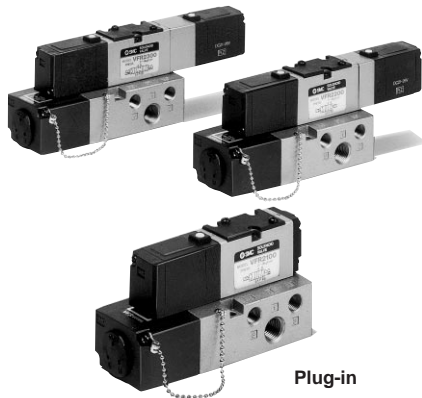


# 5 Port Pilot/Rubber Seal Plug-in, Non Plug-in

# Series VFR2000

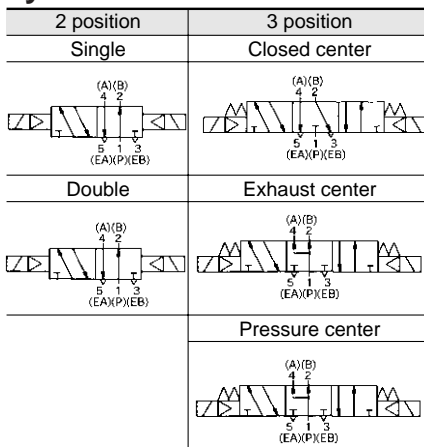


Plug-in



Non plug-in

## Symbol



## Model

Configuration	Model		Port size Rc(PT)	Effective area (mm <sup>2</sup> ) (Cv)	Max. operating frequency (Hz) <sup>(1)</sup>	Response time (ms) <sup>(2)</sup>	Weight (kg) <sup>(3)</sup>	
	Plug-in	Non plug-in						
2 position	Single	VFR2100	VFR2110	1/8, 1/4	P→A, B: 13.0(0.72) A, B→EA, EB: 16.2(0.9)	10	20 or less	0.34 (0.32)
	Double	VFR2200	VFR2210	1/8, 1/4	P→A, B: 13.0(0.72) A, B→EA, EB: 16.2(0.9)	10	20 or less	0.42 (0.44)
3 position	Closed center	VFR2300	VFR2310	1/8, 1/4	P→A, B: 7.4(0.41) A, B→EA, EB: 12.8(0.71)	5	30 or less	0.43 (0.45)
	Exhaust center	VFR2400	VFR2410	1/8, 1/4	P→A, B: 5.4(0.3) A, B→EA, EB: 16.2(0.9) (Normal position) A, B→EA, EB: 9.9(0.55)	5	30 or less	0.43 (0.45)
	Pressure center	VFR2500	VFR2510	1/8, 1/4	P→A, B: 13.2(0.73) P→A, B: 4.2(0.23) (Normal position) A, B→EA, EB: 9.9(0.55)	5	30 or less	0.43 (0.45)

- Note 1) Min. operating frequency is once in 30 days. (Based on JIS B8375)  
 Note 2) Based on dynamic performance test, JIS B8375-1981. (0.5MPa, coil temperature: 20°C, at rated voltage, without surge voltage suppressor)  
 Note 3) In case of VFR2□00-□FZ-□□<sup>01</sup>/<sub>02</sub>. ( ): VFR2□10-□DZ-□□<sup>01</sup>/<sub>02</sub>

## Standard Specifications

Valve	Fluid	Air		
	Operating pressure range	2 position single, 3 position	0.2 to 0.9MPa	
		2 position double	0.1 to 0.9MPa	
	Ambient and fluid temperature	Max. 50°C		
	Lubrication	Not required <sup>(1)</sup>		
	Manual override	Non-locking push style		
	Mounting orientation	Free		
	Shock/Vibration resistance	300/50m/s <sup>2</sup> <sup>(2)</sup>		
	Protection structure	Dust proof		
	Solenoid	Coil rated voltage	100, 200V AC (50/60Hz), 24V DC	
Allowable voltage		-15% to +10% Rated voltage		
Apparent power AC <sup>(3)</sup>		Inrush	5.6VA/50Hz, 5.0VA/60Hz	
		Holding	3.4VA (2.1W)/50Hz, 2.3VA (1.5W)/60Hz	
Power consumption DC <sup>(3)</sup>		1.8W		
Electrical entry		Plug-in	Conduit terminal	
	Non plug-in	Grommet, Grommet terminal, Conduit terminal, DIN terminal, L plug connector, M plug connector		

- Note 1) If a lubricant is used, use turbine oil class1, ISO VG32. Note 3) At rated voltage  
 Note 2) Shock resistance: No malfunction resulted from the impact test using a drop impact tester.  
 The test was performed on the axis and right angle directions of the main valve and armature, for both energized and de-energized states.  
 Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 to 2000 Hz.  
 Test was performed at both energized and de-energized states to the axis and right angle directions of the main valve and armature. (Value in the initial stage.)

## Option Specifications


Pilot	External pilot style <sup>(1)</sup>
Manual override	Non-locking push style A (Extended), Locking style B (Slotted), Locking style C (Lever)
Coil rated voltage	110 to 120V, 220V, 240V AC 50/60Hz
	12, 100V DC
Piping	Bottom piping
Option	With indicator light and surge voltage suppressor

- Note 1) Operating pressure: 0 to 0.9MPa  
 Pilot pressure: 2 position single/3 position 0.2 to 0.9MPa  
 2 position double 0.1 to 0.9MPa

- SY
- SYJ
- SX
- VK
- VZ
- VF
- VFR
- VP7
- VP4
- VQ
- VQ4
- VQZ
- VQD
- VZS
- VFS
- VS
- VS7

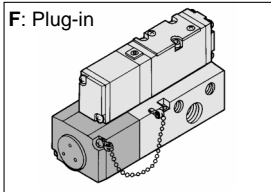
# VFR2000

## How to Order



**Electrical entry**

F: Plug-in



**Option**

-	None
Z	With indicator light and surge voltage suppressor

**Piping (P, A, B, EA, EB port)**

-	Side
B*	Bottom

\*Option


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

-	Without sub-plate
01	Rc(PT) 1/8
02	Rc(PT) 1/4

EA, EB port: Rc(PT) 1/8

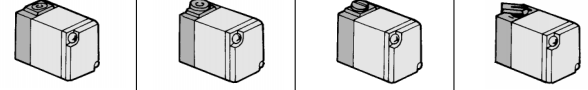
**Plug-in** VFR2 1 00 [ ] 5 F [ ] [ ] [ ] 01

**Non plug-in** VFR2 1 10 [ ] 1 E [ ] [ ] [ ] 02



**Pilot valve manual override**

-: Non-looking push style (Flush)	A*: Non-looking push style A (Extended)	B*: Locking style B (Slotted)	C*: Locking style C (Lever)
-----------------------------------	-----------------------------------------	-------------------------------	-----------------------------



\*Option

**Option**

-	None
Z	With indicator light and surge voltage suppressor
S*	With surge voltage suppressor

\*Only for grommet.  
Grommet is only with surge voltage suppressor.

