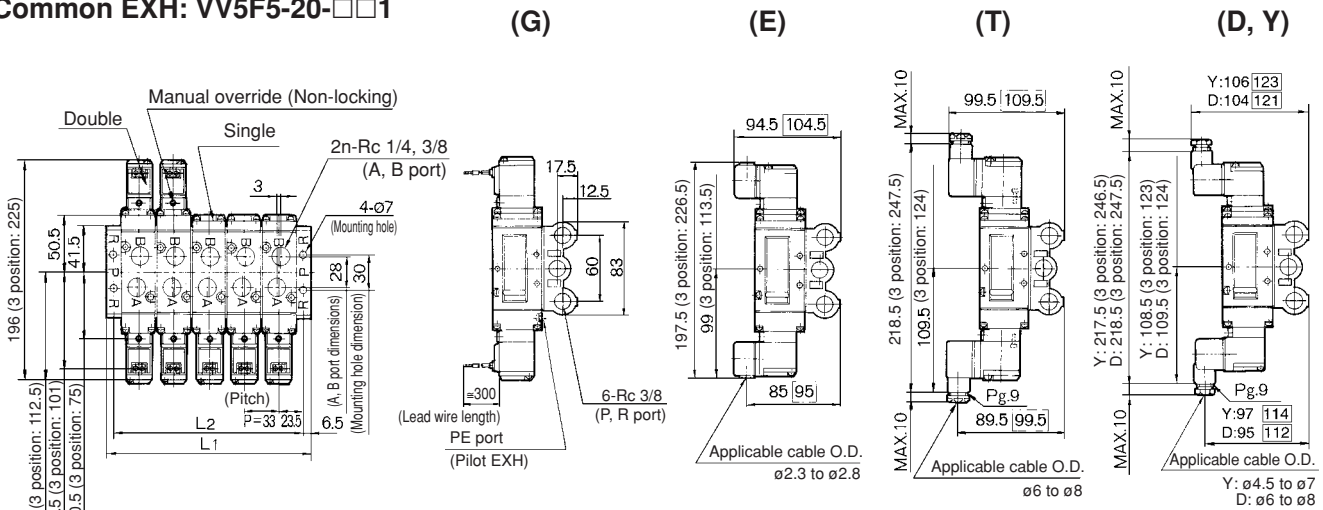
EVS

VFN

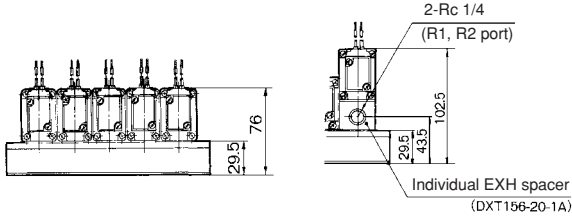
# Series VF5000

Common EXH: VV5F5-20, VV5F5-21

Common EXH: VV5F5-20-□□1



Individual EXH spacer assembly



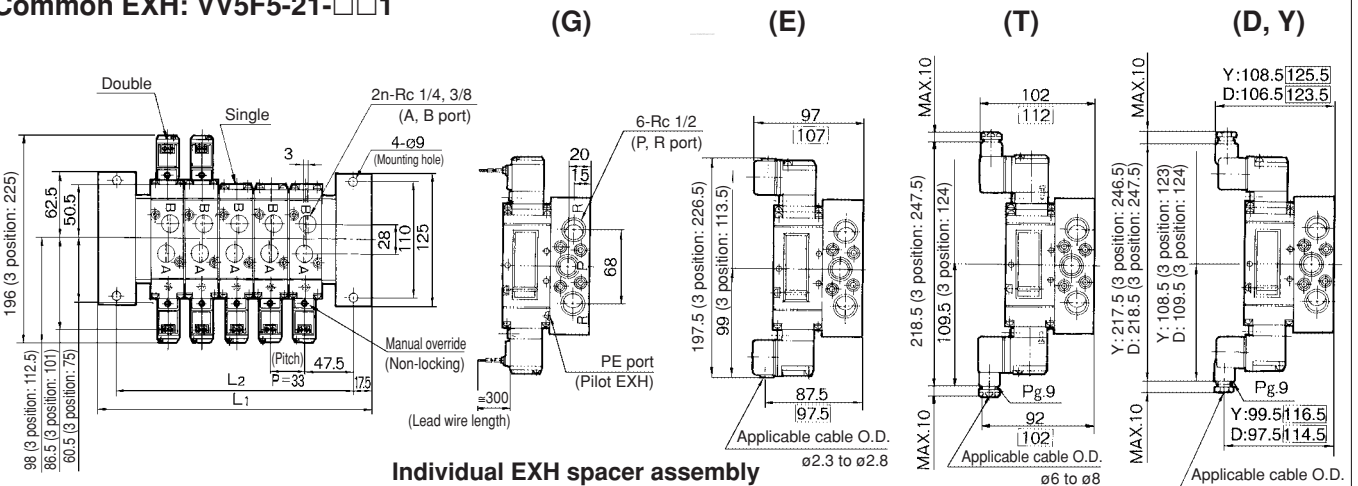
L Dimension

		n: Stations									
L	n	2	3	4	5	6	7	8	9	10	
L <sub>1</sub>		93	126	159	192	225	258	291	324	357	
L <sub>2</sub>		80	113	146	179	212	245	278	311	344	

