

5 Port Pilot Operated Solenoid Valve

VFS1000/2000/3000/4000/5000/6000 Series

Metal Seal

Series Variations

Series	Sonic conductance C [dm ³ /s·bar] 4/2 → 5/3(A/B → R1/R2)	Type of actuation	Voltage	Electrical entry	With light/surge voltage suppressor (Option)	Manual override		
Body Ported	1.8	1.8	2 position single  2 position double  3 position closed center  3 position exhaust center  3 position pressure center 	(Standard) 100 VAC, 50/60 Hz 200 VAC, 50/60 Hz 24 VDC	Grommet (G) Conduit terminal (T)	Grommet terminal (E) DIN terminal (D)	<input type="checkbox"/> With light/surge voltage suppressor • Grommet terminal (EZ) • Conduit terminal (TZ) • DIN terminal (DZ)	Non-locking push type (Flush)
	3.4	3.4	3 position closed center  3 position exhaust center  3 position pressure center 	(Option) 110 to 120 VAC, 50/60 Hz 220 VAC, 50/60 Hz 240 VAC, 50/60 Hz 12 VDC 100 VDC	Conduit terminal (T)	DIN terminal (D)	<input type="checkbox"/> With surge voltage suppressor • Grommet (GS) Note) • Indicator light is not available for grommet type. Only surge voltage suppressor can be equipped on the middle of lead wire. • DC: There is polarity. (Lead wire Red: +, Black: -)	Non-locking push type (Extended)
	6.8	6.5	3 position pressure center 				Locking type (Tool required)	

Base Mounted	VFS2000 Plug-in type Non plug-in type (P.1138)	2.8	2.7	2 position single  2 position double  3 position closed center  3 position exhaust center  3 position pressure center 	(Standard) 100 VAC, 50/60 Hz 200 VAC, 50/60 Hz 24 VDC	Plug-in Conduit terminal (F) Non plug-in Grommet (G) Conduit terminal (T)	<input type="checkbox"/> With light/surge voltage suppressor • Plug-in type Conduit terminal (FZ) • Non plug-in type Grommet terminal (EZ) Conduit terminal (TZ) DIN terminal (DZ)	Non-locking push type (Flush)
	VFS3000 Plug-in type Non plug-in type (P.1162)	5.8	5.4	3 position double check 	(Option) 110 to 120 VAC, 50/60 Hz 220 VAC, 50/60 Hz 240 VAC, 50/60 Hz 12 VDC 100 VDC	Plug-in Conduit terminal (F) Non plug-in Grommet terminal (E) DIN terminal (D)	<input type="checkbox"/> With surge voltage suppressor • Non plug-in type Grommet (GS) Note) • Indicator light is not available for grommet type. Only surge voltage suppressor can be equipped on the middle of lead wire. • DC: There is polarity. (Lead wire Red: +, Black: -)	Non-locking push type (Extended)
	VFS4000 Plug-in type Non plug-in type (P.1182)	12	11	3 position double check 		 Non plug-in Grommet terminal (E) DIN terminal (D)	<input type="checkbox"/> With light/surge voltage suppressor • Plug-in type Conduit terminal (FZ) • Non plug-in type Grommet terminal (EZ) DIN terminal (DZ)	Locking type (Tool required)
	VFS5000 Plug-in type Non plug-in type (P.1202)	20	17	2 position single  2 position double 		 Plug-in Conduit terminal (F) Non plug-in Grommet terminal (E) DIN terminal (D)	<input type="checkbox"/> With light/surge voltage suppressor • Plug-in type Conduit terminal (FZ) • Non plug-in type Grommet terminal (EZ) DIN terminal (DZ)	Locking type (Lever)
	VFS6000 Plug-in type Non plug-in type (P.1218)	38	—	2 position single  2 position double 		 Non plug-in Grommet terminal (E) DIN terminal (D)		Non-locking push type (Flush)

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

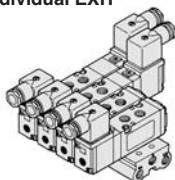
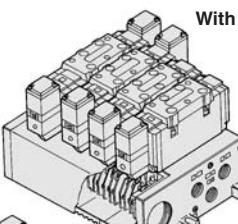
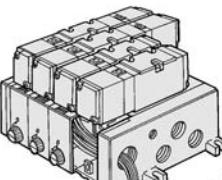
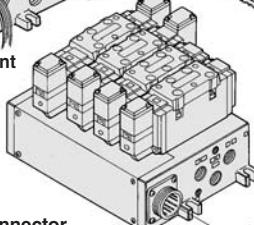
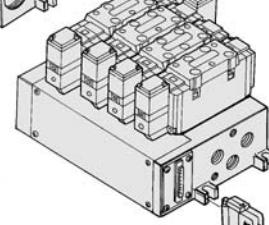
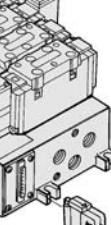
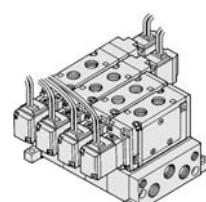
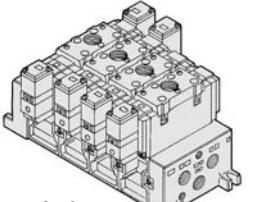
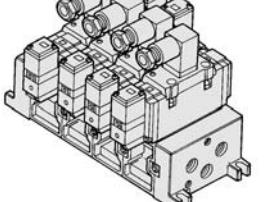
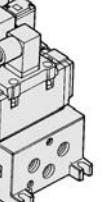
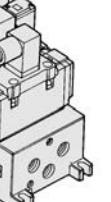
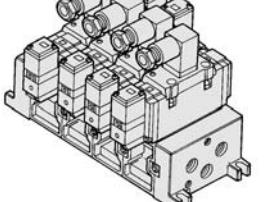
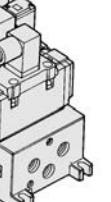
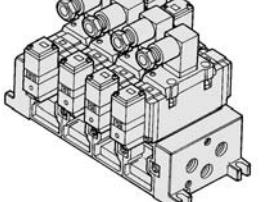
SQ

VFS

VFR

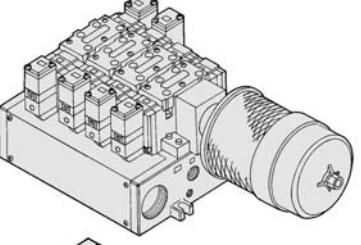
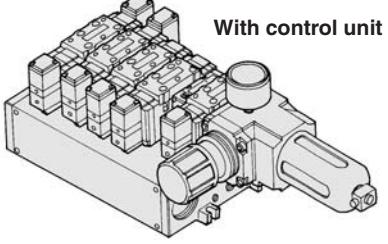
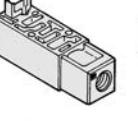
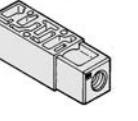
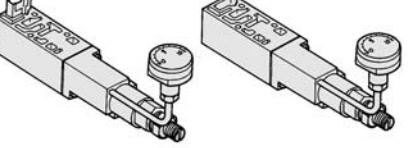
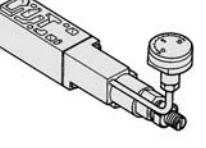
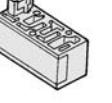
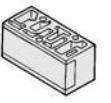
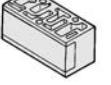
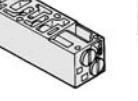
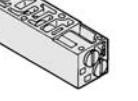
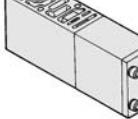
VQ7

Manifold Variations

		Manifold						
		Bar base	Stacking base	With attachment plug lead wire	With terminal block	With multi-connector	With D-sub connector	Non plug-in (Connection to each valve)
Body Ported	VFS1000	(P.1119)						
	VFS2000	(P.1127)						
	VFS3000		(P.1136)					
Base Mounted Plug-in Type	VFS2000			(P.1146)	(P.1146)	(P.1146)	(P.1146)	
	VFS3000			(P.1168)	(P.1168)	(P.1168)	(P.1168)	
	VFS4000			(P.1188)	(P.1188)	(P.1188)	(P.1188)	
	VFS5000			(P.1208)	(P.1208)	(P.1208)	(P.1208)	
Base Mounted Non Plug-in Type	VFS2000							(P.1146)
	VFS3000							(P.1168)
	VFS4000							(P.1188)
	VFS5000							(P.1208)
		Bar Base (Series VFS1000/2000)		Plug-in		Non Plug-in		
		Pilot individual EXH		With terminal block		With bottom piping		
								
		Pilot common EXH						
								
		Stacking base (Series VFS3000)		Non Plug-in		Non Plug-in		
		Pilot common EXH						
								
								
								
								
								



* Bottom piping is available as an option.

Manifold Option				Manifold Option Parts											
With exhaust cleaner	With control unit	Driproof manifold (Equivalent to IP65)	Serial transmission kit manifold (EX123/4-type compatible)	Individual SUP spacer	Individual EXH spacer	SUP block disk	EXH block disk	Throttle valve spacer	Interface regulator	Air shutoff valve spacer	Air release valve spacer	Double check spacer	Blanking plate		
													● (P.1119)		
													● (P.1127)		
													● (P.1136)		
	● (P.1153)	● (P.1155) Note	● (P.1158) Note	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)			
● (P.1173)	● (P.1175)		● (P.1178) Note	● (P.1170)	● (P.1170)	● (P.1170)	● (P.1170)	● (P.1170)	● (P.1170)			● (P.1170)	● (P.1170)		
● (P.1193)	● (P.1195)		● (P.1198) Note	● (P.1190)	● (P.1190)	● (P.1190)	● (P.1190)	● (P.1190)	● (P.1190)			● (P.1190)	● (P.1190)		
● (P.1212)			● (P.1214) Note	● (P.1209)	● (P.1209)	● (P.1209)	● (P.1209)	● (P.1209)	● (P.1209)			● (P.1209)	● (P.1209)		
	● (P.1153)			● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)	● (P.1148)			
● (P.1173)	● (P.1175)			● (P.1170)	● (P.1170)	● (P.1170)	● (P.1170)	● (P.1170)	● (P.1170)			● (P.1170)	● (P.1170)		
● (P.1193)	● (P.1195)			● (P.1190)	● (P.1190)	● (P.1190)	● (P.1190)	● (P.1190)	● (P.1190)			● (P.1190)	● (P.1190)		
● (P.1212)				● (P.1209)	● (P.1209)	● (P.1209)	● (P.1209)	● (P.1209)	● (P.1209)			● (P.1209)	● (P.1209)		
With exhaust cleaner  With control unit 				Individual SUP spacer  			Interface regulator  			Air shutoff valve spacer  			Air release valve spacer  		
Driproof Manifold (Equivalent to IP65) With serial transmission kit				SUP/EXH block disk 			Throttle valve spacer  			Double check spacer  					

Driproof Manifold (Equivalent to IP65)
With serial transmission kit



• Note) Made to Order Specifications

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series VFS1000

Model

Type of actuation	Model		Port size	Flow characteristics						Max. ⁽¹⁾ operating cycle (cpm)	Response time (ms) ⁽²⁾	Mass (kg) ⁽³⁾				
	Plug-in	Non plug-in		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)									
				C [dm ³ /(s·bar)]	b	C _v	C [dm ³ /(s·bar)]	b	C _v							
2 position	Single	VFS1120	VFS1130	1/8	1.7	0.22	0.38	1.8	0.19	0.40	1200	15 or less	0.18			
	Double	VFS1220	VFS1230	1/8	1.7	0.22	0.39	1.8	0.19	0.40	1200	13 or less	0.26			
3 position	Closed center	VFS1320	VFS1330	1/8	1.6	0.20	0.37	1.8	0.20	0.41	600	20 or less	0.27			
	Exhaust center	VFS1420	VFS1430	1/8	1.7	0.18	0.38	1.9	0.19	0.44	600	20 or less	0.27			
	Pressure center	VFS1520	VFS1530	1/8	1.7	0.24	0.40	1.6	0.18	0.37	600	20 or less	0.27			

 Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency.

Note 2) According to JIS B 8375-1981. (The value at supply pressure 0.5 MPa.)

Note 3) In the case of grommet type

Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

Compact yet provides a large flow capacity
C: 1.8 dm³/(s·bar)

Low power consumption:
1.8 W DC



Standard Specifications

Valve specifications	Fluid	Air/Inert gas
	Maximum operating pressure	1.0 MPa
	Min. operating pressure	2 position 0.1 MPa 3 position 0.15 MPa
	Proof pressure	1.5 MPa
	Ambient and fluid temperature	-10 to 60°C ⁽¹⁾
	Lubrication	Non-lube ⁽²⁾
	Pilot valve manual override	Non-locking push type (Flush)
	Shock/Vibration resistance	150/50 m/S ² ⁽³⁾
	Enclosure	Dustproof (Degrees of protection 0) ⁽⁴⁾
	Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC
Electricity specifications	Allowable voltage fluctuation	-15 to +10% of rated voltage
	Coil insulation type	Class B or equivalent (130°C) ⁽⁵⁾
	Apparent power AC	Inrush 5.6 VA (50 Hz), 5.0 VA (60 Hz)
	(Power consumption)	Holding 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
	Power consumption (DC)	1.8 W (2.04 W: With light/surge voltage suppressor)
	Electrical entry	Grommet, Grommet terminal, Conduit terminal, DIN terminal

 Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

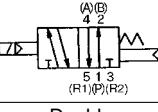
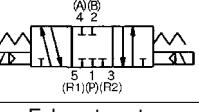
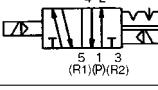
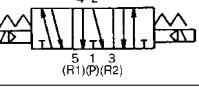
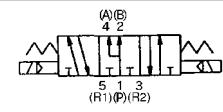
Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

JIS Symbol

2 position	3 position
Single	Closed center
	
Double	Exhaust center
	
Pressure center	
	

Option Specifications

Pilot valve manual override	Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever)
Coil rated voltage	110 to 120, 220, 240 VAC (50/60 Hz) 12, 100 VDC
Option	With light/surge voltage suppressor ^{Note}
Foot bracket (With screw)	Part No.: AXT626-10A, VFS1120 (single) only

 Note) Grommet type is available only w/ surge voltage suppressor (which is directly connected with lead wire).

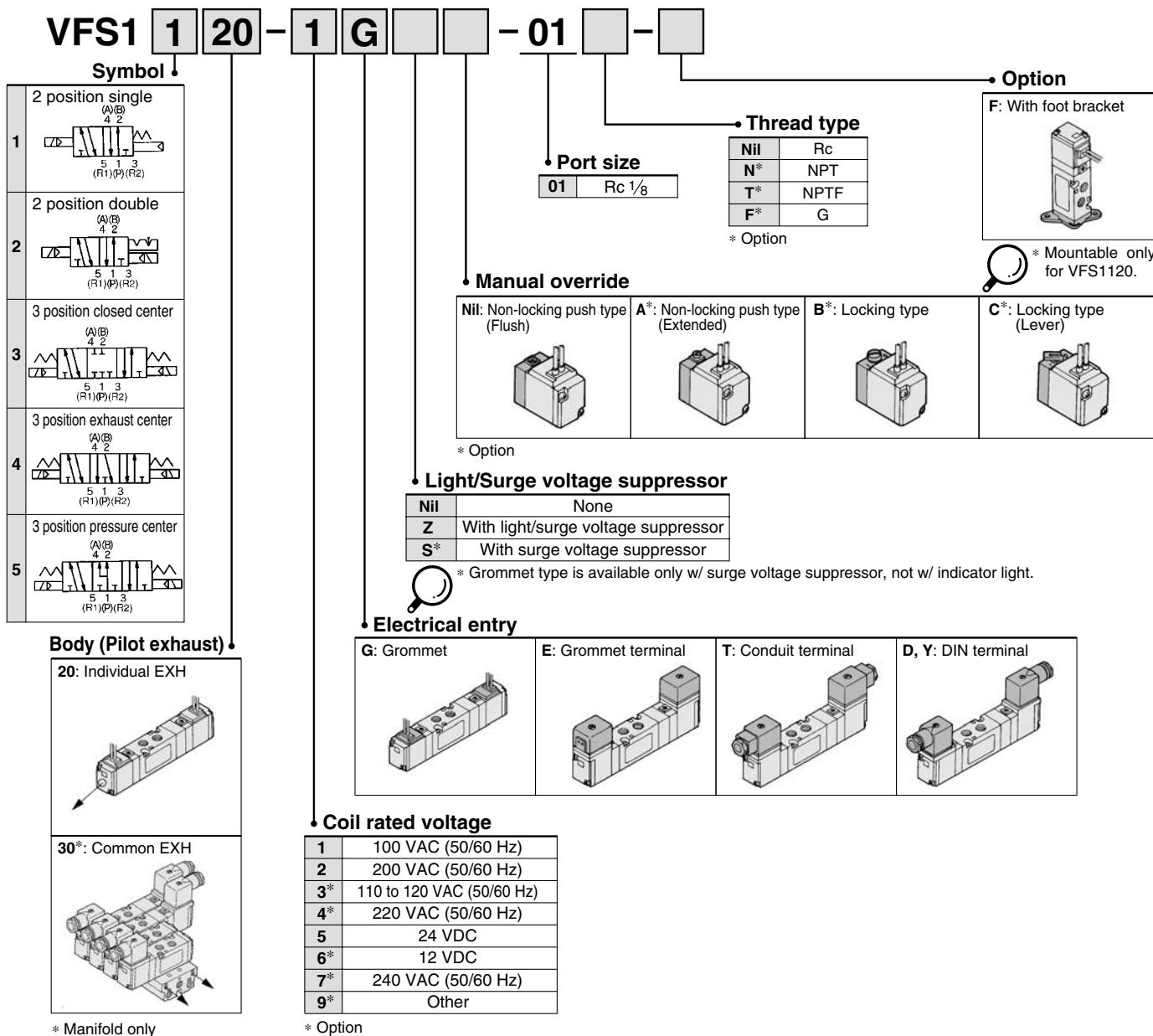
Manifold

Body type	Applicable manifold base (Pilot EXH)
VFS1□20	Bar manifold (Individual EXH)
VFS1□30	Bar manifold (Common EXH base side)

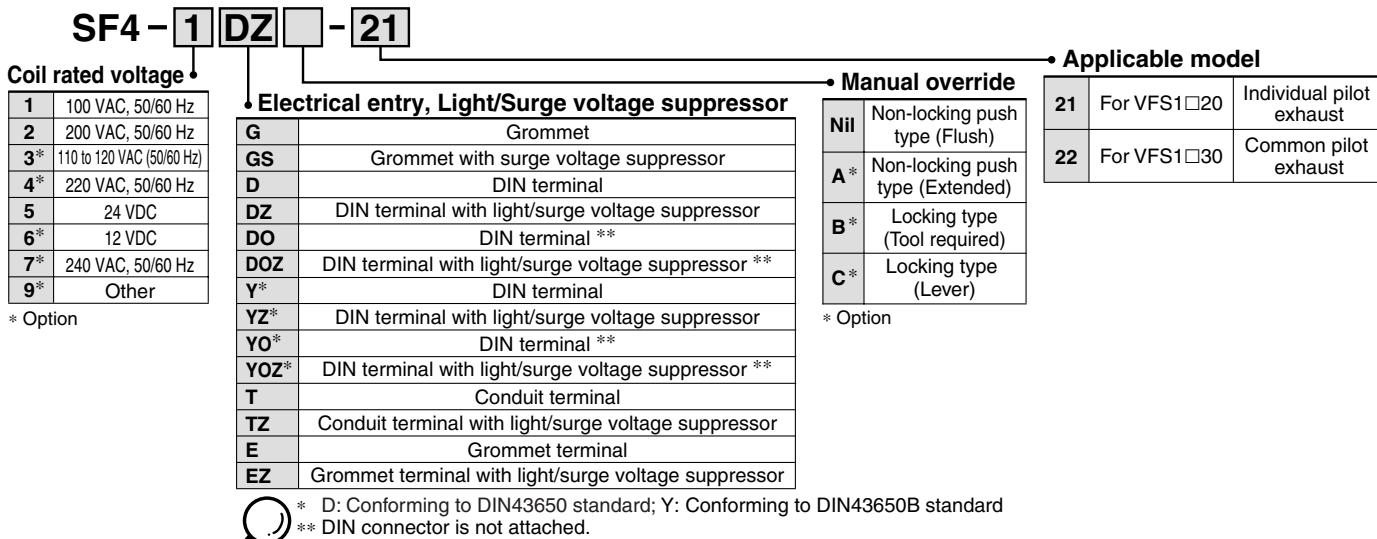
 Note) VFS1□30: Manifold only. Cannot be used as a single unit.

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series **VFS1000**

How to Order



How to Order Pilot Valve Assembly

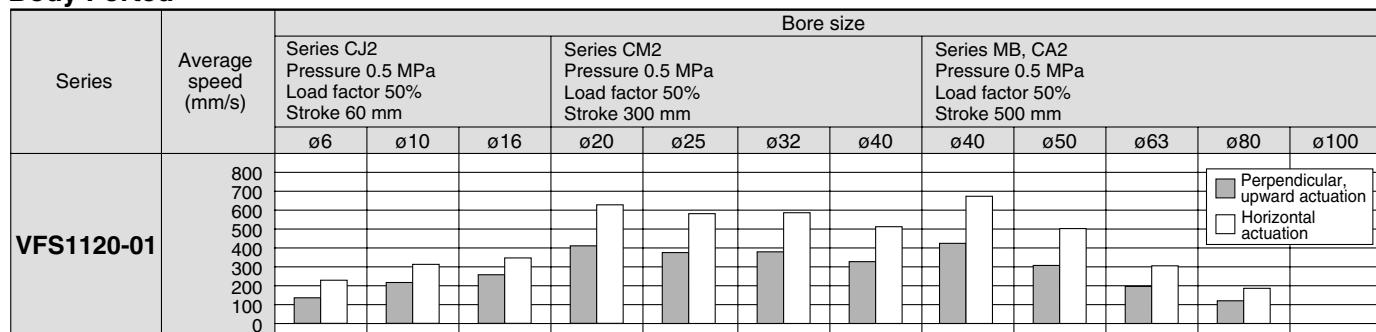


Series VFS1000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.

Body Ported



Conditions

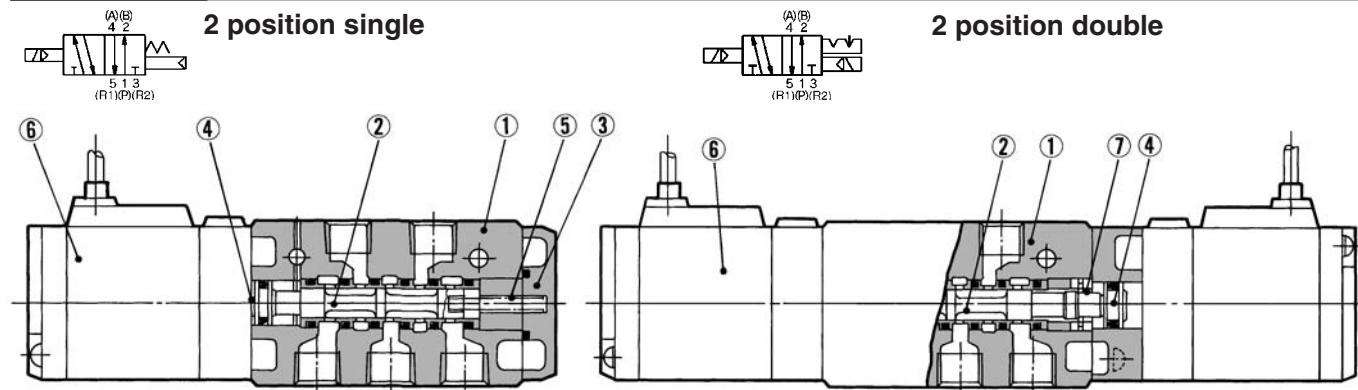
Body ported	Series CJ2	Series CM2	Series MB, CA2
VFS1120-01	Tube bore x Length T0604 x 1 m	T0806 x 1 m	
	Speed controller AS3001F-06	AS3001F-08	
	Silencer AN101-01		

* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.

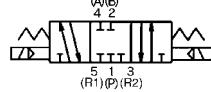
* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.

* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

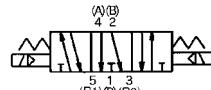
Construction



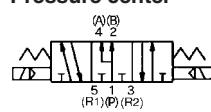
Closed center



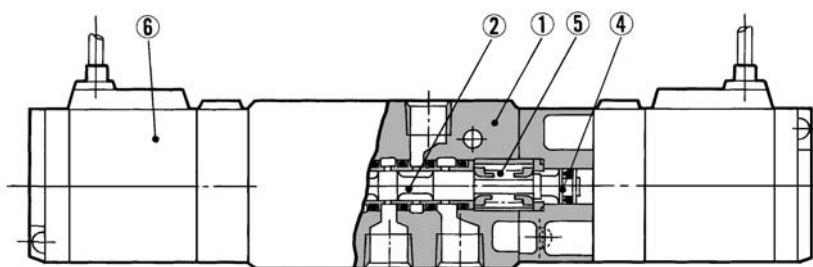
Exhaust center



Pressure center



3 position closed center/exhaust center/pressure center



Component Parts

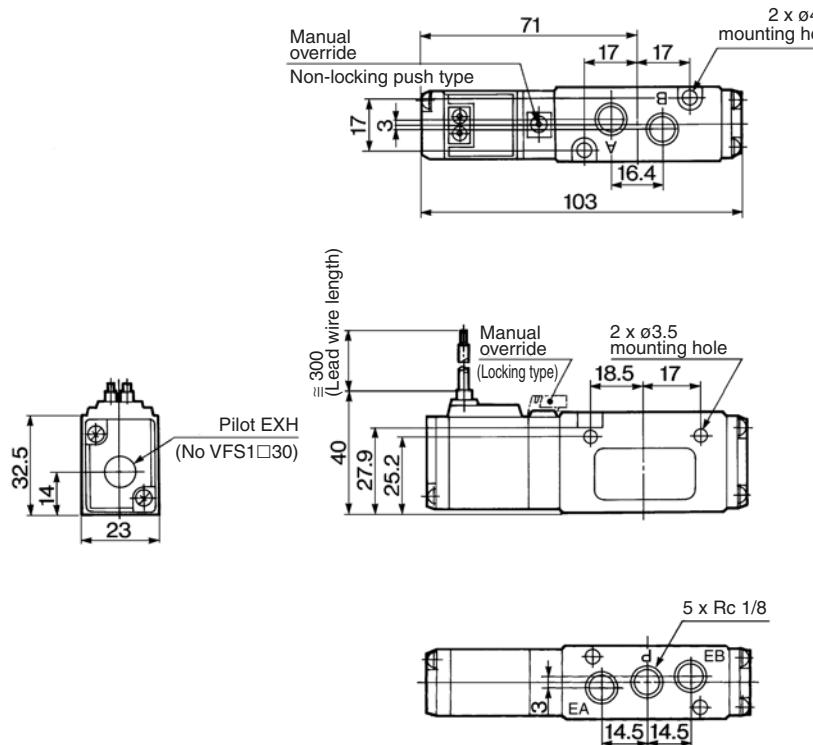
No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Spool/Sleeve	Stainless steel	—
3	End plate	Resin	—
4	Piston	Resin	—
5	Return spring	Stainless steel	—
6	Pilot valve assembly	—	—
7	Detent assembly	—	—

* Refer to "How to Order Pilot Valve Assembly" on page 1115.

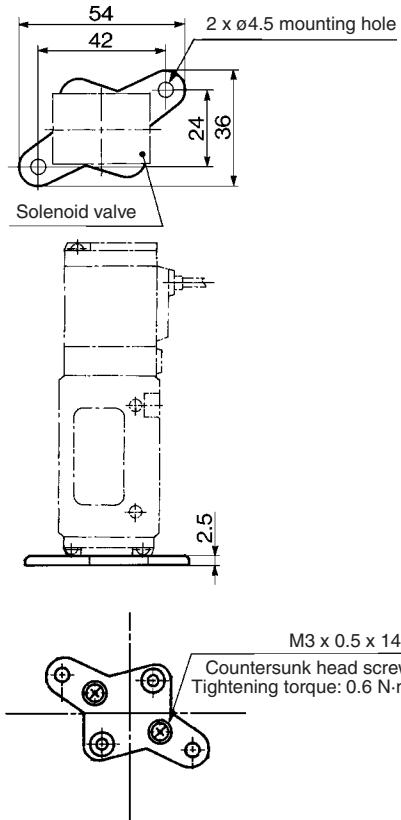
5 Port Pilot Operated Solenoid Valve
Metal Seal, Body Ported Series **VFS1000**

2 Position Single — Grommet, Grommet terminal, Conduit terminal, DIN terminal

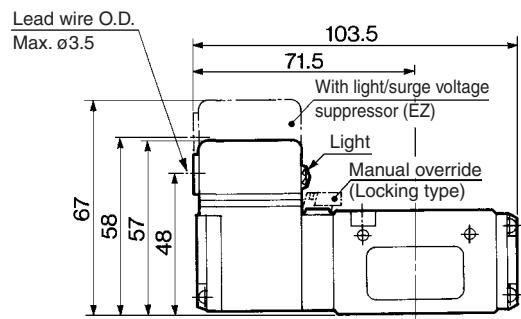
Grommet : VFS1120-□G



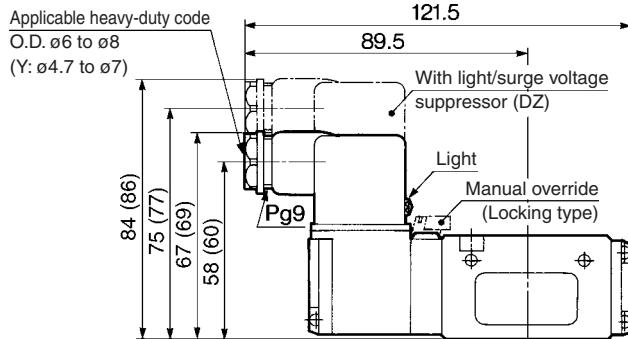
Foot bracket (F)
Part no. : AXT626-10A



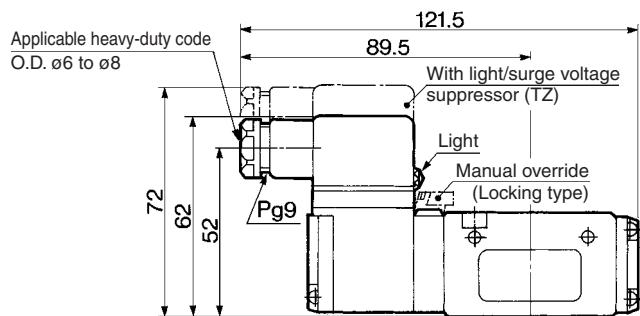
Grommet terminal: VFS1120-□E/EZ



DIN terminal: VFS1120-□D/DZ/Y/YZ



Conduit terminal: VFS1120-□T/TZ

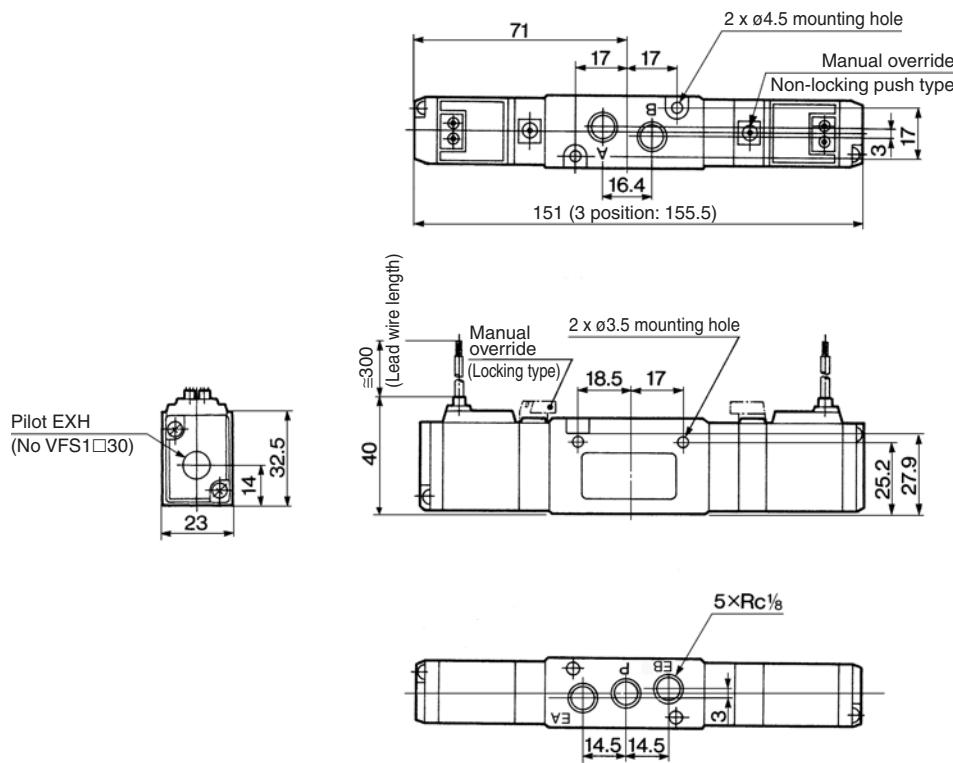


SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

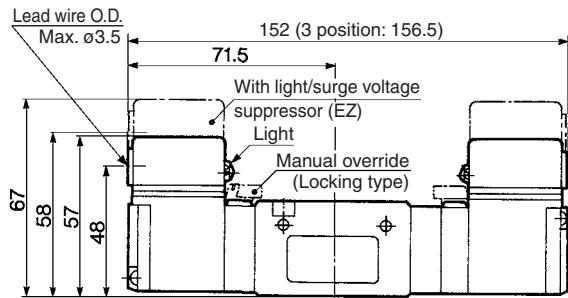
Series VFS1000

2 Position Double, 3 Position — Grommet, Grommet terminal, Conduit terminal, DIN terminal

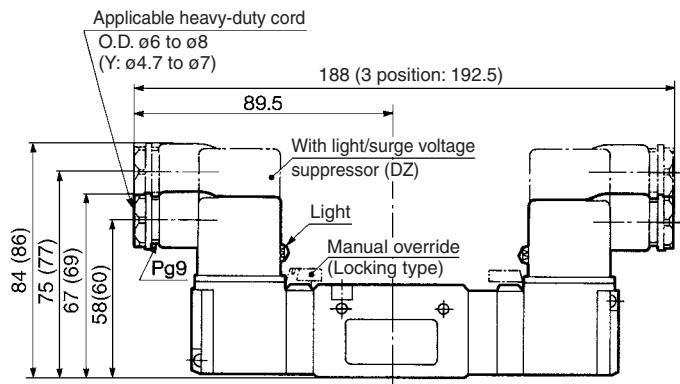
Grommet: VFS1220-□G, VFS1320-□G, VFS1420-□G, VFS1520-□G



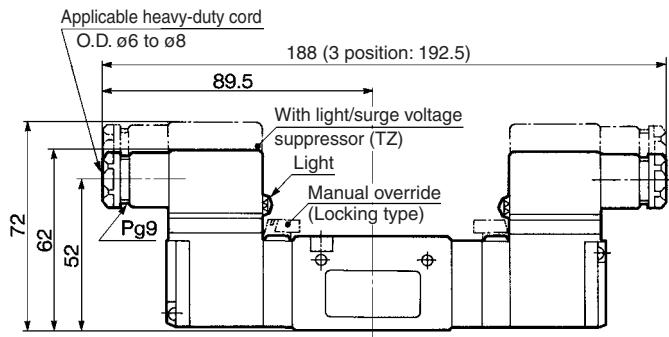
Grommet terminal: VFS1220-□E/EZ VFS1320-□E/EZ
VFS1420-□E/EZ
VFS1520-□E/EZ



DIN terminal : VFS1220-□D/DZ/Y/YZ
VFS1320-□D/DZ/Y/YZ
VFS1420-□D/DZ/Y/YZ
VFS1520-□D/DZ/Y/YZ



Conduit terminal: VFS1220-□T/TZ VFS1320-□T/TZ
VFS1420-□T/TZ
VFS1520-□T/TZ



Series VFS1000 Manifold Specifications Single Base Type

Compact and lightweight

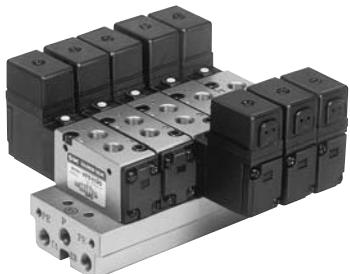
Compact due to manifolding on a single base for mounting in small spaces.

Keeps environmental air clean from pilot exhaust

Use of the VV5FS1-30 manifold can exhaust intensively the pilot exhaust gas to the base side, and can prevent environmental aggravation due to noise and oil mist.



VV5FS1-20



VV5FS1-30

Part no. for mounting bolt and gasket
BG-VFS1030

Specifications

Manifold base type	Bar manifold, Body ported		
Stations	Max. 15 stations		

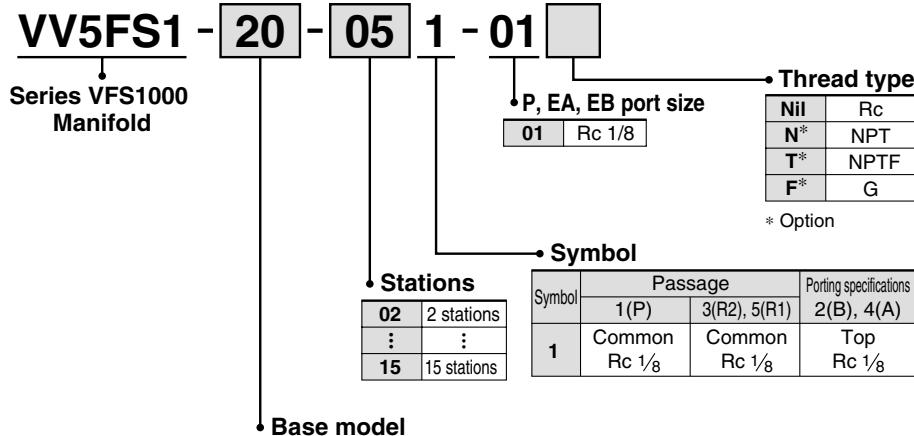
Port Specifications

Symbol	Passage		Porting specifications: Rc (Connecting port size)		
	Base	Valve	Base	1(P)	5(R1), 3(R2)
1	Common	Common	Side/Rc 1/8	Top/Rc 1/8	Side/Rc 1/8

Option

Blanking plate	VVFS1000-10A-1	With gasket, screw
----------------	----------------	--------------------

How to Order Manifold Base



SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>
(Manifold base)
(2 position single)
(2 position double)
(Blanking plate)

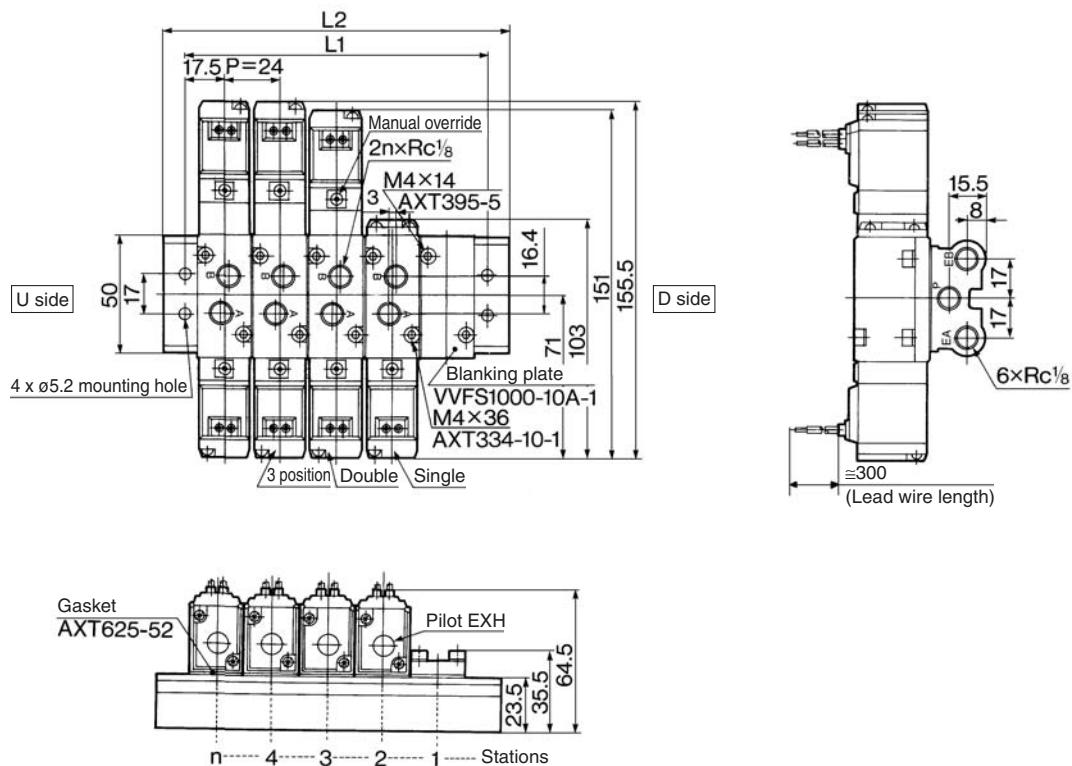
VV5FS1-20-061-01	1
* VFS1120-1D-01	3
* VFS1220-1D-01	2
* VVFS1000-10A-1	1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

Series VFS1000

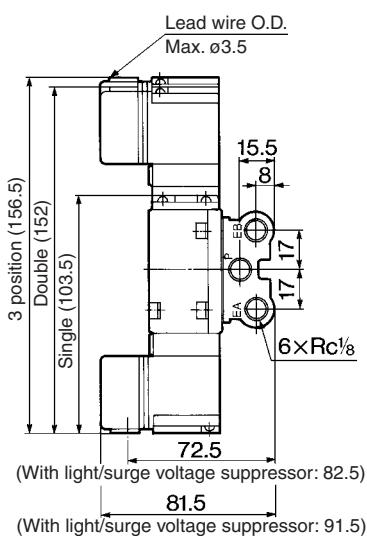
Type 20 Manifold — Pilot individual exhaust: VV5FS1-20- Station 1-01

Grommet: G

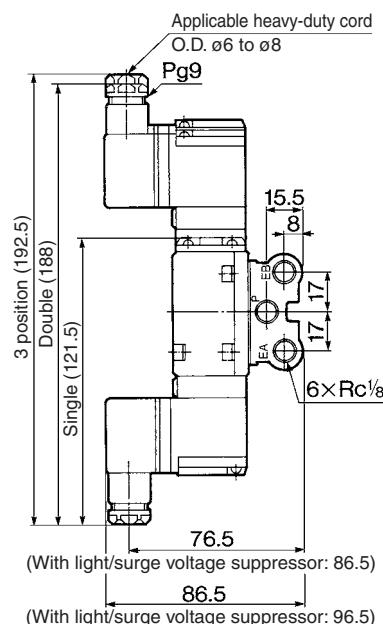


Formula for manifold weight $M = 0.049n + 0.059$ (kg) n: Station

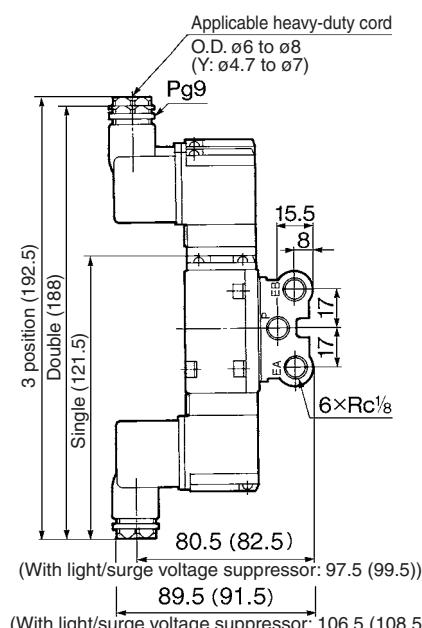
Grommet terminal: E/EZ



Conduit terminal: T/TZ



DIN terminal: D/DZ/Y/YZ



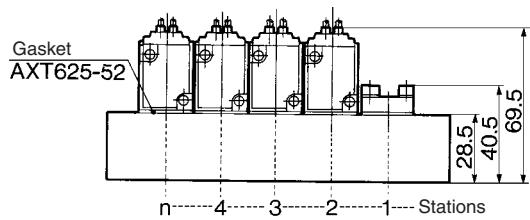
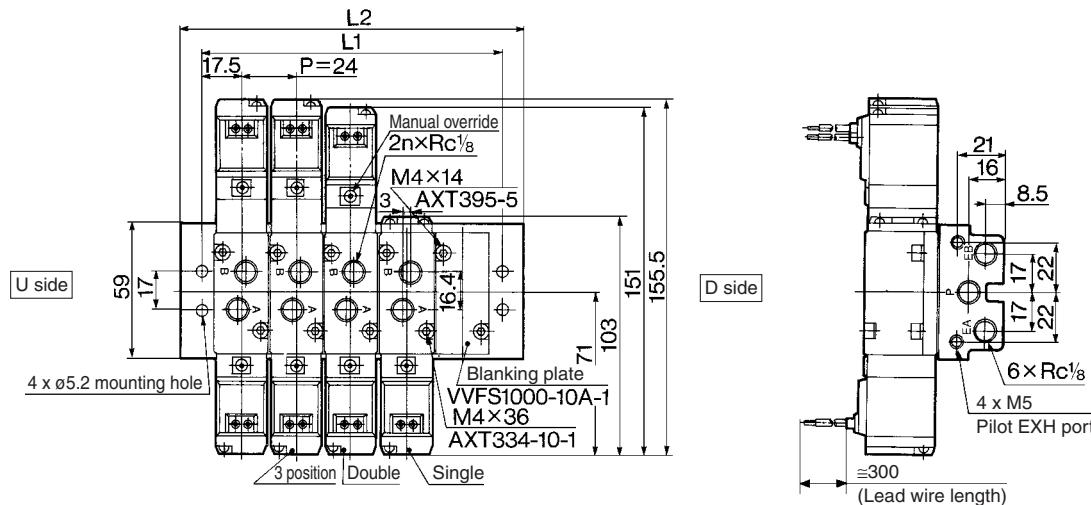
(): Y, YZ

Symbol	Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁		59	83	107	131	155	179	203	227	251	$L_1 = 24 \times n + 11$
L ₂		77	101	125	149	173	197	221	245	269	$L_2 = 24 \times n + 29$

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series **VFS1000**

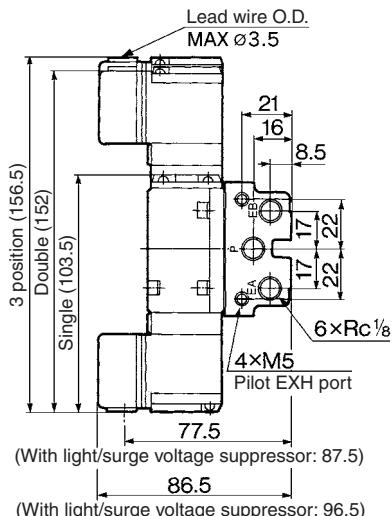
Type 30 Manifold — Pilot common exhaust: VV5FS1-30- Station 1-01

Grommet: G

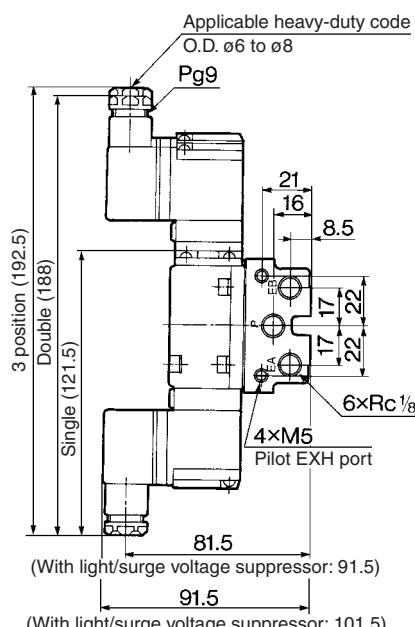


Formula for manifold weight $M = 0.079n + 0.093$ (kg) n: Station

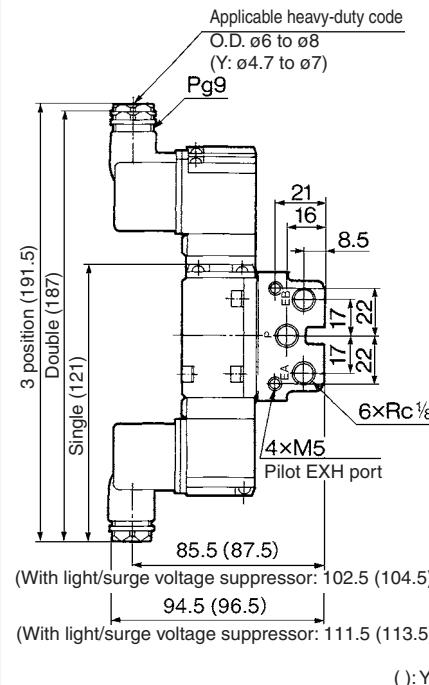
Grommet terminal: E/EZ



Conduit terminal: T/TZ



DIN terminal: D/DZ/Y/YZ



n: Station

Symbol	Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁		59	83	107	131	155	179	203	227	251	$L_1 = 24 \times n + 11$
L ₂		77	101	125	149	173	197	221	245	269	$L_2 = 24 \times n + 29$

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series VFS2000



Model

Type of actuation		Model		Port size Rc	Flow characteristics						Max. operating cycle (cpm) ⁽¹⁾	Response time (ms) ⁽²⁾	Mass (kg) ⁽³⁾				
		Plug-in	Non plug-in		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)									
					C [dm ³ /(s·bar)]	b	C _v	C [dm ³ /(s·bar)]	b	C _v							
2 position	Single	VFS2120	VFS2130	1/8	3.2	0.24	0.78	3.4	0.28	0.82	1200	22 or less	0.26				
				1/4	4.0	0.20	0.90	3.5	0.32	0.85							
	Double	VFS2220	VFS2230	1/8	3.2	0.24	0.78	3.4	0.28	0.82	1200	13 or less	0.35				
				1/4	4.0	0.20	0.90	3.5	0.32	0.85							
3 position	Closed center	VFS2320	VFS2330	1/8	3.2	0.24	0.78	3.2	0.27	0.80	600	40 or less	0.42				
	1/4	4.0	0.20	0.90	3.4	0.29	0.83										
	Exhaust center	VFS2420	VFS2430	1/8	3.2	0.25	0.79	3.4	0.26	0.82	600	40 or less	0.42				
	1/4	4.0	0.20	0.90	3.4	0.32	0.84										
	Pressure center	VFS2520	VFS2530	1/8	3.1	0.23	0.75	3.3	0.27	0.80	600	40 or less	0.42				
	1/4	4.0	0.24	0.92	3.3	0.30	0.82										

Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency.

Note 2) According to JIS B 8375-1981. (The value at supply pressure 0.5 MPa.)

Note 3) In the case of grommet type Note 4) Factors of "Note 1)" and "Note 2)" are achieved in controlled clean air.

**Compact yet provides a high flow capacity
1/4: C: 3.4 dm³/(s·bar)**

**Low power consumption:
1.8 W DC**



JIS Symbol

2 position	3 position
Single	Closed center
Double	Exhaust center
Pressure center	

Standard Specifications

Valve specifications	Fluid		Air/Inert gas
	Maximum operating pressure		1.0 MPa
	Minimum operating pressure		0.1 MPa
	Proof pressure		1.5 MPa
	Ambient and fluid temperature		-10 to 60°C ⁽¹⁾
	Lubrication		Non-lube ⁽²⁾
	Pilot valve manual override		Non-locking push type (Flush)
	Shock/Vibration resistance		150/50 m/s ² ⁽³⁾
	Enclosure		Dustproof (Degrees of protection 0) ⁽⁴⁾
	Coil rated voltage		100, 200 VAC, 50/60 Hz; 24 VDC
Electricity specifications		Inrush	-15 to +10% of rated voltage
Coil insulation type		Holding	Class B or equivalent (130°C) ⁽⁵⁾
Apparent power (Power consumption)		AC	5.6 VA (50 Hz), 5.0 VA (60 Hz)
		Holding	3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
Power consumption			1.8 W (2.04 W: With light/surge voltage suppressor)
Electrical entry			Grommet, Grommet terminal, Conduit terminal, DIN terminal

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

Option Specifications

Pilot type	External pilot ⁽¹⁾
Pilot valve manual override	Non-locking push type (Extended), Locking type (Tool required)
Coil rated voltage	110 to 120, 220, 240 VAC (50/60 Hz) 12, 100 VDC
Option	With light/surge voltage suppressor ⁽²⁾
Foot bracket (With screw)	Part no.: VFN200-17A, VFS2120 (single) only

Note 1) Operating pressure: 0 to 1.0 MPa. Pilot pressure: 0.1 to 1.0 MPa.

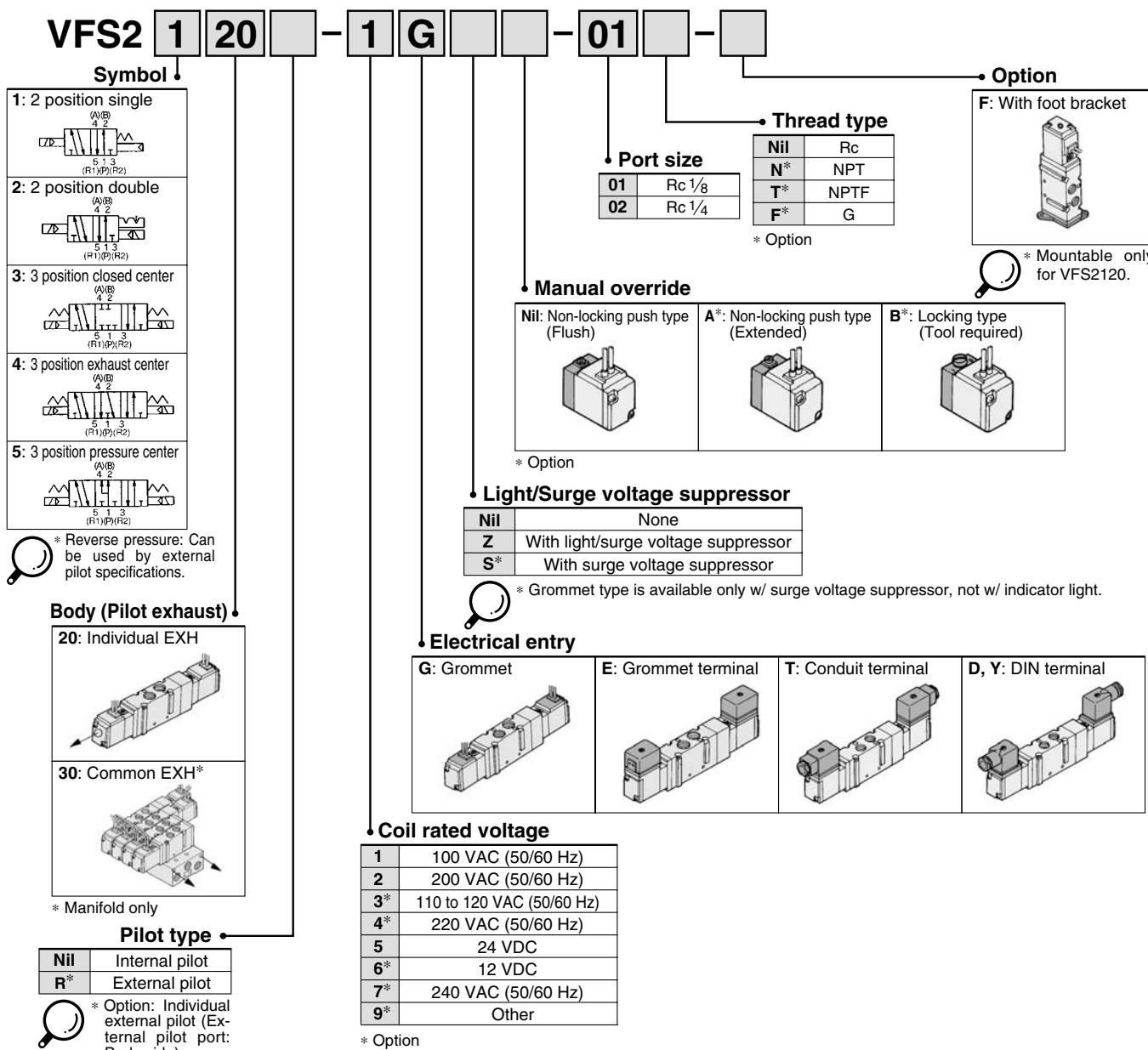
Note 2) Grommet type is available only w/ surge voltage suppressor (which is directly connected with lead wire), not w/ indicator light.

Manifold

Body type	Applicable manifold base (Pilot EXH)
VFS2□20	Bar manifold (Individual EXH)
VFS2□30	Bar manifold (Common EXH base side)

Note) VFS2□30: Manifold only. Cannot be used as a single unit.

How to Order



SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

How to Order Pilot Valve Assembly

SF4 - 1 DZ - 12

Coil rated voltage

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

* Option

Electrical entry, Light/Surge voltage suppressor

G	Grommet
GS	Grommet with surge voltage suppressor
D*	DIN terminal
DZ*	DIN terminal with light/surge voltage suppressor
DO*	DIN terminal **
DOZ*	DIN terminal with light/surge voltage suppressor **
Y*	DIN terminal
YZ*	DIN terminal with light/surge voltage suppressor
YO*	DIN terminal **
YOZ*	DIN terminal with light/surge voltage suppressor **
T	Conduit terminal
TZ	Conduit terminal with light/surge voltage suppressor
E	Grommet terminal
EZ	Grommet terminal with light/surge voltage suppressor

Applicable model

12	For VFS2□20	Individual pilot exhaust
13	For VFS2□30	Common pilot exhaust

Manual override

Nil	Non-locking push type (Flush)
A*	Non-locking push type (Extended)
B*	Locking type (Tool required)

* Option

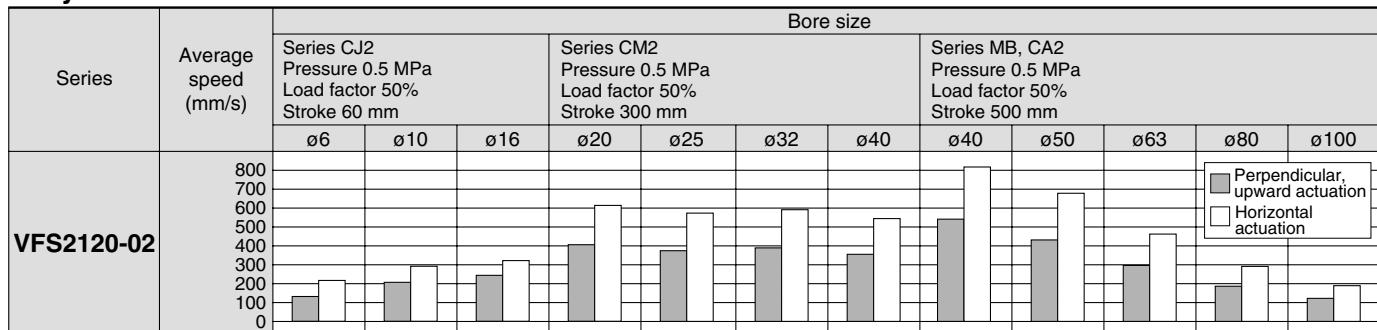
* D: Conforming to DIN43650 standard; Y: Conforming to DIN43650B standard
 ** DIN connector is not attached.

Series VFS2000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.

Body Ported



Perpendicular, upward actuation
Horizontal actuation

Conditions

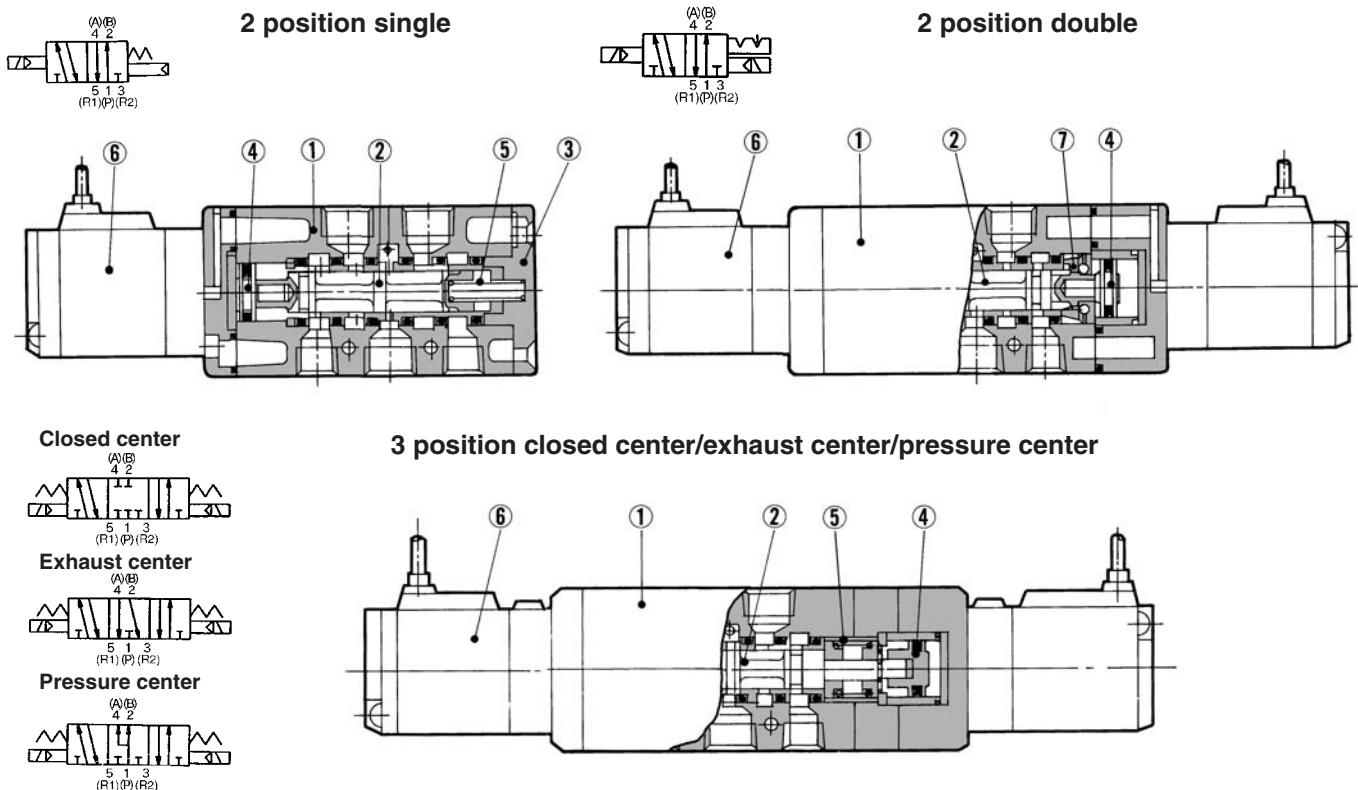
	Body ported	Series CJ2	Series CM2	Series MB, CA2
VFS2120-02	Tube bore x Length	T0604 x 1 m	T1075 x 1 m	
	Speed controller	AS3001F-06	AS4001F-10	
	Silencer		AN110-01	

* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.

* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.

* Load factor: ((Load weight x 9.8/Theoretical force) x 100%

Construction



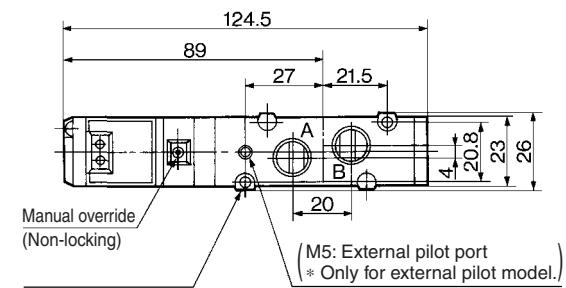
Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Spool/Sleeve	Stainless steel	—
3	End plate	Resin	—
4	Piston	Resin	—
5	Return spring	Stainless steel	—
6	Pilot valve assembly	—	—
7	Detent assembly	—	—

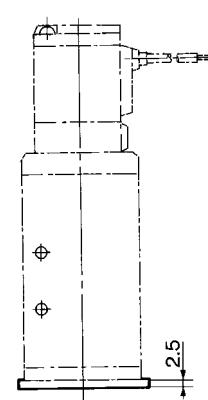
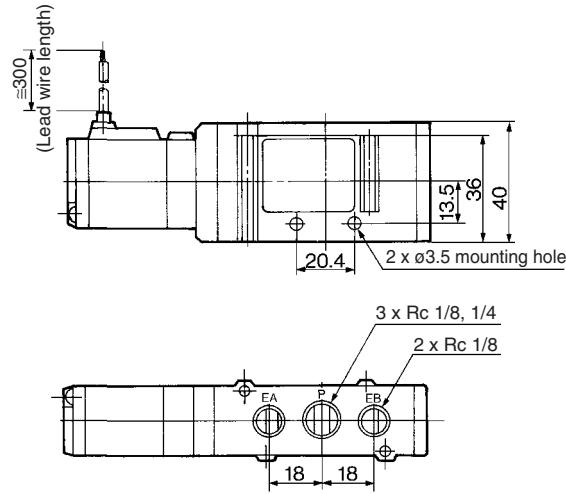
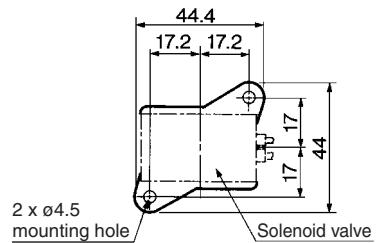
* Refer to "How to Order Pilot Valve Assembly" on page 1123.

2 Position Single — Grommet, Grommet terminal, Conduit terminal, DIN terminal

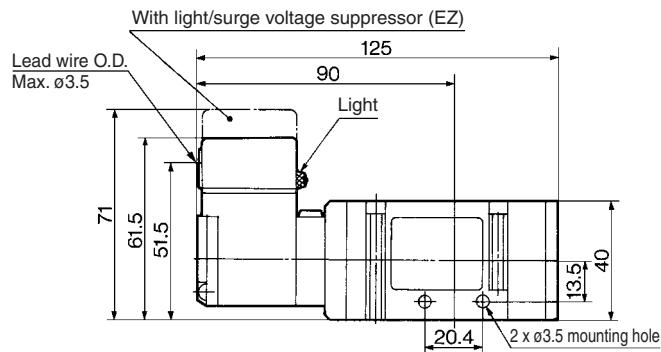
Grommet: VFS2120-□G



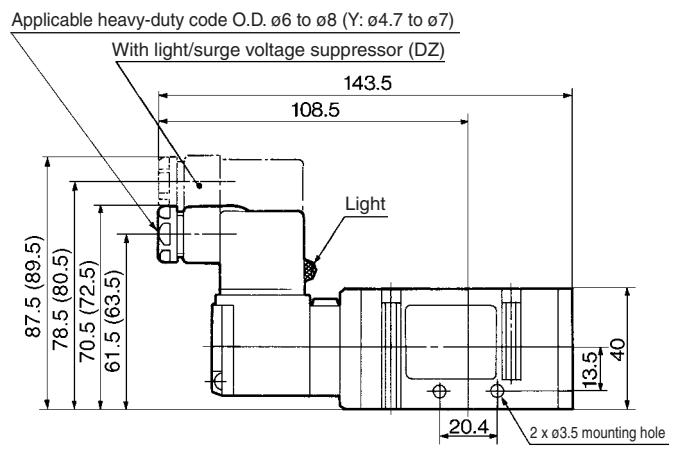
Foot bracket (F)
Part no.: VFN200-17A



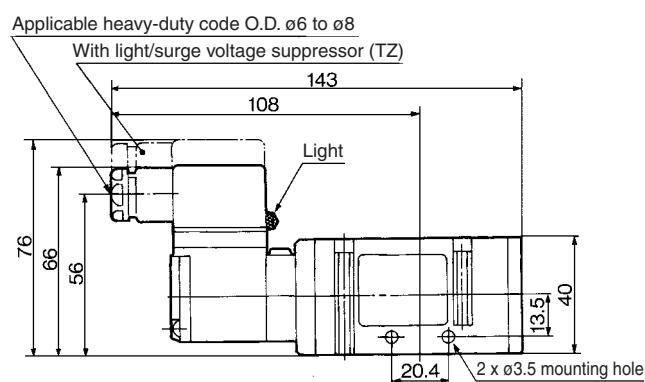
Grommet terminal: VFS2120-□E/EZ



DIN terminal: VFS2120-□D/DZ/Y/YZ



Conduit terminal: VFS2120-□T/TZ

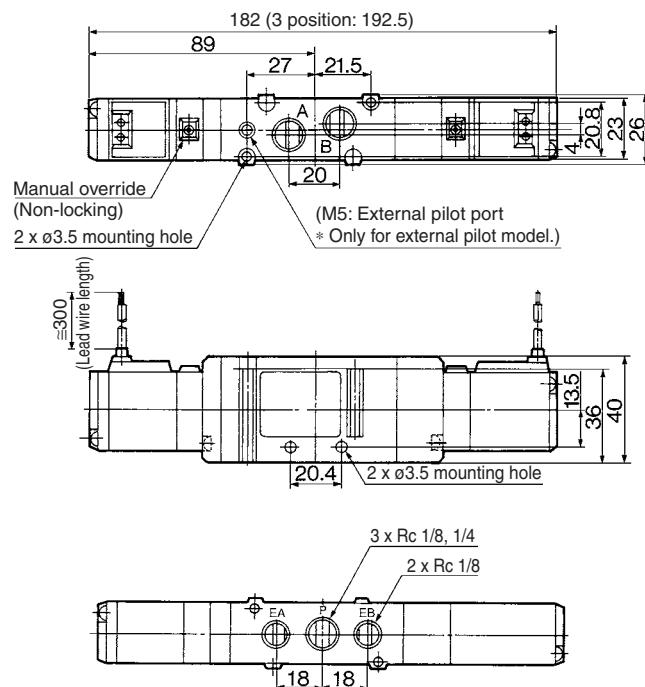


SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

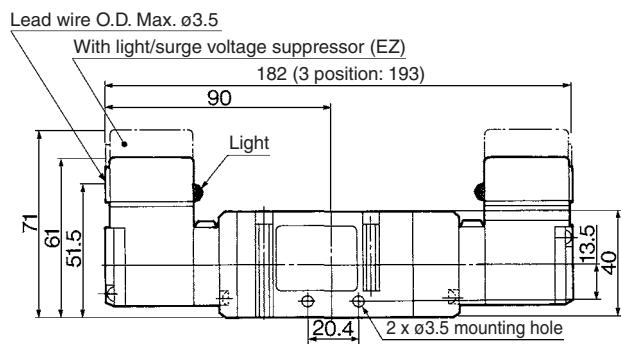
Series VFS2000

2 Position Double, 3 Position — Grommet, Grommet terminal, Conduit terminal, DIN terminal

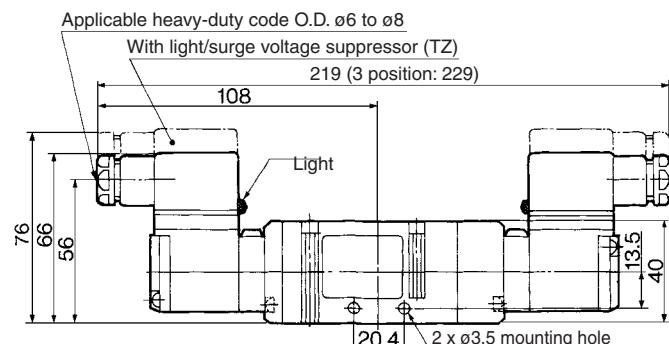
Grommet: VFS2220-□G, VFS2320-□G, VFS2420-□G, VFS2520-□G



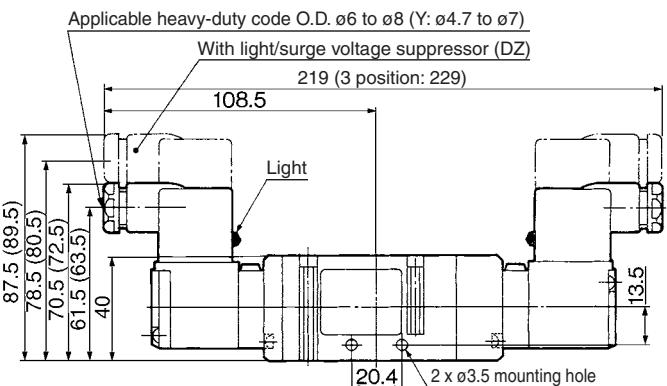
Grommet terminal: VFS2220-□E/EZ VFS2320-□E/EZ
VFS2420-□E/EZ VFS2520-□E/EZ



Conduit terminal: VFS2220-□T/TZ VFS2320-□T/TZ
VFS2420-□T/TZ VFS2520-□T/TZ



DIN terminal: VFS2220-□D/DZ/Y/YZ
VFS2320-□D/DZ/Y/YZ
VFS2420-□D/DZ/Y/YZ
VFS2520-□D/DZ/Y/YZ



(): Y, YZ

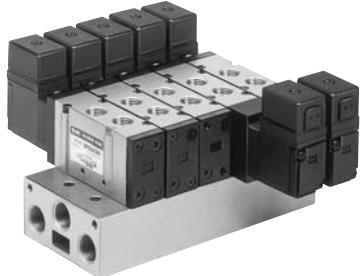
Series VFS2000 Manifold Specifications Single Base Type

Keeps environmental air clean from pilot exhaust

Use of the VV5FS2-30 manifold can exhaust intensively the pilot exhaust gas to the base side, and can prevent environmental aggravation due to noise and oil mist.



VV5FS2-20



VV5FS2-30

Part no. for mounting bolt and gasket
BG-VFS2030

Specifications

Manifold base type	Bar manifold, Body ported
Stations	Max. 15 stations

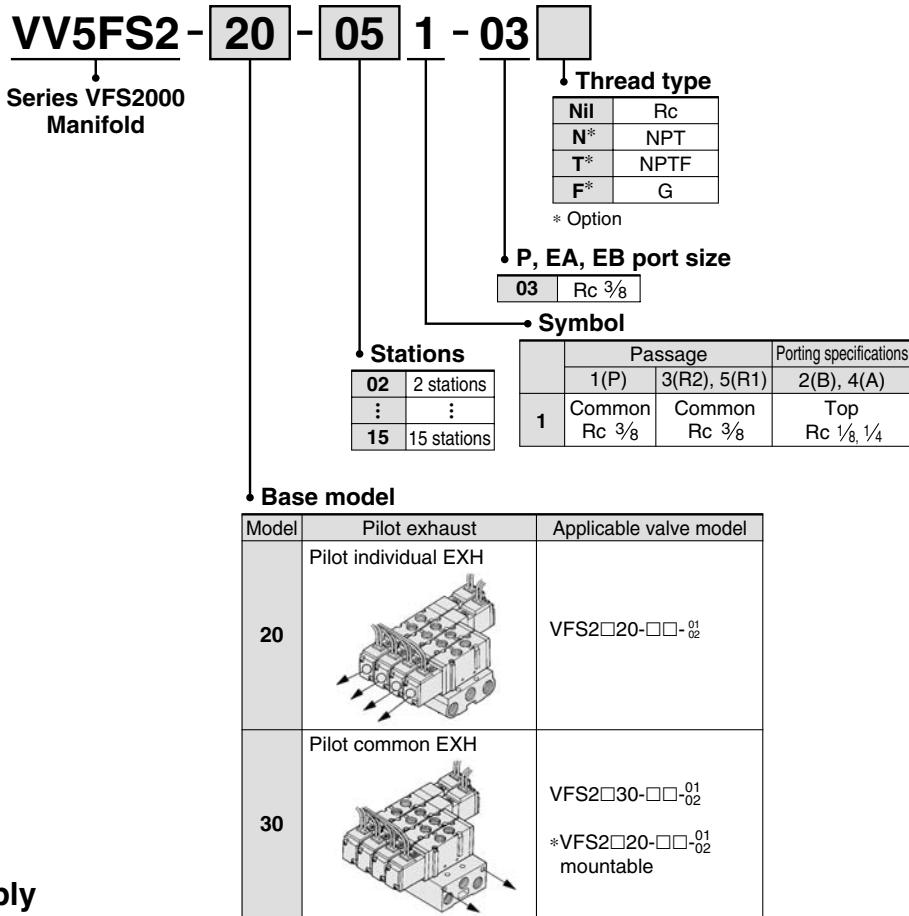
Port Specifications

Symbol	Passage		Porting specifications: Rc		
	Base	Valve	Base	1(P)	5(R1), 3(R2)
1	Common	Common	Side: 3/8	Top: 1/8, 1/4	Side: 3/8

Option

Blanking plate	VVFS2000-10A-1	With gasket, screw
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How to Order Manifold Base



How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

(Manifold base)	VV5FS2-20-061-031
(2 position single)	* VFS2120-1D-023
(2 position double)	* VFS2220-1D-022
(Blanking plate)	* VVFS2000-10A-11

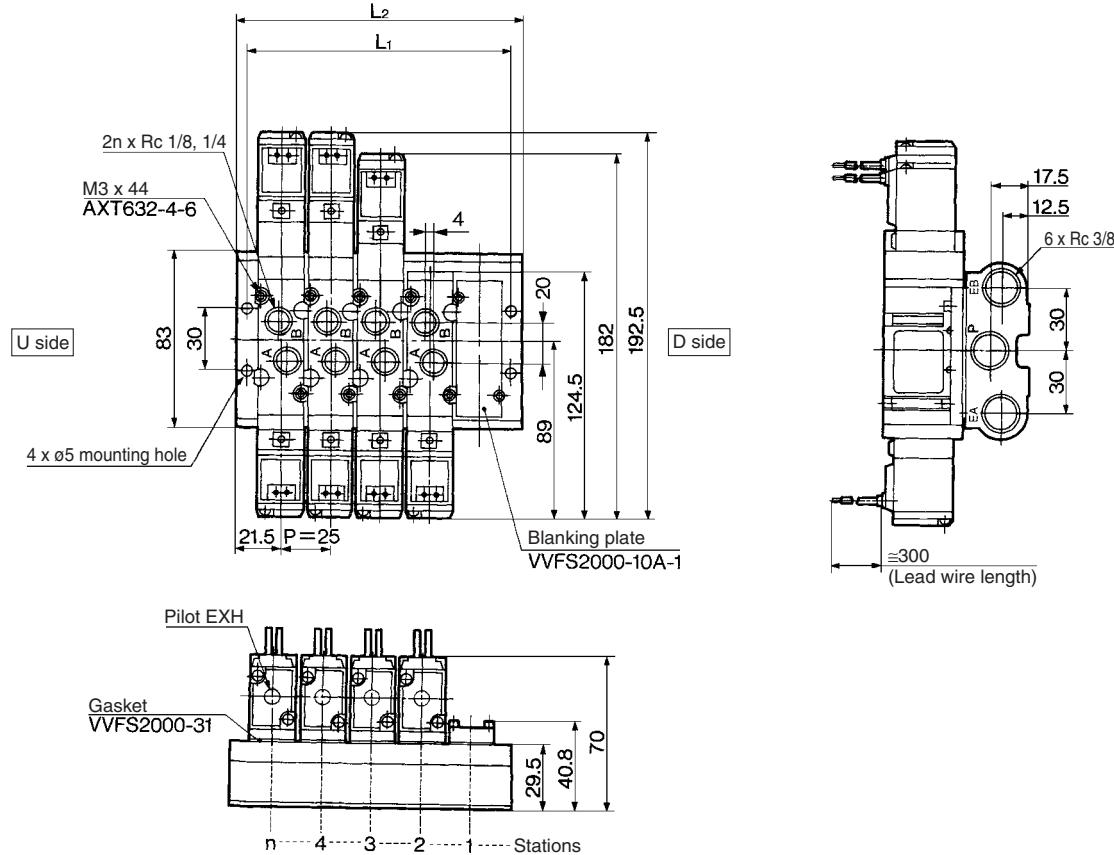
The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS2000

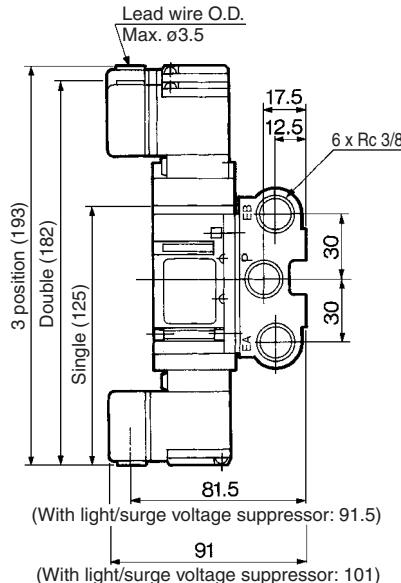
Type 20 Manifold — Pilot individual exhaust: VV5FS2-20- Station 1-03

Grommet: G

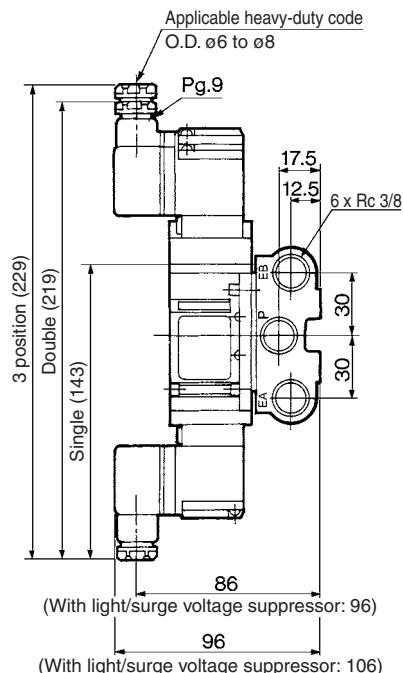


Formula for manifold weight $M = 0.108n + 0.068$ (kg) n: Station

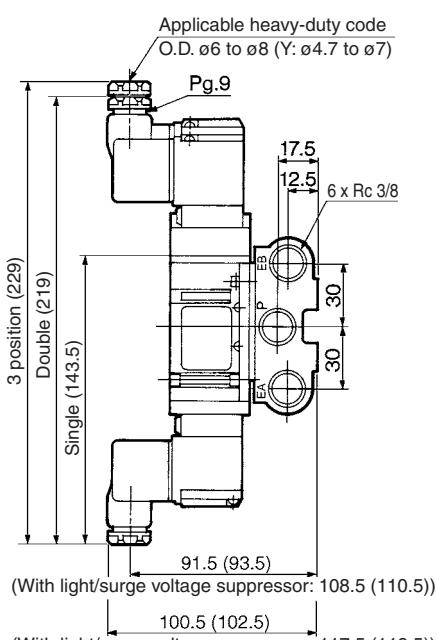
Grommet terminal: E/EZ



Conduit terminal: T/TZ



DIN terminal: D/DZ/Y/YZ



(): V V7

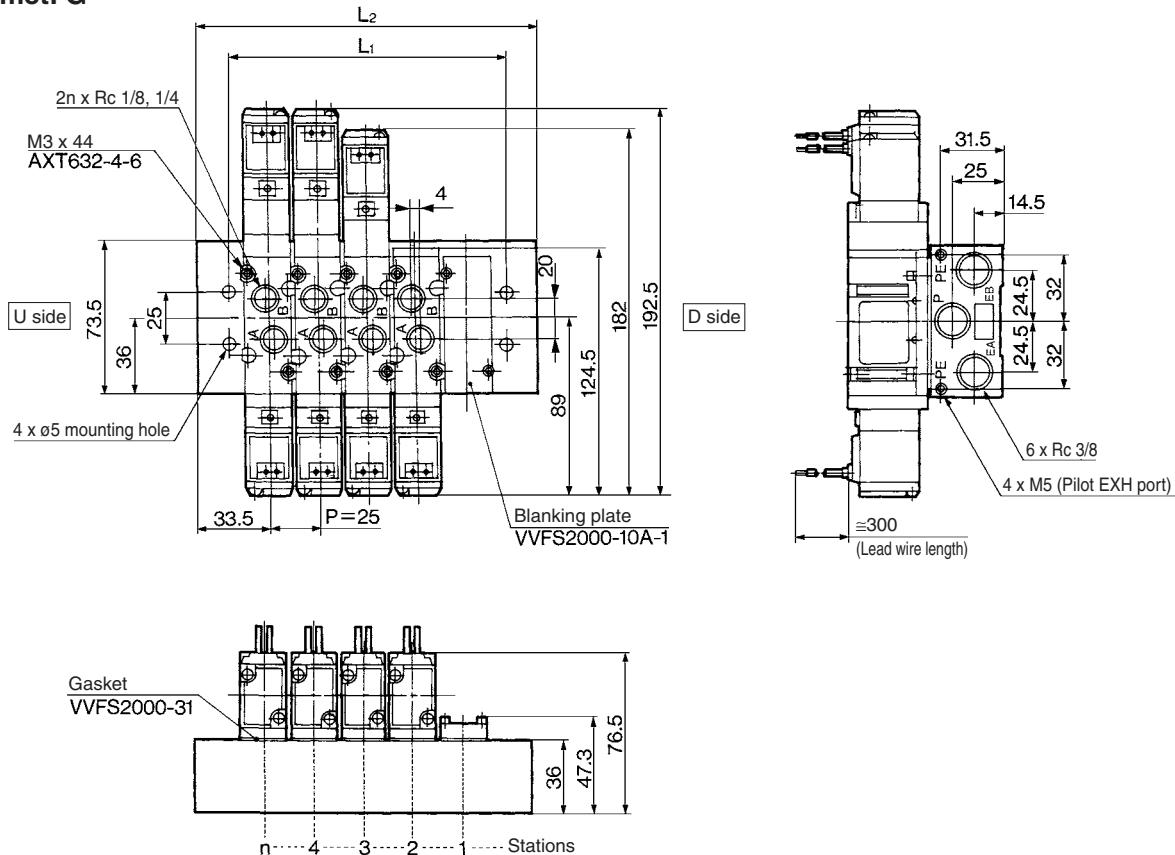
n: Station

n: Station											
L	Stations	2	3	4	5	6	7	8	9	10	Formula
L₁		58	83	108	133	158	183	208	233	258	$L_1 = 25 \times n + 8$
L₂		68	93	118	143	168	193	218	243	268	$L_2 = 25 \times n + 18$

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series VFS2000

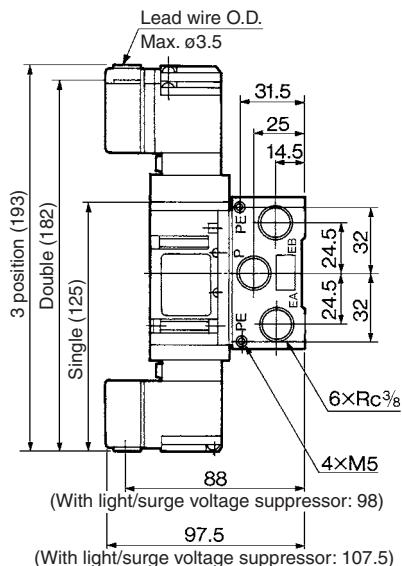
Type 30 Manifold — Pilot common exhaust: VV5FS2-30- Station 1-03

Grommet: G

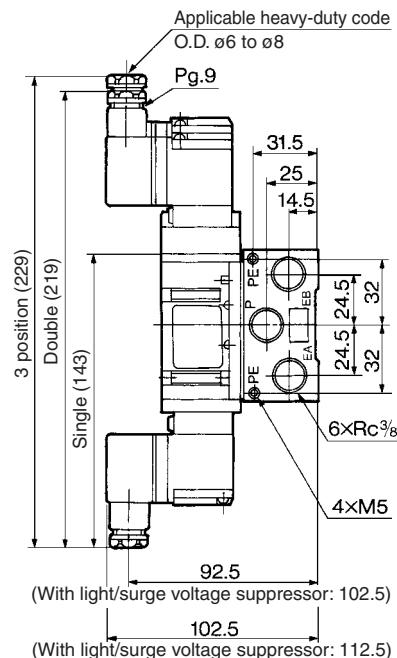


Formula for manifold weight $M = 0.12n + 0.21$ (kg) n: Station

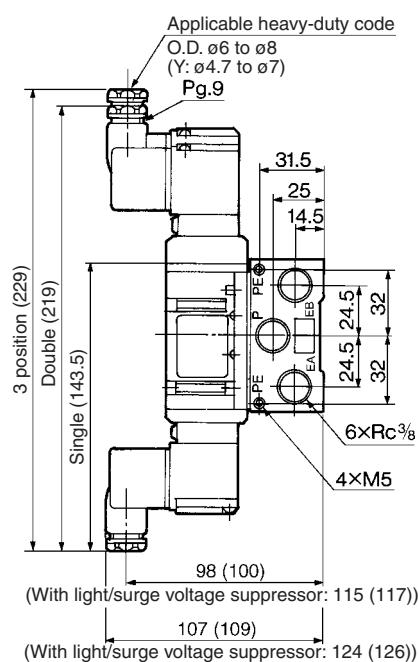
Grommet terminal: E/EZ



Conduit terminal: T/TZ



DIN terminal: D/DZ/Y/YZ



(): Y, YZ

n: Station

L	Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	62	87	112	137	162	187	212	237	262	L ₁ = 25 x n + 12	
L ₂	92	117	142	167	192	217	242	267	292	L ₂ = 25 x n + 42	

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

Series VFS3000



Model

Type of actuation		Model		Port size Rc	Flow characteristics						Max. operating cycle (cpm)	Response time (ms)	Mass (kg)				
		Plug-in	Non plug-in		1 → 4/2(P → A/B)			4/2 → 5/3(A/B → R1/R2)									
					C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv							
2 position	Single	VFS3120	VFS3130	1/4	5.0	0.20	1.1	6.8	0.30	1.7	1200	20 or less	0.33				
	Double	VFS3220	VFS3230	3/8	6.1	0.14	1.4	7.3	0.23	1.8							
3 position	Closed center	VFS3320	VFS3330	1/4	5.0	0.20	1.1	6.8	0.3	1.7	600	40 or less	0.45				
	Exhaust center	VFS3420	VFS3430	3/8	5.7	0.20	1.4	6.8	0.21	1.7							
	Pressure center	VFS3520	VFS3530	1/4	4.9	0.24	1.1	6.5	0.28	1.6	600	40 or less	0.45				
				3/8	5.8	0.15	1.4	7.0	0.22	1.7							
				1/4	4.9	0.23	1.1	6.6	0.28	1.6	600	40 or less	0.45				
				3/8	6.5	0.15	1.6	7.0	0.23	1.7							



Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency. Note 3) In the case of grommet type.

Note 2) Based on JIS B 8375-1981. (The value at supply pressure 0.5 MPa.)

Note 4) Factors of "Note1" and "Note 2)" are achieved in controlled clean air.

**Compact yet provides a large flow capacity
3/8: C: 6.8 dm³/(s·bar)**

**Low power consumption:
1.8 W DC**

VFS3120-□E-03-F

VFS3320-□E-03



VFS3220-□T-03

VFS3120-□G-03

Standard Specifications

Valve specifications	Fluid	Air/Inert gas
	Maximum operating pressure	1.0 MPa
	Minimum operating pressure	0.1 MPa
	Proof pressure	1.5 MPa
	Ambient and fluid temperature	-10 to 60°C ⁽¹⁾
	Lubrication	Non-lube ⁽²⁾
	Pilot valve manual override	Non-locking push type (Flush)
	Shock/Vibration resistance	150/50 m/s ² ⁽³⁾
	Enclosure	Dustproof (Degrees of protection 0) ⁽⁴⁾
	Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC
Electricity specifications	Allowable voltage fluctuation	-15 to +10% of rated voltage
	Coil insulation type	Class B or equivalent (130°C) ⁽⁵⁾
	Apparent power (Power consumption) AC	Inrush 5.6 VA/50 Hz, 5.0 VA/60 Hz Holding 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
	Power consumption	1.8 W (2.04 W: With light/surge voltage suppressor)
	Electrical entry	Grommet, Grommet terminal, Conduit terminal, DIN terminal



Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

JIS Symbol

2 position	3 position
Single	Closed center
Double	Exhaust center
Pressure center	

Option Specifications

Pilot type	External pilot ⁽¹⁾
Pilot valve manual override	Non-locking push type (Extended), Locking type (Tool required)
Coil rated voltage	110 to 120, 220, 240 VAC (50/60 Hz) 12, 100 VDC
Option	With light/surge voltage suppressor ⁽²⁾
Foot bracket (With screw)	Part no.: VFS3000-52A, VFS3120 (single) only



Note 1) Operating pressure: 0 to 1.0 MPa
Pilot pressure: 0.1 to 1.0 MPa

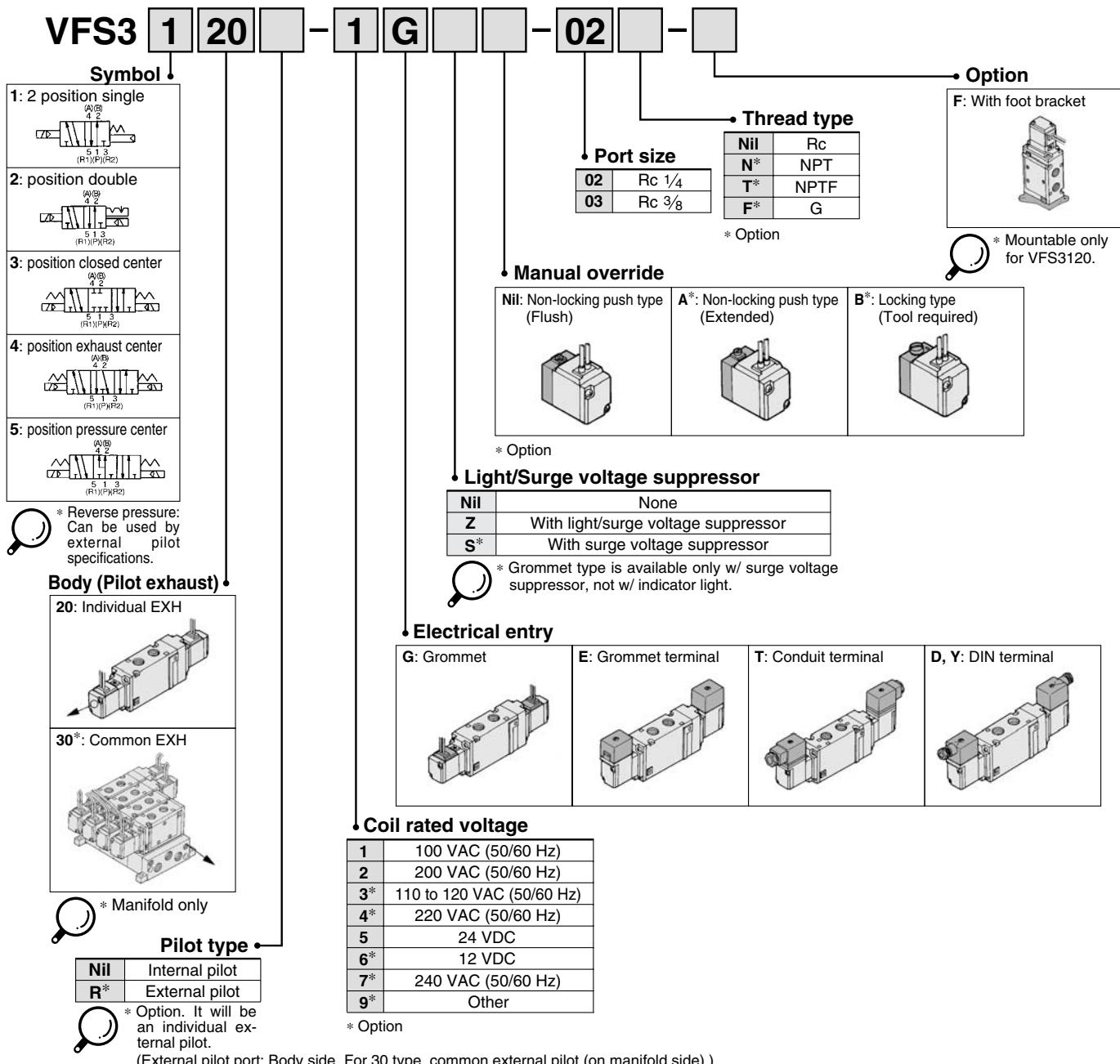
Note 2) Grommet type is available only w/ surge voltage suppressor (which is directly connected with lead wire), not w/ indicator light.

Manifold

Body type	Applicable manifold base	Pilot EXH
VFS3□20	Stacking manifold	Individual EXH (Valve side)
VFS3□30		Common EXH (Manifold base side)

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series **VFS3000**

How to Order



SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Applicable model		
14	A side pilot operator for VFS3 ₂ ¹ ₅ ²⁰	Individual pilot exhaust
15	B side pilot operator for VFS3 ₂ ¹ ₅ ²⁰	
16	B side pilot operator for VFS3 ₂ ¹ ₅ ²⁰	
17	A side pilot operator for VFS3 ₂ ¹ ₅ ³⁰	Common pilot exhaust
18	B side pilot operator for VFS3 ₂ ¹ ₅ ³⁰	
19	B side pilot operator for VFS3 ₂ ¹ ₅ ³⁰	

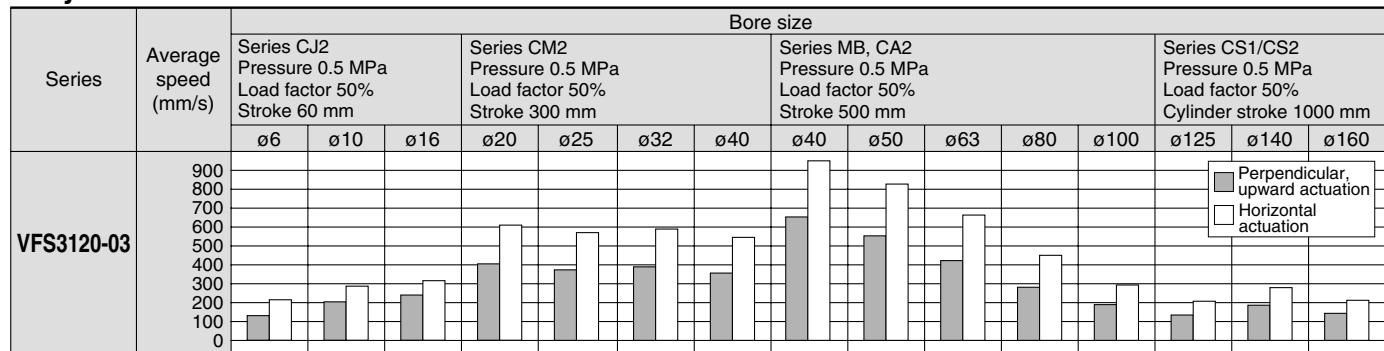
* D: Conforming to DIN43650 standard;
Y: Conforming to DIN43650B standard
** DIN connector is not attached.

Series VFS3000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.

Body Ported



* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.

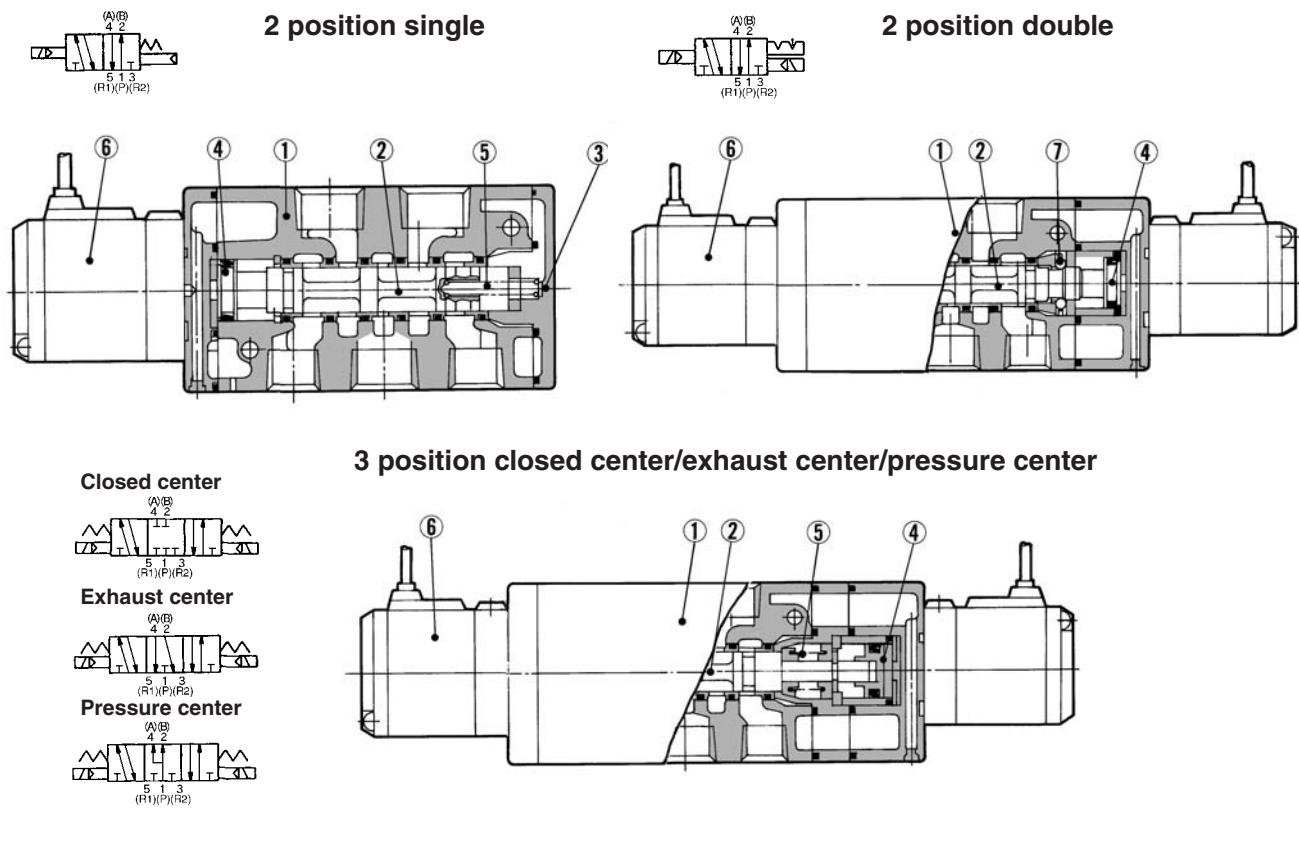
* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.

* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

Conditions

Body ported	Series CJ2	Series CM2	Series MB, CA2	Series CS1/CS2
VFS3120-03	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

Construction



Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Spool/Sleeve	Stainless steel	—
3	End plate	Resin	Black
4	Piston	Resin	—
5	Return spring	Stainless steel	—
6	Pilot valve assembly	—	—
7	Detent assembly	—	—

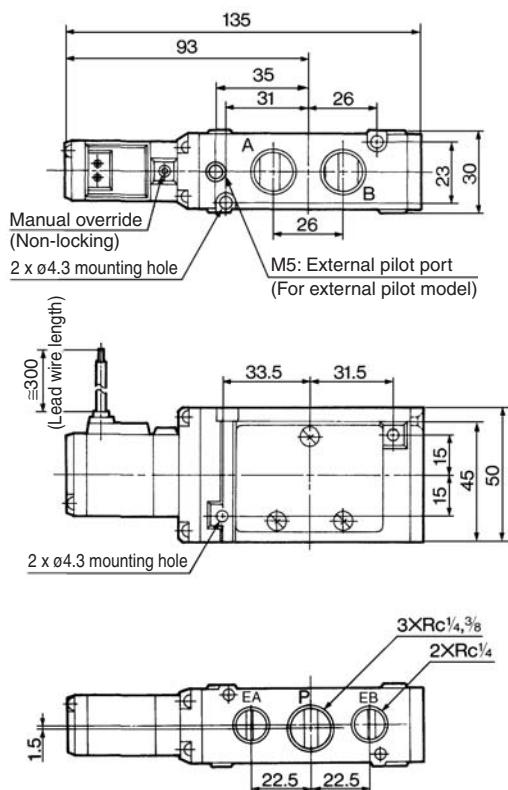
* Refer to "How to Order Pilot Valve Assembly" on page 1131.

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

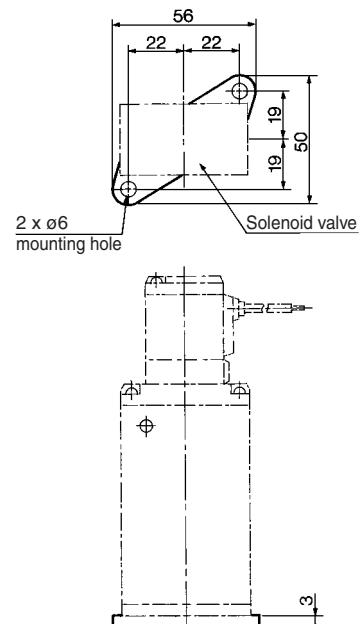
Series VFS3000

2 Position Single — Grommet, Grommet terminal, Conduit terminal, DIN terminal

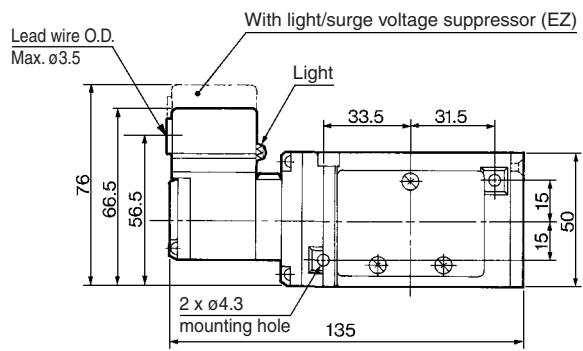
Grommet: VFS3120-□G



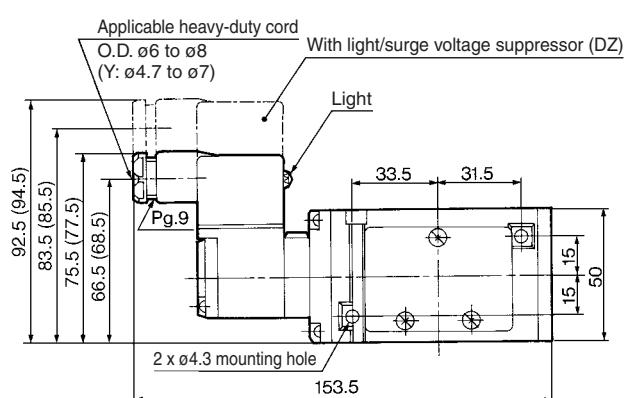
Foot bracket (F)
Part no.: VFS3000-52A



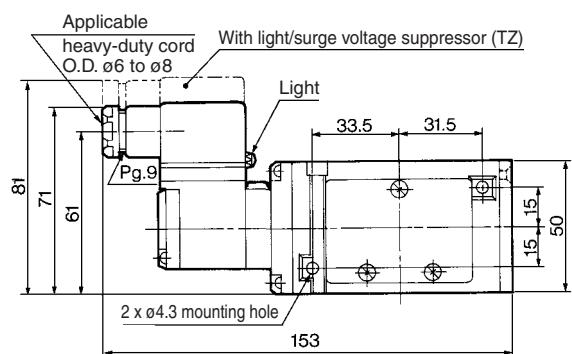
Grommet terminal: VFS3120-□E/EZ



DIN terminal: VFS3120-□D/DZ/Y/YZ



Conduit terminal: VFS3120-□T/TZ

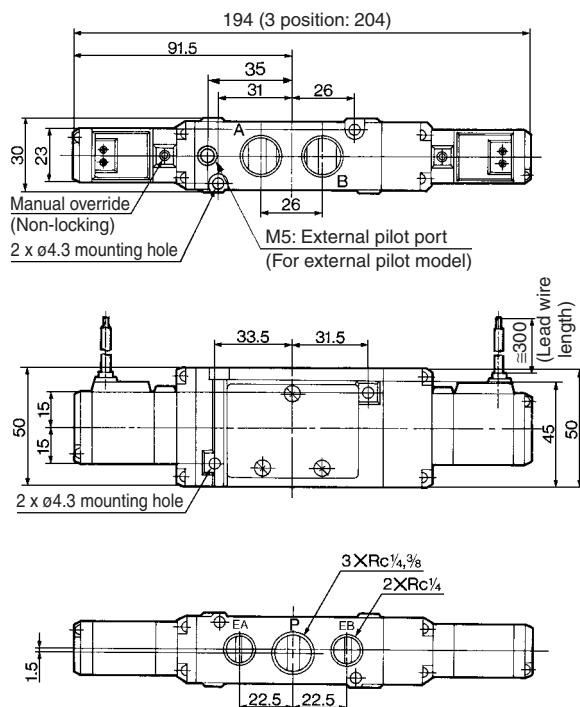


(): Y, YZ

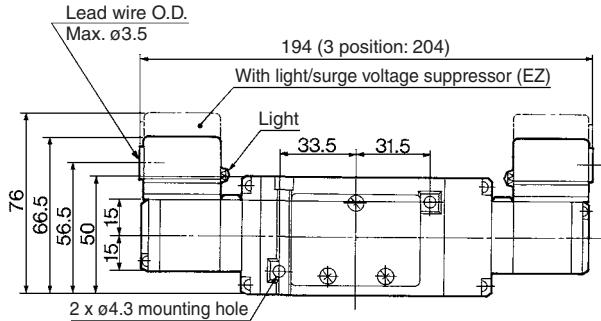
5 Port Pilot Operated Solenoid Valve
Metal Seal, Body Ported Series **VFS3000**

2 Position Double, 3 Position — Grommet, Grommet terminal, Conduit terminal, DIN terminal

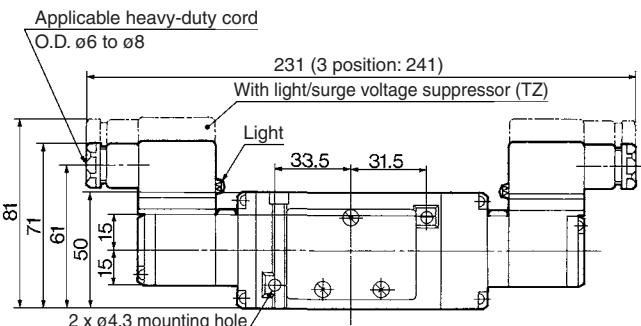
Grommet: VFS3220-□G, VFS3320-□G, VFS3420-□G, VFS3520-□G



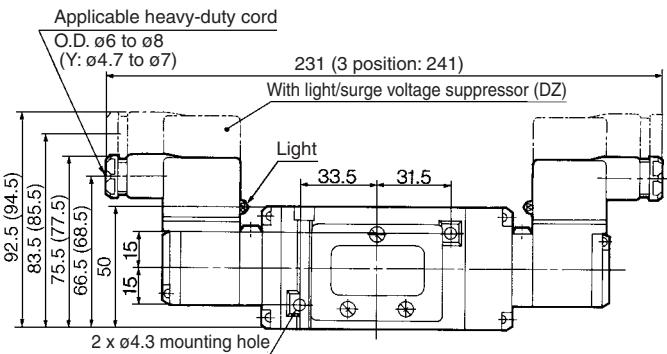
Grommet terminal: VFS3220-□E/EZ VFS3320-□E/EZ
VFS3420-□E/EZ VFS3520-□E/EZ



Conduit terminal: VFS3220-□T/TZ VFS3320-□T/TZ
VFS3420-□T/TZ VFS3520-□T/TZ



DIN terminal: VFS3220-□D/DZ/Y/YZ
VFS3320-□D/DZ/Y/YZ
VFS3420-□D/DZ/Y/YZ
VFS3520-□D/DZ/Y/YZ



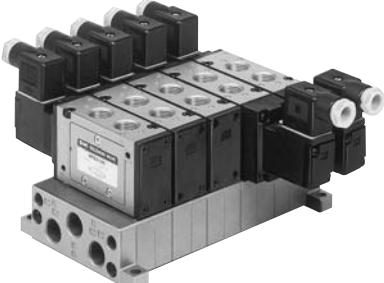
(): Y, YZ

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS3000 Manifold Specifications Stacking Type

Keeps environmental air clean from pilot exhaust

Use of the VV5FS3-31 manifold can exhaust intensively the pilot exhaust gas to the base side, and can prevent environmental aggravation due to noise and oil mist.

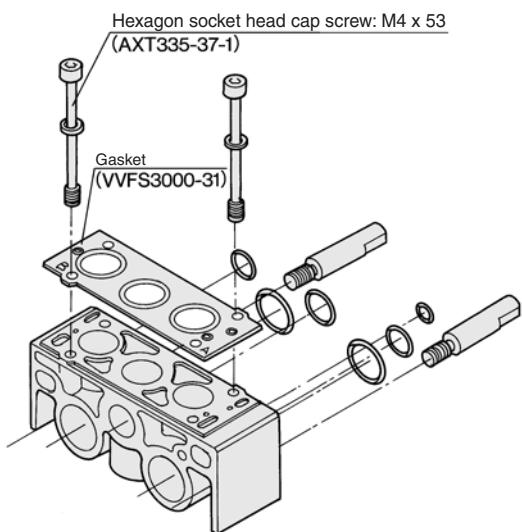


VV5FS3-31

Part no. for mounting bolt and gasket
BG-VFS3030

Exploded View of Manifold

Manifold block assembly VVFS3000-1A-30



- For increasing the manifold bases, please prepare the manifold block assembly no.

Specifications

Manifold base type	Stacking type
Stations	Max. 15 stations

Port Specifications

Symbol	Passage		Porting specifications: Rc		
	1(P)	3(R2), 5(R1)	Base	Valve	Base
1	Common	Common	Side: 3/8	Top: 1/4, 3/8	Side: 3/8

Option

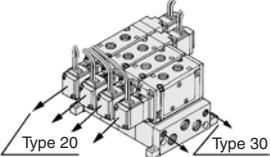
Blanking plate	VVFS3000-10A-1	With gasket, screw
SUP block plate	AXT636-10A	—
EXH block plate	AXT636-11A	—

Note) Individual SUP or EXH is possible with bottom porting of SUP or EXH. For your order, please indicate it in the manifold specification sheet.

How to Order Manifold Base

VV5FS3 - 31 -	05	1 - 03	• Thread type
Series VFS3000 Manifold		03	Rc 3/8
Stations		Nill	Rc
02 2 stations		N*	NPT
⋮ ⋮		T*	NPTF
15 15 stations		F*	G
* Option			
P, EA, EB port size		• Symbol	
03 Rc 3/8		•	
•		Passage	
1(P) 3(R2), 5(R1)		Porting specifications	
1 Common Rc 3/8		2(B), 4(A)	
Top Rc 1/4, Rc 3/8			

Base model

Model	Pilot exhaust	Applicable valve model
31	Pilot common EXH 	VFS3□20-□□-02 VFS3□30-□□-03

Note) Also VFS3□20 is possible to manifold. In this case, it uses an individual pilot exhaust.

How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first

<Example>
(Manifold base)
(2 position single)
(2 position double)
(Blanking plate)

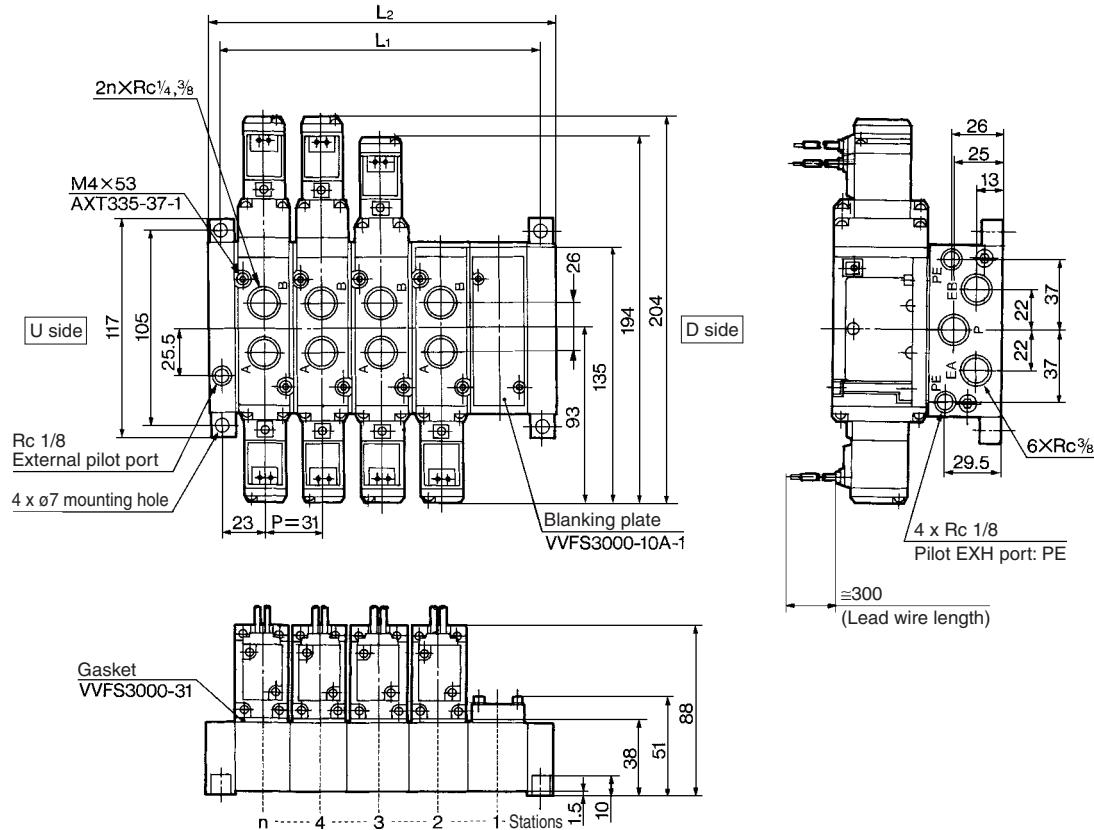
VV5FS3-31-061-03 1
* VFS3130-1D-02 3
* VFS3230-1D-02 2
* VVFS3000-10A-1 1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

5 Port Pilot Operated Solenoid Valve
Metal Seal, Body Ported Series *VFS3000*

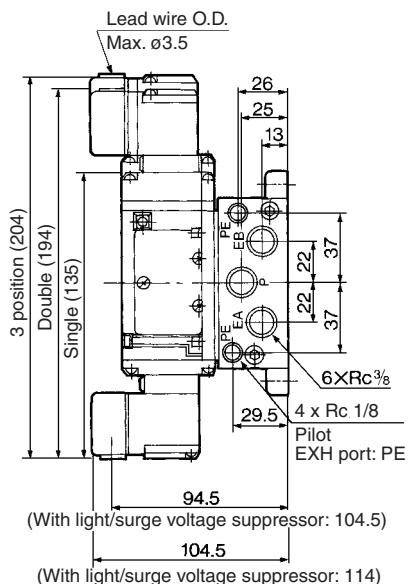
Type 31 Manifold — Pilot common exhaust: VV5FS3-31- Station 1-03

Grommet: G

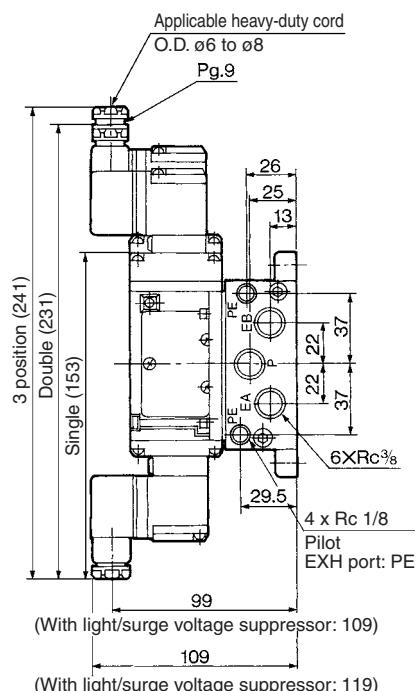


Formula for manifold weight $M = 0.184n + 0.16$ (kg) n: Station

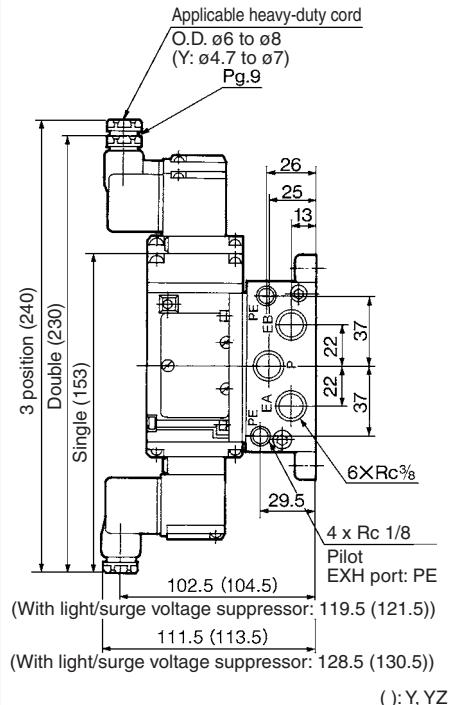
Grommet terminal: E/EZ



Conduit terminal: T/TZ



DIN terminal: D/DZ/Y/YZ



n: Station

L	Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁		77	108	139	170	201	232	263	294	325	$L_1 = 31 \times n + 15$
L ₂		92	123	154	185	216	247	278	309	340	$L_2 = 31 \times n + 30$

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS2000 CE

Model

Type of actuation		Model		Port size Rc	Flow characteristics						Max. ⁽¹⁾ operating cycle (cpm)	Response time (ms)	Mass (kg)				
		Plug-in	Non plug-in		1 → 4/2(P → A/B)			4/2 → 5/3(A/B → R1/R2)									
					C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv							
2 position	Single	VFS2100	VFS2110	1/8	2.4	0.16	0.55	2.8	0.20	0.65	1200	15 or less	0.34				
				1/4	2.5	0.18	0.58	2.8	0.21	0.65							
	Double	VFS2200	VFS2210	1/8	2.4	0.16	0.55	2.8	0.20	0.65	1200	13 or less	0.42				
				1/4	2.5	0.18	0.58	2.8	0.21	0.65							
	Closed center	VFS2300	VFS2310	1/8	2.3	0.14	0.53	2.6	0.20	0.61	600	20 or less	0.43				
				1/4	2.5	0.18	0.58	2.6	0.23	0.62							
3 position	Exhaust center	VFS2400	VFS2410	1/8	2.4	0.15	0.54	2.7	0.25	0.63	600	20 or less	0.43				
				1/4	2.5	0.20	0.60	2.7	0.24	0.63							
	Pressure center	VFS2500	VFS2510	1/8	2.5	0.11	0.55	2.7	0.20	0.62	600	20 or less	0.43				
				1/4	2.8	0.17	0.63	2.7	0.22	0.63							
	Double check	VFS2600	VFS2610	1/8	1.2	—	—	1.3	—	—	600	25 or less	0.6				
				1/4	1.2	—	—	1.3	—	—							

 Note 1) Based on JIS B 8375 (Once per 30 days) for the minimum operating frequency. Note 2) Based on JIS B 8375-1981 (The value at supply press. 0.5 MPa).
Note 3) Values for VFS2□00-□FZ-01. Note 4) Factors of "Note 1)" and "Note 2)" are ones achieved in controlled clean air.

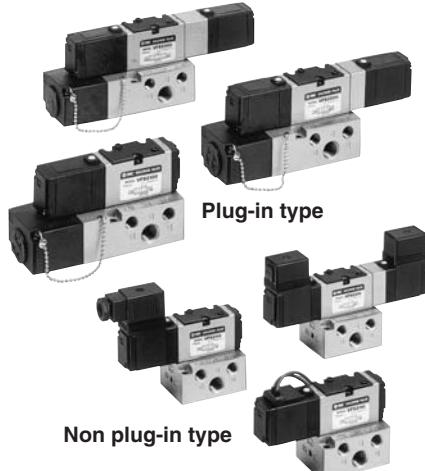
Compact yet provides a large flow capacity

1/4: C: 2.8 dm³/(s·bar)

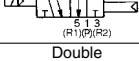
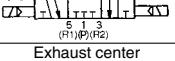
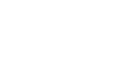
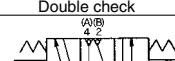
Low power consumption: 1.8 W DC

Easy maintenance

2 types of sub-plates:
Plug-in and non plug-in



JIS Symbol

2 position	3 position
Single	Closed center
	
Double	Exhaust center
	
Pressure center	
	
Double check	
	

Standard Specifications

Valve specifications	Fluid	Air/Inert gas
	Maximum operating pressure	1.0 MPa
	Min. operating pressure	2 position 0.1 MPa 3 position 0.15 MPa
	Proof pressure	1.5 MPa
	Ambient and fluid temperature	-10 to 60°C ⁽¹⁾
	Lubrication	Non-lube ⁽²⁾
	Pilot valve manual override	Non-locking push type (Flush)
	Shock/Vibration resistance	150/50 m/s ² ⁽³⁾
	Enclosure	Type G, E: Dustproof (Class 0), Type F, T, D: Splashproof (Class 4) ⁽⁴⁾
	Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC
Electricity specifications	Allowable voltage fluctuation	-15 to +10% of rated voltage
	Coil insulation type	Class B or equivalent (130°C) ⁽⁵⁾
	Apparent power AC (Power consumption)	Inrush 5.6 VA/50 Hz, 5.0 VA/60 Hz
	Holding	3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
	Power consumption DC	1.8 W (2.04 W: With light/surge voltage suppressor)
	Electrical entry	Plug-in type Conduit terminal Non plug-in type Grommet terminal, DIN terminal

 Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

Option Specifications

Pilot type	External pilot ^(Note)
Manual override	Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever)
Coil rated voltage	110 to 120, 220, 240 VAC, 50/60 Hz 12, 100 VDC
Porting specifications	Bottom ported
Option	With light/surge voltage suppressor

 Note) Operating pressure: 0 to 1.0 MPa
Pilot pressure 2 position: 0.1 to 1.0 MPa 3 position: 0.15 to 1.0 MPa

Compact, lightweight type sub-plate

Compared with the standard type, this is the sub-plate having the reduced external dimensions and lighter weight. But, use caution that Cv factor or piping port position is different from the standards. For details, refer to page 1161.

Sub-plate	L (mm)	Mass (kg)	Sonic conductance C [dm ³ /(s·bar)]
Standard type	31.0	0.2	2.2
Compact type	25.5	0.13	2.8

 * 2 position single Rc 1/4

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS2000**

How to Order



With attachment plug lead wire



With terminal block

Plug-in

VFS2 **2** **00** **-** **5** **F** **-** **01**

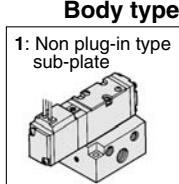
Non plug-in

VFS2 **2** **10** **-** **1** **E** **-** **02**

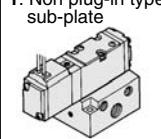


Symbol

1	2 position single	
2	2 position double	
3	3 position closed center	
4	3 position exhaust center	
5	3 position pressure center	
6	3 position double check	



Body type



Body type

Pilot type

Nil Internal pilot

R* External pilot

* Option: External pilot is possible only to the one with sub-plate.

Coil rated voltage

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

* Option

Porting specifications

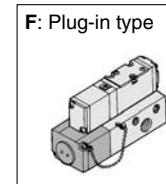
Nil	Side ported
B*	Bottom ported

* Option

Option

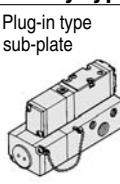
Nil	None
Z	With light/surge voltage suppressor

Electrical entry



F: Plug-in type

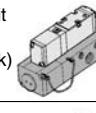
O: Plug-in type sub-plate



O: Plug-in type sub-plate

Port size

Nil	Without sub-plate
01	Rc 1/8
02	Rc 1/4
Note) P01	Rc 1/8
Note) P02	Rc 1/4

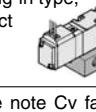
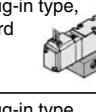


Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Note) Please note Cv factor and piping port location of compact sub-plate is different from standard. Refer to page 1161 for details.

Nil	Without sub-plate
01	Rc 1/8
02	Rc 1/4
Note) S01	Rc 1/8
Note) S02	Rc 1/4

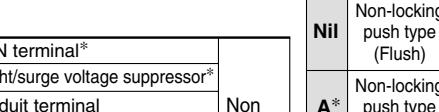
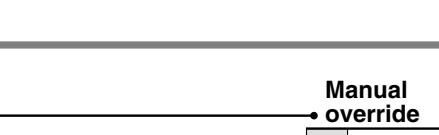
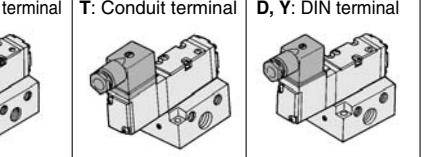


Nil	None
Z	With light/surge voltage suppressor
S*	With surge voltage suppressor

* Option

* Grommet type is available only w/ surge voltage suppressor, not w/ indicator light.

Nil	None
G: Grommet	E: Grommet terminal
T: Conduit terminal	D, Y: DIN terminal



How to Order Pilot Valve Assembly

SF4 - **1** **DZ** **-** **20**

Coil rated voltage

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

* Option

Electrical entry, Light/Surge voltage suppressor

F	Plug-in	Plug-in
G	Grommet	
GS	Grommet with surge voltage suppressor	
D	DIN terminal	Non plug-in
DZ	DIN terminal with light/surge voltage suppressor	
DO	DIN terminal*	
DOZ	DIN terminal with light/surge voltage suppressor*	
Y	DIN terminal	
YZ	DIN terminal with light/surge voltage suppressor	

Manual override

• Non plug-in

Nil Non-locking push type (Flush)

A* Non-locking push type (Extended)

B* Locking type (Tool required)

C* Locking type (Lever)

YO	DIN terminal*
Y0Z	DIN terminal with light/surge voltage suppressor*
T	Conduit terminal
TZ	Conduit terminal with light/surge voltage suppressor
E	Grommet terminal
EZ	Grommet terminal with light/surge voltage suppressor

* DIN connector is not attached.
** Refer to page 1223 for voltage conversion.
D: Conforming to DIN43650 standard;
Y: Conforming to DIN43650B standard

* Option

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

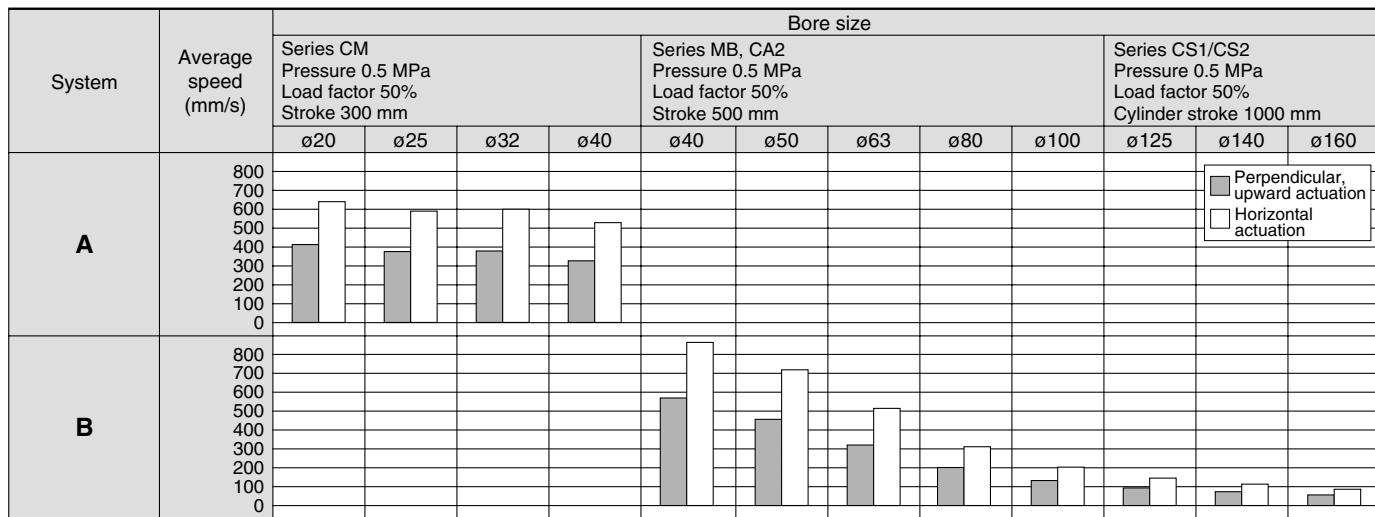
VFR

VQ7

Series VFS2000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.



System Components

System	Solenoid valve	Speed controller	Silencer	Tube bore x Length
A	Series VFS2000 Rc 1/8	AS3000-02 (S = 12 mm ²)	AN110-01 (S = 35 mm ²)	T0604 x 1 m
B	Series VFS2000 Rc 1/4	AS4000-02 (S = 21 mm ²)	AN110-01 (S = 35 mm ²)	T1075 x 1 m



* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.

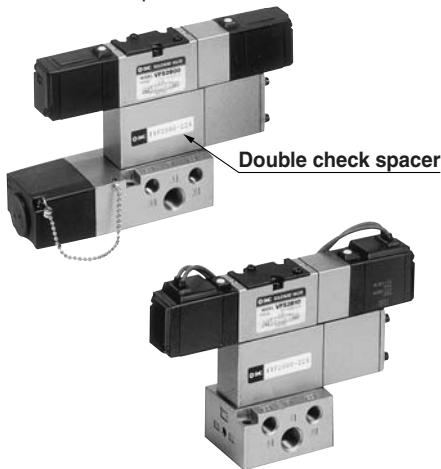
* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.

* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

Double Check Spacer/Specifications

Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



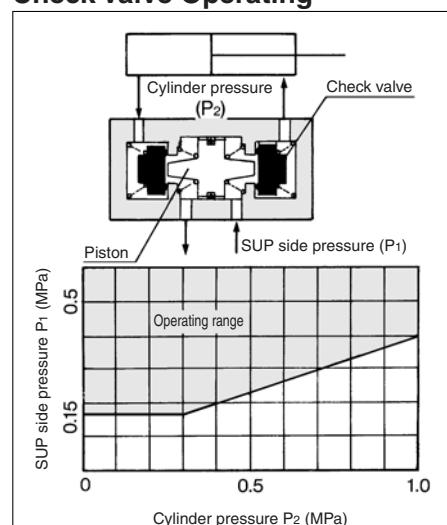
Specifications

Double check spacer part no.	Plug-in type	Non plug-in type
VVFS2000-22A-1	VVFS2000-22A-2	
Applicable valve model	VFS2400-□F	VFS2410-□G E T D

Caution

- In the case of 3 position double check valve (VFS26□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

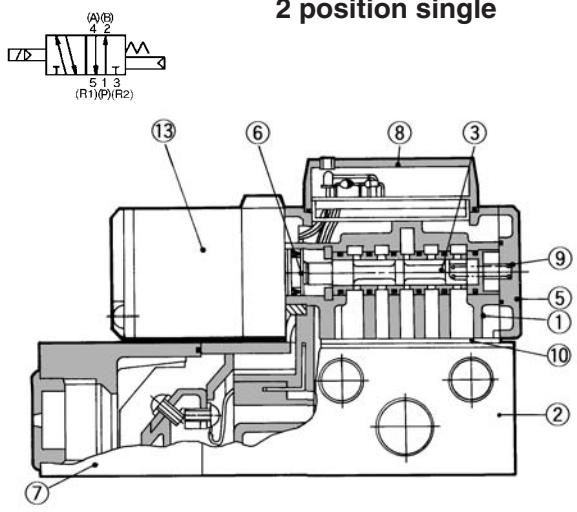
Check Valve Operating



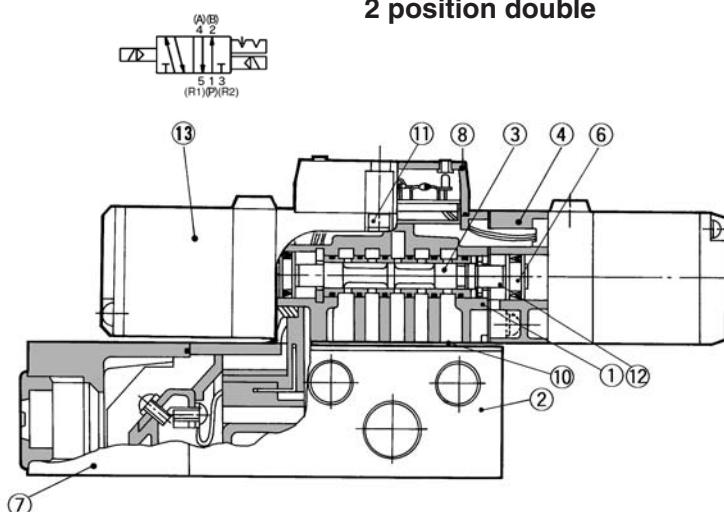
- The combination of VFS21⁰0, VFS22⁰0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

Construction

2 position single

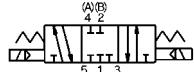


2 position double



3 position closed center/exhaust center/pressure center

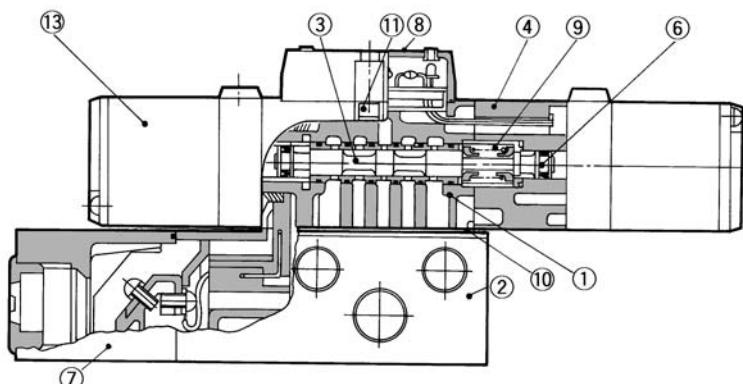
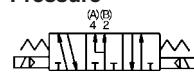
Closed center



Exhaust center



Pressure



SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Sub-plate	Aluminum die-casted	Platinum silver
3	Spool/Sleeve	Stainless steel	—
4	Adapter plate	Resin	Black
5	End plate	Resin	Black
6	Piston	Resin	—
7	Junction cover	Resin	—
8	Cover	Resin	—
9	Return spring	Stainless steel	—
10	Gasket	NBR	—
11	Hexagon socket head screw	Steel	—
12	Detent assembly	—	—
13	Pilot valve assembly	—	—

* Refer to "How to Order Pilot Valve Assembly" on page 1139.

Sub-plate Assembly (Standard) Part No.

Plug-in	VFS2000-LP- ⁰¹ ₀₂
Non plug-in	VFS2000-LS- ⁰¹ ₀₂

* Mounting bolt and gasket are not included.

Sub-plate Assembly (For External Pilot) Part No.

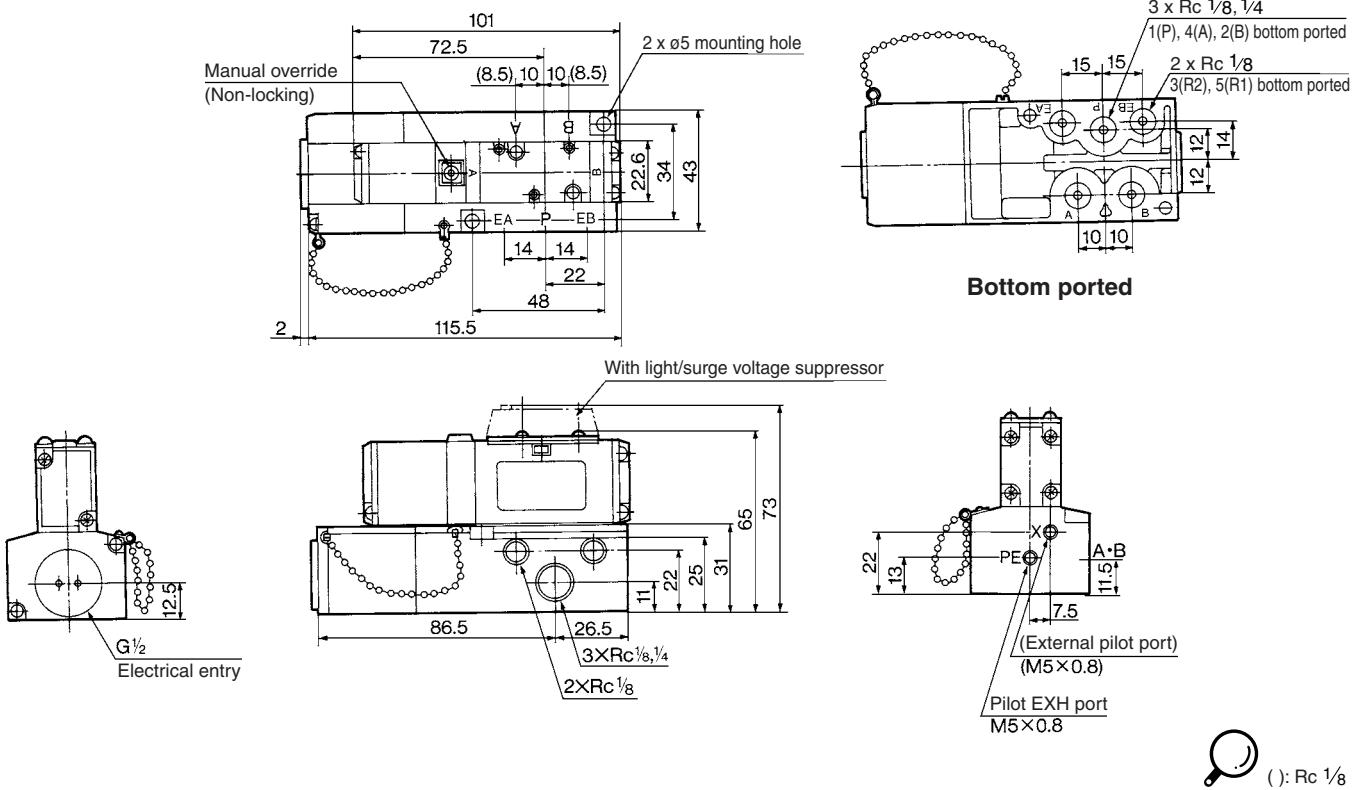
Plug-in	VFS2000-LP-R ⁰¹ ₀₂
Non plug-in	VFS2000-LS-R ⁰¹ ₀₂

Part no. for mounting bolt and gasket
BG-VFS2000

Series VFS2000

Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS2100-□F₀₂⁰¹

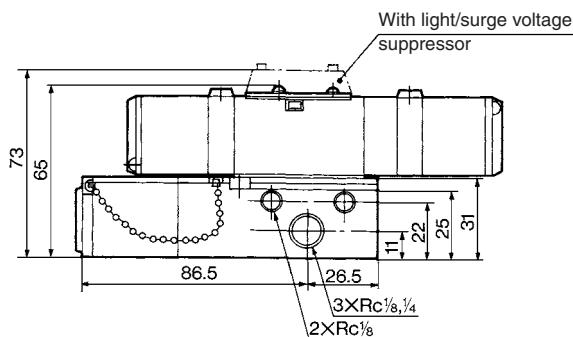
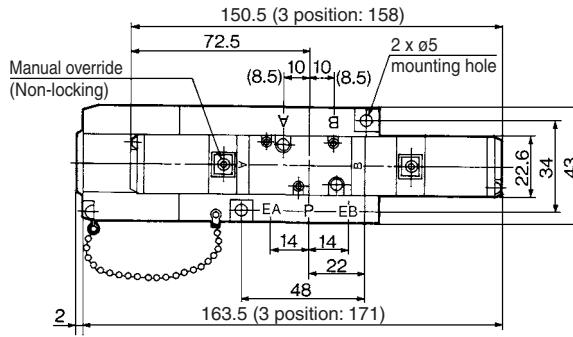


2 position double: VFS2200-□F₀₂⁰¹

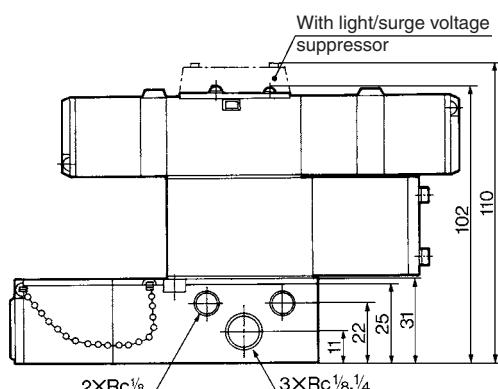
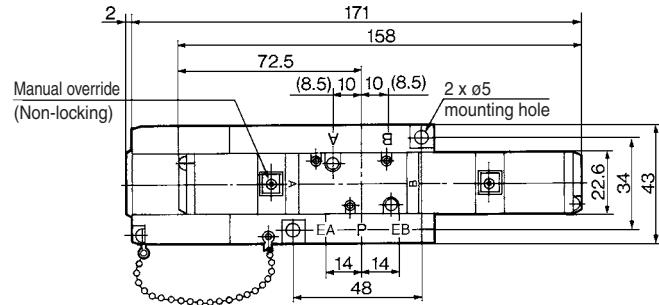
3 position closed center: VFS2300-□F₀₂⁰¹

3 position exhaust center: VFS2400-□F₀₂⁰¹

3 position pressure center: VFS2500-□F₀₂⁰¹



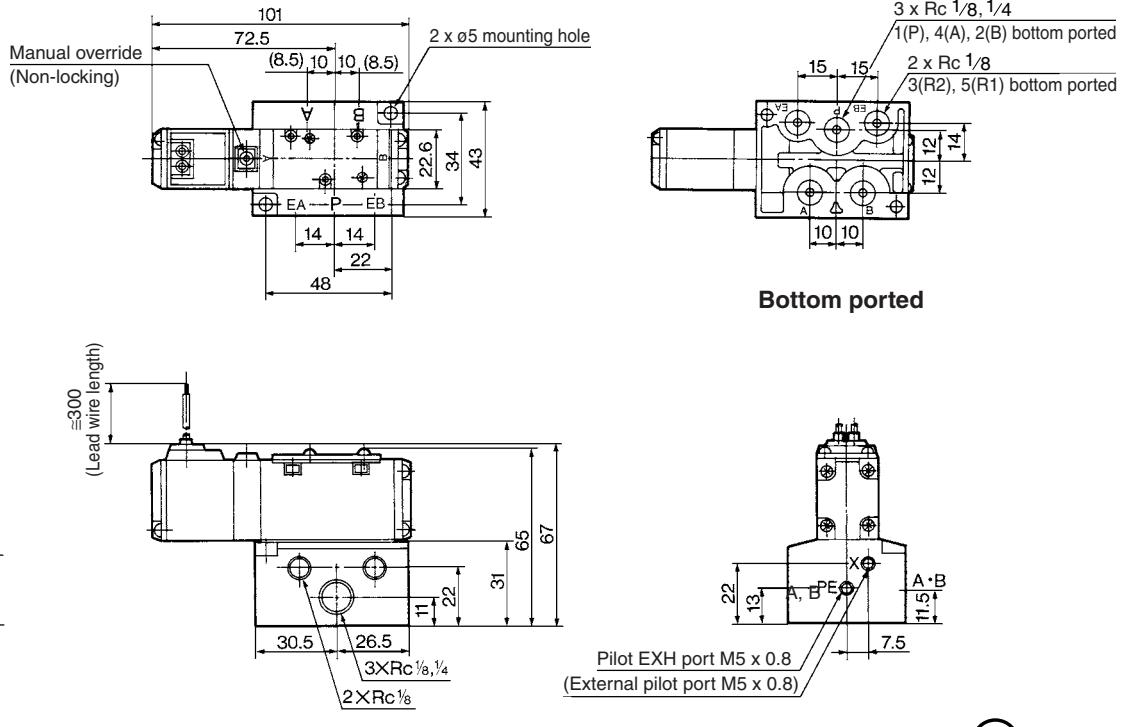
3 position double check: VFS2600-□F₀₂⁰¹



(): Rc 1/8

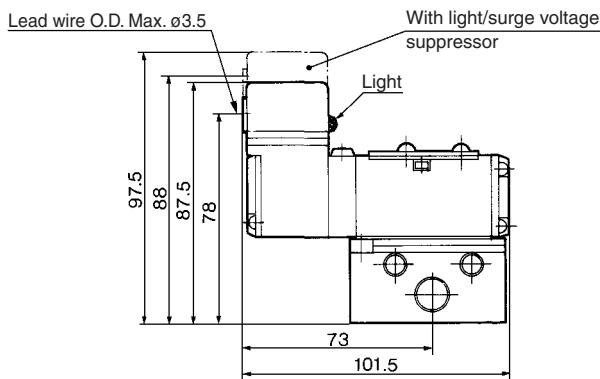
Non Plug-in — 2 Position single

Grommet: VFS2110-□G-⁰¹₀₂

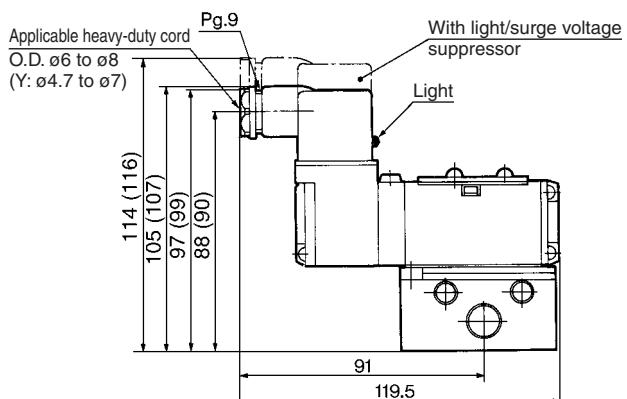


SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

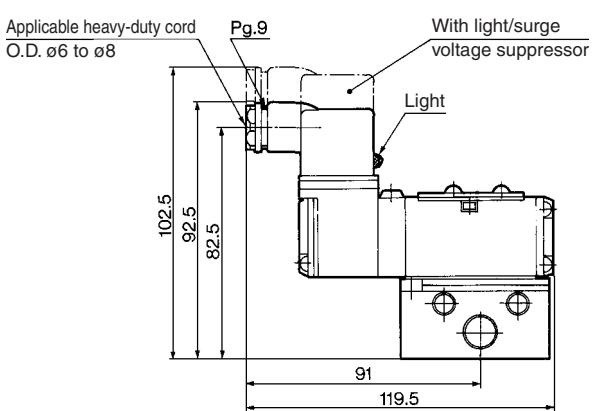
Grommet terminal: VFS2110-□E-⁰¹₀₂



DIN terminal: VFS2110-□Y-⁰¹₀₂



Conduit terminal: VFS2110-□T-⁰¹₀₂



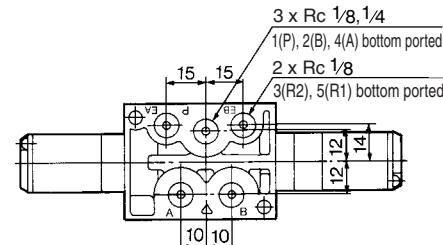
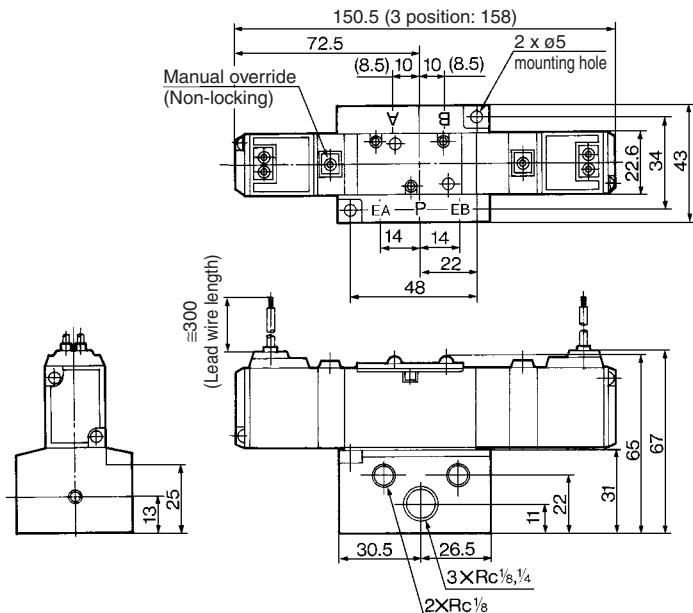
(): Y, YZ

Series VFS2000

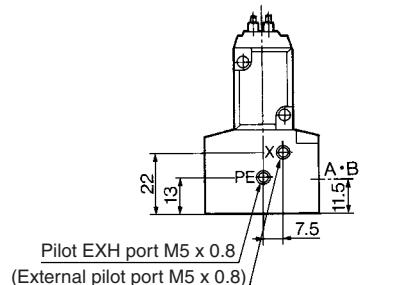
Non Plug-in — 2 Position double/3 Position closed center/Exhaust center/Pressure center

Grommet: Double VFS2210-□G-⁰¹₀₂

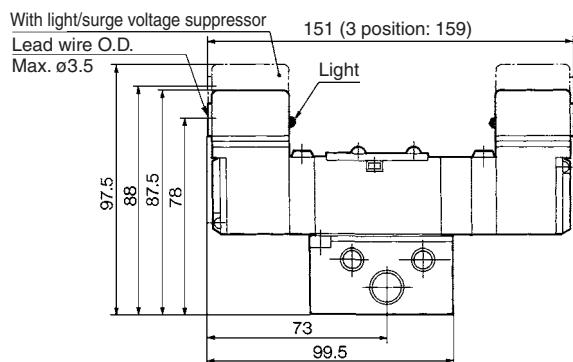
Closed center VFS2310-□G-⁰¹₀₂, Exhaust center VFS2410-□G-⁰¹₀₂, Pressure center VFS2510-□G-⁰¹₀₂



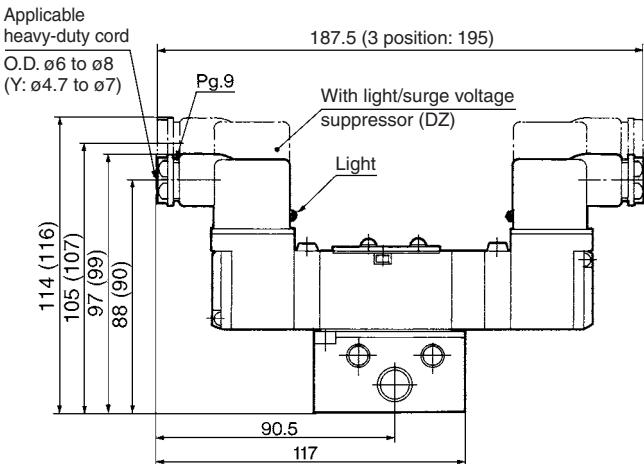
Bottom ported



Grommet terminal: Double VFS2210-□E-⁰¹₀₂
Closed center VFS2310-□E-⁰¹₀₂
Exhaust center VFS2410-□E-⁰¹₀₂
Pressure center VFS2510-□E-⁰¹₀₂

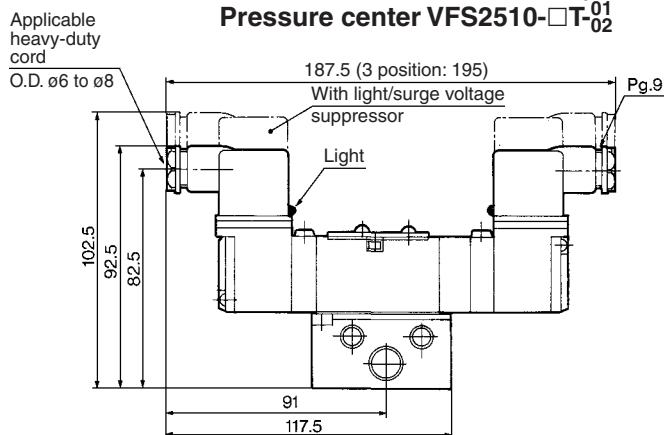


DIN terminal: Double VFS2210-□Y-⁰¹₀₂
Closed center VFS2310-□Y-⁰¹₀₂
Exhaust center VFS2410-□Y-⁰¹₀₂
Pressure center VFS2510-□Y-⁰¹₀₂



(): Y, YZ

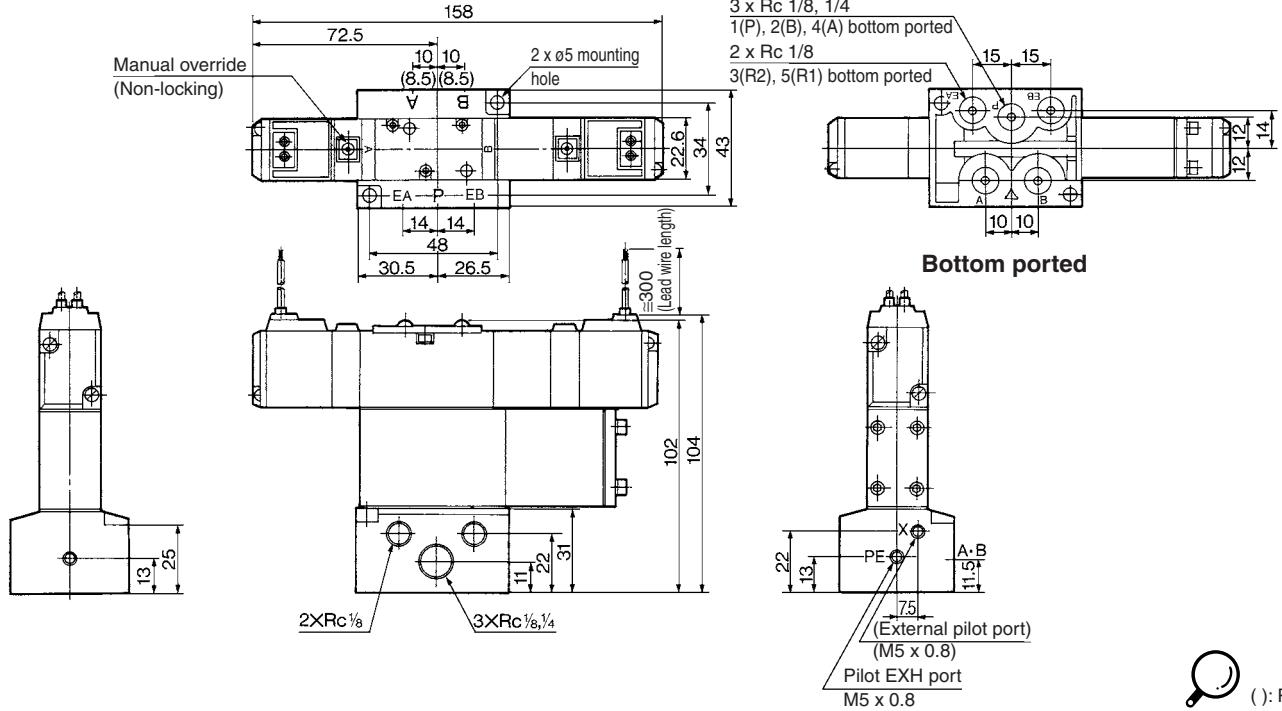
Conduit terminal: Double VFS2210-□T-⁰¹₀₂
Closed center VFS2310-□T-⁰¹₀₂
Exhaust center VFS2410-□T-⁰¹₀₂
Pressure center VFS2510-□T-⁰¹₀₂



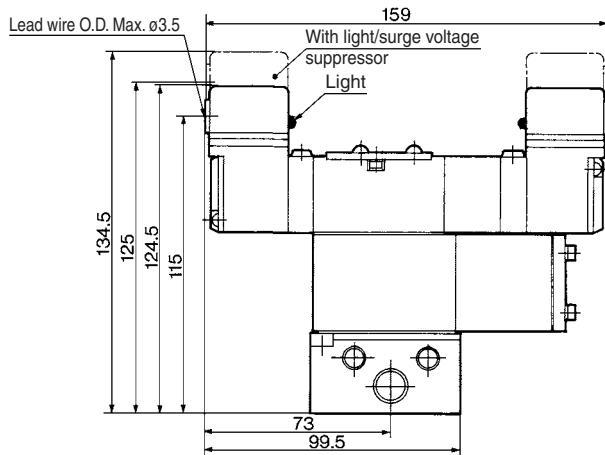
5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS2000**

Non Plug-in — 3 Position double check

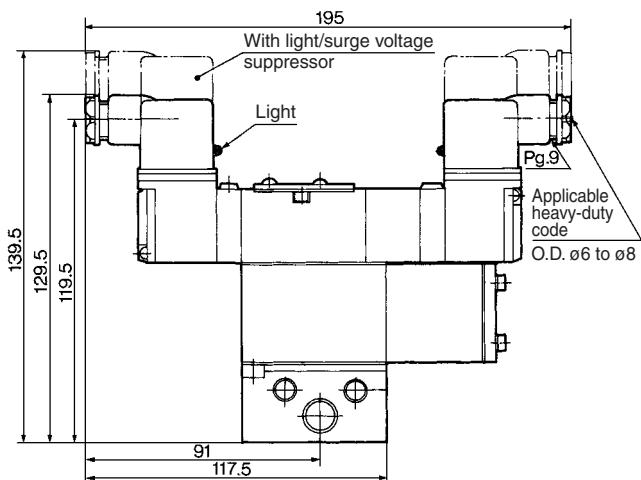
Grommet: VFS2610-□G-₀₁⁰²



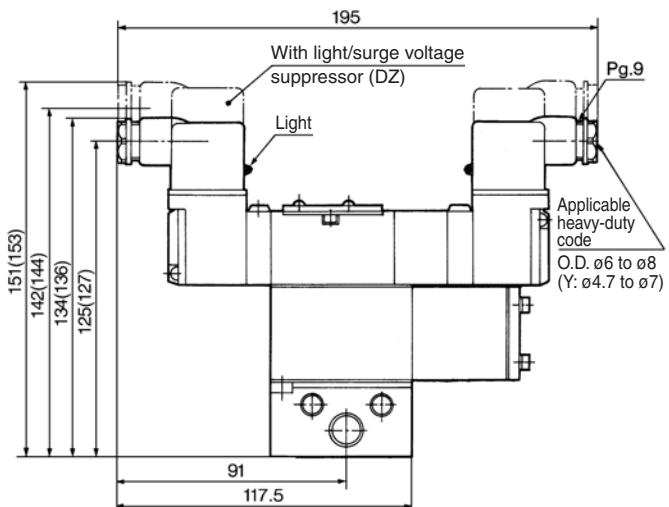
Grommet terminal: VFS2610-□E-⁰¹₀₂



Conduit terminal: VFS2610-□T⁰¹₀₂



DIN terminal: VFS2610-□^{D 01}
Y⁰²

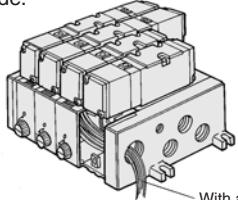


Series VFS2000

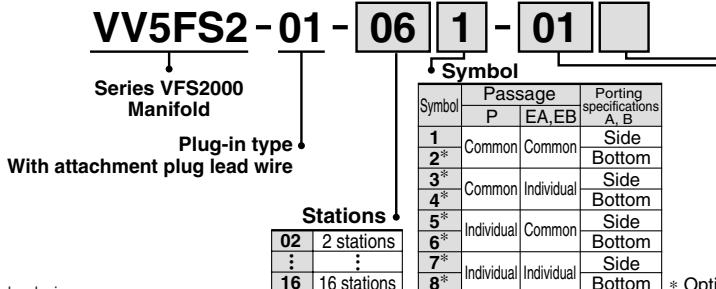
Manifold Specifications

Plug-in Type: With Attachment Plug Lead Wire

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



With attachment plug lead wire



• Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

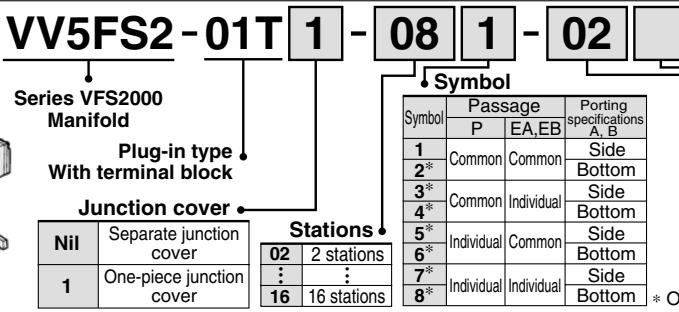
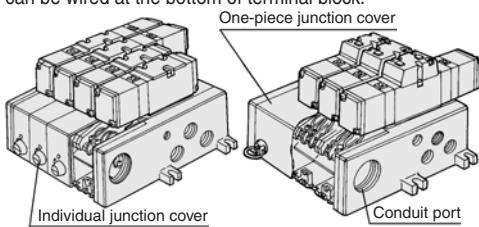
• Port size

Symbol	P, EA, EB	A, B
01	Rc	Rc 1/8
02	Rc	Rc 1/4
M		Mixed

* For bottom ported, Rc 1/8 is only available.

Plug-in Type: With Terminal Block

Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



• Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

• Port size

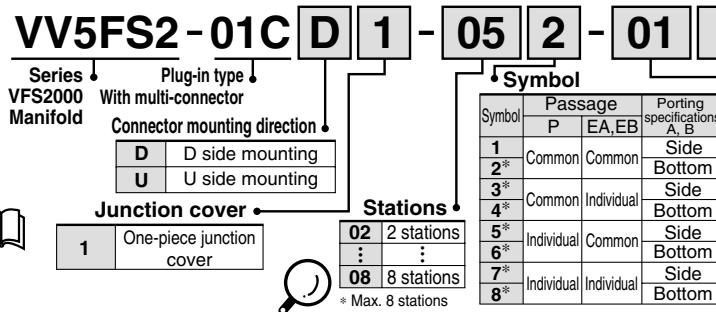
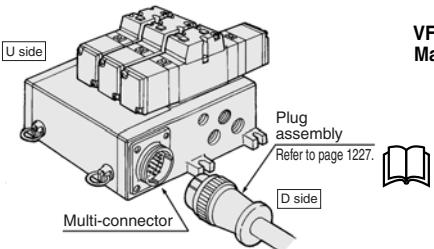
Symbol	P, EA, EB	A, B
01	Rc	Rc 1/8
02	Rc	Rc 1/4
M		Mixed

* For bottom ported, Rc 1/8 is only available.

Plug-in Type: With Multi-connector

(Wiring specifications: Refer to page 1227.)

- Master connection of power and solenoid valves.
- Quick wiring permits ease of installation.



• Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

• Port size

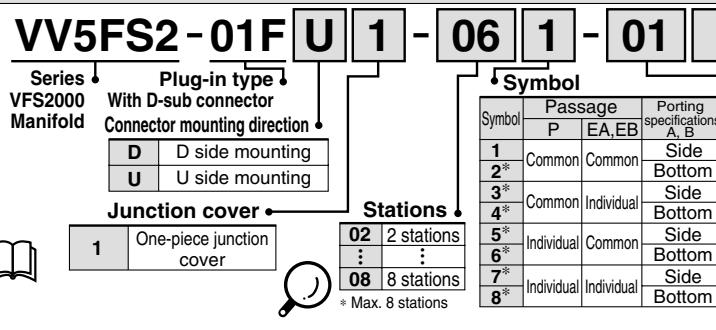
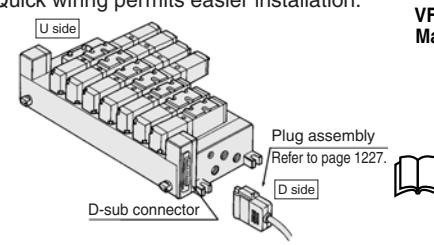
Symbol	P, EA, EB	A, B
01	Rc	Rc 1/8
02	Rc	Rc 1/4
M		Mixed

* For bottom ported, Rc 1/8 is only available.

Plug-in Type: With D-sub Connector

(Wiring specifications: Refer to page 1227.)

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



• Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

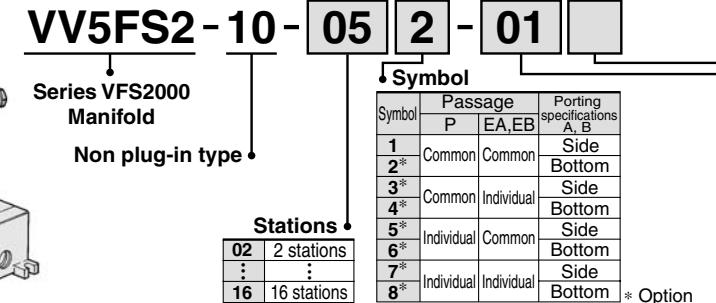
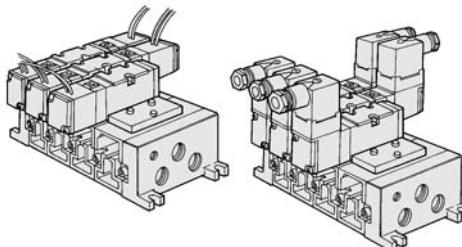
• Port size

Symbol	P, EA, EB	A, B
01	Rc	Rc 1/8
02	Rc	Rc 1/4
M		Mixed

* For bottom ported, Rc 1/8 is only available.

Non Plug-in Type: Grommet, Grommet Terminal, Conduit Terminal, DIN Terminal

- Wiring for every valve



• Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

• Port size

Symbol	P, EA, EB	A, B
01	Rc	Rc 1/8
02	Rc	Rc 1/4
M		Mixed

* For bottom ported, Rc 1/8 is only available.

Note) The individual specification of the P port at the composition symbol 3 to 8 or the EA, EB, ports should be taken as individual port using a block plate. Therefore, if an individual port is using a single SUP spacer of option or a single EXH spacer, the composition symbol mark is "1".

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS2000**

How to Order Manifold Assembly

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

<Example>

- Plug-in type with terminal block (6 stations, one-piece style junction cover)
(Manifold base) **VV5FS2-01T1-061-02**.....1
(2 position single) **VFS2100-5FZ**.....3
(2 position double) **VFS2200-5FZ**.....2
(Blanking plate) **VVFS2000-10A**.....1
- Non plug-in type (6 stations)
(Manifold base) **VV5FS2-10-061-01**.....1
(2 position single) **VFS2110-5D**.....3
(3 position exhaust center) **VFS2410-5D**.....1
(Individual EXH spacer) **VVFS2000-R-01-2**.....1

Manifold Specifications

Base model	Wiring	Porting specifications		Port size Rc A, B	Stations	Applicable valve model
		A, B port	P, EA, EB			
Plug-in type VV5FS2-01	<ul style="list-style-type: none"> • With attachment plug lead wire • With terminal block • With multi-connector • With D-sub connector 	Side/Bottom	1/4	1/8, 1/4	2 to 15* stations	VFS2□00-□F
Non plug-in type VV5FS2-10	<ul style="list-style-type: none"> • Grommet • Grommet terminal • Conduit terminal • DIN terminal 					VFS2□10-□G VFS2□10-□E VFS2□10-□T VFS2□10-□D

 * With multi-connector, with D-sub connector: 8 stations at the maximum.

Flow Characteristics at the Number of Manifold Stations (Operated individually)

Model	Passage/Stations	Station 1	Station 5	Station 10
VVFS2	1 → 4/2 (P → A/B)	C [dm ³ /(s·bar)]	2.4	2.4
	b	0.14	0.14	0.14
	C _v	0.50	0.50	0.50
	4/2 → 5/3 (A/B → R1/R2)	C [dm ³ /(s·bar)]	2.5	2.5
		b	0.18	0.18
		C _v	0.60	0.60

 * Port size Rc 1/4

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

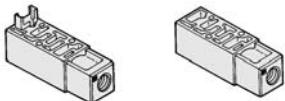
Series VFS2000

Manifold Option Parts Assembly

Individual SUP spacer

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

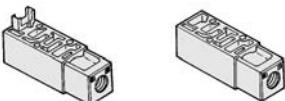
Body type	Plug-in type	Non plug-in type
Part no.	Rc 1/8 VVFS2000-P-01-1	VVFS2000-P-01-2
Part no.	Rc 1/4 VVFS2000-P-02-1	VVFS2000-P-02-2



Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (Common EXH type)

Body type	Plug-in type	Non plug-in type
Part no.	Rc 1/8 VVFS2000-R-01-1	VVFS2000-R-01-2
Part no.	Rc 1/4 VVFS2000-R-02-1	VVFS2000-R-02-2



SUP block plate

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

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

EXH block plate

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

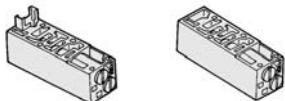
Body type	Plug-in type	Non plug-in type
Part no.	AXT625-12A	



Throttle valve spacer

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

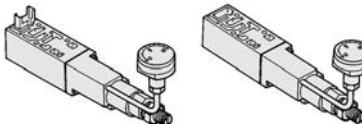
Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-20A-1	VVFS2000-20A-2



Interface regulator (P port regulation)

 Interface regulator set on manifold block can regulate the pressure to each valve. Refer to "Flow Characteristics" on page 1225.

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF2000-00-P-1	ARBF2000-00-P-2



Blanking plate

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

Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-10A	

Accessory

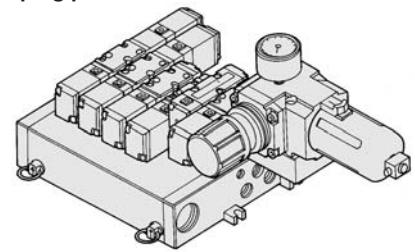
One pair of gasket and mounting thread is attached to every option parts assembly.

Manifold Option

With control unit

Plug-in type/Non plug-in type

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



 For details, refer to page 1153.

Driproof Manifold

Plug-in type

- Equivalent to IP65

 For details, refer to page 1155.

Made to Order

Manifold with serial transmission kit

Plug-in type

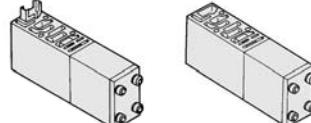
- Solenoid valve wiring process reduced considerably.

 For details, refer to page 1158.

Double check spacer

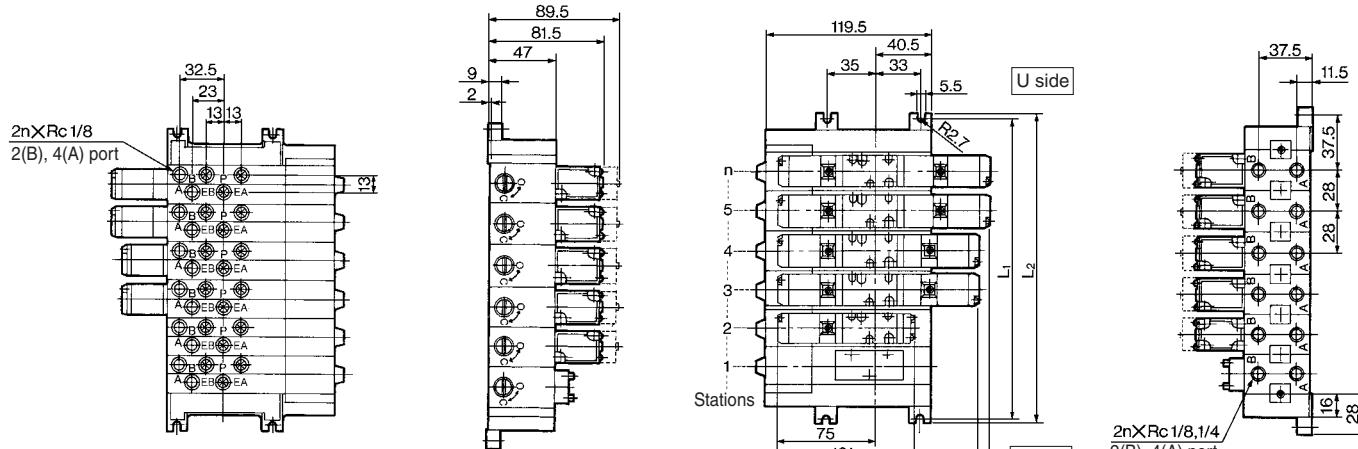
If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-22A-1	VVFS2000-22A-2

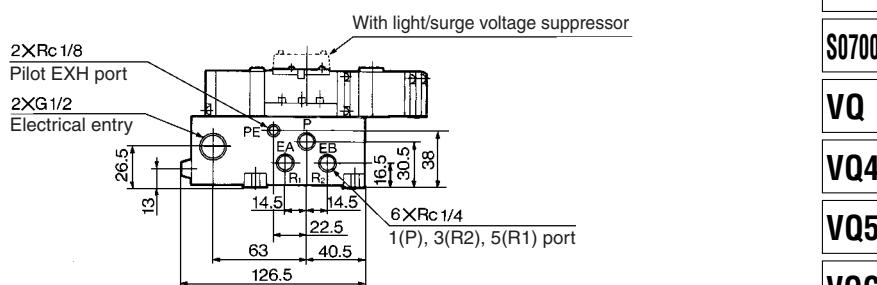


Manifold — Plug-in type, Non plug-in type

Plug-in type (Insert plug with lead wire): VV5FS2-01- Station 1- Port size

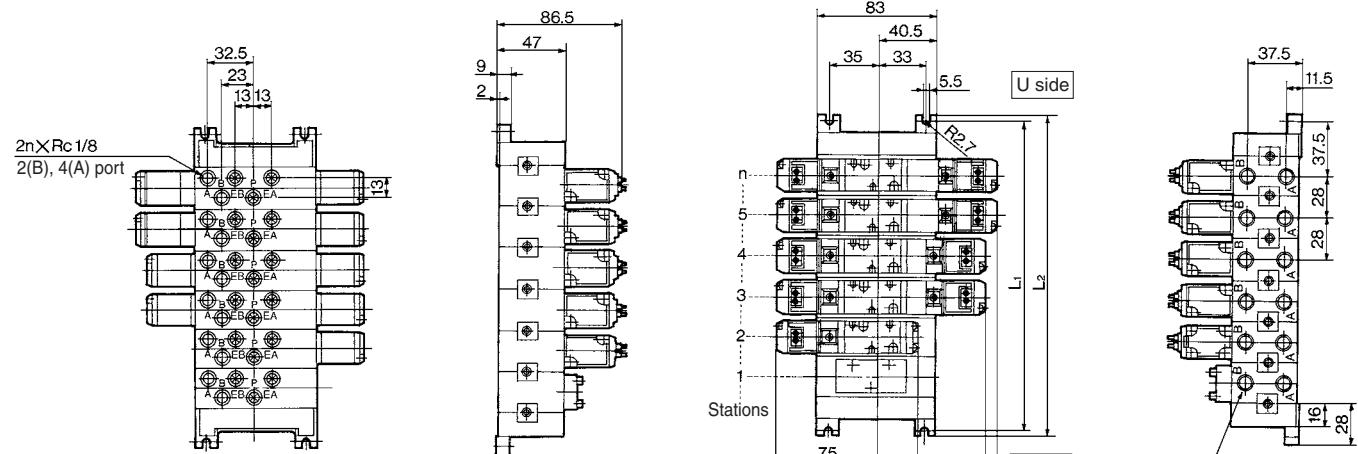


**Bottom ported:
VV5FS2-01- Station 2- Port size**

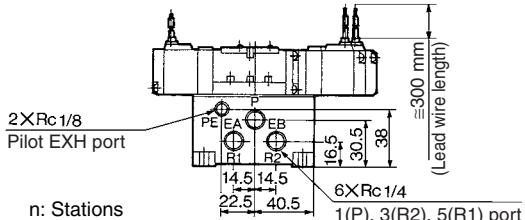


Formula for manifold weight $M = 0.201n + 0.299$ (kg) n: Station

Non plug-in type: VV5FS2-10- Station 1- Port size



**Bottom ported:
VV5FS2-10- Station 2- Port size**



Formula for manifold weight $M = 0.174n + 0.218$ (kg)

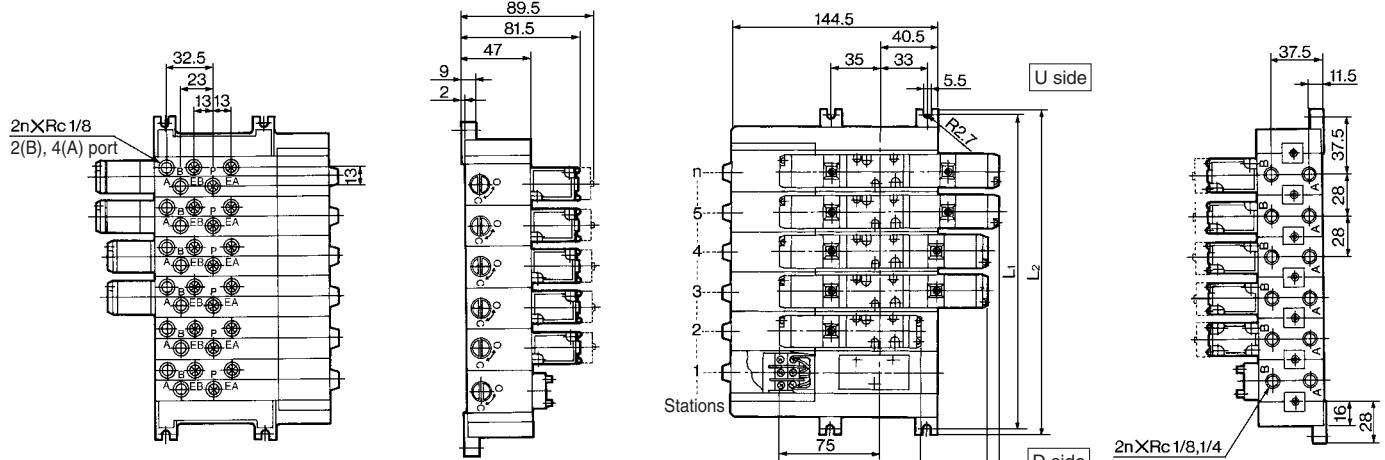
Stations	1	2	3	4	5	6	7	8	9	10	Formula
L ₁	75	103	131	159	187	215	243	271	299	327	$L_1 = 28 \times n + 47$
L ₂	84	112	140	168	196	224	252	280	308	336	$L_2 = 28 \times n + 56$

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS2000

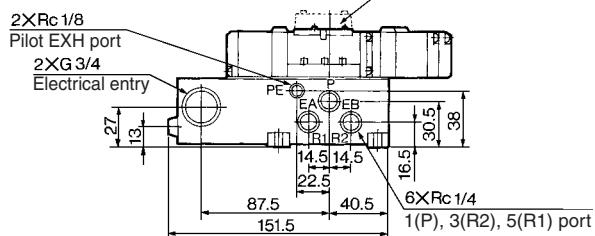
Manifold — Plug-in type: Individual/One-piece junction cover

Plug-in type with terminal block (Individual junction covers): VV5FS2-01T- Station 1- Port size



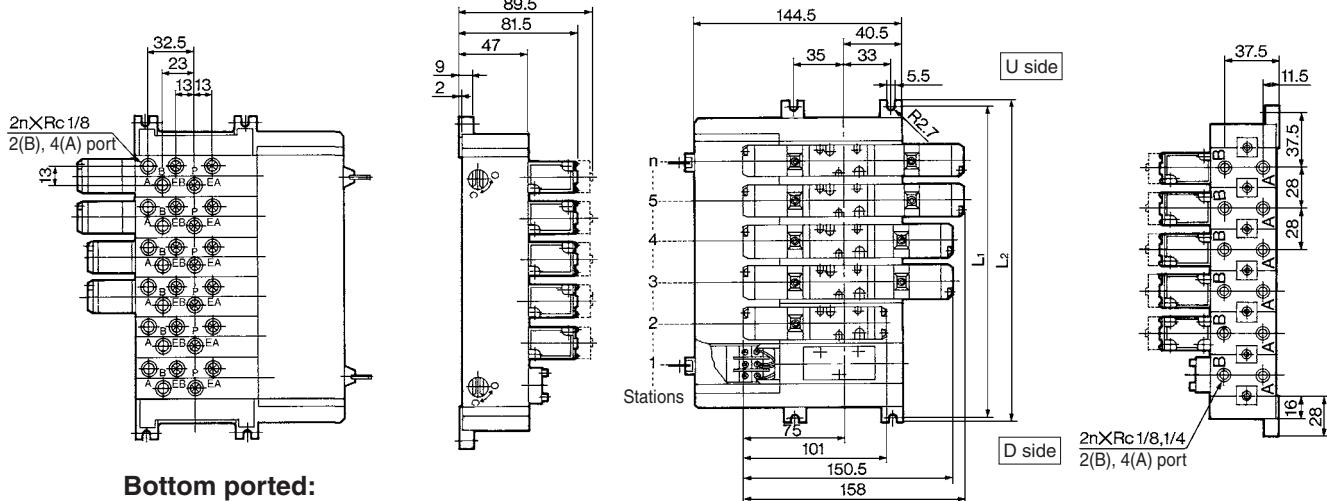
Bottom ported:

VV5FS2-01T- Station 2- Port size



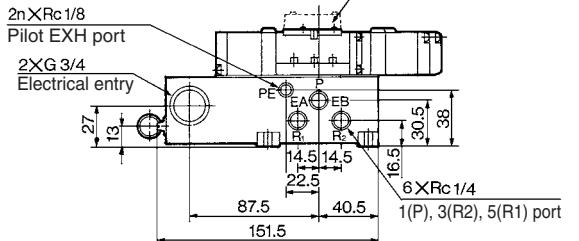
Formula for manifold weight $M = 0.215n + 0.35$ (kg) n: Station

Plug-in type with terminal block (One-piece junction covers): VV5FS2-01T1- Station 1- Port size



Bottom ported:

VV5FS2-01T1- Station 2- Port size



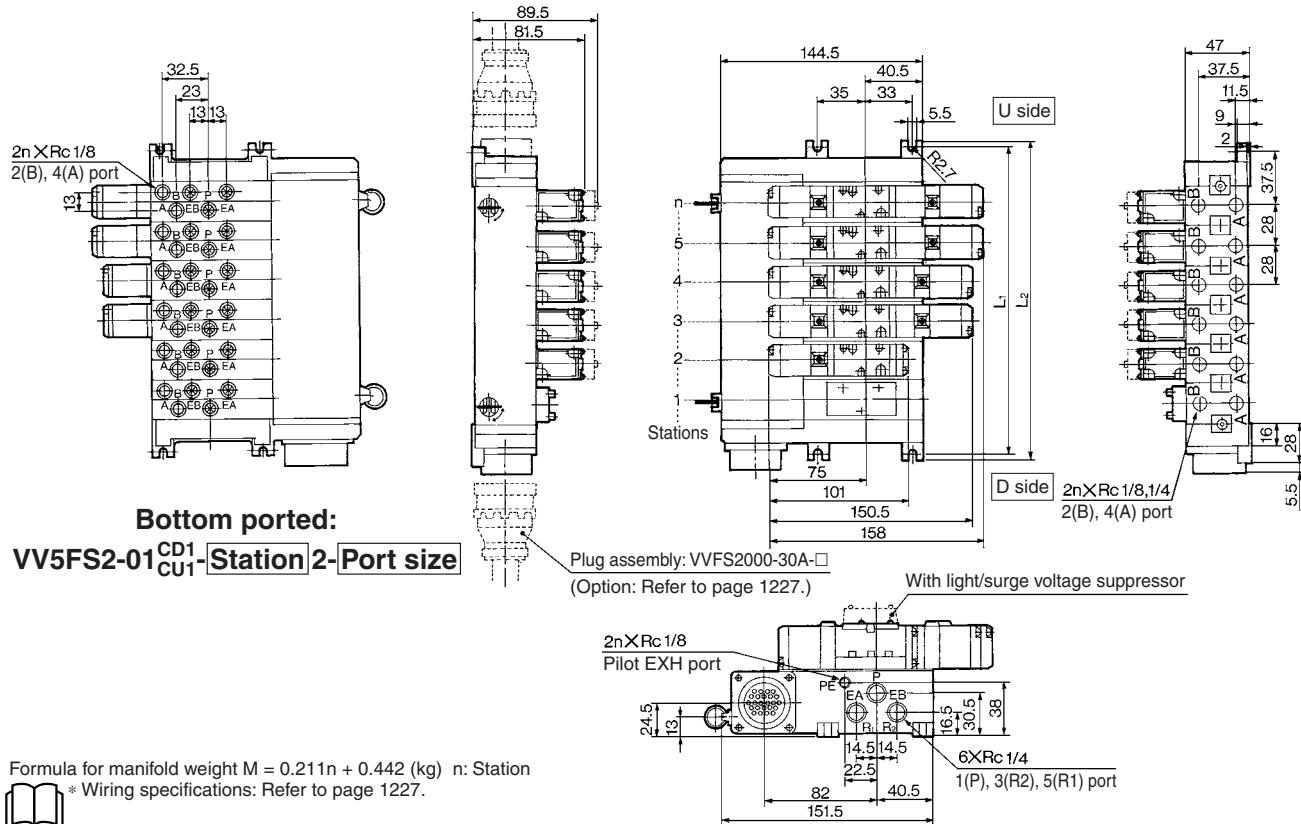
Formula for manifold weight $M = 0.236n + 0.354$ (kg)

n: Station

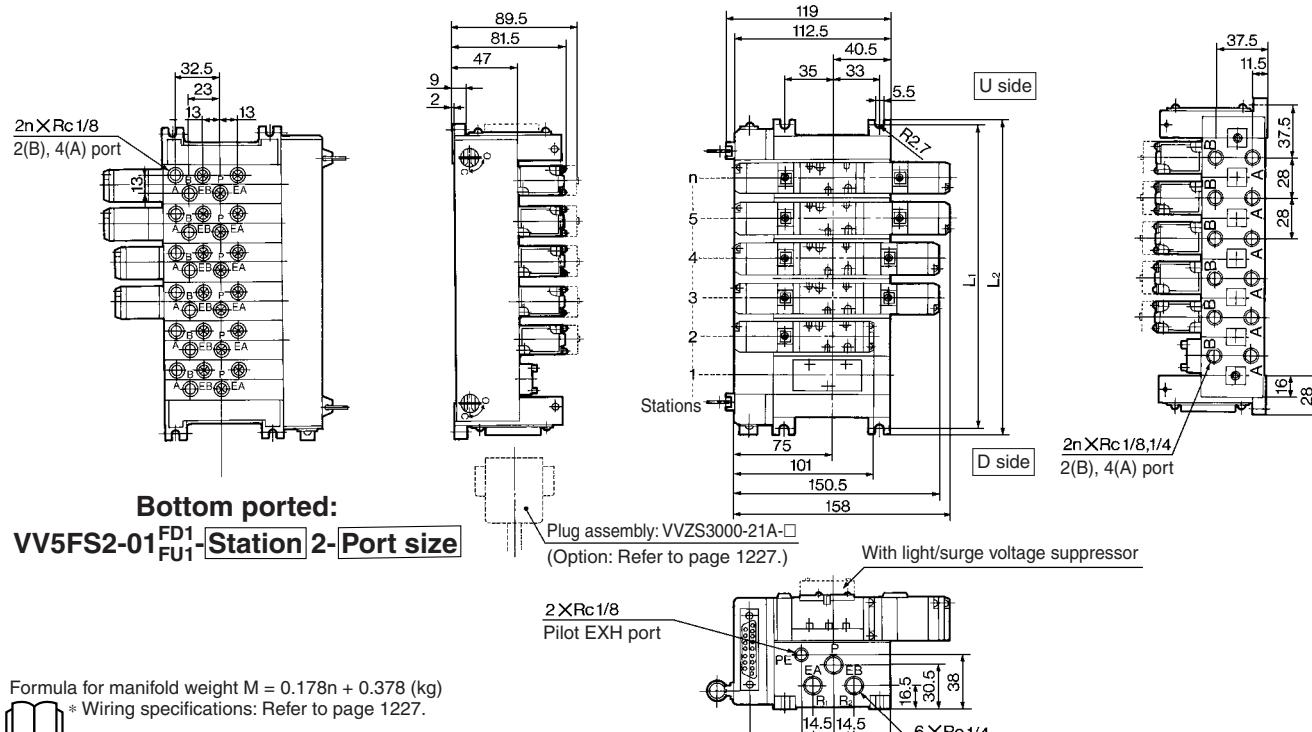
L Stations	1	2	3	4	5	6	7	8	9	10	Formula
L ₁	75	103	131	159	187	215	243	271	299	327	$L_1 = 28 \times n + 47$
L ₂	84	112	140	168	196	224	252	280	308	336	$L_2 = 28 \times n + 56$

Manifold — Plug-in with multi-connector/with D-sub connector

Plug-in with multi-connector: VV5FS2-01CD1-**Station 1- Port size**, VV5FS2-01CU1-**Station 1- Port size**



Plug-in type with D-sub connector: VV5FS2-01FD1-**Station 1- Port size**, VV5FS2-01FU1-**Station 1- Port size**



<u>L</u>	Stations	1	2	3	4	5	6	7	8	Formula
<u>L</u> ₁		75	103	131	159	187	215	243	271	$L_1 = 28 \times n + 47$
<u>L</u> ₂		84	112	140	168	196	224	252	280	$L_2 = 28 \times n + 56$

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

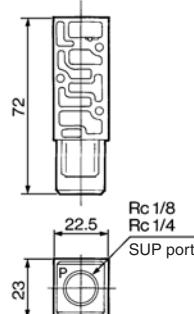
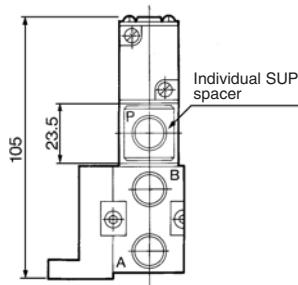
Series VFS2000

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

Individual SUP spacer:

VVFS2000-P-⁰¹₀₂-1 (Plug-in type)

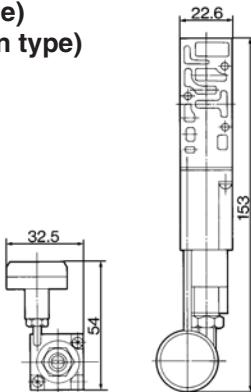
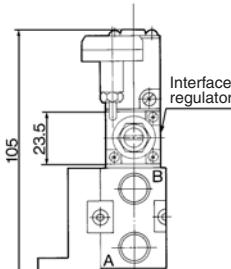
VVFS2000-P-⁰¹₀₂-2 (Non plug-in type)



Interface regulator:

ARBF2000-00-P-1 (Plug-in type)

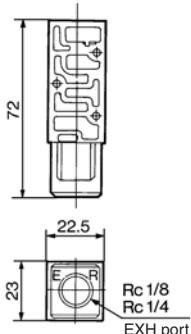
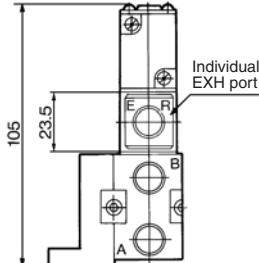
ARBF2000-00-P-2 (Non plug-in type)



Individual EXH spacer:

VVFS2000-R-⁰¹₀₂-1 (Plug-in type)

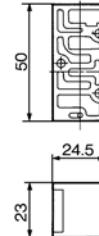
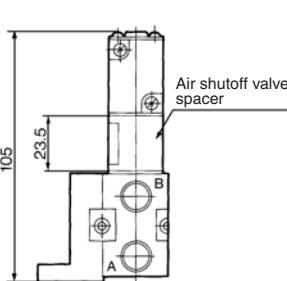
VVFS2000-R-⁰¹₀₂-2 (Non plug-in type)



Air shutoff valve spacer:

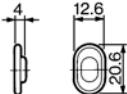
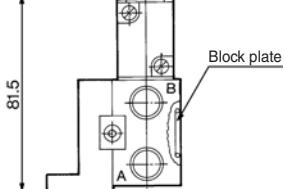
VVFS2000-21A-1 (Plug-in type)

VVFS2000-21A-2 (Non plug-in type)



SUP block plate: AXT625-12A

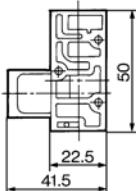
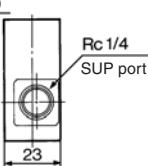
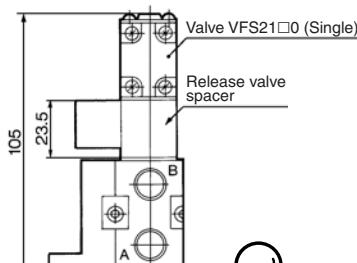
EXH block plate: AXT625-12A



Release valve spacer:

VVFS2000-24A-1^R_L (Plug-in type)

VVFS2000-24A-2^R_L (Non plug-in type)

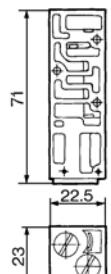
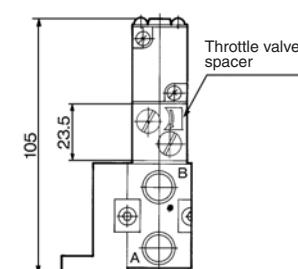


Note) VVFS2000-24A-12¹₂ R. D-side mounting.

Throttle valve spacer:

VVFS2000-20A-1 (Plug-in type)

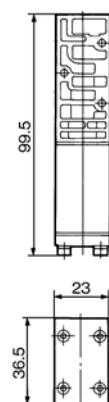
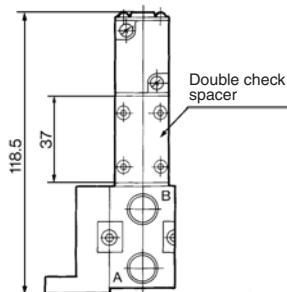
VVFS2000-20A-2 (Non plug-in type)



Double check spacer:

VVFS2000-22A-1 (Plug-in type)

VVFS2000-22A-2 (Non plug-in type)

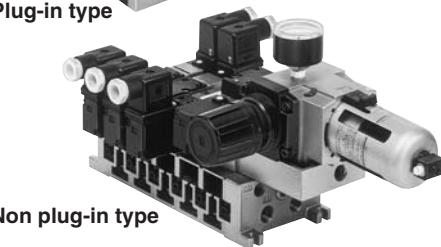


Manifold with Control Unit

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



Plug-in type



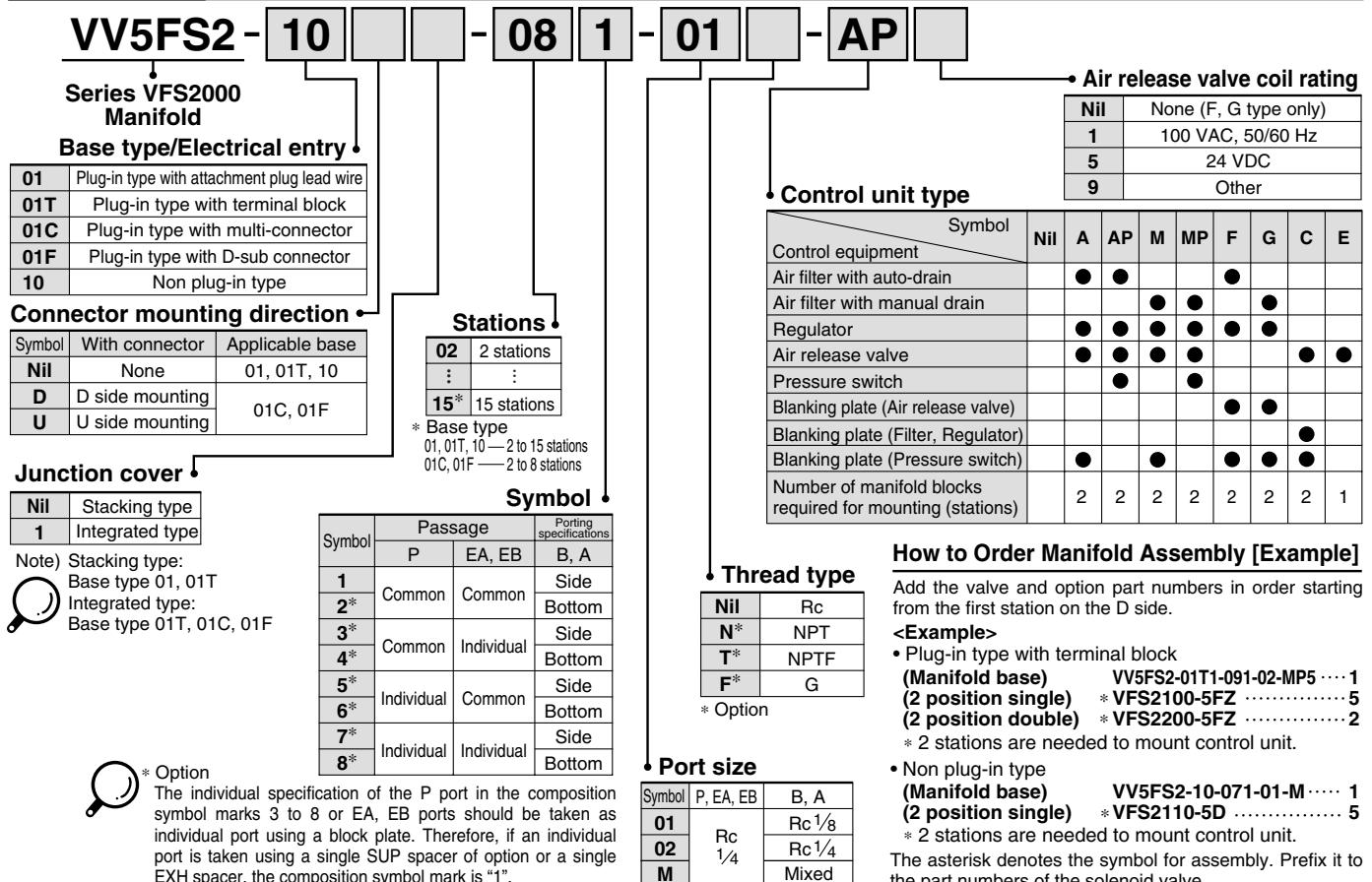
Non plug-in type

Caution

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

How to Order

(Note) The manifold of plug-in type with attachment plug lead wire is applied to individual type only. Non plug-in type has no junction cover.