**Configuration**

1	2 position single (A)(B)
2	2 position double (A)(B)
3	3 position closed center (A)(B)
4	3 position exhaust center (A)(B)
5	3 position pressure center (A)(B)

**Pilot**

-	Internal pilot
R*	External pilot

\*Option (External pilot is available only on sub-plate type.)

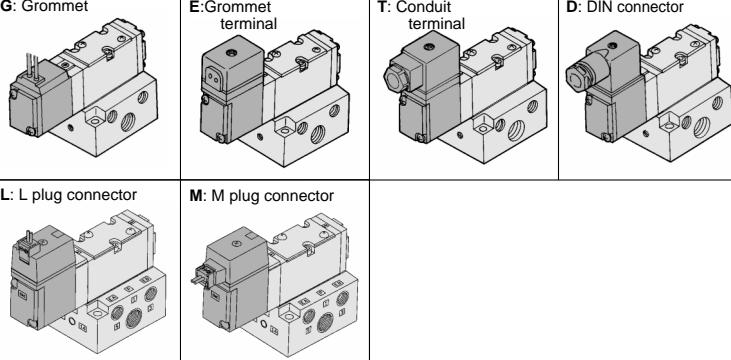
**Voltage**

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3*	110V to 120V AC 50/60Hz
4*	220V AC 50/60Hz
5	24V DC
6*	12V DC
7*	240V AC 50/60Hz
9*	Others

\*Option

**Electrical entry**

G: Grommet	E: Grommet terminal	T: Conduit terminal	D: DIN connector
L: L plug connector	M: M plug connector		



## How to Order Pilot Valve Assembly

SF4 - 1 DZ [ ] - 60

**Manual override**

-	Non-looking push
A*	Non-looking push A (Extended)
B*	Locking B (Slotted)
C*	Locking C (Lever)

\*Option

**Electrical entry/Indicator light and surge voltage suppressor**

Symbol	Electrical entry	light	Surge suppressor	Body
F	Plug-in	-	-	Plug-in
G	Grommet	-	-	Non plug-in
GS	Grommet	-	●	
D	DIN connector	-	-	
DZ	DIN connector	●	●	
DO	DIN connector (Without connector)	-	-	
DOZ	DIN connector (Without connector)	●	●	
T	Conduit terminal	-	-	
TZ	Conduit terminal	●	●	
E	Grommet terminal	-	-	
EZ	Grommet terminal	●	●	

**Manual override**

-	Non-looking push
A*	Non-looking push A (Extended)
B*	Locking B (Slotted)
C*	Locking C (Lever)

\*Option

**Electrical entry/Indicator light and surge voltage suppressor**

Symbol	Electrical entry	light	Surge suppressor	Body
L	L plug connector	-	-	Non plug-in
LZ	L plug connector	●	●	
LO	L plug connector (Without connector)	-	-	
LOZ	L plug connector (Without connector)	●	●	
M	M plug connector	-	-	
MZ	M plug connector	●	●	
MO	M plug connector (Without connector)	-	-	
MOZ	M plug connector (Without connector)	●	●	

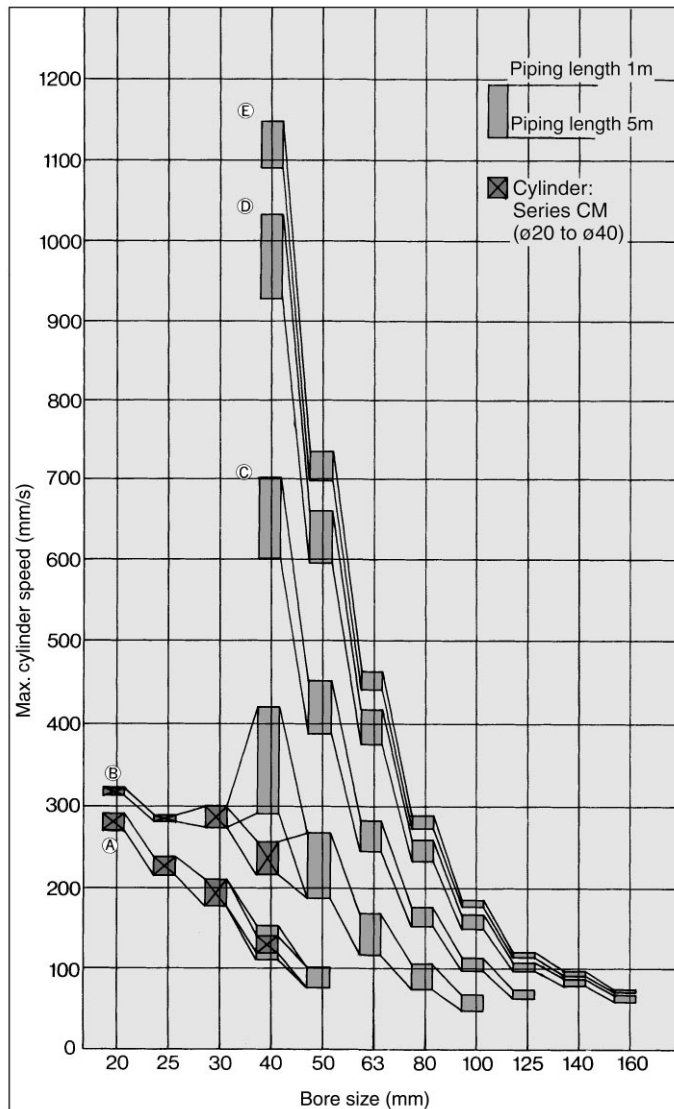
**Voltage**

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3*	110 to 120V AC 50/60Hz
4*	220V AC 50/60Hz
5	24V DC
6*	12V DC
7*	240V AC 50/60Hz
9*	Others