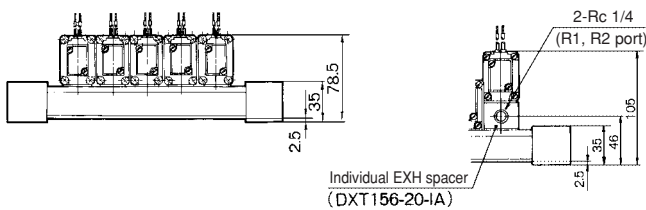


□ : With light/surge voltage suppressor

Common EXH: VV5F5-21-□□1



Individual EXH spacer assembly



L Dimension

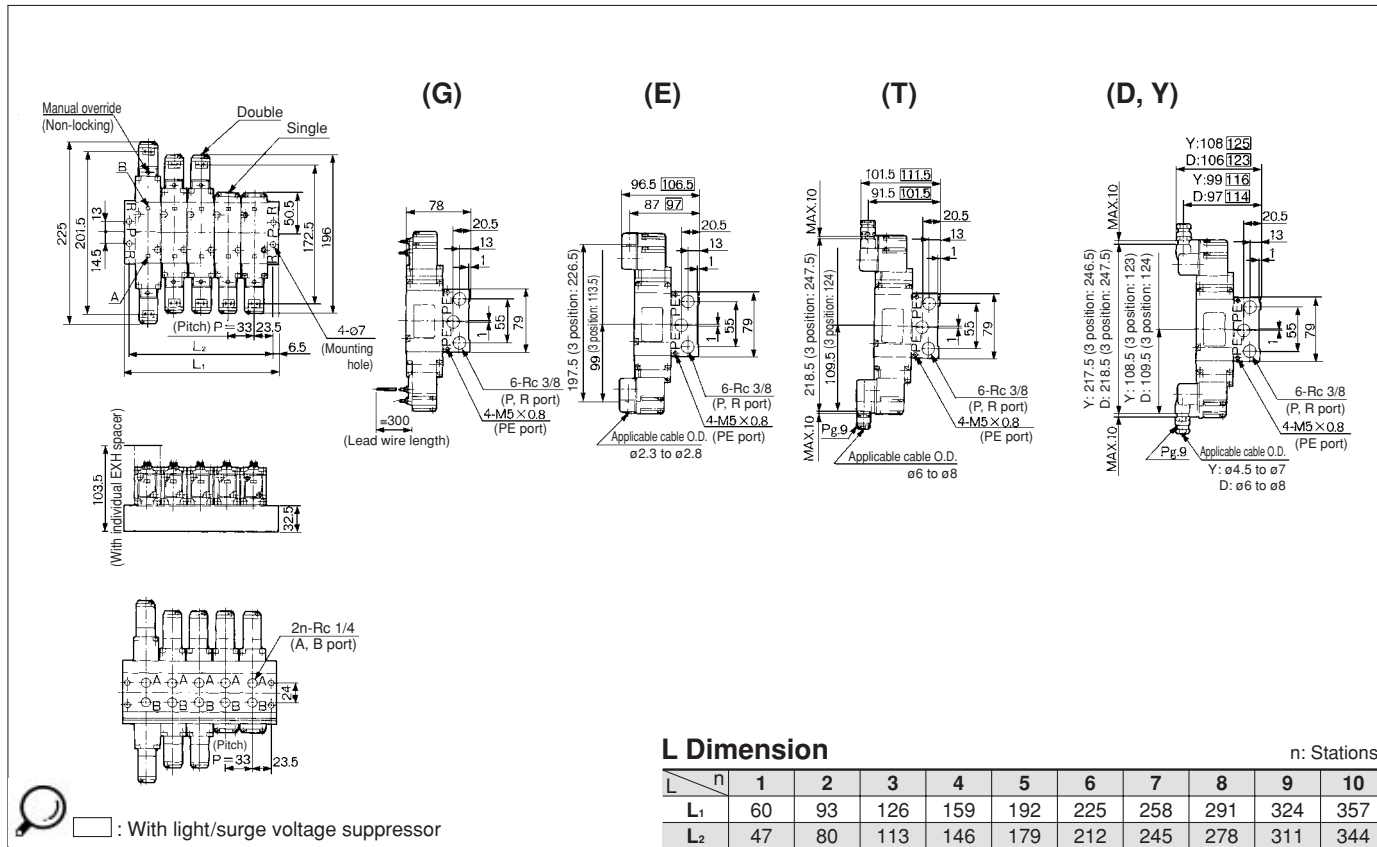
		n: Stations														
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
L <sub>1</sub>		163	196	229	262	295	328	361	394	427	460	493	526	559	592	
L <sub>2</sub>		128	161	194	227	260	293	326	359	392	425	458	491	524	557	



□ : With light/surge voltage suppressor

# 5 Port Pilot Operated Solenoid Valve Rubber Seal Series VF5000

## Common EXH: VV5F5-40



VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN