5 Port Solenoid Valve

Reduced power consumption:

0.55 W [With power saving circuit]

1.55 W [Standard]

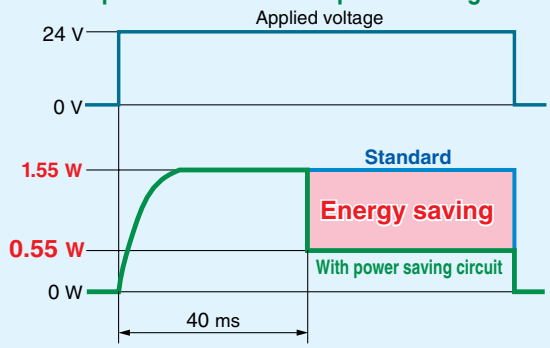
(Conventional: 2.0 W) * With DC light

Series VF3000

Power consumption is reduced by power saving circuit.

Power consumption is decreased by approx. 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 40 ms at 24 VDC.) Refer to electrical power waveform as shown below.

Electrical power waveform with power saving circuit



Built-in full-wave rectifier (AC)

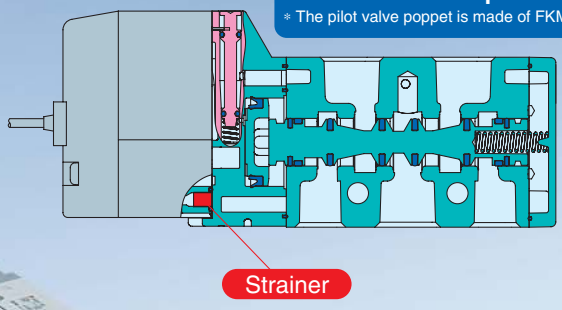
- **Noise reduction**
  Noise is considerably reduced by changing it to DC mode with a full-wave rectifier.
- **Reduced apparent power**
  Conventional: 5.6 VA → **1.55** VA

Built-in strainer in the pilot valve

Unexpected troubles due to foreign matter can be prevented.

Note) Be sure to mount an air filter on the inlet side.

Rubber material: HNBR
Ozone-resistant specification
* The pilot valve poppet is made of FKM.



CE

RoHS compliant

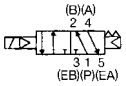
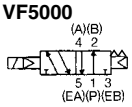
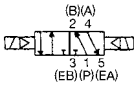
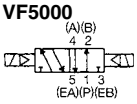
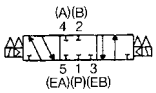
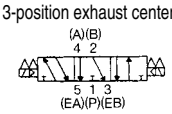
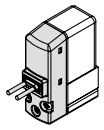
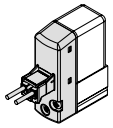
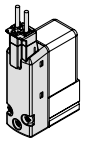
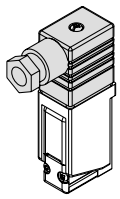
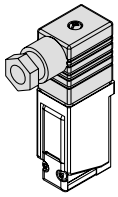
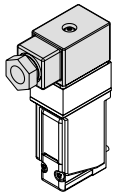
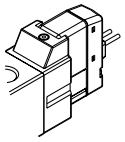
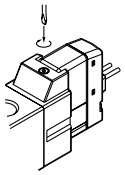
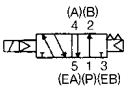
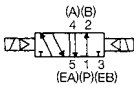
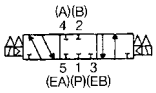
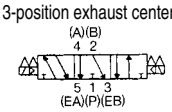
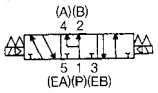
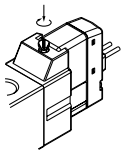
Series VF1000/3000/5000

SMC

CAT.ES11-99B

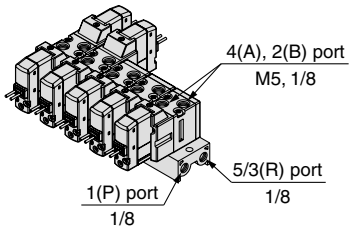
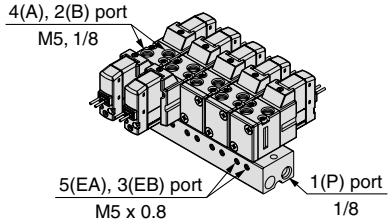
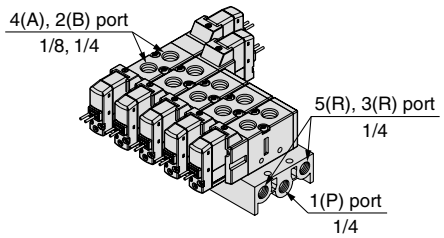
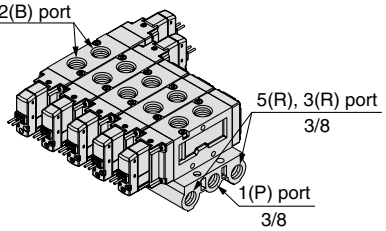
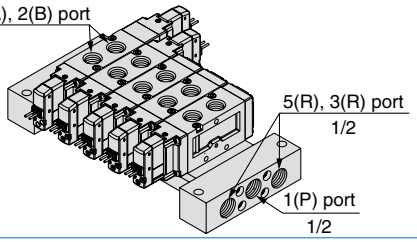
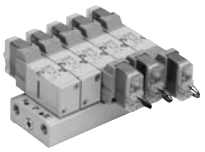
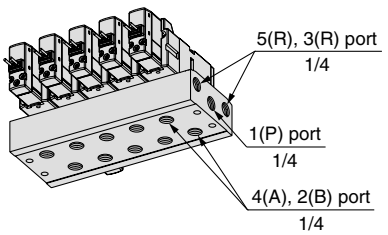
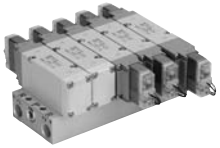
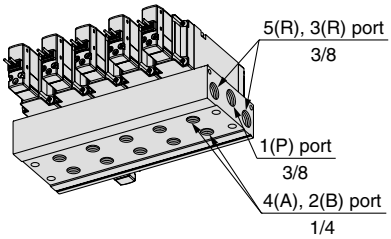
Model Selection by Operating Conditions ①

Single Unit

	Series	Sonic conductance C [dm³/(s·bar)]	Type of actuation	Port size	Voltage	Electrical entry	Light/surge voltage suppressor	Manual override	
Body ported	**VF1000** 	0.76	2-position single **VF1000**  **VF3000** **VF5000**  2-position double **VF1000**  **VF3000** **VF5000**  3-position closed center  3-position exhaust center  3-position pressure center 	M5 x 0.8 1/8	12 VDC 24 VDC 24 VAC 100 VAC 200 VAC 110 VAC 220 VAC 240 VAC	Grommet  L-type plug connector  M-type plug connector  DIN terminal  DIN (EN1753 01-803) terminal  Conduit terminal 	DC ■ With surge voltage suppressor ■ With light/surge voltage suppressor ■ With surge voltage suppressor (Non-polar) ■ With light/surge voltage suppressor (Non-polar) AC ■ With light/surge voltage suppressor	Non-locking push type  Push-turn locking slotted type 	P. 1
	VF3000 	4.0		1/8 1/4					
	VF5000 	8.8		1/4 3/8					
Base mounted	**VF3000** 	3.1	2-position single  2-position double  3-position closed center  3-position exhaust center  3-position pressure center 	1/4 3/8				Push-turn locking lever type 	P. 15
	VF5000 	9.4		1/4 3/8 1/2					

Model Selection by Operating Conditions ②

Manifold

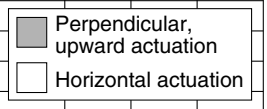
	Series	EXH port type	Manifold base model	Applicable valve	Applicable stations	
Body ported	VF1000 	Common EXH	VV5F1-30 	VF1□30 VF1□33	2 to 20 stations	P. 27
		Individual EXH	VV5F1-31 			
	VF3000 	Common EXH	VV5F3-30 	VF3□30 VF3□33	2 to 20 stations	
	VF5000 	Common EXH	VV5F5-20 	VF5□20 VF5□23	2 to 10 stations	
		Common EXH	VV5F5-21 		2 to 15 stations	
Base mounted	VF3000 	Common EXH	VV5F3-40 	VF3□40 VF3□43	2 to 20 stations	P. 39
	VF5000 	Common EXH	VV5F5-40 	VF5□44	2 to 10 stations	

Cylinder Speed Chart ①

This chart is provided as guidelines only.
For performance under various conditions, use SMC's Model Selection Program before making a judgement.

Body Ported

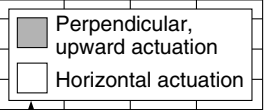
Series	Average speed (mm/s)	Bore size														
		Series CJ2 Pressure 0.5 MPa Load factor 50% Stroke 60 mm			Series CM2 Pressure 0.5 MPa Load factor 50% Stroke 300 mm				Series MB, CA2 Pressure 0.5 MPa Load factor 50% Stroke 500 mm				Series CS1 Pressure 0.5 MPa Load factor 50% Stroke 1000 mm			
		ø6	ø10	ø16	ø20	ø25	ø32	ø40	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160
VF1120-01	1000 800 600 400 200 0															
VF3130-02	1000 800 600 400 200 0															
VF5120-03	1000 800 600 400 200 0													★	★	



∗ With ★: when using steel piping

Base Mounted

Series	Average speed (mm/s)	Bore size																
		Series CJ2 Pressure 0.5 MPa Load factor 50% Stroke 60 mm			Series CM2 Pressure 0.5 MPa Load factor 50% Stroke 300 mm				Series MB, CA2 Pressure 0.5 MPa Load factor 50% Stroke 500 mm				Series CS1 Pressure 0.5 MPa Load factor 50% Stroke 1000 mm				
		ø6	ø10	ø16	ø20	ø25	ø32	ø40	ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø180	ø200
VF3140-03	1000 800 600 400 200 0													★	★			
VF5144-04	1000 800 600 400 200 0														★	★	★	★



∗ With ★: when using steel piping

Cylinder Speed Chart ②

This chart is provided as guidelines only.
For performance under various conditions, use SMC's Model Selection Program before making a judgement.

Conditions

Body Ported

Body ported		Series CJ2	Series CM2	Series MB, CA2	Series CS1
VF1120-01	Tube bore x Length	T0604 x 1 m	T0806 x 1 m		—
	Speed controller	AS3001F-06	AS3001F-08		—
	Silencer	AN101-01			—
VF3130-02	Tube bore x Length	T0604 x 1 m	T1075 x 1 m		—
	Speed controller	AS3001F-06	AS4001F-10		—
	Silencer	AN110-01			—
VF5120-03	Tube bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12	
	Silencer	AN200-02			AN202-02

Body Ported [when using SGP (Steel Piping)]

Body ported		Series CS1
VF5120-03	Tube bore x Length	SGP10A x 1 m
	Speed controller	AS420-03
	Silencer	AN200-02

Base Mounted

Base mounted		Series CJ2	Series CM2	Series MB, CA2	Series CS1
VF3140-03	Tube bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	—
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12	—
	Silencer	AN200-02			—
VF5144-04	Tube bore x Length	T0604 x 1 m	T1075 x 1 m	T1209 x 1 m	
	Speed controller	AS3001F-06	AS4001F-10	AS4001F-12	
	Silencer	AN200-02			

Base Mounted [when using SGP (Steel Piping)]

Base mounted		Series CS1
VF3140-03	Tube bore x Length	SGP10A x 1 m
	Speed controller	AS420-03
	Silencer	AN300-03
VF5144-04	Tube bore x Length	SGP15A x 1 m
	Speed controller	AS420-04
	Silencer	AN400-04

Pilot Operated 5 Port Solenoid Valve

Series VF1000/3000/5000

Body Ported Single Unit

Note) Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.

How to Order Valve

Body ported **VF** **3** **1** **3** **0** □ □ – **5** **G** □ □ **1** – **01** □ – □ – □

Series

1	VF1000
3	VF3000
5	VF5000

Type of actuation

1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

∗ Only 1 and 2 are available with the VF1000.

Body model

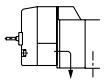
Symbol	VF1000	VF3000	VF5000
2	○	—	○
3	—	○	—

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1 MPa)

Body option

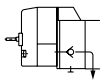
0: Pilot valve individual exhaust



PE port∗ EA/EB port

VF1000	VF3000	VF5000
○	○	○

3: Main/Pilot valve common exhaust



PE port EA/EB port

VF1000	VF3000	VF5000
—	○	○

∗ Refer to "Made to Order" (P.14) when piping to PE port is required.

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to back pages 5 and 6 for details.)

∗ T type is available with DC mode only. When T is selected, only Z type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Rated voltage

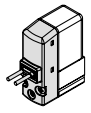
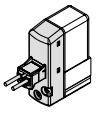
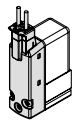
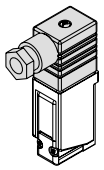
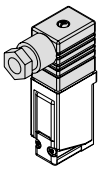
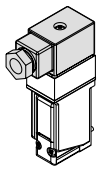
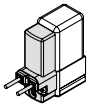
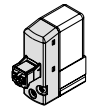
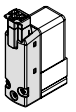
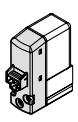
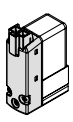
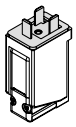
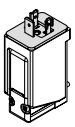
DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

Electrical entry

Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
			[IP65 compatible]	[IP65 compatible]	[IP65 compatible]
 **G**: Lead wire length 300 mm **H**: Lead wire length 600 mm	 **L**: With lead wire (length 300 mm)	 **M**: With lead wire (length 300 mm)	 **D**: With connector	 **Y**: With connector	 **T**: Conduit terminal
 **G**: Lead wire length 300 mm **H**: Lead wire length 600 mm DC Without light/surge voltage suppressor	 **LN**: Without lead wire	 **MN**: Without lead wire			
	 **LO**: Without connector	 **MO**: Without connector	 **DO**: Without connector	 **YO**: Without connector	
CE compliant DC	CE	CE	CE	CE	CE
CE compliant AC Note 2	—	—	CE	CE	CE

∗ LN and MN types are with 2 sockets.

∗ Refer to back page 3 when different length of lead wire for L/M-type plug connector is required.

∗ Refer to back page 4 for details on the DIN (EN175301-803) terminal.

Note 1) When using with IP65, select the main/pilot valve common exhaust type. (Except VF1000)

Note 2) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

Thread type

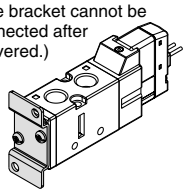
Nil	Rc
F	G
N	NPT
T	NPTF

∗ M5 is available with Nil only.

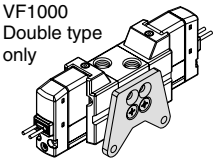
Bracket

Nil	Without bracket
F	With bracket

VF1000/3000 Single type (The bracket cannot be connected after delivered.)



VF1000 Double type only



∗ Not available with the VF5000.

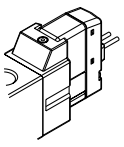
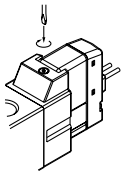
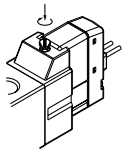
Made to Order

Nil	—
X500	Pilot exhaust port with piping thread (M3) specification (Refer to page 14).

A, B port size

Symbol	Port size	VF1000	VF3000	VF5000
M5	M5 x 0.8	○	—	—
01	1/8	○	○	—
02	1/4	—	○	○
03	3/8	—	—	○

Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type	E: Push-turn locking lever type
		

Light/surge voltage suppressor

Symbol	Light/surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	—Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

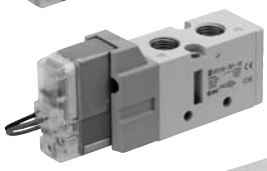
Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

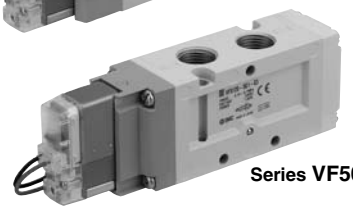
∗ In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 6 for details.


Series VF1000


Series VF3000


Series VF5000

Specifications

Model			VF1000	VF3000	VF5000
Fluid			Air		
Operating pressure range (MPa)	**Standard**	**2-position single/3-position**	0.15 to 0.7		
		2-position double	0.1 to 0.7		
	High-pressure type	**2-position single/3-position**	0.15 to 1.0		
		2-position double	0.1 to 1.0		
Ambient and fluid temperature (°C)			–10 to 50 (No freezing)		
Max. operating frequency (Hz)		**2-position single/double**	10	10	5
		3-position	—	3	3
Manual override			Non-locking push type Push-turn locking slotted type Push-turn locking lever type		
Pilot exhaust type			Individual exhaust, Main/Pilot valve common exhaust (Except VF1000)		
Lubrication			Not required		
Mounting orientation			Unrestricted		
Impact/Vibration resistance (m/s²) Note)			300/50		
Enclosure			Dustproof (IP65* for D, Y, T)		

Note) Impact resistance: No malfunction occurred when it is tested 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)
* Based on IEC60529. When using with IP65, select the main/pilot valve common exhaust type.

Made to Order

Made to Order
(Refer to page 14 for details.)

X500	Pilot exhaust port with piping thread (M3) specification

Solenoid Specifications

Electrical entry			Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T)
			G, H, L, M	D, Y, T
Coil rated voltage (V)		**DC**	24, 12	
		AC (50/60 Hz)	24, 100, 110, 200, 220, 240	
Allowable voltage fluctuation			±10%* of rated voltage	
Power consumption (W)	**DC**	**Standard**	1.5 (With light: 1.55)	1.5 (With light: 1.75)
		With power saving circuit	0.55 (With light only)	0.75 (With light only)
Apparent power (VA)*	**AC**	**24 V**	1.5 (With light: 1.55)	1.5 (With light: 1.75)
		100 V	1.55 (With light: 1.65)	1.55 (With light: 1.7)
		110 V [115 V]		
		200 V		
		220 V [230 V]		
		240 V		
Surge voltage suppressor			Diode (Non-polar type: Varistor)	
Indicator light			LED (Neon bulb is used for AC mode of D, Y, T.)	

* It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
* Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.
* Since voltage drops due to the internal circuit in S, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.
24 VDC: –7% to +10% 12 VDC: –4% to +10%

Response Time

Series	Type of actuation		Pressure specification	Operating pressure range (MPa)	Response time ms (at 0.5 MPa)			
					Without light/surge voltage suppressor	With light/surge voltage suppressor		AC
						S, Z type	R, U type	
VF1000	2-position	Single	Standard	0.15 to 0.7	20	45	23	45
		Double		0.1 to 0.7	12	12	12	12
		Single	High-pressure type	0.15 to 1.0	23	48	26	48
		Double		0.1 to 1.0	15	15	15	15
VF3000	2-position	Single	Standard	0.15 to 0.7	20	45	23	45
		Double		0.1 to 0.7	12	12	12	12
	3-position			0.15 to 0.7	30	55	33	55
	2-position	Single	High-pressure type	0.15 to 1.0	23	48	26	48
		Double		0.1 to 1.0	15	15	15	15
	3-position			0.15 to 1.0	33	58	36	58
VF5000	2-position	Single	Standard	0.15 to 0.7	30	55	33	55
		Double		0.1 to 0.7	15	15	15	15
	3-position			0.15 to 0.7	50	75	53	75
	2-position	Single	High-pressure type	0.15 to 1.0	33	58	36	58
		Double		0.1 to 1.0	18	18	18	18
	3-position			0.15 to 1.0	53	78	56	78

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)

Flow-rate Characteristics/Weight

Valve model	Type of actuation		Port size		Flow-rate characteristics Note 1)						Weight (g) Note 2)	
					1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)				
			1, 4, 2 (P, A, B)	5, 3 (EA, EB)	C [dm³/(s/bar)]	b	Cv	C [dm³/(s/bar)]	b	Cv	Grommet	DIN terminal
VF1□20-M5	2-position	Single	M5 x 0.8		0.49	0.40	0.13	0.52	0.35	0.13	140	176
		Double			0.49	0.40	0.13	0.52	0.35	0.13	200	272
VF1□20-01	2-position	Single	1/8	M5 x 0.8	0.76	0.22	0.17	0.53	0.28	0.13	136	172
		Double			0.76	0.22	0.17	0.53	0.28	0.13	196	268
VF3□30-01	2-position	Single	1/8		3.0	0.38	0.78	2.8	0.30	0.67	182	218
		Double			3.0	0.38	0.78	2.8	0.30	0.67	243	315
	3-position	Closed center			2.4	0.31	0.64	1.8	0.37	0.46	260	332
		Exhaust center			2.6	0.37	0.70	3.0 [2.5]	0.32 [0.28]	0.76 [0.62]	260	332
		Pressure center			3.0 [1.4]	0.42 [0.44]	0.83 [0.39]	2.4	0.27	0.59	260	332
VF3□30-02	2-position	Single	1/4	1/8	4.0	0.36	1.0	3.1	0.32	0.75	178	214
		Double			4.0	0.36	1.0	3.1	0.32	0.75	239	311
	3-position	Closed center			2.4	0.45	0.68	1.9	0.37	0.47	256	328
		Exhaust center			3.0	0.42	0.82	3.1 [2.7]	0.36 [0.29]	0.79 [0.66]	256	328
		Pressure center			5.5 [1.4]	0.37 [0.50]	1.4 [0.40]	2.6	0.32	0.64	256	328
VF5□20-02	2-position	Single	1/4		7.1	0.46	1.9	7.7	0.51	2.2	313	349
		Double			7.1	0.46	1.9	7.7	0.51	2.2	368	440
	3-position	Closed center			6.7	0.46	1.8	6.6	0.41	1.8	406	478
		Exhaust center			7.1	0.42	1.9	8.0 [7.4]	0.45 [0.47]	2.2 [2.1]	406	478
		Pressure center			6.8 [2.7]	0.51 [0.50]	2.0 [0.78]	5.7	0.37	1.4	406	478
VF5□20-03	2-position	Single	3/8		8.8	0.44	2.4	10.0	0.49	2.9	299	335
		Double			8.8	0.44	2.4	10.0	0.49	2.9	354	426
	3-position	Closed center			7.5	0.43	2.0	7.5	0.38	1.9	391	463
		Exhaust center			8.3	0.40	2.2	10.0 [8.7]	0.48 [0.46]	3.0 [2.4]	391	463
		Pressure center			9.2 [3.0]	0.50 [0.49]	2.6 [0.85]	6.1	0.35	1.6	391	463

Note 1) [ ]: Normal position
Note 2) Values without bracket

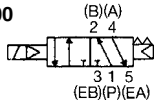
Construction/Body Ported

2-position single

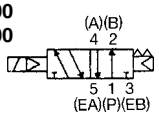
Symbol

2-position single

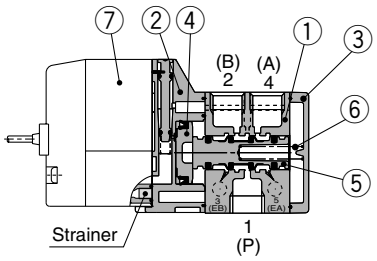
VF1000



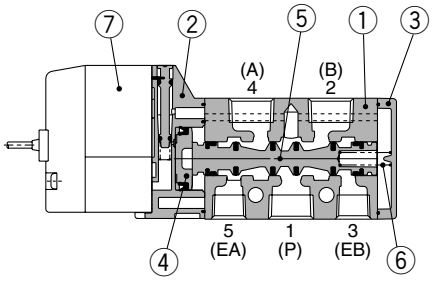
VF3000
VF5000



VF1000



VF3000/5000

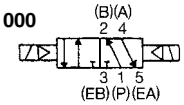


2-position double

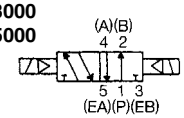
Symbol

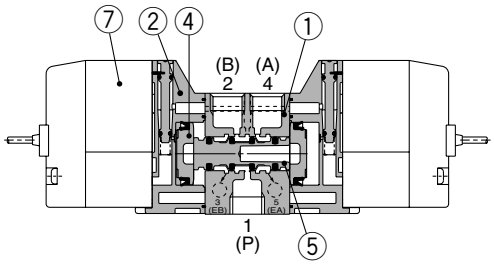
2-position double

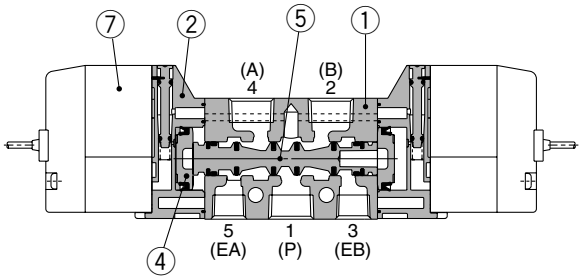
VF1000



VF3000
VF5000



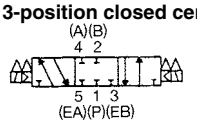




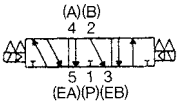
3-position closed center/exhaust center/pressure center

Symbol

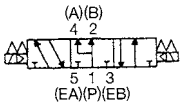
3-position closed center

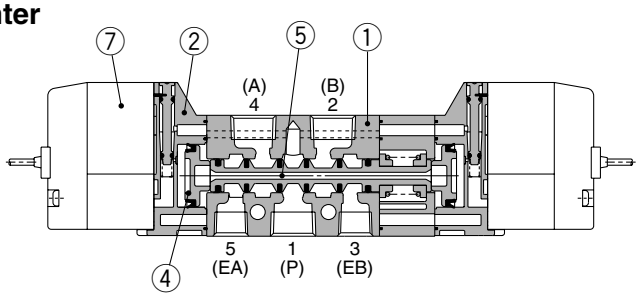


3-position exhaust center



3-position pressure center





(Drawing shows a closed center type.)

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum die-casted	White
2	**Adapter plate**	Resin	Gray
3	**End plate**	Aluminum die-casted (VF5000: Resin)	White
4	**Piston**	Resin	
5	**Spool valve**	Aluminum, HNBR	
6	**Spring**	Stainless steel	

Replacement Parts

No.	Description	Part no.	Note
7	**Pilot valve assembly**	Refer to “How to Order Pilot Valve Assembly” on page 5.	Built-in strainer

Bracket Assembly Part No.

Description	Part no.
Bracket (for VF1000 double)	DXT144-8-1A (With 2 mounting screws)

How to Order Pilot Valve Assembly (With a gasket and two mounting screws)

⚠ Caution

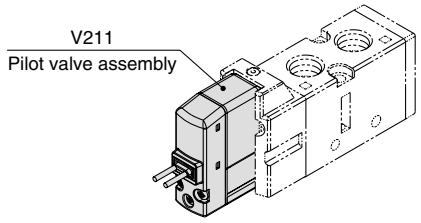
When only the pilot valve assembly is replaced, it is not possible to change from V211 (Grommet or L/M-type) to V212 (DIN or Conduit type), or vice versa.

Valve model: VF□□□□□□-5GZ□1-□□□

∗ Select from the below in accordance with the valve used.

■ Grommet or L/M-type

V 2 1 1 □□-5GZ



Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	—Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation. When T is selected, only Z type of light/surge voltage suppressor is available.

⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 6 for details.

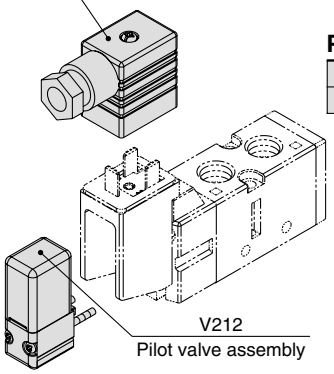
Electrical entry

G	Grommet (Lead wire length 300 mm)	
H	Grommet (Lead wire length 600 mm)	
L	L-type plug connector	With lead wire
LN		Without lead wire
LO		Without connector
M	M-type plug connector	With lead wire
MN		Without lead wire
MO		Without connector

∗ LN and MN types are with 2 sockets.
∗ Refer to back page 3 when different length of lead wire for L/M-type plug connector is required.

■ DIN or Conduit type

V 2 1 2 □□-5



Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1 MPa)

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

∗ T type is available with DC mode only.

Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

⚠ Caution

For V212 (DIN or Conduit type), the coil specification and voltage (including light/surge voltage suppressor) cannot be changed by changing the pilot valve assembly.