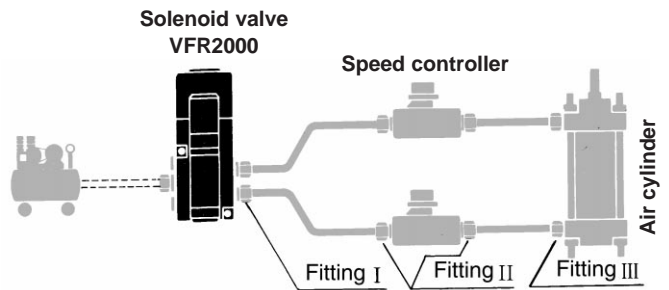
\*Option

## Maximum Cylinder Speed

Condition: Supply pressure 0.5MPa, Load factor 50%



## System diagram



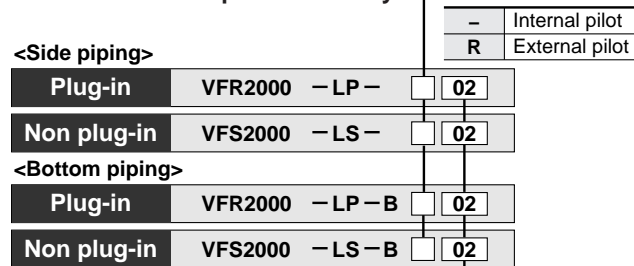
- SY
- SYJ
- SX
- VK
- VZ
- VF
- VFR**
- VP7
- VP4

## System construction

System	Solenoid valve	Speed controller	Silencer	Fitting (Tube O. D. X Port size)		
				1	2	3
A	Series VFR2000 Rc(PT) 1/8	AS2000-01 (S=2.5mm <sup>2</sup> )	AN110-01 (S=35mm <sup>2</sup> )	ø4 X 1/8	ø4 X 1/8	ø4 X 1/8 to 1/4
		AS3000-02 (S=12mm <sup>2</sup> )	AN110-01 (S=35mm <sup>2</sup> )	ø6 X 1/8	ø6 X 1/8	ø6 X 1/8 to 1/2
C		AS3000-02 (S=12mm <sup>2</sup> )	AN110-01 (S=35mm <sup>2</sup> )	ø8 X 1/8	ø8 X 1/8	ø8 X 1/8 to 1/2
D	Series VFR2000 Rc(PT) 1/4	AS4000-02 (S=21mm <sup>2</sup> )	AN110-01 (S=35mm <sup>2</sup> )	ø10 X 1/4	ø10 X 1/4	ø10 X 1/4 to 1/2
		AS4000-02 (S=21mm <sup>2</sup> )	AN110-01 (S=35mm <sup>2</sup> )	ø12 X 1/4	ø12 X 1/4	ø12 X 1/4 to 1/2

- VQ
- VQ4
- VQZ
- VQD
- VZS
- VFS
- VS
- VS7

## How to Order Sub-plate Assembly



Note) Mounting screws and gaskets are not included.