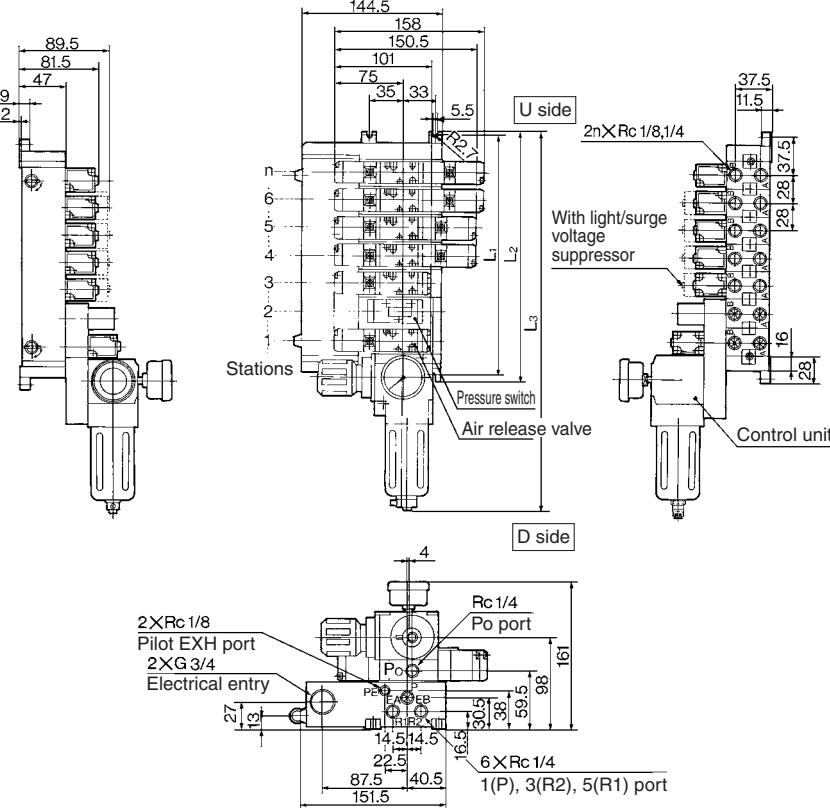


Series VFS2000

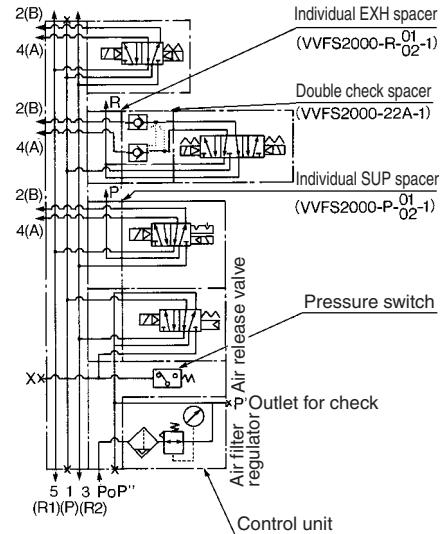
Manifold with Control Unit — Plug-in type, Non plug-in type

Plug-in type:

VV5FS2-01T- Station 1- Port size - Control unit Voltage for release valve

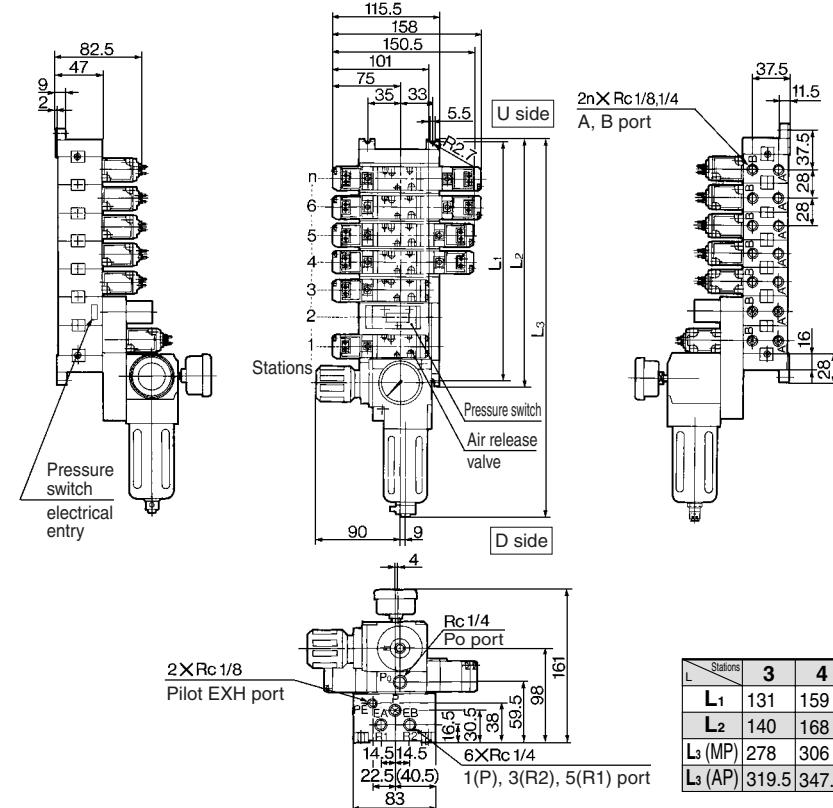


Example for manifold

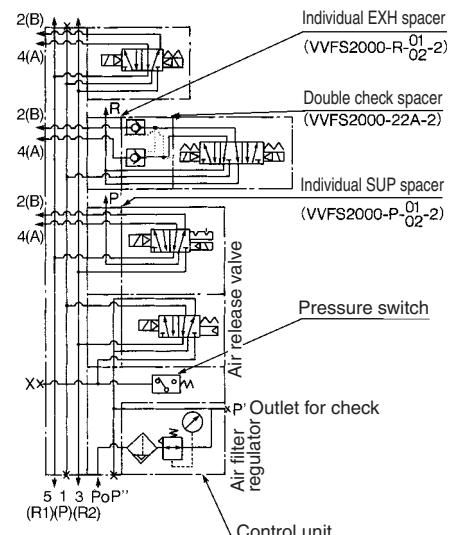


Non plug-in type:

VV5FS2-10- Station 1- Port size - Control unit Voltage for release valve



Example for manifold



L	Stations	3	4	5	6	7	8	9	10	Formula
L₁	131	159	187	215	243	271	299	327	L ₁ = 28 x n + 47	
L₂	140	168	196	224	252	280	308	336	L ₂ = 28 x n + 56	
L₃ (MP)	278	306	334	362	390	418	446	474	L ₃ = 28 x n + 194	
L₃ (AP)	319.5	347.5	375.5	403.5	431.5	459.5	487.5	515.5	L ₃ = 28 x n + 235.5	

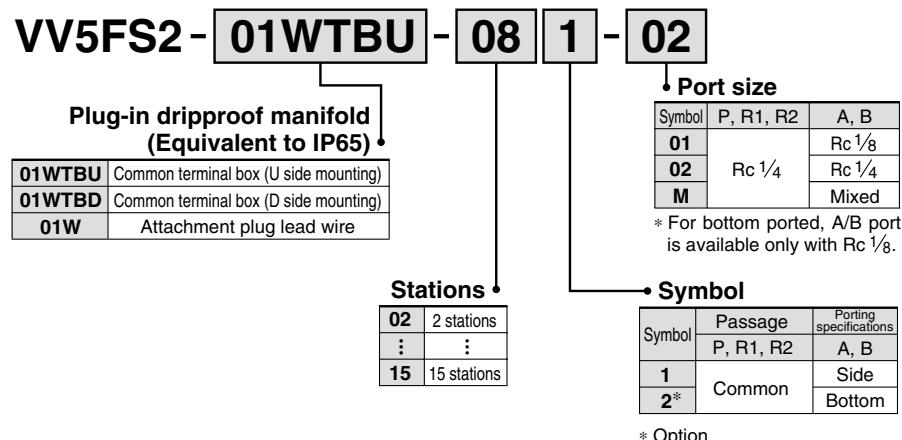
Driproof Manifold (Equivalent to IP65)

Manifold Specifications

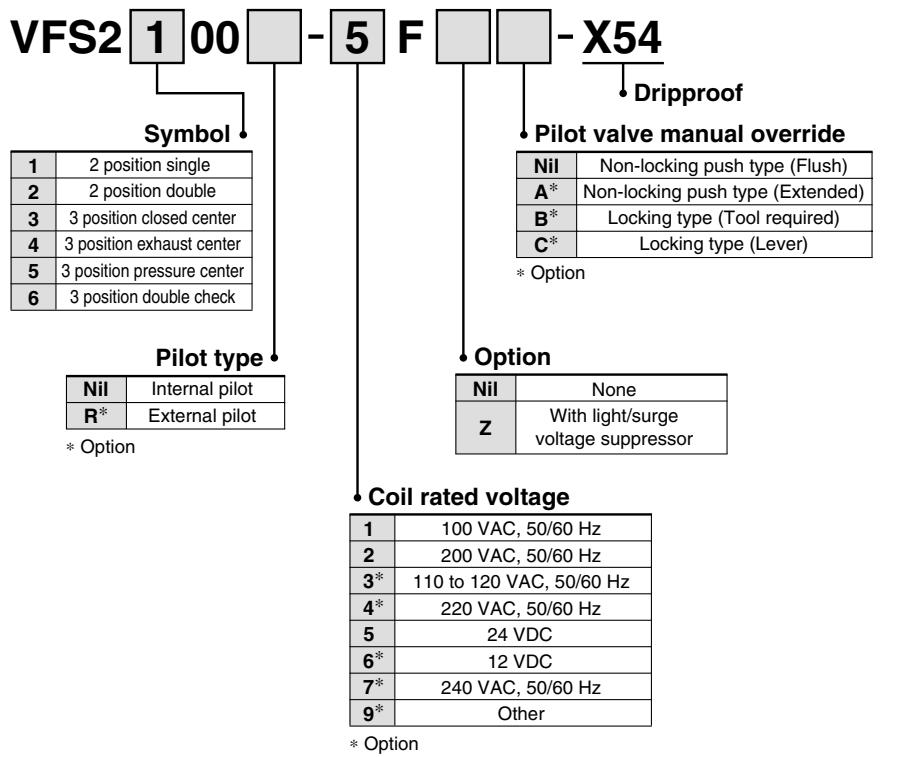
Manifold	VV5FS2-01WTBU	VV5FS2-01W
Wiring	Common terminal box	Attachment plug lead wire
Applicable valve model	VFS2□00-□F-X54	
Porting specifications	Common SUP, Common EXH	
Rc	2(B), 4(A) port 1(P), 3(R2), 5(R1) port	Side: Rc 1/8, 1/4, Bottom: Rc 1/8 (Option) Side: Rc 1/4
Stations	2 to 10 stations	2 to 15 stations

How to Order

How to order manifold



How to order valves



SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

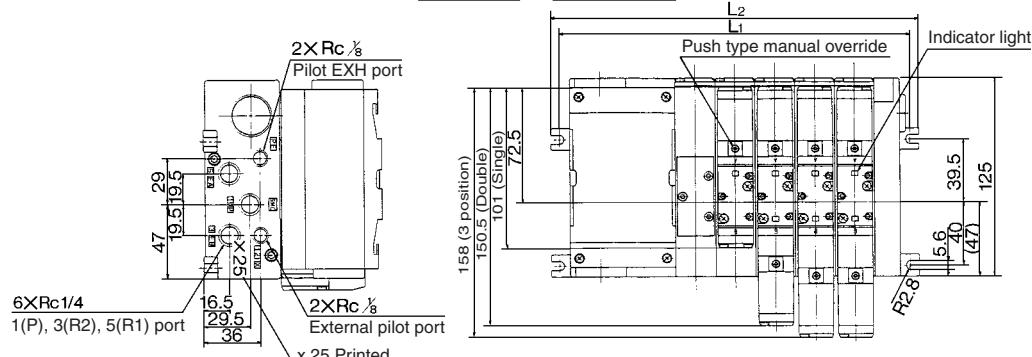
VFR

VQ7

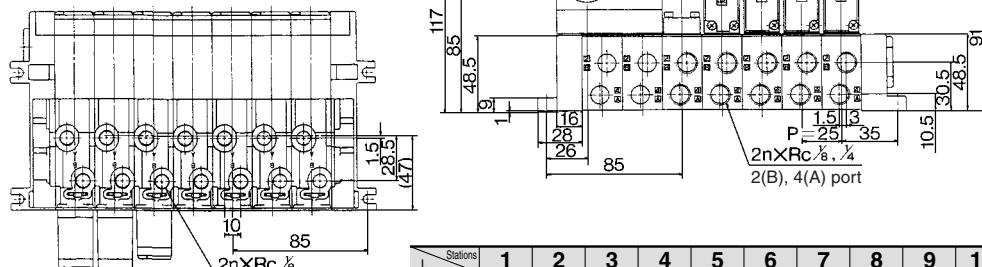
Series VFS2000

Driproof Manifold

With common terminal box: VV5FS2-01WTB_{UD} - Station 1 - Port size



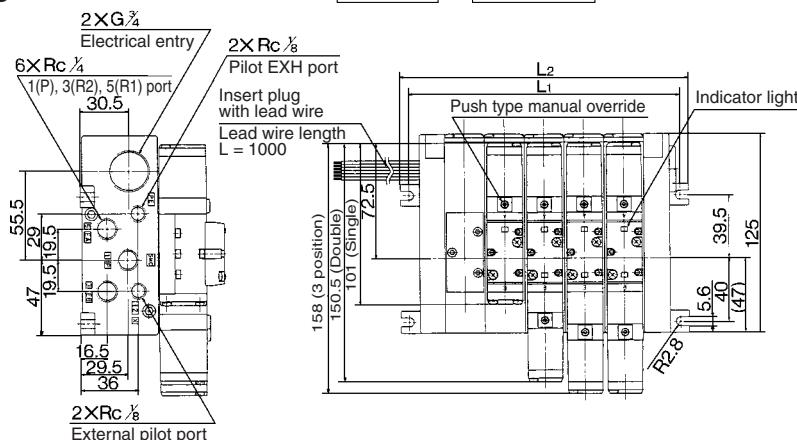
Bottom ported: VV5FS2-01WTBD- Station 2-01



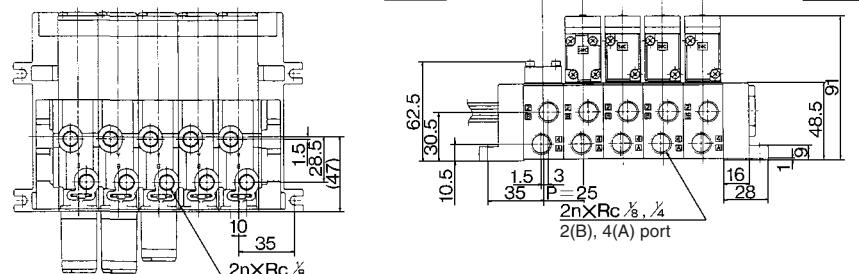
 * Terminal mounting stations are not included.
Indicates Solenoid valve mounting stations.

n: Stations												
L	Stations	1	2	3	4	5	6	7	8	9	10	Formula
L ₁	120	145	170	195	220	245	270	295	320	345		$L_1 = 25 \times n + 95$
L ₂	131	156	181	206	231	256	281	306	331	356		$L_2 = 25 \times n + 106$

With attachment plug lead wire: VV5FS2-01W- **Station 1**- **Port size**



Bottom ported: VV5FS2-01W- Station 2-01



n: Stations																	
L	Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Formula
L₁	70	95	120	145	170	195	220	245	270	295	320	345	370	395	420	$L_1 = 25n + 45$	
L₂	81	106	131	156	181	206	231	256	281	306	331	356	381	406	431	$L_2 = 25n + 56$	

Made to Order

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output)
Serial Transmission System

How to Order

How to Order Manifold

VV5FS2-01S V-01-02-X460

• **Plug-in type**
Serial transmission kit

Stations

3	3 stations
:	:
18	18 stations

Note 1) Max. 18 stations. Add 2 stations for serial unit mounting.

Note 2) Max. 18 stations for all-single wiring. (No. of valves: 16)

For the standard double wiring, the maximum number of stations is 10. (No. of valves: 8)

• Port size

Symbol	P, R1, R2	A, B
01		Rc 1/8
02	Rc 1/4	Rc 1/4
M		Mixed

Nil	Rc
N	NPT
T	NPTF
F	G

* For bottom ported: Rc 1/8 only

• Applicable models

Symbol	SI unit part no.	Description
0	—	Without SI unit
F1	EX123U-SUW1	NKE Corporation: Uni-wire System (16 outputs)
H	EX123U-SUH1	NKE Corporation: Uni-wire H System (16 outputs)
J1	EX123U-SSL1	SUNX Corporation: S-LINK System (16 outputs)
J2	EX123U-SSL2	SUNX Corporation: S-LINK System (8 outputs)
Q	EX124U-SDN1	DevieNet (2 power supply systems)
R1	EX124U-SCS1	OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems)
R2	EX124U-SCS2	OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)
V	EX124U-SMJ1	CC-Link (2 power supply systems)

• Combination symbol

Symbol	Port specification	Piping specification	
	P	R1, R2	A, B
1	Common	Common	Side
2*	Common	Bottom	
3*	Common	Individual	Side
4*	Common	Individual	Bottom
5*	Individual	Common	Side
6*	Individual	Common	Bottom
7*	Individual	Individual	Side
8*	Individual	Individual	Bottom

* Option

Refer to pages 1653 to 1655 for the details of the EX123/124 integrated type (for output) serial transmission system.

● Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

D side

U side

D side

U side

SI unit output no.	1	2	3	4	5	6	7	8	9	10	SI unit
Double	Double	Single	Single	Single	Double	Single	Single				
AB	AB	AB	AB	AB	AB	AB	AB	AB	AB		

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

<Wiring Example 2> Single/Double mixed wiring (Option)

SI unit output no.

SI unit output no.	1	2	3	4	5	6	7	8	9	10	11	12	SI unit
Double	Double	Single	Single	Single	Single	Double	Single	Double	Single	Single	Single		
AB	AB	A	A	A	A	AB	A	AB	A	A	A		

0 1 2 3 4 5 6 7 8 9 10 11 12

* Mixed wiring is available as an option. Use the manifold specification sheet to specify this.

How to Order Valves

VFS2-00-5F

• Symbol

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
6	3 position double check

• Pilot type

Nil	Internal pilot
R	External pilot

24 VDC

• Pilot valve manual override

Nil	Non-locking push type (Flush)
A	Non-locking push type (Extended)
B	Locking type (Tool required)
C	Locking type (Lever)

• Option

Nil	None
Z	With light/surge voltage suppressor

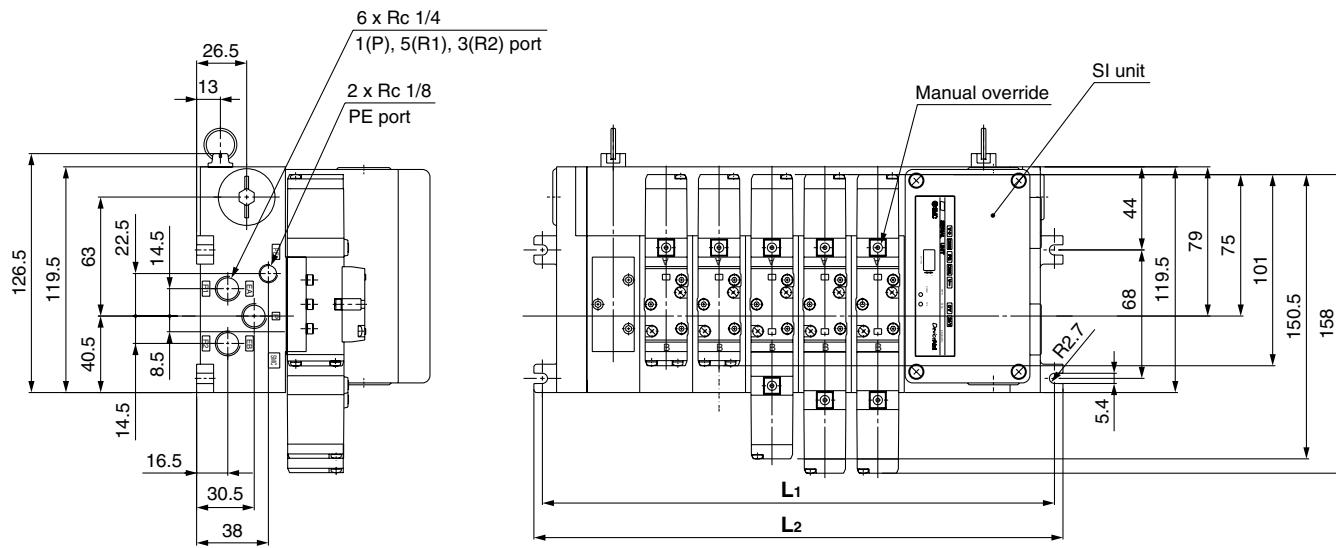
• Coil rated voltage

Nil	None
-----	------

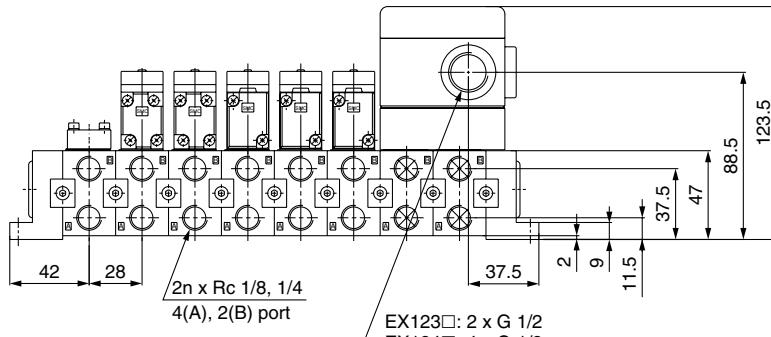
5 Port Pilot Operated Solenoid Valve
Metal Seal, Plug-in/Non Plug-in Series **VFS2000**

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output) Serial Transmission System

VV5FS2-01S Model - Stations Symbol - Port size -X460



D side Stations (1) (2) (3) (4) (5) (6) (7) (8) ... (n) U side



* Use a driproof plug assembly (AXT100-B04A) for the unused conduit port (G 1/2).

EX123□: 2 x G 1/2
EX124□: 4 x G 1/2
Electrical entry

Dimensions

L \ n	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
L ₁	131	159	187	215	243	271	299	327	355	383	411	439	467	495	523	551
L ₂	140	168	196	224	252	280	308	336	364	392	420	448	476	504	532	560

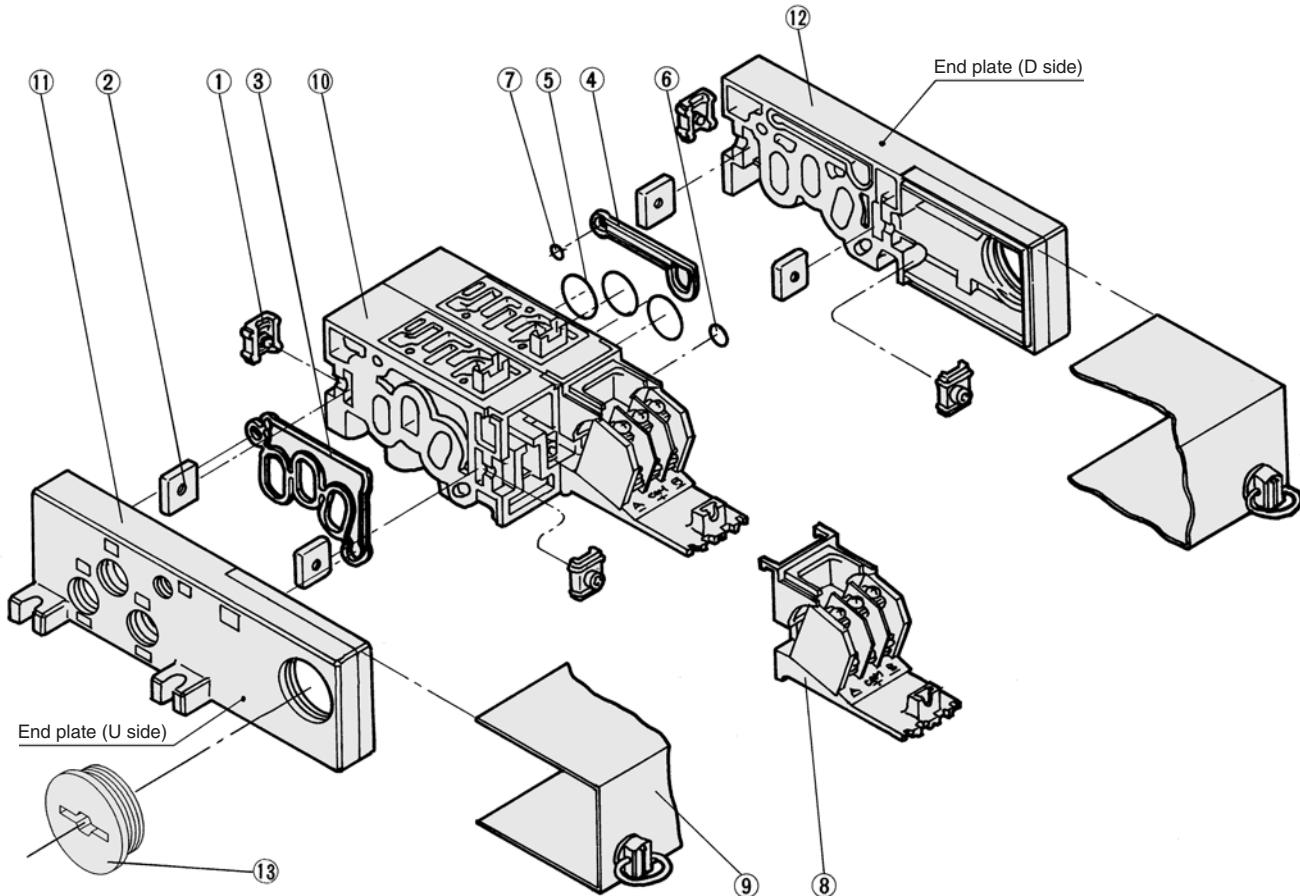
Note) Actual number of manifold base stations: Add 2 SI unit mounting stations to the number of valve stations.

Formula $L_1 = 28n + 47$ $L_2 = 28n + 56$
n: Stations (Max. 18 stations)

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS2000

Manifold Base Construction — Plug-in type, Non plug-in type



Replacement Parts

No.	Description	Material	Part no.
1	Connection fitting A	Steel plate	AXT625-4-1#1
2	Connection fitting B	Steel plate	AXT625-5
3	Gasket A	NBR	AXT625-17
4	Gasket B	NBR	AXT625-16
5	O-ring	NBR	18 x 15 x 1.5
6	O-ring	NBR	10.5 x 7.5 x 1.5
7	O-ring	NBR	8 x 5 x 1.5
	Adapter plate	Resin	For 01 AXT625-6
8	Adapter plate assembly	—	For 01T AXT625-28-1A (Terminal section with adapter plate)
	Adapter plate	Resin	For 01C AXT625-28-1 For 01F VVF2000-26-6 For 01S AXT625-6

No.	Description	Material	Part no.
9	Junction cover assembly	—	For 01 AXT625-7A
			For 01T AXT625-28-3A
			For 01T1 AXT625-28-7A- [Stations]
			For 01C VVF2000-26-5A- [Stations]
			For 01S AZ738-10A- [Stations]
13	Rubber plug	NBR	For 01 AXT333-12
			For 01T AXT625-22
	Plug	—	For 01 W EXP22S

- For increasing the manifold bases, please order the manifold block assembly number of the principle number assembly ⑩.
- For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.



Note) Manifold Base/Construction: Plug-in type with terminal block.

Replacement Parts: Sub Assembly

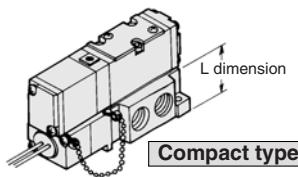
No.	Description	Assembly part no.	Component parts	Applicable manifold base
10	Manifold block assembly	AXT625-01A- ₁ ^{Note} ₂	Manifold block ⑩, Metal joint ①, ②, O-ring ⑤, ⑥, ⑦ Junction cover, Adapter plate, Pin housing, Guide, Insert plug lead wire	Plug-in type With attachment plug lead wire
		AXT625-20A- ₁ ^{Note} ₂	Manifold block ⑩, Metal joint ①, ②, O-ring ⑤, ⑥, ⑦ Terminal ⑧, Junction cover ⑨, Adapter plate, Pin housing, Guide	Plug-in type With terminal block
		AXT625-10A- ₁ ^{Note} ₂	Manifold block ⑩, Metal joint ①, ②, O-ring ⑤, ⑥, ⑦	Non plug-in type
11	End plate (U side) assembly	AXT625-2A	End plate (U) ⑪, Metal joint ①, ②, Gasket A ③, Guard ⑬	Plug-in type With attachment plug lead wire
		AXT625-2A-20	End plate (U) ⑪, Metal joint ①, ②, Gasket A ③, Guard ⑬	Plug-in type With terminal block
		AXT625-2A-10	End plate (U) ⑪, Metal joint ①, ②, Gasket A ③, Guard ⑬	Non plug-in type
12	End plate (D side) assembly	AXT625-3A	End plate (D) ⑫, Metal joint ①, ②, Gasket B ④, Guard ⑬, Steel ball	Plug-in type With attachment plug lead wire
		AXT625-3A-20	End plate (D) ⑫, Metal joint ①, ②, Gasket B ④, Guard ⑬, Steel ball	Plug-in type With terminal block
		AXT625-3A-10	End plate (D) ⑫, Metal joint ①, ②, Gasket B ④, Guard ⑬, Steel ball	Non plug-in type

Note) 1: A, B port size Rc 1/8, 2: A, B port size Rc 1/4

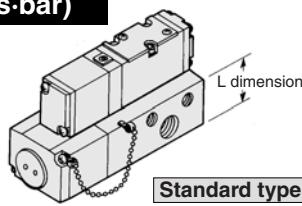


Light Compact Type Sub-plate/C: 2.8 dm³/(s·bar)

C: 2.2 dm³/(s·bar)



C: 2.8 dm³/(s·bar)



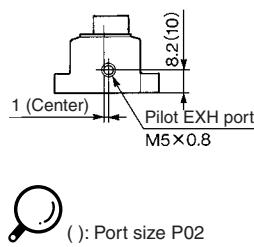
Sub-plate

Type	L dimension (mm)	Mass (kg)
Compact type	25.5	0.13
Standard type	31	0.2

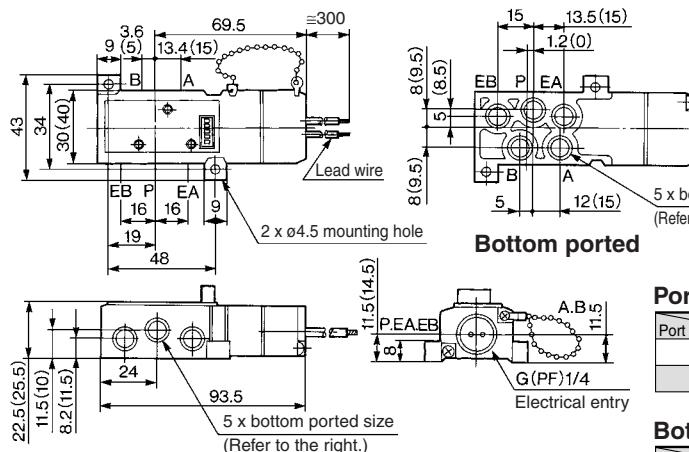
Sub-plate — Compact: Plug-in, Grommet (With attachment plug lead wire)

VFS2□00-□F-(B) P01
P02

Sub-plate assembly part no.: VFS2000-CP-(B) 01 (01: Rc 1/8, 02: Rc 1/4)



(): Port size P02



Bottom ported

Port Size

Port size	Port	P, A, B	EA, EB
P01	Rc 1/8	Rc 1/8	
P02	Rc 1/4	Rc 1/8	

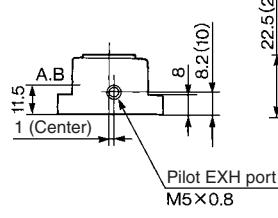
Bottom Ported Size

Port size	Port	P, A, B	EA, EB
BP02	Rc 1/8, 1/4	Rc 1/8	

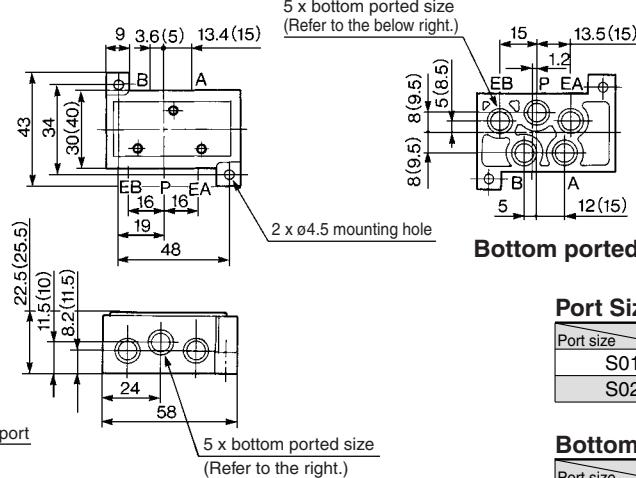
Sub-plate — Compact: Non plug-in

VFS2□10-□□-(B) S01
S02

Sub-plate assembly part no.: VFS2000-CS-(B) 01 (01: Rc 1/8, 02: Rc 1/4)



(): Port size S02



Bottom ported

Port Size

Port size	Port	P, A, B	EA, EB
S01	Rc 1/8	Rc 1/8	
S02	Rc 1/4	Rc 1/8	

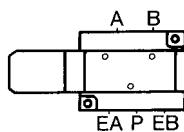
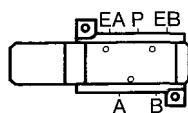
Bottom Ported Size

Port size	Port	P, A, B	EA, EB
BS02	Rc 1/8, 1/4	Rc 1/8	

Precautions Please pay attention to piping port location of sub-plate.

VFS2□□0-□□-P01/02: Compact type

VFS2□□0-□□-01: Standard type



Electrical Connection

Compact type, plug-in type grommet sub-plate (With attachment plug lead wire)

- The attachment plug lead wire is attached to the manifold block and lead wire is plugged in with valve side as shown in the following list. Please connect with corresponding power side.

	Solenoid	A side	B side
Lead wire color	Red	Black	Brown

- There is no polarity.

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

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

Series **VFS3000** CE

Model

Type of actuation		Model		Port size Rc	Flow characteristics						Max. operating cycle (cpm)	Response time (ms)	Mass (kg)				
					1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)									
		Plug-in	Non plug-in		C [dm ³ /(s-bar)]	b	Cv	C [dm ³ /(s-bar)]	b	Cv							
2 position	Single	VFS3100	VFS3110	1/4	6.0	0.15	1.4	5.8	0.12	1.3	1200	20 or less	0.31				
				3/8	7.3	0.23	1.8	6.8	0.12	1.6							
		VFS3200	VFS3210	1/4	6.0	0.15	1.4	5.8	0.12	1.3	1500	15 or less	0.41				
				3/8	7.3	0.23	1.8	6.8	0.12	1.6							
	Closed center	VFS3300	VFS3310	1/4	5.8	0.21	1.4	5.4	0.14	1.2	600	40 or less	0.43				
				3/8	6.8	0.22	1.7	6.3	0.12	1.5							
	Exhaust center	VFS3400	VFS3410	1/4	6.1	0.23	1.4	5.0	0.14	1.2	600	40 or less	0.43				
				3/8	7.4	0.20	1.8	5.6	0.18	1.3							
	Pressure center	VFS3500	VFS3510	1/4	6.0	0.22	1.5	5.8	0.16	1.3	600	40 or less	0.43				
				3/8	7.2	0.19	1.8	7.1	0.18	1.8							
3 position	Double check	VFS3600	VFS3610	1/4	4.0	—	—	3.5	—	—	600	50 or less	0.91				
				3/8	4.0	—	—	3.7	—	—							

 Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency. Note 2) Based on JIS B 8375-1981 (the value at supply press. 0.5 MPa). Note 3) The figures in the above list are for without sub-plate. In the case of with plug-in sub-plate and with non plug-in sub-plate, add 0.30 kg and 0.27 kg respectively. Note 4) "Note 1" and "Note 2" are with controlled clean air.

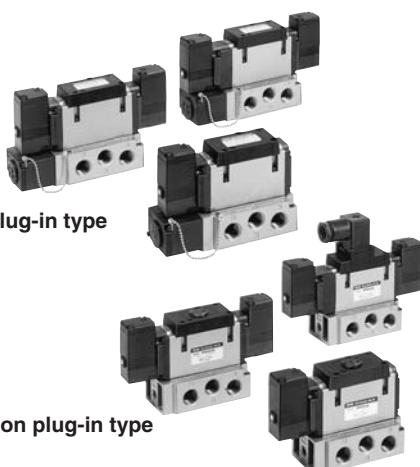
Compact yet provides a large flow capacity
3/8: C: 5.8 dm³/(s·bar)

Low power consumption: 1.8 W DC

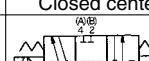
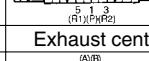
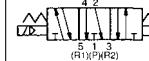
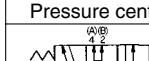
Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in



JIS Symbol

2 position	3 position
Single 	Closed center 
Double 	Exhaust center 
	Pressure center 
	Double check 

Standard Specifications

Standard specifications		
Fluid	Air/Inert gas	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	0.1 MPa	
Proof pressure	1.5 MPa	
Ambient and fluid temperature	-10 to 60°C ⁽¹⁾	
Lubrication	Non-lube ⁽²⁾	
Pilot valve manual override	Non-locking push type (Flush)	
Shock/Vibration resistance	150/50 m/s ² ⁽³⁾	
Enclosure	Type E: Dustproof (Level 0), Type F: Driproof (Level 2), Type D: Splashproof (Level 4) ⁽⁴⁾	
Electricity specifications		
Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC	
Allowable voltage fluctuation	-15 to +10% of rated voltage	
Coil insulation type	Class B or equivalent (130°C) ⁽⁵⁾	
Apparent power (Power consumption) AC	Inrush	5.6 VA/50 Hz, 5.0 VA/60 Hz
	Holding	3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
Power consumption DC	1.8 W (2.04 W: With light/surge voltage suppressor)	
Electrical entry	Plug-in type	Conduit terminal
	Non plug-in type	DIN terminal, Grommet terminal

 Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

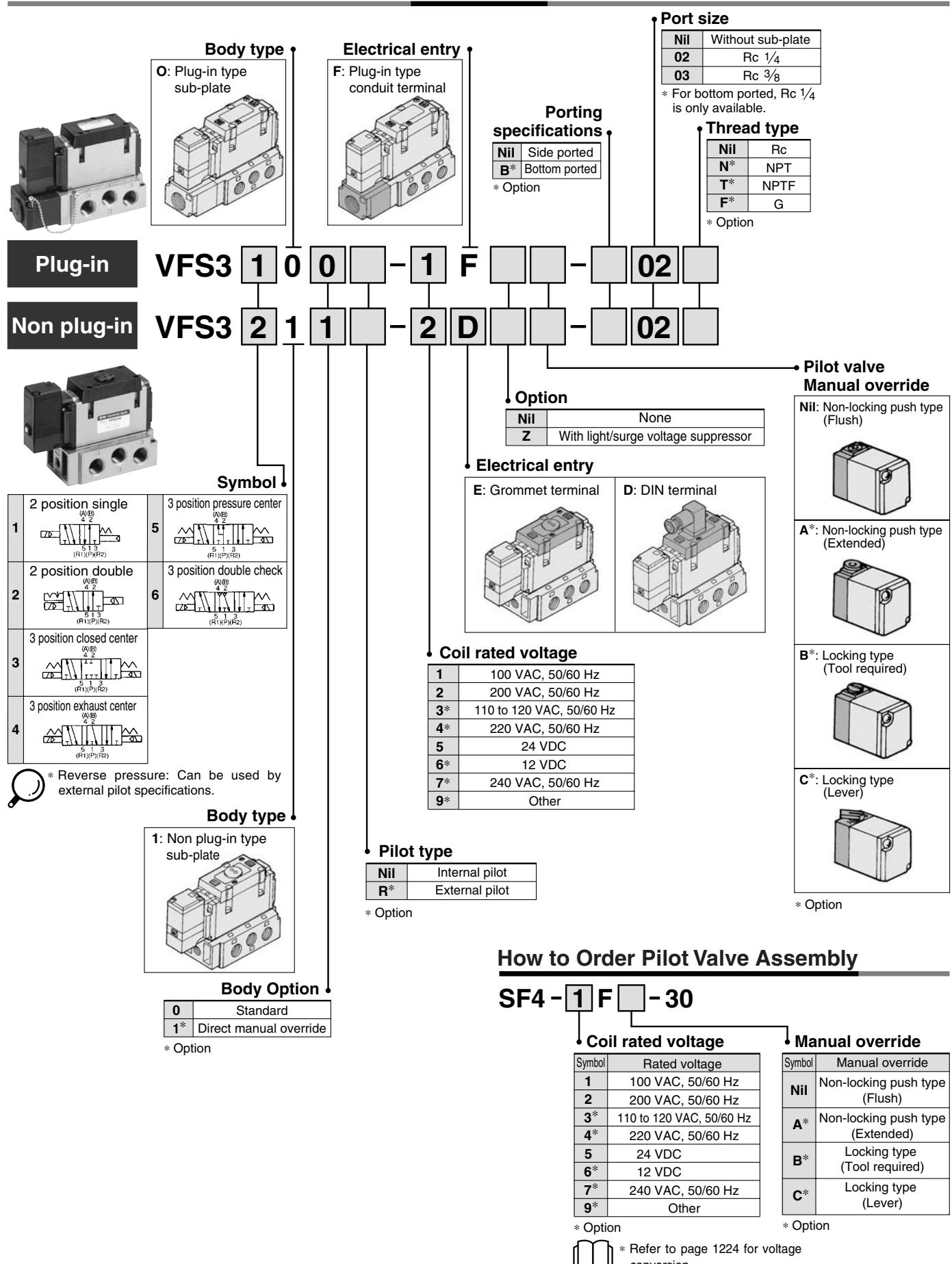
Option

Pilot type		External pilot <small>Note</small>
Manual override	Main valve	Direct manual override type
	Pilot valve	Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever)
Coil rated voltage		110 to 120, 220, 240 VAC (50/60 Hz) 12, 100 VDC
Porting specifications		Bottom ported
Option		With light/surge voltage suppressor

Note) Operating pressure: 0 to 1.0 MPa
Pilot pressure: 0.1 to 1.0 MPa

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS3000**

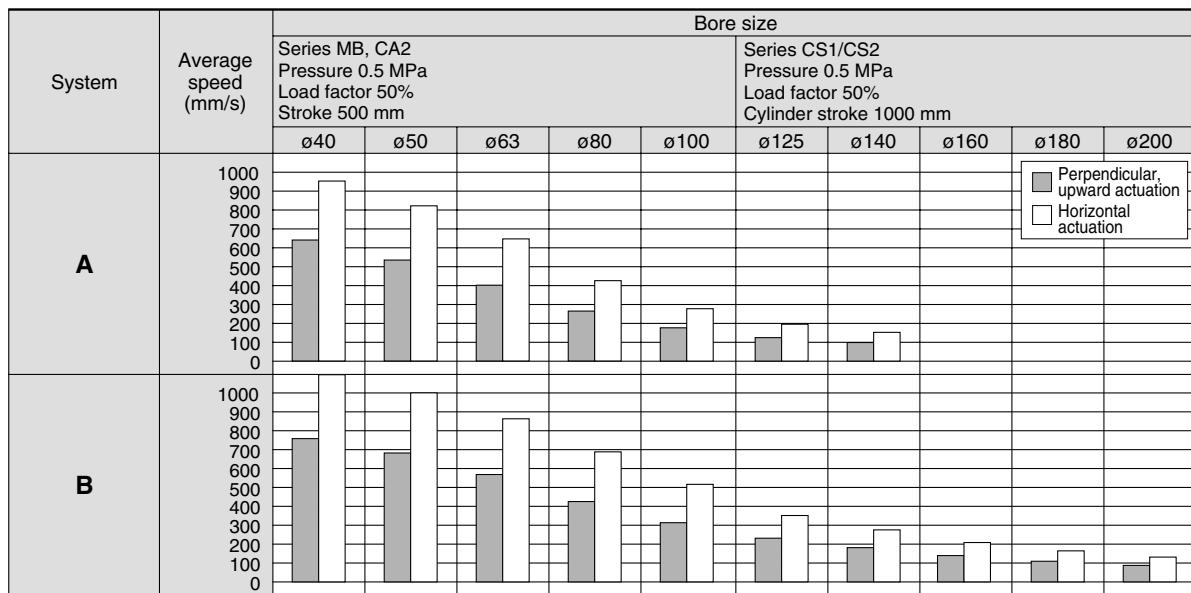
How to Order



Series VFS3000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC
Sizing Program.



System Components

System	Solenoid valve	Speed controller	Silencer	SGP (Steel pipe) Port size x Length
A	Series VFS3000 Rc 1/4	AS4000-02 (S = 24 mm ²)	AN200-02 (S = 35 mm ²)	6A x 1 m
B	Series VFS3000 Rc 3/8	AS420-03 (S = 73 mm ²)	AN300-03 (S = 60 mm ²)	10A x 1 m

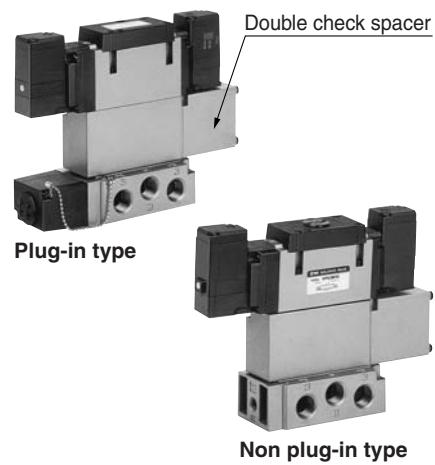


- * It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- * The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.
- * Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

Double Check Spacer/Specifications

Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



Specifications

Double check spacer part no.	Plug-in type	Non plug-in type
VVFS3000-22A-1	VVFS3000-22A-2	

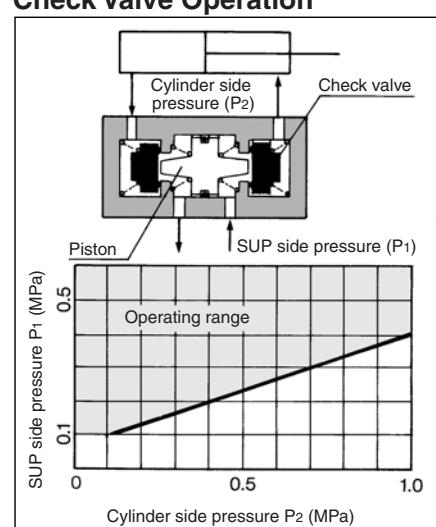
Applicable valve model

VFS3400-□F	VFS3410-□D VFS3410-□E
------------	--------------------------

Caution

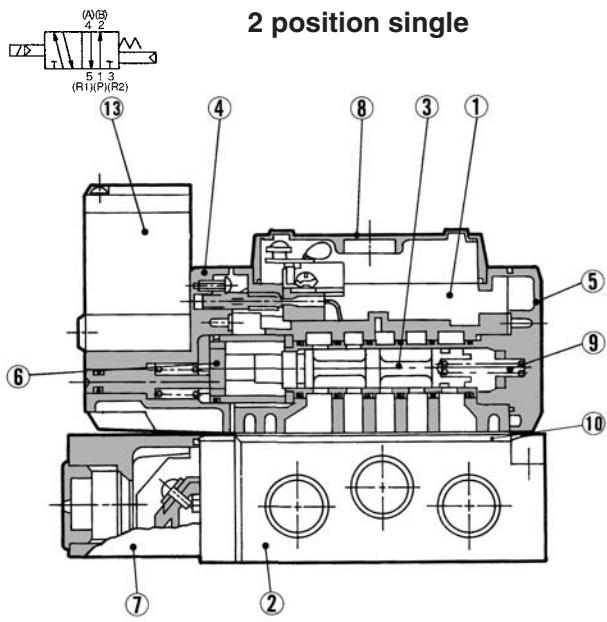
- In the case of 3 position double check valve (VFS36□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

Check Valve Operation

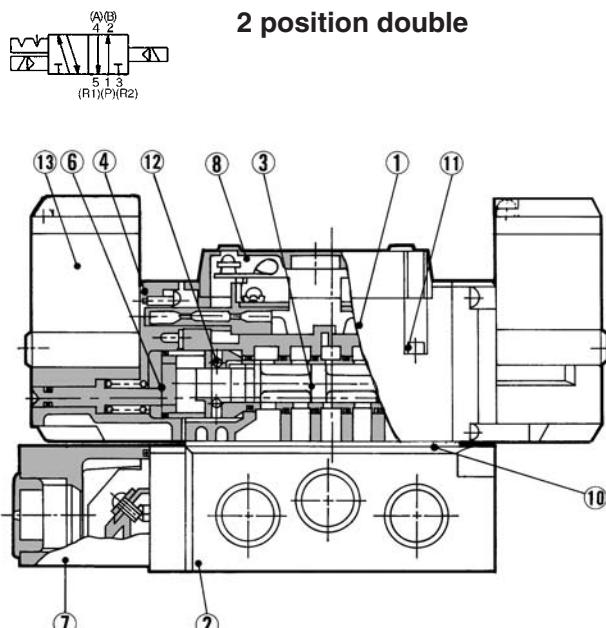


- The combination of VFS31⁰0, VFS32⁰0 and double check spacer can be used as prevention for falling at the stroke end but cannot hold the intermediate position of the cylinder.

Construction



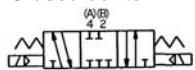
2 position single



2 position double

3 position closed center/exhaust center/pressure center

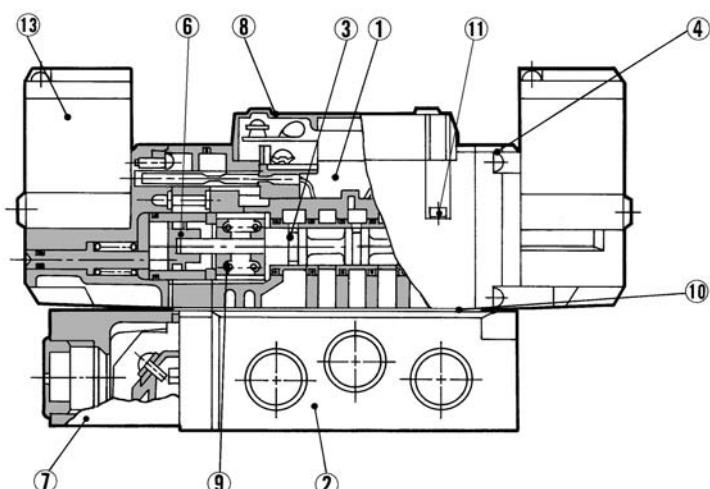
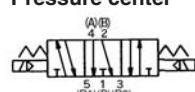
Closed center



Exhaust center



Pressure center



Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Sub-plate	Aluminum die-casted	Platinum silver
3	Spool/Sleeve	Stainless steel	—
4	Adapter plate	Resin	Black
5	End plate	Resin	Black
6	Piston	Resin	—
7	Junction cover	Resin	—
8	Light cover	Resin	—
9	Return spring	Stainless steel	—
10	Gasket	NBR	—
11	Hexagon socket head screw	Steel	—
12	Detent assembly	—	—
13	Pilot valve assembly	—	—

* Refer to "How to Order Pilot Valve Assembly" on page 1163.

Sub-plate Assembly Part No.

Plug-in	VFS3000-P- ⁰² ₀₃
Non plug-in	VFS3000-S- ⁰² ₀₃

* Mounting bolt and gasket are not included.

Sub-plate Assembly (For External Pilot) Part No.

Plug-in	VFS3000-P-R ⁰² ₀₃
Non plug-in	VFS3000-S-R ⁰² ₀₃

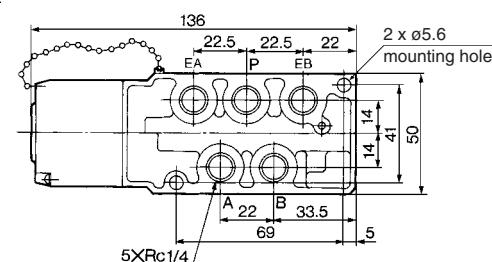
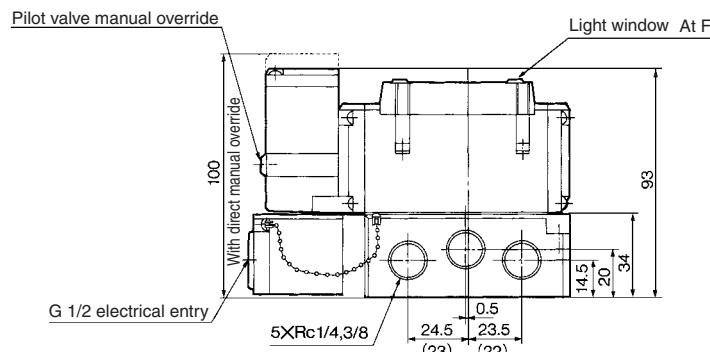
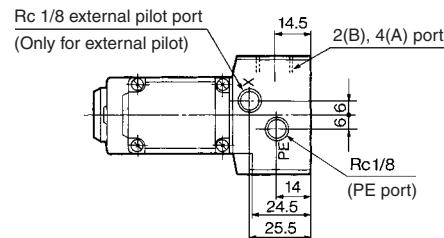
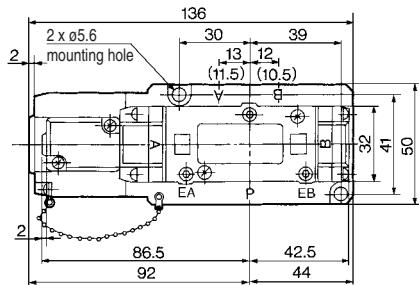
Part no. for mounting bolt and gasket
BG-VFS3000

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS3000

Plug-in — 2 Position single/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS3100-□F



Bottom ported

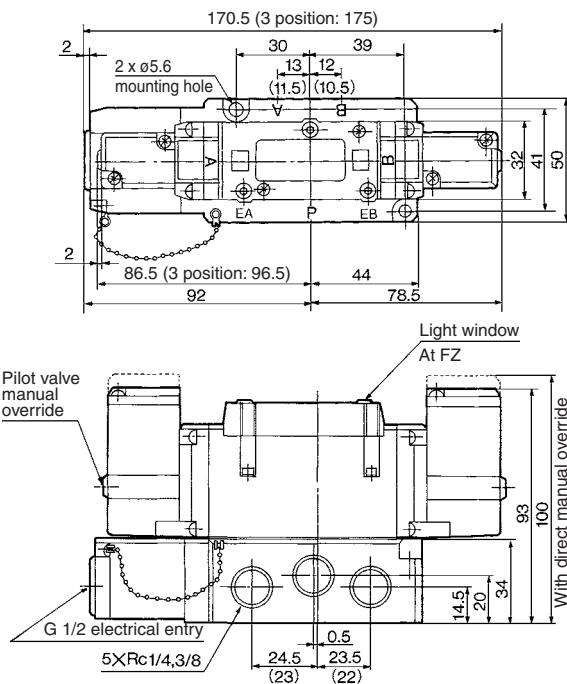
(): Rc 1/4

2 position double: VFS3200-□F

3 position closed center: VFS3300-□F

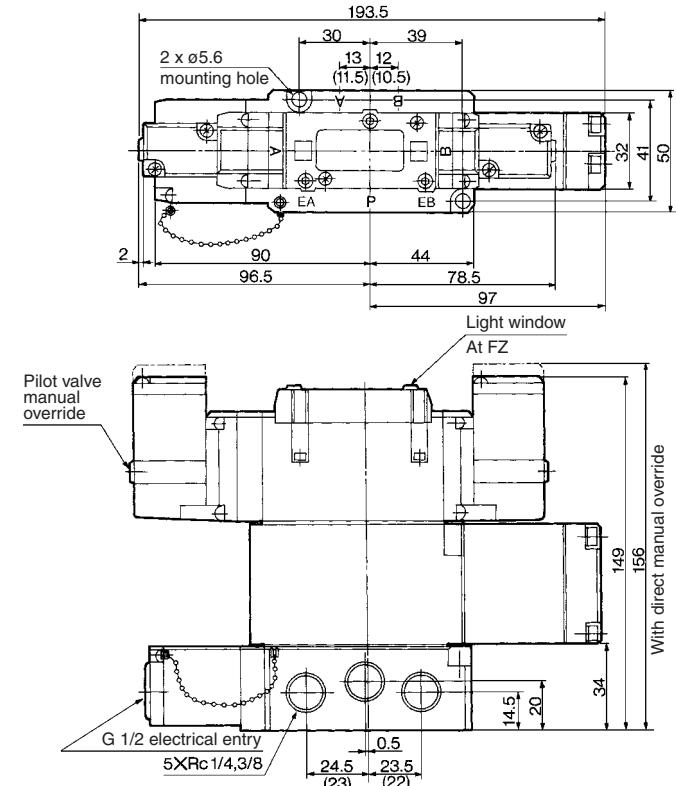
3 position exhaust center: VFS3400-□F

3 position pressure center: VFS3500-□F



(): Rc 1/4

3 position double check: VFS3600-□F

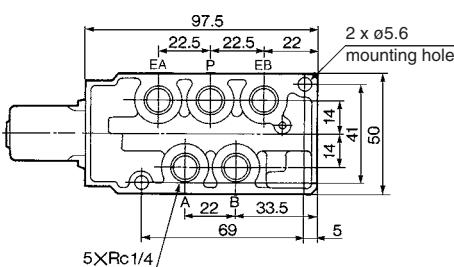
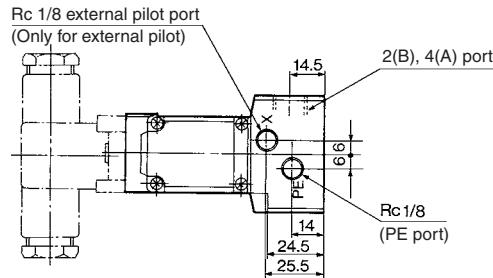
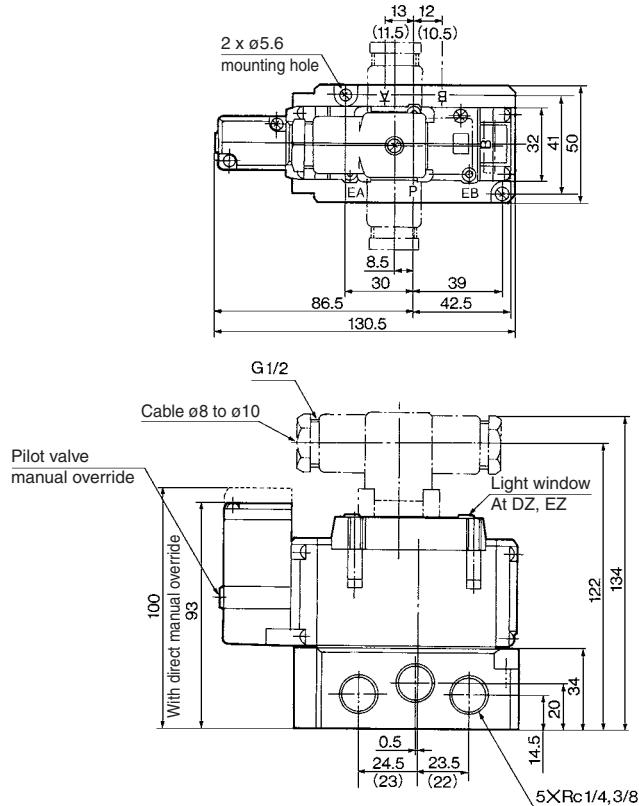


(): Rc 1/4

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS3000**

Non Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS3110-□E, VFS3110-□D

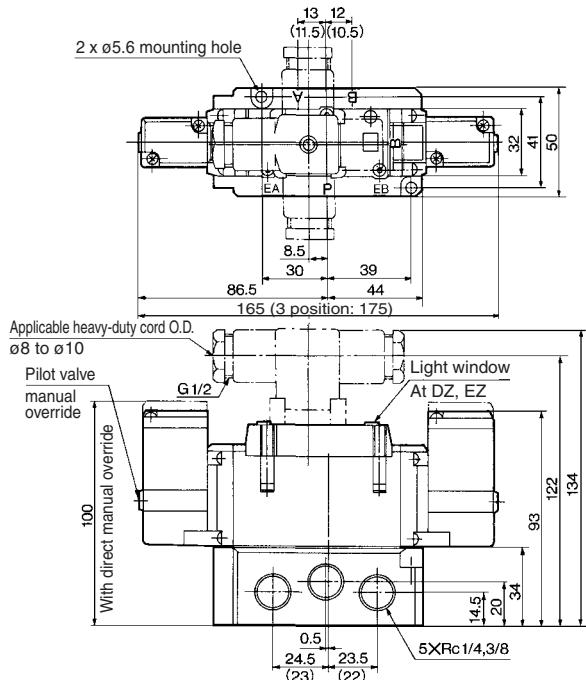


Bottom ported



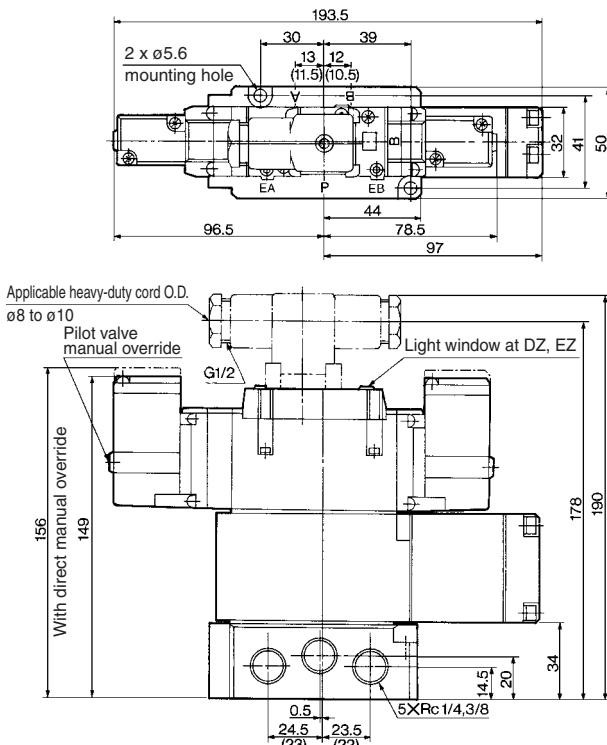
(): Rc 1/4

2 position double: VFS3210-□E, VFS3210-□D
3 position closed center: VFS3310-□E, VFS3310-□D
3 position exhaust center: VFS3410-□E, VFS3410-□D
3 position pressure center: VFS3510-□E, VFS3510-□D



(): Rc 1/4

3 position double check: VFS3610-□E, VFS3610-□D



(): Rc 1/4

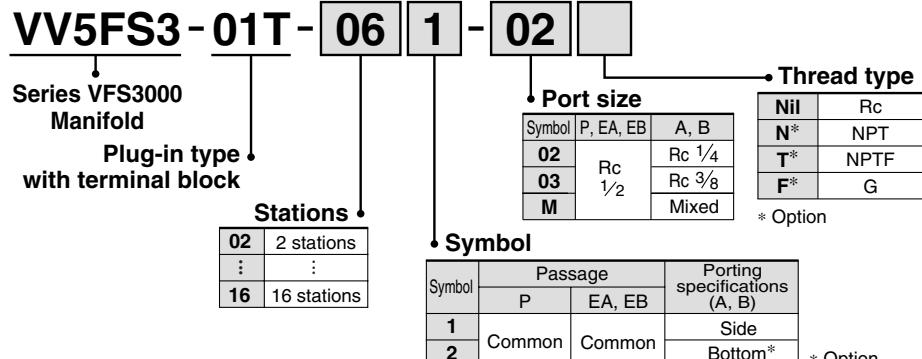
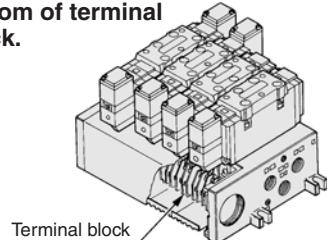
SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS3000

Manifold Specifications

Plug-in Type: With Terminal Block

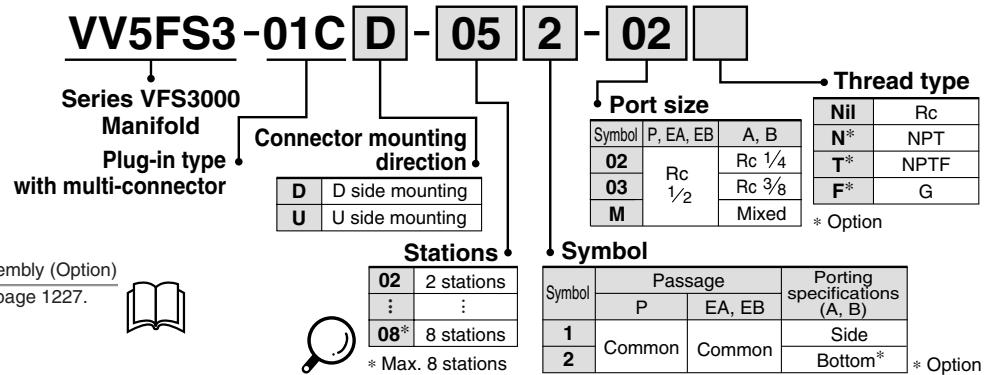
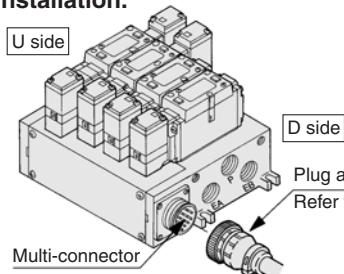
- Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



Plug-in Type: With Multi-connector

(Wiring specifications: Refer to page 1227.)