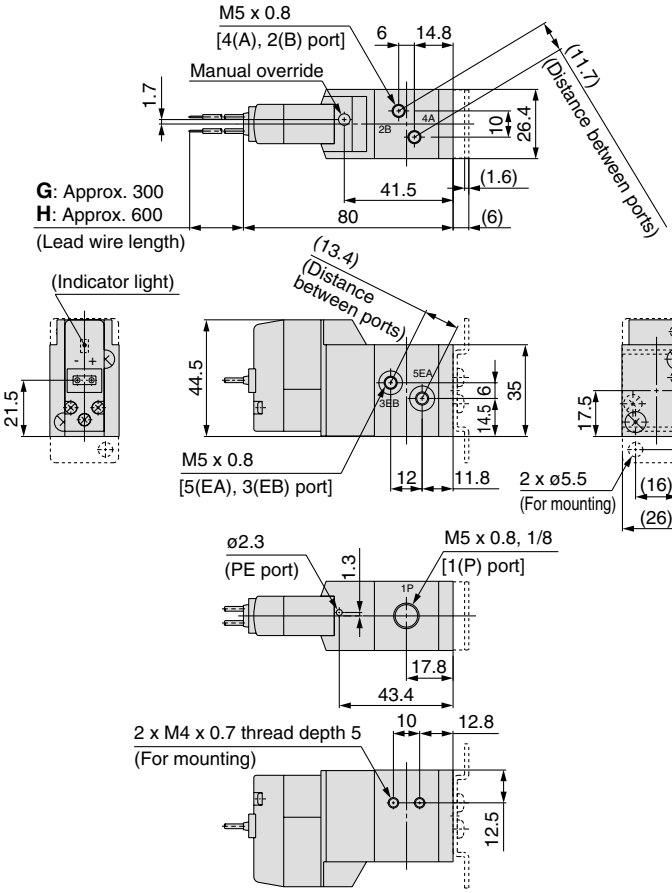
⚠ Caution

Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N·m

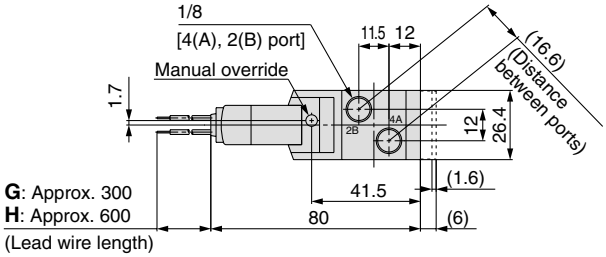
Series VF1000/Body Ported/Dimensions

2-position single

Grommet (G) (H): VF1120-□ G/H □□1-M5□ (-F)

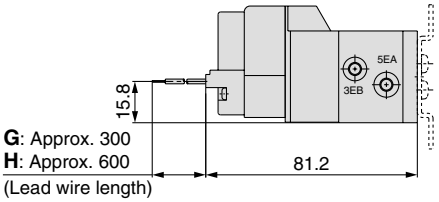


Grommet (G) (H): VF1120-□ G/H □□1-01□ (-F)

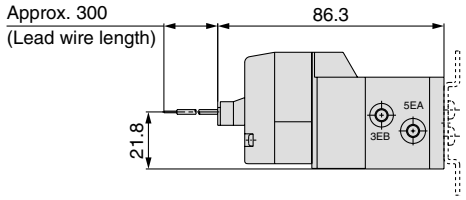


Grommet (G) (H)

DC without light/surge voltage suppressor

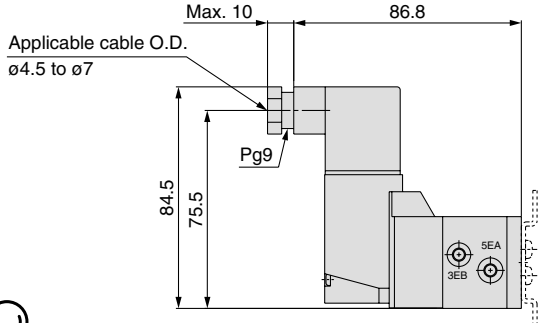


L-type plug connector (L): VF1120-□L□□1-M5/01□ (-F)



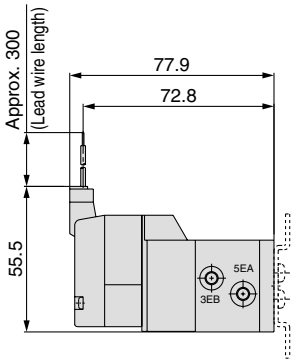
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF1120-□ D/Y □□1-M5/01□ (-F)



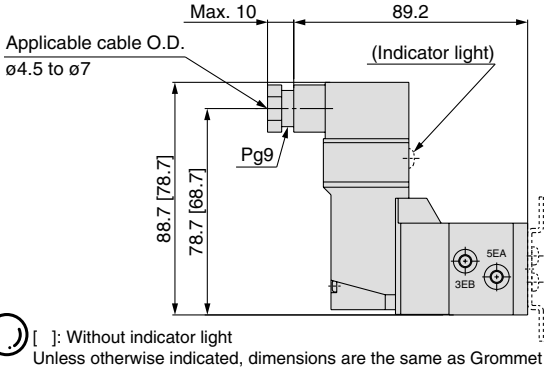
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF1120-□M□□1-M5/01□ (-F)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF1120-□T□□1-M5/01□ (-F)

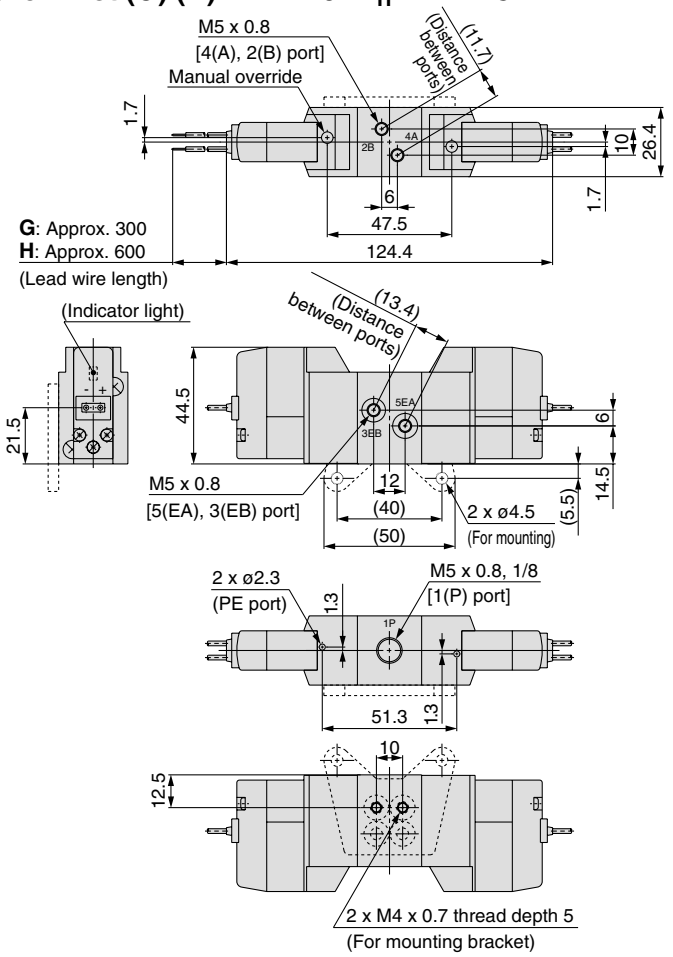


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

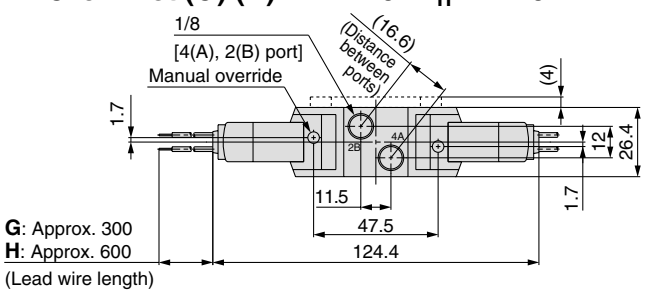
Series VF1000/Body Ported/Dimensions

2-position double

Grommet (G) (H): VF1220-□ G/H □□1-M5□

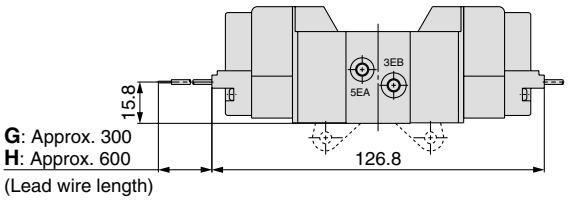


Grommet (G) (H): VF1220-□ G/H □□1-01□

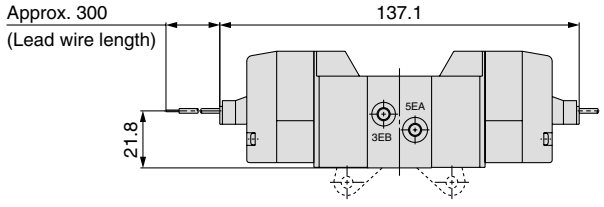


Grommet (G) (H)

DC without light/surge voltage suppressor

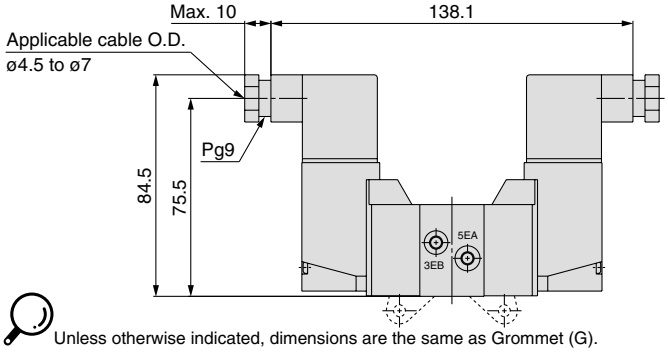


L-type plug connector (L): VF1220-□L□□1-M5/01□



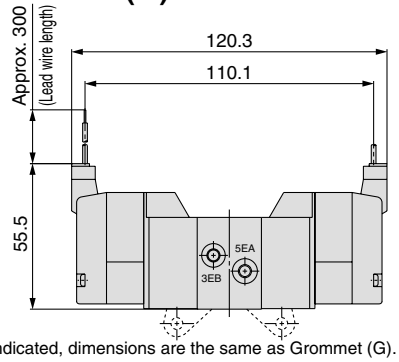
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF1220-□ D/Y □□1-M5/01□



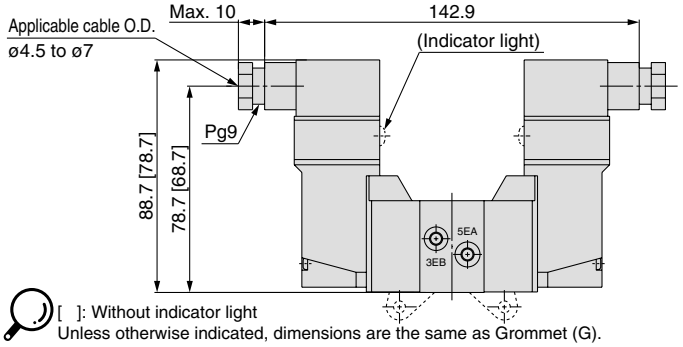
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF1220-□M□□1-M5/01□



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF1220-□T□□1-M5/01□

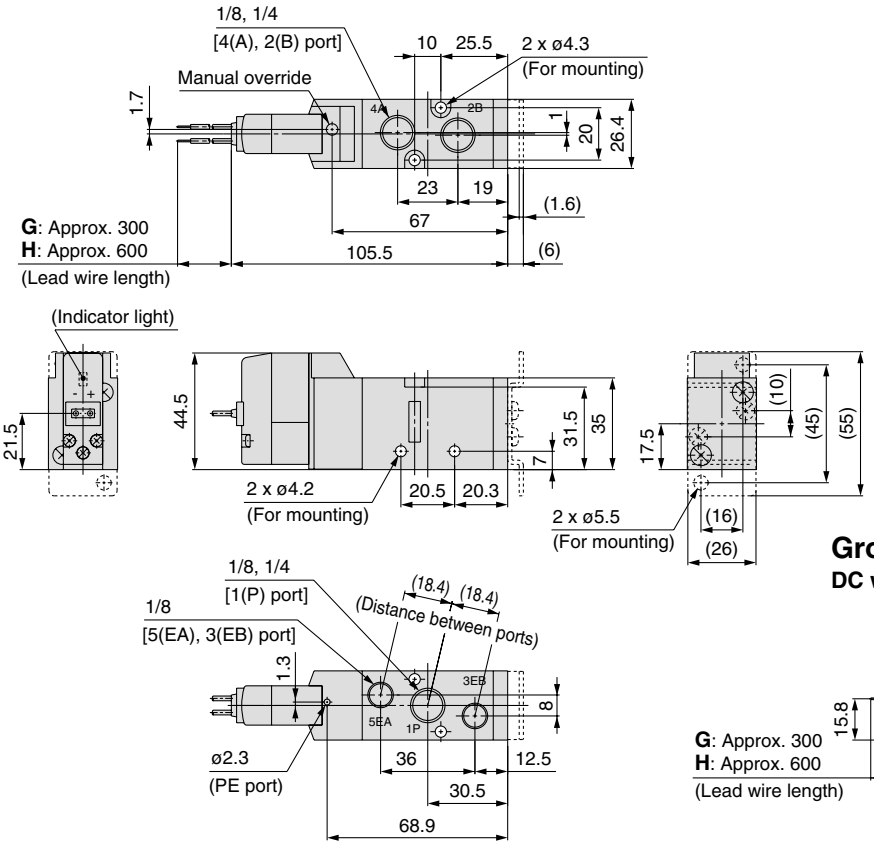


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF3000/Body Ported/Dimensions

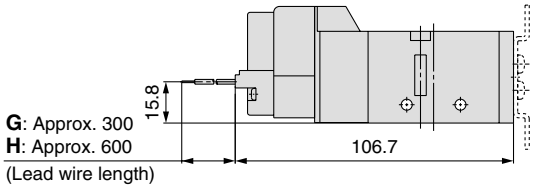
2-position single

Grommet (G) (H): VF3130-□ G/H □□1- 01/02 □ (-F)

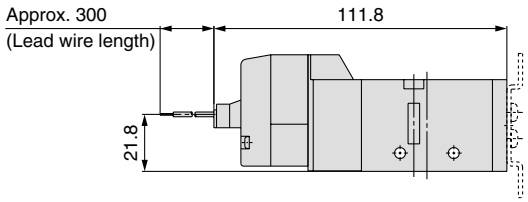


Grommet (G) (H)

DC without light/surge voltage suppressor

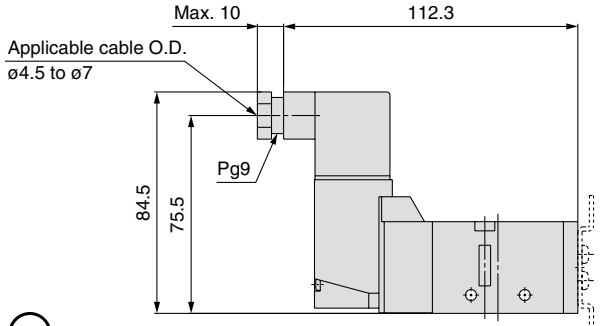


L-type plug connector (L): VF3130-□L□□1- 01/02 □ (-F)



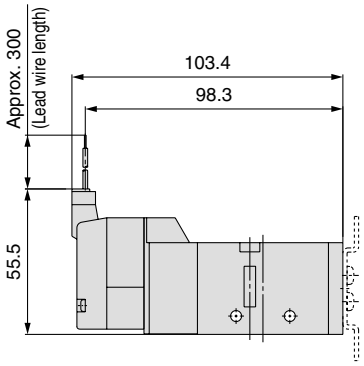
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3130-□ D/Y □□1- 01/02 □ (-F)



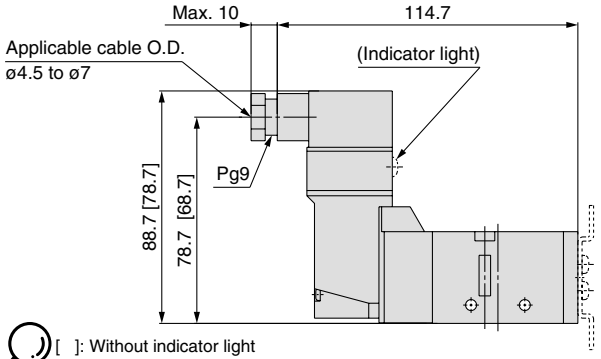
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3130-□M□□1- 01/02 □ (-F)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF3130-□T□□1- 01/02 □ (-F)

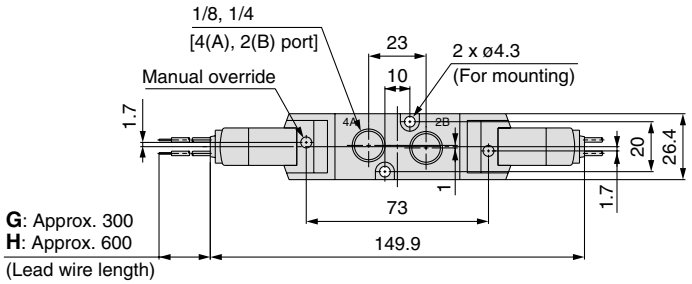


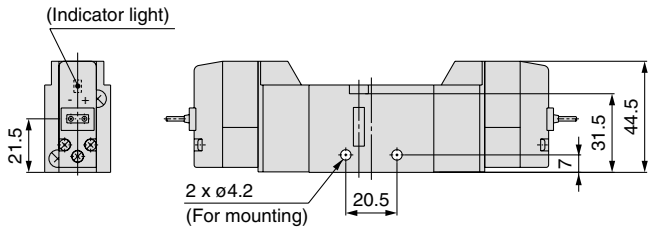
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

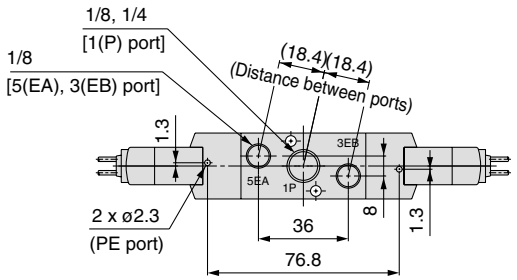
Series VF3000/Body Ported/Dimensions

2-position double

Grommet (G) (H): VF3230-□ G/H □□1- 01/02 □

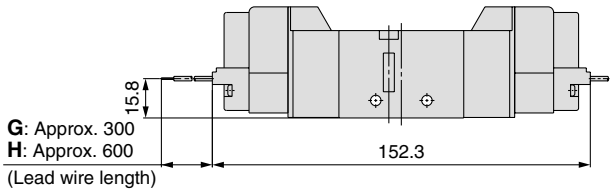




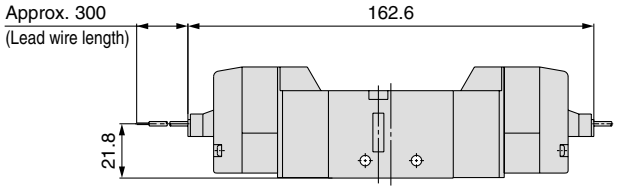


Grommet (G) (H)

DC without light/surge voltage suppressor

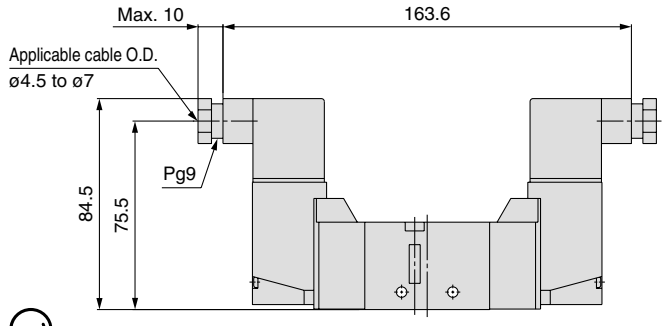


L-type plug connector (L): VF3230-□L□□1- 01/02 □



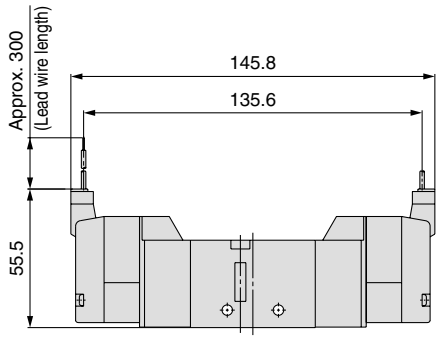
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3230-□ D/Y □□1- 01/02 □



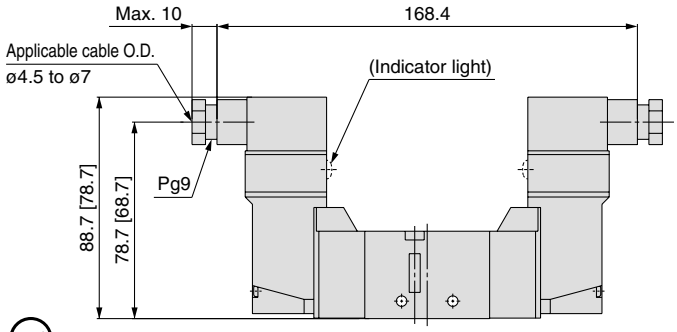
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3230-□M□□1- 01/02 □



Unless otherwise indicated, dimensions are the same as Grommet (G).

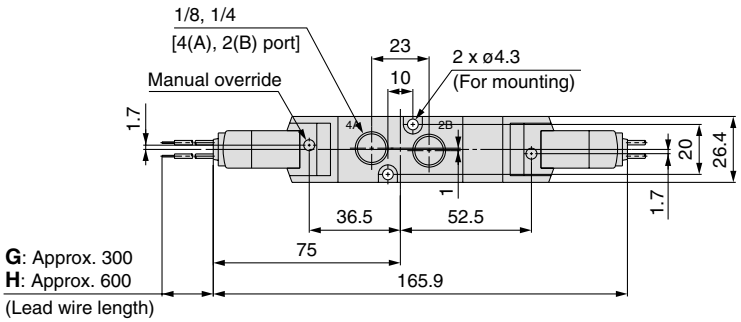
Conduit terminal (T): VF3230-□T□□1- 01/02 □

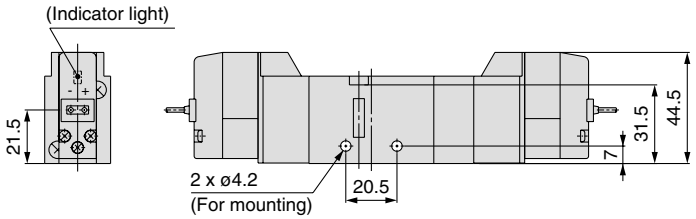


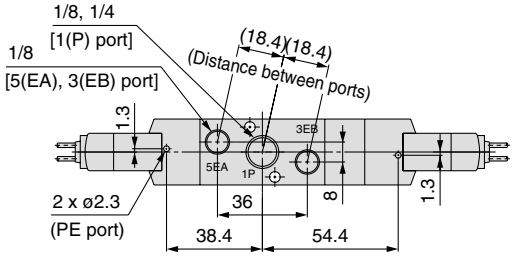
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF3000/Body Ported/Dimensions

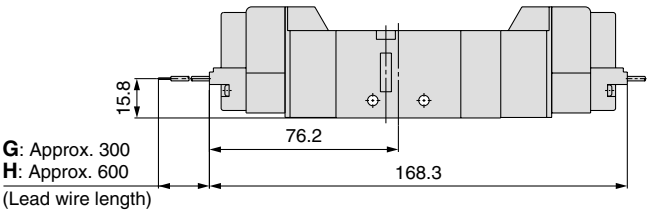
3-position closed center/exhaust center/pressure center
Grommet (G) (H): VF3$^{3}_{4}_{5}$30-□$^{G}_{H}$□□1-$^{01}_{02}$□



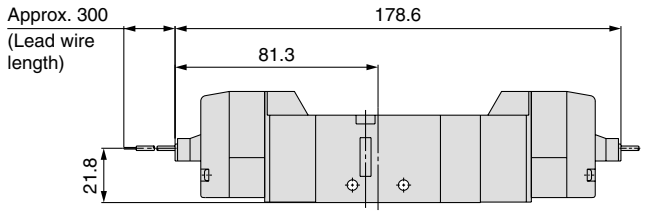




Grommet (G) (H)
DC without light/surge voltage suppressor

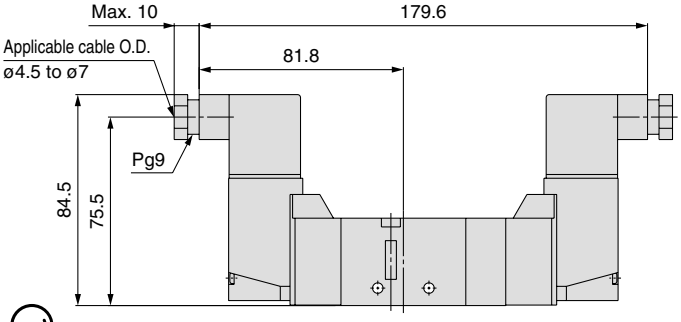


L-type plug connector (L): VF3$^{3}_{4}_{5}$30-□L□□1-$^{01}_{02}$□



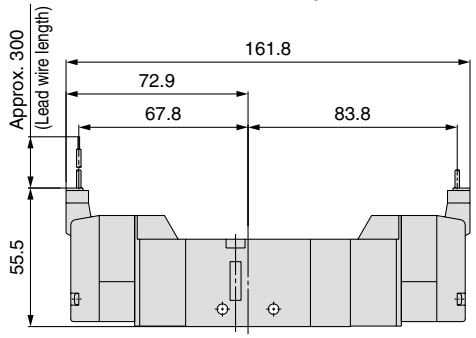
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3$^{3}_{4}_{5}$30-□$^{D}_{Y}$□□1-$^{01}_{02}$□



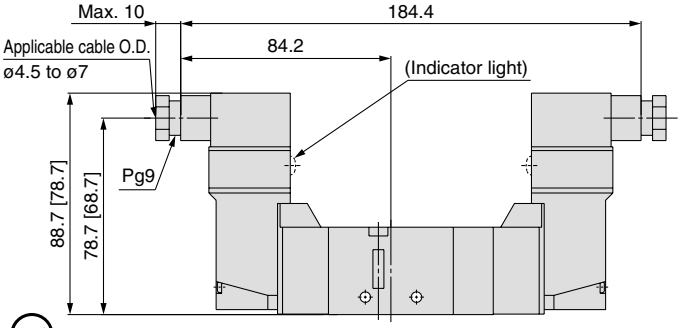
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3$^{3}_{4}_{5}$30-□M□□1-$^{01}_{02}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF3$^{3}_{4}_{5}$30-□T□□1-$^{01}_{02}$□

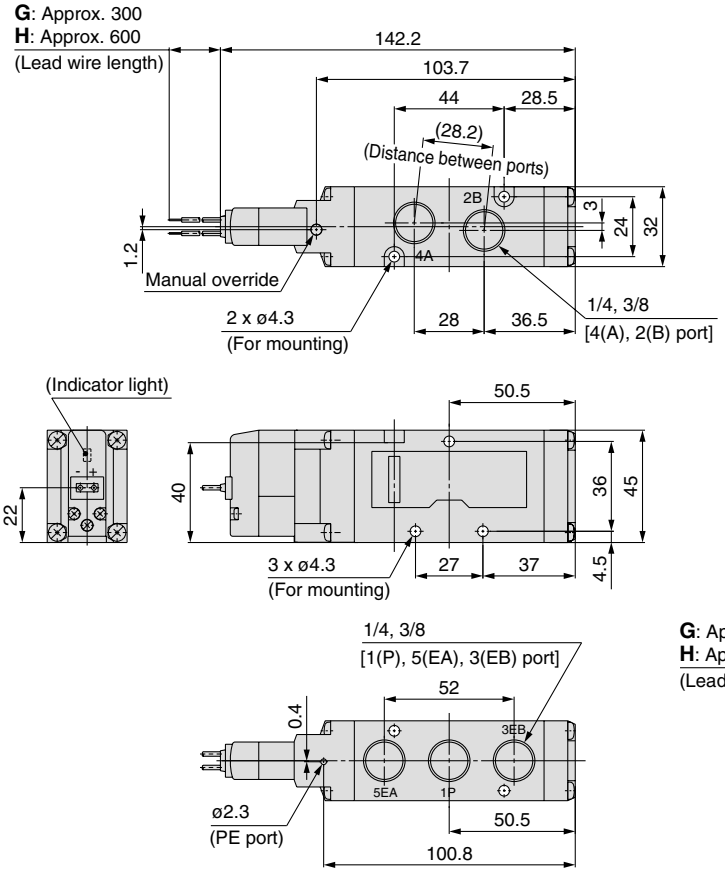


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF5000/Body Ported/Dimensions

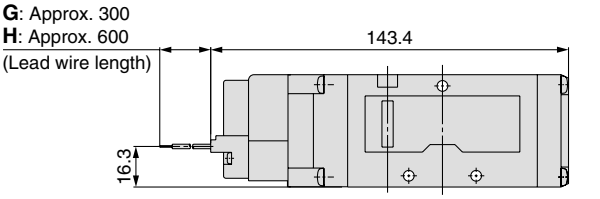
2-position single

Grommet (G) (H): VF5120-□$^{G}_{H}$□□1-$^{02}_{03}$□

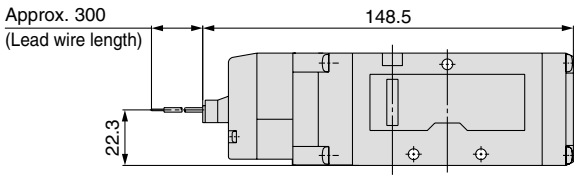


Grommet (G) (H)

DC without light/surge voltage suppressor

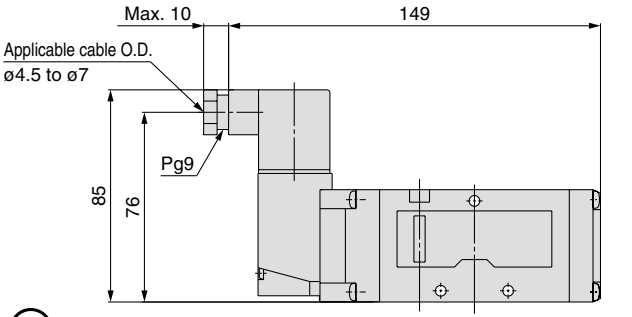


L-type plug connector (L): VF5120-□L□□1-$^{02}_{03}$□



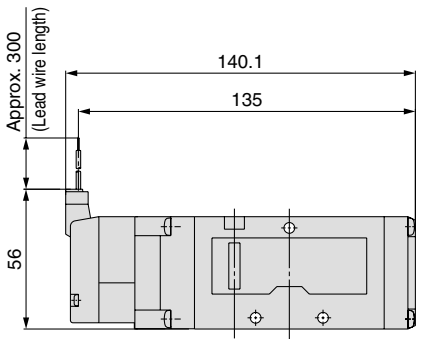
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF5120-□$^{D}_{Y}$□□1-$^{02}_{03}$□



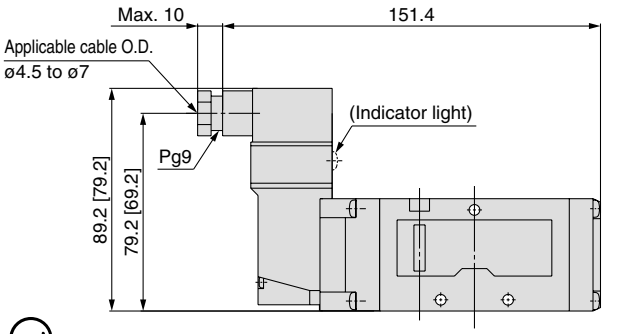
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF5120-□M□□1-$^{02}_{03}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF5120-□T□□1-$^{02}_{03}$□