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

01	Rc(PT) 1/8
02	Rc(PT) 1/4

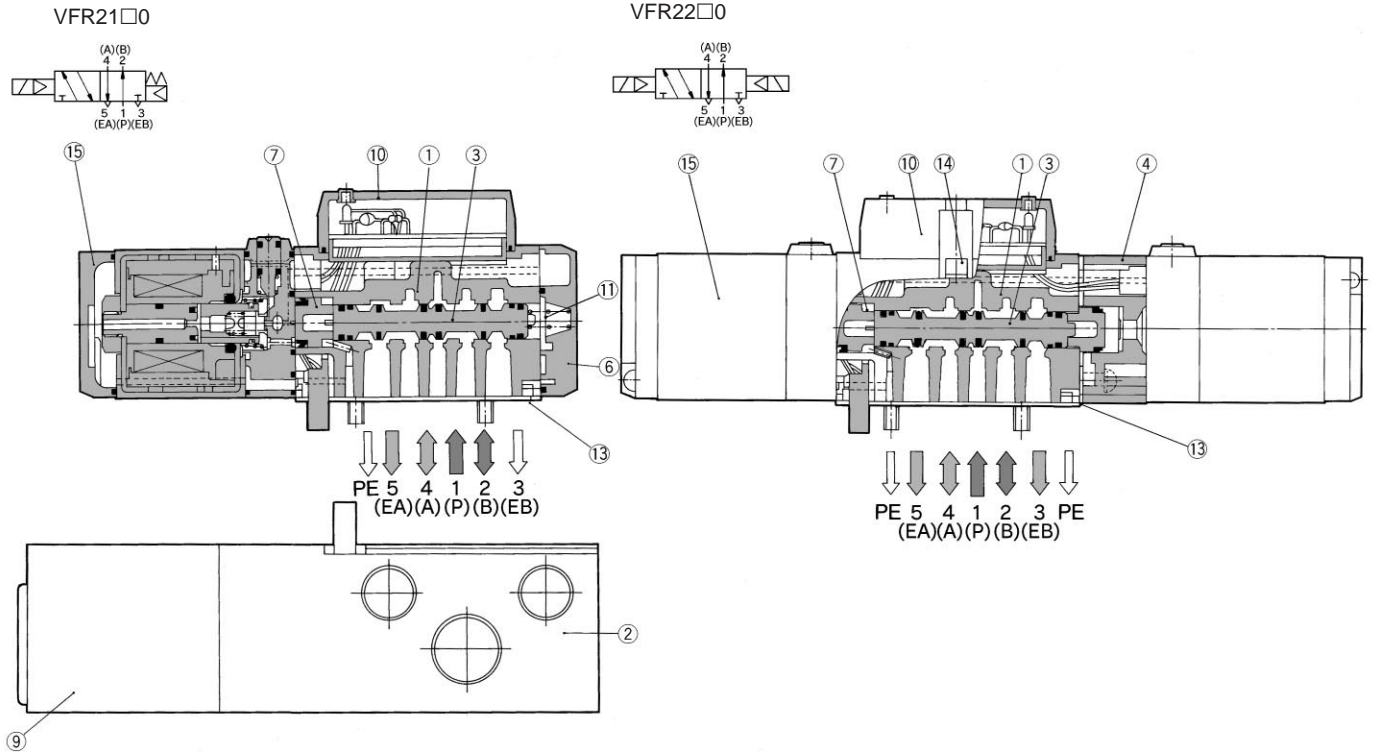
EA, EB port: Rc(PT) 1/8

# VFR2000

## Construction

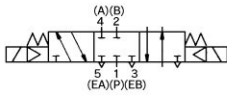
### 2 position single

### 2 position double

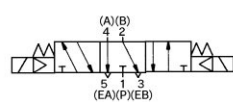


### 3 position closed center/exhaust center/pressure center

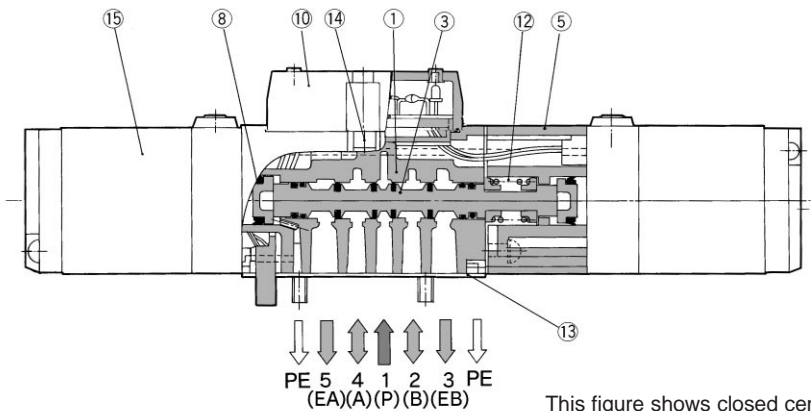
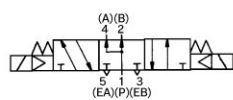
Closed center/VFR2300



Exhaust center/VFR2400



Pressure center/VFR2500



This figure shows closed center.

### Component Parts

No.	Description	Material	Note
①	Body	Aluminum die cast	Platinum silver
②	Sub-plate	Aluminum die cast	Platinum silver
③	Spool valve	Aluminum, NBR	
④	Adaptor plate	Aluminum die cast	Platinum silver
⑤	Adaptor plate	Aluminum die cast	Platinum silver
⑥	End plate	Resin	Black

### Component Parts

No.	Description	Material	Note
⑦	Piston	Resin	
⑧	Piston	Resin	
⑨	Junction cover	Resin	
⑩	Light cover ass'y	Resin	
⑪	Spool spring	Stainless steel	
⑫	Return spring	Stainless steel	

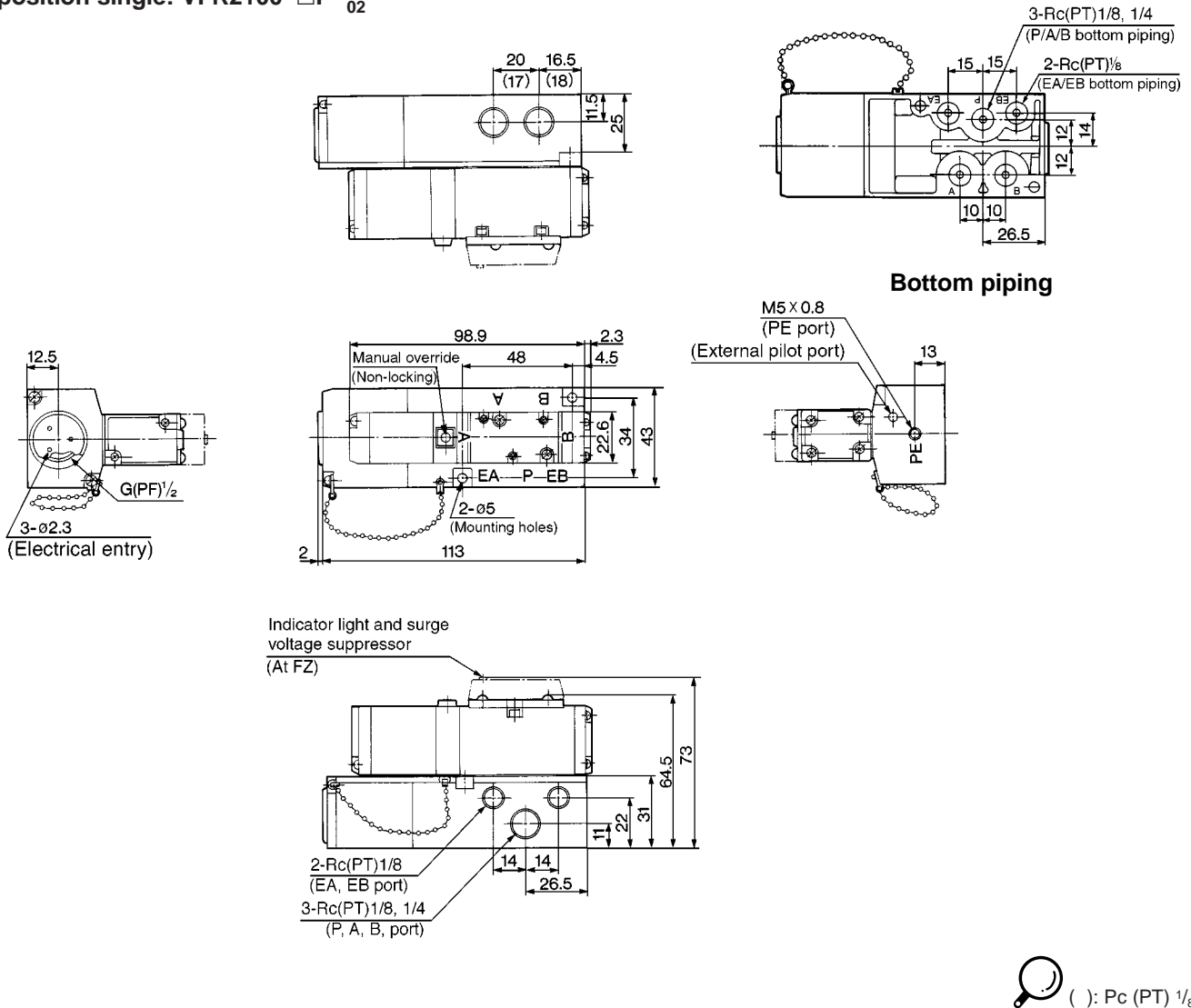
### Replacement Parts

No.	Description	Material	Part No.		
			VFR2100	VFR2200	VFR2300, 2400, 2500
⑬	Gasket	NBR	AXT624-20-2	AXT624-20-2	AXT624-20-2
⑭	Hex. socket head cap screw	Steel	AXT624-26 (M3 X 31)	AXT624-26 (M3 X 31)	AXT624-26 (M3 X 31)
⑮	Pilot valve assembly	-	Refer to "How to Order Pilot Valve Assembly on p.1.7-10.		
	Sub-plate assembly	-	Refer to "How to Order Sub-plate Assembly on p.1.7-11.		