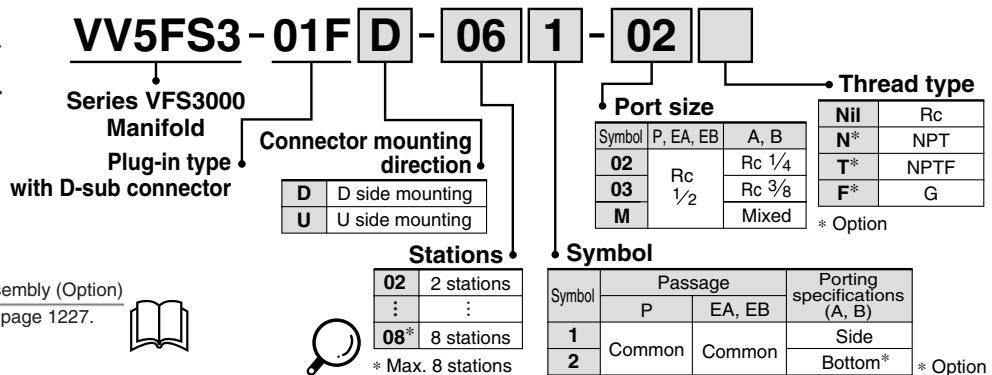
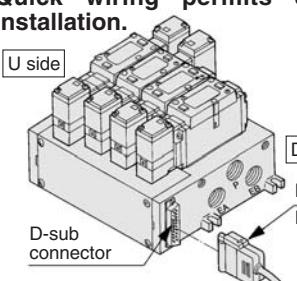
- Master connection of power and solenoid valves.
- Quick wiring permits easier installation.



Plug-in Type: With D-sub Connector

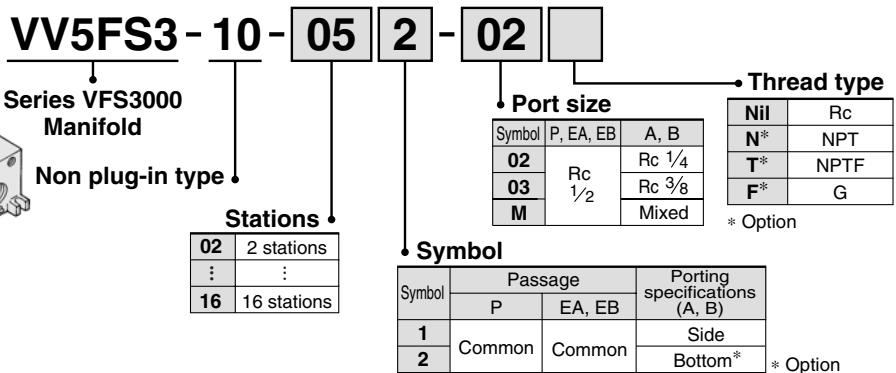
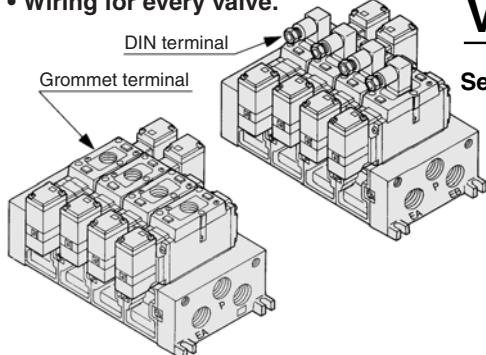
(Wiring specifications: Refer to page 1227.)

- Wide range of interchangeability (MIL Spec D-sub connector terminal 25 pcs attached.)
- Quick wiring permits easier installation.



Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS3000**

How to Order Manifold Assembly

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

<Example>

- Plug-in type with terminal block: 6 stations
(Manifold base) VV5FS3-01T-061-021
(2 position single) VFS3100-5FZ3
(2 position double) VFS3200-5FZ2
(Blanking plate) VVFS3000-10A1

<Example>

- Non plug-in type: 6 stations
(Manifold base) VV5FS3-10-061-031
(2 position single) VFS3110-5D5
(3 position exhaust center) VFS3410-5D1
(Individual EXH spacer) VVFS3000-R-03-21

Manifold Specifications

Base model	Wiring	Porting specifications A, B port	Port size Rc P, EA, EB	Rc A, B	Stations	Applicable valve model
Plug-in type VV5FS3-01 <input type="checkbox"/>	<ul style="list-style-type: none"> • With terminal block • With multi-connector • With D-sub connector 	Side/ Bottom	1/2 ⁽¹⁾	1/4, 3/8	2 to 10 ⁽²⁾	VFS3□00-□F
Non plug-in type VV5FS3-10	<ul style="list-style-type: none"> • DIN terminal • Grommet terminal 					VFS3□10-□D VFS3□10-□E

 Note 1) Appropriate silencer for EA, EB port: "AN403-04" (O.D. ø27).

 Note 2) With multi-connector, or with D-sub connector: 8 stations max.

Flow Characteristics at the Number of Manifold Stations (Operated individually)

Model	Passage/Stations		Station 1	Station 5	Station 10
	1 → 4/2 (P → A/B)	C [dm ³ /(s·bar)]	6.0	6.0	6.0
VV5FS3	b	0.20	0.20	0.20	0.20
	C _v	1.4	1.4	1.4	1.4
	4/2 → 5/3 (A/B → R1/R2)	C [dm ³ /(s·bar)]	7.0	7.0	7.0
	b	0.20	0.20	0.20	0.20
	C _v	1.8	1.8	1.8	1.8

 * Port size: Rc 3/8

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

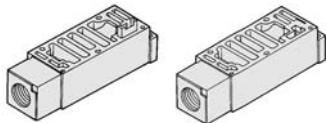
Series VFS3000

Manifold Option Parts Assembly

Individual SUP spacer

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

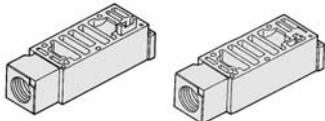
Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-P-03-1	VVFS3000-P-03-2



Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (common EXH type)

Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-R-03-1	VVFS3000-R-03-2



* SUP block plate

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

Body type	Plug-in type	Non plug-in type
Part no.	AXT636-1A	

* EXH block plate

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

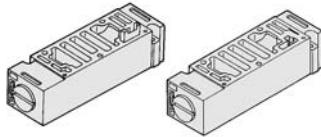
Body type	Plug-in type	Non plug-in type
Part no.	AXT636-1A	



Throttle valve spacer

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

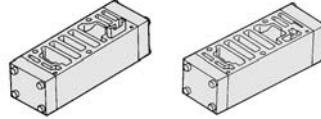
Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-20A-1	VVFS3000-20A-2



Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

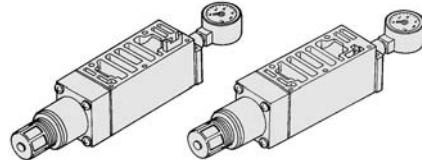
Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-22A-1	VVFS3000-22A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (Refer to page 1225 for "Flow Characteristics".)

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF3050-00-P-1	ARBF3050-00-P-2
A port regulation	ARBF3050-00-A-1	ARBF3050-00-A-2
B port regulation	ARBF3050-00-B-1	ARBF3050-00-B-2



Blanking plate

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

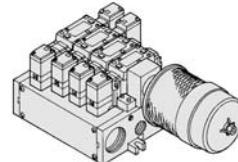
Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-10A	

Manifold Option

With exhaust cleaner

Plug-in type/Non Plug-in type

- Valve exhaust noise dampening: 35 dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.

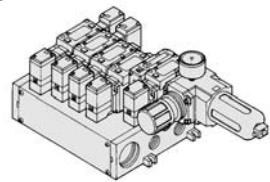


For details, refer to page 1173.

With control unit

Plug-in type/Non Plug-in type

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



For details, refer to page 1175.

Made to Order

Serial transmission kit manifold

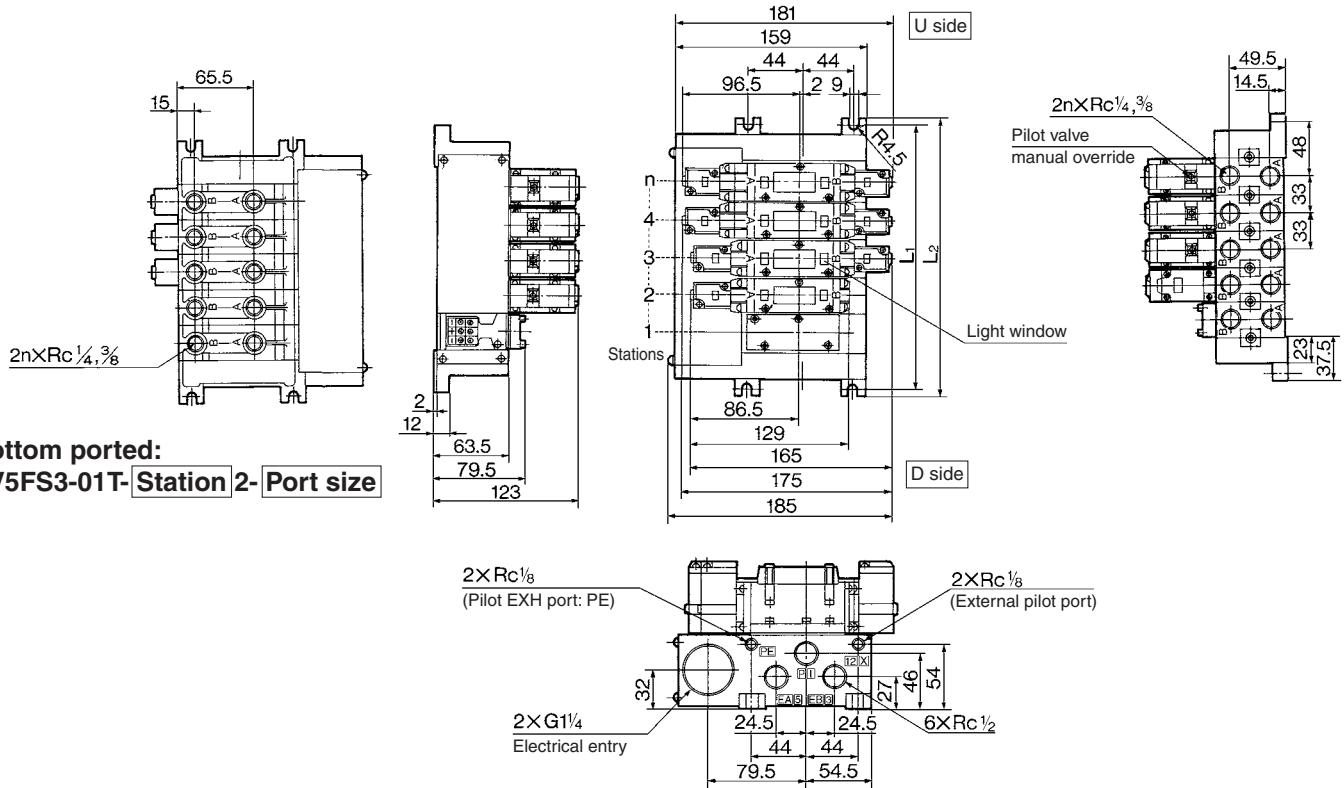
Plug-in type

- Solenoid valve wiring process reduced considerably.

For details, refer to page 1178.

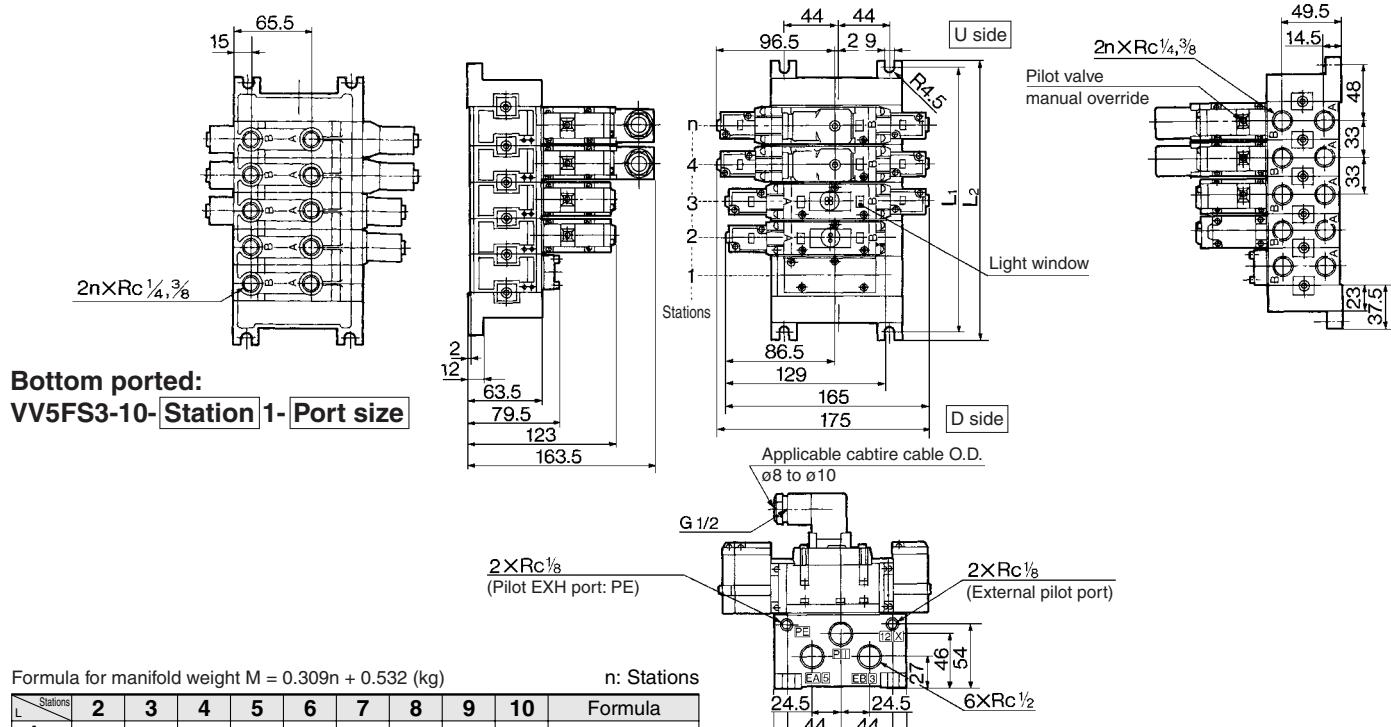
Manifold — Plug-in type, Non plug-in type

Plug-in type (With terminal block): VV5FS3-01T- Station 1- Port size



Formula for manifold weight $M = 0.405n + 0.665$ (kg) n: Station

Non plug-in type: VV5FS3-10- Station 1- Port size



Formula for manifold weight $M = 0.309n + 0.532$ (kg)

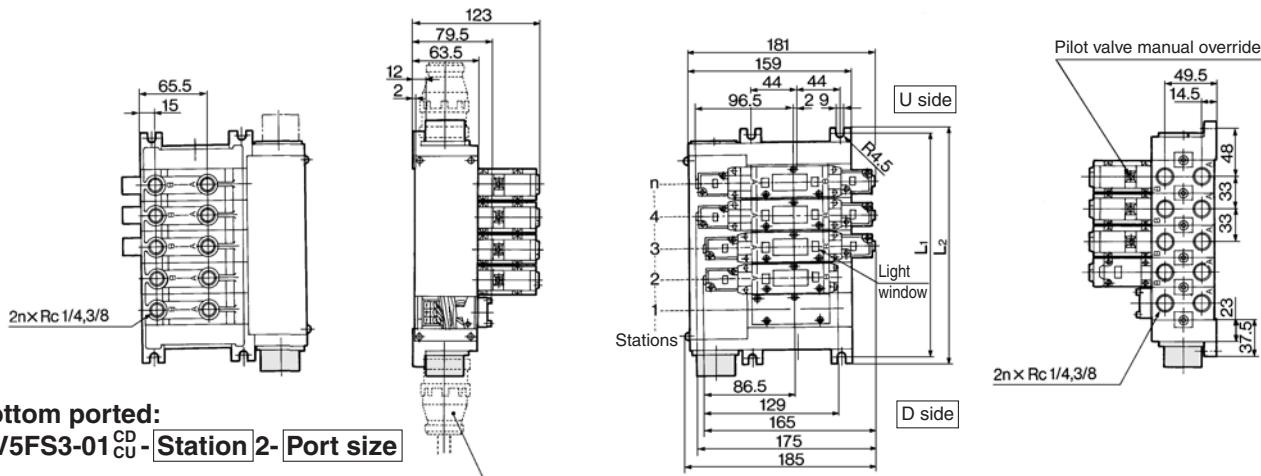
Stations	2	3	4	5	6	7	8	9	10	Formula
L1	129	162	195	228	261	294	327	360	393	$L1 = 33 \times n + 63$
L2	141	174	207	240	273	306	339	372	405	$L2 = 33 \times n + 75$

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS3000

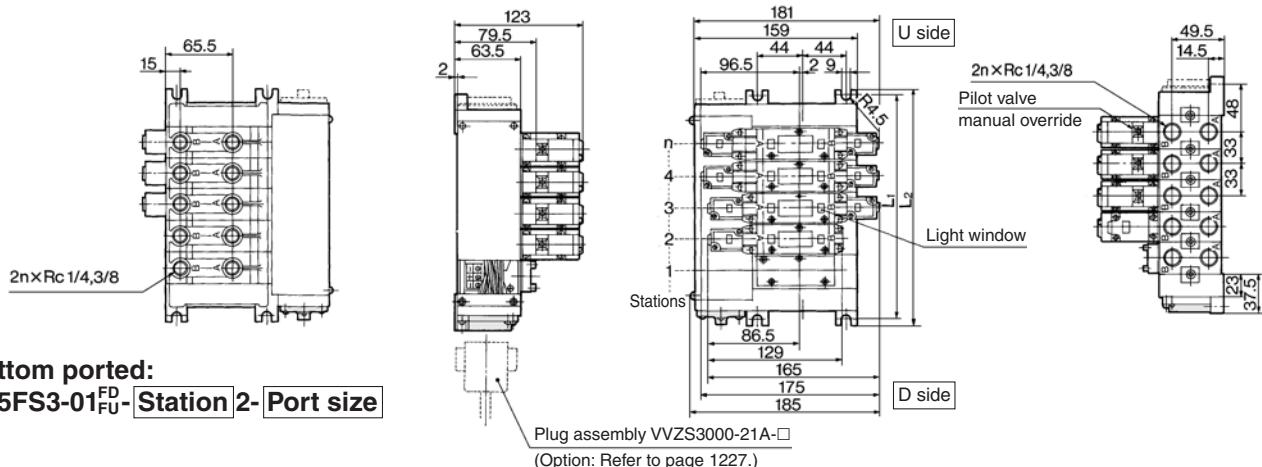
Manifold — Plug-in type with multi-connector/D-sub connector

Plug-in type with multi-connector: VV5FS3-01CD- Station 1- Port size , VV5FS3-01CU- Station 1- Port size



Formula for manifold weight $M = 0.41n + 0.753$ (kg) n: Station
 * Wiring specifications: Refer to page 1227.

Plug-in type with D-sub connector: VV5FS3-01FD- Station 1- Port size , VV5FS3-01FU- Station 1- Port size

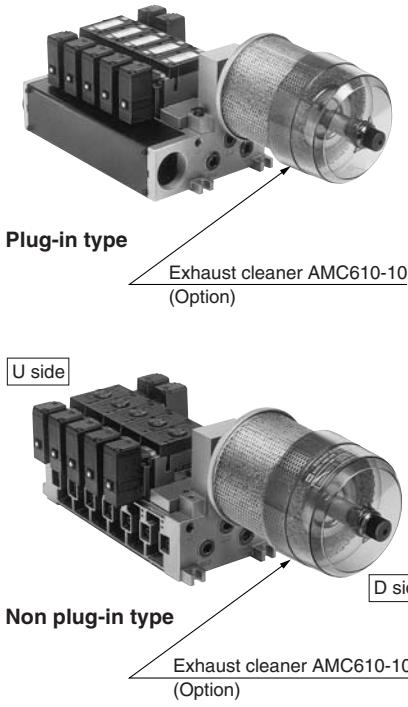


Formula for manifold weight $M = 0.41n + 0.677$ (kg) n: Station
 * Wiring specifications: Refer to page 1227.

L	Stations	2	3	4	5	6	7	8	Formula
L ₁		129	162	195	228	261	294	327	$L_1 = 33 \times n + 63$
L ₂		141	174	207	240	273	306	339	$L_2 = 33 \times n + 75$

Manifold with Exhaust Cleaner

- Serves to protect working environment.
- Valve exhaust noise dampening: 35 dB or more.
- Collection rate of drainage and oil mist: 99.9% or more.
- Piping work is reduced.



Manifold Specifications

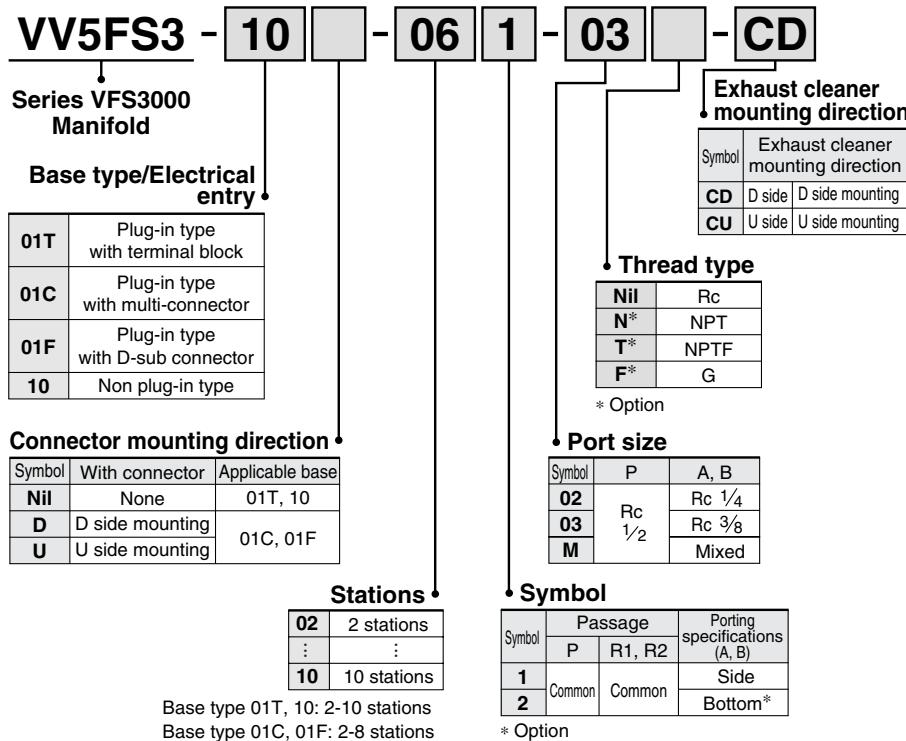
Manifold	Plug-in type: VV5FS3-01□	Non plug-in type: VV5FS3-10
Wiring	With terminal blocks With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS3□00-□F	VFS3□10-□D, VFS3□10-□E
Porting specifications	Common SUP, Common EXH	
Rc	2(B), 4(A) port 1(P), 3(R2), 5(R1) port	1/4, 3/8 P: 1/2, EXH: 1
Stations	2 to 10 ⁽¹⁾	
Applicable exhaust cleaners	AMC610-10 (Connecting port size R 1) ⁽²⁾	



Note 1) With multi-connector, or with D-sub connector: 8 stations max.

Note 2) Exhaust cleaner "AMC610-10" is not attached.

How to Order



SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

- Plug-in type with terminal block (6 stations)

(Manifold base)	VV5FS3-01T-061-03-CD	1
(2 position single)	* VFS3100-5FZ	3
(2 position double)	* VFS3200-5FZ	2
(Blanking plate)	* VVFS3000-10A	1
(Exhaust cleaner)	AMC610-10	1
- Non plug-in type (6 stations)

(Manifold base)	VV5FS3-10-061-03-CU	1
(2 position single)	* VFS3110-5E	3
(2 position double)	* VFS3210-5E	2
(Blanking plate)	* VVFS3000-10A	1
(Exhaust cleaner)	AMC610-10	1

→ The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

Caution

When using an exhaust cleaner, mount it downwards.

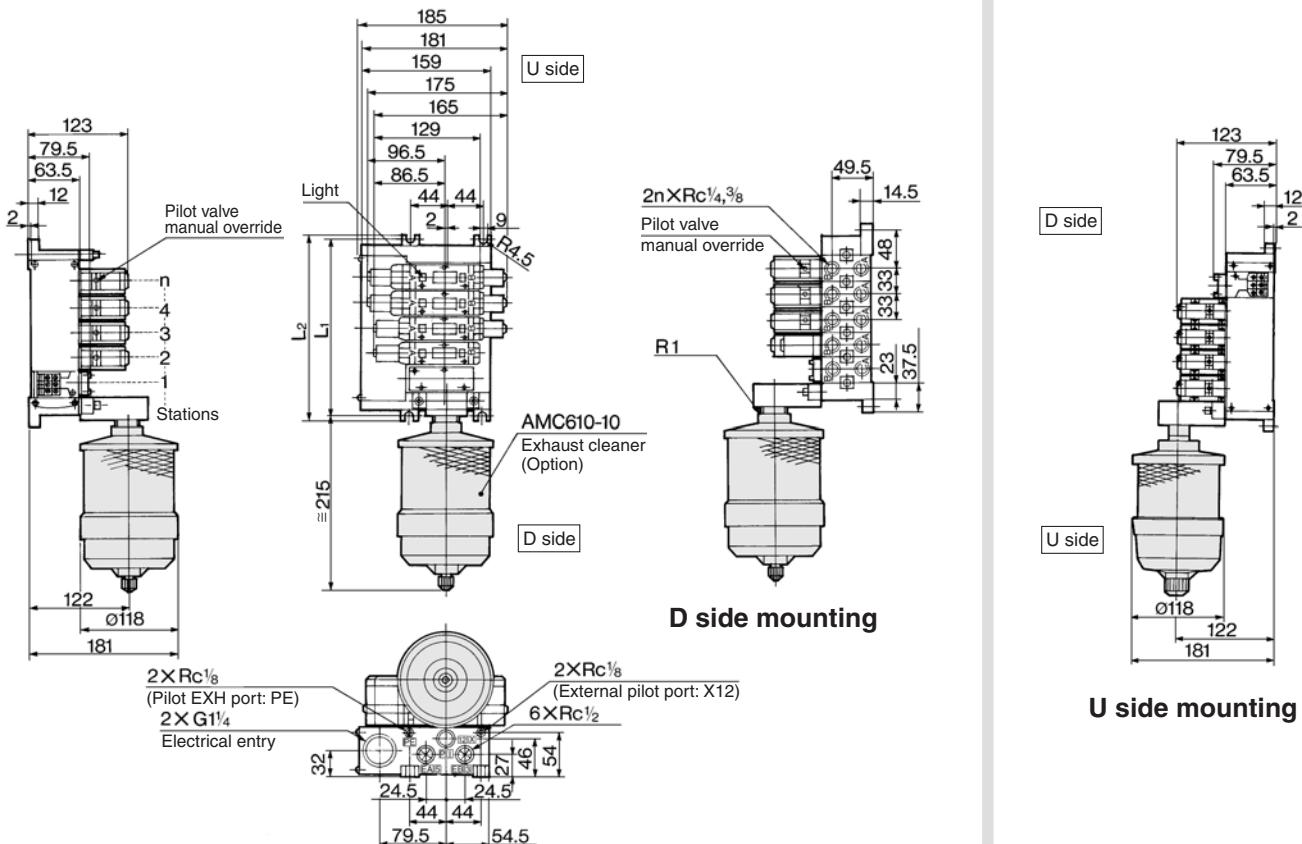


* For details about exhaust cleaners, refer to Best Pneumatic Vol. 6.

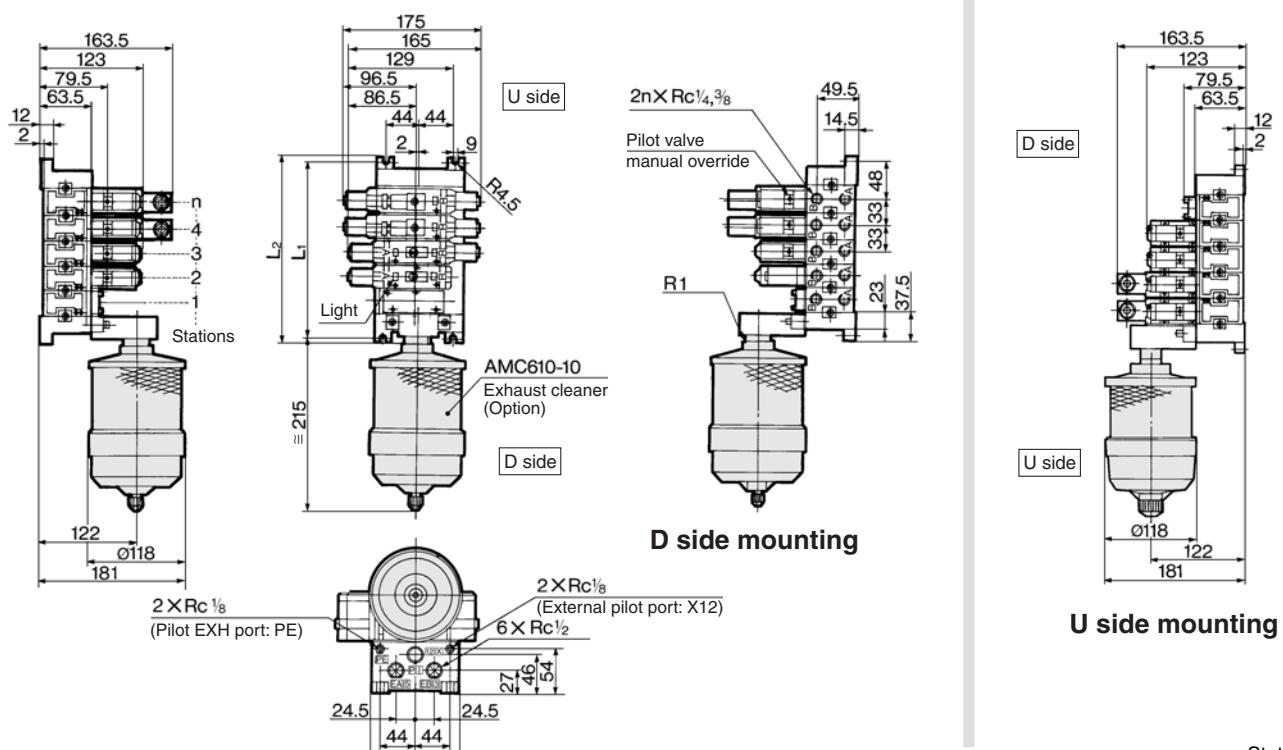
Series VFS3000

Manifold with Exhaust — Plug-in type, Non plug-in type

Plug-in type: VV5FS3-01T-Station 1-Port size-^{CD}_{CU}



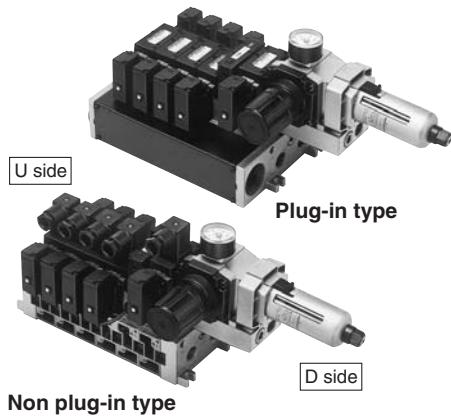
Non plug-in type: VV5FS3-10-Station 1-Port size-^{CD}_{CU}



L	Stations	2	3	4	5	6	7	8	9	10	Formula
L₁	129	162	195	228	261	294	327	360	393	L ₁ = 33 x n + 63	
L₂	141	174	207	240	273	306	339	372	405	L ₂ = 33 x n + 75	

Manifold with Control Unit

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



Caution

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

Manifold Specifications

Manifold	Plug-in type: VV5FS3-01□	Non plug-in type: VV5FS3-10
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS3□00-□F	VFS3□10-□D, VFS3□10-□E
Porting specifications	Common SUP, Common EXH	
Rc	2(B), 4(A) port 1(P), 3(R2), 5(R1) port	1/4, 3/8 1/2
Stations		2 to 10 *

* With multi-connector, or with D-sub connector: 8 stations max.

Control Unit Specifications

Air filter (With auto-drain/With manual drain)	
Filtration degree	5 µm
Regulator	
Set pressure (Outlet pressure)	0.05 to 0.85 MPa
Pressure switch ⁽¹⁾	
Set pressure range: OFF	0.1 to 0.6 MPa
Differential	0.08 MPa or less
Contact	1a
Indicator light	LED (RED)
Max. switch capacity	2 VA AC, 2 W DC
Max. operating current	24 VAC/DC or less: 50 mA 100 VAC/DC: 20 mA
Air release valve (Single only)	
Operating pressure range	0.1 to 1.0 MPa

Control Unit/Option

Air release valve spacer ⁽²⁾	<Plug-in type> VVFS3000-24A-1R (D side mounting)
	<Non plug-in type> VVFS3000-24A-2R (D side mounting)
Pressure switch ⁽³⁾	IS1000P-2-1
Blanking plate	Filter regulator MP2-3 Pressure switch MP3-2 Release valve VVFS3000-24A-10
Filter element	INA-13-854-12-5B

Note 1) Voltage: 24 VDC to 100 VAC
Inner voltage drop: 4 V

Note 2) Combination of valve VFS31□□ (single) and a release valve spacer can be used an air release valve.

Note 3) The non plug-in type cannot be mounted afterwards.

How to Order

VV5FS3 - 10 - 08 1 - 02 - AP

Series VFS3000
Manifold

Base type/Electrical entry

01T	Plug-in type with terminal block
01C	Plug-in type with multi-connector
01F	Plug-in type with D-sub connector
10	Non plug-in type

Connector mounting direction

Symbol	With connector	Applicable base
Nil	None	01T, 10
D	D side mounting	01C, 01F
U	U side mounting	

Stations •

02	2 stations
⋮	⋮
10	10 stations

Base type 01T, 10:
2 to 10 stations
Base type 01C, 01F:
2 to 8 stations

Symbol •

Symbol	Passage	Porting specifications (A, B)
1	P	EA, EB
2	Common	Common

* Option

Port size •

Symbol	P, EA, EB	A, B
02	Rc 1/2	Rc 1/4
03		Rc 3/8
M		Mixed

Thread type •

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Air release valve coil rating

Nil	None (F, G type only)
1	100 VAC, 50/60 Hz
5	24 VDC
9	Other

Control unit type

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

How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

- Plug-in type with terminal block — In order to mount control unit, it requires 2 stations.
- (Manifold base) VV5FS3-01T-081-03-AP5 1
- (2 position single) * VFS3100-5FZ 4
- (2 position double) * VFS3200-5FZ 2
- Non plug-in type — In order to mount control unit, it requires 2 stations.
- (Manifold base) VV5FS3-10-061-03-A 1
- (2 position single) * VFS3110-5D 4

→ The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

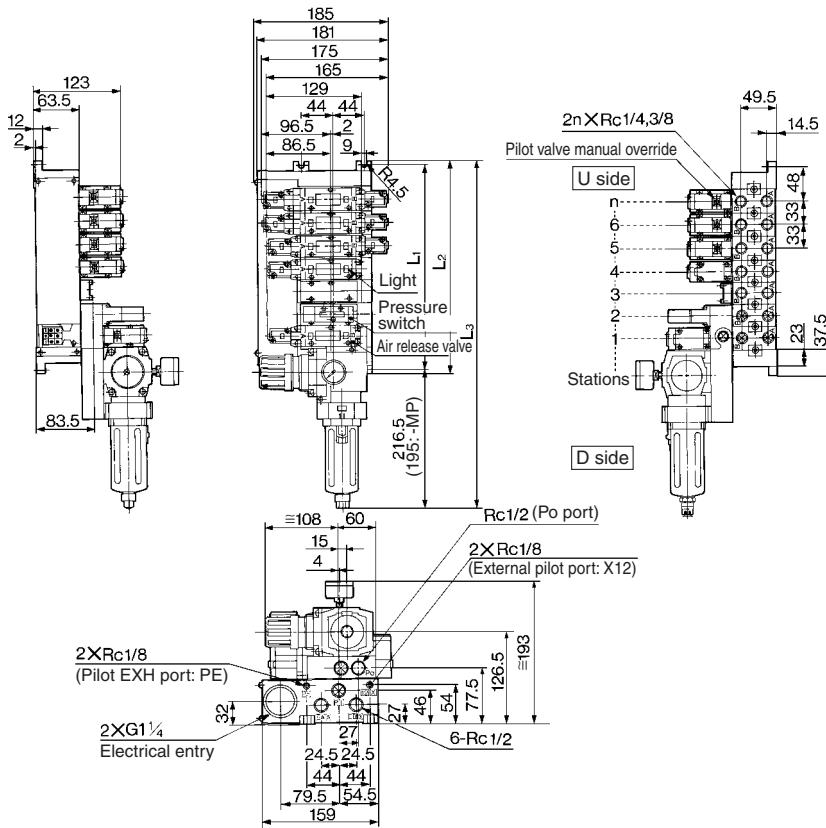
VFR

VQ7

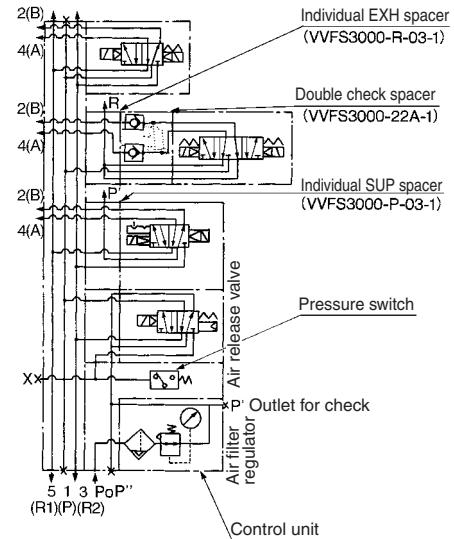
Series VFS3000

Manifold with Control unit — Plug-in type, Non plug-in type

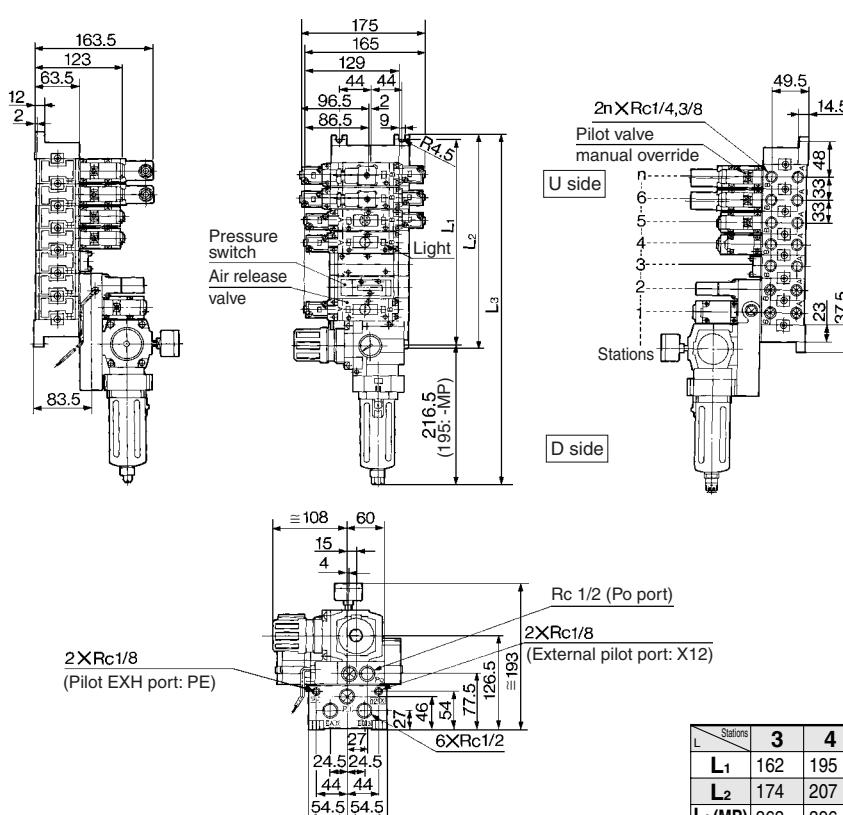
Plug-in type: VV5FS3-01T- Station 1- Port size -AP Voltage for release valve



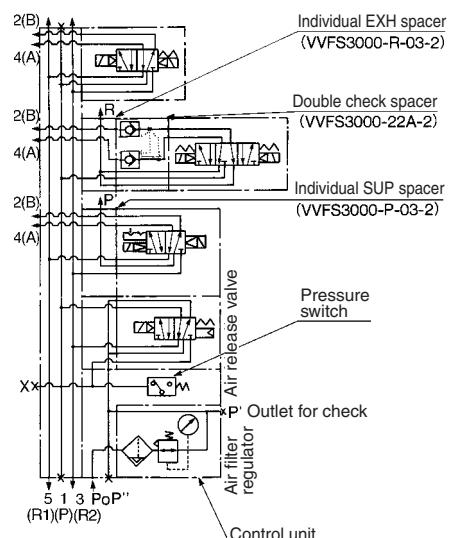
Example for manifold



Non plug-in type: VV5FS3-10- Station 1- Port size -AP Voltage for release valve



Example for manifold



L	3	4	5	6	7	8	9	10	Formula
L₁	162	195	228	261	294	327	360	393	$L_1 = 33 \times n + 63$
L₂	174	207	240	273	306	339	372	405	$L_2 = 33 \times n + 75$
L₃(MP)	363	396	429	462	495	528	561	594	$L_3 = 33 \times n + 264$
L₃(AP)	384.5	417.5	450.5	483.5	516.5	549.5	582.5	615.5	$L_3 = 33 \times n + 285.5$

Made to Order

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output)
Serial Transmission System

How to Order

How to Order Manifold

VV5FS3-01S V-08 1-02 - X279

• **Plug-in type**
Serial transmission kit

Stations

2	2 stations
:	:
17	17 stations

Note 1) Max. 17 stations. Add 1 station for serial unit mounting.

Note 2) Max. 17 stations for all-single wiring. (No. of valves: 16)

For the standard double wiring, the maximum number of stations is 9. (No. of valves: 8)

Port size

Symbol	P, R1, R2	A, B
02		Rc 1/4
03	Rc 1/2	Rc 3/8
M		Mixed

• Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

* For bottom ported: Rc 1/8 only

• Combination symbol

Symbol	Port specification		Piping specification A, B
	P	R1, R2	
1	Common	Common	Side
2*			Bottom

* Option

• Applicable models

Symbol	SI unit part no.	Description
0	—	Without SI unit
F1	EX123U-SUW1	NKE Corporation: Uni-wire System (16 outputs)
H	EX123U-SUH1	NKE Corporation: Uni-wire H System (16 outputs)
J1	EX123U-SSL1	SUNX Corporation: S-LINK System (16 outputs)
J2	EX123U-SSL2	SUNX Corporation: S-LINK System (8 outputs)
Q	EX124U-SDN1	DevieNet (2 power supply systems)
R1	EX124U-SCS1	OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems)
R2	EX124U-SCS2	OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)
V	EX124U-SMJ1	CC-Link (2 power supply systems)

Refer to pages 1653 to 1655 for the details of the EX123/124 integrated type (for output) serial transmission system.

Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

D side		U side									
SI unit output no.		1	2	3	4	5	6	7	8	9	
Double	Double	Single	Single	Single	Double	Single	Single	Single		SI unit	
AB	AB	AB	AB	AB	AB	AB	AB	AB			

<Wiring Example 2> Single/Double mixed wiring (Option)

D side		U side										
SI unit output no.		1	2	3	4	5	6	7	8	9	10	
Double	Double	Single	Single	Single	Double	Single	Single	Double	Single	Double	Single	SI unit
AB	AB	A	A	A	AB	A	A	A	AB	A	AB	A

* Mixed wiring is available as an option. Use the manifold specification sheet to specify this.

How to Order Valves

VFS3 00 - 5 F

• Symbol

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
6	3 position double check

• Pilot valve manual override

Nil	Non-locking push type (Flush)
A	Non-locking push type (Extended)
B	Locking type (Tool required)
C	Locking type (Lever)

• Option

Nil	None
Z	With light/surge voltage suppressor

• Coil rated voltage

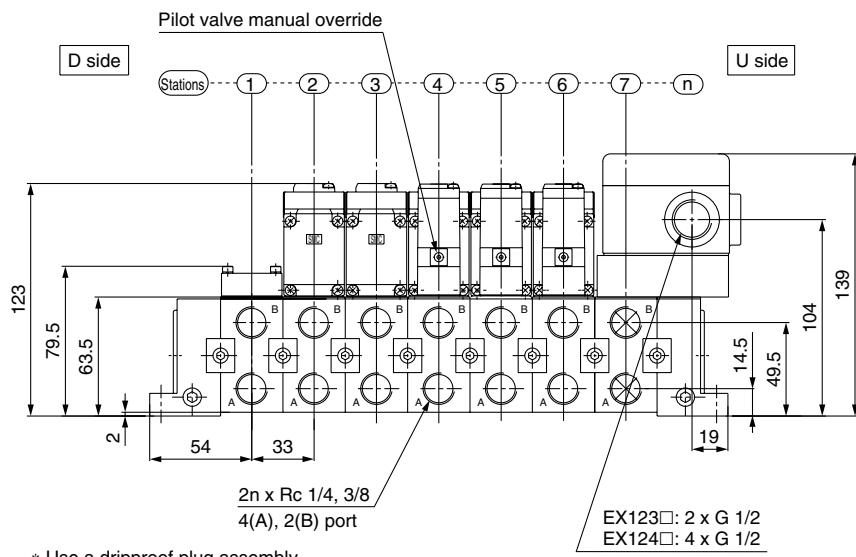
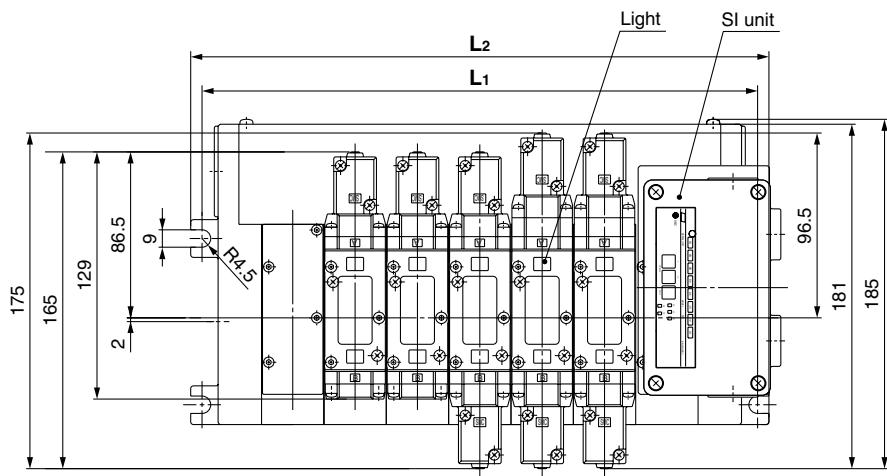
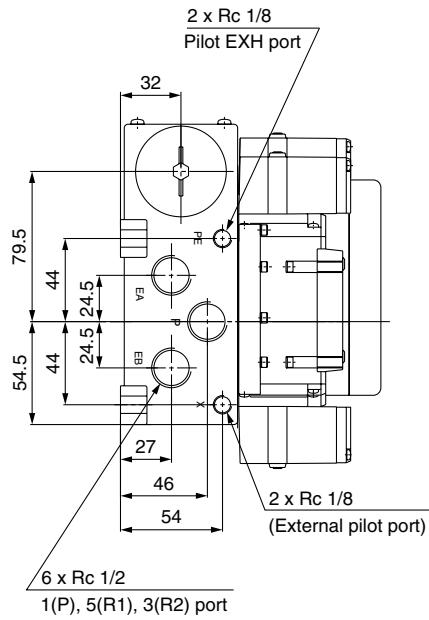
Nil	None
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24 VDC

**5 Port Pilot Operated Solenoid Valve
Metal Seal, Plug-in/Non Plug-in Series *VFS3000***

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output) Serial Transmission System

VV5FS3-01S **Model** - **Stations** **Symbol** - **Port size** **Thread** -X279



* Use a driproof plug assembly
(AXT100-B04A) for the unused
conduit port (G 1/2).

Dimensions

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
L ₁		129	162	195	228	261	294	327	360	393	426	459	492	525	558	591	624
L ₂		141	174	207	240	273	306	339	372	405	438	471	504	537	570	603	636

Note) Actual number of manifold base stations: Add 1 SI unit mounting station to the number of valve stations.

Formula $L_1 = 33n + 63$ $L_2 = 33n + 75$
n: Stations (Max. 17stations)

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

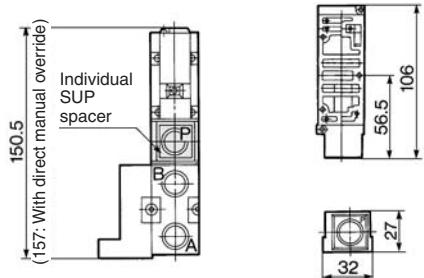
Series VFS3000

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

Individual SUP spacer:

VVFS3000-P-03-1 (Plug-in type)

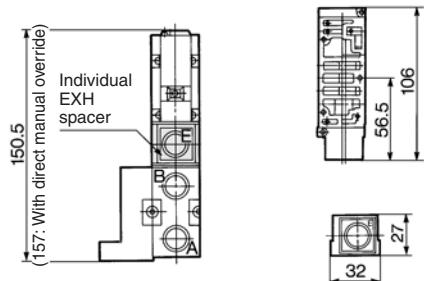
VVFS3000-P-03-2 (Non plug-in type)



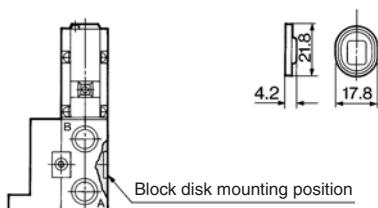
Individual EXH spacer:

VVFS3000-R-03-1 (Plug-in type)

VVFS3000-R-03-2 (Non plug-in type)



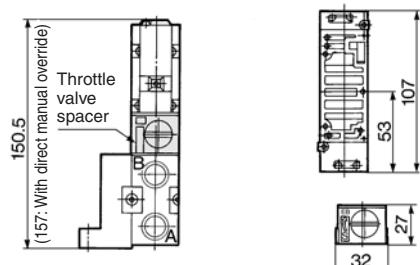
SUP/EXH block plate: AXT636-1A



Throttle valve spacer:

VVFS3000-20A-1 (Plug-in type)

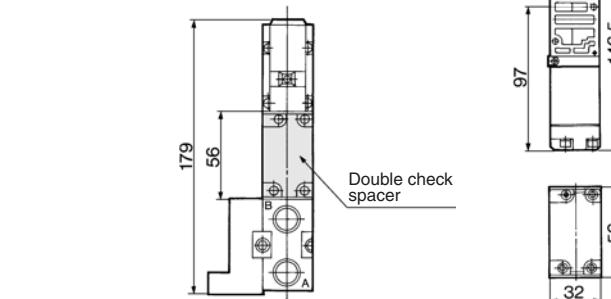
VVFS3000-20A-2 (Non plug-in type)



Double check spacer:

VVFS3000-22A-1 (Plug-in type)

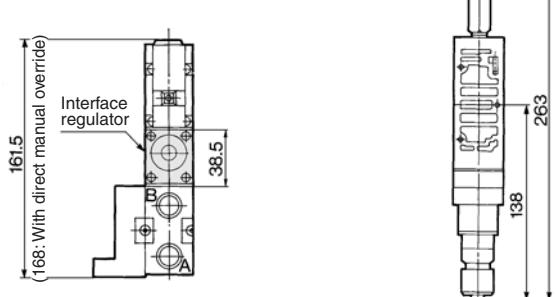
VVFS3000-22A-2 (Non plug-in type)



Interface regulator/P port regulation:

ARBF3050-00-P-1 (Plug-in type)

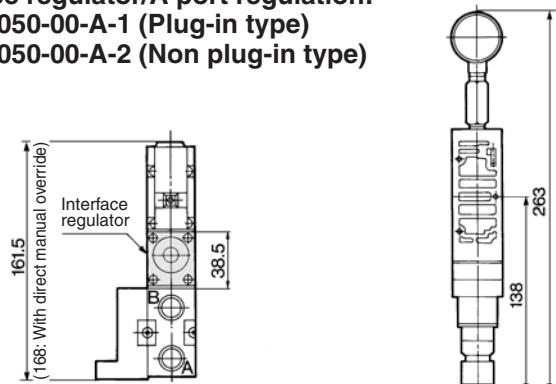
ARBF3050-00-P-2 (Non plug-in type)



Interface regulator/A port regulation:

ARBF3050-00-A-1 (Plug-in type)

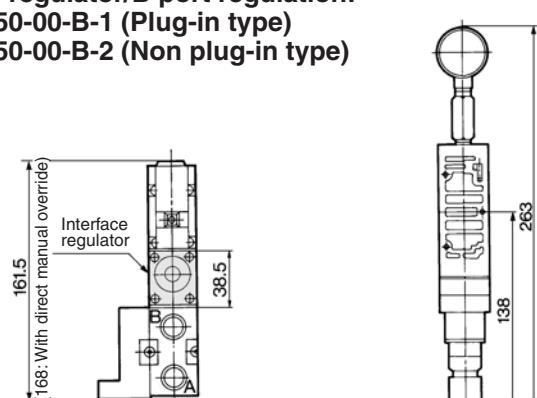
ARBF3050-00-A-2 (Non plug-in type)



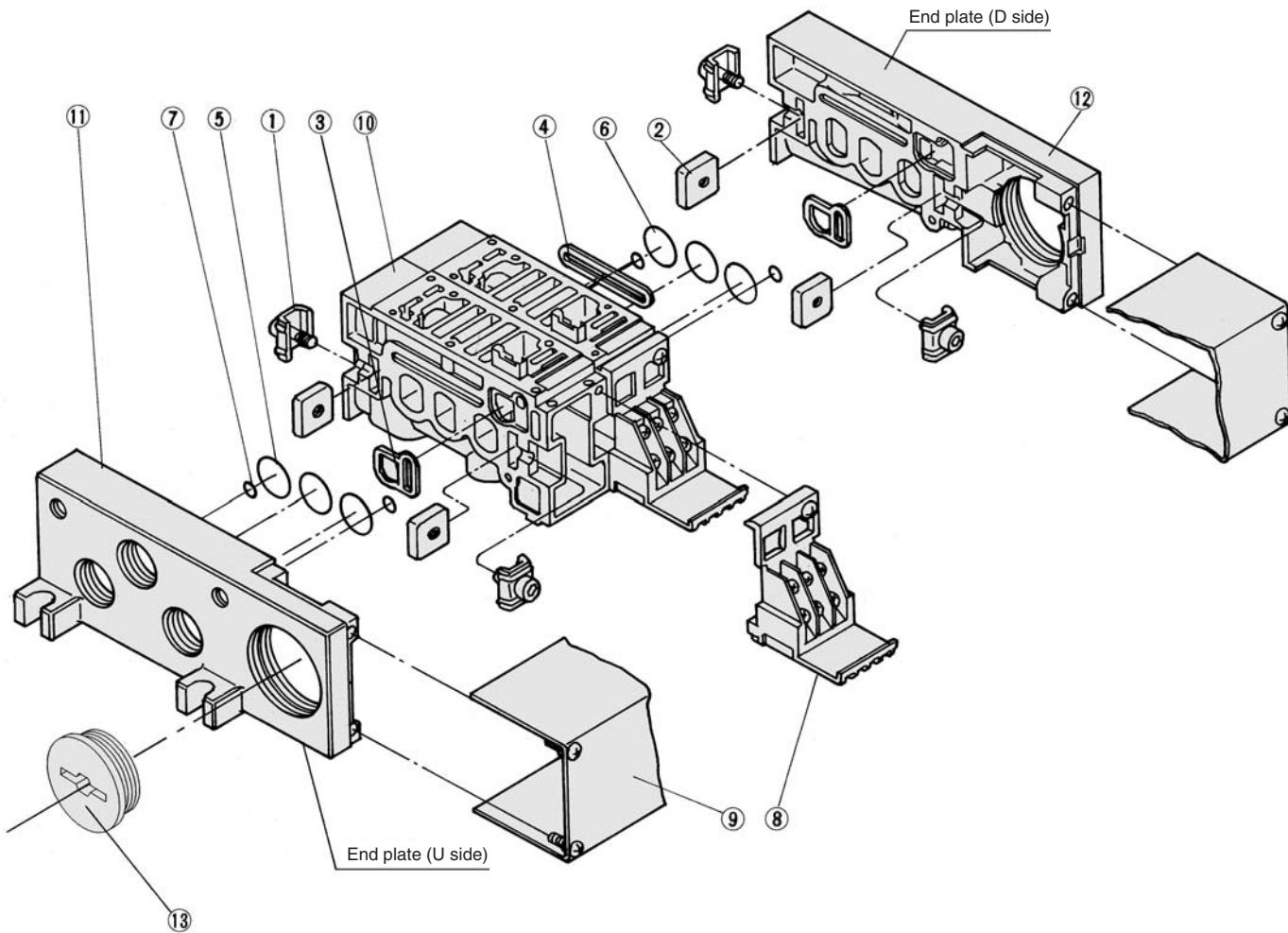
Interface regulator/B port regulation:

ARBF3050-00-B-1 (Plug-in type)

ARBF3050-00-B-2 (Non plug-in type)



Manifold Base Construction — Plug-in type, Non plug-in type



SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Replacement Parts

No.	Description	Material	Part no.
1	Connection fitting A	Steel plate	VVFS3000-5-1A
2	Connection fitting B	Steel plate	VVFS3000-5-2
3	Gasket	NBR	VVFS3000-7-1
4	Gasket	NBR	VVFS3000-8
5	O-ring	NBR	19.8 x 16.6 x 1.6 (End plate)
6	O-ring	NBR	20 x 16 x 2 (Manifold block)
7	O-ring	NBR	6.2 x 3 x 1.6
8	Terminal assembly	—	VVFS3000-6A
9	Junction cover assembly	For 01T	VVFS3000-4A- <small>Stations</small>
		For 01S	AZ738-22A- <small>Stations</small>
13	Rubber plug	NBR	AXT336-9

- For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly ⑩. For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.



Note) Manifold Base/Construction: Plug-in with terminal block.

Replacement Parts: Sub Assembly

No.	Description	Assembly part no.	Component parts	Applicable manifold base
10	Manifold block assembly	VVFS3000-1A-1- <small>02</small> ₀₃	Manifold block ⑩, Terminal ⑧, Metal joint ①, ②, Gasket ③, ④, O-ring ⑤, ⑦, Receptacle assembly	Plug-in type
		VVFS3000-1A-2- <small>02</small> ₀₃	Manifold block ⑩, Metal joint ①, ②, Gasket ③, ④, O-ring ⑥, ⑦	Non plug-in type
11	End plate (U side) assembly	VVFS3000-2A-1	End plate (U) ⑪, Metal joint ①, ②, O-ring ⑤, ⑥	Plug-in type
		VVFS3000-2A-2	End plate (U) ⑪, Metal joint ①, ②, O-ring ⑤, ⑥	Non plug-in type
12	End plate (D side) assembly	VVFS3000-3A-1	End plate (D) ⑫, Metal joint ①, ②, Gasket ③	Plug-in type
		VVFS3000-3A-2	End plate (D) ⑫, Metal joint ①, ②, Gasket ③	Non plug-in type

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS4000 CE SMC

NRTL /C

Model

Type of actuation		Model		Port size	Flow characteristics ⁽¹⁾						Max. ⁽¹⁾ operating cycle (cpm)	Response time ⁽²⁾ (ms)	Mass ⁽³⁾⁽⁴⁾ (kg)
		Plug-in	Non plug-in		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)					
					C [dm ³ /(s-bar)]	b	Cv	C [dm ³ /(s-bar)]	b	Cv			
2 position	Single	VFS4100	VFS4110	3/8	11	0.18	2.6	12	0.20	2.8	1,000	40 or less	0.63
				1/2	12	0.15	2.8	12	0.22	3.1			
2 position	Double	VFS4200	VFS4210	3/8	11	0.18	2.6	12	0.20	2.8	1,200	15 or less	0.75
				1/2	12	0.15	2.8	12	0.22	3.1			
3 position	Closed center	VFS4300	VFS4310	3/8	10	0.18	2.5	10	0.14	2.3	600	50 or less	0.82
				1/2	11	0.18	2.7	11	0.22	2.6			
3 position	Exhaust center	VFS4400	VFS4410	3/8	11	0.16	2.6	10	0.15	2.3	600	50 or less	0.82
				1/2	12	0.15	2.9	10	0.15	2.4			
3 position	Pressure center	VFS4500	VFS4510	3/8	11	0.22	2.7	11	0.22	2.7	600	50 or less	0.82
				1/2	12	0.22	2.9	11	0.22	2.8			
3 position	Double check	VFS4600	VFS4610	3/8	6.3	—	—	6.5	—	—	200	55 or less	1.71
				1/2	6.8	—	—	6.8	—	—			

 Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency. Note 2) Based on JIS B 8375-1981 (The value at supply press. 0.5 MPa).

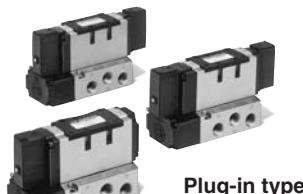
Note 3) The figures in the above list are for without sub-plate. In the case of with plug-in sub-plate and with non plug-in sub-plate, add 0.50 kg and 0.43 kg respectively. Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

Compact yet provides a large flow capacity
1/2: C: 12 dm³/(s-bar)

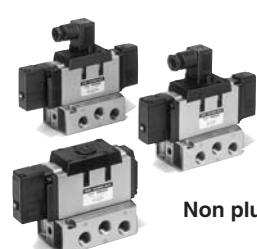
Low power consumption: 1.8 W DC

Easy maintenance

2 types of sub-plates:
Plug-in and non plug-in



Plug-in type



Non plug-in type

JIS Symbol

2 position	3 position
Single	Closed center
Double	Exhaust center
Pressure center	
Double check	

Standard Specifications

Valve specifications	Fluid	Air/Inert gas
	Maximum operating pressure	1.0 MPa
	Minimum operating pressure	2 position 0.1 MPa 3 position 0.15 MPa
	Proof pressure	1.5 MPa
	Ambient and fluid temperature	-10 to 60°C ⁽¹⁾
	Lubrication	Non-lube ⁽²⁾
	Pilot valve manual override	Non-locking push type (Flush)
	Shock/Vibration resistance	150/50 m/s ² ⁽³⁾
	Enclosure	Type E: Dustproof (level 0), Type F: Driproof (level 2), Type D: Splashproof (level 4) ⁽⁴⁾
Electricity specifications	Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC
	Allowable voltage fluctuation	-15 to +10% of rated voltage
	Coil insulation type	Class B or equivalent (130°C) ⁽⁵⁾
	Apparent power (Power consumption) AC	5.6 VA/50 Hz, 5.0 VA/60 Hz
	Inrush	3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
	Power consumption DC	1.8 W (2.04 W: With light/surge voltage suppressor)
	Electrical entry	Plug-in type Conduit terminal Non plug-in type Grommet terminal, DIN terminal

 Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

Note 4) Based on JIS C 0920.

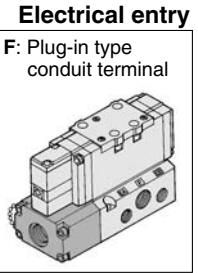
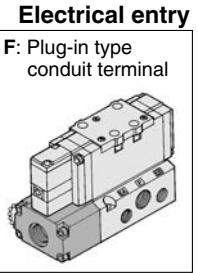
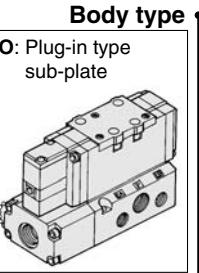
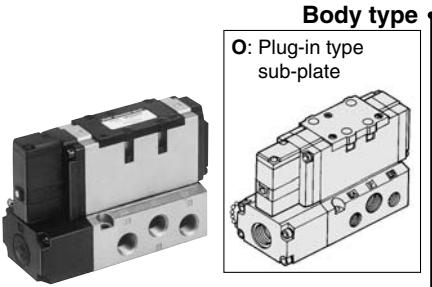
Note 5) Based on JIS C 4003.

Option Specifications

Pilot type	External pilot ^(Note)	
	Manual override	Direct manual override
Main override	Pilot valve	Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever)
Coil rated voltage		110 to 120, 220, 240 VAC, 50/60 Hz
		12, 100 VDC
Porting specifications		Bottom ported
Option	With light/surge voltage suppressor, Non-rotating DIN terminal	

 Note) Operating pressure: 0 to 1.0 MPa
Pilot pressure 2 position: 0.1 to 1.0 MPa, 3 position: 0.15 to 1.0 MPa

How to Order



Porting specifications	
Nil	Side ported
B*	Bottom ported

* In the case of external pilot (Option), bottom piping is not available.

Port size

Nil	Without sub-plate
03	Rc 3/8
04*	Rc 1/2

* EA, EB: Rc 3/8

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

* Option

Plug-in

VFS4 **2 0** **0** - **5** **F** **03**

Non plug-in

VFS4 **2 1** **0** - **1** **E** **03**

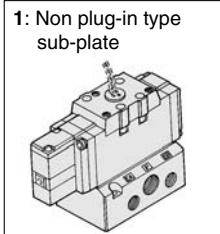


Symbol

1	2 position single 	5	3 position pressure center
2	2 position double 	6	3 position double check
3	3 position closed center 		
4	3 position exhaust center 		

* Reverse pressure: Can be used by external pilot specifications.

Body type



1: Non plug-in type sub-plate

Body option

0	Standard
1*	Direct manual override

* Option

Porting specifications

Nil	Side ported
B*	Bottom ported

* In the case of external pilot (Option), bottom piping is not available.