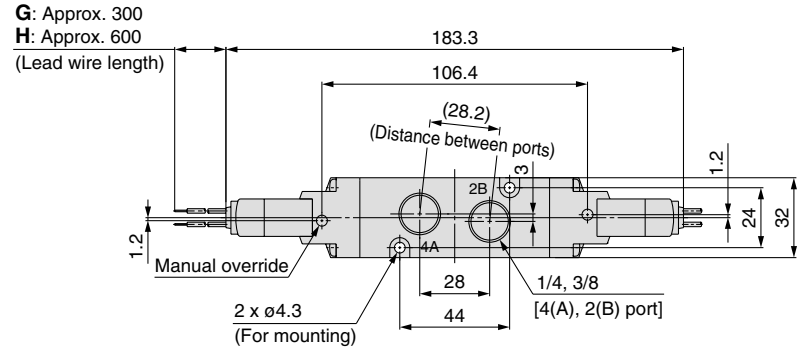
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

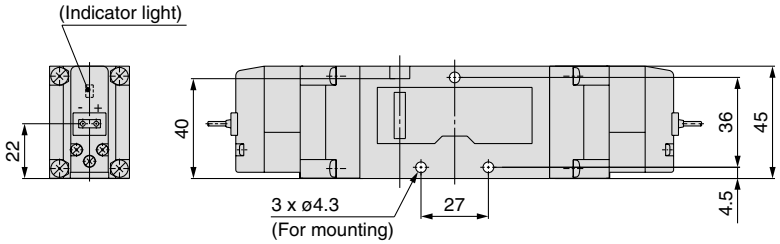
Series VF5000/Body Ported/Dimensions

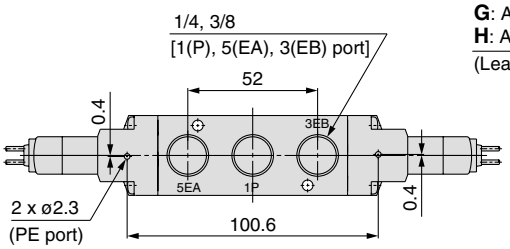
2-position double

Grommet (G) (H): VF5220-□ G/H □□1- 02/03 □

G: Approx. 300
H: Approx. 600
(Lead wire length)

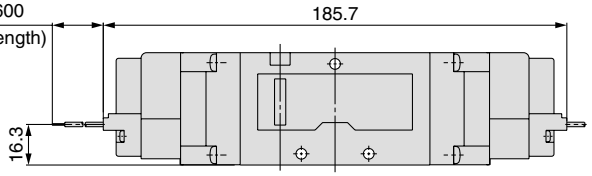




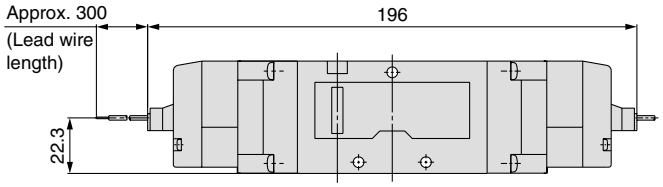


Grommet (G) (H)
DC without light/surge voltage suppressor

G: Approx. 300
H: Approx. 600
(Lead wire length)

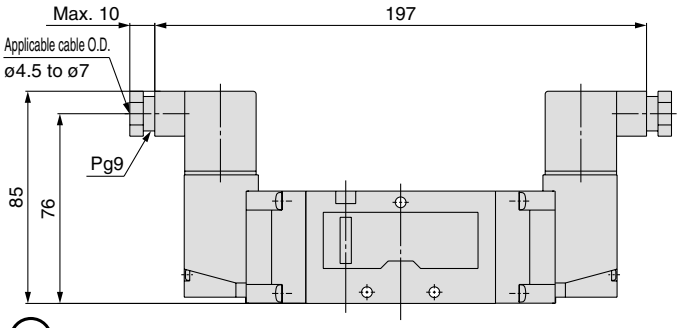


L-type plug connector (L): VF5220-□L□□1- 02/03 □



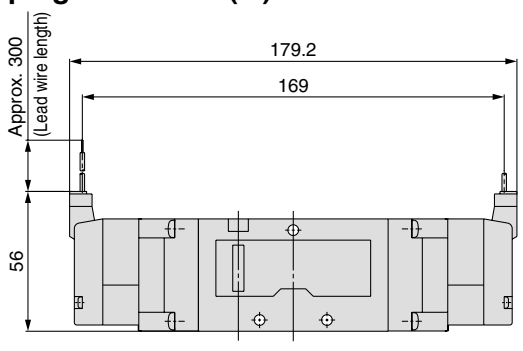
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF5220-□ D/Y □□1- 02/03 □



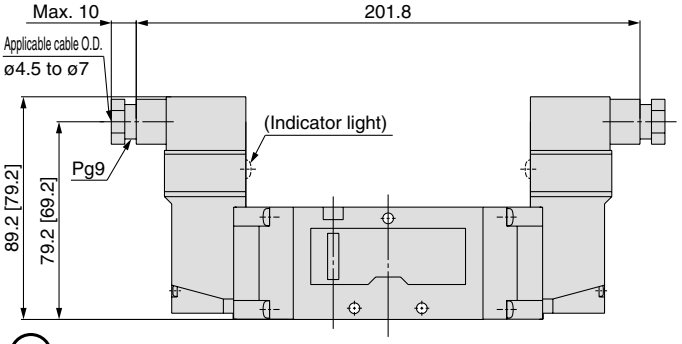
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF5220-□M□□1- 02/03 □



Unless otherwise indicated, dimensions are the same as Grommet (G).

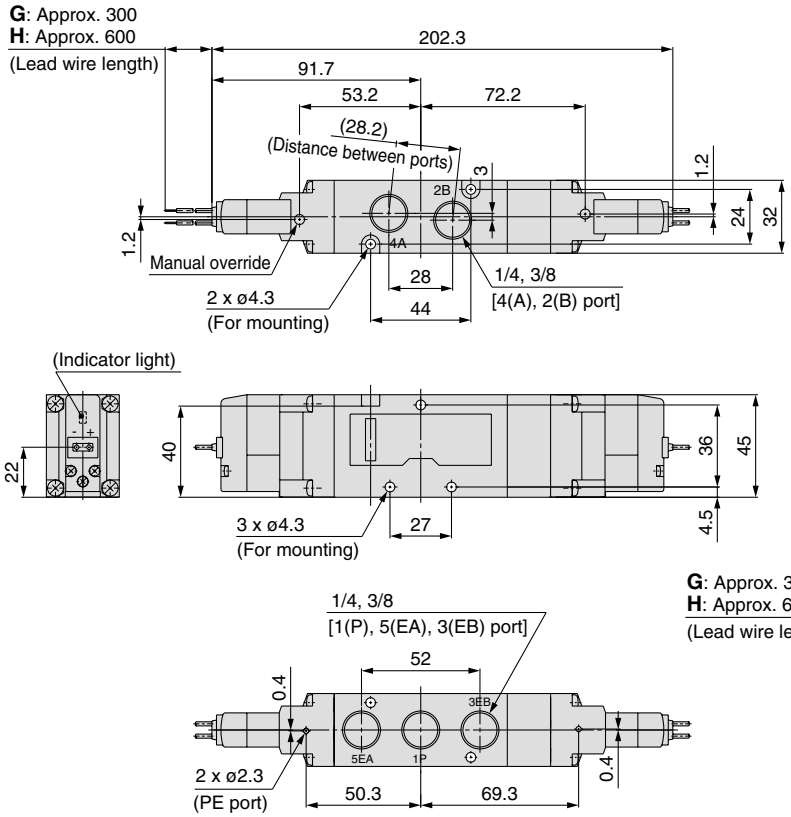
Conduit terminal (T): VF5220-□T□□1- 02/03 □



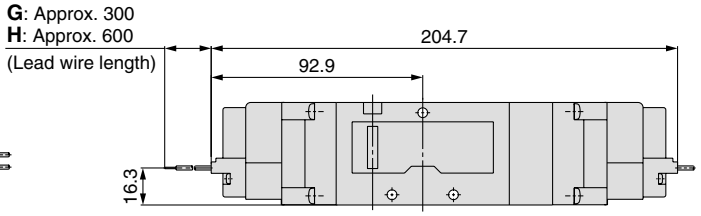
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF5000/Body Ported/Dimensions

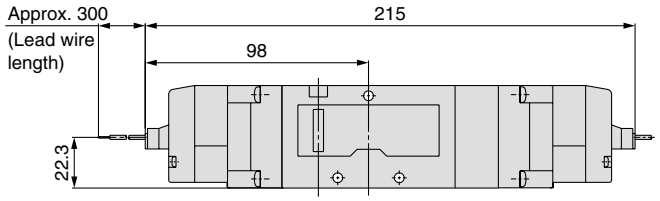
3-position closed center/exhaust center/pressure center
Grommet (G) (H): VF5$^{3}_{4}_{5}$20-□$^{G}_{H}$□□1-$^{02}_{03}$□



Grommet (G) (H)
DC without light/surge voltage suppressor

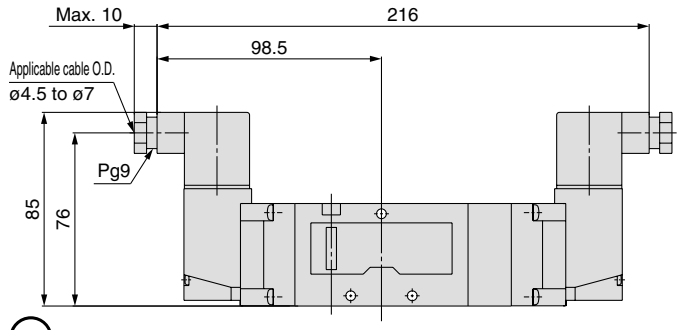


L-type plug connector (L): VF5$^{3}_{4}_{5}$20-□L□□1-$^{02}_{03}$



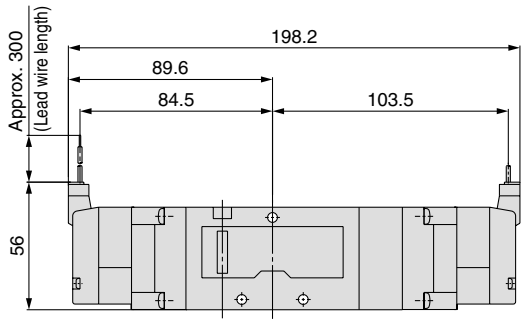
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF5$^{3}_{4}_{5}$20-□$^{D}_{Y}$□□1-$^{02}_{03}$□



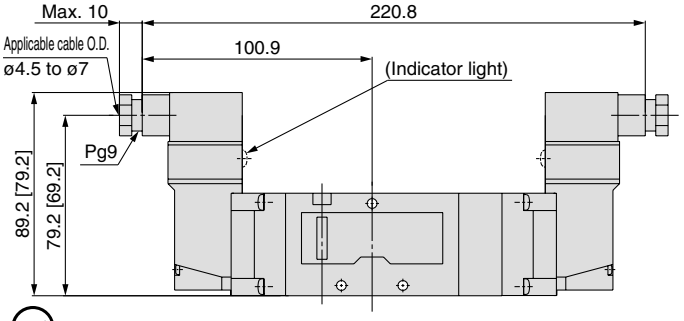
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF5$^{3}_{4}_{5}$20-□M□□1-$^{02}_{03}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF5$^{3}_{4}_{5}$20-□T□□1-$^{02}_{03}$□



[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.

1 Body Ported Pilot Exhaust Port with Piping Thread (M3) Specification

In this specification, piping to the pilot exhaust port (PE port) is available when the valve is used in an environment where the exhaust from the pilot valve is not allowable, or intrusion of ambient dust should be prevented.

How to Order Valve

VF 3 □ 3 0 □□ – □□□□ 1 – □□□ – □ – X500

Series

1	VF1000
3	VF3000
5	VF5000

Entry is the same as standard products.
The specifications and performance are the same as those of standard models.

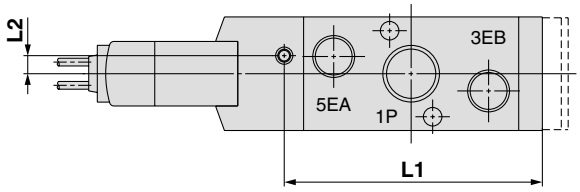
Type of actuation

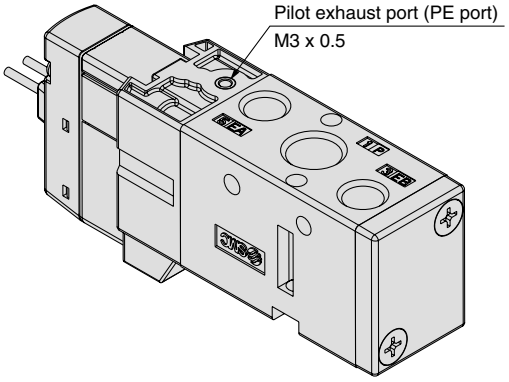
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

Body model

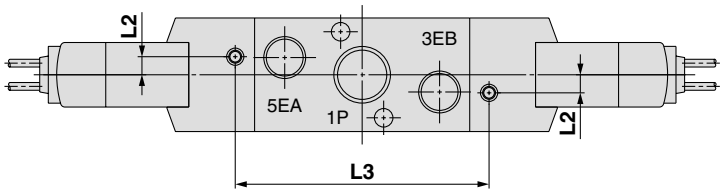
Symbol	VF1000	VF3000	VF5000
2	○	—	○
3	—	○	—

• 2-position single

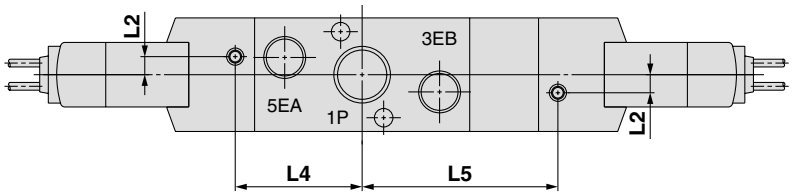




• 2-position double



• 3-position closed center/exhaust center/pressure center



Series	L1	L2	L3	L4	L5
VF1000	34.5	4.2	33.4	—	—
VF3000	60	4.2	59	29.5	45.5
VF5000	95	3.45	89	44.5	63.5

Pilot Operated 5 Port Solenoid Valve

Series VF3000/5000

Base Mounted Single Unit

Note) Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.

How to Order Valve

Base mounted (VF1000: Not available)

VF [3] [1] [4] [0] [K] [T] – [5] [G] [Z] [D] 1 – [02] [ ]

Series

3	VF3000
5	VF5000

∗ Not available with the VF1000.

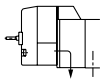
Type of actuation

1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

Body model

Body option

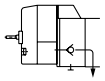
0: Pilot valve individual exhaust



PE port EA/EB port

VF3000	VF5000
○	—

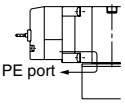
3: Main/Pilot valve common exhaust



PE port EA/EB port

VF3000	VF5000
○	—

4: Pilot valve base exhaust



PE port

VF3000	VF5000
—	○

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1 MPa)

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to back pages 5 and 6 for details.)

∗ T type is available with DC mode only. When T is selected, only Z type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

Thread type

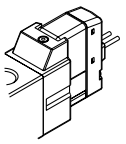
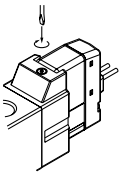
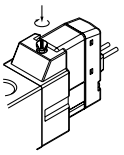
Nil	Rc
F	G
N	NPT
T	NPTF

Port size (Sub-plate)

Symbol	Port size	VF3000	VF5000
Nil	Without sub-plate		
02	1/4	○	○
03	3/8	○	○
04	1/2	—	○

∗ Without the sub-plate, two mounting screws and gasket are accompanied.

Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type	E: Push-turn locking lever type
		

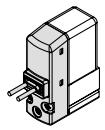
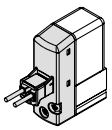
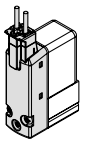
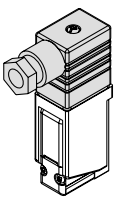
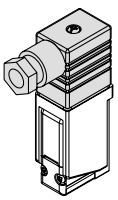
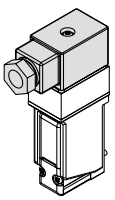
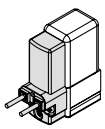
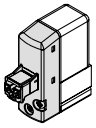
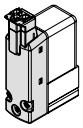
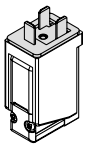
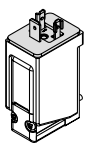
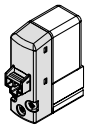
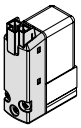
Light/surge voltage suppressor

Symbol	Light/surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	—Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

∗ In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

Electrical entry

	Grommet	L-type plug connector	M-type plug connector	DIN terminal [IP65 compatible]	DIN (EN175301-803) terminal [IP65 compatible]	Conduit terminal [IP65 compatible]
	 **G**: Lead wire length 300 mm **H**: Lead wire length 600 mm	 **L**: With lead wire (length 300 mm)	 **M**: With lead wire (length 300 mm)	 **D**: With connector	 **Y**: With connector	 **T**: Conduit terminal
	 **G**: Lead wire length 300 mm **H**: Lead wire length 600 mm DC Without light/surge voltage suppressor	 **LN**: Without lead wire	 **MN**: Without lead wire	 **DO**: Without connector	 **YO**: Without connector	
	 **LO**: Without connector	 **MO**: Without connector				
CE compliant DC	CE	CE	CE	CE	CE	CE
CE compliant AC Note 2)	—	—	—	CE	CE	CE

∗ LN and MN types are with 2 sockets.

∗ Refer to back page 3 when different length of lead wire for L/M-type plug connector is required.

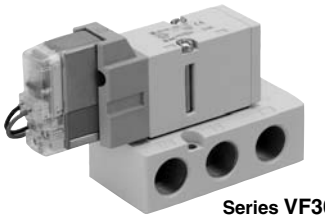
∗ Refer to back page 4 for details on the DIN (EN175301-803) terminal.

Note 1) When using with IP65, select the main/pilot valve common exhaust type or pilot valve base exhaust type.

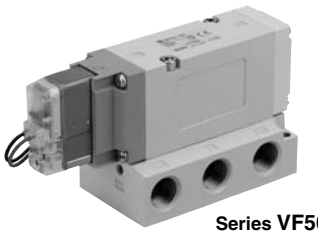
Note 2) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 6 for details.



Series VF3000



Series VF5000

Specifications

Model			VF3000	VF5000
Fluid			Air	
Operating pressure range (MPa)	**Standard**	**2-position single/3-position**	0.15 to 0.7	
		2-position double	0.1 to 0.7	
	High-pressure type	**2-position single/3-position**	0.15 to 1.0	
		2-position double	0.1 to 1.0	
Ambient and fluid temperature (°C)			–10 to 50 (No freezing)	
Max. operating frequency (Hz)		**2-position single/double**	10	5
		3-position	3	3
Manual override			Non-locking push type Push-turn locking slotted type Push-turn locking lever type	
Pilot exhaust type			Individual exhaust, Main/ Pilot valve common exhaust	Pilot valve base exhaust
Lubrication			Not required	
Mounting orientation			Unrestricted	
Impact/Vibration resistance (m/s²) Note)			300/50	
Enclosure			Dustproof (IP65* for D, Y, T)	

Note) Impact resistance: No malfunction occurred when it is tested 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)

* Based on IEC60529. When using with IP65, select the main/pilot valve common exhaust type or pilot valve base exhaust type.

Solenoid Specifications

Electrical entry			Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T)
			G, H, L, M	D, Y, T
Coil rated voltage (V)		**DC**	24, 12	
		AC (50/60 Hz)	24, 100, 110, 200, 220, 240	
Allowable voltage fluctuation			±10%* of rated voltage	
Power consumption (W)	**DC**	**Standard**	1.5 (With light: 1.55)	1.5 (With light: 1.75)
		With power saving circuit	0.55 (With light only)	0.75 (With light only)
Apparent power (VA)*	**AC**	**24 V**	1.5 (With light: 1.55)	1.5 (With light: 1.75)
		100 V	1.55 (With light: 1.65)	1.55 (With light: 1.7)
		110 V [115 V]		
		200 V		
		220 V [230 V]		
		240 V		
Surge voltage suppressor			Diode (Non-polar type: Varistor)	
Indicator light			LED (Neon bulb is used for AC mode of D, Y, T.)	

* It is in common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
* Allowable voltage fluctuation is –15% to +5% of the rated voltage for 115 VAC or 230 VAC.
* Since voltage drops due to the internal circuit in S, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.
  24 VDC: –7% to +10% 12 VDC: –4% to +10%

Response Time

Series	Type of actuation		Pressure specification	Operating pressure range (MPa)	Response time ms (at 0.5 MPa)			
					Without light/surge voltage suppressor	With light/surge voltage suppressor		AC
						S, Z type	R, U type	
VF1000	2-position	Single	Standard	0.15 to 0.7	20	45	23	45
		Double		0.1 to 0.7	12	12	12	12
		Single	High-pressure type	0.15 to 1.0	23	48	26	48
		Double		0.1 to 1.0	15	15	15	15
VF3000	2-position	Single	Standard	0.15 to 0.7	20	45	23	45
		Double		0.1 to 0.7	12	12	12	12
	3-position			0.15 to 0.7	30	55	33	55
	2-position	Single	High-pressure type	0.15 to 1.0	23	48	26	48
		Double		0.1 to 1.0	15	15	15	15
	3-position			0.15 to 1.0	33	58	36	58
VF5000	2-position	Single	Standard	0.15 to 0.7	30	55	33	55
		Double		0.1 to 0.7	15	15	15	15
	3-position			0.15 to 1.0	50	75	53	75
	2-position	Single	High-pressure type	0.15 to 1.0	33	58	36	58
		Double		0.1 to 1.0	18	18	18	18
	3-position			0.15 to 1.0	53	78	56	78

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)

Flow-rate Characteristics/Weight

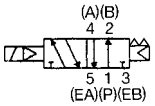
Valve model	Type of actuation		Port size	Flow-rate characteristics Note 1)						Weight (g) Note 2)	
				1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)				
				C [dm³/(s/bar)]	b	Cv	C [dm³/(s/bar)]	b	Cv	Grommet	DIN terminal
VF3□40-02	2-position	Single	1/4	2.8	0.14	0.64	2.5	0.18	0.57	344 (192)	380 (228)
		Double		2.8	0.14	0.64	2.5	0.18	0.57	405 (252)	477 (324)
	3-position	Closed center		2.1	0.22	0.49	1.6	0.26	0.41	422 (270)	494 (342)
		Exhaust center		2.3	0.21	0.53	2.8 [2.1]	0.23 [0.26]	0.66 [0.50]	422 (270)	494 (342)
		Pressure center		2.9 [1.1]	0.16 [0.45]	0.67 [0.32]	2.1	0.23	0.49	422 (270)	494 (342)
VF3□40-03	2-position	Single	3/8	3.1	0.24	0.76	2.6	0.23	0.62	327 (192)	363 (228)
		Double		3.1	0.24	0.76	2.6	0.23	0.62	388 (252)	460 (324)
	3-position	Closed center		2.2	0.33	0.57	1.6	0.34	0.40	405 (270)	477 (342)
		Exhaust center		2.6	0.27	0.61	2.8 [2.3]	0.30 [0.28]	0.68 [0.55]	405 (270)	477 (342)
		Pressure center		3.4 [1.3]	0.29 [0.48]	0.80 [0.38]	2.2	0.31	0.52	405 (270)	477 (342)
VF5□44-02	2-position	Single	1/4	7.3	0.49	2.1	7.3	0.50	2.0	486 (297)	522 (333)
		Double		7.3	0.49	2.1	7.3	0.50	2.0	541 (352)	613 (424)
	3-position	Closed center		6.6	0.35	1.7	6.3	0.31	1.6	578 (390)	650 (462)
		Exhaust center		7.4	0.33	1.9	8.1 [7.4]	0.35 [0.34]	2.1 [1.9]	578 (390)	650 (462)
		Pressure center		8.0 [2.9]	0.35 [0.48]	2.1 [0.85]	5.6	0.31	1.5	578 (390)	650 (462)
VF5□44-03	2-position	Single	3/8	8.4	0.34	2.2	8.9	0.29	2.3	473 (297)	509 (333)
		Double		8.4	0.34	2.2	8.9	0.29	2.3	529 (352)	601 (424)
	3-position	Closed center		7.3	0.34	2.0	7.1	0.28	1.8	566 (390)	638 (462)
		Exhaust center		8.1	0.27	2.0	14.0 [8.3]	0.26 [0.31]	3.4 [2.2]	566 (390)	638 (462)
		Pressure center		8.1 [2.5]	0.33 [0.48]	2.0 [0.74]	5.7	0.31	1.4	566 (390)	638 (462)
VF5□44-04	2-position	Single	1/2	9.4	0.43	2.7	12.0	0.32	3.0	545 (297)	581 (333)
		Double		9.4	0.43	2.7	12.0	0.32	3.0	600 (352)	672 (424)
	3-position	Closed center		7.1	0.41	2.1	7.4	0.32	2.0	638 (390)	710 (462)
		Exhaust center		8.6	0.39	2.4	13.0 [8.9]	0.21 [0.40]	3.1 [2.5]	638 (390)	710 (462)
		Pressure center		11.0 [2.6]	0.18 [0.47]	2.6 [0.78]	6.1	0.35	1.6	638 (390)	710 (462)

Note 1) [ ]: Normal position
Note 2) Values without bracket

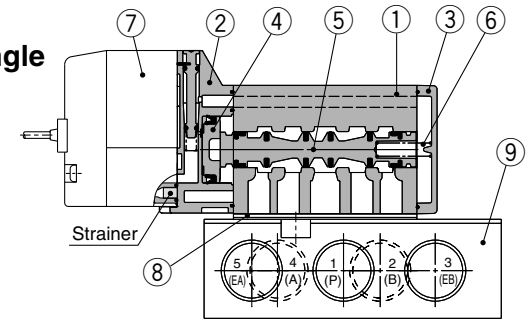
Construction/Base Mounted

VF3000/5000

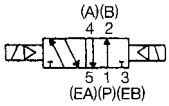
Symbol
2-position single



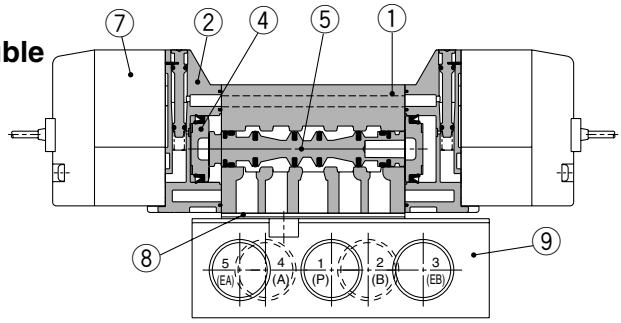
2-position single



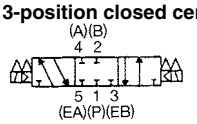
Symbol
2-position double



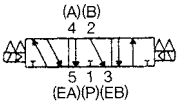
2-position double



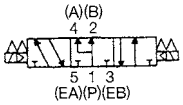
Symbol
3-position closed center



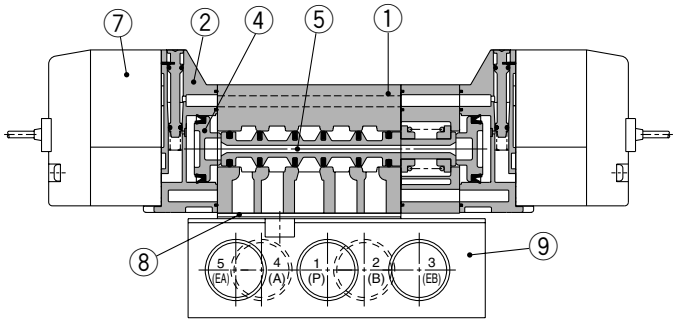
3-position exhaust center



3-position pressure center



3-position closed center/exhaust center/pressure center



(Drawing shows a closed center type.)

Sub-plate part no.

VF 3 000-71- 1 ☐

Series

3	VF3000
5	VF5000

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	Port size	VF3000	VF5000
1	1/4	○	○
2	3/8	○	○
3	1/2	—	○

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum die-casted	White
2	**Adapter plate**	Resin	Gray
3	**End plate**	Aluminum die-casted (VF5000: Resin)	White
4	**Piston**	Resin	
5	**Spool valve**	Aluminum, HNBR	
6	**Spring**	Stainless steel	

Replacement Parts

No.	Description	Part no.		Note
		VF3000	**VF5000**	
7	**Pilot valve assembly**	Refer to “How to Order Pilot Valve Assembly” on page 19.		Built-in strainer
8	**Gasket**	DXT031-30-11	DXT156-9-8	HNBR
9	**Sub-plate**	1/4: VF3000-71-1☐ 3/8: VF3000-71-2☐	1/4: VF5000-71-1☐ 3/8: VF5000-71-2☐ 1/2: VF5000-71-3☐	Aluminum die-casted
—	**Round head combination screw (1 pc.)**	DXT031-44-1 (With M4 x 39.5 SW)	—	For valve mounting
—	**Hexagon socket head cap screw (1 pc.)**	—	AXT620-32-1 (With M4 x 48 SW)	For valve mounting

⚠ Caution

Tightening Torque of Valve Mounting

M4: 1.4 N·m

How to Order Pilot Valve Assembly (With a gasket and two mounting screws)

⚠ Caution

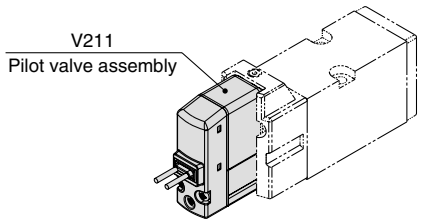
When only the pilot valve assembly is replaced, it is not possible to change from V211 (Grommet or L/M-type) to V212 (DIN or Conduit type), or vice versa.