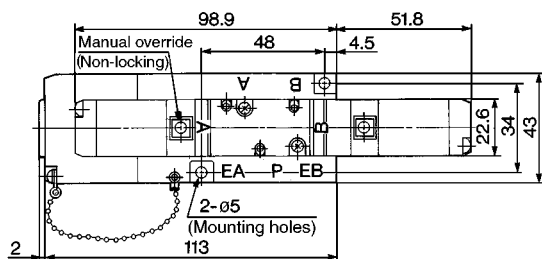
## Plug-in 2 Position Single/Double, 3 Position Closed Center/Exhaust Center/Pressure Center

2 position single: VFR2100-□F-<sup>01</sup>/<sub>02</sub>



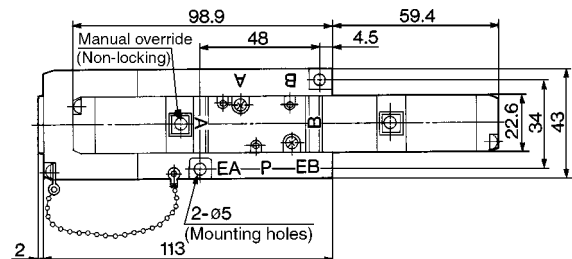
( ): Pc (PT) 1/8

2 position double: VFR2200-□F-<sup>01</sup>/<sub>02</sub>



\*Other dimensions are the same as single style.

3 position closed center: VFR2300-□F-<sup>01</sup>/<sub>02</sub>  
 3 position exhaust center: VFR2400-□F-<sup>01</sup>/<sub>02</sub>  
 3 position pressure center: VFR2500-□F-<sup>01</sup>/<sub>02</sub>



\*Other dimensions are the same as single style.



- 2 position single ————— SV5FR21, #1+#7
- 2 position double ————— SV5FR21, #2+#7
- 3 position ————— SV5FR21, #3+#7
- Bottom piping ————— SV5FR21, #7 is changed for#8
- With indicator light and surge voltage suppressor. ————— SV5FR21, (#9, #001) are added.