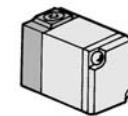
Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

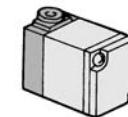
* Option

Pilot valve
Manual override

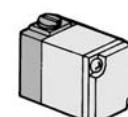
Nil: Non-locking push type (Flush)



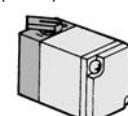
A*: Non-locking push type (Extended)



B*: Locking type (Tool required)



C*: Locking type (Lever)



* Option

Coil rated voltage

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

* Option

Pilot type

Nil	Internal pilot
R*	External pilot

* Option

How to Order Pilot Valve Assembly

SF4 - **1** **F** **30**

Coil rated voltage

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

* Option

Manual override

Nil	Non-locking push type (Flush)
A*	Non-locking push type (Extended)
B*	Locking type (Tool required)
C*	Locking type (Lever)

* Option

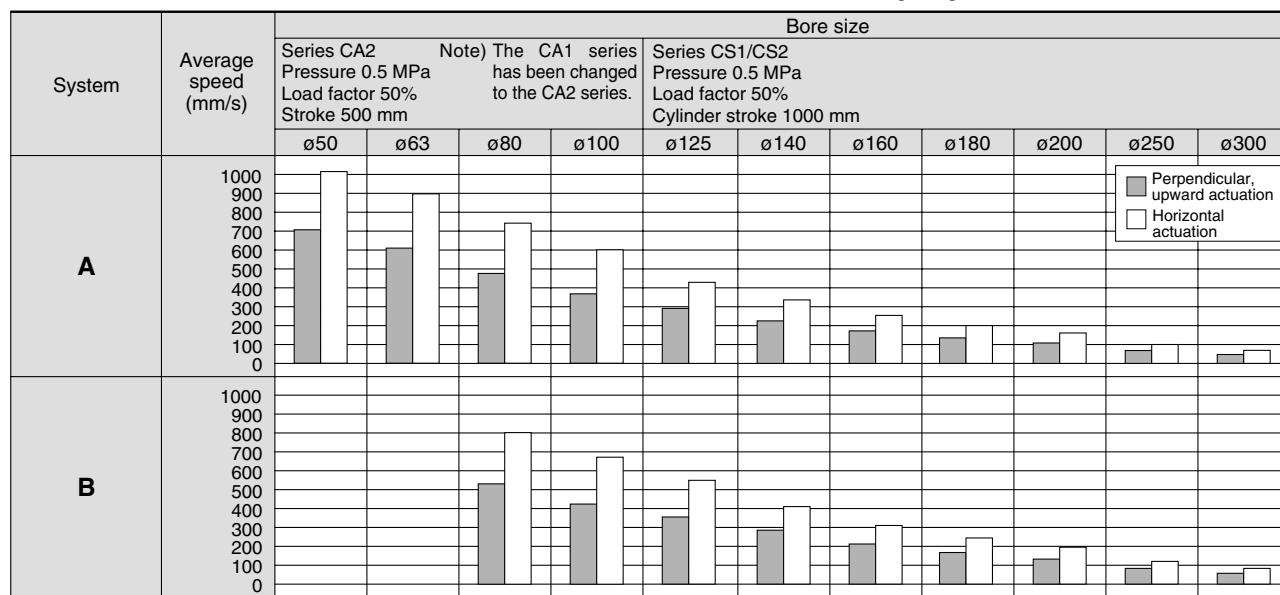


** Refer to page 1224
for voltage conversion.

Series VFS4000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.



System Components

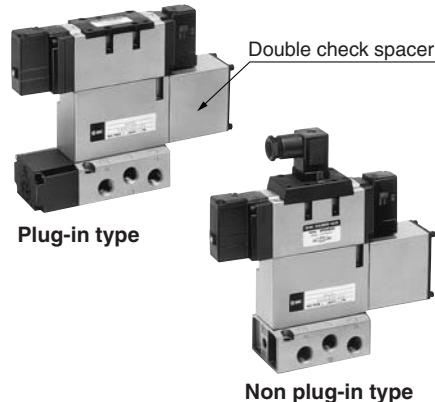
System	Solenoid valve	Speed controller	Silencer	SGP (Steel pipe) Port size x Length
A	Series VFS4000 Rc 1/2	AS420-03 (S = 73 mm ²)	AN300-03 (S = 60 mm ²)	10A x 1
B	Series VFS4000 Rc 1/2	AS420-04 (S = 97 mm ²)	AN400-04 (S = 90 mm ²)	15A x 1

- * It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
 * The average velocity of the cylinder is what the stroke is divided by the total stroke time.
 * Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

Double Check Spacer/Specifications

Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



Specifications

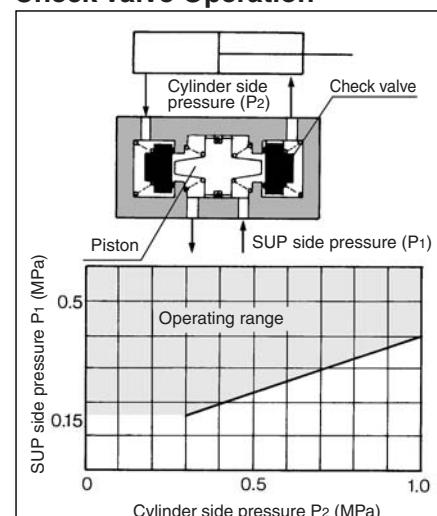
Double check spacer part no.	Plug-in type	Non plug-in type
VVFS4000-22A-1	VVFS4000-22A-2	

Applicable valve model	VFS4400-□F	VFS4410-□D VFS4410-□E
------------------------	------------	--------------------------

⚠ Caution

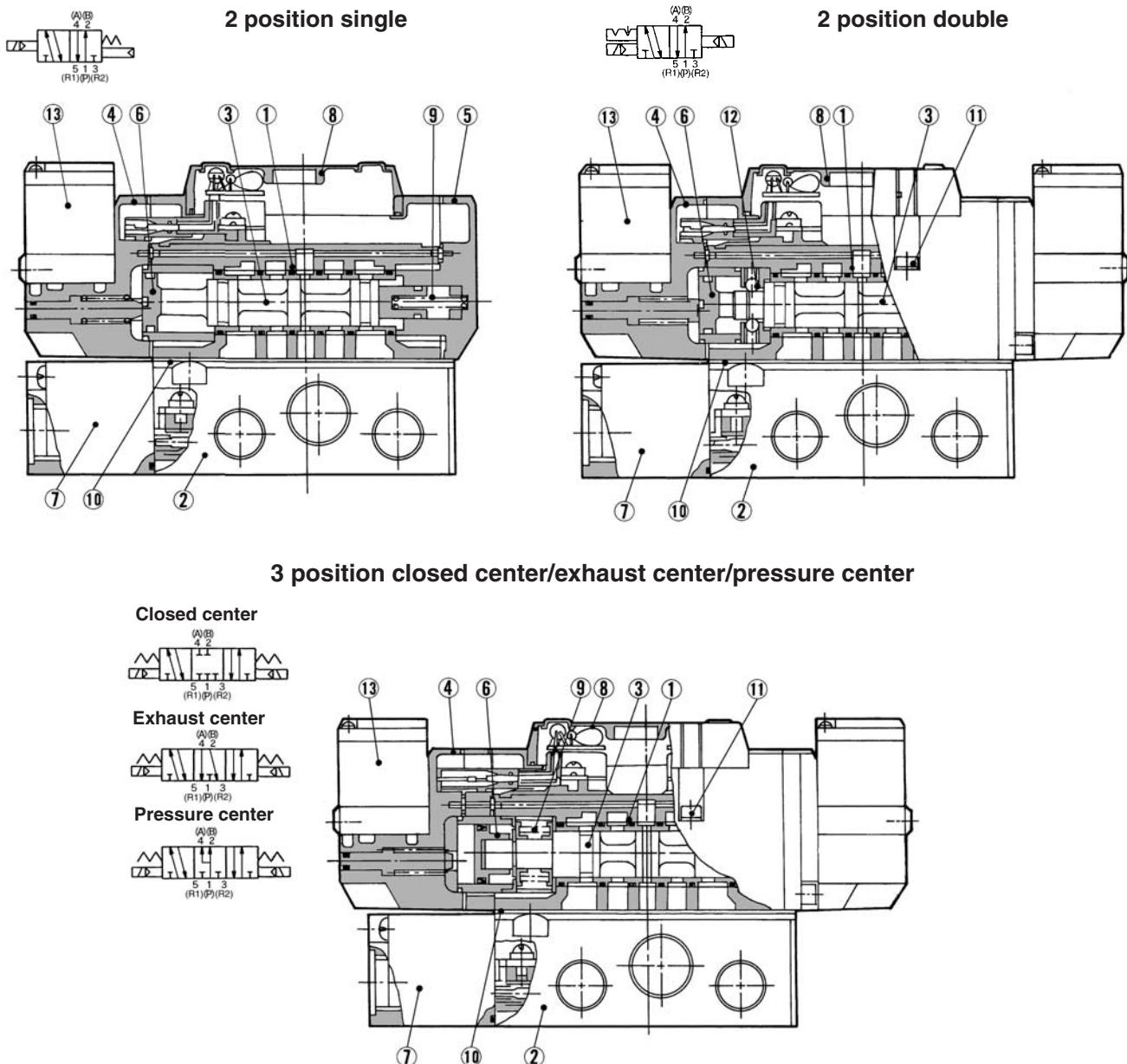
- In the case of 3 position double check valve (VFS4610), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

Check Valve Operation



- The combination of VFS4110, VFS4210 and Double check spacer for prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

Construction



Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Sub-plate	Aluminum die-casted	Platinum silver
3	Spool/Sleeve	Stainless steel	—
4	Adapter plate	Resin	Black
5	End plate	Resin	Black
6	Piston	Resin	—
7	Junction cover	Resin	—
8	Light cover	Resin	—
9	Return spring	Stainless steel	—
10	Gasket	NBR	—
11	Hexagon socket head screw	Steel	—
12	Detent assembly	—	—
13	Pilot valve assembly	—	—

* Refer to "How to Order Pilot Valve Assembly" on page 1183.

Sub-plate Assembly Part No.

Plug-in	VFS4000-P- ⁰³ ₀₄
Non plug-in	VFS4000-S- ⁰³ ₀₄

 * Mounting bolt and gasket are not included.

Sub-plate Assembly (For External Pilot) Part No.

Plug-in	VFS4000-P-R ⁰³ ₀₄
Non plug-in	VFS4000-S-R ⁰³ ₀₄

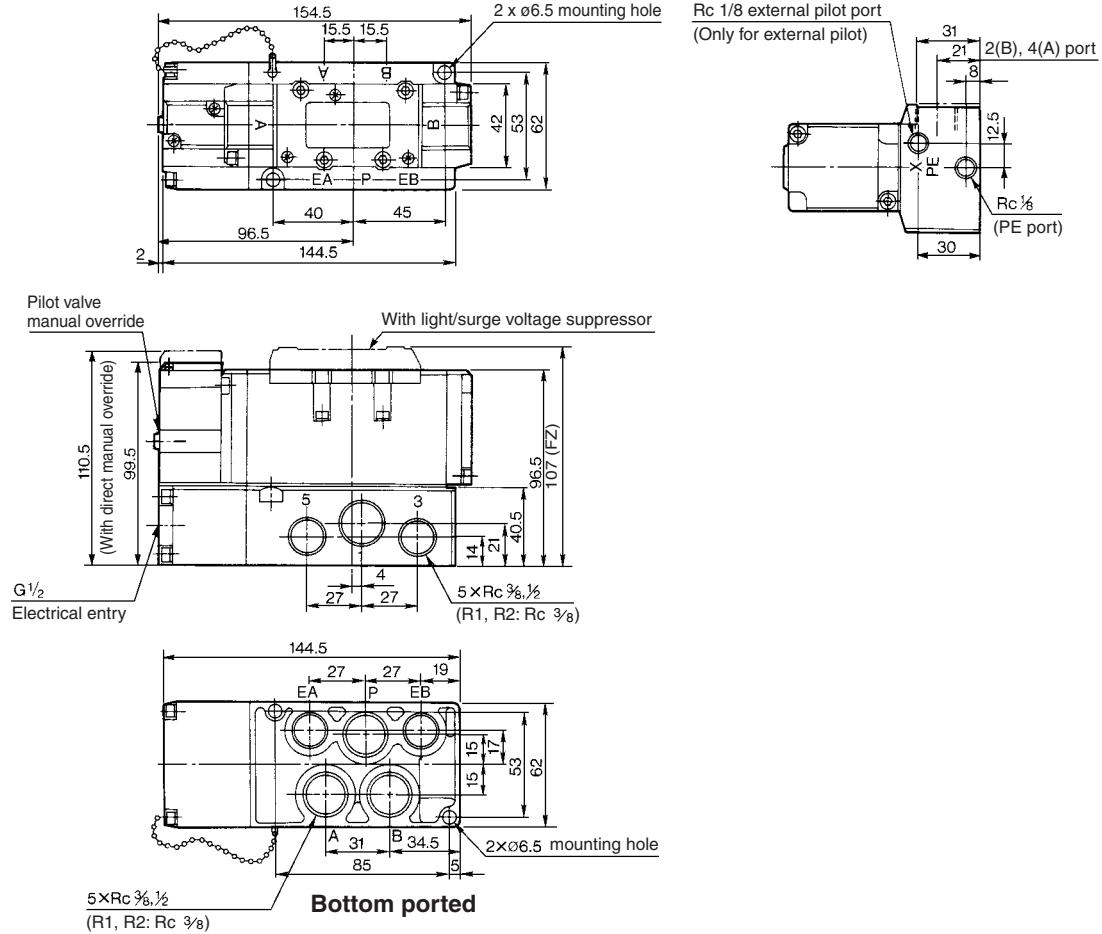
Part no. for mounting bolt and gasket
BG-VFS4000

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Series VFS4000

Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS4100-□F

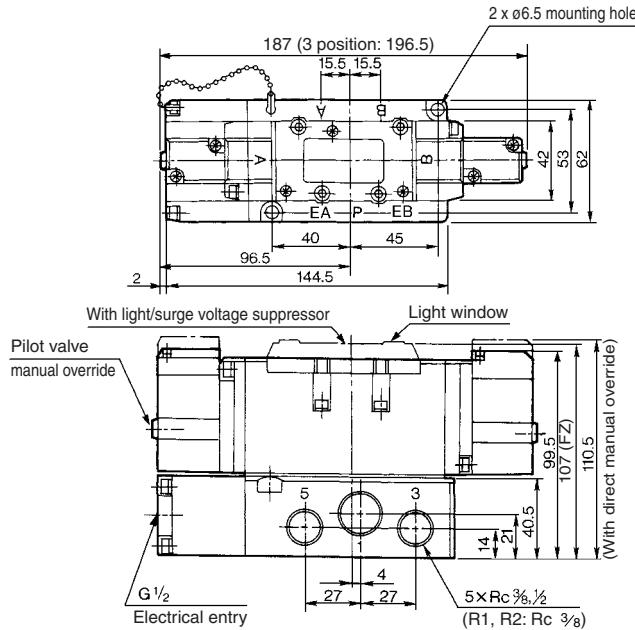


2 position double: VFS4200-□F

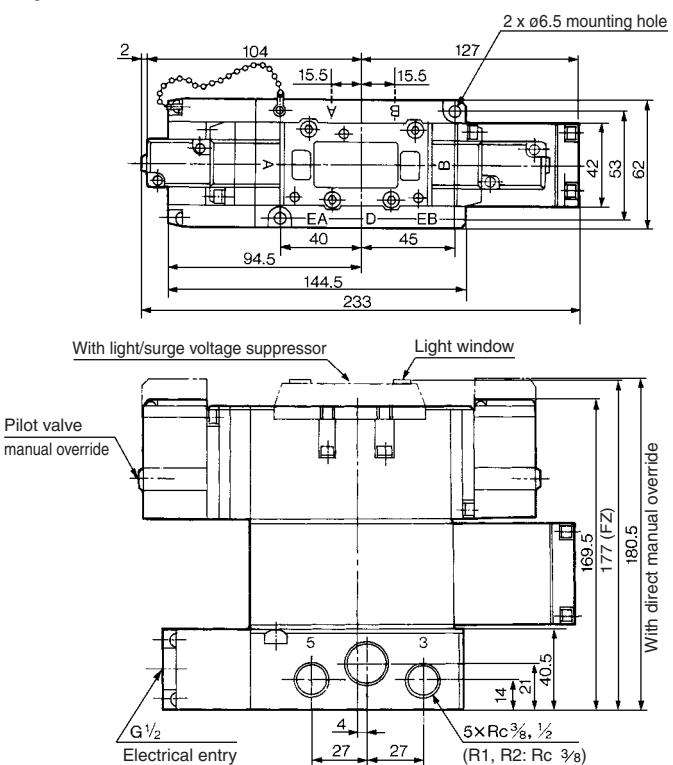
3 position closed center: VFS4300-□F

3 position exhaust center: VFS4400-□F

3 position pressure center: VFS4500-□F



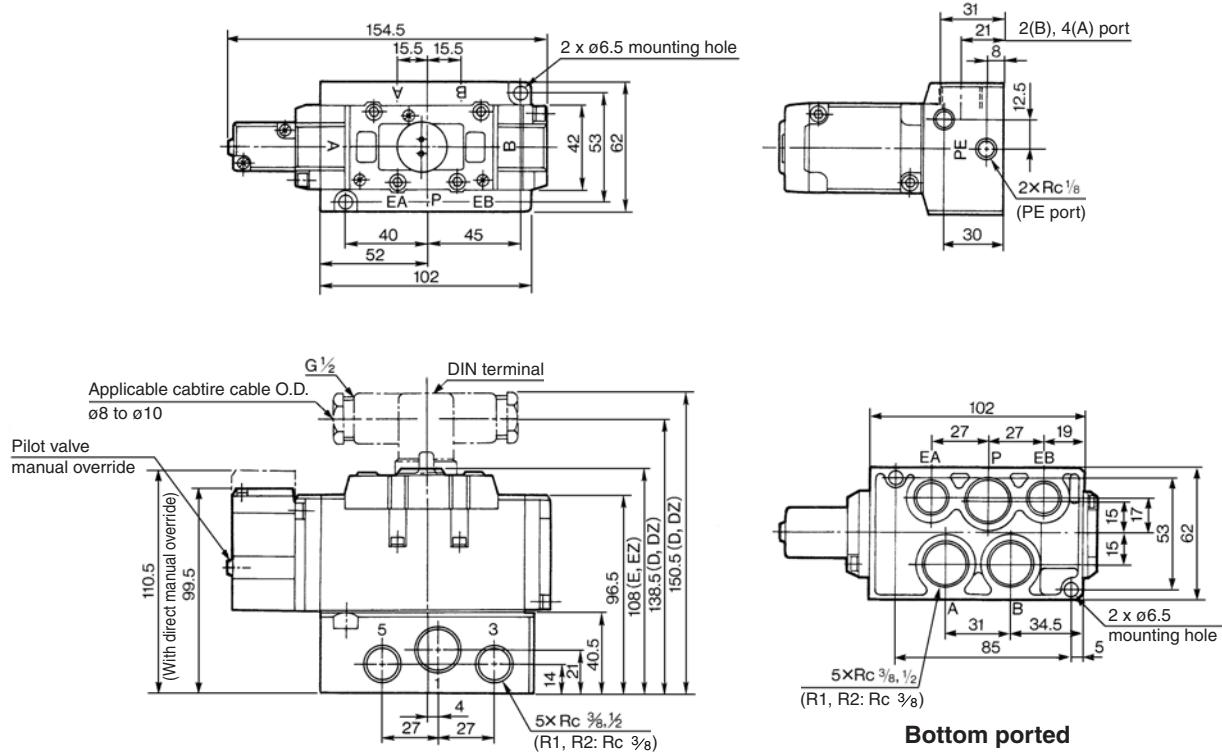
3 position double check: VFS4600-□F



5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS4000**

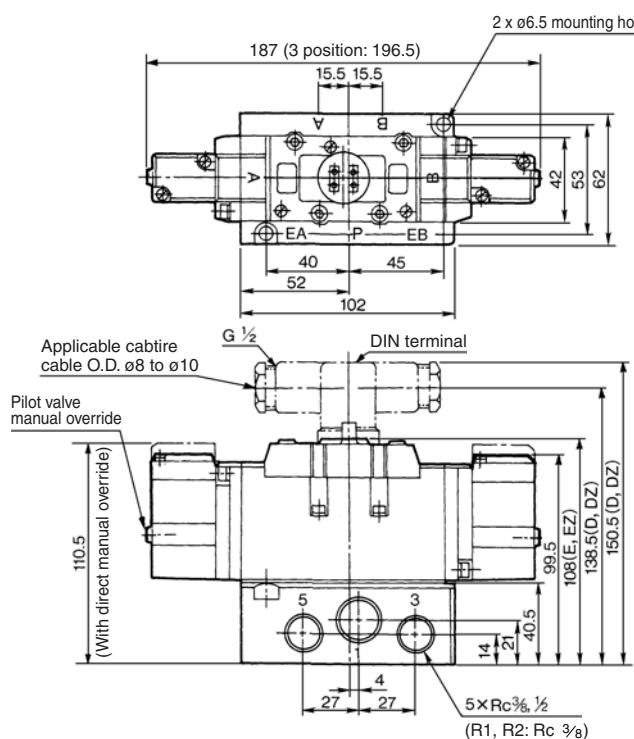
Non Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS4110-□E, VFS4110-□D

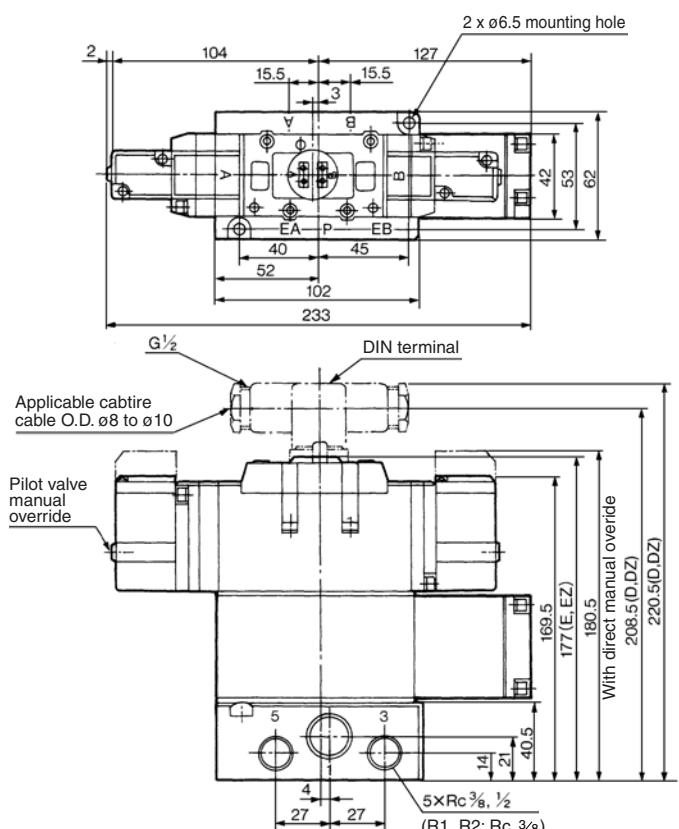


SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

2 position double: VFS4210-□E, VFS4210-□D
3 position closed center: VFS4310-□E, VFS4310-□D
3 position exhaust center: VFS4410-□E, VFS4410-□D
3 position pressure center: VFS4510-□E, VFS4510-□D



3 position double check: VFS4610-□E, VFS4610-□D

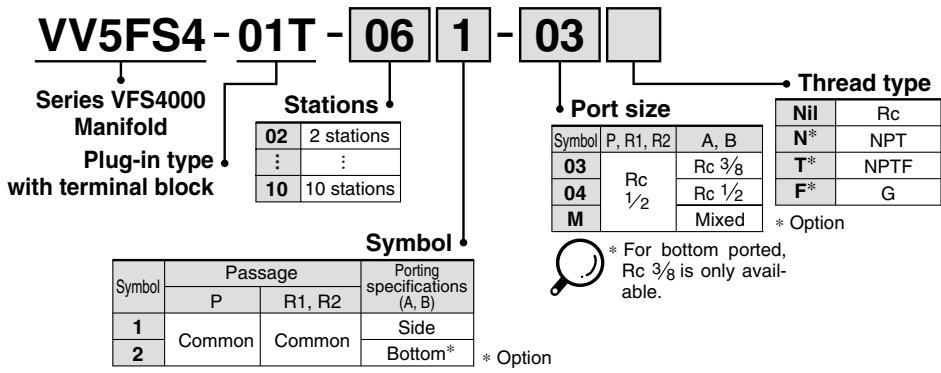
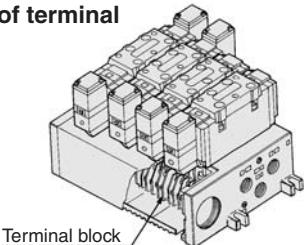


Series VFS4000

Manifold Specifications

Plug-in Type: With Terminal Block

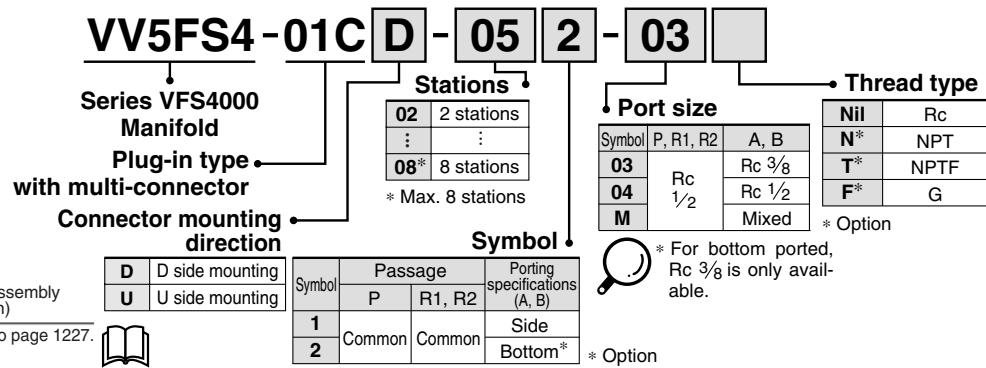
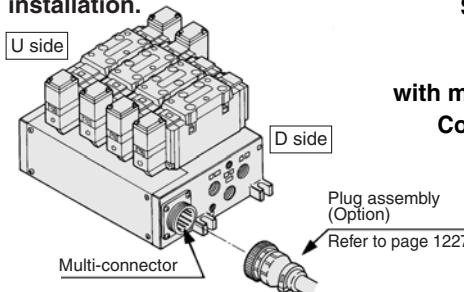
- Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



Plug-in Type: With Multi-connector

(Wiring specifications: Refer to page 1227.)

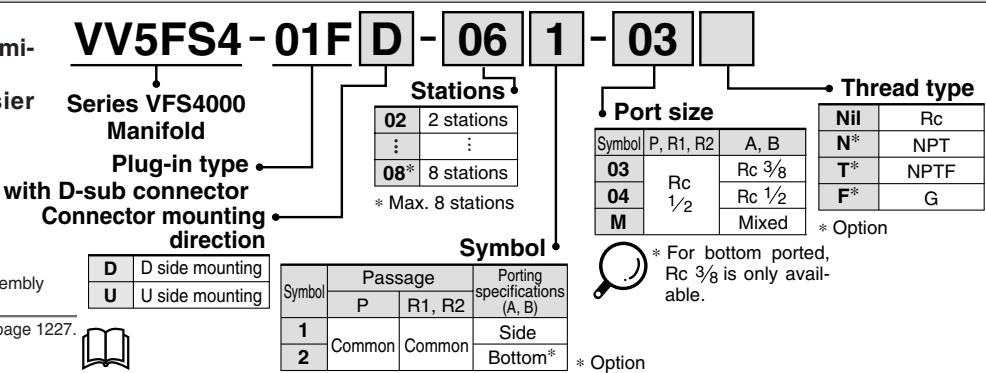
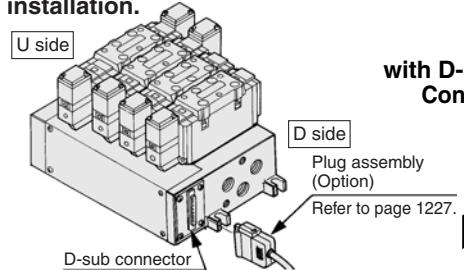
- Master connection of power and solenoid valves.
- Quick wiring permits easier installation.



Plug-in Type With: D-sub Connector

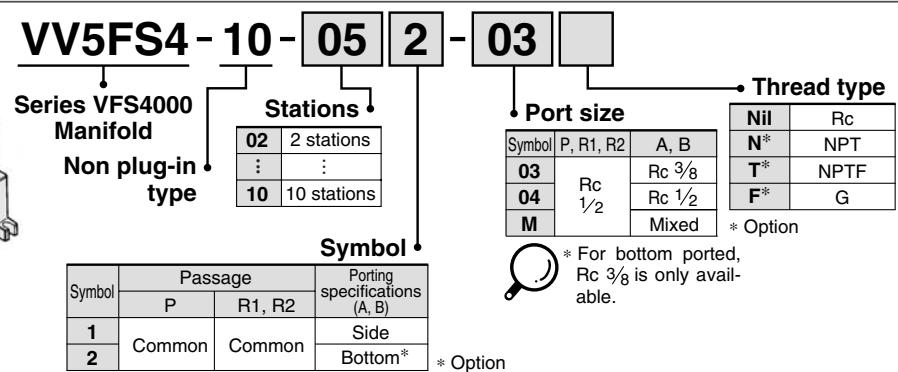
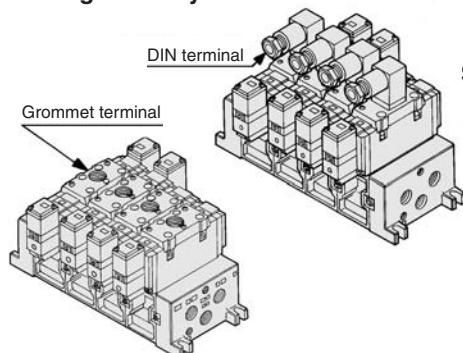
(Wiring specifications: Refer to page 1227.)

- Wide range of interchangeability (MIL Spec D-sub connector terminal 25 pcs attached.)
- Quick wiring permits easier installation.



Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS4000**

How to Order Manifold Assembly

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

<Example>

- Plug-in type with terminal block: 6 stations
(Manifold base) VV5FS4-01T-061-031
(2 position single) VFS4100-5FZ3
(2 position double) VFS4200-5FZ2
(Blanking plate) VVFS4000-10A1
- Non plug-in type: 6 stations
(Manifold base) VV5FS4-10-061-041
(2 position single) VFS4110-5D5
(3 position exhaust center) VFS4410-5D1
(Individual EXH spacer) VVFS4000-R-04-2.....1

Manifold Specifications

Base model	Wiring	Porting specifications		Port size Rc P, R1, R2	A, B	Stations	Applicable valve model
		A, B port	Side/Bottom				
Plug-in type VV5FS4-01	<ul style="list-style-type: none"> • With terminal block • With multi-connector • With D-sub connector 	Side/ Bottom	1/2	3/8, 1/2	2 to 10*	2 to 10*	VFS4□00-□F
Non plug-in type VV5FS4-10	<ul style="list-style-type: none"> • DIN terminal • Grommet terminal 						VFS4□10-□D VFS4□10-□E

 * With multi-connector, or with D-sub connector: 8 stations max.

Flow Characteristics at the Number of Manifold Stations (Operated individually)

Model	Passage/Stations	Station 1			Station 5	Station 10
		C [dm ³ /(s·bar)]	b	Cv		
VV5FS4	1 → 4/2 (P → A/B)	10.5	0.20	2.5	10.5	10.5
		b	0.20		0.20	0.20
		Cv		2.5		2.5
	4/2 → 5/3 (A/B → R1/R2)	11	0.20	2.9	11	11
		C [dm ³ /(s·bar)]	0.20		0.20	0.20
		b		2.9		2.9

 * Port size: Rc 1/2

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7

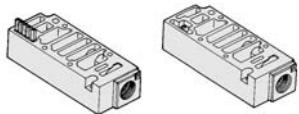
Series VFS4000

Manifold Option Parts Assembly

Individual SUP spacer

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

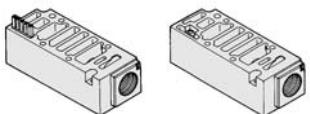
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-P-03-1	VVFS4000-P-03-2



Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve.
(common EXH type)

Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-R-04-1	VVFS4000-R-04-2



* SUP block plate

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

Body type	Plug-in type	Non plug-in type
Part no.	AXT634-10A	

* EXH block plate

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

Body type	Plug-in type	Non plug-in type
Part no.	AXT634-11A	



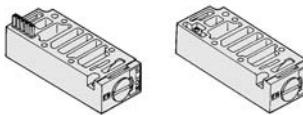
EXH block plate

SUP block plate

Throttle valve spacer

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

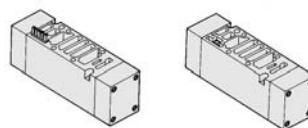
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-20A-1	VVFS4000-20A-2



Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

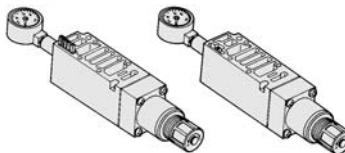
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-22A-1	VVFS4000-22A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (Refer to page 1225 for "Flow Characteristics".)

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF4050-00-P-1	ARBF4050-00-P-2
A port regulation	ARBF4050-00-A-1	ARBF4050-00-A-2
B port regulation	ARBF4050-00-B-1	ARBF4050-00-B-2



Blanking plate

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

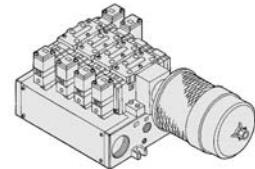
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-10A	

Manifold Option

With exhaust cleaner

Plug-in type/Non Plug-in type

- Valve exhaust noise dampening: 35 dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.

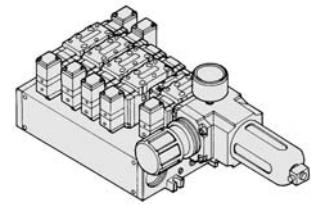


 For details, refer to page 1193.

With control unit

Plug-in type/Non Plug-in type

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



 For details, refer to page 1195.

Made to Order

Manifold with serial transmission kit

Plug-in type

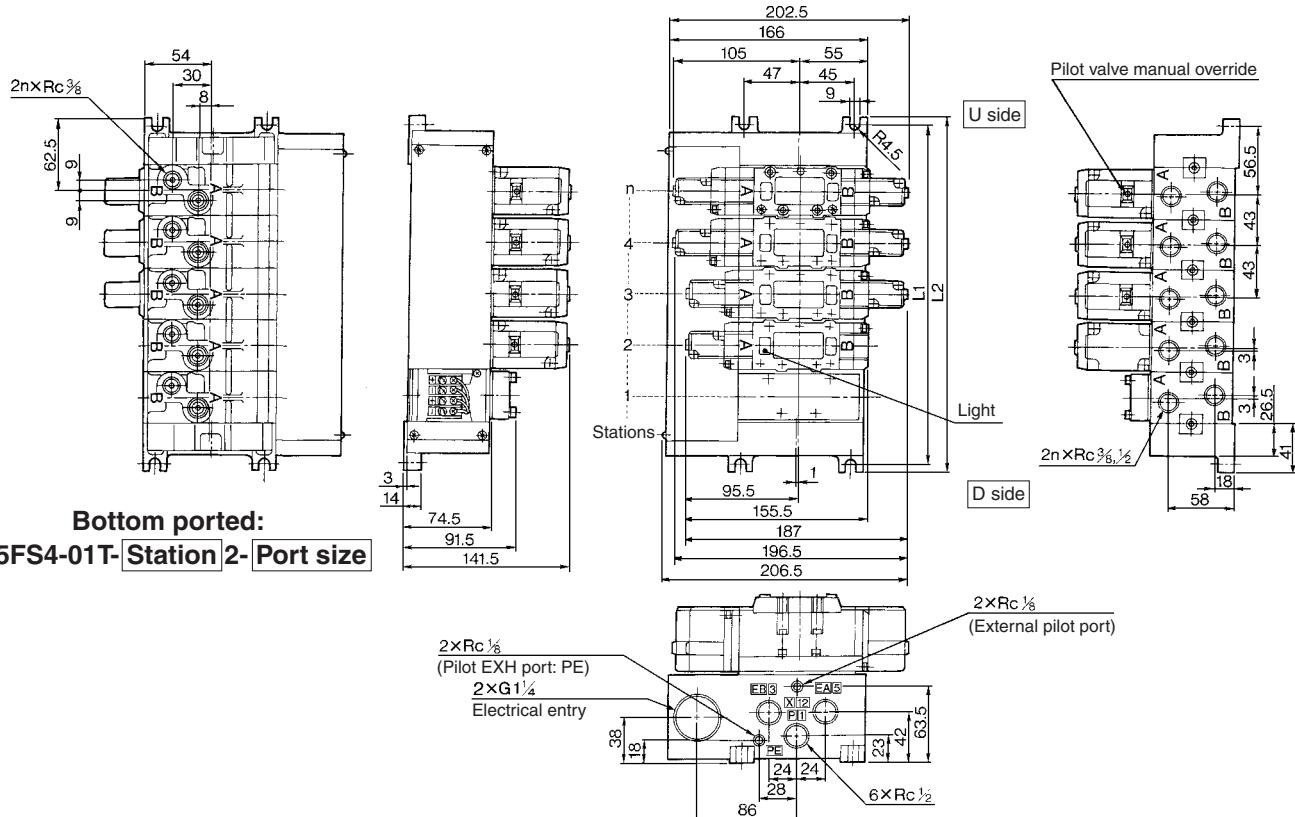
- Solenoid valve wiring process reduced considerably.

 For details, refer to page 1198.

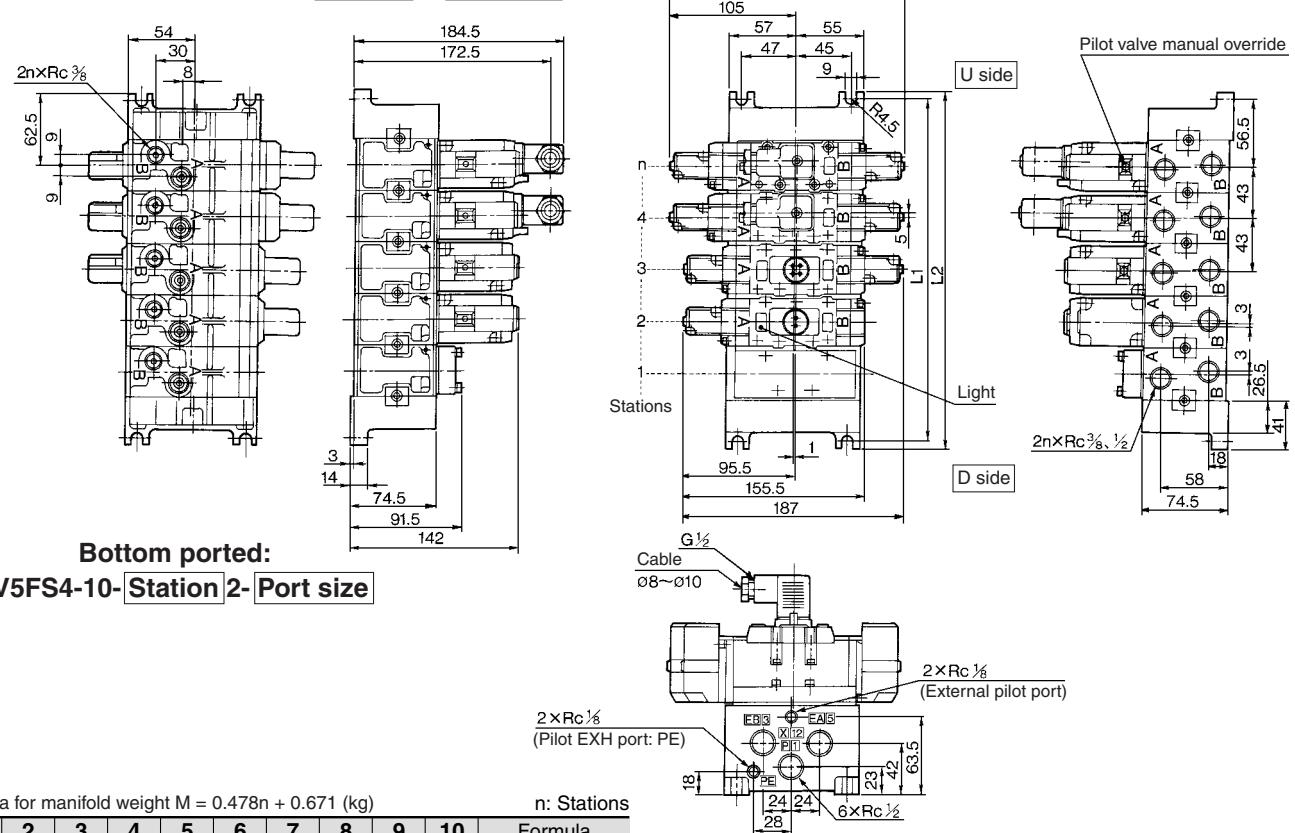
5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS4000**

Manifold — Plug-in type, Non plug-in type

Plug-in type (With terminal block): VV5FS4-01T- Station 1- Port size



Non plug-in type: VV5FS4-10- Station 1- Port size



Formula for manifold weight $M = 0.478n + 0.671$ (kg)

n: Stations

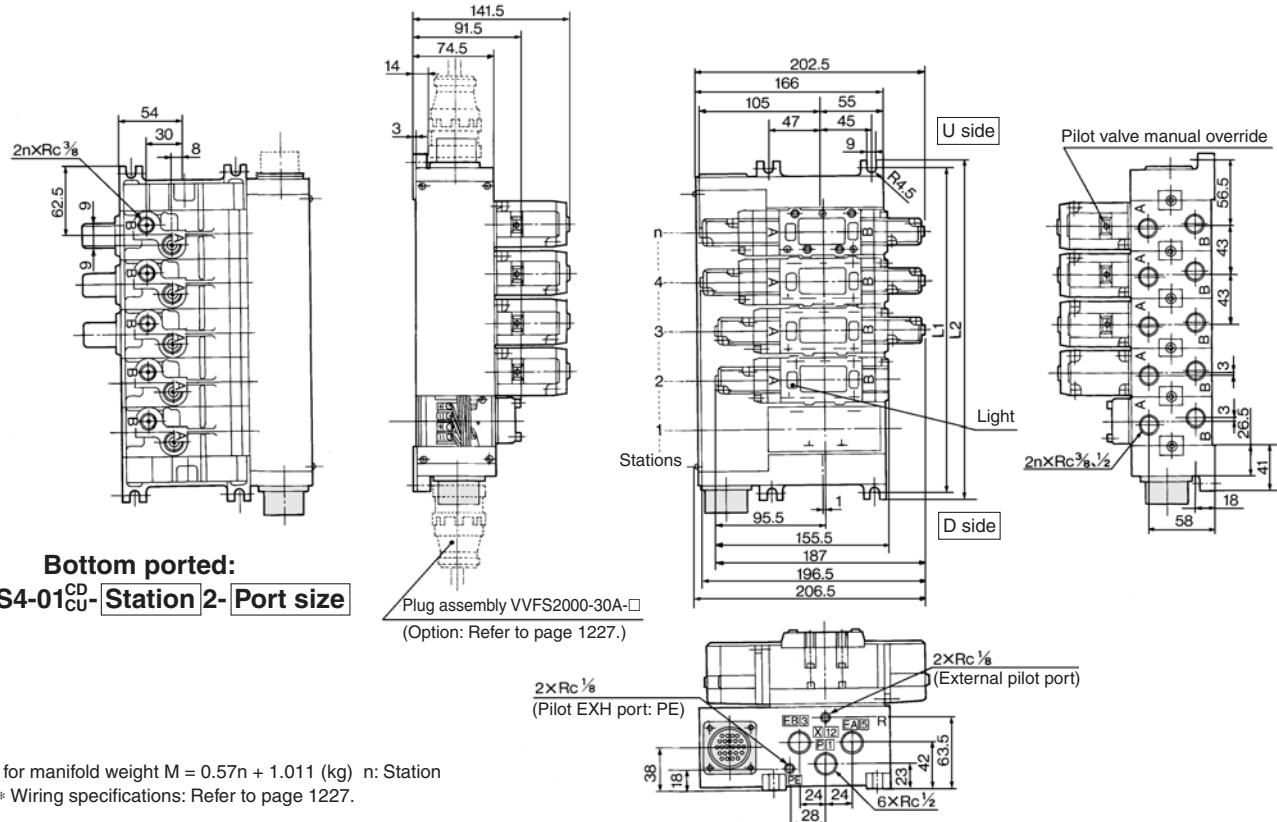
L	2	3	4	5	6	7	8	9	10	Formula
L ₁	156	199	242	285	328	371	414	457	500	$L_1 = 43 \times n + 70$
L ₂	168	211	254	297	340	383	426	469	512	$L_2 = 43 \times n + 82$

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

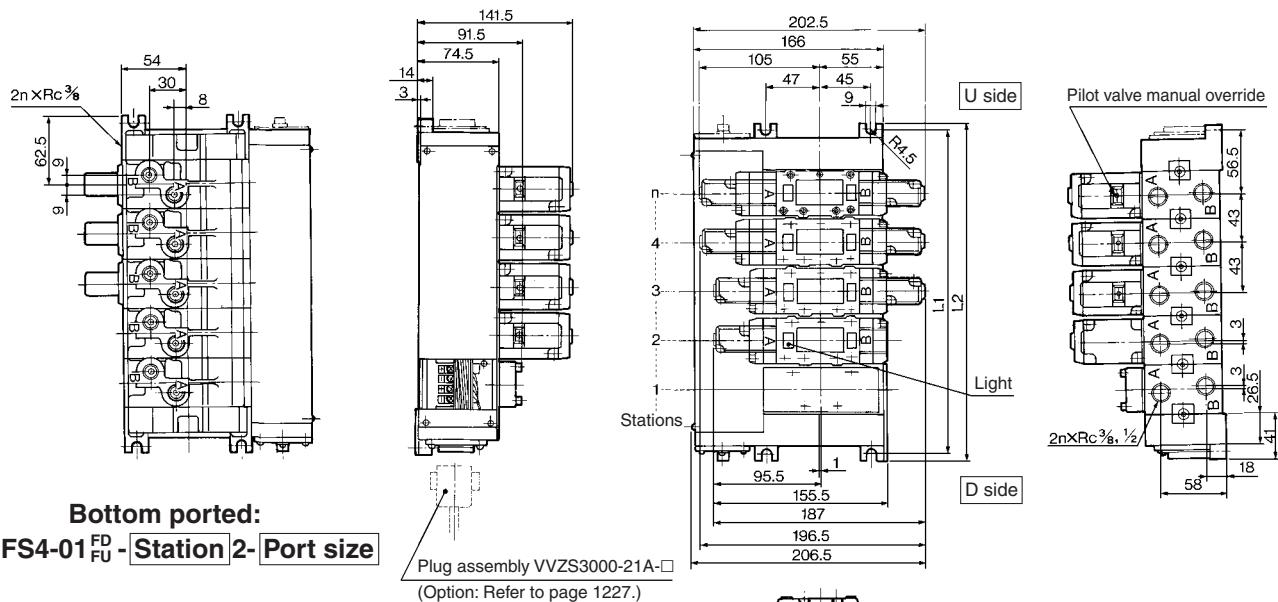
Series VFS4000

Manifold — Plug-in type with multi-connector/D-sub connector

Plug-in type with multi-connector: VV5FS4-01CD- Station 1- Port size , VV5FS4-01CU- Station 1- Port size



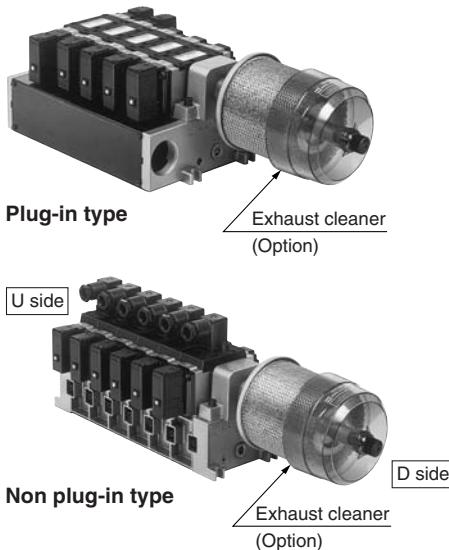
Plug-in type with D-sub connector: VV5FS4-01FD- Station 1- Port size , VV5FS4-01FU- Station 1- Port size



Stations	2	3	4	5	6	7	8	Formula
L ₁	156	199	242	285	328	371	414	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	L ₂ = 43 x n + 82

Manifold with Exhaust Cleaner

- Serves to protect working environment.
- Valve exhaust noise dampening: 35 dB or more.
- Collection rate of drainage and oil mist: 99.9% or more.
- Piping work is reduced.

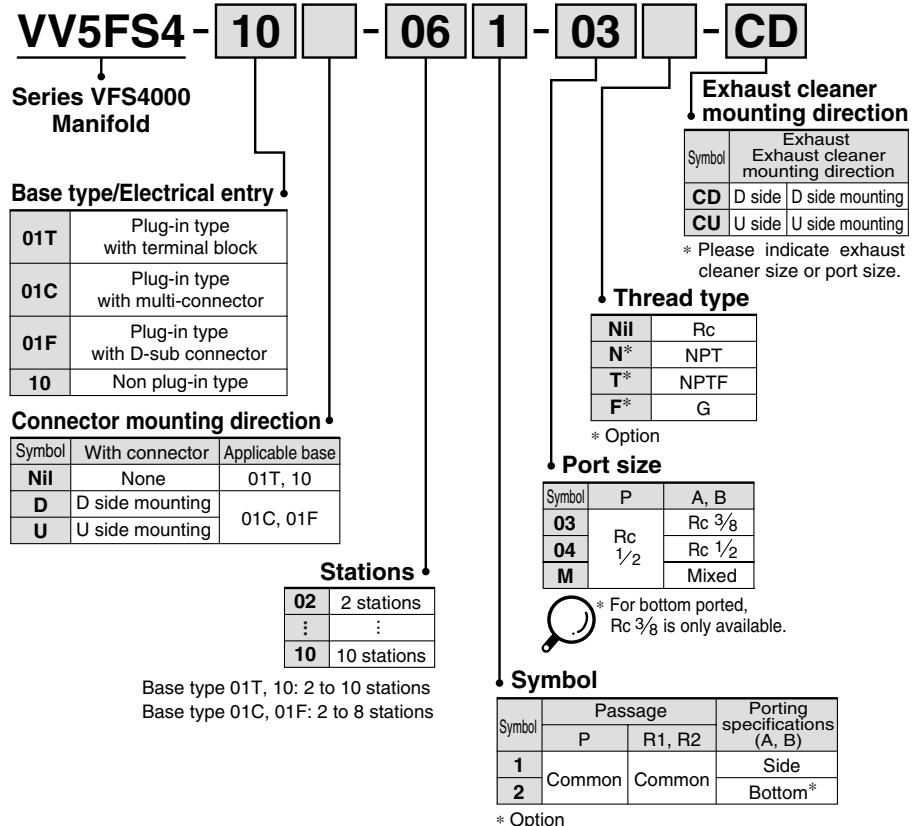


Manifold Specifications

Manifold	Plug-in type: VV5FS4-01□	Non plug-in type: VV5FS4-10
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS4□00-□F	VFS4□10-□D, VFS4□10-□E
Porting specifications	Common SUP/Common EXH	
Rc	2(B), 4(A) port 1(P), 3(R2), 5(R1) port	Side: 3/8, 1/2, Bottom: 3/8 (Option) P: 1/2, EXH: 1, 1 1/2
Stations		2 to 10 ⁽¹⁾
Applicable exhaust cleaners	AMC610-10 (Connecting port size R 1), AMC810-14 (Connecting port size R 1 1/2) ⁽²⁾	

Note 1) With multi-connector, or with D-sub connector: 8 stations max.
Note 2) Stations of 5 or more and high frequency of operation should be used with AMC810-14.
Exhaust cleaners AMC610-10 and AMC810-14 are not attached.

How to Order



⚠ Caution

When using an exhaust cleaner, mount it downwards.



* Refer to Best Pneumatics Vol. 6 for Exhaust Cleaner details.

How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

• Plug-in type with terminal block (6 stations)	
(Manifold base)	VV5FS4-01T-061-03-CD 1
(2 position single)	* VFS4100-5FZ 3
(2 position double)	* VFS4200-5FZ 2
(Blanking plate)	* VVFS4000-10A 1
(Exhaust cleaner)	AMC610-10 1
• Non plug-in type (6 stations)	
(Manifold base)	VV5FS4-10-061-04-CU 1
(2 position single)	* VFS4110-5E 3
(2 position double)	* VFS4210-5E 2
(Blanking plate)	* VVFS4000-10A 1
(Exhaust cleaner)	AMC810-14 1

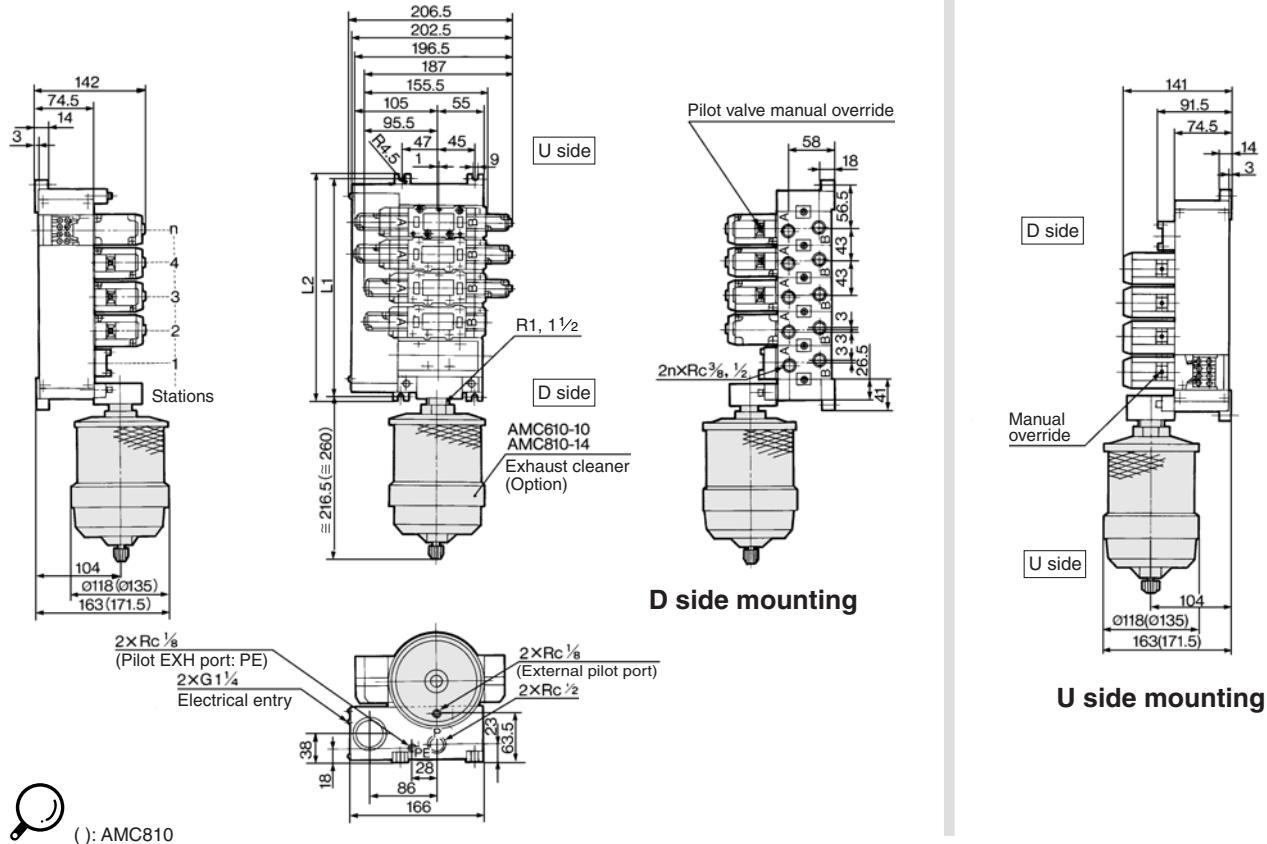
→ The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

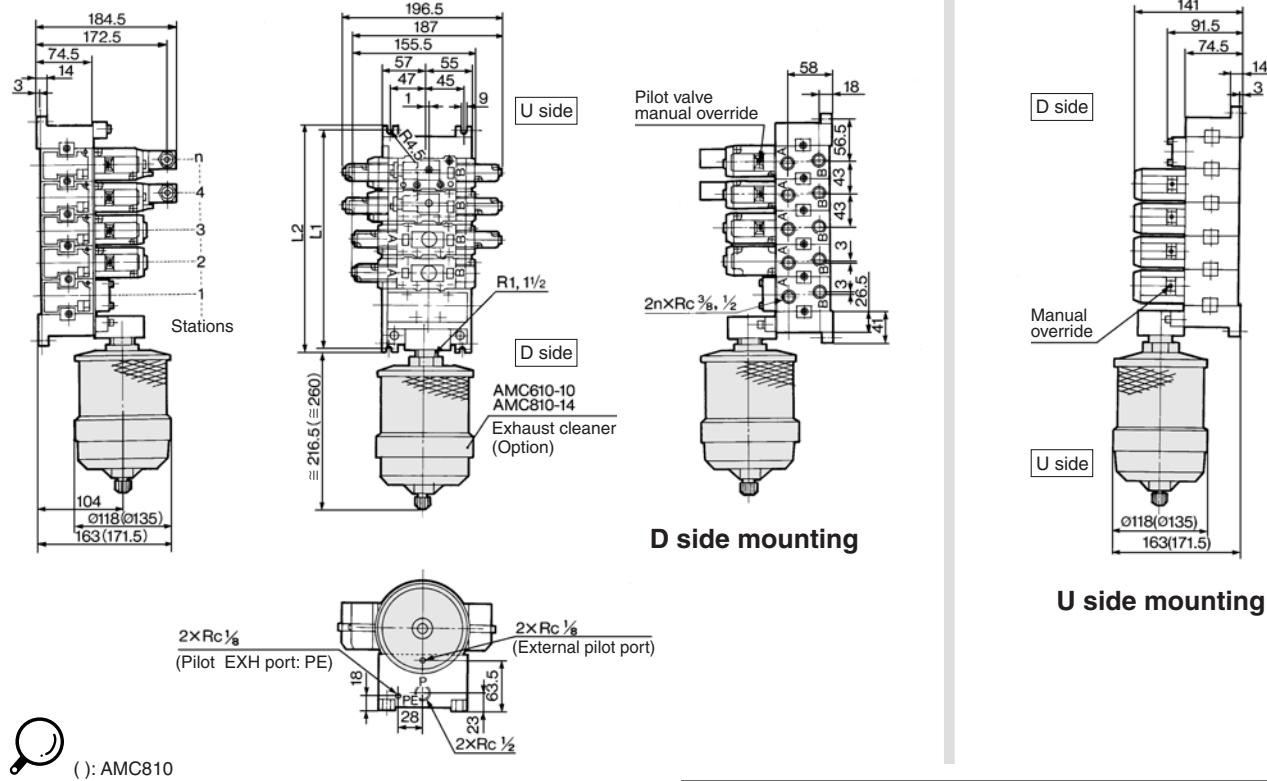
Series VFS4000

Manifold with Exhaust Cleaner — Plug-in type, Non plug-in type

Plug-in type: VV5FS4-01T-Station 1-Port size -^{CD}_{CU}



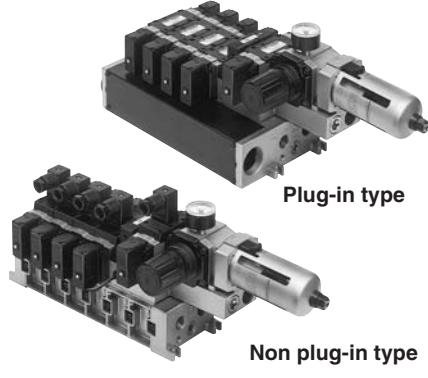
Non plug-in type: VV5FS4-10-Station 1-Port size -^{CD}_{CU}



L	Stations	2	3	4	5	6	7	8	9	10	Formula
L₁		156	199	242	285	328	371	414	457	500	$L_1 = 43 \times n + 70$
L₂		168	211	254	297	340	383	426	469	512	$L_2 = 43 \times n + 82$

Manifold with Control Unit

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



Caution

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

Manifold Specifications

Manifold	Plug-in type: VV5FS4-01□	Non plug-in type: VV5FS4-10
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS4□00-□F	VFS4□10-□D, VFS4□10-□E
Porting specifications	Common SUP, Common EXH	
Rc (PT)	2(B), 4(A) port 1(P), 3(R2), 5(R1) port	Side: 3/8, 1/2, Bottom: 3/8 Side: 1/2
Stations		2 to 10 *



* With multi-connector, or with D-sub connector: 8 stations max.

Control Unit Specifications

Air filter (With auto-drain/With manual drain)	
Filtration degree	5 µm
Regulator	
Set pressure (Outlet pressure)	0.05 to 0.85 MPa
Pressure switch (1)	
Set pressure range: OFF	0.1 to 0.6 MPa
Differential	0.08 MPa or less
Contact	1a
Indicator light	LED (RED)
Max. switch capacity	2 VA AC, 2 W DC
Max. operating current	24 VAC/DC or less: 50 mA 48 VAC/DC: 40 mA 100 VAC/DC: 20 mA
Air release valve (Single only)	
Operating pressure range	0.1 to 1.0 MPa

Control Unit/Option

Air release valve spacer (2)	<Plug-in type> VVFS4000-24A-1R (D side mounting)
Pressure switch	<Non plug-in type> VVFS4000-24A-2R (D side mounting)
Blanking plate (3)	IS1000P-2-1
Filter element	Filter regulator MP2-3
	Pressure switch MP3-2
	Release valve VVFS4000-24A-10
	11104-5B

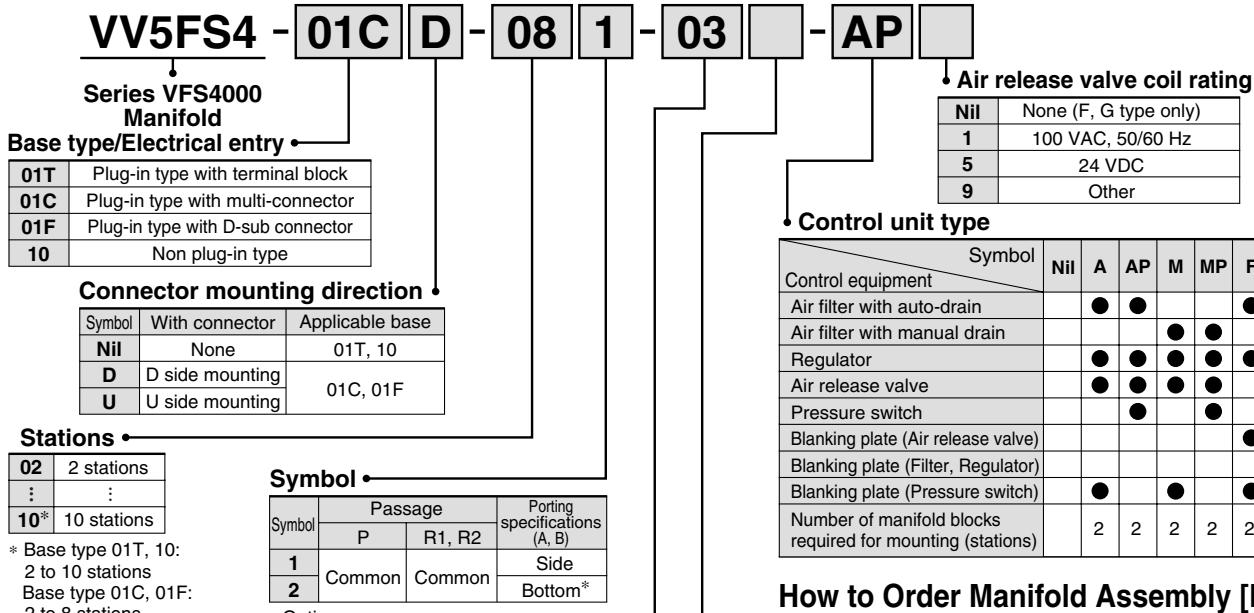
Note 1) Voltage: 24 VDC to 100 VAC

Inner voltage drop: 4 V

Note 2) Combination of a valve VFS41□□ (single) and a release valve spacer can be used as an air release valve.

Note 3) The non plug-in type cannot be mounted afterwards.

How to Order



Control unit type

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

How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

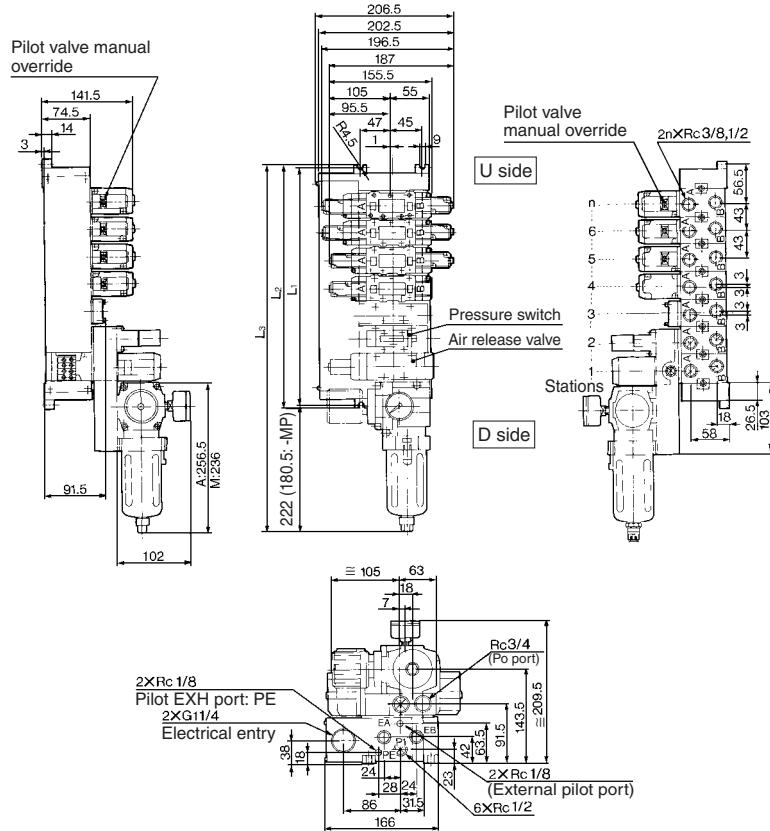
- Plug-in type with terminal block: In order to mount control unit, it requires 2 stations.
(Manifold base) VV5FS4-01T-081-03-AP5 1
(2 position single) * VFS4100-5FZ 4
(2 position double) * VFS4200-5FZ 2
- Non plug-in type: In order to mount control unit, it requires 2 stations.
(Manifold base) VV5FS4-10-061-03-A 1
(2 position single) * VFS4110-5D 4

→ The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

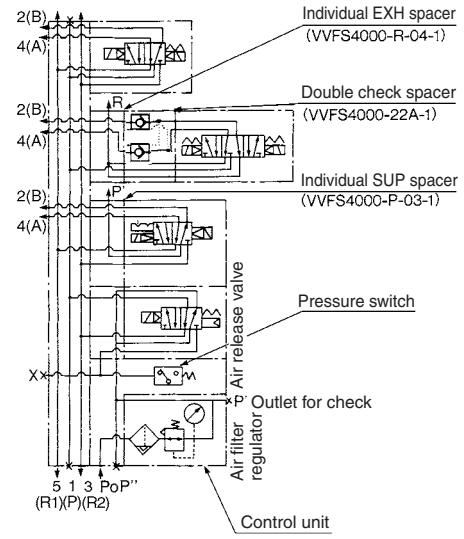
Series VFS4000

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

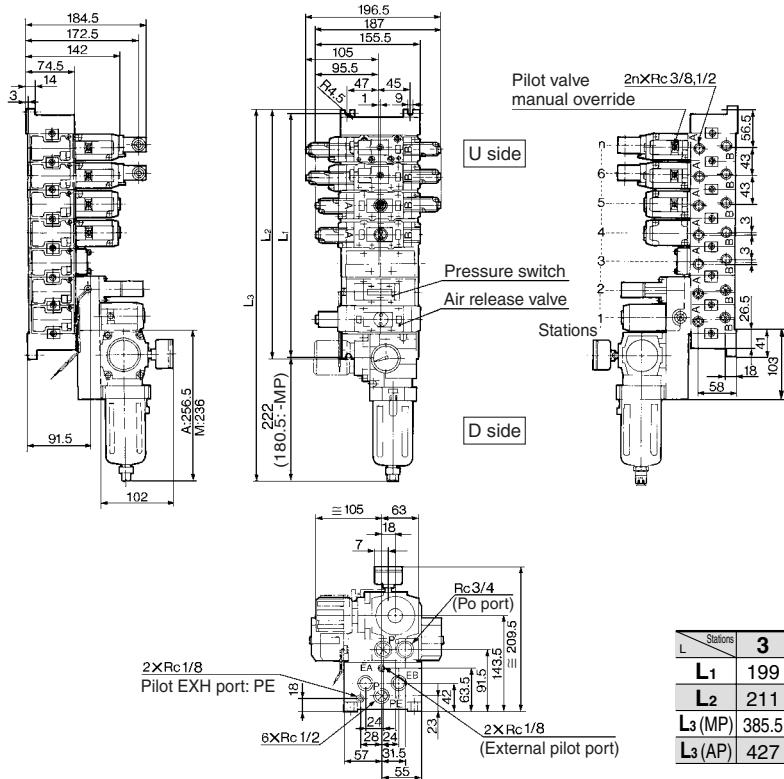
Plug-in type: VV5FS4-01T-Station 1-Port size-AP Voltage for release valve



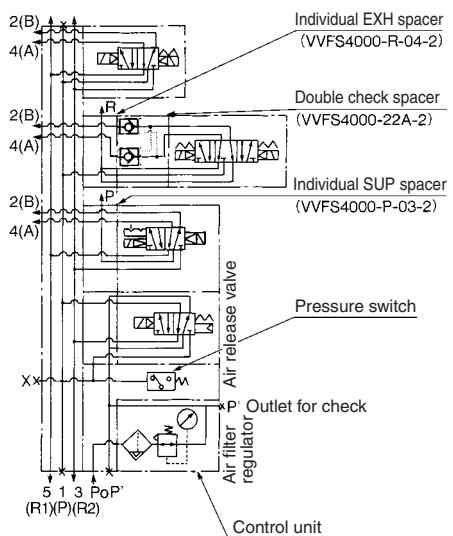
Example for manifold



Non plug-in type: VV5FS4-10-Station 1-Port size-AP Voltage for release valve



Example for manifold



L Stations	n: Stations									
	3	4	5	6	7	8	9	10	Formula	
L₁	199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70	
L₂	211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82	
L₃ (MP)	385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L ₃ = 43 x n + 256.5	
L₃ (AP)	427	470	513	556	599	642	685	728	L ₃ = 43 x n + 298	

Made to Order

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output)
Serial Transmission System

How to Order

How to Order Manifold

VV5FS4 -01S **U** **V** - **08** **1** - **03** - X199

Plug-in type
Serial transmission kit

SI unit mounting position

D	D side mounting
U	U side mounting

• Stations

2	2 stations
:	:
10	10 stations

• Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

• Port size

Symbol	P, R1, R2	A, B
03		Rc 3/8
04		Rc 1/2
M		Mixed

* For bottom ported: Rc 1/8 only

SI unit can be mounted on either U or D side.