Valve model: VF□□□□□□-5GZ□1-□□□

∗ Select from the below in accordance with the valve used.

■ Grommet or L/M-type

V 2 1 1 □□-5GZ



Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	—Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation. When T is selected, only Z type of light/surge voltage suppressor is available.

⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 6 for details.

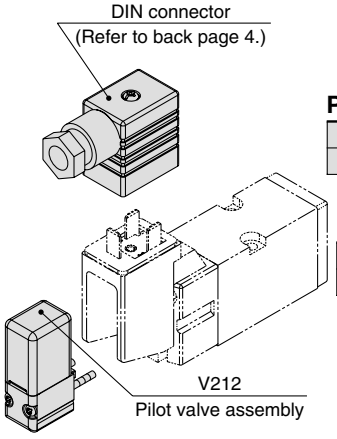
Electrical entry

G	Grommet (Lead wire length 300 mm)	
H	Grommet (Lead wire length 600 mm)	
L	L-type plug connector	With lead wire
LN		Without lead wire
LO		Without connector
M	M-type plug connector	With lead wire
MN		Without lead wire
MO		Without connector

∗ LN and MN types are with 2 sockets.
∗ Refer to back page 3 when different length of lead wire for L/M-type plug connector is required.

■ DIN or Conduit type

V 2 1 2 □□-5



Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1 MPa)

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

∗ T type is available with DC mode only.

Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

⚠ Caution

For V212 (DIN or Conduit type), the coil specification and voltage (including light/surge voltage suppressor) cannot be changed by changing the pilot valve assembly.

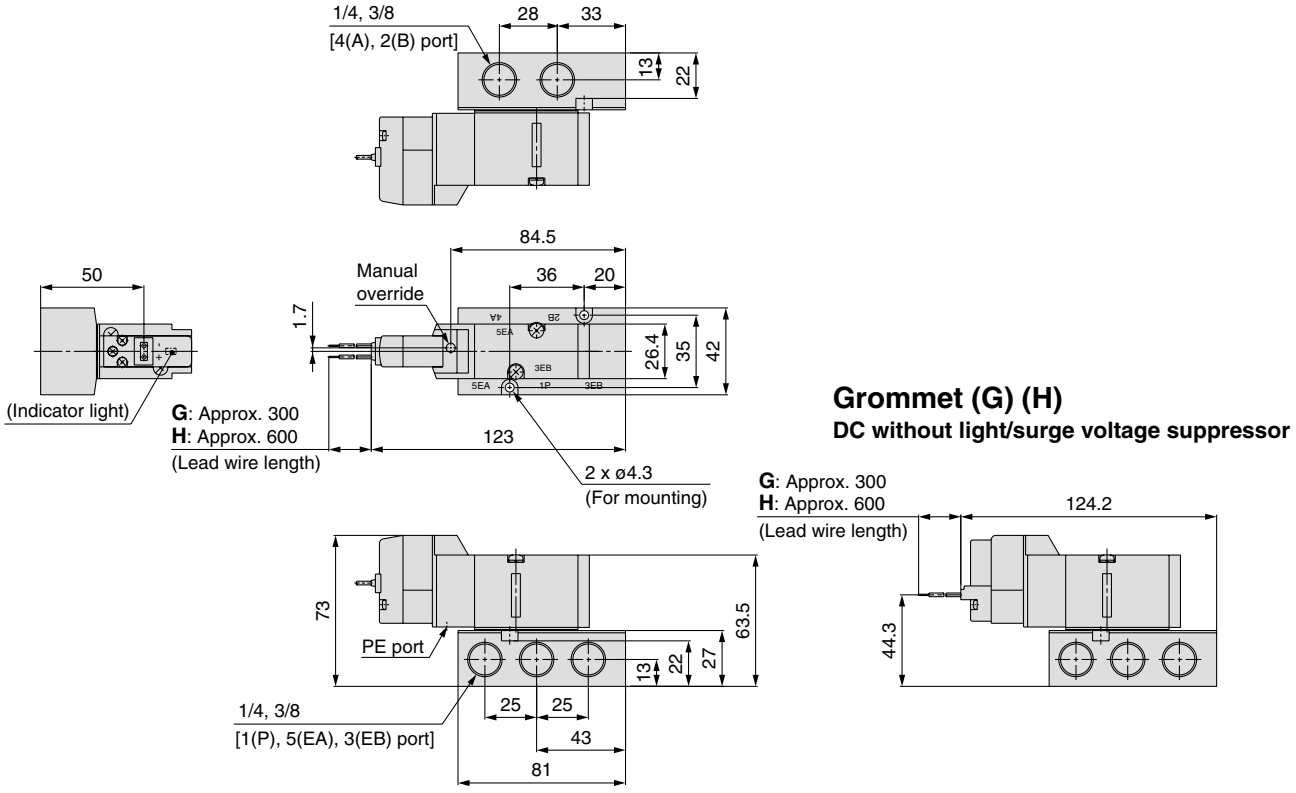
⚠ Caution

Tightening torque of the pilot valve assembly mounting screw
M2.5: 0.32 N·m

Series VF3000/Base Mounted/Dimensions

2-position single

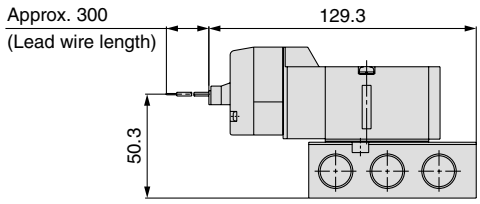
Grommet (G) (H): VF3140-□$^{G}_{H}$□□1-$^{02}_{03}$□



Grommet (G) (H)

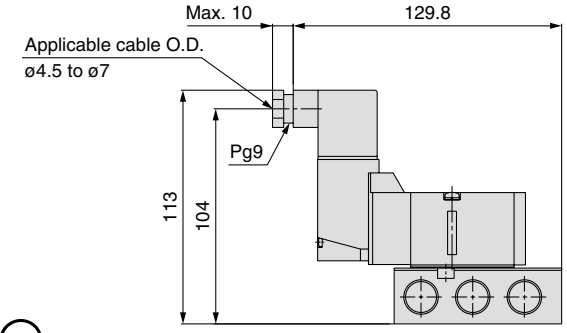
DC without light/surge voltage suppressor

L-type plug connector (L): VF3140-□L□□1-$^{02}_{03}$□



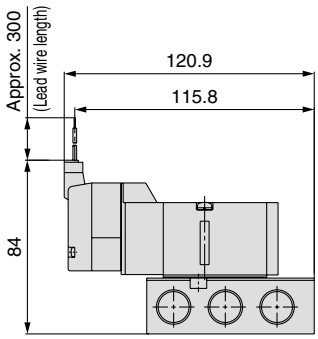
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3140-□$^{D}_{Y}$□□1-$^{02}_{03}$□



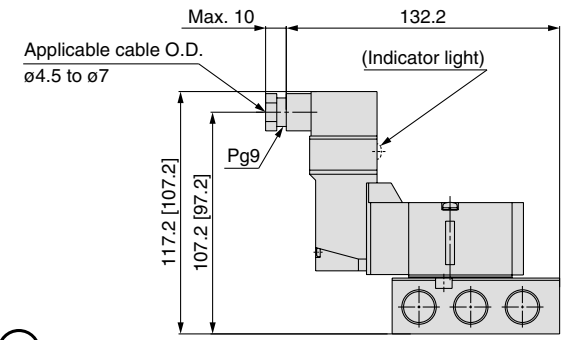
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3140-□M□□1-$^{02}_{03}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).

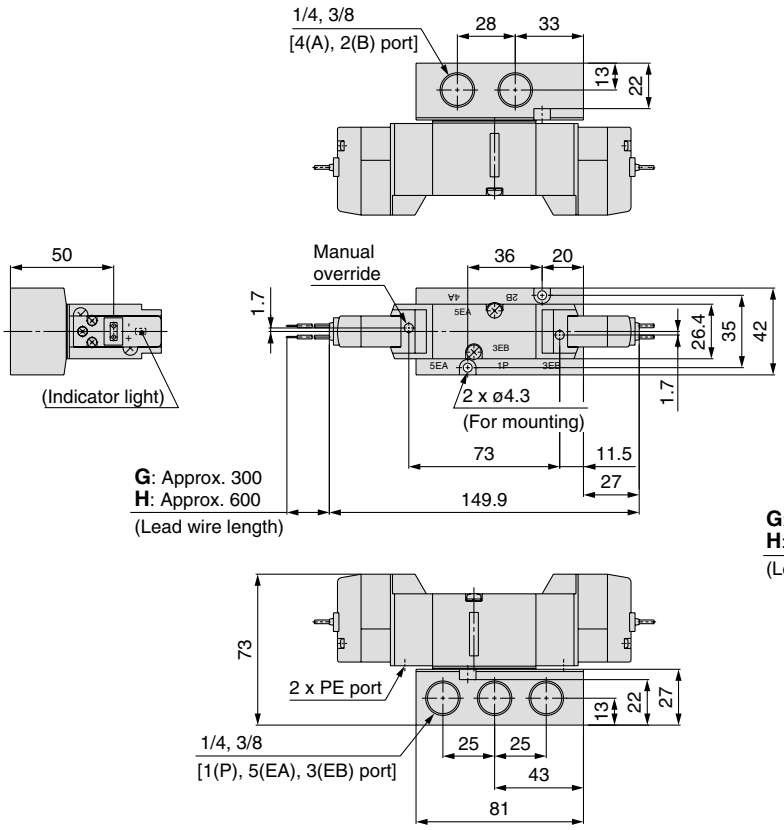
Conduit terminal (T): VF3140-□T□□1-$^{02}_{03}$□



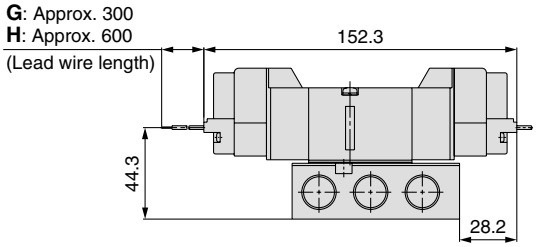
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF3000/Base Mounted/Dimensions

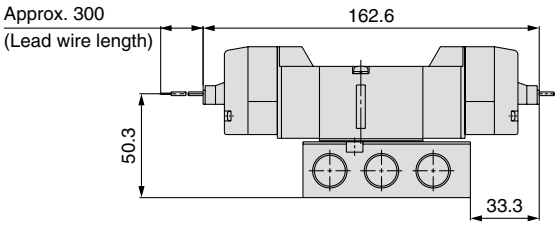
2-position double
Grommet (G) (H): VF3240-□$^{G}_{H}$□□1-$^{02}_{03}$□



Grommet (G) (H)
DC without light/surge voltage suppressor

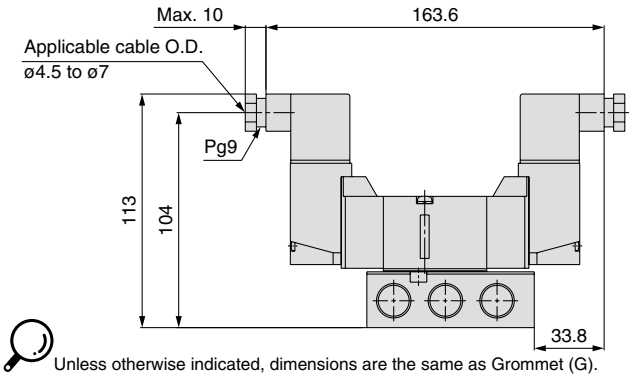


L-type plug connector (L): VF3240-□L□□1-$^{02}_{03}$□



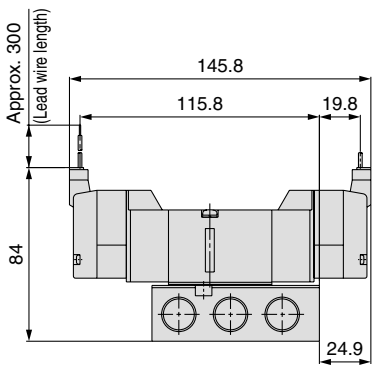
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3240-□$^{D}_{Y}$□□1-$^{02}_{03}$□



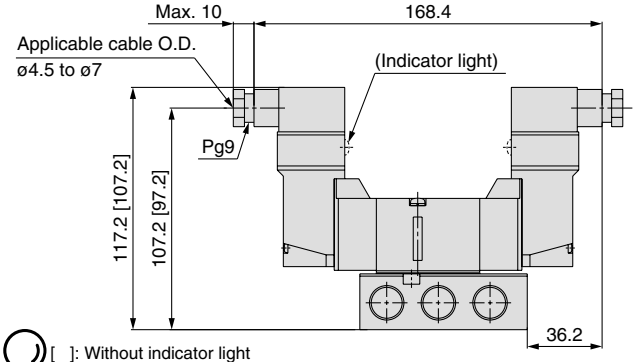
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3240-□M□□1-$^{02}_{03}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T): VF3240-□T□□1-$^{02}_{03}$□

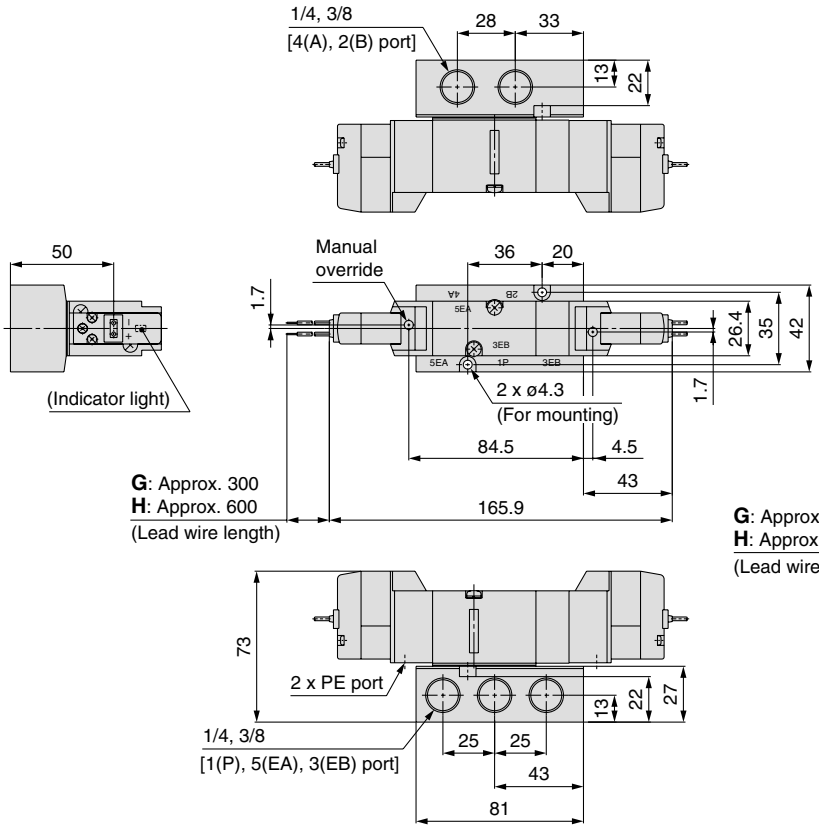


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF3000/Base Mounted/Dimensions

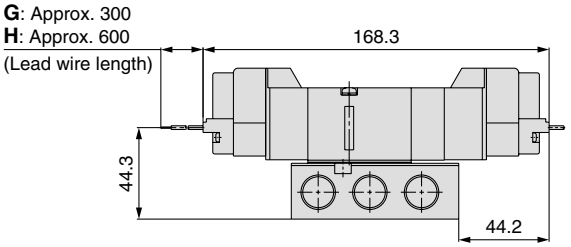
3-position closed center/exhaust center/pressure center

Grommet (G) (H): VF3$^{3}_{4}_{5}$40-□$^{G}_{H}$□□1-$^{02}_{03}$□

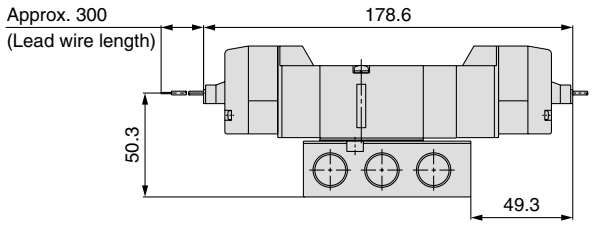


Grommet (G) (H)

DC without light/surge voltage suppressor

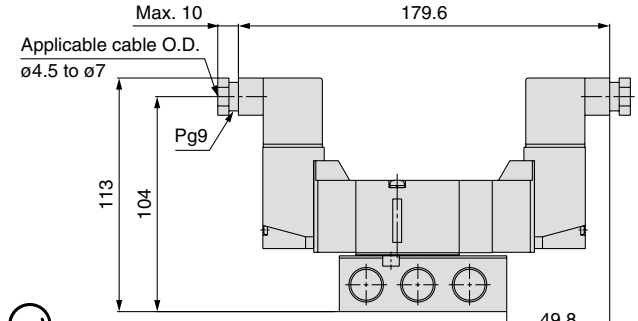


L-type plug connector (L): VF3$^{3}_{4}_{5}$40-□L□□1-$^{02}_{03}$□



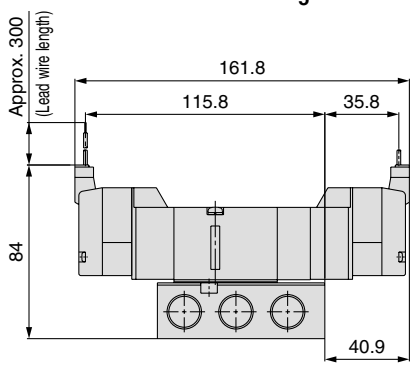
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y): VF3$^{3}_{4}_{5}$40-□$^{D}_{Y}$□□1-$^{02}_{03}$□



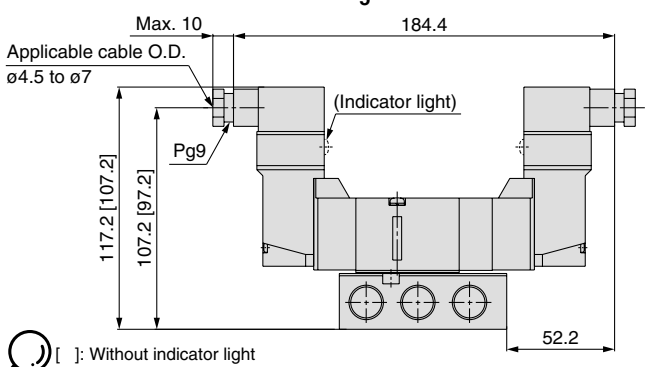
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VF3$^{3}_{4}_{5}$40-□M□□1-$^{02}_{03}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).

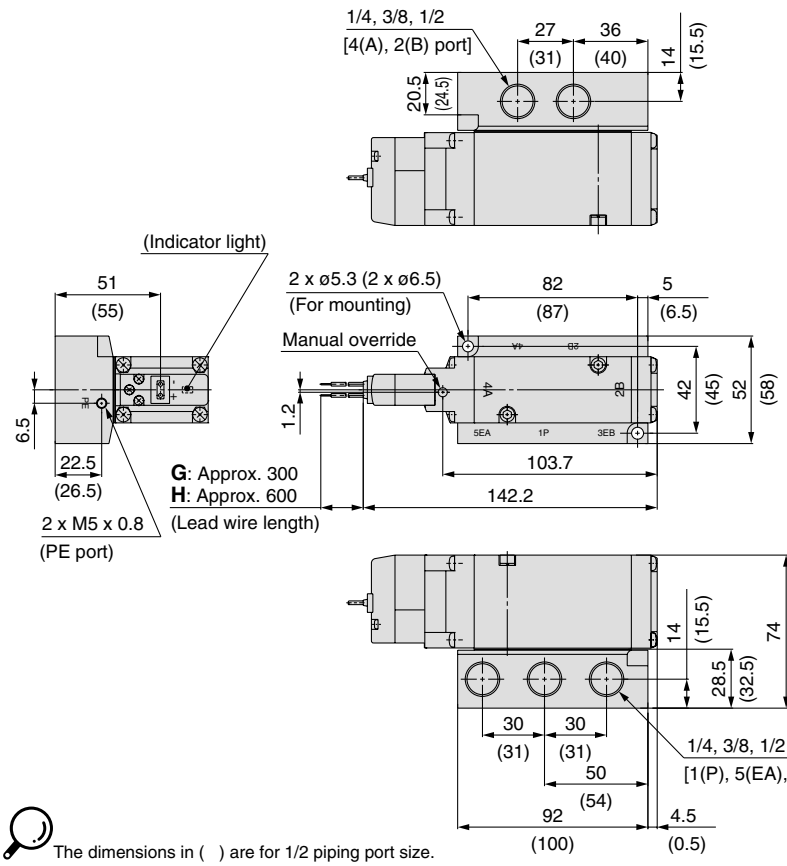
Conduit terminal (T): VF3$^{3}_{4}_{5}$40-□T□□1-$^{02}_{03}$□



[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

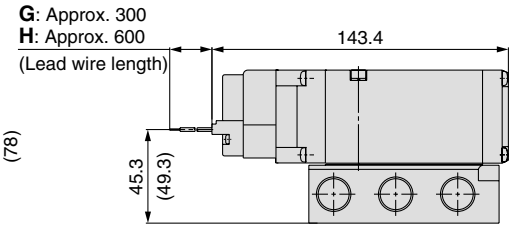
Series VF5000/Base Mounted/Dimensions

2-position single
Grommet (G) (H): VF5144-□ G/H □□1- 02/03/04 □

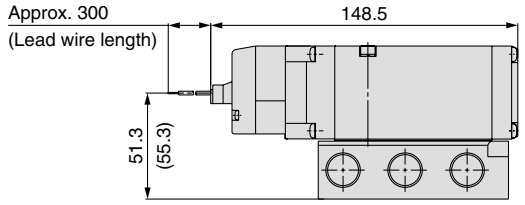


The dimensions in ( ) are for 1/2 piping port size.

Grommet (G) (H)
DC without light/surge voltage suppressor

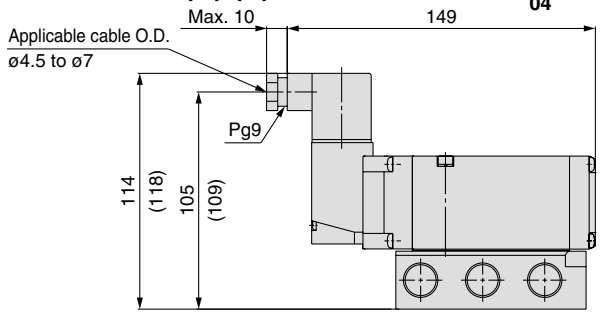


L-type plug connector (L): VF5144-□L□□1- 02/03/04 □



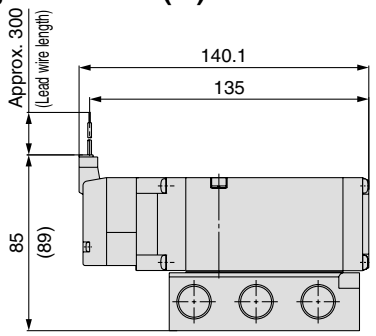
Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

DIN terminal (D) (Y): VF5144-□ D/Y □□1- 02/03/04 □



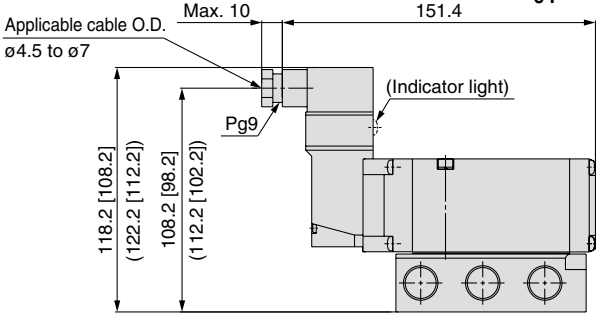
Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

M-type plug connector (M): VF5144-□M□□1- 02/03/04 □



Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

Conduit terminal (T): VF5144-□T□□1- 02/03/04 □

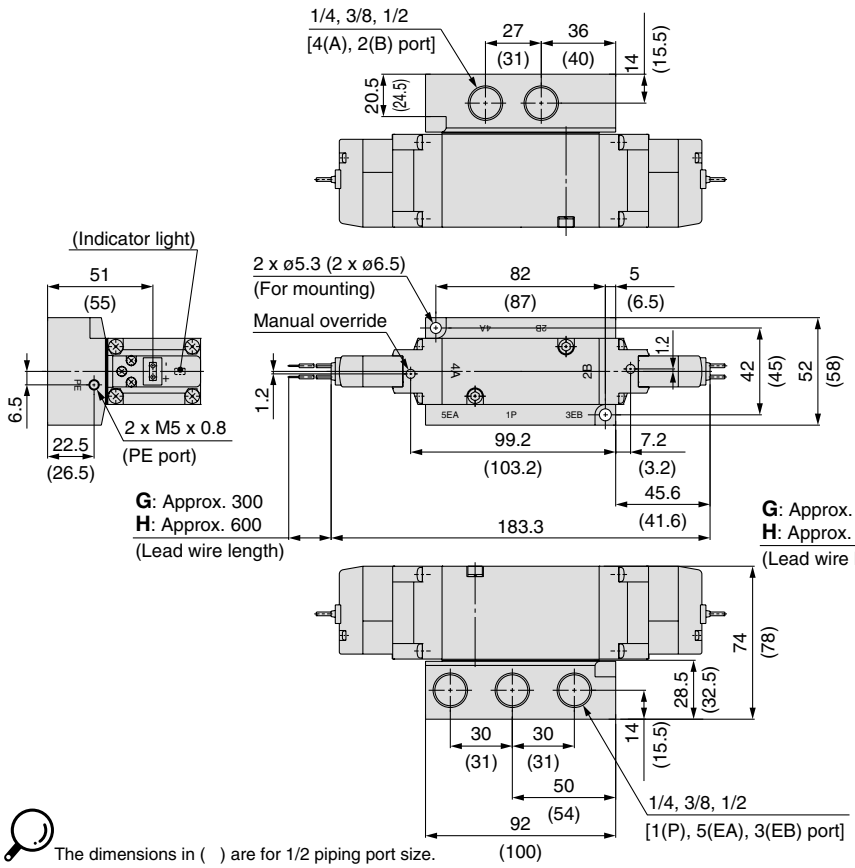


Unless otherwise indicated, dimensions are the same as Grommet (G).
[ ]: Without indicator light
The dimensions in ( ) are for 1/2 piping port size.

Series VF5000/Base Mounted/Dimensions

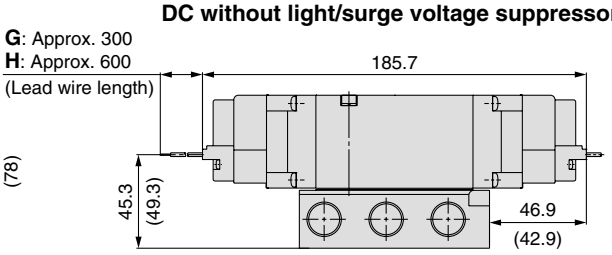
2-position double

Grommet (G) (H): VF5244-□ G/H □□1- 02/03/04 □

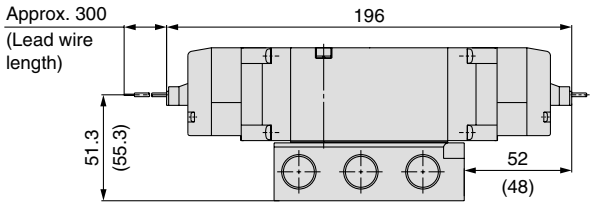


The dimensions in ( ) are for 1/2 piping port size.