- SY
- SYJ
- SX
- VK
- VZ
- VF
- VFR**
- VP7
- VP4
- VQ
- VQ4
- VQZ
- VQD
- VZS
- VFS
- VS
- VS7

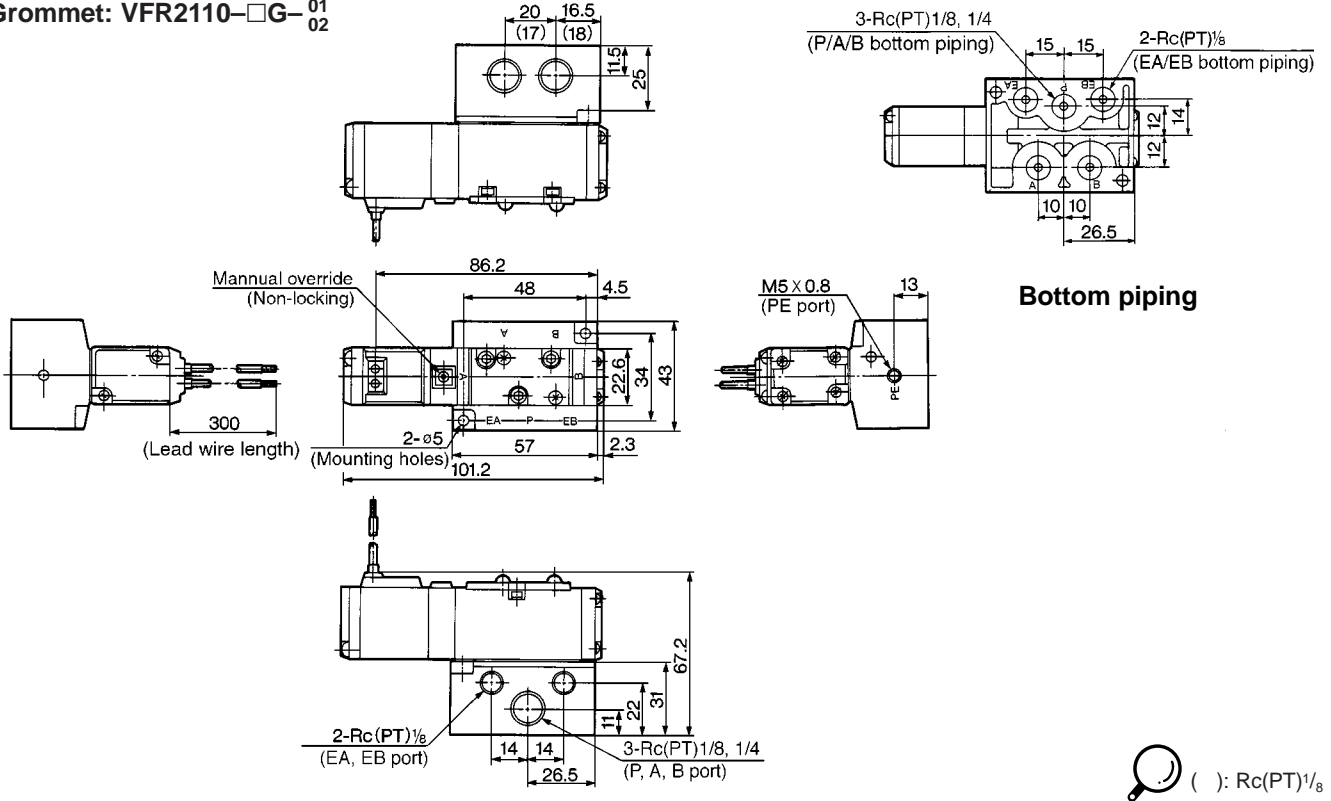


# VFR2000



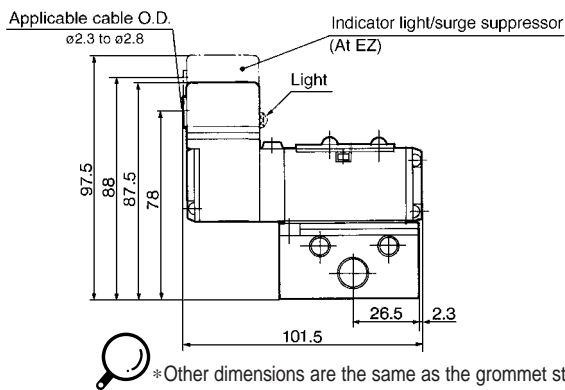
## Non Plug-in 2 Position Single

Grommet: VFR2110-□G-01/02



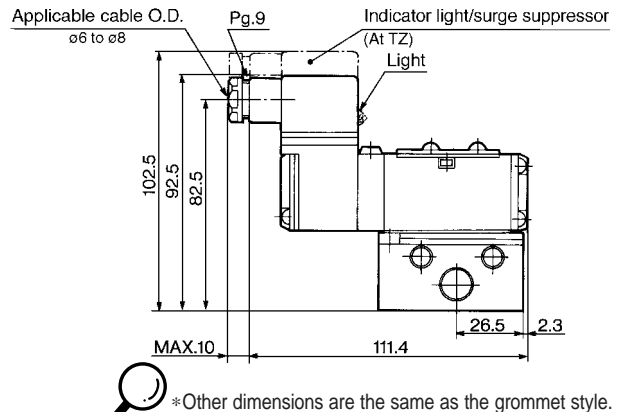
⊕ ( ) : Rc(PT)1/8

Grommet terminal: VFR2110-□E-01/02



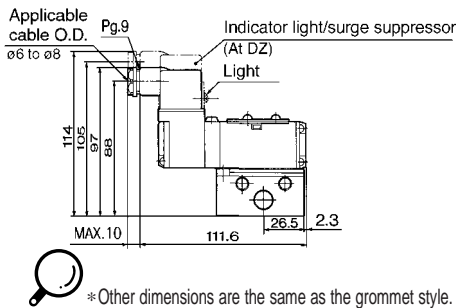
⊕ \*Other dimensions are the same as the grommet style.

Conduit terminal: VFR2110-□T-01/02



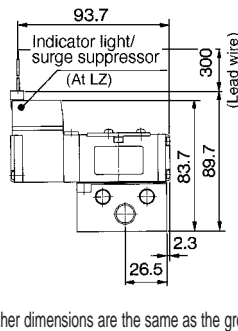
⊕ \*Other dimensions are the same as the grommet style.

DIN connector: VFR2110-□D-01/02



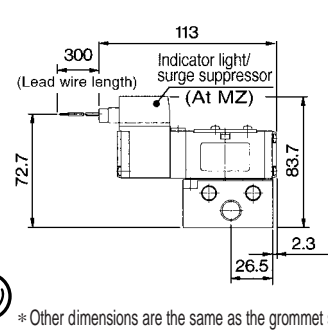
⊕ \*Other dimensions are the same as the grommet style.

L plug connector: VFR2110-□L-01/02



⊕ \*Other dimensions are the same as the grommet style.

M plug connector: VFR2110-□M-01/02



⊕ \*Other dimensions are the same as the grommet style.

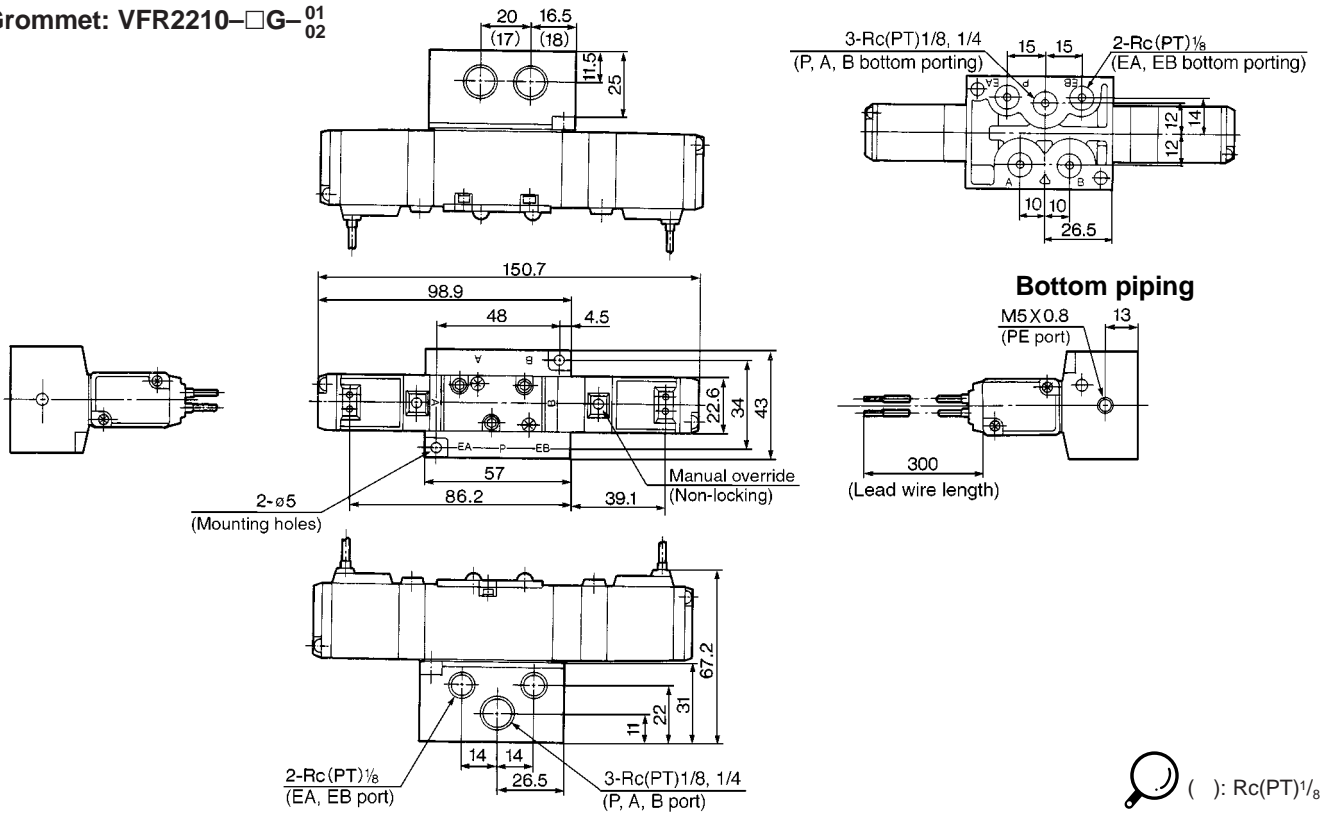
- ⊕ Grommet ————— SV5FR21, #1+#7+(#9, #002)
- ⊕ Grommet terminal ————— SV5FR21, #1+#7+(#9, #003)
- ⊕ DIN terminal ————— SV5FR21, #1+#7+(#9, #005)
- ⊕ M plug connector ————— SV5FR21, #1+#7+(#9, #007)