• Applicable models

Symbol	SI unit part no.		Description
	For U side mounting	For D side mounting	
0	—	—	Without SI unit
F1	EX123U-SUW1	EX123D-SUW1	NKE Corporation: Uni-wire System (16 outputs)
H	EX123U-SUH1	EX123D-SUH1	NKE Corporation: Uni-wire H System (16 outputs)
J1	EX123U-SSL1	EX123D-SSL1	SUNX Corporation: S-LINK System (16 outputs)
J2	EX123U-SSL2	EX123D-SSL2	SUNX Corporation: S-LINK System (8 outputs)
Q	EX124U-SDN1	EX124D-SDN1	DevieNet (2 power supply systems)
R1	EX124U-SCS1	EX124D-SCS1	OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems)
R2	EX124U-SCS2	EX124D-SCS2	OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)
V	EX124U-SMJ1	EX124D-SMJ1	CC-Link (2 power supply systems)

• Combination symbol

Symbol	Port specification		Piping specification A, B
	P	R1, R2	
1	Common	Common	Side
2*			Bottom

* Option

Refer to pages 1653 to 1655 for the details of the EX123/124 integrated type (for output) serial transmission system.

● Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

D side

U side

SI unit output no.	1	2	3	4	5	6	7	8	9	SI unit
Double	Double	Single	Single	Single	Double	Single	Single	Single	SI unit	
A B	A B	A B	A B	A B	A B	A B	A B	A B	SI unit	

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

<Wiring Example 2> Single/Double mixed wiring (Option)

D side

U side

SI unit output no.	1	2	3	4	5	6	7	8	9	10	SI unit
Double	Double	Single	Single	Single	Single	Double	Single	Double	Single	SI unit	
A B	A B	A	A	A	A	A B	A	A B	A	SI unit	

0 1 2 3 4 5 6 7 8 9 10 11 11

* Mixed wiring is available as an option. Use the manifold specification sheet to specify this.

How to Order Valves

VFS4 **00** - **5 F**

• Symbol

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
6	3 position double check

Pilot type

Nil	Internal pilot
R	External pilot

24 VDC

• Pilot valve manual override

Nil	Non-locking push type (Flush)
A	Non-locking push type (Extended)
B	Locking type (Tool required)
C	Locking type (Lever)

• Option

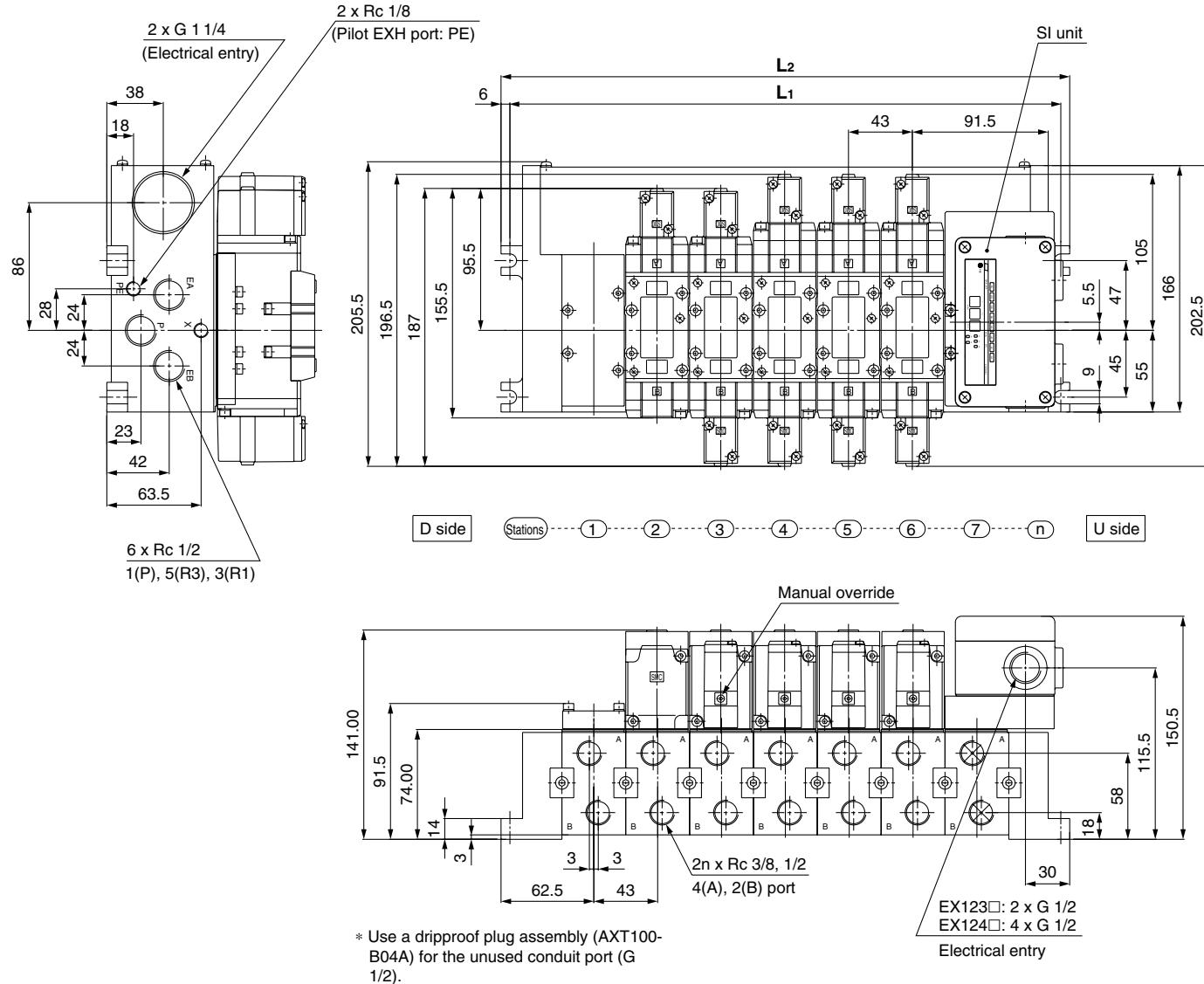
Nil	None
Z	With light/surge voltage suppressor

• Coil rated voltage

Nil	None
-----	------

Serial Transmission Kit Manifold (EX123/124): Plug-in Type

VV5FS4-01S **Mounting position** **Model** - **Stations** **Symbol** - **Port size** **Thread** -X199



Dimensions

Formula $L_1 = 43n + 70$ $L_2 = 43n + 82$
n: Stations (Max. 10 stations)

L	n	2	3	4	5	6	7	8	9	10
L₁	156	199	242	285	328	371	414	457	500	
L₂	168	211	254	297	340	383	426	469	512	

Note) Actual number of manifold base stations: Add 1 SI unit mounting station to the number of valve stations.

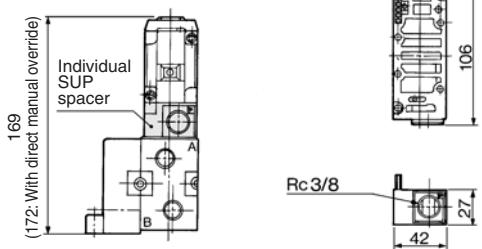
5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS4000**

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

Individual SUP spacer:

VVFS4000-P-03-1 (Plug-in type)

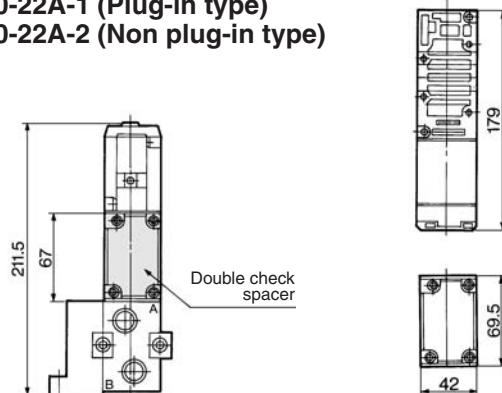
VVFS4000-P-03-2 (Non plug-in type)



Double check spacer:

VVFS4000-22A-1 (Plug-in type)

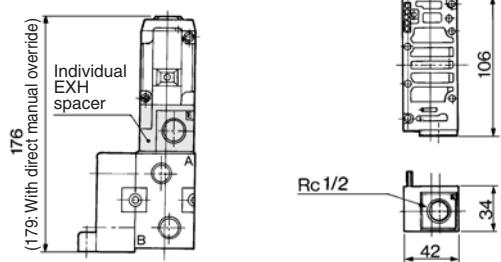
VVFS4000-22A-2 (Non plug-in type)



Individual EXH spacer:

VVFS4000-R-04-1 (Plug-in type)

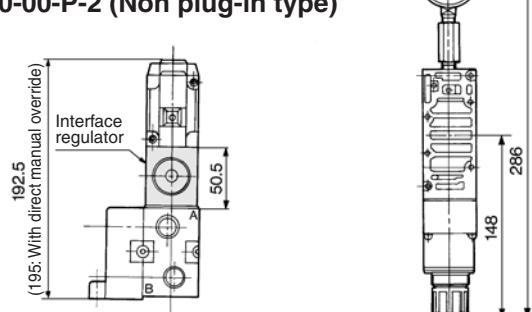
VVFS4000-R-04-2 (Non plug-in type)



Interface regulator/P port regulation:

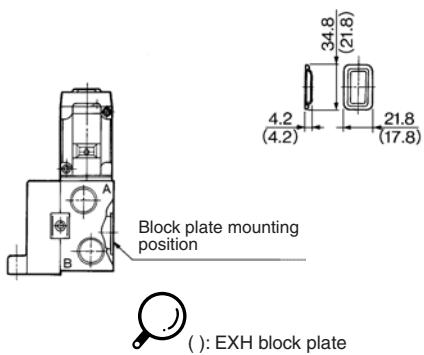
ARBF4050-00-P-1 (Plug-in type)

ARBF4050-00-P-2 (Non plug-in type)



SUP block plate: AXT634-10A

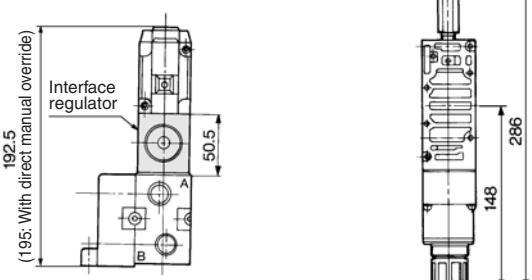
EXH block plate: AXT634-11A



Interface regulator/A port regulation:

ARBF4050-00-A-1 (Plug-in type)

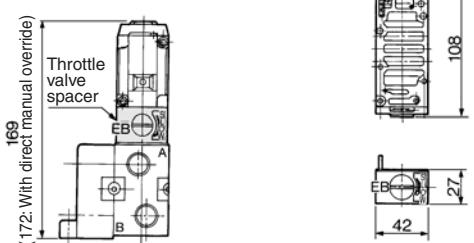
ARBF4050-00-A-2 (Non plug-in type)



Throttle valve spacer:

VVFS4000-20A-1 (Plug-in type)

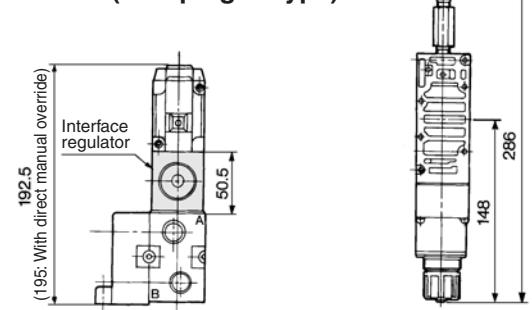
VVFS4000-20A-2 (Non plug-in type)



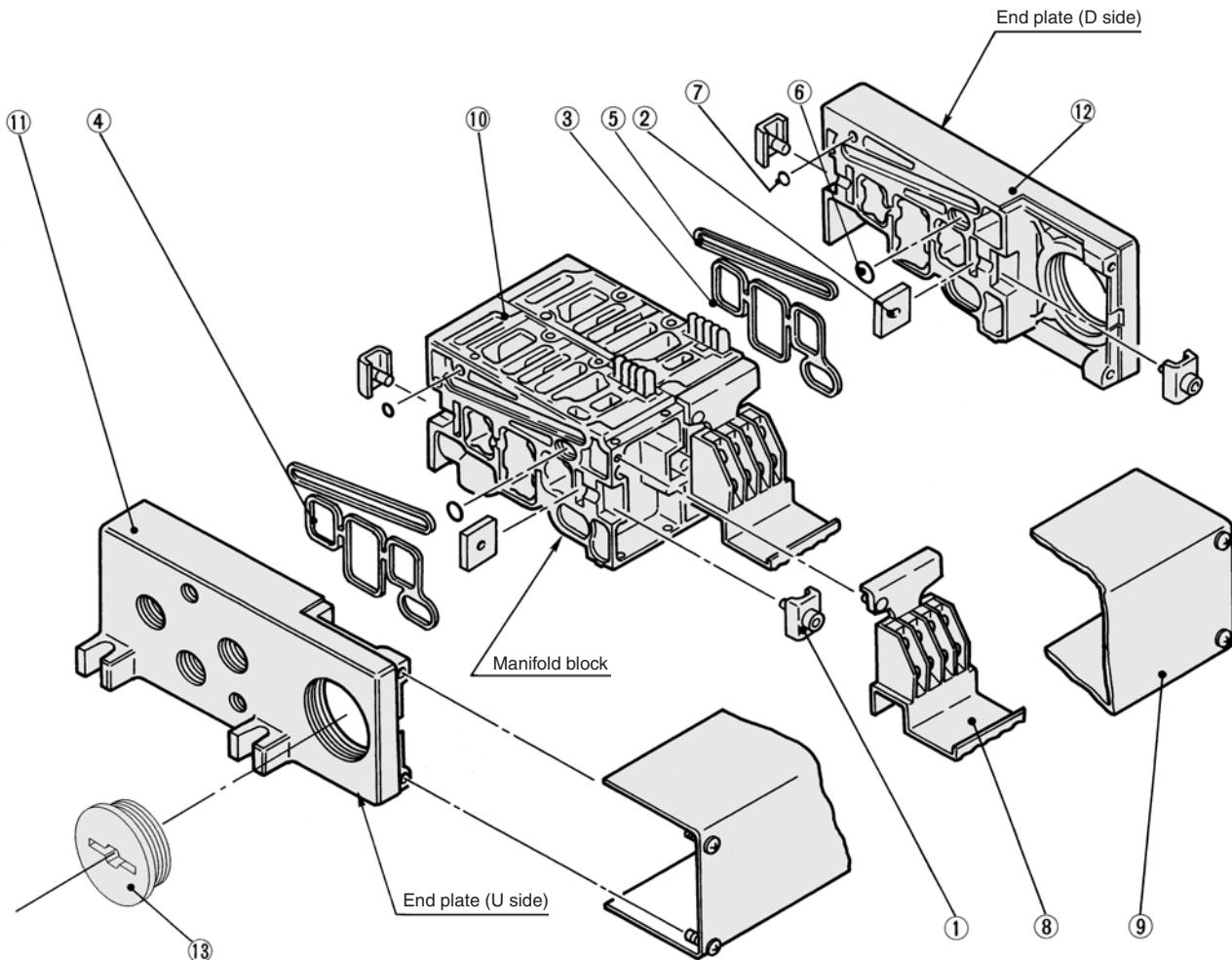
Interface regulator/B port regulation:

ARBF4050-00-B-1 (Plug-in type)

ARBF4050-00-B-2 (Non plug-in type)



Manifold Base Construction — Plug-in type, Non Plug-in type



Replacement Parts

No.	Description	Material	Part no.
1	Connection fitting A	Steel plate	VVF4000-5-1A
2	Connection fitting B	Steel plate	VVF4000-5-2
3	Gasket	NBR	VVF4000-7 (End plate)
4	Gasket	NBR	VVF4000-7-1 (Manifold block)
5	Gasket	NBR	VVF4000-8
6	O-ring	NBR	AS568-011
7	O-ring	NBR	P-3
8	Terminal assembly	—	VVF4000-6A
9	Junction cover assembly	For 01T	VVF4000-4A- Stations
9		For 01SU	AZ738-30A- Stations
13	Rubber plug	NBR	AXT336-9

- For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly ⑩. For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.

Replacement Parts: Sub Assembly



Note) Manifold Base/Construction: Plug-in type with terminal block.

No.	Description	Assembly part no.	Component parts	Applicable manifold base
10	Manifold block assembly	VVF4000-1A-1-03 ₀₄	Manifold block ⑩, Terminal ⑧, Metal joint ①, ②, Gasket ④, Receptacle assembly	Plug-in type
		VVF4000-1A-2-03 ₀₄	Manifold block ⑩, Metal joint ①, ②, Gasket ④	Non plug-in type
11	End plate (U side) assembly	VVF4000-2A-1	End plate (U) ⑪, Metal joint ①, ②	Plug-in type
		VVF4000-2A-2	End plate (U) ⑪, Metal joint ①, ②	Non plug-in type
12	End plate (D side) assembly	VVF4000-3A-1	End plate (D) ⑫, Metal joint ①, ②, Gasket ③, ⑤, O-ring ⑥, ⑦	Plug-in type
		VVF4000-3A-2	End plate (D) ⑫, Metal joint ①, ②, Gasket ③, ⑤, O-ring ⑤, ⑥	Non plug-in type

SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS5000



Model

Type of actuation		Model		Port size Rc	Flow characteristics						Max. ⁽¹⁾ operating cycle (cpm)	Response time ⁽²⁾ (ms)	Mass ⁽³⁾ (kg)
		Plug-in	Non plug-in		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)					
2 position	Single	VFS5100	VFS5110	3/8	15	0.30	3.7	15	0.30	4.1			
				1/2	16	0.15	3.7	19	0.15	4.5			
				3/4	17	0.15	3.9	20	0.13	4.7			
2 position	Double	VFS5200	VFS5210	3/8	15	0.30	3.7	15	0.30	4.1			
				1/2	16	0.15	3.7	19	0.15	4.5			
				3/4	17	0.15	3.9	20	0.13	4.7			
3 position	Closed center	VFS5300	VFS5310	3/8	14	0.25	4.0	14	0.24	4.1	300	55 or less	1.16
				1/2	16	0.25	4.1	16	0.24	4.1			
				3/4	16	0.25	4.1	16	0.23	4.1			
3 position	Exhaust center	VFS5400	VFS5410	3/8	14	0.32	3.8	14	0.25	3.5	300	55 or less	1.14
				1/2	16	0.17	3.8	16	0.18	4.1			
				3/4	17	0.20	4.2	17	0.13	4.1			
3 position	Pressure center	VFS5500	VFS5510	3/8	14	0.30	3.7	14	0.31	3.8	300	55 or less	1.14
				1/2	16	0.23	3.9	16	0.22	4.1			
				3/4	18	0.25	4.6	17	0.22	4.3			
3 position	Double check	VFS5600	VFS5610	3/8	9.0	—	—	9.0	—	—	180	60 or less	1.99
				1/2	9.0	—	—	9.0	—	—			
				3/4	9.0	—	—	9.0	—	—			

Note 1) Based on JIS B 8375 (once per 30 days) for the minimum operating frequency. Note 2) Based on JIS B8375-1981. (The value at supply pressure 0.5 MPa.)

Note 3) The figures in the above list are without sub-plate. In the case of with plug-in sub-plate and, with non plug-in sub-plate add Rc 3/8, 1/2—0.744 kg, Rc 3/4—0.966 kg and Rc 3/8, 1/2—0.577 kg, Rc 3/4—0.823 kg respectively.

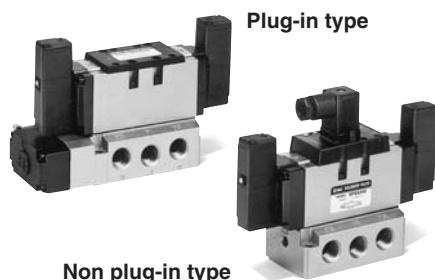
Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

Compact yet provides a large flow capacity
3/4: C: 20 dm³/(s·bar)

Low power consumption: 1.8 W DC

Easy maintenance

2 types of sub-plates:
Plug-in and non plug-in



JIS Symbol

2 position	3 position
Single	Closed center
Double	Exhaust center
Pressure center	
Double check	

Standard Specifications

Valve specifications	Fluid		Air/Inert gas
	Maximum operating pressure	Minimum operating pressure	1.0 MPa
Proof pressure		0.1 MPa	1.5 MPa
Ambient and fluid temperature		-10 to 60°C ⁽¹⁾	
Lubrication		Non-lube ⁽²⁾	
Pilot valve manual override		Non-locking push type (Flush)	
Shock/Vibration resistance		150/50 m/s ² ⁽³⁾	
Enclosure		Type E: Dustproof (Level 0), Type F: Driproof (Level 2), Type D: Splashproof (Level 4) ⁽⁴⁾	
Electricity specifications	Coil rated voltage		100, 200 VAC, 50/60 Hz; 24 VDC
	Allowable voltage fluctuation		-15 to +10% of rated voltage
Coil insulation type		Class B or equivalent (130°C) ⁽⁵⁾	
Apparent power (Power consumption) AC	Inrush	5.6 VA/50 Hz, 5.0 VA/60 Hz	
	Holding	3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz	
Power consumption DC		1.8 W (2.04 W: With light/surge voltage suppressor)	
Electrical entry		Plug-in type	Conduit terminal
Non plug-in type		Grommet terminal, DIN terminal	

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 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)

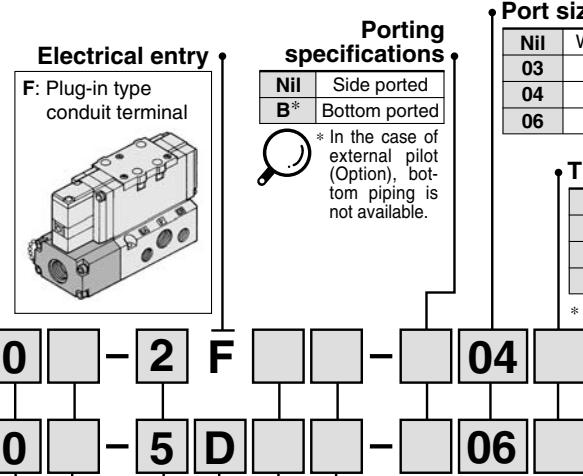
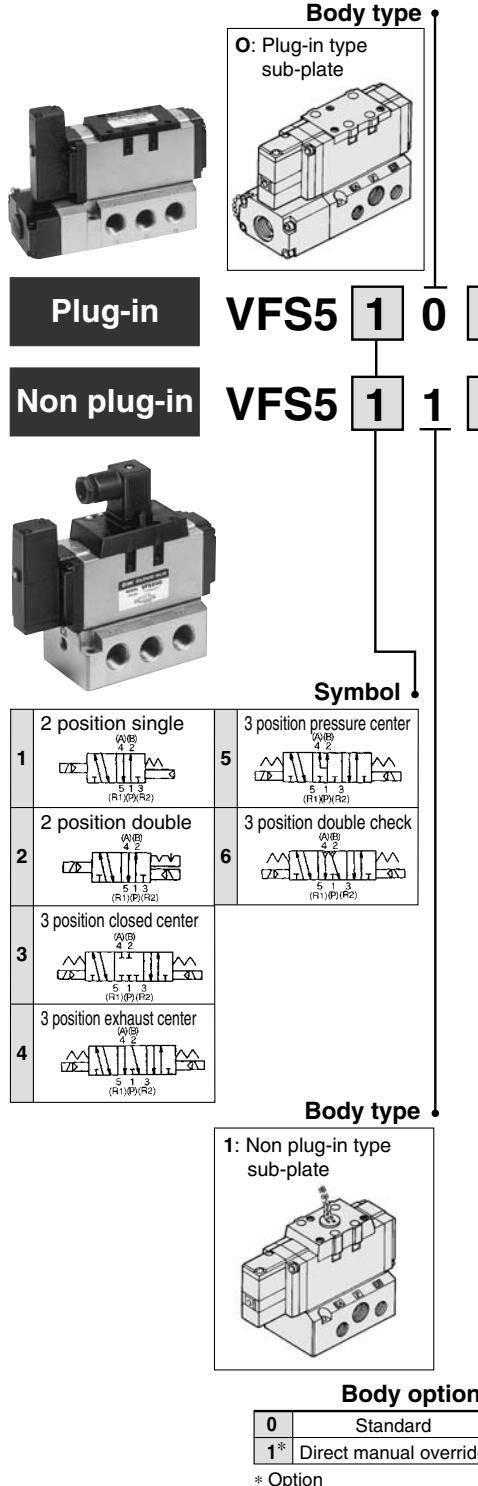
Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

Option Specifications

Pilot type	External pilot ^(Note)	
Manual override	Direct manual override	
Pilot valve	Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever)	
Coil rated voltage	110 to 120, 220, 240 VAC (50/60 Hz)	
	12, 100 VDC	
Porting specifications		Bottom ported
Option	With light/surge voltage suppressor, Non-rotating DIN terminal	

Note) Operating pressure: 0 to 1.0 MPa
Pilot pressure: 0.1 to 1.0 MPa

How to Order



Option

Nil	None
Z	With light/surge voltage suppressor
P*	Non-rotating DIN terminal
ZP*	Light/Surge Voltage Suppressor Non-rotating DIN terminal

* Type "P", "ZP" is available for DIN type only.

Electrical entry

E: Grommet terminal	D: DIN terminal
---------------------	-----------------

Coil rated voltage

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

* Option

Pilot type

Nil	Internal pilot
R*	External pilot

* Option

Pilot valve Manual override

Nil	Non-locking push type (Flush)
A*	Non-locking push type (Extended)
B*	Locking type (Tool required)
C*	Locking type (Lever)

* Option

How to Order Pilot Valve Assembly

SF4 - 1 F - 30

Coil rated voltage

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

* Option

Manual override

Nil	Non-locking push type (Flush)
A*	Non-locking push type (Extended)
B*	Locking type (Tool required)
C*	Locking type (Lever)

* Option

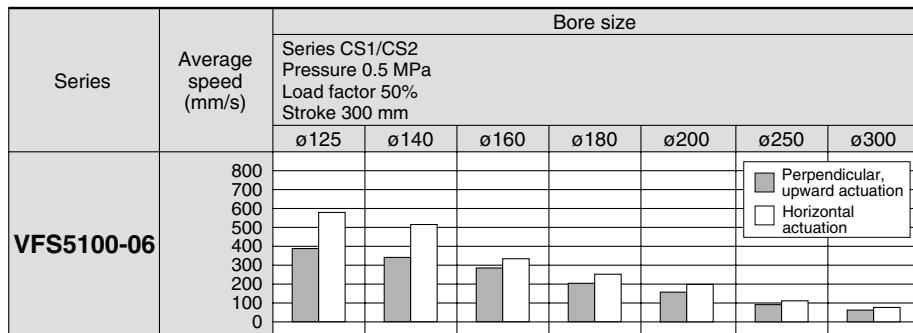


** Refer to page 1224 for voltage conversion.

Series VFS5000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.



* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
* The average velocity of the cylinder is what the stroke is divided by the total stroke time.
* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

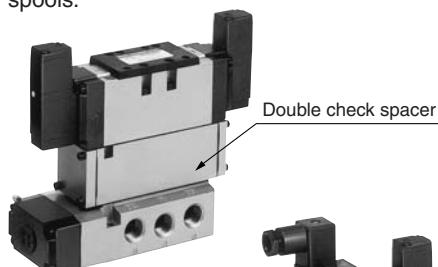
Conditions

	Series CS1	
VFS5100-06	Tube bore x Length	SGP20A x 1 m
	Speed controller	AS500-06
	Silencer	AN500-06

Double Check Spacer/Specifications

Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



Plug-in type



Non plug-in type

Specifications

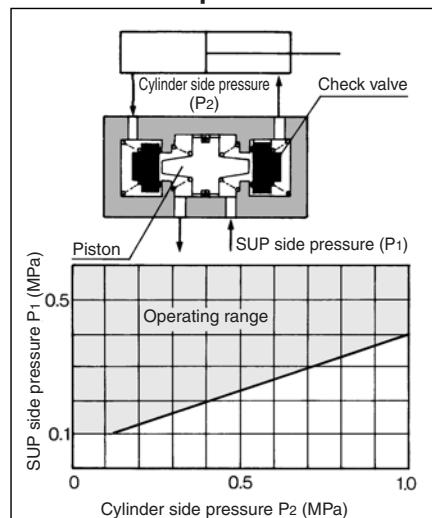
Double check spacer part no.	Plug-in type	Non plug-in type
VVFS5000-22A-1	VVFS5000-22A-2	

Applicable valve model	VFS5400-□F	VFS5410-□D VFS5410-□E

Caution

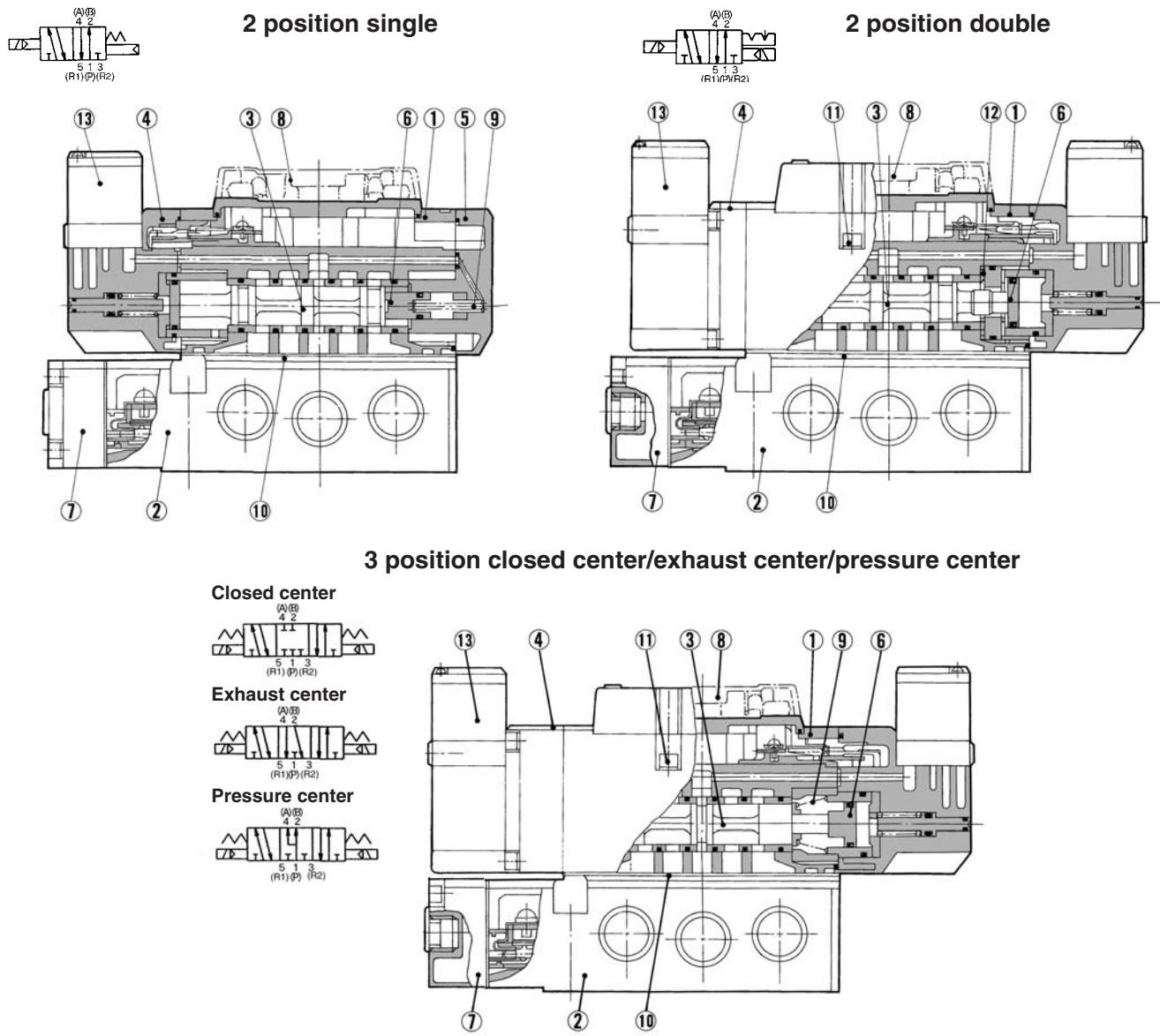
- In the case of 3 position double check valve (VFS56□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

Check Valve Operation



- The combination of VFS51⁰0, VFS52⁰0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

Construction



Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Sub-plate	Aluminum die-casted	Platinum silver
3	Spool/Sleeve	Stainless steel	—
4	Adapter plate	Resin	Black
5	End plate	Resin	Black
6	Piston	Resin	—
7	Junction cover	Resin	—
8	Light cover	Resin	—
9	Return spring	Stainless steel	—
10	Gasket	NBR	—
11	Hexagon socket head screw	Steel	—
12	Detent assembly	—	—
13	Pilot valve assembly	—	—

* Refer to "How to Order Pilot Valve Assembly" on page 1203.

Sub-plate Assembly Part No.

Plug-in	VFS5000-P- 03 04 06
Non plug-in	VFS5000-S- 03 04 06

 * Mounting bolt and gasket are not included.

Sub-plate Assembly (For External Pilot) Part No.

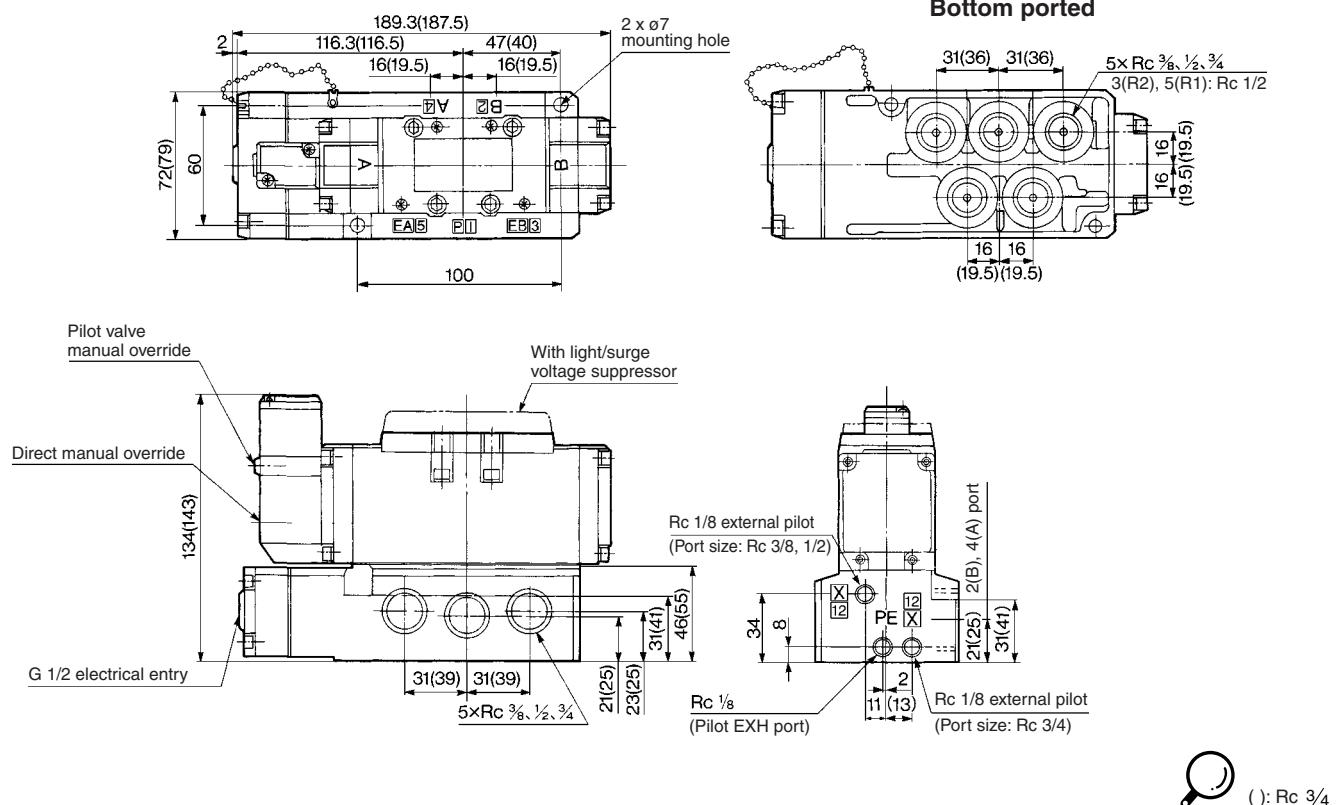
Plug-in	VFS5000-P-R 03 04 06
Non plug-in	VFS5000-S-R 03 04 06

Part no. for mounting bolt and gasket BG-VFS5000

Series VFS5000

Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS5100-□F

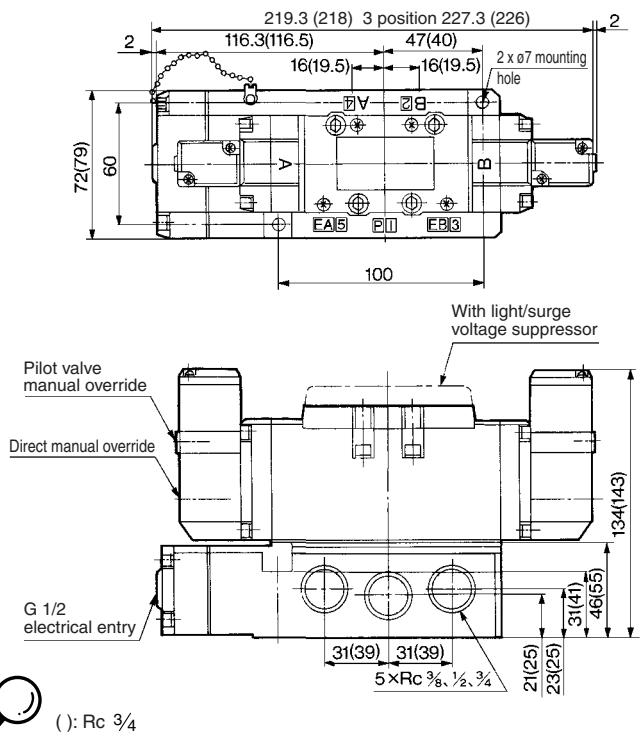


2 position double: VFS5200-□F

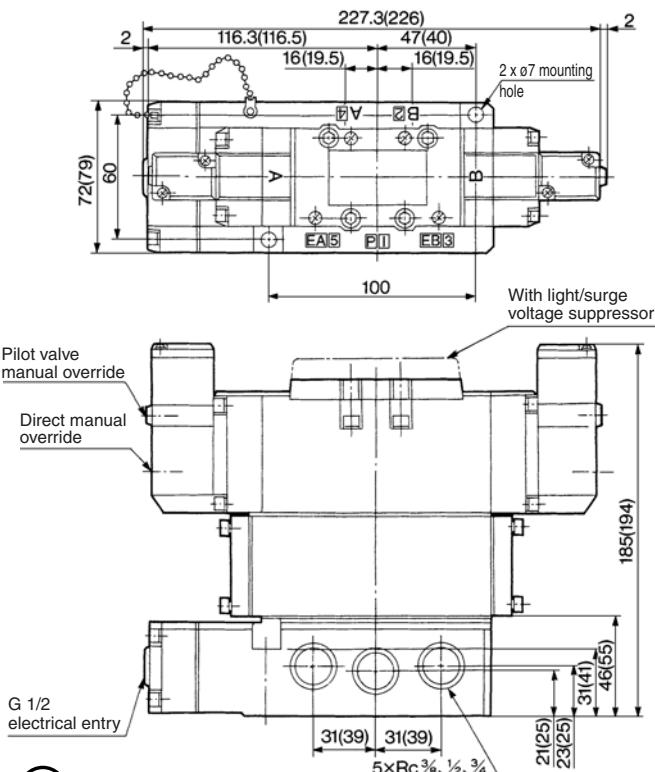
3 position closed center: VFS5300-□F

3 position exhaust center: VFS5400-□F

3 position pressure center: VFS5500-□F



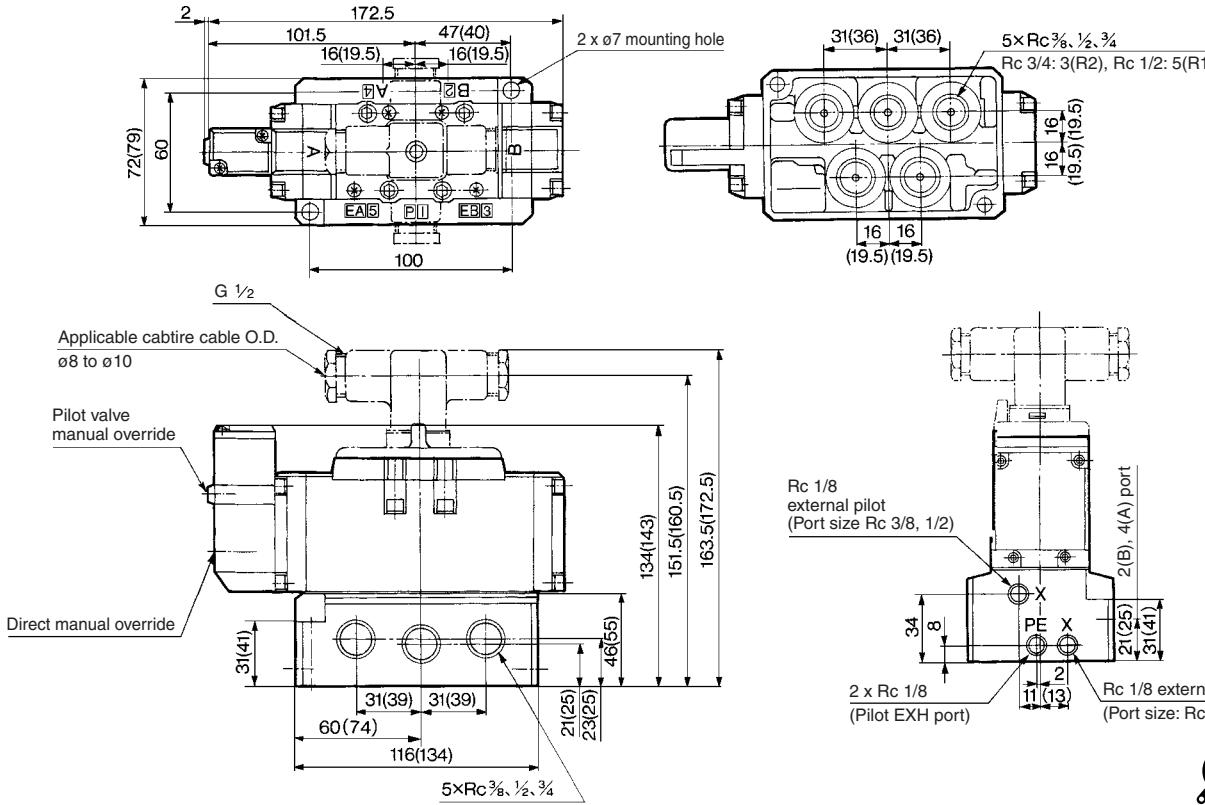
3 position double check: VFS5600-□F



5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS5000**

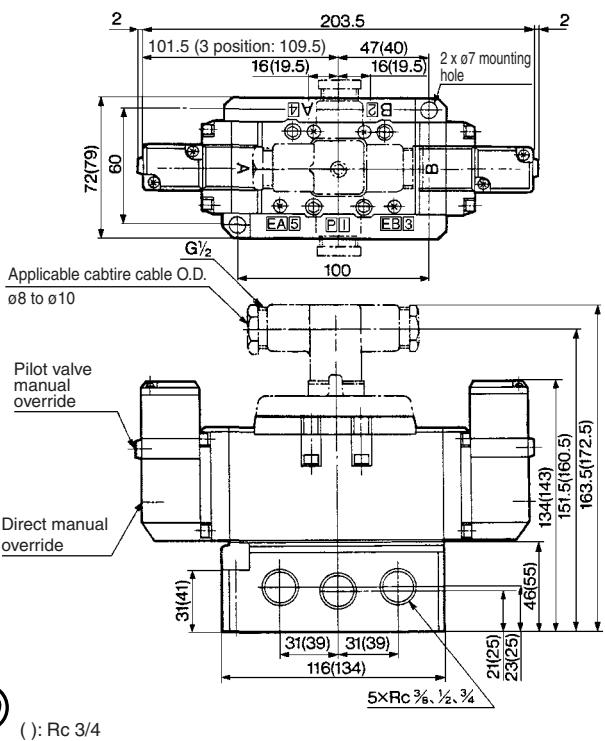
Non Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

2 position single: VFS5110-□E, VFS5110-□D



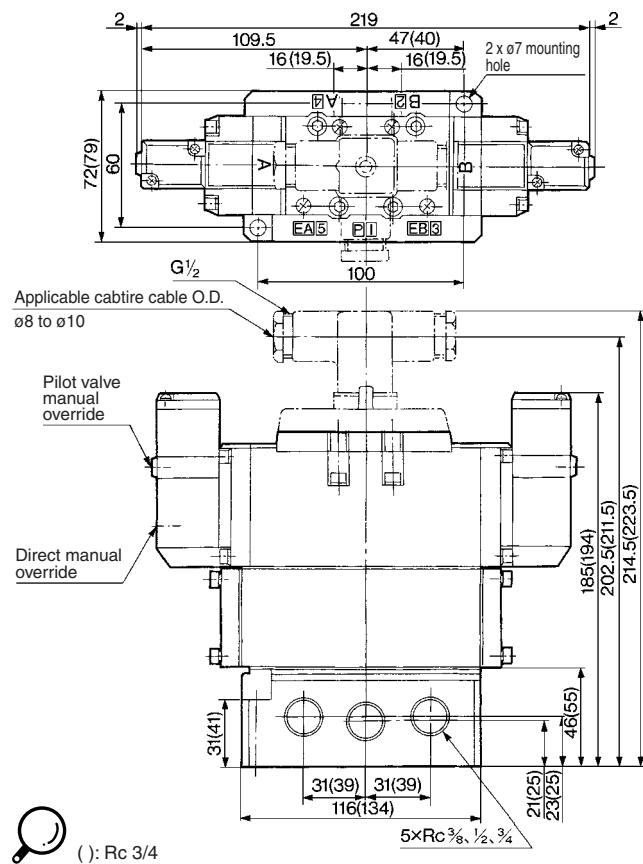
SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

2 position double: VFS5210-□E, VFS5210-□D
3 position closed center: VFS5310-□E, VFS5310-□D
3 position exhaust center: VFS5410-□E, VFS5410-□D
3 position pressure center: VFS5510-□E, VFS5510-□D



(): Rc 3/4

3 position double check: VFS5610-□E, VFS5610-□D



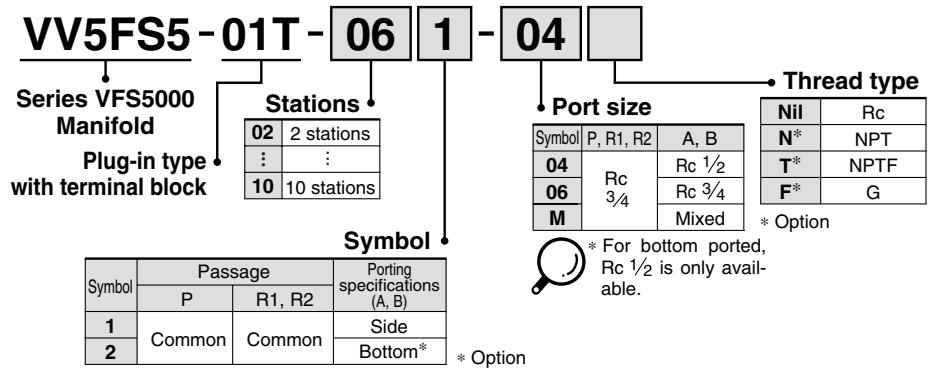
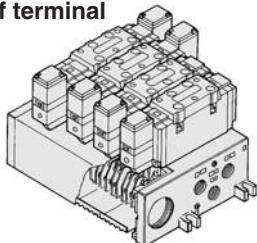
(): Rc 3/4

Series VFS5000

Manifold Specifications

Plug-in Type: With Terminal Block

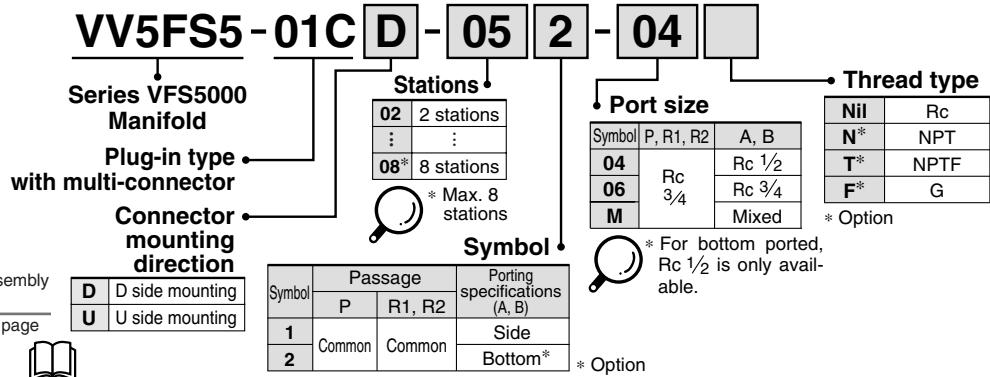
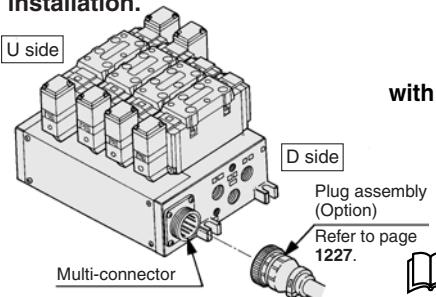
- Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



Plug-in Type: With Multi-connector

(Wiring specifications: Refer to page 1227.)

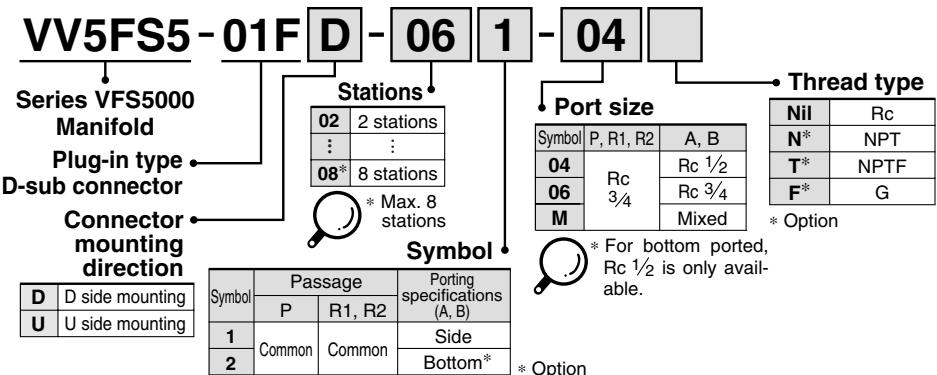
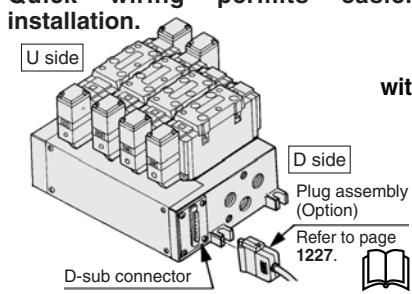
- Master connection of power and solenoid valves.
- Quick wiring permits easier installation.



Plug-in Type: With D-sub Connector

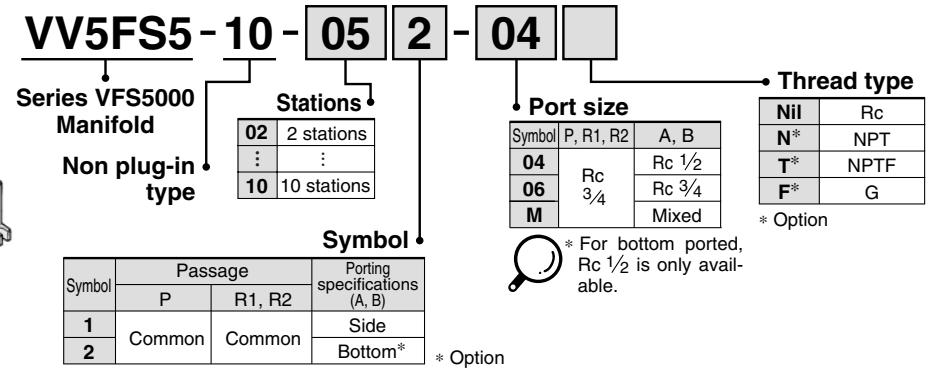
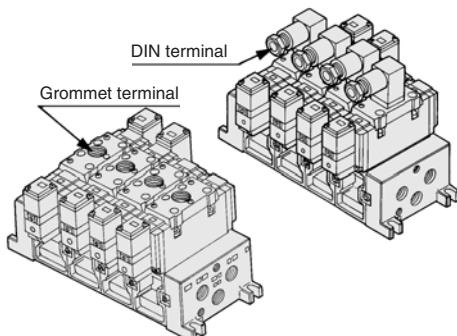
(Wiring specifications: Refer to page 1227.)

- Wide range of interchangeability (MIL Spec. D-sub connector terminal 25 pcs attached.)
- Quick wiring permits easier installation.



Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS5000**

How to Order Manifold Assembly

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

<Example>

- Plug-in type with terminal block: 6 stations
(Manifold base) VV5FS5-01T-061-041
(2 position single) VFS5100-5FZ3
(2 position double) VFS5200-5FZ2
(Blanking plate) VVFS5000-10A1
- Non plug-in type: 6 stations
(Manifold base) VV5FS5-10-061-041
(2 position single) VFS5110-5D5
(3 position exhaust center) VFS5410-5D1
(Individual EXH center) VVFS5000-R-04-21

Manifold Specifications

Base model	Wiring	Porting specifications		Port size Rc	Stations	Applicable valve model
		A, B port	P, R1, R2			
Plug-in type VV5FS5-01	• With terminal block • With multi-connector • With D-sub connector	Side/ Bottom	Rc 3/4	Rc 1/2, 3/4	2 to 10*	VFS5□00-□F
Non plug-in type VV5FS5-10	• DIN terminal • Grommet terminal					VFS5□10-□D VFS5□10-□E

*With multi-connector, or with D-sub connector: 8 stations max.

Flow Characteristics at the Number of Manifold Stations (Operated individually)

Model	Passage/Stations	Station 1	Station 5	Station 10
VV5FS5	1 → 4/2 (P → A/B)	C [dm ³ /(s·bar)]	6.0	6.0
		b	0.20	0.20
		Cv	1.4	1.4
	4/2 → 5/3 (A/B → R1/R2)	C [dm ³ /(s·bar)]	7.0	7.0
		b	0.20	0.20
		Cv	1.8	1.8

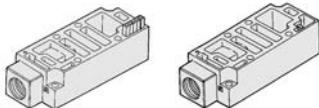
* Port size: Rc 1/2, 3/4

Manifold Option Parts Assembly

Individual SUP spacer

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

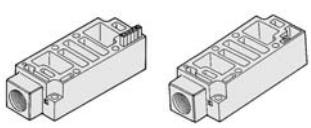
Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-P-04-1	VVFS5000-P-04-2



Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (common EXH type)

Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-R-04-1	VVFS5000-R-04-2



SUP block plate

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

Body type	Plug-in type	Non plug-in type
Part no.		AXT628-12A

EXH block plate

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

Body type	Plug-in type	Non plug-in type
Part no.		AXT512-14-1A



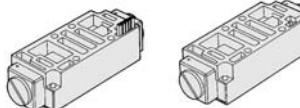
EXH block plate

SUP block plate

Throttle valve spacer

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

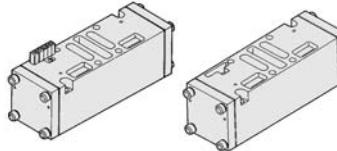
Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-20A-1	VVFS5000-20A-2



Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

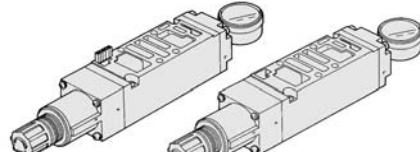
Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-22A-1	VVFS5000-22A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (In the event of using, refer to "Flow Characteristics" on page 1225).

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF5050-00-P-1	ARBF5050-00-P-2
A port regulation	ARBF5050-00-A-1	ARBF5050-00-A-2
B port regulation	ARBF5050-00-B-1	ARBF5050-00-B-2



Blanking plate

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

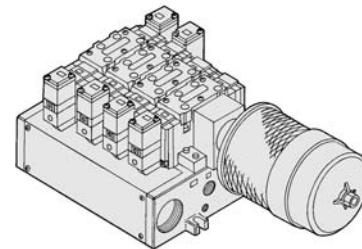
Body type	Plug-in type	Non plug-in type
Part no.		VVFS5000-10A

Manifold Option

With exhaust cleaner

Plug-in type/Non plug-in type

- Valve exhaust noise dampening: 35 dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.



For details, refer to page 1212.

Made to Order

Manifold with serial transmission kit Plug-in type

- Solenoid valve wiring process reduced considerably.



For details, refer to page 1214.