Grommet (G) (H)
DC without light/surge voltage suppressor

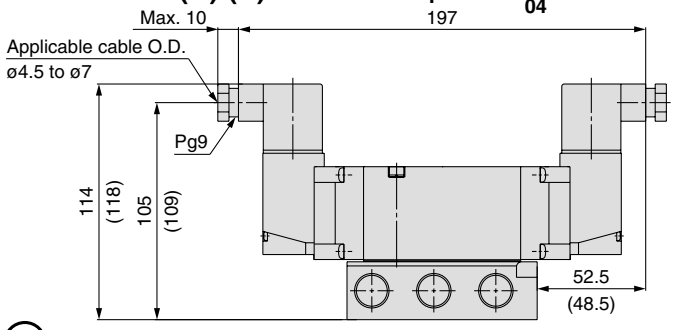


L-type plug connector (L): VF5244-□L□□1- 02/03/04 □



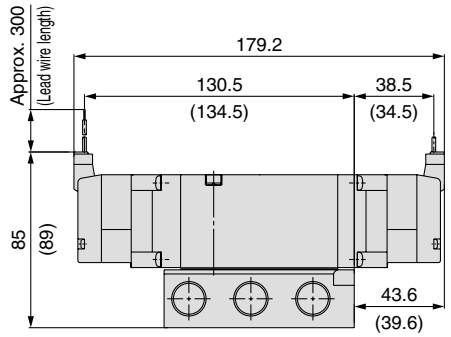
Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

DIN terminal (D) (Y): VF5244-□ D/Y □□1- 02/03/04 □



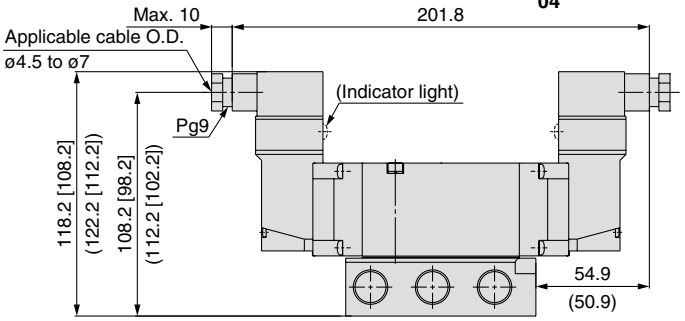
Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

M-type plug connector (M): VF5244-□M□□1- 02/03/04 □



Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

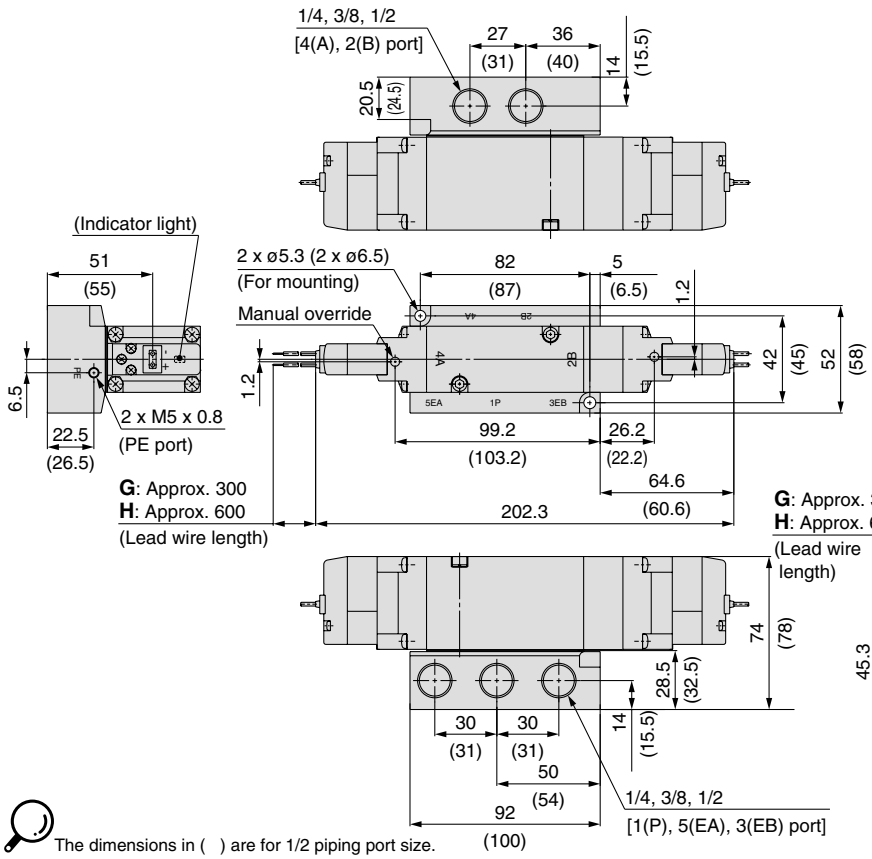
Conduit terminal (T): VF5244-□T□□1- 02/03/04 □



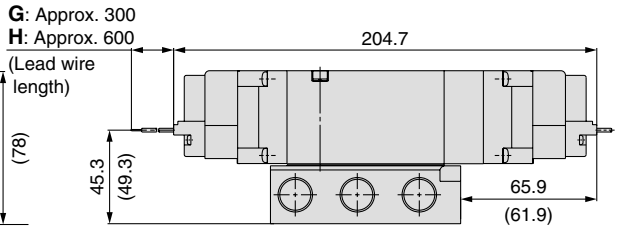
Unless otherwise indicated, dimensions are the same as Grommet (G).
[ ]: Without indicator light
The dimensions in ( ) are for 1/2 piping port size.

Series VF5000/Base Mounted/Dimensions

3-position closed center/exhaust center/pressure center
Grommet (G) (H): VF5$^{3}_{4}_{5}$44-□$^{G}_{H}$□□1-$^{02}_{03}_{04}$□

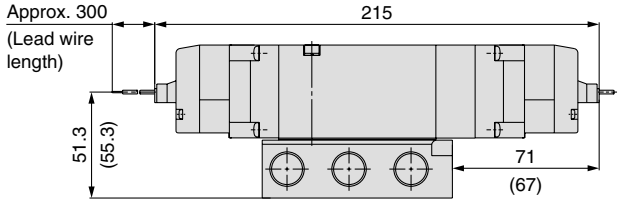


Grommet (G) (H)
DC without light/surge voltage suppressor



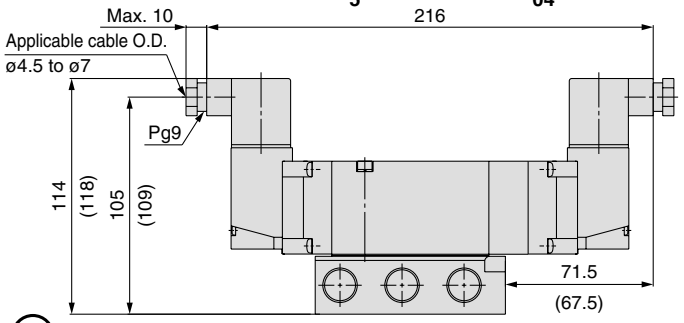
The dimensions in ( ) are for 1/2 piping port size.

L-type plug connector (L): VF5$^{3}_{4}_{5}$44-□L□□1-$^{02}_{03}_{04}$□



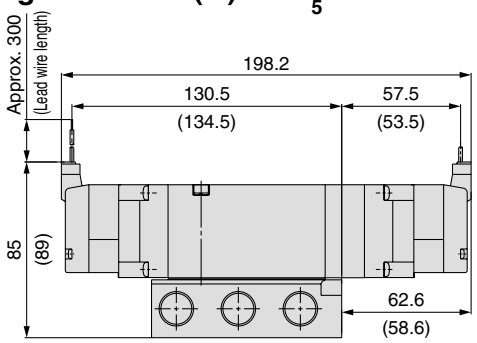
Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

DIN terminal (D) (Y): VF5$^{3}_{4}_{5}$44-□$^{D}_{Y}$□□1-$^{02}_{03}_{04}$□



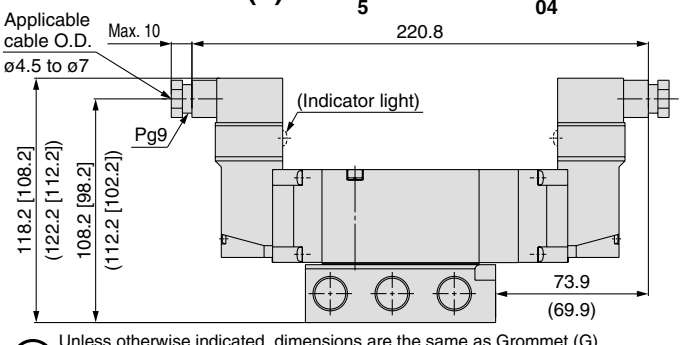
Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

M-type plug connector (M): VF5$^{3}_{4}_{5}$44-□M□□1-$^{02}_{03}_{04}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).
The dimensions in ( ) are for 1/2 piping port size.

Conduit terminal (T): VF5$^{3}_{4}_{5}$44-□T□□1-$^{02}_{03}_{04}$□



Unless otherwise indicated, dimensions are the same as Grommet (G).
[ ]: Without indicator light
The dimensions in ( ) are for 1/2 piping port size.

Pilot Operated 5 Port Solenoid Valve

Series VF1000/3000/5000

Body Ported Manifold

Note) Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.

How to Order Manifold

Common exhaust

VV5F 1 – 30 – 04 1 – □

Series

1	VF1000
3	VF3000
5	VF5000

Manifold model

Symbol	P, R port size	VF1000	VF3000	VF5000
30	1/8	○	—	—
	1/4	—	○	—
20	3/8	—	—	○
21	1/2	—	—	○

∗ The A and B ports are made on the top.

Stations

02	2 stations
⋮	⋮
20	20 stations

∗ Up to 10 stations for VV5F5-20, and up to 15 stations for VV5F5-21.

Thread type

Nil	Rc
00F	G
00N	NPT
00T	NPTF

Individual exhaust (VF1000 only)

VV5F1 – 31 – 04 3 – □

Stations

02	2 stations
⋮	⋮
20	20 stations

Thread type

Nil	Rc
00F	G
00N	NPT
00T	NPTF

Manifold model

Symbol	P, R port size	EA, EB port size
31	1/8	M5

How to Order Valve (With a gasket and two mounting screws)

VF 3 1 3 0 □ □ – 5 G □ □ 1 – 01 □

Series

1	VF1000
3	VF3000
5	VF5000

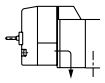
Type of actuation

1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

∗ Only 1 and 2 are available with the VF1000.

Body option

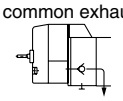
0: Pilot valve individual exhaust



PE port EA/EB port

VF1000	VF3000	VF5000
○	○	○

3: Main/Pilot valve common exhaust



PE port EA/EB port

VF1000	VF3000	VF5000
○	○	○

Body model

Symbol	VF1000	VF3000	VF5000
2	—	—	○
3	○ Note)	○	—

Note) Manifold only

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to back pages 5 and 6 for details.)

∗ T type is available with DC mode only. When T is selected, only Z type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1 MPa)

Rated voltage

DC		AC (50/60 Hz)			
5	24 VDC	1	100 VAC	4	220 VAC [230 VAC]
6	12 VDC	2	200 VAC	7	240 VAC
		3	110 VAC [115 VAC]	B	24 VAC

A, B port size

Symbol	Port size	VF1000	VF3000	VF5000
M5	M5 x 0.8	○	—	—
01	1/8	○	○	—
02	1/4	—	○	○
03	3/8	—	—	○

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

∗ M5 is available with Nil only.

Light/surge voltage suppressor

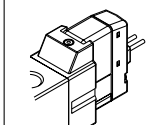
Symbol	Light/surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	— Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

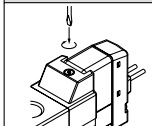
∗ In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

Manual override

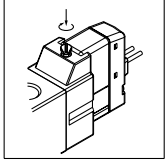
Nil: Non-locking push type



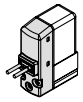
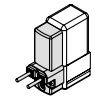
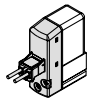
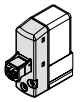
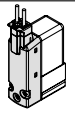
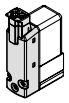
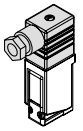
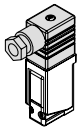
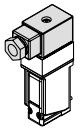
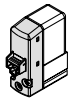
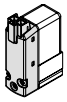
D: Push-turn locking slotted type



E: Push-turn locking lever type



Electrical entry

	Grommet		L-type plug connector		M-type plug connector		DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
							[IP65 compatible]	[IP65 compatible]	[IP65 compatible]
	 **G**: Lead wire length 300 mm **H**: Lead wire length 600 mm	 **G**: Lead wire length 300 mm **H**: Lead wire length 600 mm DC Without light/surge voltage suppressor	 **L**: With lead wire (length 300 mm)	 **LN**: Without lead wire	 **M**: With lead wire (length 300 mm)	 **MN**: Without lead wire	 **D**: With connector	 **Y**: With connector	 **T**: Conduit terminal
			 **LO**: Without connector		 **MO**: Without connector		 **DO**: Without connector	 **YO**: Without connector	
CE compliant DC	CE		CE		CE		CE	CE	CE
CE compliant AC Note 2)	—		—		—		CE	CE	CE

∗ LN and MN types are with 2 sockets. ∗ Refer to back page 3 when different length of lead wire for L/M-type plug connector is required.

∗ Refer to back page 4 for details on the DIN (EN175301-803) terminal.

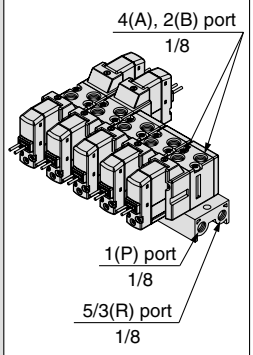
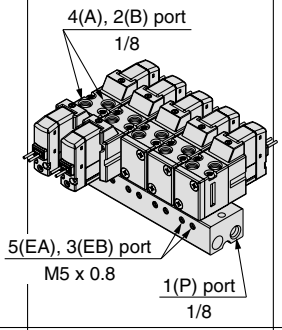
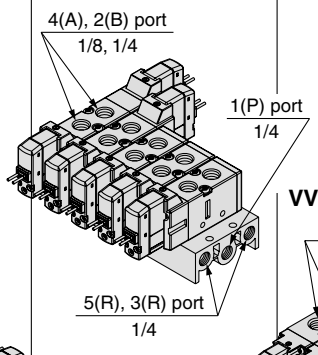
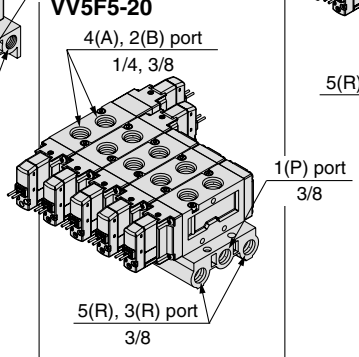
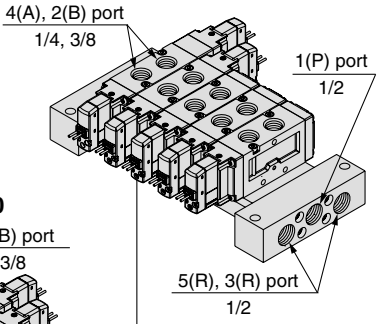
Note 1) When using with IP65, select the main/pilot valve common exhaust type.

Note 2) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

⚠ Caution

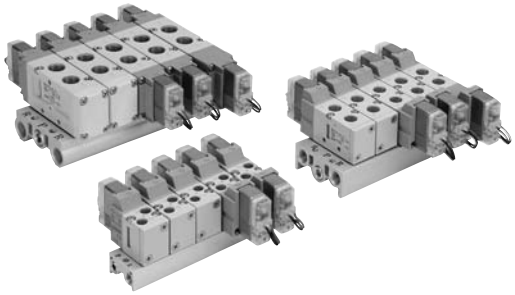
When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 6 for details.

Manifold Specifications

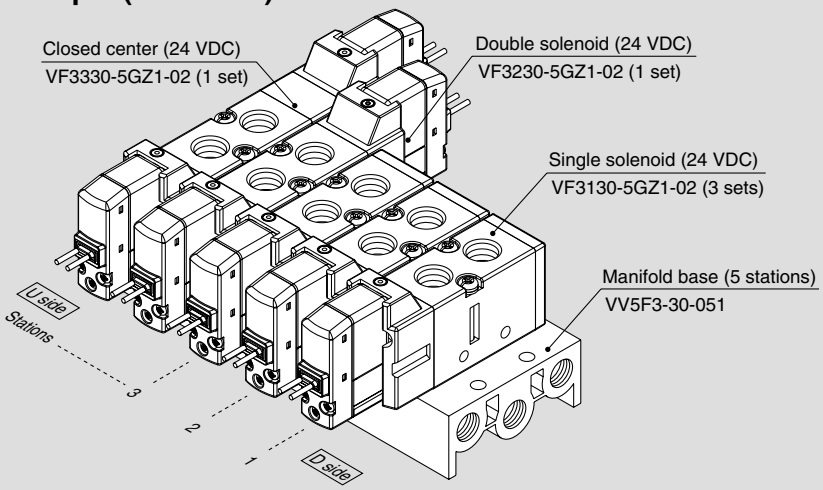
Series	VF1000		VF3000	VF5000	
Manifold base model	**VV5F1-30** 	**VV5F1-31** 	**VV5F3-30** 	**VV5F5-20** 	**VV5F5-21** 
EXH port type	Common EXH	Individual EXH	Common EXH	Common EXH	Common EXH
Applicable valve model	**VF1□30** **VF1□33**		**VF3□30** **VF3□33**	**VF5□20** **VF5□23**	
Applicable stations	2 to 20 stations		2 to 20 stations	2 to 10 stations	2 to 15 stations
Manifold base Weight: W [g] Stations: n	W = 29n + 21	W = 51n + 35	W = 63n + 64	W = 97n + 80	W = 139n + 550

Note) Supply pressure to 1(P) ports and exhaust pressure from R ports on both sides for 10 stations or more (5 stations or more for the VF5000).

How to Order Manifold Assembly



Example (VV5F3-30)

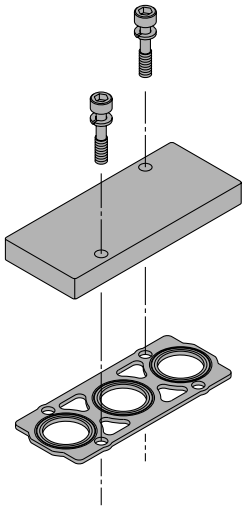


VV5F3-30-051 ····· 1 set (Type 30, 5-station manifold base part no.)
*** VF3130-5GZ1-02 ····· 3 sets (Single solenoid part no.)**
*** VF3230-5GZ1-02 ····· 1 set (Double solenoid part no.)**
*** VF3330-5GZ1-02 ····· 1 set (Closed center part no.)**
→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Indicate the valves to be attached below the manifold base part number, in order starting from station 1 as shown in the drawing. If the arrangement becomes complicated, then indicate on the manifold specification sheet.

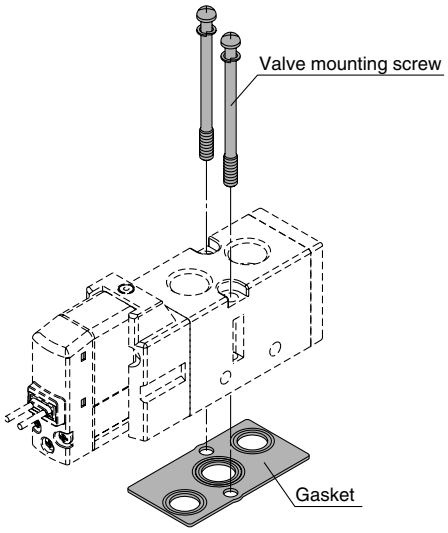
Manifold Options

■ For body ported Blanking plate assembly



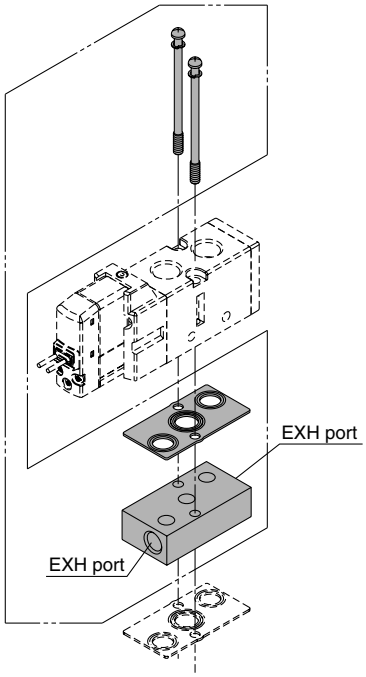
Series	Blanking plate assembly part no.
VF1000	DXT144-13-3A
VF3000	DXT031-38-5A
VF5000	VF5000-70-1A

■ Mounting screw, gasket part no.



Series	Valve mounting screw (1 pc.)	Gasket
VF1000	Round head combination screw DXT031-44-1 (With M4 x 39.5 SW)	DXT144-12-2
VF3000		DXT155-25-7
VF5000	Hexagon socket head cap screw AXT620-32-1 (With M4 x 48 SW)	DXT156-9-6

■ Individual EXH spacer assembly



⚠ Caution

Tightening Torque of Mounting Screw

M4: 1.4 N·m

⚠ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., the mounting orientation is already decided. If mounted in a wrong direction, the equipment to be connected may result in malfunction. Refer to external dimensions in mounting.

VF 3 000-75-1 □ A

Series

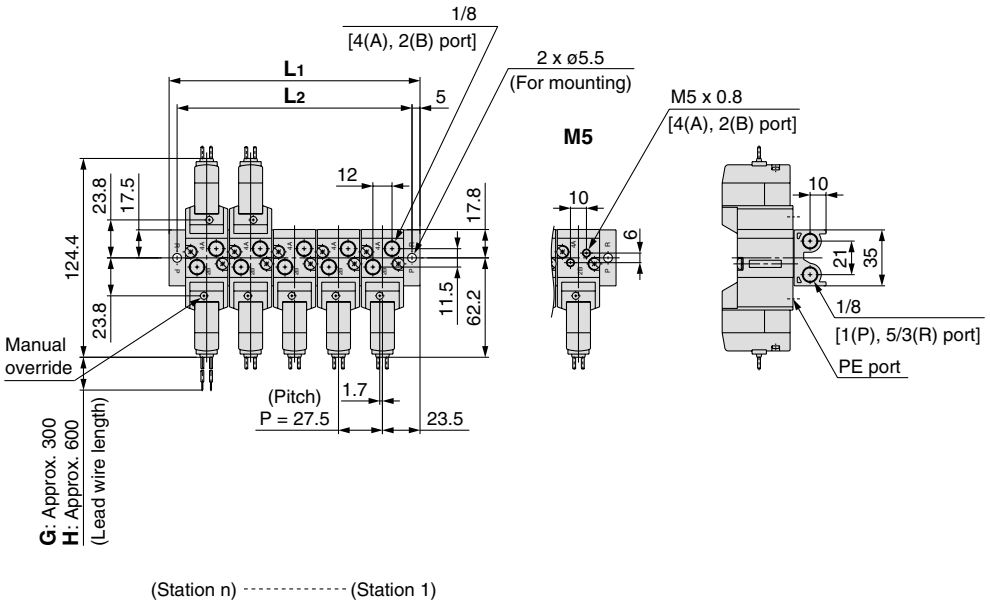
Symbol	Series	Port size
3	VF3000	1/8
5	VF5000	1/4

Thread type

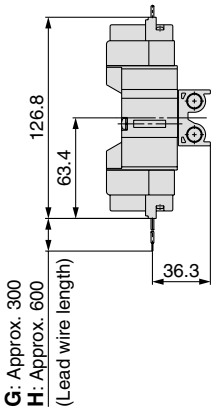
Nil	Rc
F	G
N	NPT
T	NPTF

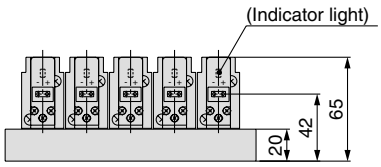
Series VF1000/Dimensions

Type 30/VV5F1-30-□□1-□: Common exhaust
Grommet (G) (H)



Grommet (G) (H)
DC without light/
surge voltage suppressor





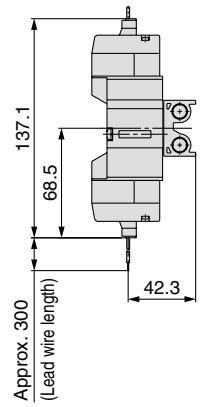
L: Dimensions

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14
L1	74.5	102	129.5	157	184.5	212	239.5	267	294.5	322	349.5	377	404.5
L2	64.5	92	119.5	147	174.5	202	229.5	257	284.5	312	339.5	367	394.5

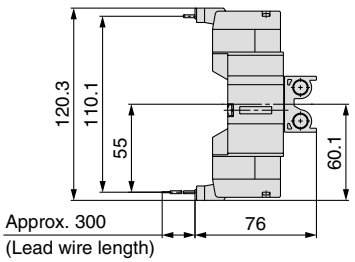
L \ n	15	16	17	18	19	20
L1	432	459.5	487	514.5	542	569.5
L2	422	449.5	477	504.5	532	559.5

L-type plug connector (L)



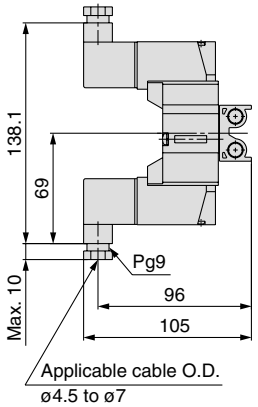
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



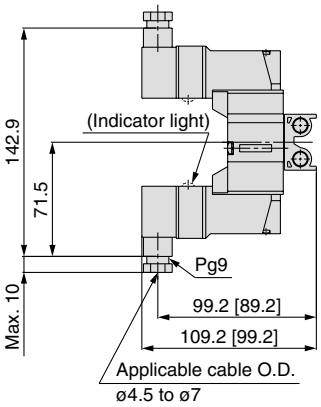
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

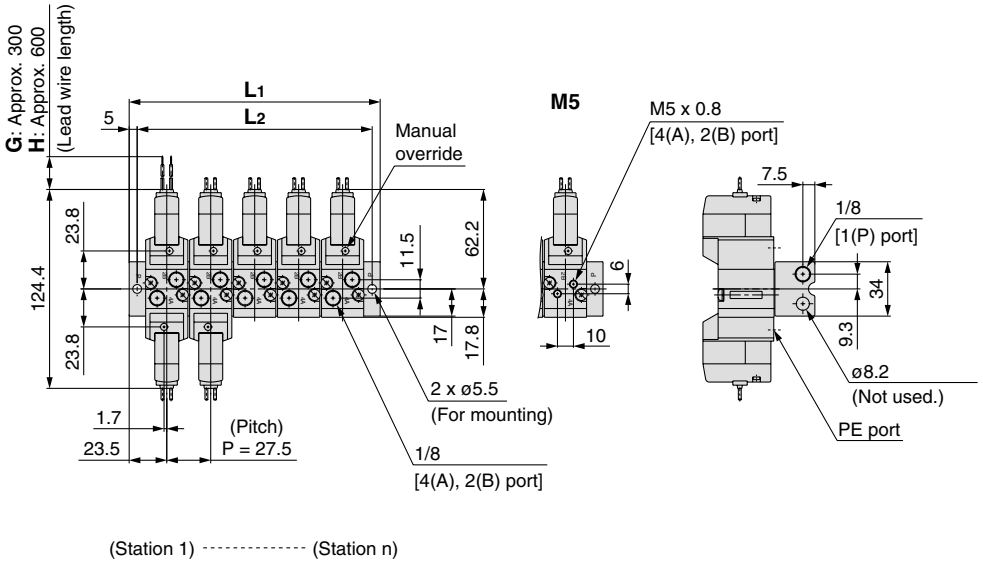
Conduit terminal (T)



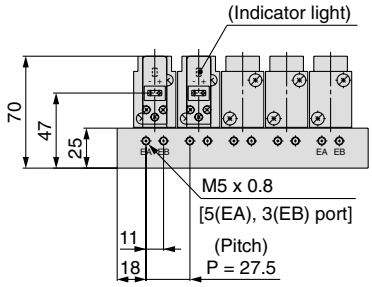
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF1000/Dimensions

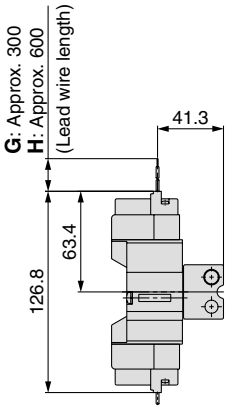
Type 31/VV5F1-31-□□3-□: Individual exhaust
Grommet (G) (H)



(Station 1) ---------- (Station n)



Grommet (G) (H)
DC without light/ surge voltage suppressor



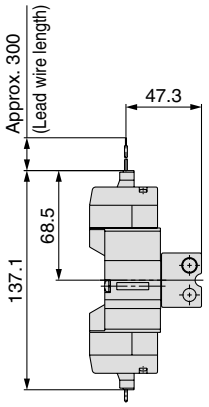
L: Dimensions

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14
L1	74.5	102	129.5	157	184.5	212	239.5	267	294.5	322	349.5	377	404.5
L2	64.5	92	119.5	147	174.5	202	229.5	257	284.5	312	339.5	367	394.5

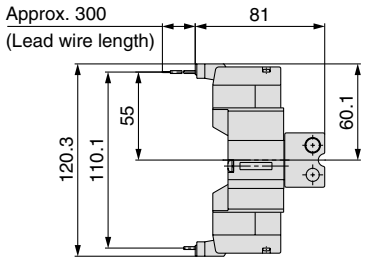
L \ n	15	16	17	18	19	20
L1	432	459.5	487	514.5	542	569.5
L2	422	449.5	477	504.5	532	559.5

L-type plug connector (L)



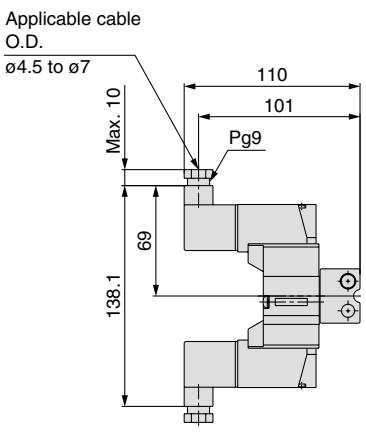
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



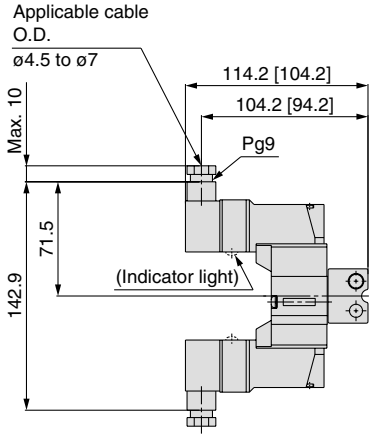
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

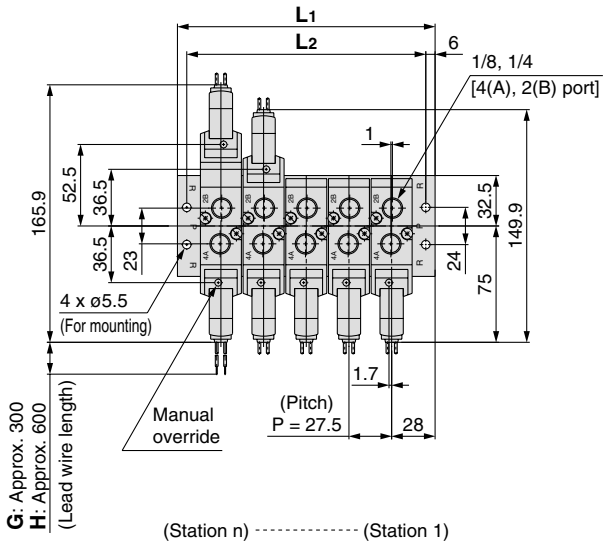
Conduit terminal (T)