- ⊕ Bottom piping ————— SV5FR21, #7 is changed for #8
- ⊕ Conduit terminal ————— SV5FR21, #1+#7+(#9, #004)
- ⊕ L plug connector ————— SV5FR21, #1+#7+(#9, #006)

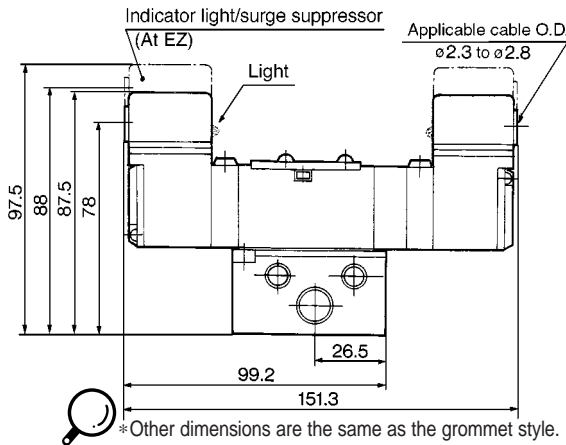


## Non Plug-in 2 Position Double

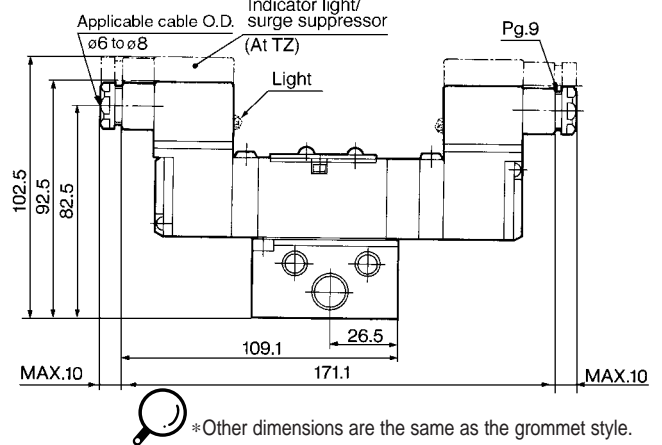
Grommet: VFR2210-□G-01  
02



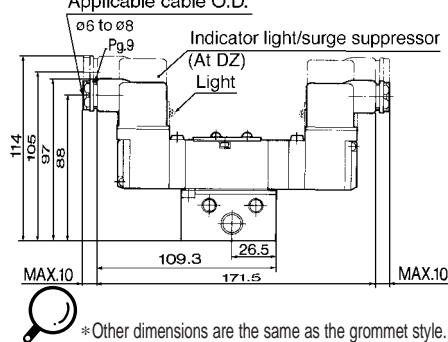
Grommet terminal: VFR2210-□E-01  
02



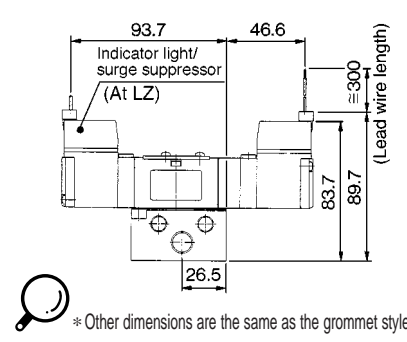
Conduit terminal: VFR2210-□T-01  
02



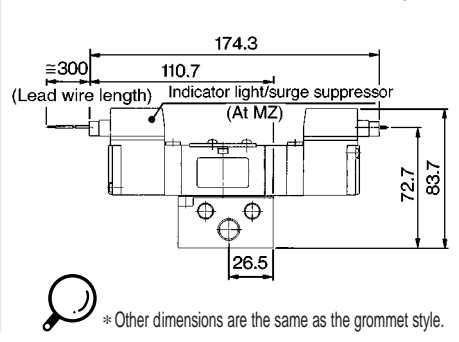
DIN connector: VFR2210-□D-01  
02



L plug connector: VFR2210-□L-01  
02



M plug connector: VFR2210-□M-01  
02



Grommet — SV5FR21, #2+#7+(#9, #002)  
Grommet terminal — SV5FR21, #2+#7+(#9, #003)  
DIN terminal — SV5FR21, #2+#7+(#9, #005)  
M plug connector — SV5FR21, #2+#7+(#9, #007)

Bottom piping — SV5FR21, #7 is changed for #8  
Conduit terminal — SV5FR21, #2+#7+(#9, #004)  
L plug connector — SV5FR21, #2+#7+(#9, #006)