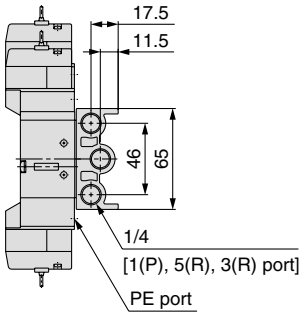


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

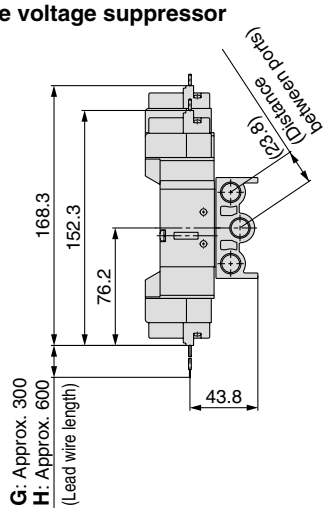
Series VF3000/Dimensions

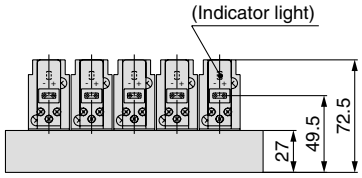
Type 30/VV5F3-30-□□1-□: Common exhaust
Grommet (G) (H)





Grommet (G) (H)
DC without light/
surge voltage suppressor





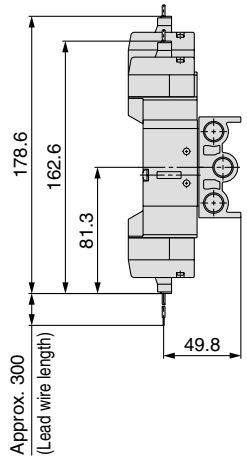
L: Dimensions

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5
L2	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5

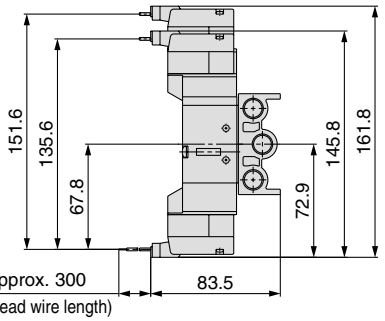
L \ n	15	16	17	18	19	20
L1	441	468.5	496	523.5	551	578.5
L2	429	456.5	484	511.5	539	566.5

L-type plug connector (L)



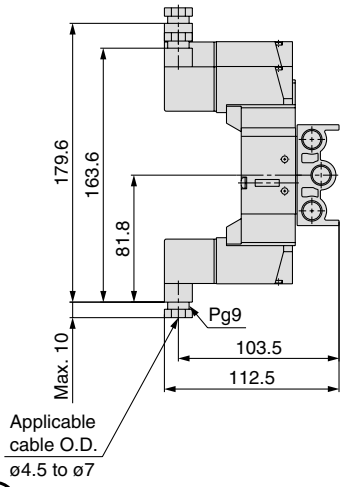
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



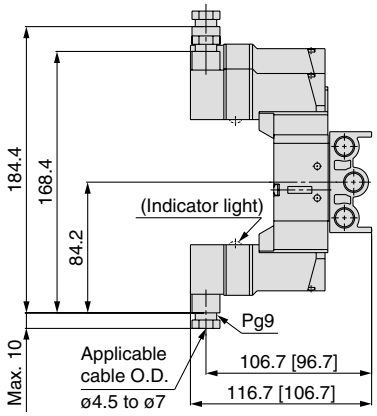
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

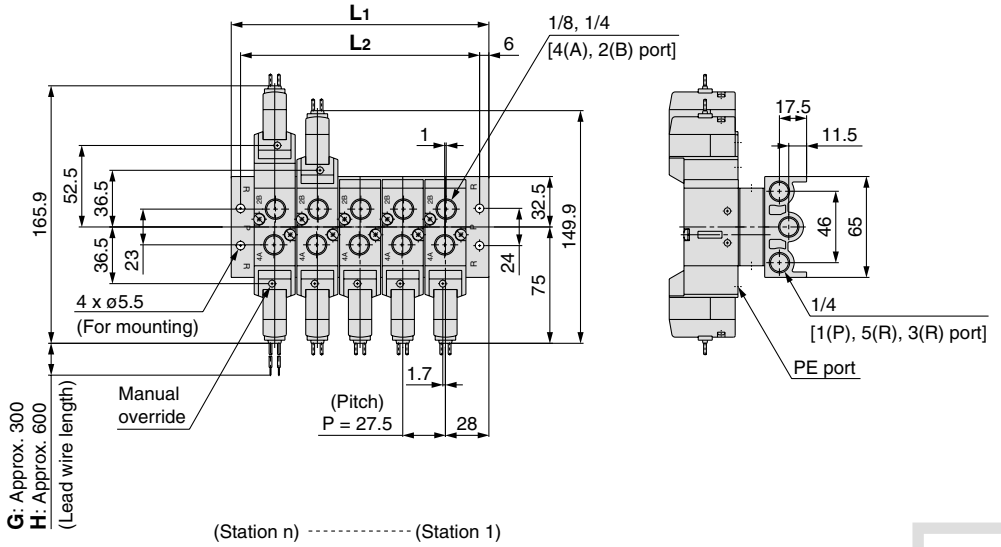
Conduit terminal (T)



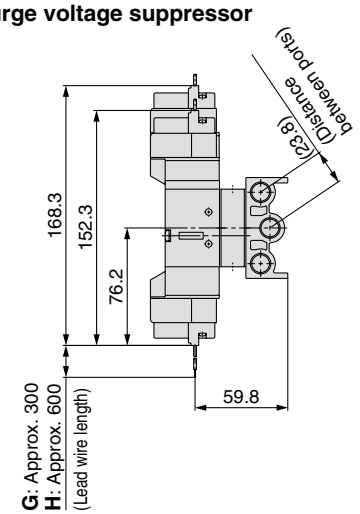
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

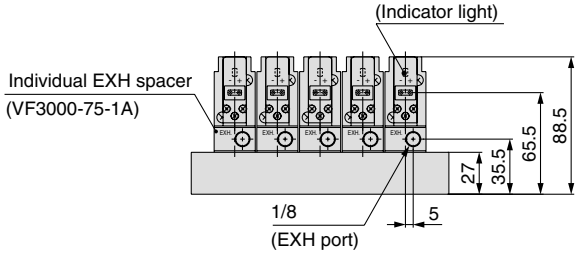
Series VF3000/Dimensions

Type 30/VV5F3-30-□□1-□: When the individual EXH spacer (VF3000-75-1A) is mounted.
Grommet (G) (H)

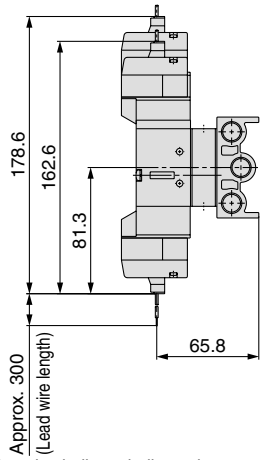


Grommet (G) (H)
DC without light/
surge voltage suppressor





L-type plug connector (L)



Unless otherwise indicated, dimensions are the same as Grommet (G).

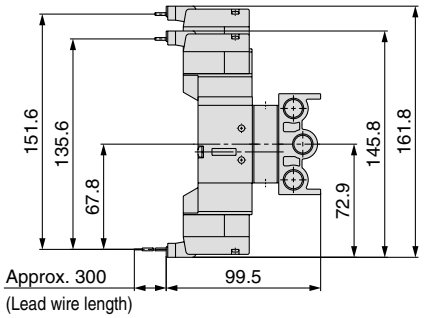
L: Dimensions

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5
L2	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5

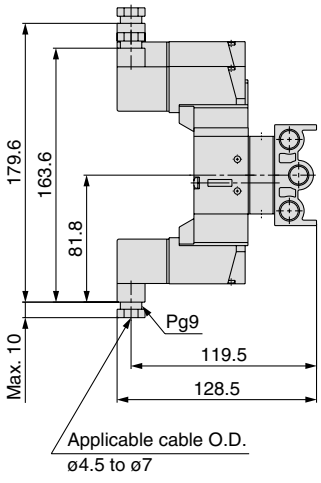
L \ n	15	16	17	18	19	20
L1	441	468.5	496	523.5	551	578.5
L2	429	456.5	484	511.5	539	566.5

M-type plug connector (M)



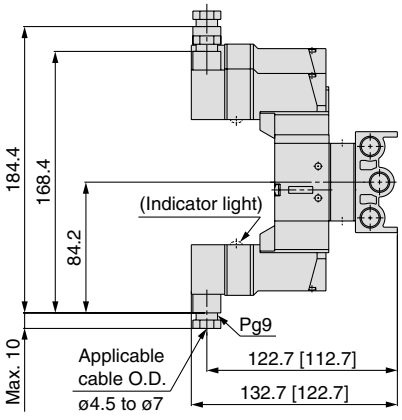
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

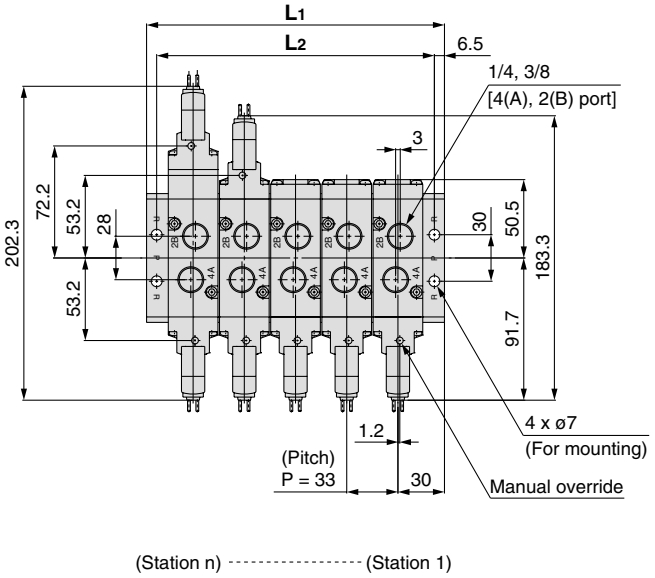
Conduit terminal (T)

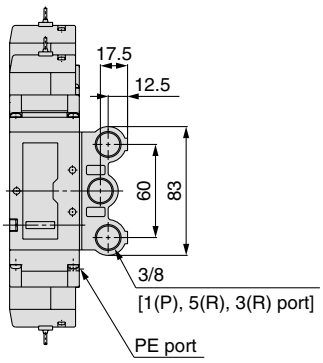


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

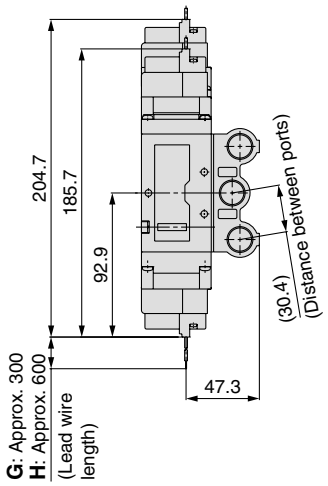
Series VF5000/Dimensions

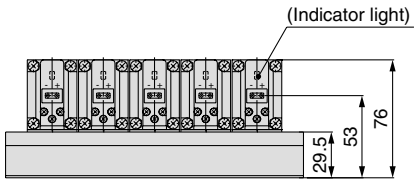
Type 20/VV5F5-20-□□1-□: Common exhaust
Grommet (G)





Grommet (G) (H)
DC without light/
surge voltage suppressor



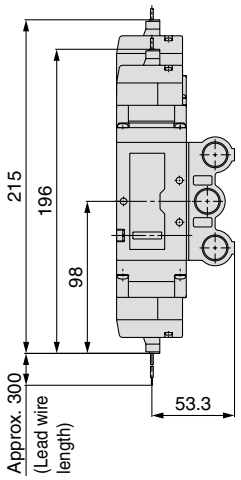


L: Dimensions

n: Stations

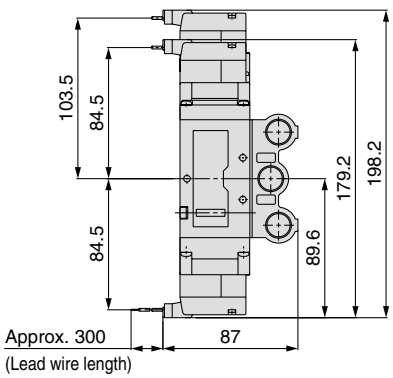
L \ n	2	3	4	5	6	7	8	9	10
L1	93	126	159	192	225	258	291	324	357
L2	80	113	146	179	212	245	278	311	344

L-type plug connector (L)



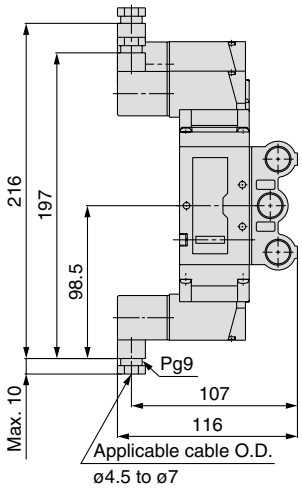
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



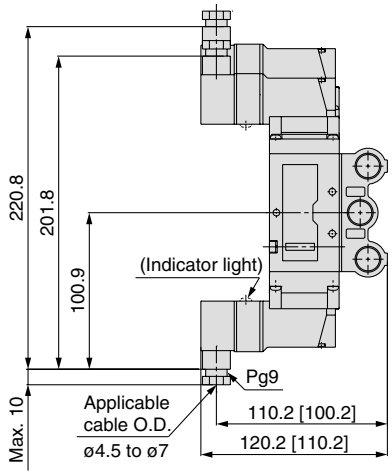
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)

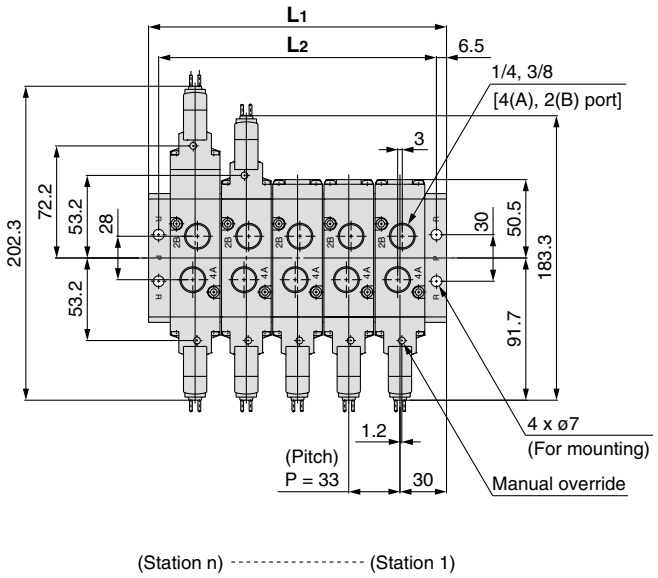


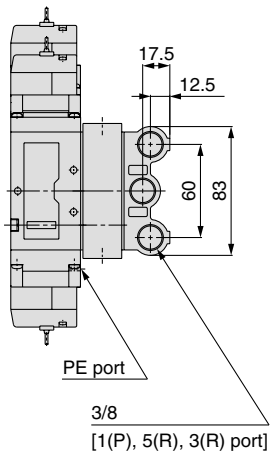
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Series VF5000/Dimensions

Type 20/VV5F5-20-□□1-□: When the individual EXH spacer (VF5000-75-1A) is mounted.

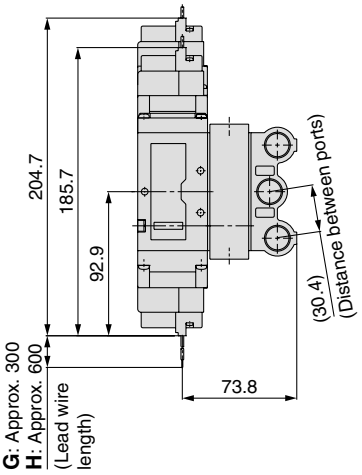
Grommet (G)

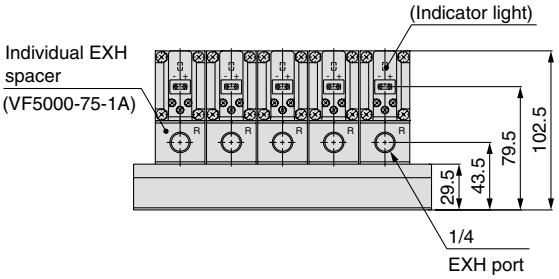




Grommet (G) (H)

DC without light/ surge voltage suppressor



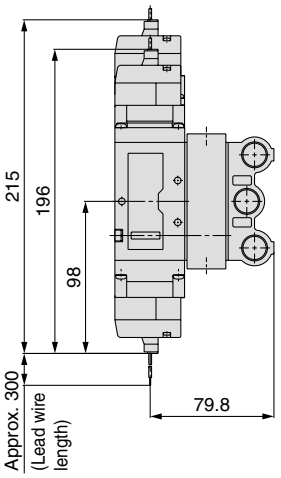


L: Dimensions

n: Stations

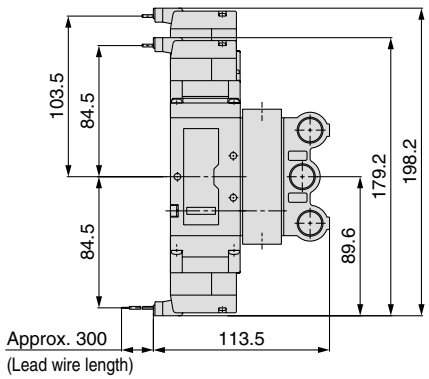
L \ n	2	3	4	5	6	7	8	9	10
L1	93	126	159	192	225	258	291	324	357
L2	80	113	146	179	212	245	278	311	344

L-type plug connector (L)



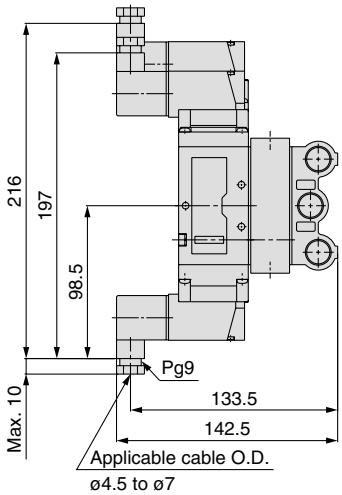
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



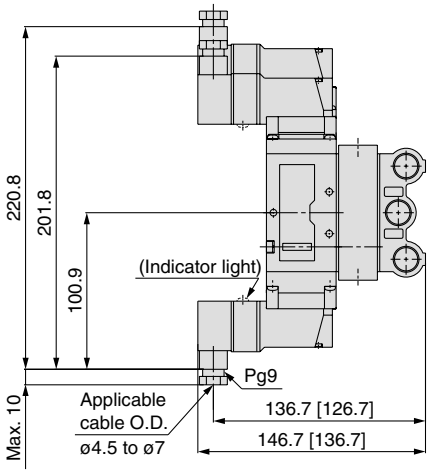
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)

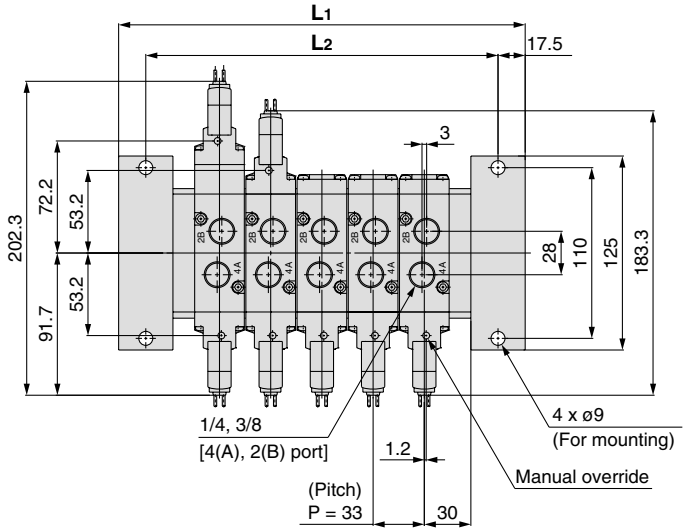


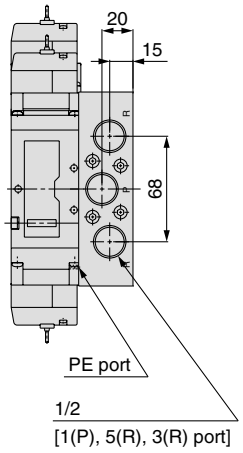
[ ]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

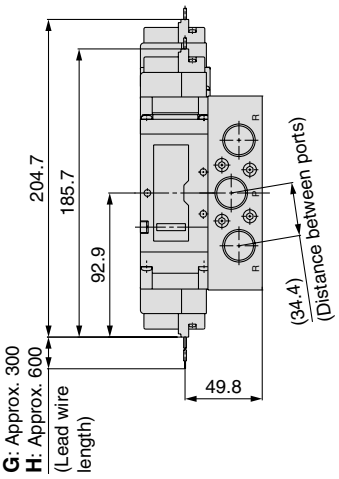
Series VF5000/Dimensions

Type 21/VV5F5-21-□□1-□: Common exhaust
Grommet (G)

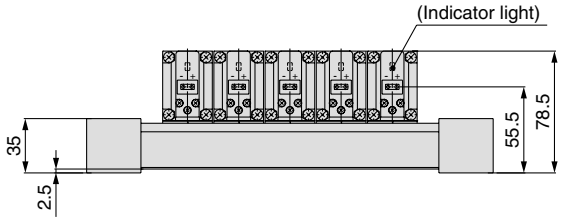




Grommet (G) (H)
DC without light/
surge voltage suppressor



(Station n) ---------- (Station 1)

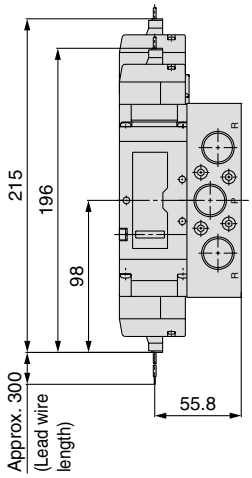


L: Dimensions

n: Stations

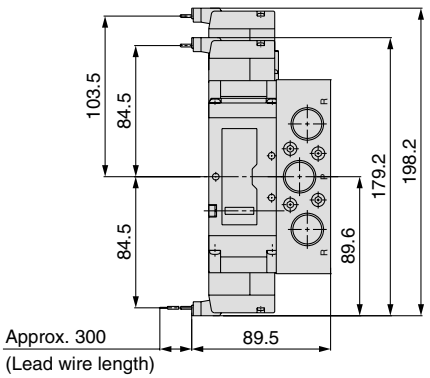
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L1	163	196	229	262	295	328	361	394	427	460	493	526	559	592
L2	128	161	194	227	260	293	326	359	392	425	458	491	524	557

L-type plug connector (L)



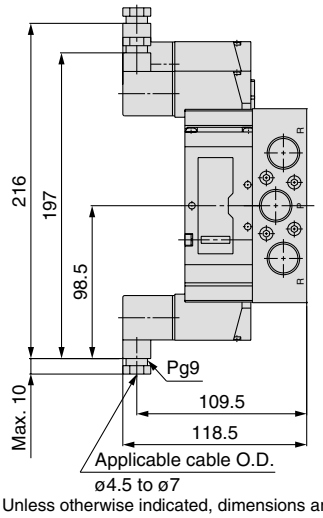
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



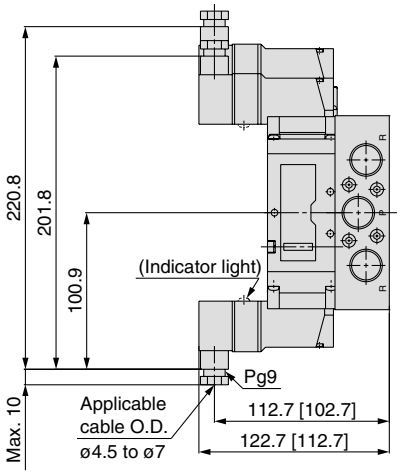
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)

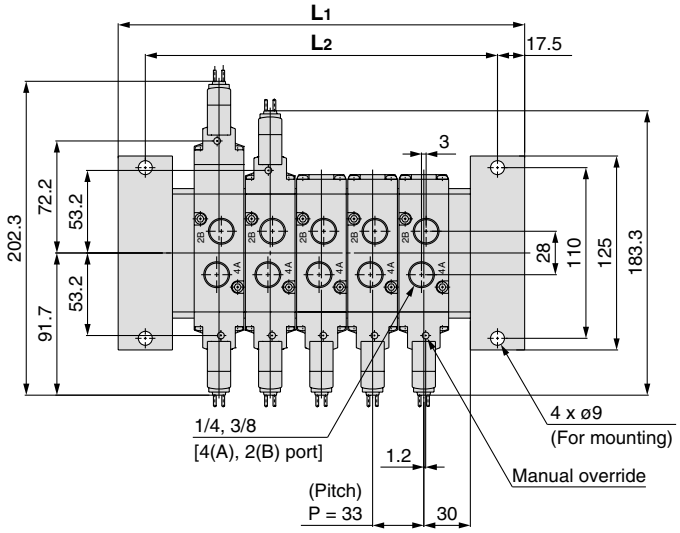


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

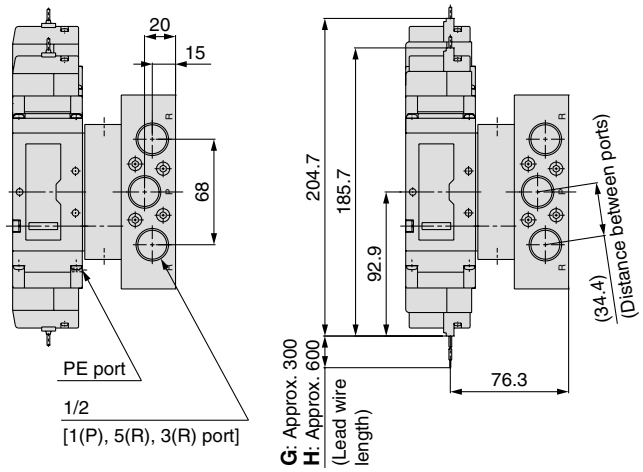
Series VF5000/Dimensions

Type 21/VV5F5-21-□□1-□: When the individual EXH spacer (VF5000-75-1A) is mounted.

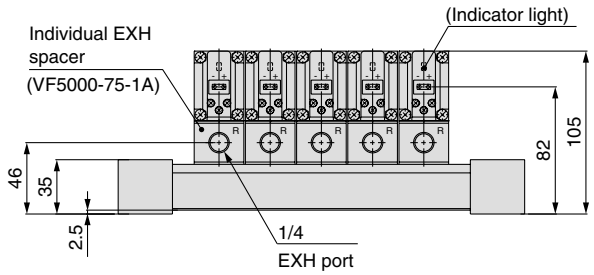
Grommet (G)



Grommet (G) (H)
DC without light/ surge voltage suppressor



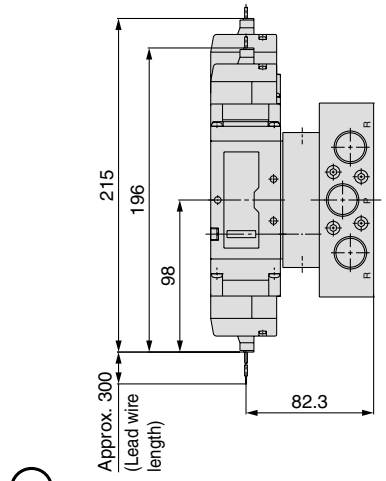
(Station n) ---------- (Station 1)



L: Dimensions n: Stations

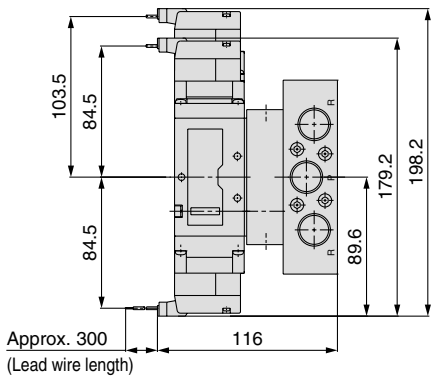
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L1	163	196	229	262	295	328	361	394	427	460	493	526	559	592
L2	128	161	194	227	260	293	326	359	392	425	458	491	524	557

L-type plug connector (L)



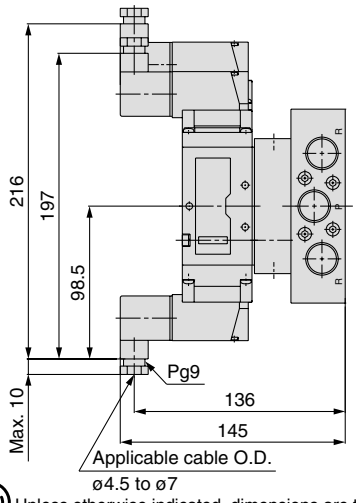
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



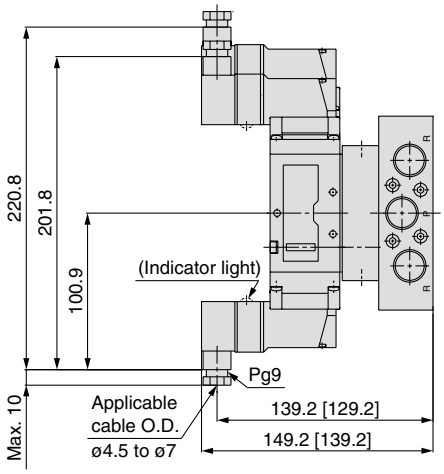
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)



[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Pilot Operated 5 Port Solenoid Valve

Series VF3000/5000

Base Mounted Manifold

Note) Only DIN and conduit terminal types are available with AC mode. Refer to the electrical entry for details.

How to Order Manifold

Common exhaust **VV5F 3 – 40 – 05 2 – 02 F**

Series

Symbol	Series	P, R port size	A, B port size
3	VF3000	1/4	1/4
5	VF5000	3/8	1/4

∗ The A and B ports are made on the bottom.

Stations

02	2 stations
⋮	⋮
20	20 stations

∗ Up to 10 stations for VV5F5.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

How to Order Valve (With a gasket and two mounting screws)

VF 3 1 4 0 □ □ – 5 G □ □ 1

Series

3	VF3000
5	VF5000

∗ Not available with the VF1000.

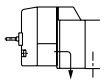
Type of actuation

1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

Body model

Body option

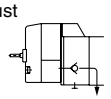
0: Pilot valve individual exhaust



PE port EA/EB port

VF3000	VF5000
○	—

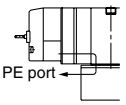
3: Main/Pilot valve common exhaust



PE port EA/EB port

VF3000	VF5000
○	—

4: Pilot valve base exhaust



PE port

VF3000	VF5000
—	○

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1 MPa)

Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

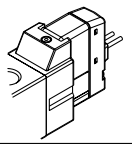
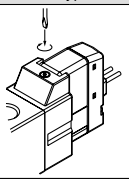
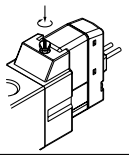
Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for long periods of time. (Refer to back pages 5 and 6 for details.)

∗ T type is available with DC mode only. When T is selected, only Z type of light/surge voltage suppressor is available. (Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Manual override

Nil: Non-locking push type	**D**: Push-turn locking slotted type	**E**: Push-turn locking lever type
		

Light/surge voltage suppressor

Symbol	Light/surge voltage suppressor	DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	—Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

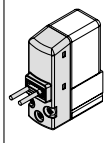
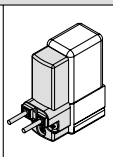
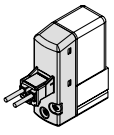
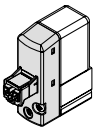
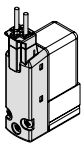
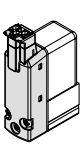
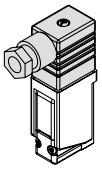
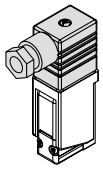
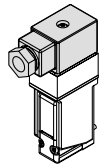
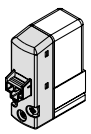
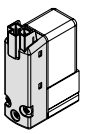
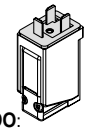
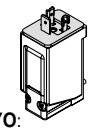
Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

∗ In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

⚠ Caution

When using the surge voltage suppressor type, residual voltage will remain. Refer to back page 6 for details.

Electrical entry

Grommet		L-type plug connector		M-type plug connector		DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
						[IP65 compatible]	[IP65 compatible]	[IP65 compatible]
								
G: Lead wire length 300 mm **H**: Lead wire length 600 mm	**G**: Lead wire length 300 mm **H**: Lead wire length 600 mm DC Without light/surge voltage suppressor	**L**: With lead wire (length 300 mm)	**LN**: Without lead wire	**M**: With lead wire (length 300 mm)	**MN**: Without lead wire	**D**: With connector	**Y**: With connector	**T**: Conduit terminal
								
		LO: Without connector		**MO**: Without connector		**DO**: Without connector	**YO**: Without connector	
CE compliant DC	CE	CE		CE		CE	CE	CE
CE compliant AC Note 2	—	—		—		CE	CE	CE

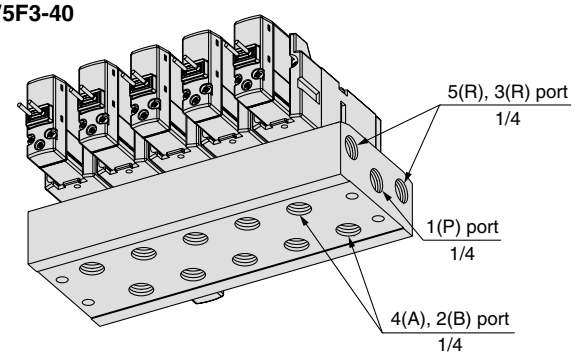
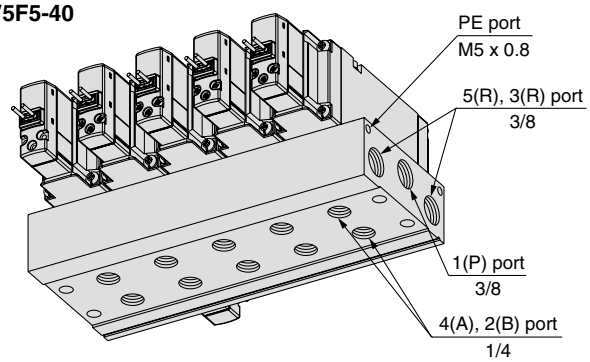
∗ LN and MN types are with 2 sockets. ∗ Refer to back page 3 when different length of lead wire for L/M-type plug connector is required.

∗ Refer to back page 4 for details on the DIN (EN175301-803) terminal.

Note 1) When using with IP65, select the main/pilot valve common exhaust or pilot valve base exhaust type.

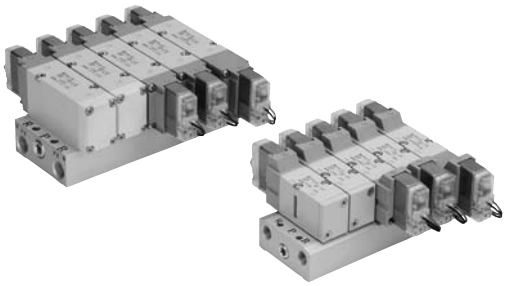
Note 2) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

Manifold Specifications

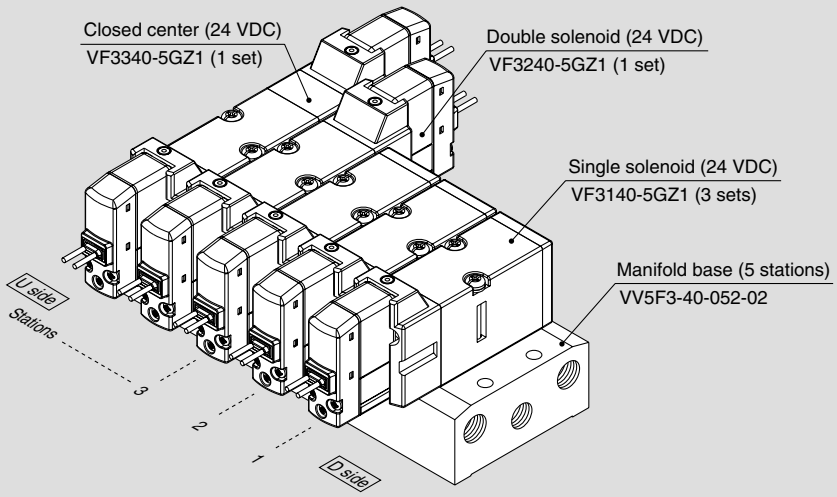
Series	Manifold base model	EXH port type	Applicable valve model	Applicable stations	Manifold base Weight: W [g] Stations: n
VF3000	**VV5F3-40**  	Common EXH	**VF3□40** **VF3□43**	2 to 20 stations	W = 110n + 116
VF5000	**VV5F5-40**  	Common EXH	**VF5□44**	2 to 10 stations	W = 161n + 128

Note) Supply pressure to 1(P) ports and exhaust pressure from R ports on both sides for 10 stations or more (5 stations or more for the VF5000).

How to Order Manifold Assembly



Example (VV5F3-40)

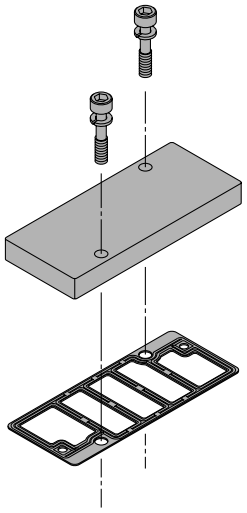


VV5F3-40-052-02 ..... 1 set (Type 40, 5-station manifold base part no.)
*** VF3140-5GZ1 ..... 3 sets (Single solenoid part no.)**
*** VF3240-5GZ1 ..... 1 set (Double solenoid part no.)**
*** VF3340-5GZ1 ..... 1 set (Closed center part no.)**
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Indicate the valves to be attached below the manifold base part number, in order starting from station 1 as shown in the drawing. If the arrangement becomes complicated, then indicate on the manifold specification sheet.

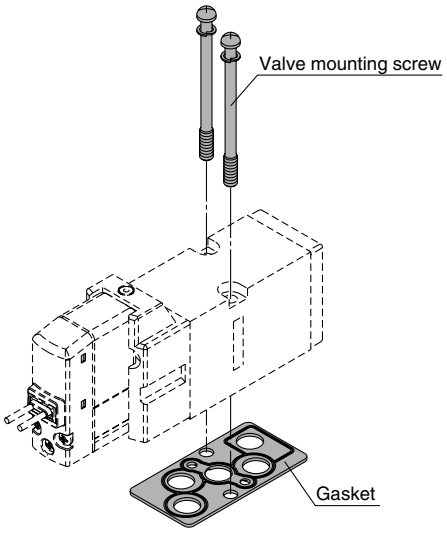
Manifold Options

■ For base mounted Blanking plate assembly



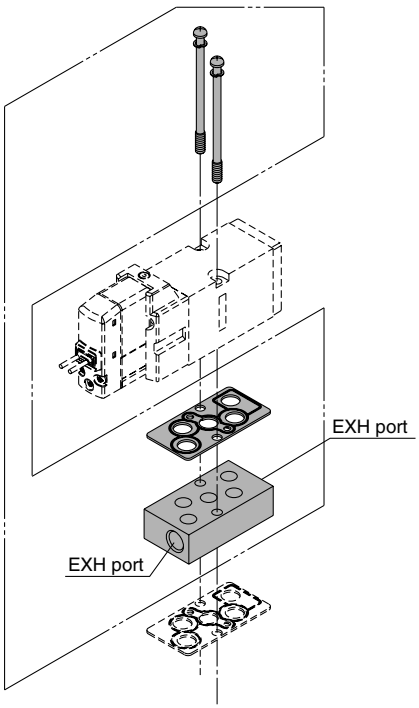
Series	Blanking plate assembly part no.
VF3000	DXT031-38-5A
VF5000	VF5000-70-2A

■ Mounting screw, gasket part no.



Series	Valve mounting screw (1 pc.)	Gasket
VF3000	Round head combination screw DXT031-44-1 (With M4 x 39.5 SW)	DXT031-30-11
VF5000	Hexagon socket head cap screw AXT620-32-1 (With M4 x 48 SW)	DXT156-9-8

■ Individual EXH spacer assembly



⚠ Caution

Tightening Torque of Mounting Screw

M4: 1.4 N·m

⚠ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., the mounting orientation is already decided. If mounted in a wrong direction, the equipment to be connected may result in malfunction. Refer to external dimensions in mounting.

VF 3 000-75-2 □ A

•Series

Symbol	Series	Port size
3	VF3000	1/8
5	VF5000	1/4

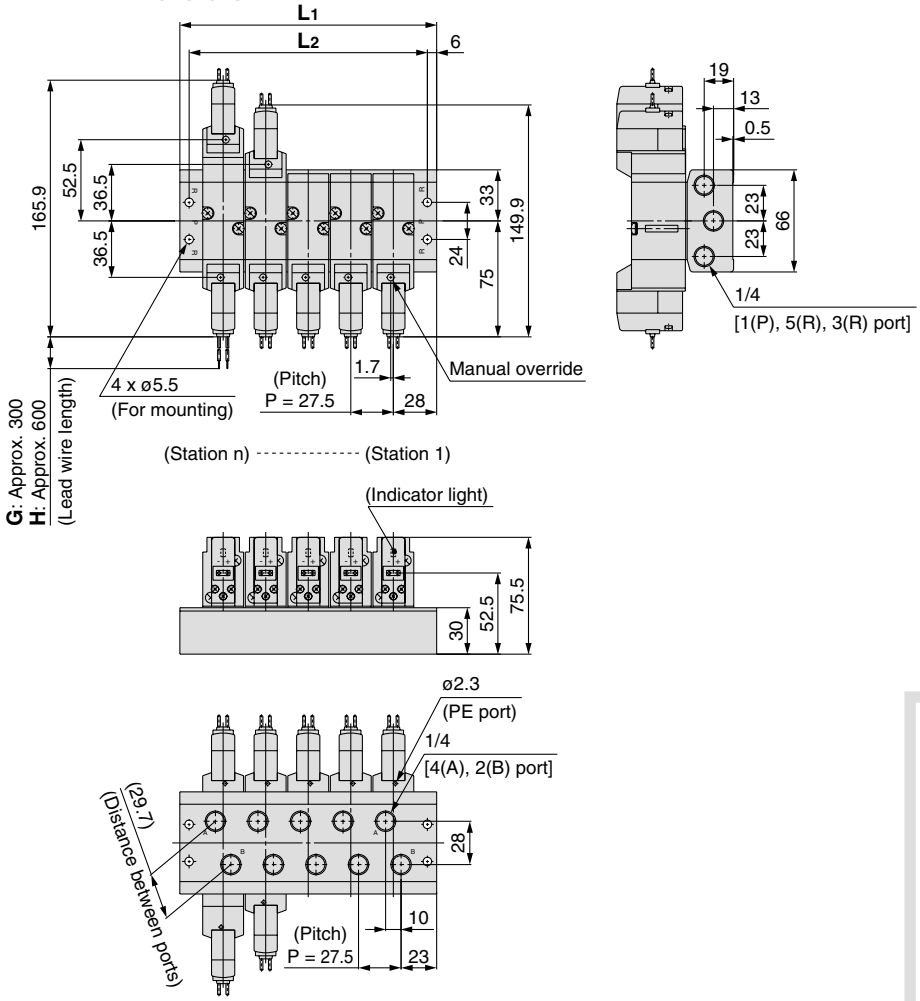
•Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Series VF3000/Dimensions

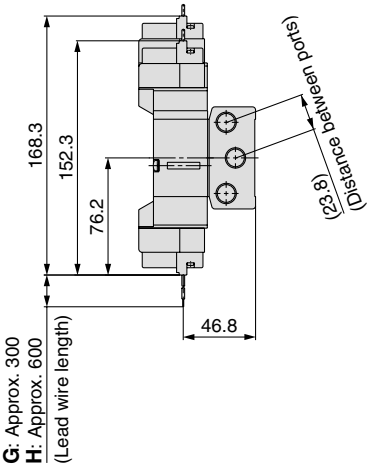
Type 40/VV5F3-40-□□2-02□: Common exhaust

Grommet (G) (H)



Grommet (G) (H)

DC without light/
surge voltage suppressor



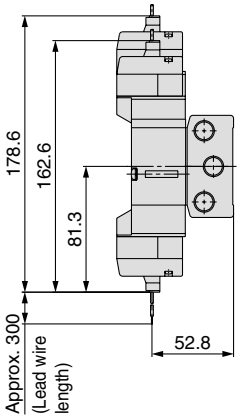
L: Dimensions

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5
L2	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5

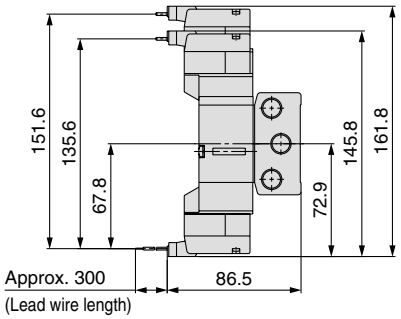
L \ n	15	16	17	18	19	20
L1	441	468.5	496	523.5	551	578.5
L2	429	456.5	484	511.5	539	566.5

L-type plug connector (L)



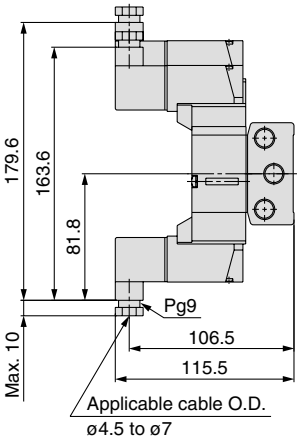
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



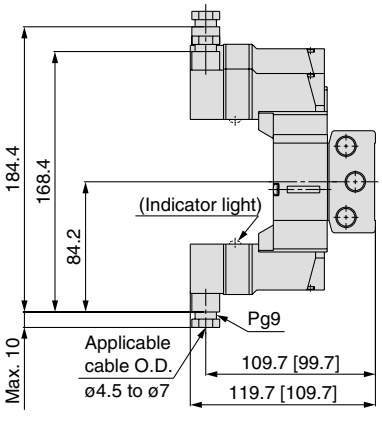
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)

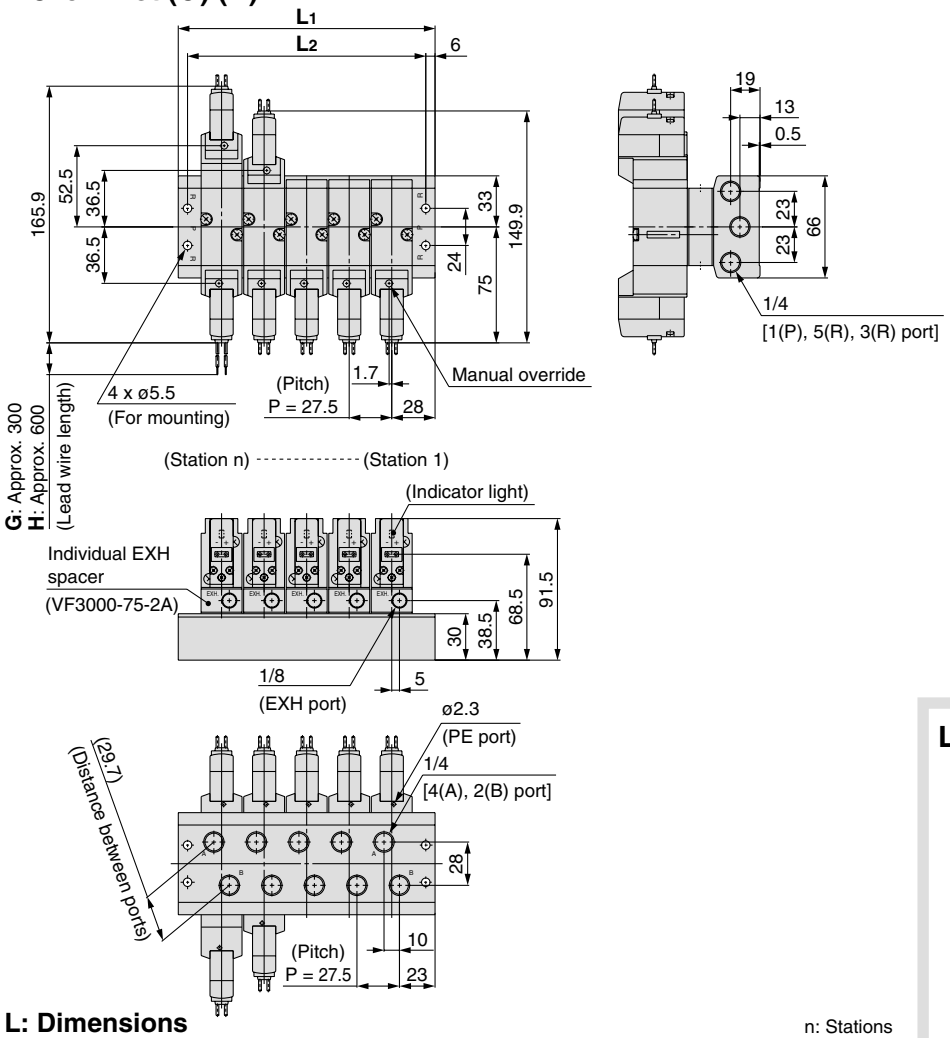


[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

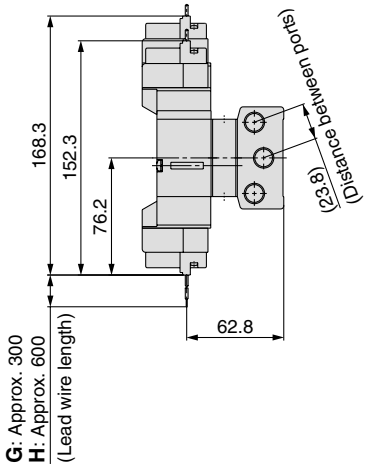
Series VF3000/Dimensions

Type 40/VV5F3-40-□□2-02□: When the individual EXH spacer (VF3000-75-2A) is mounted.

Grommet (G) (H)



Grommet (G) (H)
DC without light/ surge voltage suppressor



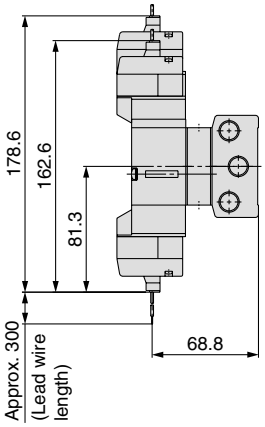
L: Dimensions

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14
L1	83.5	111	138.5	166	193.5	221	248.5	276	303.5	331	358.5	386	413.5
L2	71.5	99	126.5	154	181.5	209	236.5	264	291.5	319	346.5	374	401.5

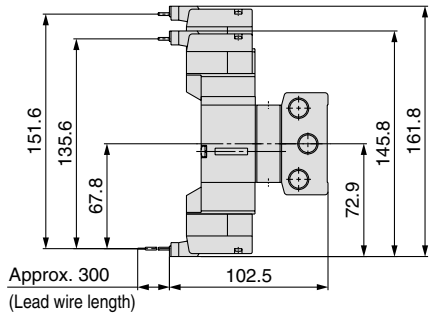
L \ n	15	16	17	18	19	20
L1	441	468.5	496	523.5	551	578.5
L2	429	456.5	484	511.5	539	566.5

L-type plug connector (L)



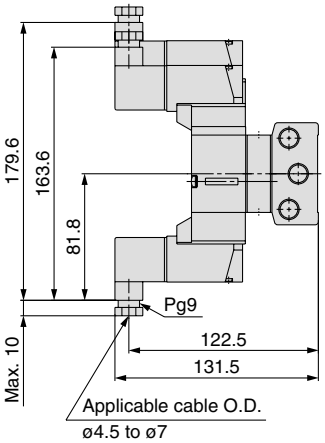
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



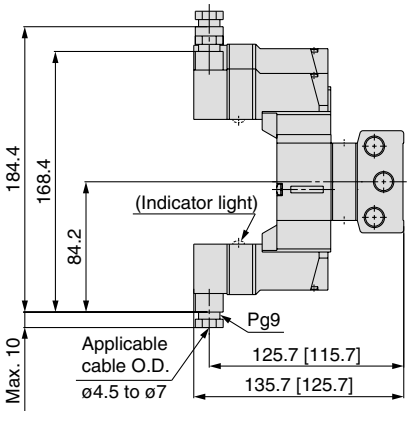
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)

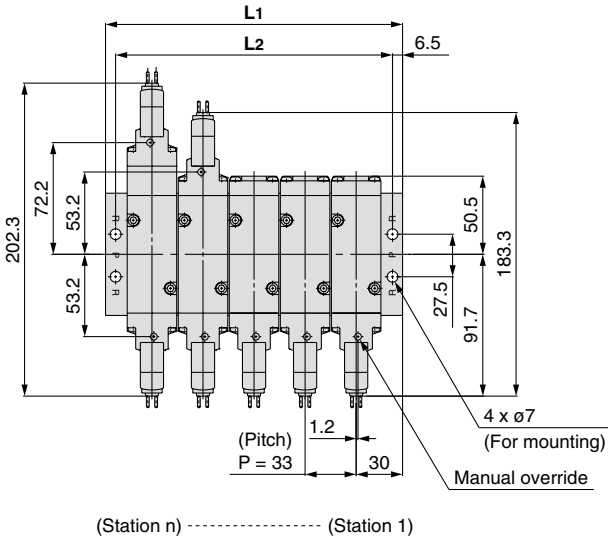


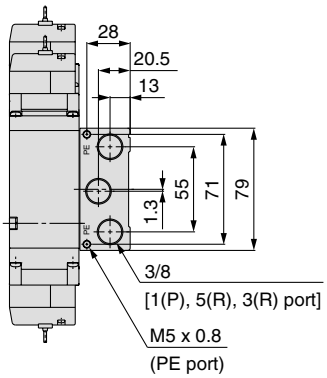
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

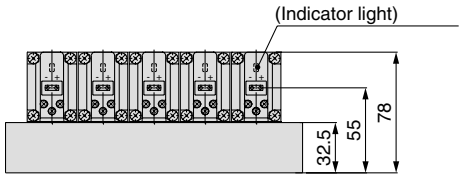
Series VF5000/Dimensions

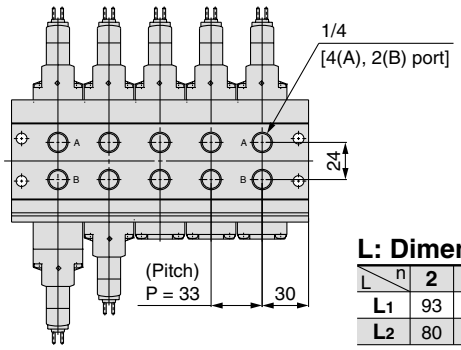
Type 40/VV5F5-40-□□2-02□: Common exhaust

Grommet (G)







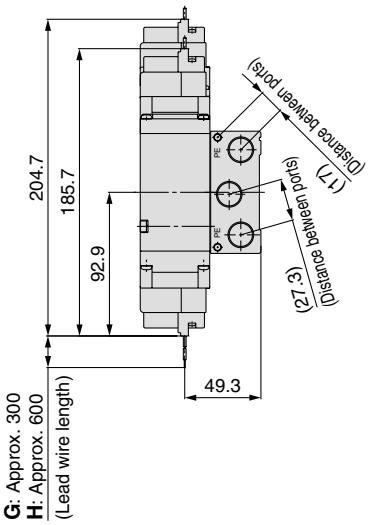


L: Dimensions n: Stations

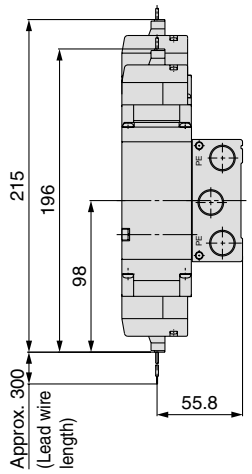
L \ n	2	3	4	5	6	7	8	9	10
L1	93	126	159	192	225	258	291	324	357
L2	80	113	146	179	212	245	278	311	344

Grommet (G) (H)

DC without light/
surge voltage suppressor

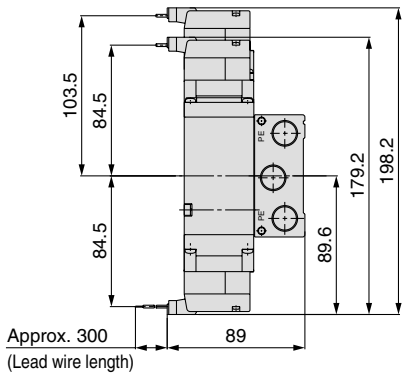


L-type plug connector (L)



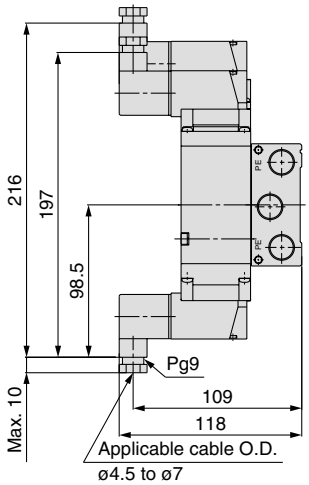
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



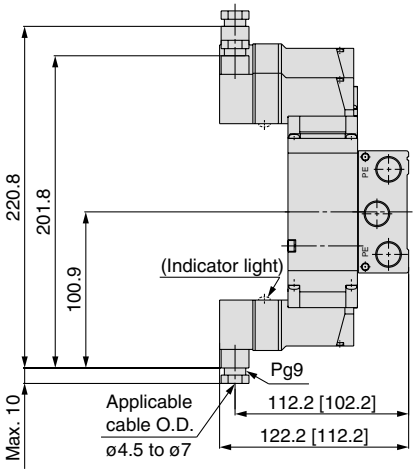
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)

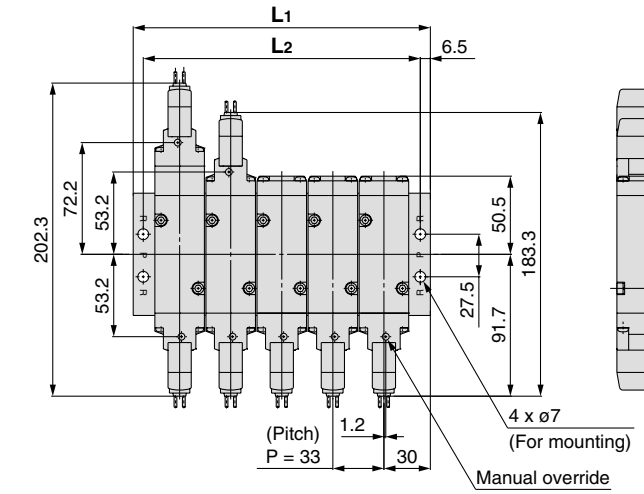


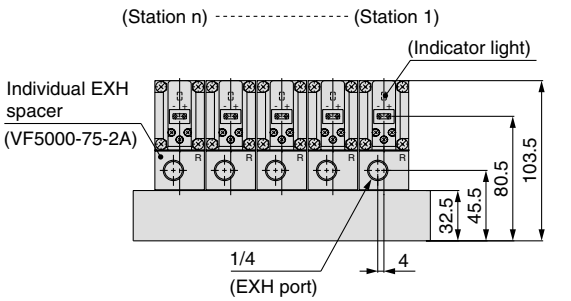
[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

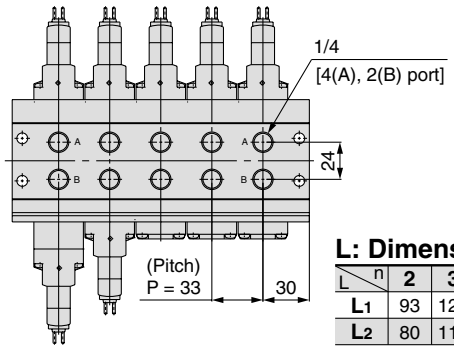
Series VF5000/Dimensions

Type 40/VV5F5-40-□□2-02□: When the individual EXH spacer (VF5000-75-2A) is mounted.