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

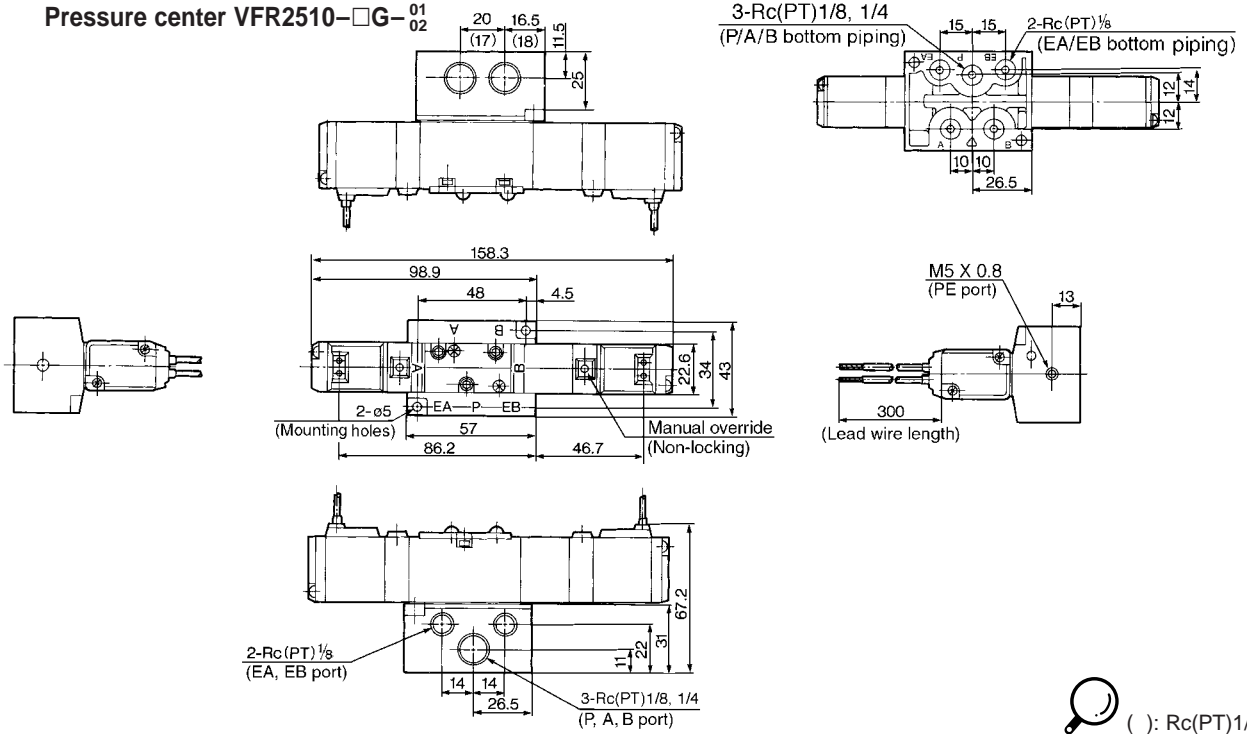
VS7

# VFR2000



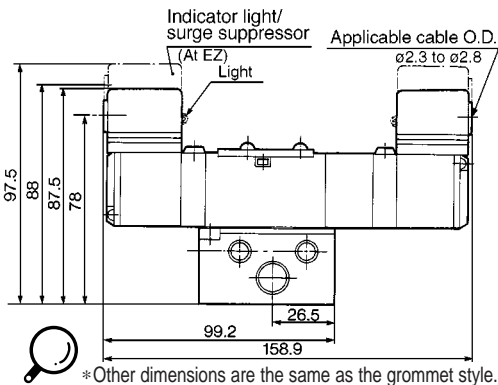
## Non Plug-in 3 Position Closed Center/Exhaust Center/Pressure Center

Grommet: Closed center VFR2310-□G-<sup>01</sup>/<sub>02</sub>, Exhaust center VFR2410-□G-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFR2510-□G-<sup>01</sup>/<sub>02</sub>



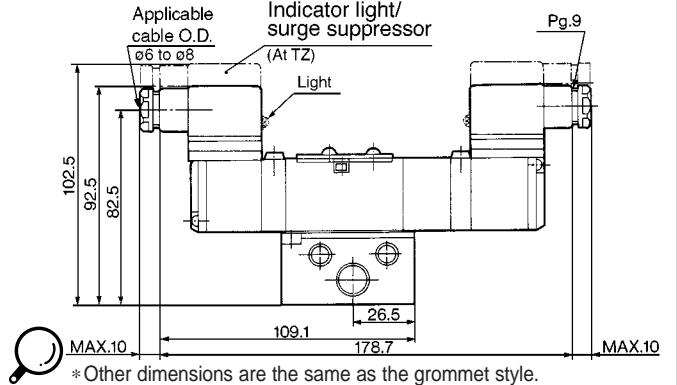
( ) : Rc(PT)1/8

Grommet terminal: Closed center VFR2310-□E-<sup>01</sup>/<sub>02</sub>  
 Exhaust center VFR2410-□E-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFR2510-□E-<sup>01</sup>/<sub>02</sub>



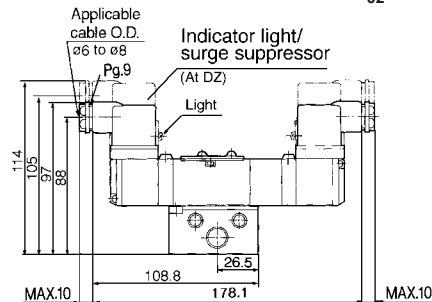
\*Other dimensions are the same as the grommet style.

Conduit terminal: Closed center VFR2310-□T-<sup>01</sup>/<sub>02</sub>  
 Exhaust center VFR2410-□T-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFR2510-□T-<sup>01</sup>/<sub>02</sub>



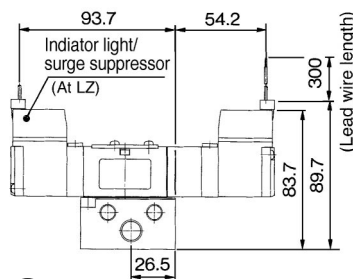
\*Other dimensions are the same as the grommet style.

DIN connector:  
 Closed center VFR2310-□D-<sup>01</sup>/<sub>02</sub>  
 Exhaust center VFR2410-□D-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFR2510-□D-<sup>01</sup>/<sub>02</sub>



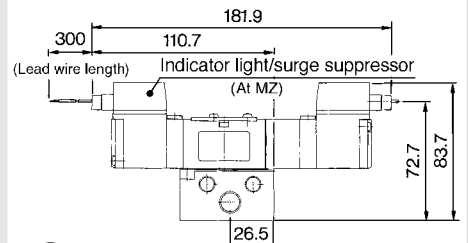
\*Other dimensions are the same as the grommet style.

L plug connector  
 Closed center VFR2310-□L-<sup>01</sup>/<sub>02</sub>  
 Exhaust center VFR2410-□L-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFR2510-□L-<sup>01</sup>/<sub>02</sub>



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

M plug connector  
 Closed center VFR2310-□M-<sup>01</sup>/<sub>02</sub>  
 Exhaust center VFR2410-□M-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFR2510-□M-<sup>01</sup>/<sub>02</sub>



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

	Grommet	SV5FR21, #3+#7+(#9, #002)
	Conduit terminal	SV5FR21, #3+#7+(#9, #004)
	L plug connector	SV5FR21, #3+#7+(#9, #006)
	Bottom piping	SV5FR21, #7 is changed for #8

Grommet terminal	SV5FR21, #3+#7+(#9, #003)
DIN terminal	SV5FR21, #3+#7+(#9, #005)
M plug connector	SV5FR21, #3+#7+(#9, #007)