Grommet (G)





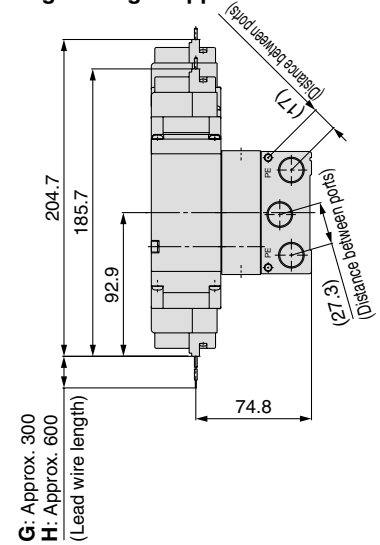


L: Dimensions n: Stations

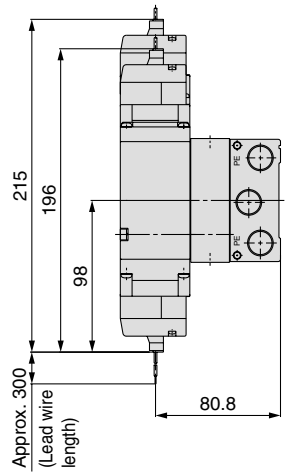
L \ n	2	3	4	5	6	7	8	9	10
L1	93	126	159	192	225	258	291	324	357
L2	80	113	146	179	212	245	278	311	344

Grommet (G) (H)

DC without light/ surge voltage suppressor

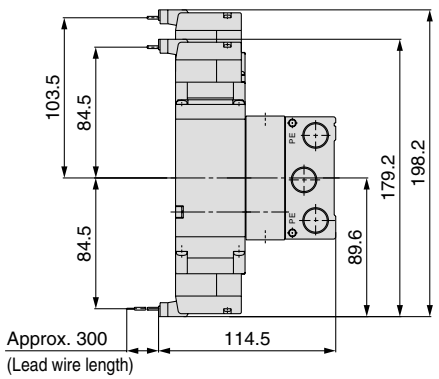


L-type plug connector (L)



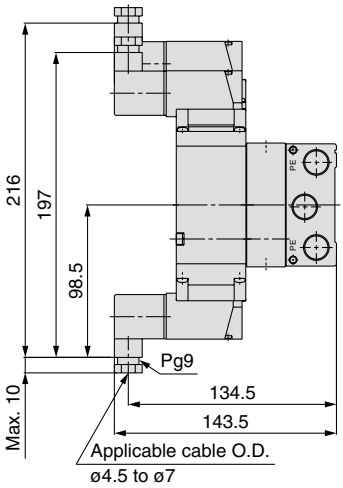
Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M)



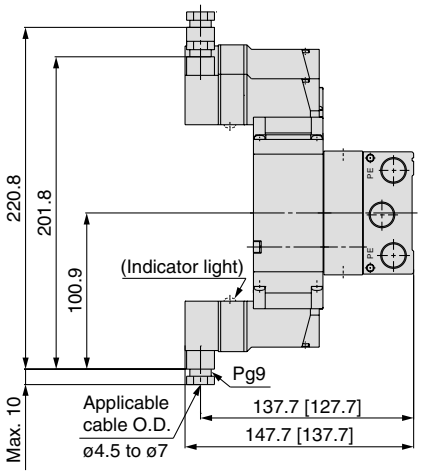
Unless otherwise indicated, dimensions are the same as Grommet (G).

DIN terminal (D) (Y)



Unless otherwise indicated, dimensions are the same as Grommet (G).

Conduit terminal (T)



[ ]: Without indicator light
Unless otherwise indicated, dimensions are the same as Grommet (G).

Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.

1 Body Ported Pilot Exhaust Port with Piping Thread (M3) Specification

In this specification, piping to the pilot exhaust port (PE port) is available when the valve is used in an environment where the exhaust from the pilot valve is not allowable, or intrusion of ambient dust should be prevented.

How to Order Valve

VF 3 □ 3 0 □□ – □□□□ 1 – □□□ – □ – X500

Series

1	VF1000
3	VF3000
5	VF5000

Type of actuation

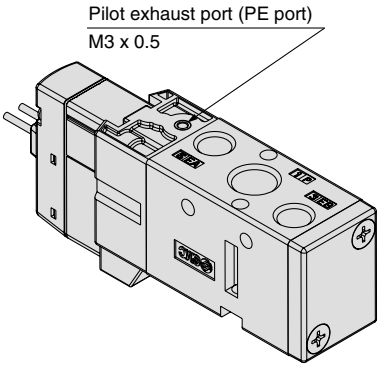
1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

Body model

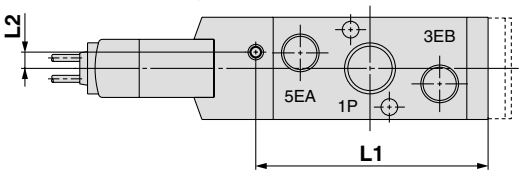
Symbol	VF1000	VF3000	VF5000
2	○	—	○
3	—	○	—

Note) Not available for the base mounted type.

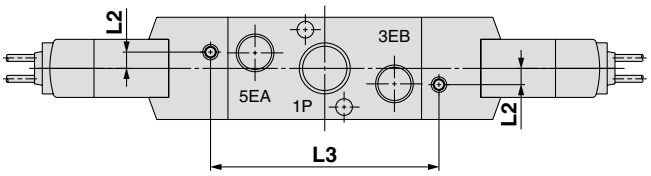
Entry is the same as standard products. The specifications and performance are the same as those of standard models.



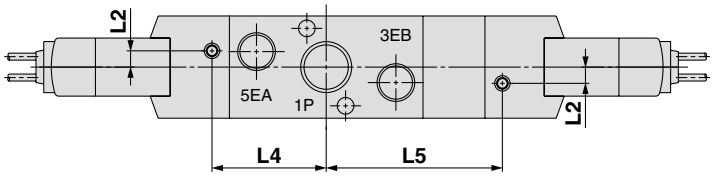
• 2-position single



• 2-position double



• 3-position closed center/exhaust center/pressure center



Series	L1	L2	L3	L4	L5
VF1000	34.5	4.2	33.4	—	—
VF3000	60	4.2	59	29.5	45.5
VF5000	95	3.45	89	44.5	63.5

2 TRIAC Output Specification

For AC type valve, use this specification when the pilot valve is not recovered even though valve power supply is turned OFF at the equipment using output unit with large leakage voltage over 8 % of the rated voltage (TRIAC output such as PLC or SSR, etc.)

How to Order Valve

VF 3 □ □□□□ – □□□□ 1 – □□ – □ – □ – X600

Series

1	VF1000
3	VF3000
5	VF5000

Entry is the same as standard products.
Note) Rated voltage: AC type only

Type of actuation

1	2-position single
2	2-position double
3	3-position closed center
4	3-position exhaust center
5	3-position pressure center

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠Caution

1. The product is provided for use in manufacturing industries.
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***2) Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Safety Instructions	Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

SMC

Series VF
Specific Product Precautions 1

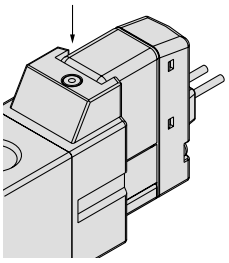
Be sure to read before handling.
Refer to back page 1 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Manual Override

⚠Warning

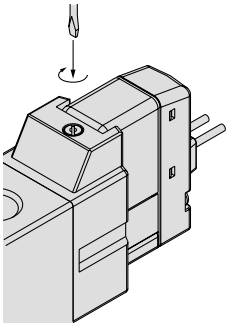
Without an electric signal for the solenoid valve the manual override is used for switching the main valve. Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

■ Non-locking push type

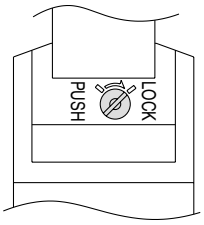


Push down on the manual override with a small screwdriver until it stops. Release the screwdriver and the manual override will return.

■ Push-turn locking slotted type

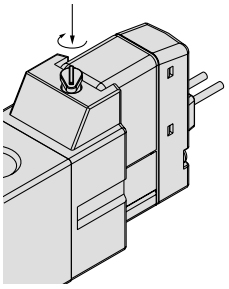


Locked condition

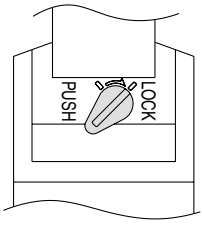


Push down on the manual override with a small flat head screwdriver until it stops. Turn it clockwise by 90° to lock it. Turn it counterclockwise to release it.

■ Push-turn locking lever type



Locked condition



After pushing down, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking push type.

⚠Caution

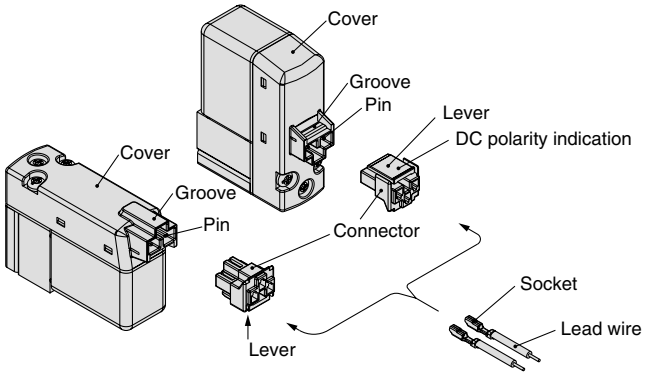
When locking the manual override with the push-turn locking type (D or E type), be sure to push it down before turning.
Turning without first pushing it down can cause damage to the manual override and other trouble such as air leakage, etc.
Do not apply excessive torque when turning the locking type manual override. (0.1 N·m)

How to Use L/M-Type Plug Connector

⚠Caution

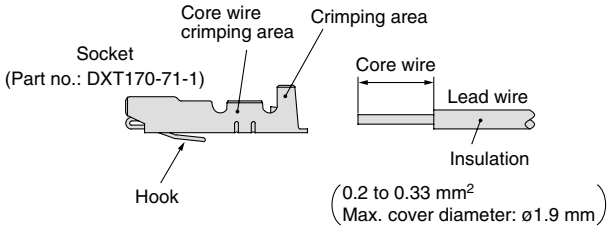
1. Attaching and detaching connectors

- 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.



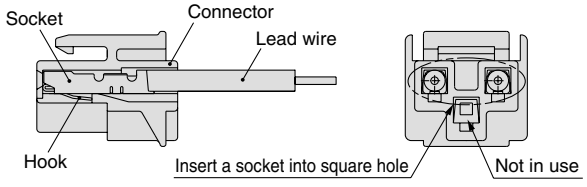
2. Crimping lead wires and sockets

Not necessary if ordering the lead wire pre-connected model. Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area. (Please contact SMC for details on the crimping tool.)



3. Attaching and detaching sockets with lead wire

- **Attaching**
  Insert the sockets into the square holes of the connector (+, – indication), and continue to push the sockets all the way in until they 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.
- **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.



Series VF
Specific Product Precautions 2

Be sure to read before handling.
Refer to back page 1 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Plug Connector Lead Wire Length

⚠Caution

Plug connector lead wires have a standard length of 300 mm, however, the following lengths are also available.

How to Order Connector Assembly

DC : V200-30-4A-□

100 VAC : V200-30-1A-□

200 VAC : V200-30-2A-□

AC other voltages: V200-30-3A-□

Without lead wire : V200-30-A
(With connector and 2 sockets)

Lead wire length

Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

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

DC	AC
VF3130-5LO1-02	VF3130-1LO1-02
V200-30-4A-20	V200-30-1A-20

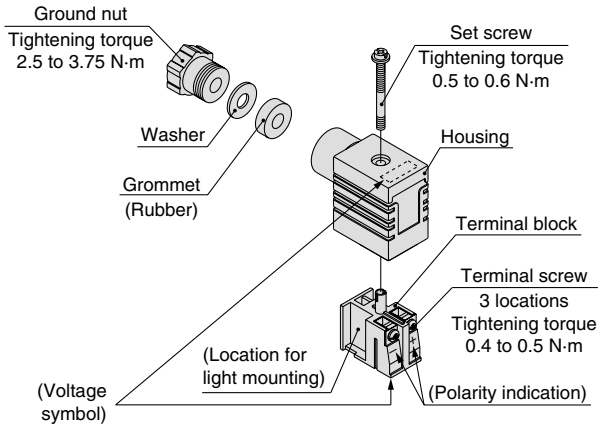
How to Use DIN Terminal

The DIN terminal type with an IP65 (enclosure) is protected against dust and water, however, it must not be used in water.

⚠Caution

Connection

1) Loosen the set screw and pull the connector out of the solenoid valve terminal block.
2) After removing the set screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3) Loosen the terminal screws on the terminal block, insert the core of the lead wire into the terminal, and attach securely with the terminal screws.
   In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires corresponding to the polarity (+ or –) that is printed on the terminal block.
4) Tighten the ground nut to secure the wire.
   In the case of connecting wires, select cabtire cords carefully because if those out of the specified range (ø4.5 to ø7) are used, it will not be able to satisfy IP65 (enclosure).
   Tighten the ground nut and set screw within the specified range of torque.



∗ Refer to back page 4 for the DIN connector part no.

Changing the entry direction

After separating terminal block and housing, the cord entry direction can be changed by attaching the housing in the opposite direction.

∗ Make sure not to damage elements, etc., with the lead wires of the cord.

Precautions

Plug in and pull out the connector vertically without tilting to one side.

Applicable cable

Cable O.D.: ø4.5 to ø7
(Reference) 0.5 mm² to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

Applicable crimped terminal

O terminal: R1.25-4M that is specified in JIS C 2805
Y terminal: 1.25-3L, which is released by JST Mfg. Co., Ltd.
Stick terminal: Size 1.5 or shorter

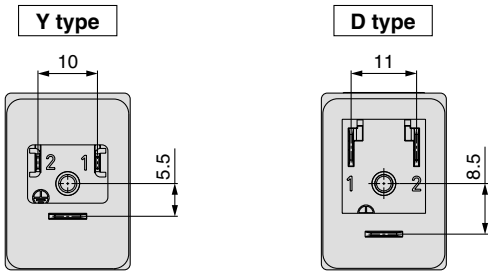
ⓐ Back page 3

Series VF
Specific Product Precautions 3

Be sure to read before handling.
Refer to back page 1 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

DIN (EN175301-803) Terminal

Y type DIN terminal corresponds to the DIN connector with terminal pitch 10 mm, which complies with EN175301-803B. Since the terminal pitch is different from the D type DIN connector, these two types are not interchangeable.



How to Order DIN Connector

⚠Caution

● **Without indicator light**
DC, AC, Other voltages: V200- □ **-1**

● **With indicator light**
DC
Polar type (□Z) : V200- □ **-3-** □
Non-polar type (□U) : V200- □ **-5-** □

Rated voltage

05	24 VDC
06	12 VDC

AC (□Z) : V200- □ **-7-** □

Connector specification

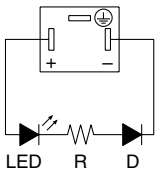
61	D type
63	Y type

Rated voltage

01	100/110 VAC [115 VAC]
02	200/220 VAC [230 VAC]
07	240 VAC
B	24 VAC

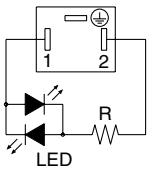
Circuit diagram with light (Built-in connector)

DC (□Z) circuit diagram



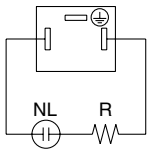
LED: Light emitting diode
D: Protective diode
R: Resistor

DC (□U) circuit diagram



LED: Light emitting diode
R: Resistor

AC (□Z) circuit diagram



NL: Neon bulb, R: Resistor

Note) The 24 VAC specifications are the same as those in the DC (□U) circuit diagram.

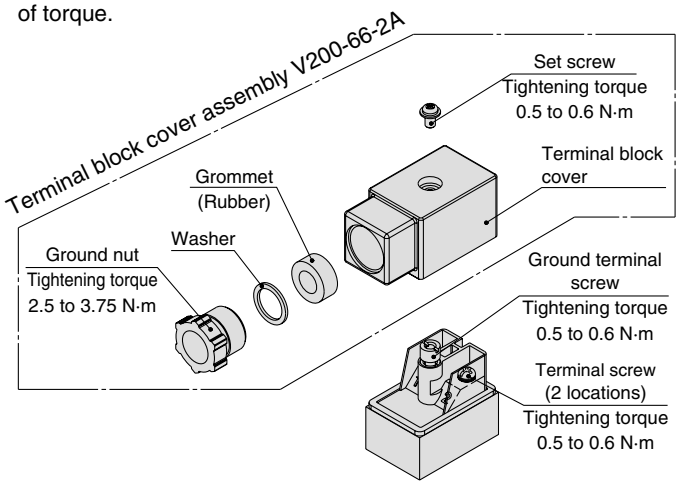
How to Use Conduit Terminal

⚠Caution

Connection

1) Loosen the set screw and remove the terminal block cover from the terminal block.
2) Loosen the terminal screws on the terminal block, insert the core of the lead wire or crimped terminal into the terminal, and attach securely with the terminal screws.
In addition, when using the DC mode type with a surge voltage suppressor (polar: S and Z types), connect wires to terminal 1 and 2 corresponding to the polarity (+ or –) as shown on the right figure.
3) Secure the cord by fastening the ground nut.

In the case of connecting wires, select cabtire cords carefully because if those out of the specified range (ø4.5 to ø7) are used, it will not be able to satisfy IP65 (enclosure).
Tighten the ground nut and set screw within the specified range of torque.



Applicable cable

Cable O.D.: ø4.5 to ø7
(Reference) 0.5 mm² to 1.5 mm², 2-core or 3-core, equivalent to JIS C 3306

Applicable crimped terminal

O terminal: Equivalent to R1.25-3 that is specified in JIS C 2805
Y terminal: Equivalent to 1.25-3, which is released by JST Mfg. Co., Ltd.
∗ Use O terminal when a ground terminal is used.

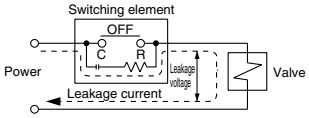
Series VF
Specific Product Precautions 4

Be sure to read before handling.
Refer to back page 1 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Leakage Voltage

⚠Caution

Especially when a resistor and a switching element are used in parallel or C-R device (surge voltage suppressor) is used for the protection of the switching device, note that leakage voltage will be increased by passing leakage voltage through the resistor and C-R device. Therefore, suppressor residual leakage voltage should be as follows.



DC coil

3% or less of the rated voltage

AC coil

8% or less of the rated voltage

Continuous Duty

⚠Caution

- If a valve is energized continuously for long periods of time, the rise in temperature due to heat-up of the coil assembly may cause a decline in solenoid valve performance, reduce service life, or have adverse effects on peripheral equipment. If the valve is energized continuously for long periods of time, or the total energizing time per day becomes longer than the non-energizing time, use a valve with power saving circuit.
- When the valve is mounted onto a control panel, take measures against radiation in order to keep the valve temperature within the specified range.

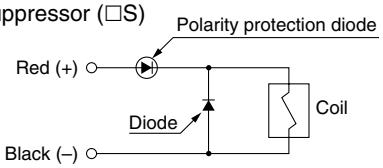
Light/Surge Voltage Suppressor

⚠Caution

<DC>

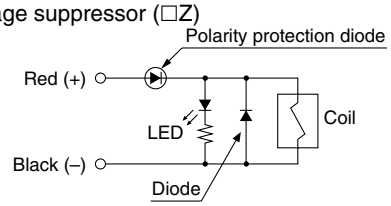
■ **Polar type**

With surge voltage suppressor (□S)



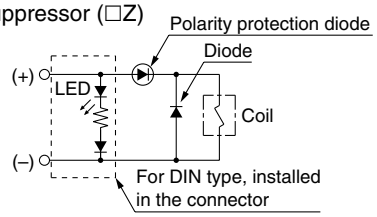
● Grommet or L/M-type plug connector

With light/surge voltage suppressor (□Z)



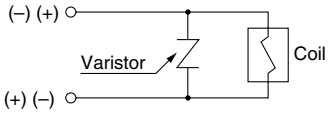
● DIN or Conduit terminal

With light/surge voltage suppressor (□Z)



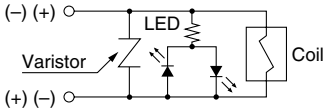
■ **Non-polar type**

With surge voltage suppressor (□R)



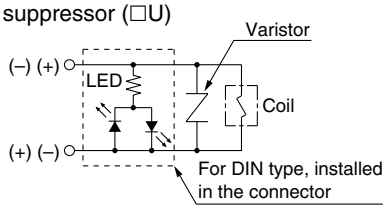
● Grommet or L/M-type plug connector

With light/surge voltage suppressor (□U)



● DIN or Conduit terminal

With light/surge voltage suppressor (□U)



- Please connect correctly the lead wires to + (positive) and – (negative) indications on the connector. (For non-polar type, the lead wires can be connected to either one.)
- When the valve with polarity protection diode is used, the voltage will drop by approx. 1 V. Therefore, pay attention to the allowable voltage fluctuation (For details, refer to the solenoid specification of each type of valve).
- Solenoids, whose lead wires have been pre-wired: + (positive) side red and – (negative) side black.

Back page 5

Series VF
Specific Product Precautions 5

Be sure to read before handling.
Refer to back page 1 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

Light/Surge Voltage Suppressor

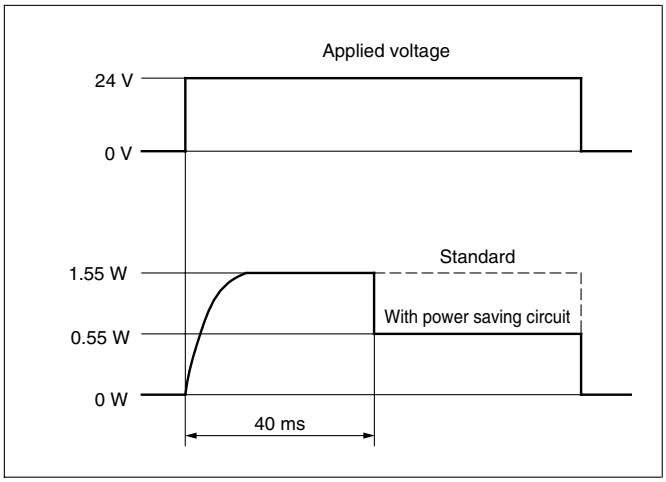
⚠Caution

■ **With power saving circuit**

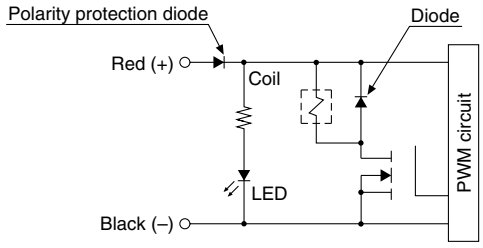
Power consumption is decreased by approx. 1/3 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 40 ms at 24 VDC.)

Refer to the electrical power waveform as shown below.

<Electrical power waveform of energy saving type>



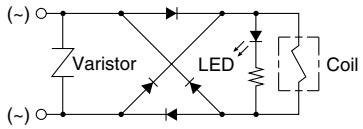
• Since the voltage will drop by approx. 0.5 V due to the transistor, pay attention to the allowable voltage fluctuation. (For details, refer to the solenoid specifications of each type of valve.)



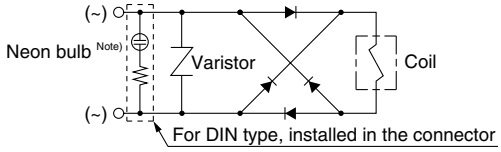
<AC>

There is no S option, since a rectifier prevents surge voltage generation.

● Grommet or L/M-type plug connector
With light/surge voltage suppressor (□Z)



● DIN or Conduit terminal
With light/surge voltage suppressor (□Z)



Note) LED for 24 VAC.

Light/Surge Voltage Suppressor

⚠Caution

Residual voltage of the surge voltage suppressor

Note) if a varistor or diode surge voltage suppressor is used, there is some residual voltage to the protection element and rated voltage. Therefore, refer to the table below and pay attention to the surge voltage protection on the controller side. Also, since the response time does change, refer to the specifications on page 2 and 16.

Residual Voltage

Surge voltage suppressor	DC		AC
	24 V	12 V	
S, Z	Approx. 1 V		Approx. 1 V
R, U	Approx. 47 V	Approx. 32 V	—

Countermeasure for Surge Voltage Intrusion

⚠Caution

With non-polar type solenoid valves, at times of sudden interruption of the loading power supply, such as emergency shutdown, surge voltage intrusion may be generated from loading equipment with a large capacity (power consumption), and the solenoid valve in a de-energized state may switch over (see Figure 1).

When installing a breaker circuit for the loading power supply, consider using a solenoid valve with polarity (with polarity protection diode), or install a surge absorption diode between the loading equipment COM line and the output equipment COM line (see Figure 2).

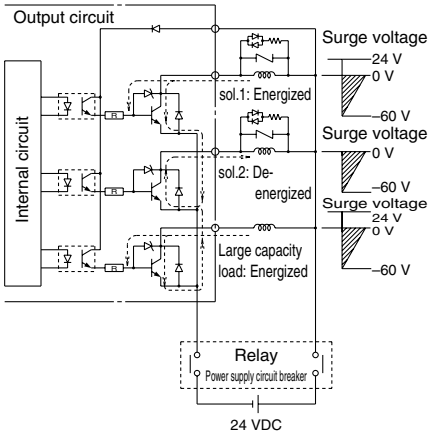


Figure 1. Surge intrusion circuit example (NPN outlet example) (24 VDC)

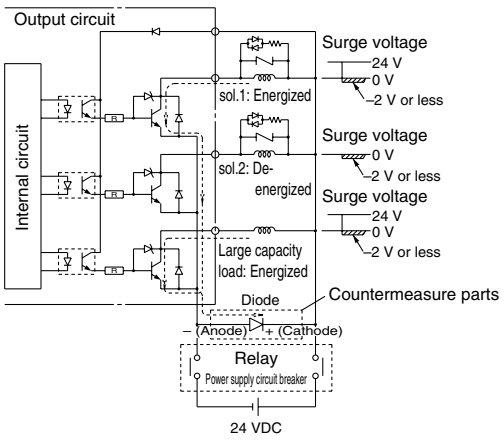


Figure 2. Surge intrusion circuit example (NPN outlet example) (24 VDC)

Specific Product Precautions 6

Be sure to read before handling.
Refer to back page 1 for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valves Precautions.

One-touch Fittings Precautions

⚠Caution

When fittings are used, they may interfere with one another depending on their types and sizes. Therefore, the dimensions of the fittings to be used should first be confirmed in their respective catalogs.
Fittings whose compliance with the VF series is already confirmed are stated below. If the fitting within the applicable range is selected, there will not be any interference.

Applicable Fittings: Series KQ2H, KQ2S

Series	Model	Piping port	Port size	Applicable tubing O.D.						
				ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
VF1000	VF1□20-□□1-M5	4(A), 2(B)	M5	●	●					
		5(EA), 3(EB)	M5	●	●	●				
	VF1□20-□□1-01	4(A), 2(B)	1/8	●	●	●	●			
		5(EA), 3(EB)	M5	●	●	●				
	VF1□3□-□□1-M5	4(A), 2(B)	M5	●	●					
	VF1□3□-□□1-01	4(A), 2(B)	1/8	●	●	●	●			
	Type 30 manifold base	1(P), 5/3(R)	1/8	●	●	●	●	●		
	Type 31 manifold base	1(P)	1/8	●	●	●				
		5(EA), 3(EB)	M5	●	●					

Series	Model	Piping port	Port size	Applicable tubing O.D.						
				ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
VF3000	VF3□3□-□□1-01	4(A), 2(B)	1/8			●	●	●	●	
		1(P), 5(EA), 3(EB)	1/8			●	●	●		
	VF3□3□-□□1-02	4(A), 2(B)	1/4			●	●	●	●	
		1(P), 5(EA), 3(EB)	P: 1/4, EA, EB: 1/8			●	●	●		
	VF3□4□-□□1-02	4(A), 2(B)	1/4			●	●	●	●	
		1(P), 5(EA), 3(EB)	1/4			●	●	●	●	
	VF3□4□-□□1-03	4(A), 2(B)	3/8			●	●	●	●	
		1(P), 5(EA), 3(EB)	3/8			●	●	●		
	Type 30 manifold base	1(P), 5(R), 3(R)	1/4			●	●	●	●	
	Type 40 manifold base	4(A), 2(B)	1/4			●	●	●	●	
		1(P), 5(R), 3(R)	1/4			●	●	●	●	

Series	Model	Piping port	Port size	Applicable tubing O.D.						
				ø3.2	ø4	ø6	ø8	ø10	ø12	ø16
VF5000	VF5□2□-□□1-02	4(A), 2(B)	1/4			●	●	●	●	
		1(P), 5(EA), 3(EB)	1/4			●	●	●	●	
	VF5□2□-□□1-03	4(A), 2(B)	3/8			●	●	●	●	
		1(P), 5(EA), 3(EB)	3/8			●	●	●	●	
	VF5□44-□□1-02	4(A), 2(B)	1/4			●	●	●	●	
		1(P), 5(EA), 3(EB)	1/4			●	●	●	●	
	VF5□44-□□1-03	4(A), 2(B)	3/8			●	●	●	●	
		1(P), 5(EA), 3(EB)	3/8			●	●	●	●	●
	VF5□44-□□1-04	4(A), 2(B)	1/2					●	●	●
		1(P), 5(EA), 3(EB)	1/2					●	●	●
	Type 20 manifold base	1(P), 5(R), 3(R)	3/8			●	●	●	●	
	Type 21 manifold base	1(P), 5(R), 3(R)	1/2					●	●	●
	Type 40 manifold base	4(A), 2(B)	1/4			●	●	●	●	
		1(P), 5(R), 3(R)	3/8			●	●	●	●	

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Revision history	
Edition B	* Addition of 24 VAC to Rated voltage for Series VF1000/3000/5000.

OZ

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Specifications are subject to change without prior notice
and any obligation on the part of the manufacturer.

D-DN

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