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

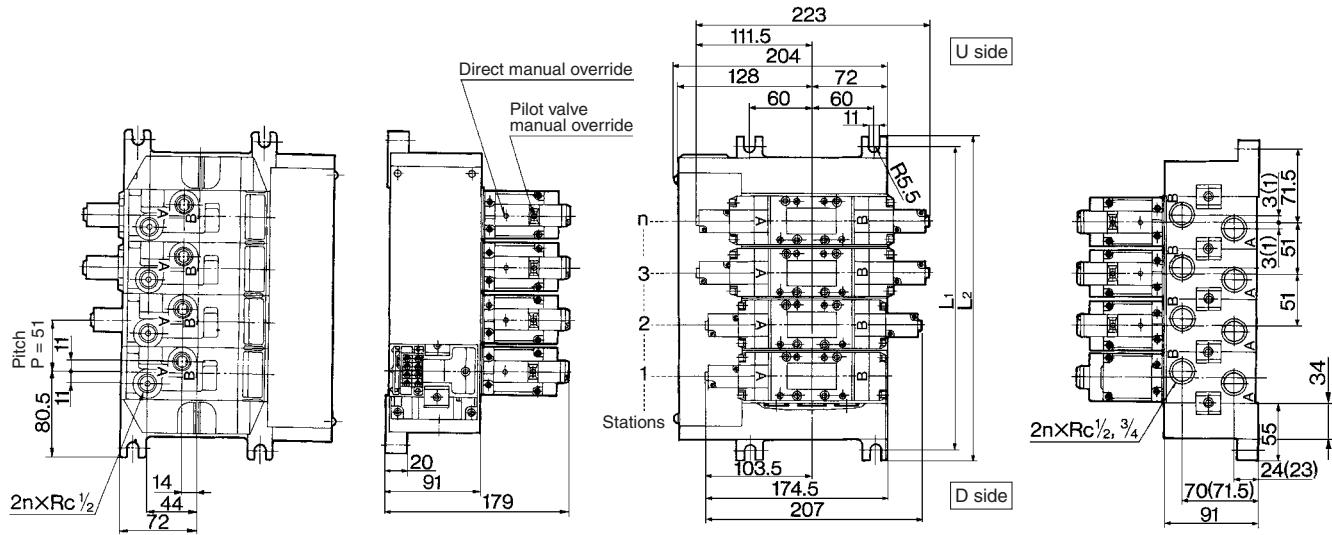
VFR

VQ7

Series VFS5000

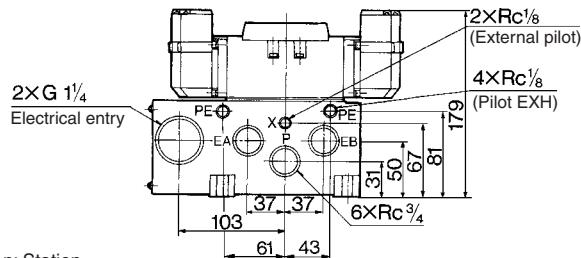
Manifold — Plug-in type, Non plug-in type

Plug-in type (With terminal block): VV5FS5-01T-Station 1-Port size



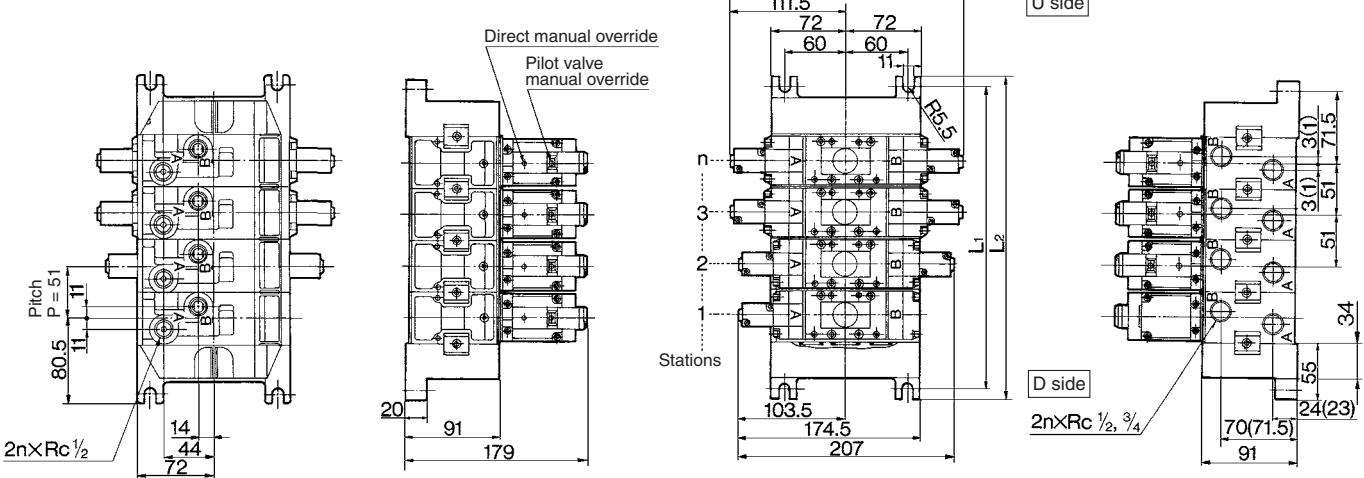
Bottom ported:

VV5FS5-01T-Station 2-Port size



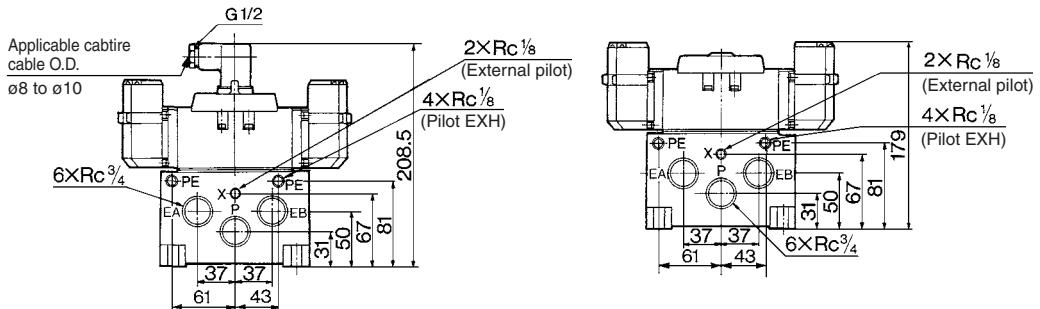
(): 2(B)/4(A) port Rc 3/4

Non plug-in type: VV5FS5-10-Station 1-Port size



DIN terminal

VV5FS5-10-Station 2-Port size



Formula for manifold weight $M = 0.811n + 1.231$ (kg) n: Station

Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	194	245	296	347	398	449	500	551	602	$L_1 = 51 \times n + 92$
L ₂	212	263	314	365	416	467	518	569	620	$L_2 = 51 \times n + 110$

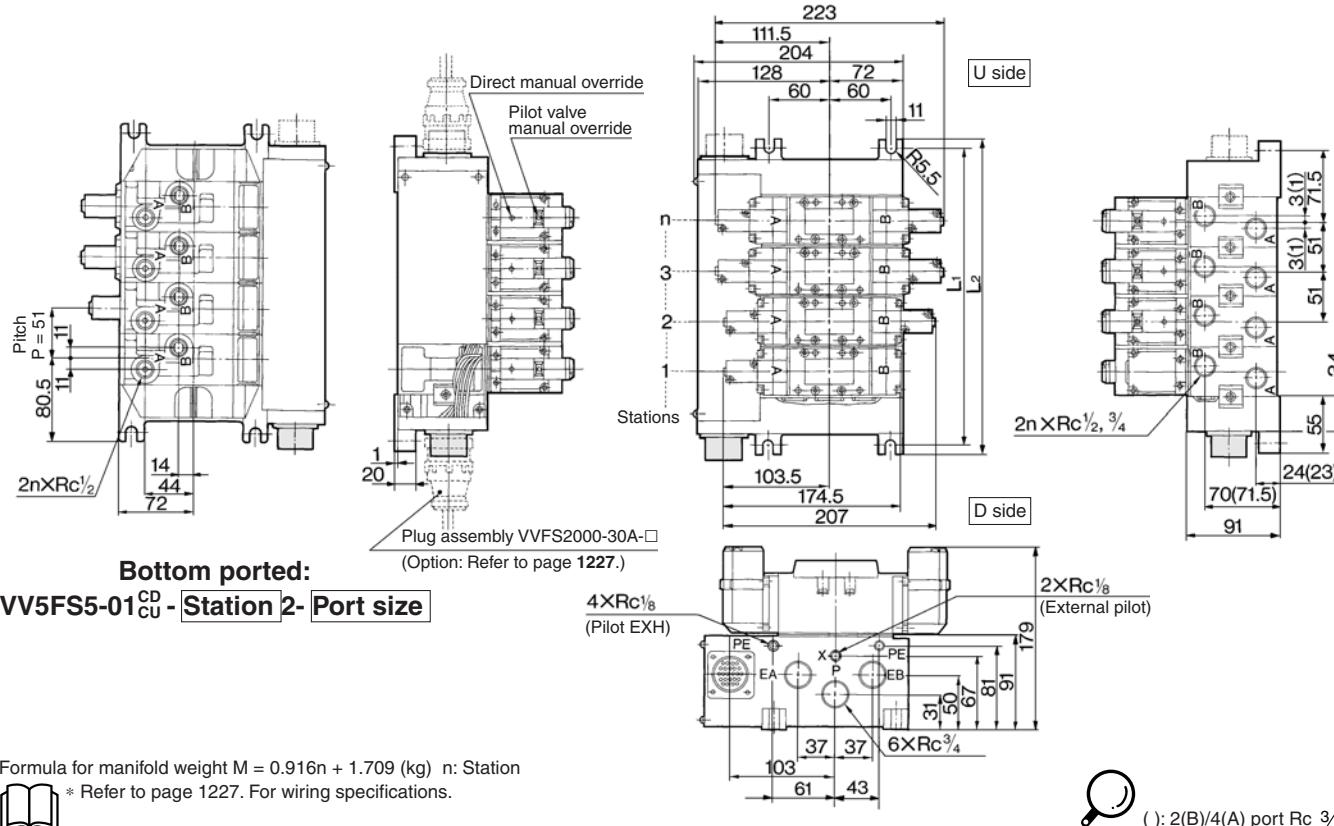


(): 2(B)/4(A) port Rc 3/4

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS5000**

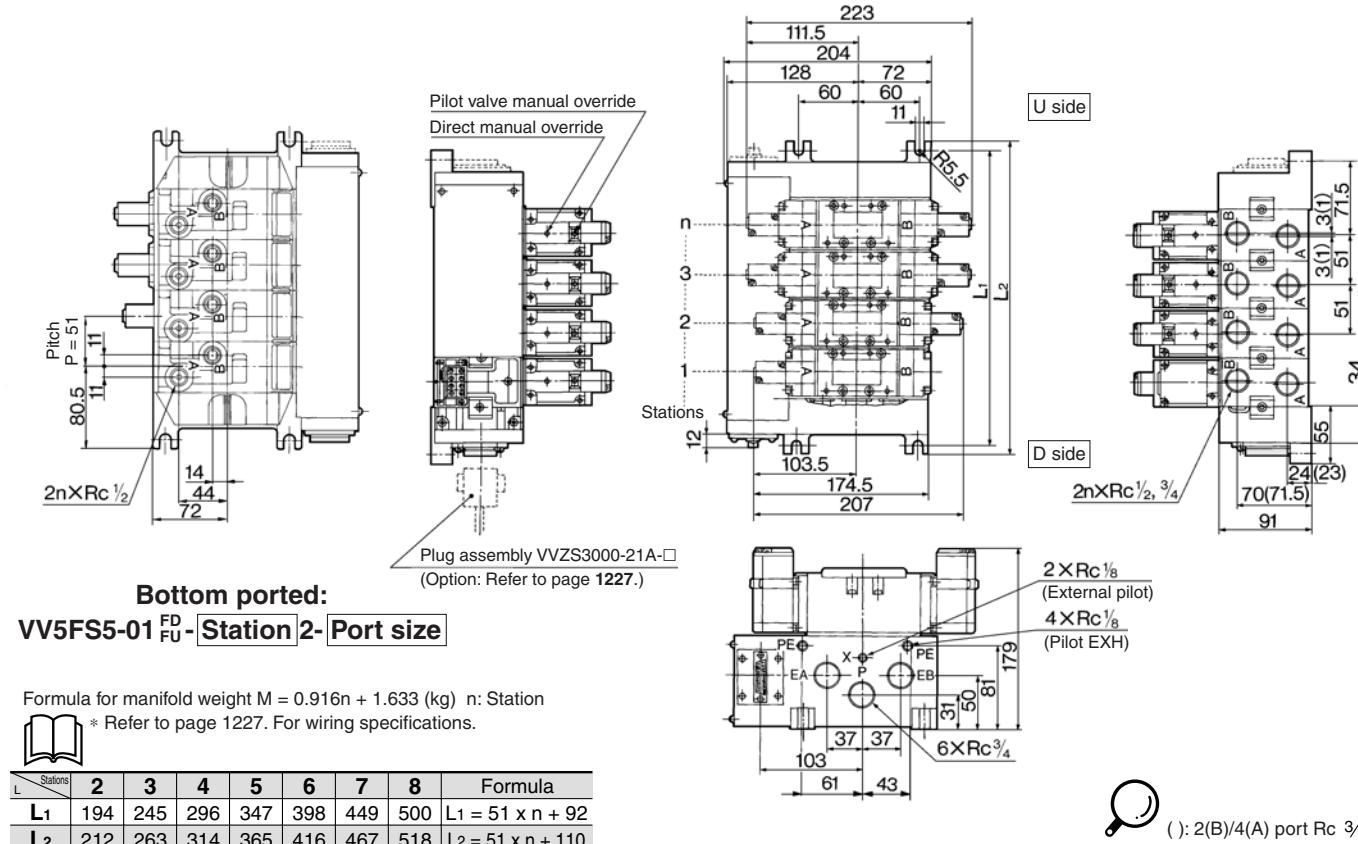
Manifold — Plug-in type with multi-connector/D-sub connector

Plug-in type with multi-connector: VV5FS5-01CD-**Station 1- Port size**, VV5FS5-01CU-**Station 1- Port size**



SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

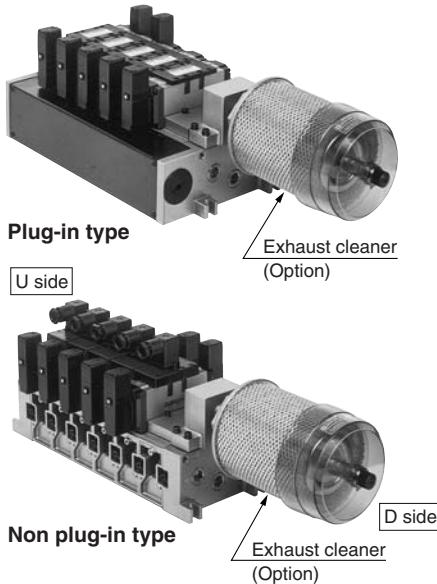
Plug-in type with D-sub connector: VV5FS5-01FD-**Station 1- Port size**, VV5FS5-01FU-**Station 1- Port size**



Series VFS5000

Manifold with Exhaust Cleaner

- Serves to protect working environment.
- Valve exhaust noise dampening: 35 dB or more.
- Collection rate of drainage and oil mist: 99.9% or more.
- Piping work is reduced.



Manifold Specifications

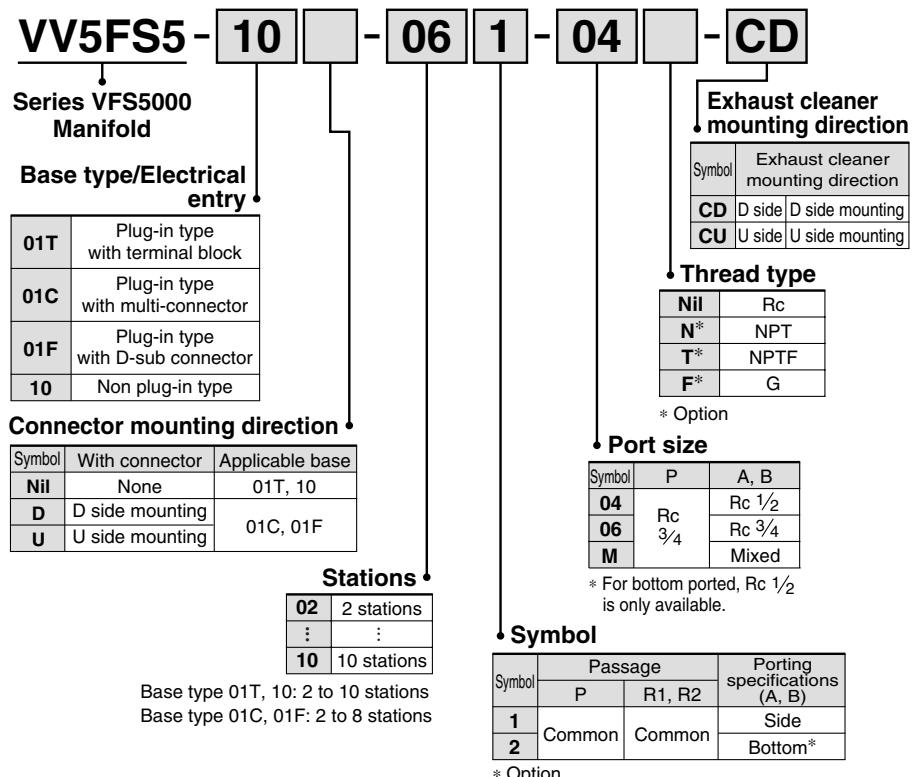
Manifold	Plug-in type: VV5FS5-01□	Non plug-in type: VV5FS5-10
Wiring	With terminal blocks With multi-connector With D-sub connector	DIN terminal Grommet terminal
Applicable valve model	VFS5□00-□F	VFS5□10-□D, VFS5□10-□E
Porting specifications	Common SUP/Common EXH	
Rc	2(B), 4(A) port 1(P), 3(R2), 5(R1)	Side: 1/2, 3/4, Bottom: 1/2 (Option) P: 3/4, EXH: 1 1/2
Stations		2 to 10 ⁽¹⁾
Applicable exhaust cleaners	AMC810-14 (Connecting port size R 1 1/2) ⁽²⁾	



Note 1) With multi-connector, or with D-sub connector: 8 stations max.

Note 2) Exhaust cleaner: Not attached.

How to Order



How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

- Plug-in type with terminal block (6 stations)

(Manifold base)	VV5FS5-01T-061-04-CD	1
(2 position single)	* VFS5100-5FZ	3
(2 position double)	* VFS5200-5FZ	2
(Blanking plate)	* VVFS5000-10A	1
(Exhaust cleaner)	AMC810-14	1
- Non plug-in type (6 stations)

(Manifold base)	VV5FS5-10-061-04-CU	1
(2 position single)	* VFS5110-5E	3
(2 position double)	* VFS5210-5E	2
(Blanking plate)	* VVFS5000-10A	1
(Exhaust cleaner)	AMC810-14	1

→ The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

⚠ Caution

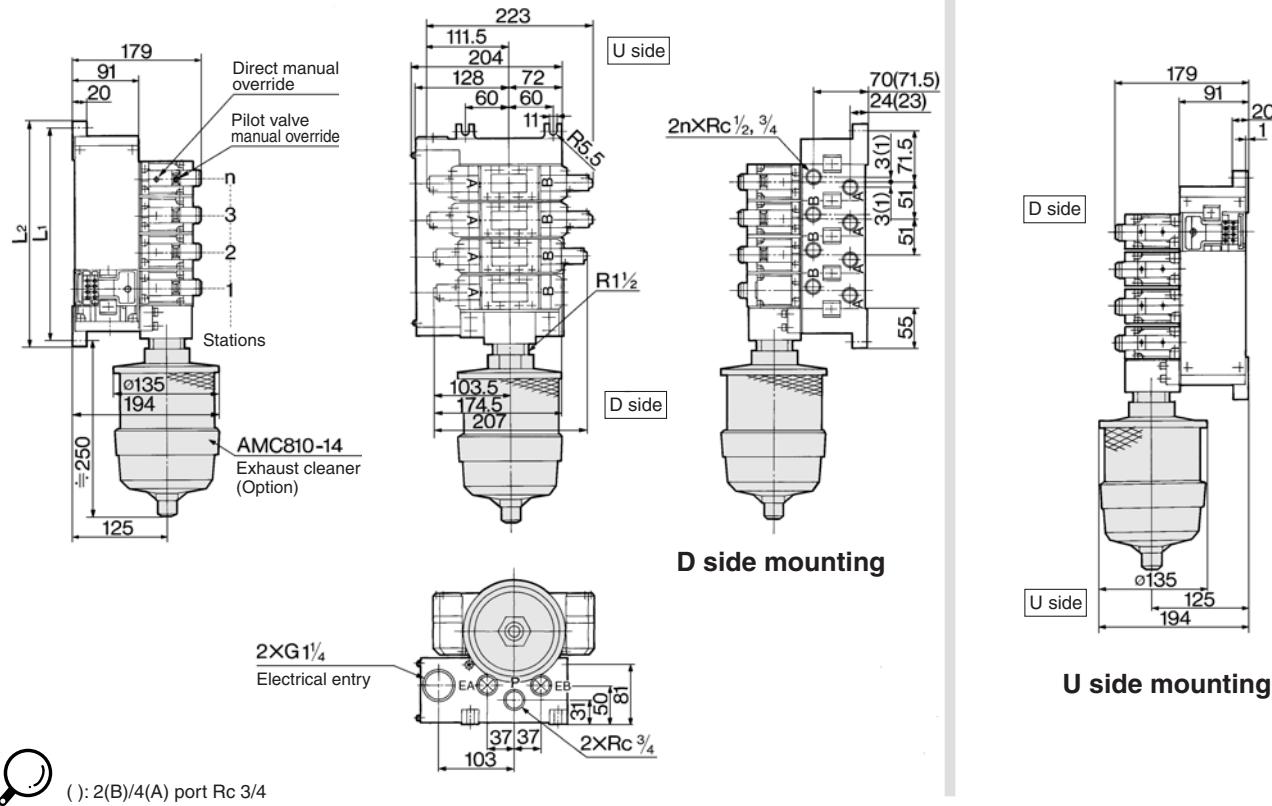
When using an exhaust cleaner, mount it downwards.



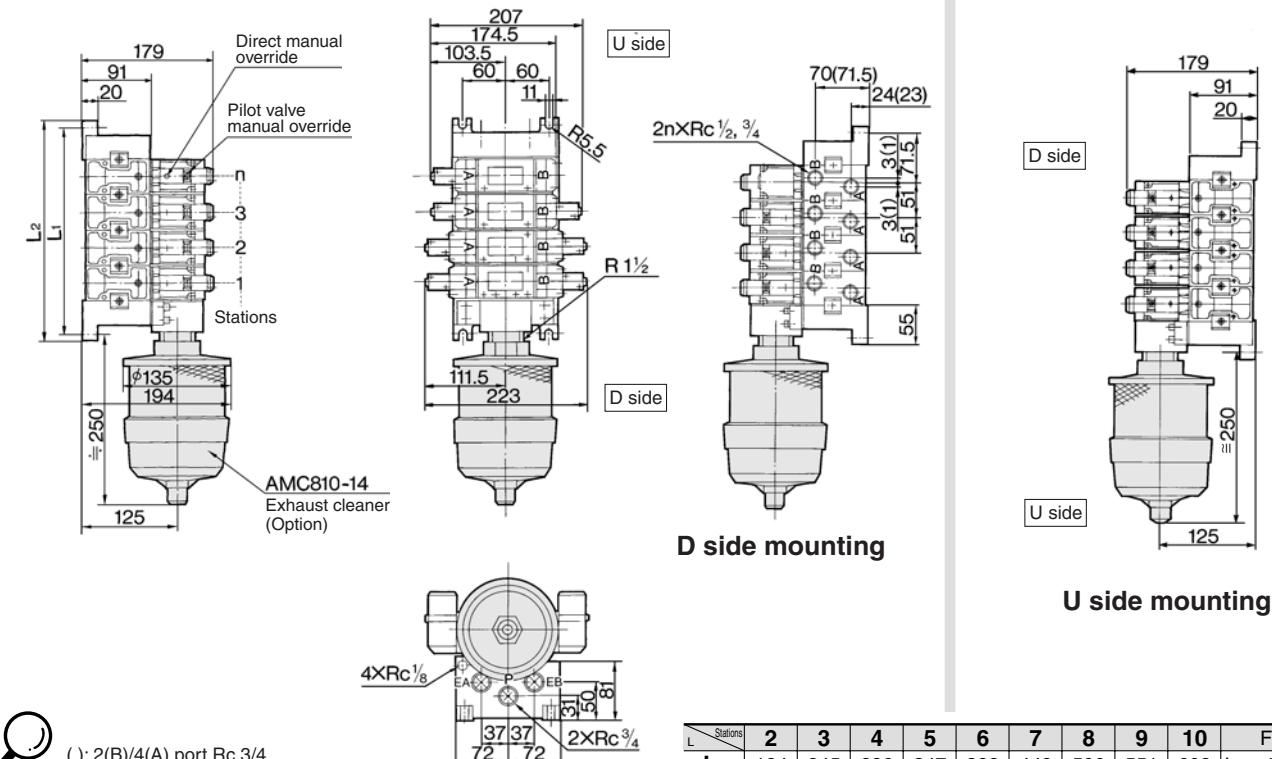
* Refer to Best Pneumatics Vol. 6 for Exhaust Cleaner details.

Manifold with Exhaust Cleaner — Plug-in type, Non plug-in type

Plug-in type: VV5FS5-01T-Station 1-Port size -^{CD}_{CU}



Non plug-in type: VV5FS5-10-Station 1-Port size -^{CD}_{CU}



L	Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁		194	245	296	347	398	449	500	551	602	L ₁ = 51 x n + 92
L ₂		212	263	314	365	416	467	518	569	620	L ₂ = 51 x n + 110

Made to Order

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output)
Serial Transmission System

How to Order

How to Order Manifold

VV5FS5 - 01S **U **V** - 08 **1** - 04 - X199**

• **Plug-in type**
Serial transmission kit

• **SI unit mounting position**

D	D side mounting
U	U side mounting

• **Stations**

2	2 stations
:	:
10	10 stations

• **Thread type**

Nil	Rc
N	NPT
T	NPTF
F	G

• **Port size**

Symbol	P, R1, R2	A, B
04	Rc 1/2	
06	Rc 3/4	
M	Mixed	

* For bottom ported: Rc 1/8 only

• **Combination symbol**

Symbol	Port specification		Piping specification A, B
	P	R1, R2	
1			Side
2*	Common	Common	Bottom

* Option

Refer to pages 1653 to 1655 for the details of the EX123/124 integrated type (for output) serial transmission system.

• Applicable models

Symbol	SI unit part no.		Description
	For U side mounting	For D side mounting	
0	—	—	Without SI unit
F1	EX123U-SUW1	EX123D-SUW1	NKE Corporation: Uni-wire System (16 outputs)
H	EX123U-SUH1	EX123D-SUH1	NKE Corporation: Uni-wire H System (16 outputs)
J1	EX123U-SSL1	EX123D-SSL1	SUNX Corporation: S-LINK System (16 outputs)
J2	EX123U-SSL2	EX123D-SSL2	SUNX Corporation: S-LINK System (8 outputs)
Q	EX124U-SDN1	EX124D-SDN1	DevieNet (2 power supply systems)
R1	EX124U-SCS1	EX124D-SCS1	OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems)
R2	EX124U-SCS2	EX124D-SCS2	OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)
V	EX124U-SMJ1	EX124D-SMJ1	CC-Link (2 power supply systems)

● Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

D side

SI unit output no.	1	2	3	4	5	6	7	8	9	SI unit
Double	Double	Single	Single	Single	Double	Single	Single	Single	SI unit	
A B	A B	A B	A B	A B	A B	A B	A B	A B	SI unit	

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

<Wiring Example 2> Single/Double mixed wiring (Option)

U side

D side

U side

SI unit output no.	1	2	3	4	5	6	7	8	9	10	SI unit
Double	Double	Single	Single	Single	Single	Double	Single	Double	Single	SI unit	
A B	A B	A	A	A	A	A B	A	A B	A	SI unit	

0 1 2 3 4 5 6 7 8 9 10 11 12

* Mixed wiring is available as an option. Use the manifold specification sheet to specify this.

How to Order Valves

VFS5 00 - 5 F

• **Symbol**

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
6	3 position double check

• **Pilot valve manual override**

Nil	Non-locking push type (Flush)
A	Non-locking push type (Extended)
B	Locking type (Tool required)
C	Locking type (Lever)

• **Option**

Nil	None
Z	With light/surge voltage suppressor

• **Coil rated voltage**

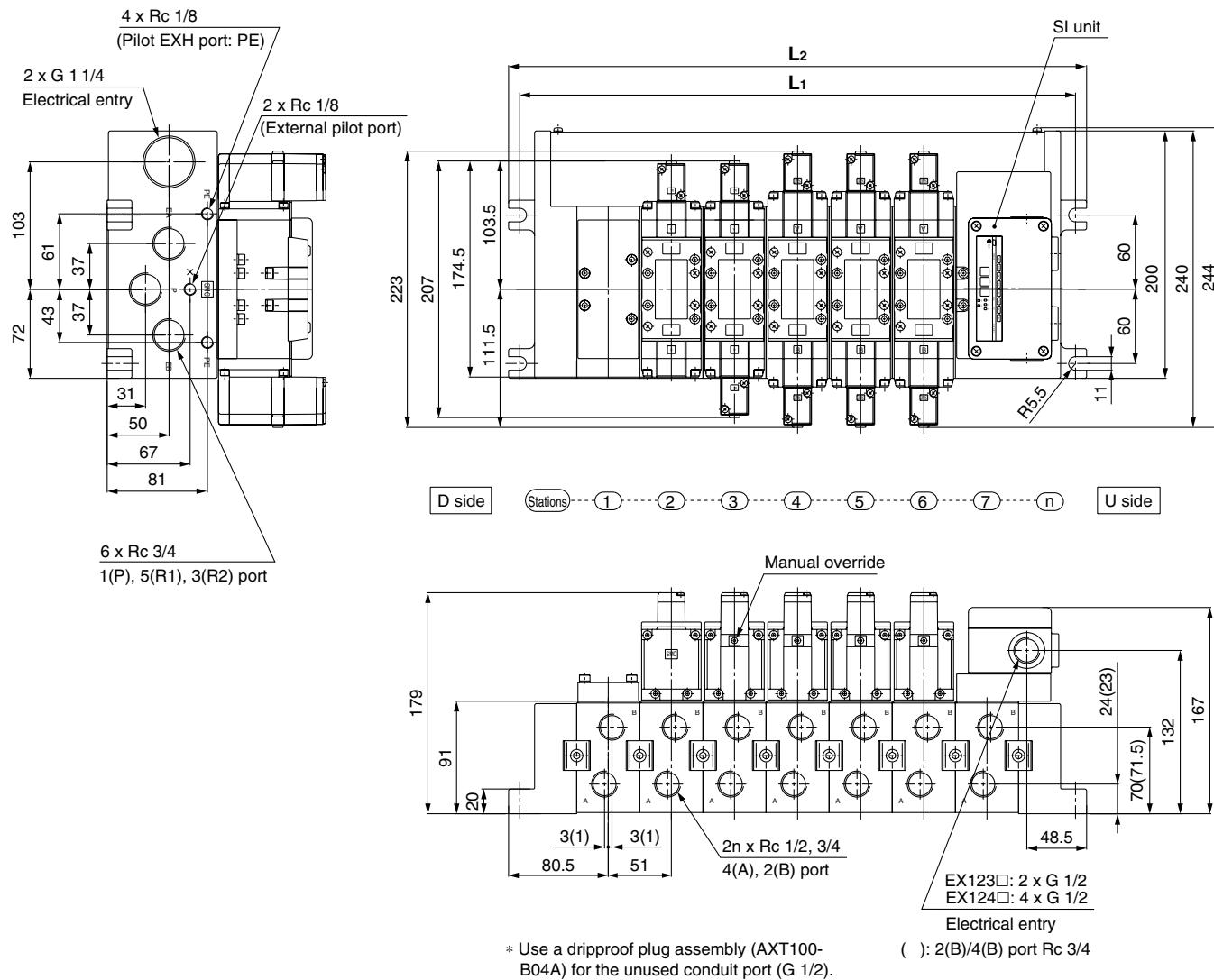
Nil	None
-----	------

24 VDC

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS5000**

Serial Transmission Kit Manifold: EX123/124 Integrated Type (For Output) Serial Transmission System

VV5FS5-01S **Mounting position** **Model** - **Stations** **Symbol** - **Port size** **Thread** -X199



Dimensions

Formula $L_1 = 51n + 92$ $L_2 = 51n + 110$
n: Stations (Max. 10 stations)

L	n	2	3	4	5	6	7	8	9	10
L ₁		194	245	296	347	398	449	500	551	602
L ₂		212	263	314	365	416	467	518	569	620

Note) Actual number of manifold base stations: Add 1 SI unit mounting station to the number of valve stations.

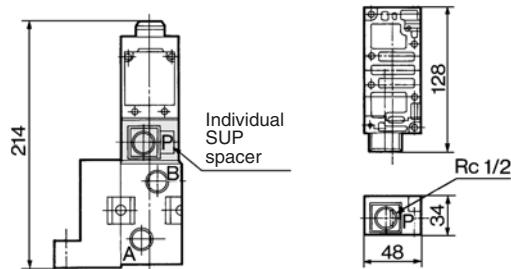
Series VFS5000

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

Individual SUP spacer:

VVFS5000-P-04-1 (Plug-in type)

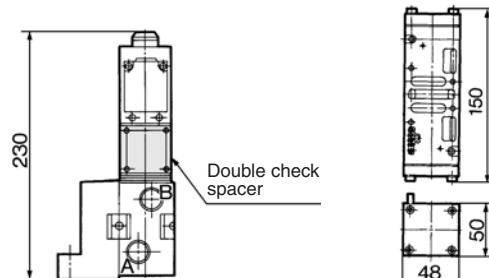
VVFS5000-P-04-2 (Non plug-in type)



Double check spacer:

VVFS5000-22A-1 (Plug-in type)

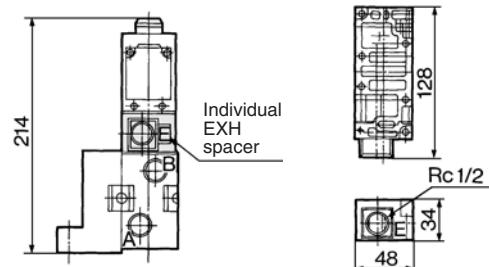
VVFS5000-22A-2 (Non plug-in type)



Individual EXH spacer:

VVFS5000-R-04-1 (Plug-in type)

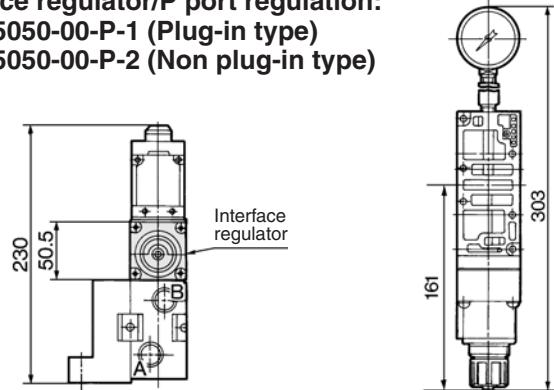
VVFS5000-R-04-2 (Non plug-in type)



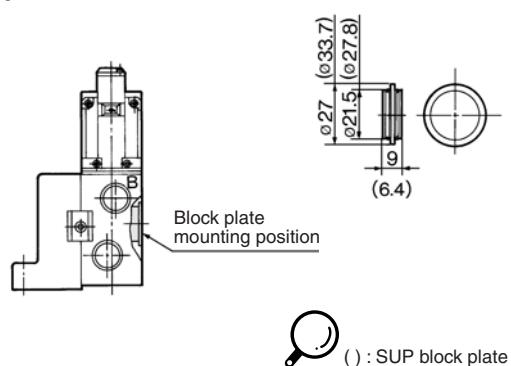
Interface regulator/P port regulation:

ARBF5050-00-P-1 (Plug-in type)

ARBF5050-00-P-2 (Non plug-in type)



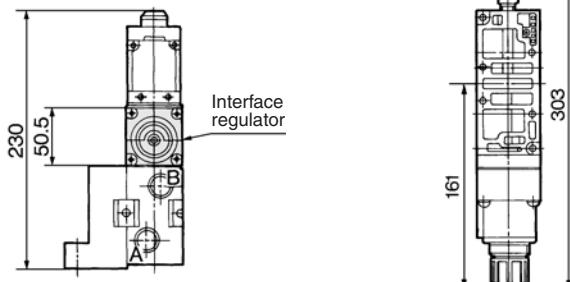
SUP block plate: AXT628-12A EXH block plate: AXT512-14-1A



Interface regulator/A port regulation:

ARBF5050-00-A-1 (Plug-in type)

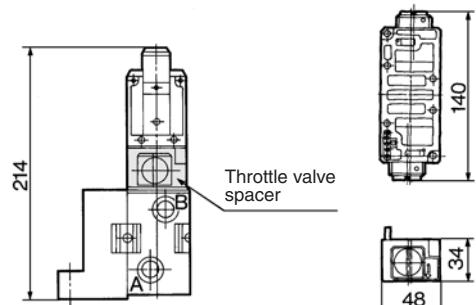
ARBF5050-00-A-2 (Non plug-in type)



Throttle valve spacer:

VVFS5000-20A-1 (Plug-in type)

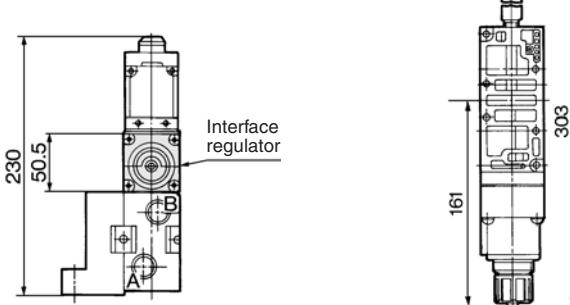
VVFS5000-20A-2 (Non plug-in type)



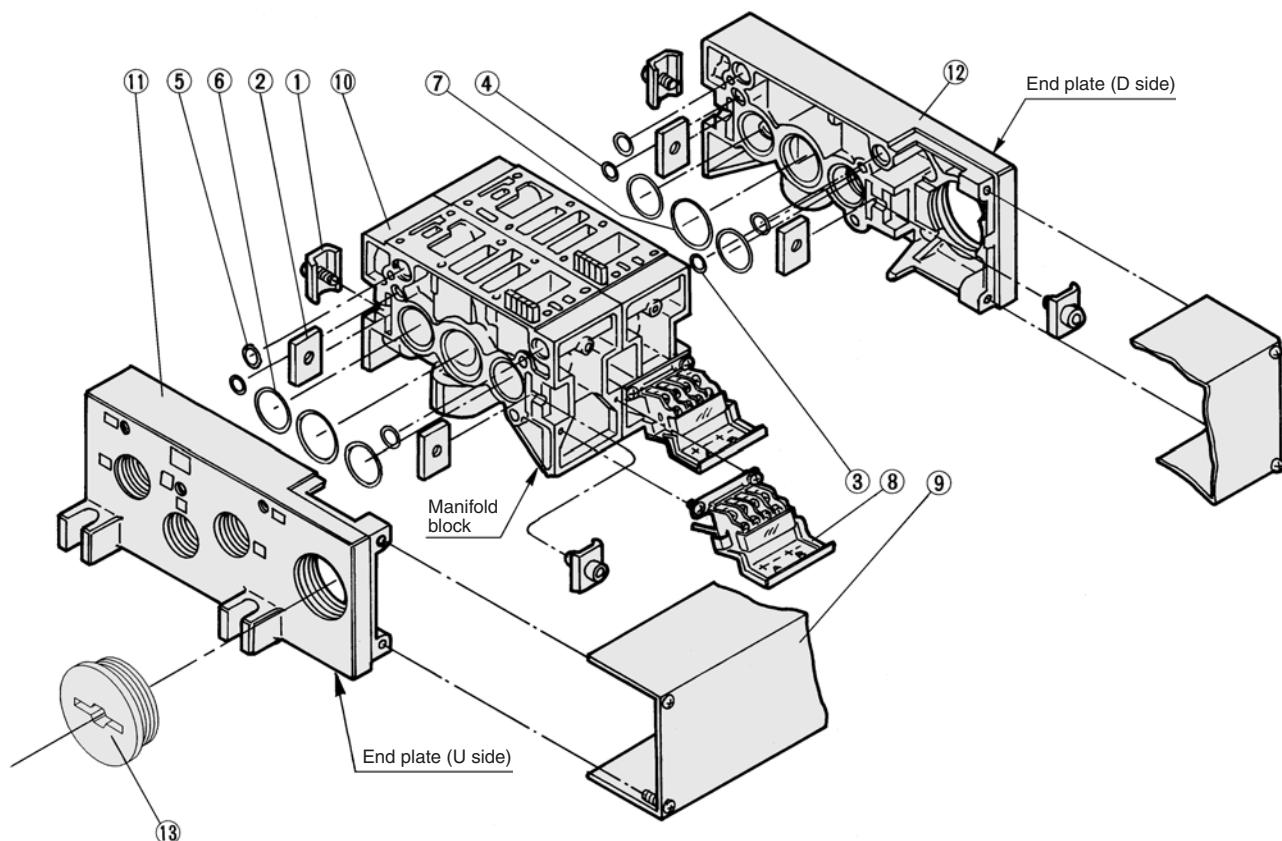
Interface regulator/B port regulation:

ARBF5050-00-B-1 (Plug-in type)

ARBF5050-00-B-2 (Non plug-in type)



Manifold Base Construction — Plug-in type, Non plug-in type



SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

Replacement Parts

No.	Description	Material	Part no.
1	Connection fitting A	Steel plate	AXT628-6-1A
2	Connection fitting B	Steel plate	AXT628-6-2
3	O-ring	NBR	AS568-006
4	O-ring	NBR	AS568-010
5	O-ring	NBR	AS568-013
6	O-ring	NBR	AS568-022
7	O-ring	NBR	AS568-026
8	Terminal assembly	—	AXT628-5-1A
9	Junction cover assembly	For 01T	VVFS5000-4A-[Stations]
9		For 01SU	AZ738-31A-[Stations]
13	Rubber plug	NBR	AXT336-9

Replacement Parts: Sub Assembly

- For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly ⑩.
- For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.



Note) Manifold Base/Construction: Plug-in type with terminal block.

No.	Description	Assembly part no.	Component parts	Applicable manifold base
10	Manifold block assembly	VVFS5000-1A-1- ⁰⁴ ₀₆	Manifold block ⑩, Metal joint ①, ②, Terminal ⑧, O-ring ③, ④, ⑤, ⑥, ⑦, Receptacle assembly	Plug-in type
		VVFS5000-1A-2- ⁰⁴ ₀₆	Manifold block ⑩, Metal joint ①, ②, O-ring ③, ④, ⑤, ⑥, ⑦	Non plug-in type
11	End plate (U side) assembly	VVFS5000-2A-1	End plate (U) ⑪, Metal joint ①, ②	Plug-in type
		VVFS5000-2A-2	End plate (U) ⑪, Metal joint ①, ②	Non plug-in type
12	End plate (D side) assembly	VVFS5000-3A-1	End plate (D) ⑫, Metal joint ①, ②, O-ring ③, ④, ⑤, ⑥, ⑦	Plug-in type
		VVFS5000-3A-2	End plate (D) ⑫, Metal joint ①, ②, O-ring ③, ④, ⑤, ⑥, ⑦	Non plug-in type

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS6000**



Model

Type of actuation		Model		Port size Rc	Flow characteristics						Max. operating cycle (cpm) ⁽¹⁾	Response time (ms) ⁽²⁾	Mass (kg) ⁽³⁾	
		Plug-in	Non plug-in		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)						
2 position	Single	VFS6100	VFS6110	3/4 1	29	0.10	6.8	38	0.10	9.0	180	160 or less	2.5	
	Double	VFS6200	VFS6210		29	0.10	6.8	38	0.10	9.0	180	60 or less	2.75	

Note 1) Based on JIS B 8375-1981 (once per 30 days) for the min. operating frequency.

Note 2) According to JIS B 8375-1981. (The value at supply pressure 0.5 MPa.)

Note 3) The figures in the above list are for without sub-plate. In case of with sub-plate, add 1.65 kg for Rc 3/4 and 1.5 kg for RC 1 respectively.

Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

Note 5) The flow characteristics is for the port size Rc 4/3.

Compact yet provides a large flow capacity
3/4: C: 38 dm³/(s-bar)

Low power consumption: 1.8 W DC

Easy maintenance

2 types of sub-plates:
Plug-in and non plug-in



Standard Specifications

Valve specifications	Fluid	Air/Inert gas	
	Maximum operating pressure	1.0 MPa	
	Minimum operating pressure	0.1 MPa	
	Proof pressure	1.5 MPa	
	Ambient and fluid temperature	-10 to 60°C ⁽¹⁾	
	Lubrication	Non-lube ⁽²⁾	
	Pilot valve manual override	Non-locking push type (Flush)	
	Shock/Vibration resistance	150/50 m/s ² ⁽³⁾	
Electricity specifications	Enclosure	Type E: Dustproof (Level 0), Type F: Driproof (Level 2), Type D: Splashproof (Level 4) ⁽⁴⁾	
	Coil rated voltage	100, 200 VAC, 50/60 Hz; 24 VDC	
	Allowable voltage fluctuation	-15 to +10% of rated voltage	
	Coil insulation type	Class B or equivalent (130°C) ⁽⁵⁾	
	Apparent power (Power consumption)	AC	Inrush 5.6 VA/50 Hz, 5.0 VA/60 Hz Holding 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz
	Power consumption DC	1.8 W (2.04 W: With light/surge voltage suppressor)	
	Electrical entry	Plug-in type	Conduit terminal
		Non plug-in type	Grommet terminal, DIN terminal

JIS Symbol

2 position
Single
Double

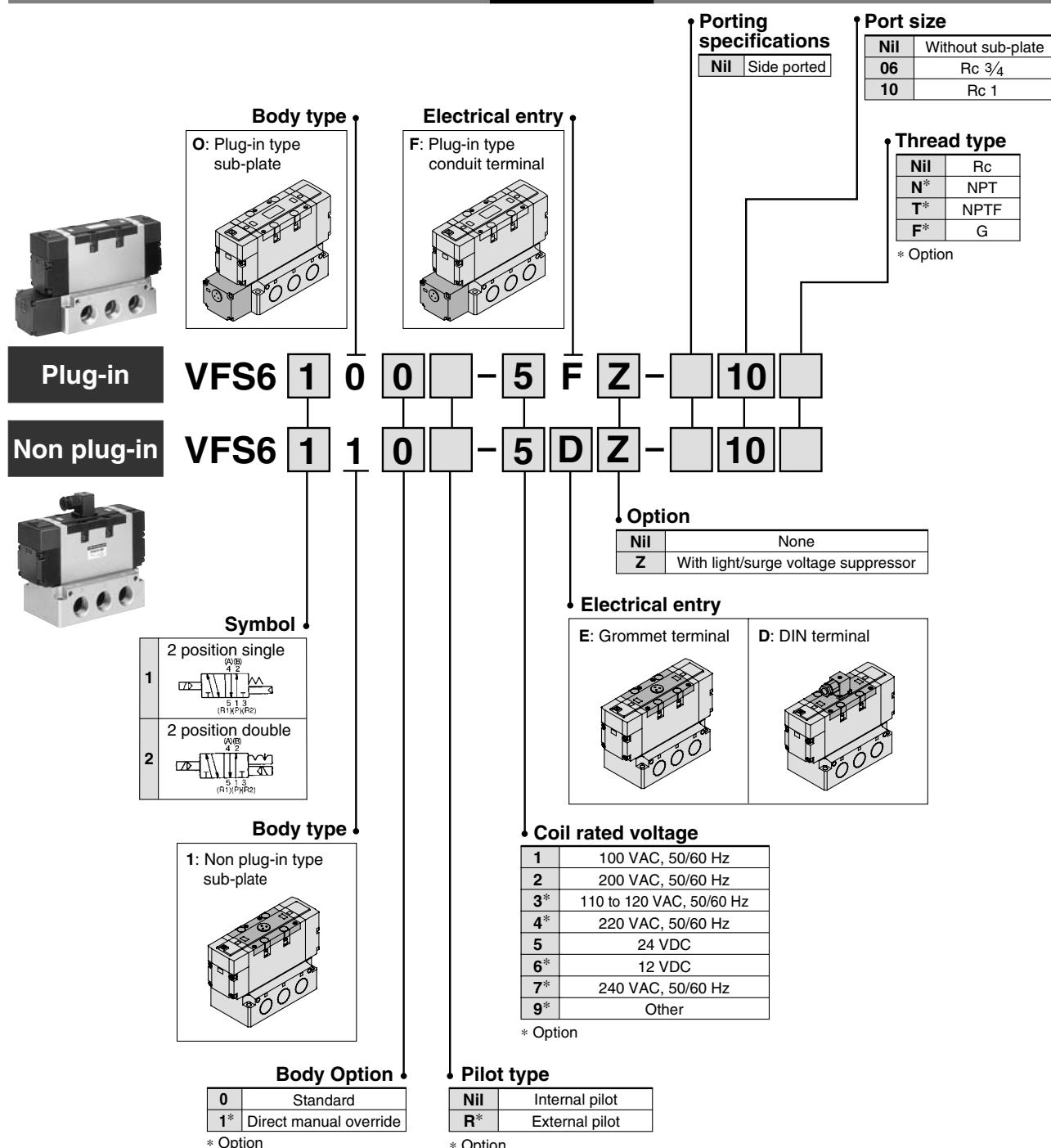
Option Specifications

Pilot type	External pilot ^(Note)
Manual override	Direct manual override
Coil rated voltage	110 to 120, 220, 240 VAC (50 Hz/60 Hz) 12, 100 VDC
Porting specifications	Bottom ported
Option	With light/surge voltage suppressor, Non-rotating DIN terminal

Note) Operating pressure: 0 to 1.0 MPa
Pilot pressure: 0.1 to 1.0 MPa

5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS6000**

How to Order



SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

How to Order Pilot Valve Assembly

SF4 - 1 F - 22

Coil rated voltage

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

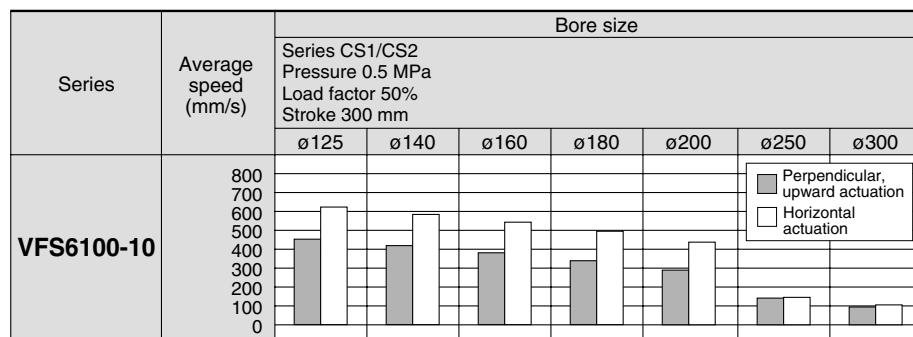
* Option

 * Refer to page 1224 for voltage conversion.

Series VFS6000

Cylinder Speed Chart

Use as a guide for selection.
Please confirm the actual conditions with SMC Sizing Program.



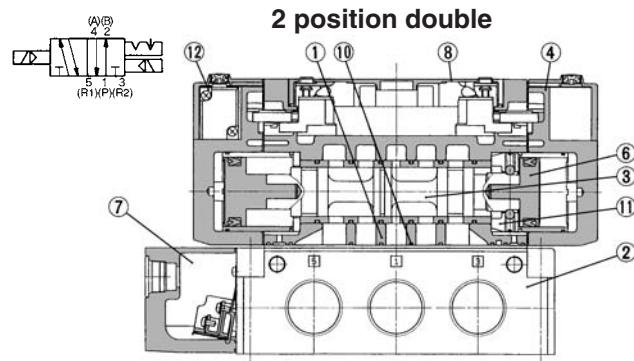
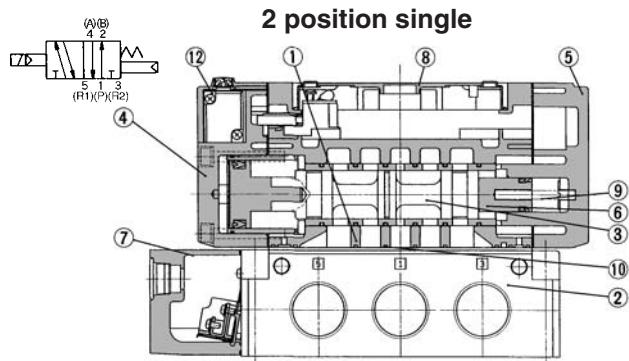
Perpendicular,
upward actuation
Horizontal
actuation

- * It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
* The average velocity of the cylinder is what the stroke is divided by the total stroke time.
* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%

Conditions

	Series CS1/CS2	
VFS6100-10	Tube bore x Length	SGP25A x 1 m
	Speed controller	AS600-10
	Silencer	AN600-10

Construction



Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	Platinum silver
2	Sub-plate	Aluminum die-casted	Platinum silver
3	Spool/Sleeve	Stainless steel	—
4	Adapter plate	Aluminum die-casted	Black
5	End plate	Aluminum die-casted	Black
6	Piston	Resin	—
7	Junction cover	Resin	—
8	Light cover	Resin	—
9	Return spring	Stainless steel	—
10	Gasket	NBR	—
11	Detent assembly	—	—
12	Pilot valve assembly	—	—

* Refer to "How to Order Pilot Valve Assembly" on page 1219.

Sub-plate Assembly Part No.

Plug-in	VFS6000-P- ₀₆ ¹⁰
Non plug-in	VFS6000-S- ₀₆ ¹⁰

* Mounting bolt and gasket are not included.



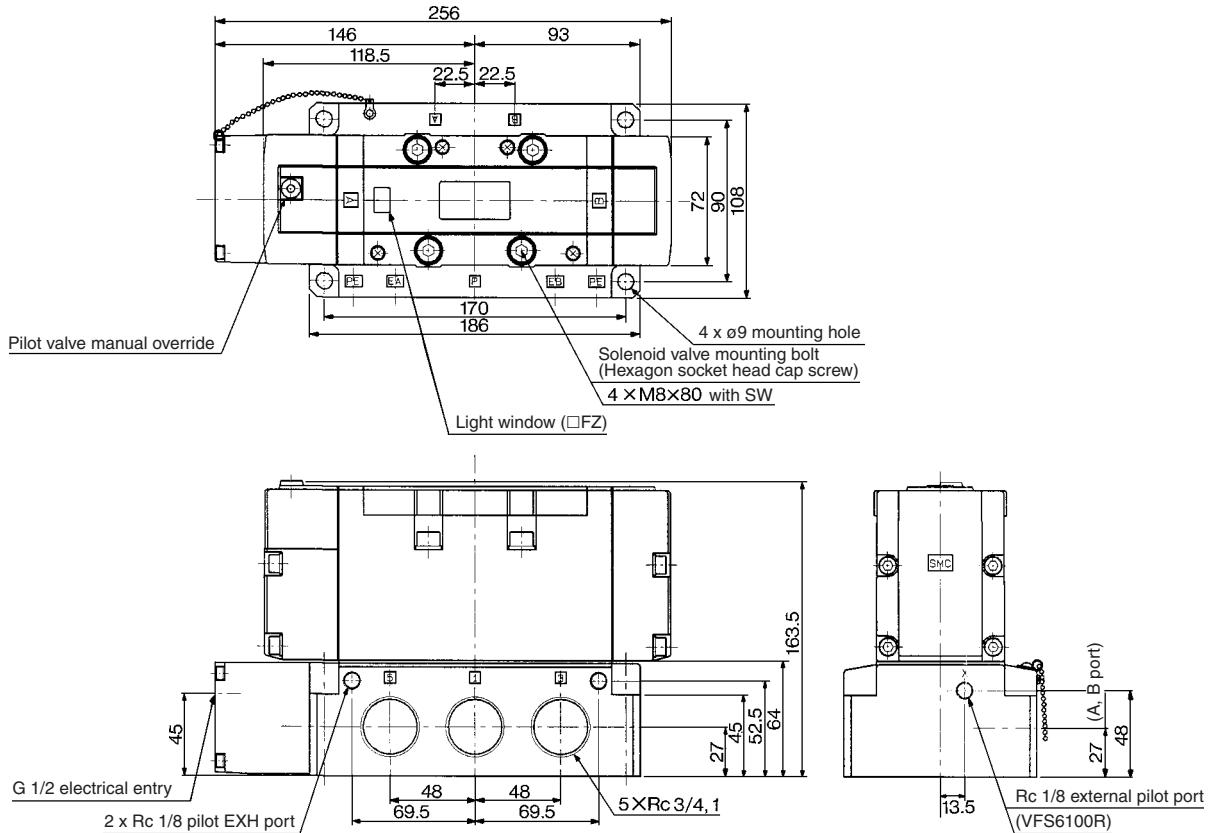
Sub-plate Assembly (For External Pilot) Part No.

Plug-in	VFS6000-P-R- ₀₁ ⁰²
Non plug-in	VFS6000-S-R- ₀₁ ⁰²

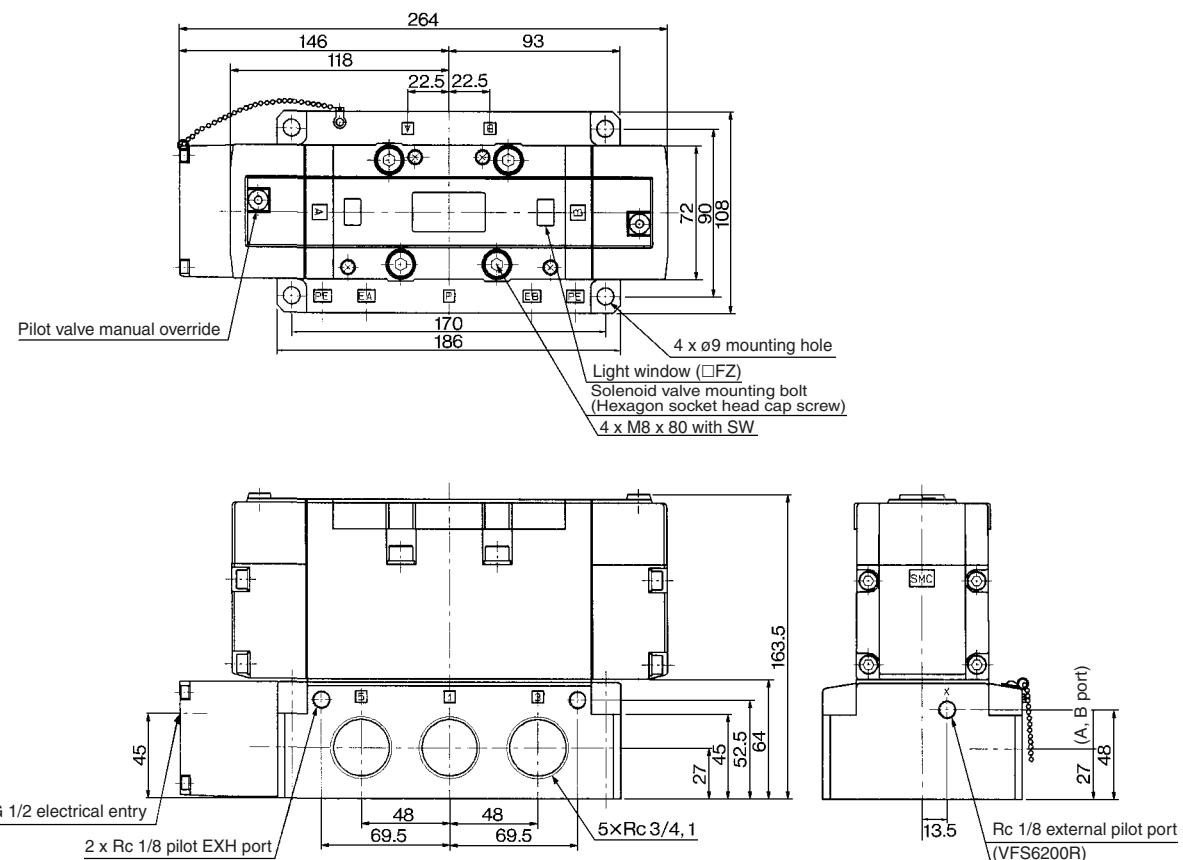
Part no. for mounting bolt and gasket
BG-VFS6000

Plug-in — 2 Position single/Double

2 position single: VFS6100-□F



2 position double: VFS6200-□F

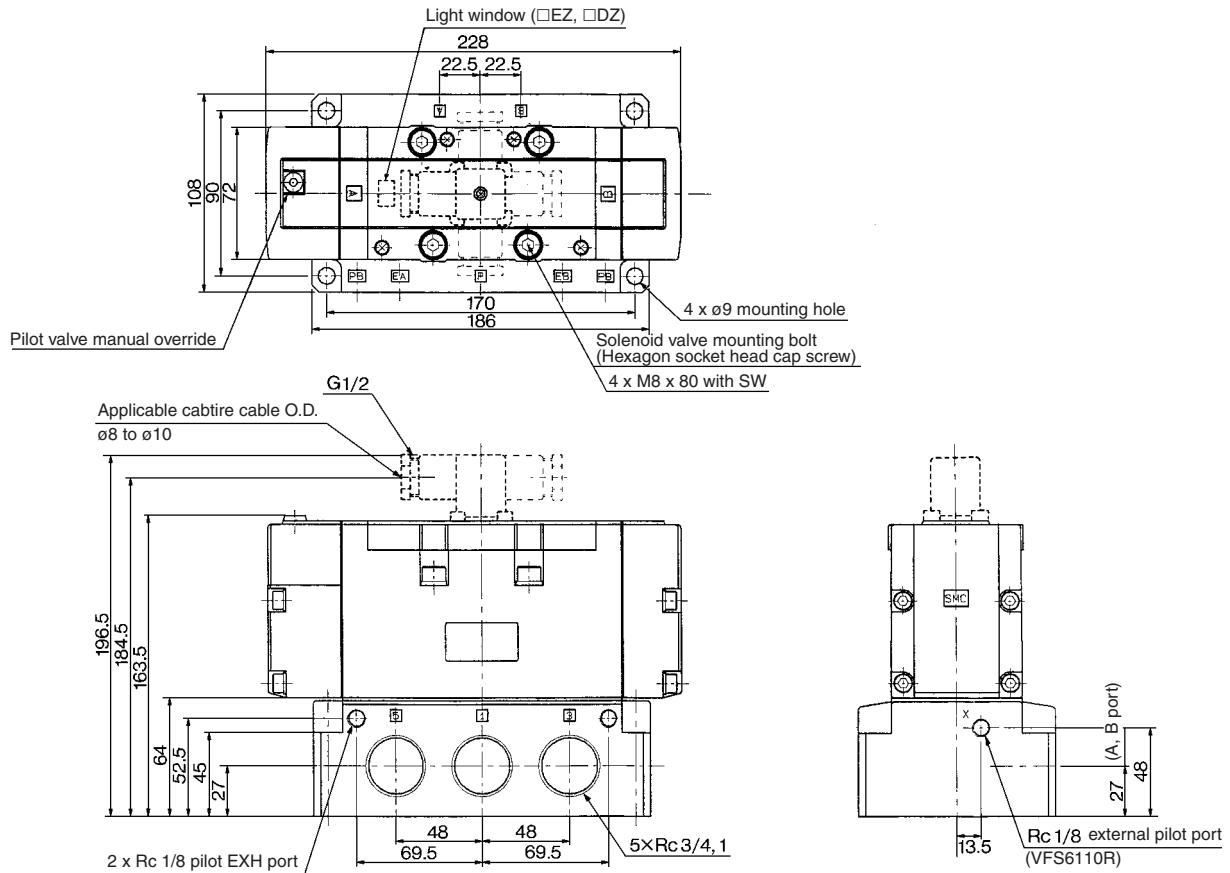


SJ
SY
SV
SYJ
SZ
VP4
S0700
VQ
VQ4
VQ5
VQC
VQZ
SQ
VFS
VFR
VQ7

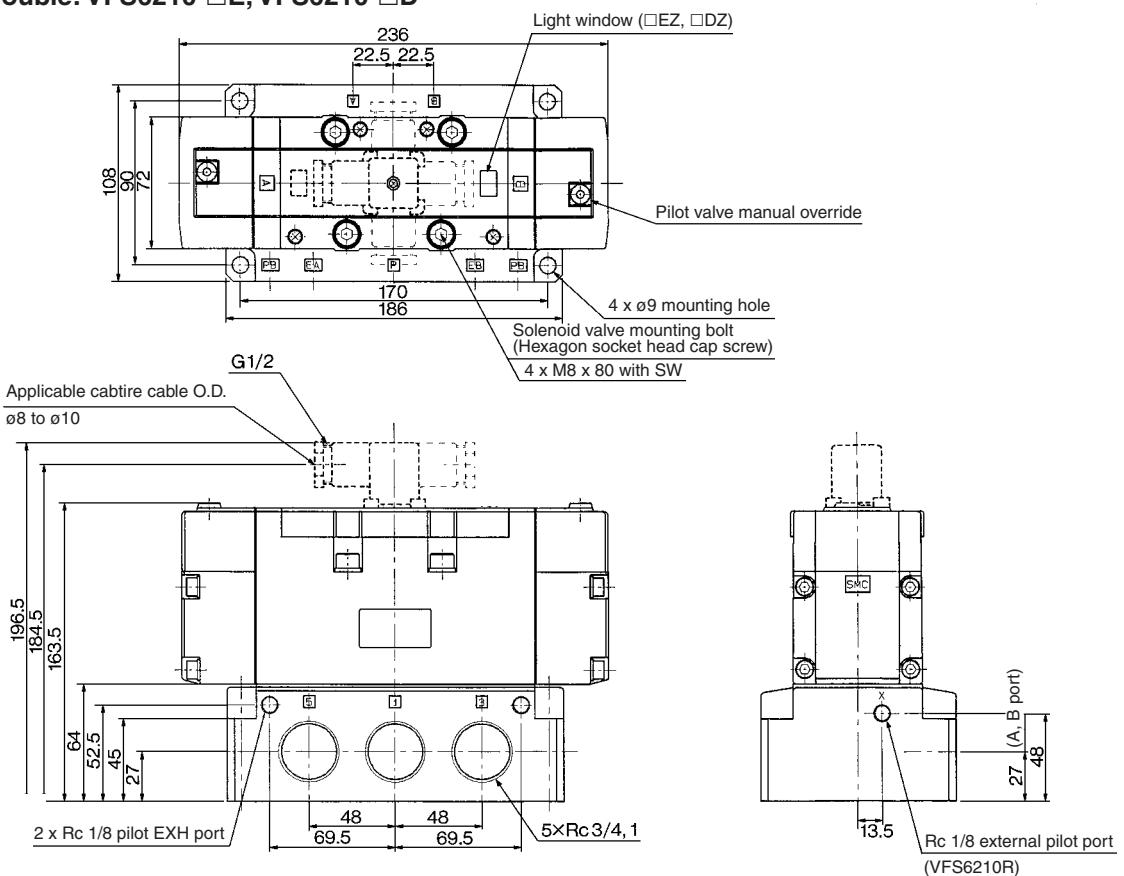
Series VFS6000

Non Plug-in — 2 Position single/Double

2 position single: VFS6110-□E, VFS6110-□D



2 position double: VFS6210-□E, VFS6210-□D





Series VFS

Specific Product Precautions 2

Be sure to read before handling.

Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.

⚠ Caution

Light/Surge Voltage Suppressor, Electrical Entry

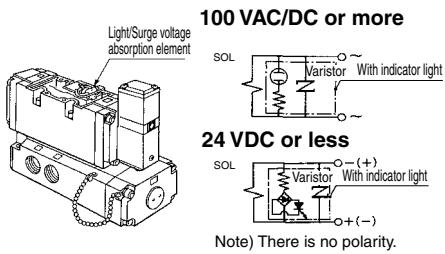
Single unit

Base Mounted

Series VFS3000/4000/5000/6000

Light/Surge Voltage Suppressor

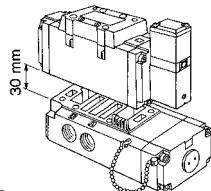
In the case of surge voltage suppressor, surge voltage absorption element is attached to terminal block on body area.



How to Exchange

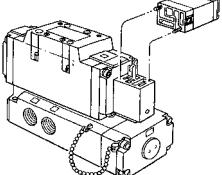
Solenoid valve

- Loosen set screw and take solenoid valve out vertically, otherwise it may cause damage to the solenoid valve. Never remove a valve at an angle.
- When mounting solenoid valve onto the base, plug pin assembly (base side) into receptacle assembly (body side) vertically.

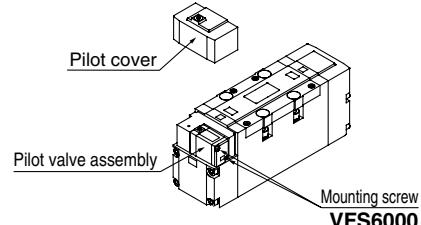


Pilot valve

- When changing the rated voltage, electrical entry, etc., pilot valve assembly can be exchanged easily since this is plug-in type. Then, when changing the rated voltage with indicator light/surge voltage suppressor, change of indicator light/surge voltage suppressor substrate is also needed. So, order together with pilot valve assembly.



VFS3000/4000/5000



Light/Surge Voltage Suppressor Substrate Part No.

VFS3000	VFS3000-10A-□
VFS4000	100V or more VF4000-9A-□ 24V or less VF4000-9B-□
VFS5000	100V or more AXT627-7A-□ 24V or less AXT627-7B-□
VFS6000	100V or more VF4000-9A-□ 24V or less VF4000-9B-□

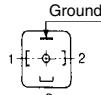
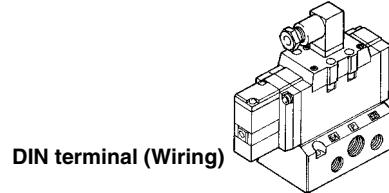
-□: Coil rated voltage Symbol: Refer to below.

1: 100 to 120 V 6: 12 V
2: 200 to 220 V 7: 240 V
5: 24 V

Lead Wire Connection

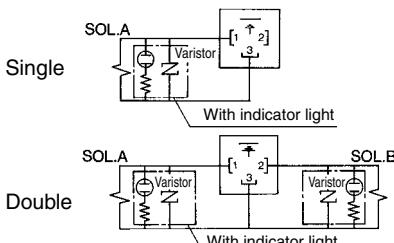
DIN terminal block type

- Male pin terminal of DIN terminal block board of solenoid valve and wires as shown below. Connect to corresponding terminal block on the connector.

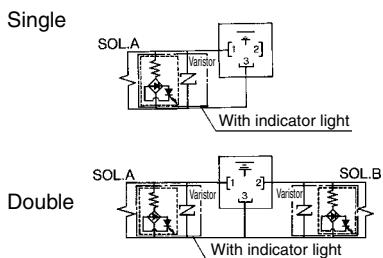


- There is no polarity.

100 VAC/DC or more



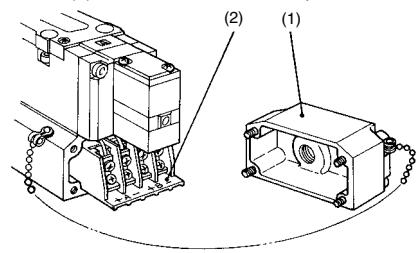
24 VDC or less



- Heavy-duty cord
Applicable cable O. D.: Ø8 to Ø10
- Applicable terminal
Applicable terminal on block board: 3 (kinds)
1.25Y-3L, 1.25-3.5S, 1.25-4M
- Connector/Clamping torque
Set screw 0.6 N·m
Terminal screw 0.6 N·m
- Incorrect common (DIN terminal no. 3) causes damage on power side circuit.

Plug-in type (With terminal)

- If the junction cover (1) of the sub-plate is removed, you can see the plug-in type terminal block (2) mounted inside the sub-plate.



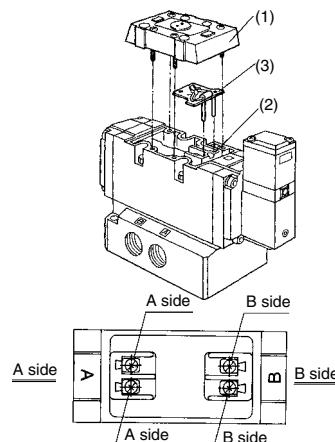
- The following markings are on the terminal block. Connect with corresponding power side.

	Solenoid A side	Solenoid B side
Terminal block marking	A + -	B + -

- Applicable terminal:
VFS3000: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S
VFS4000: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M
VFS5000: 1.25-4, 1.25-4M
VFS6000: 1.25-3.5M, 1.25Y-3L, 1.25-3M
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m

Non plug-in type (With terminal)

- Remove cover (1), over terminal block (2) attached to the inside of body. Connect with corresponding power side. For a type with indicator light and surge voltage suppressor, pull out the light and surge voltage suppressor substrate (3) in a straight direction and then connect them.



- Applicable terminal:
VFS3000: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S
VFS4000/5000/6000: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M

- There is no polarity.
- Tightening torque for terminal: 0.6 N·m



Series VFS

Specific Product Precautions 3

Be sure to read before handling.

Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.

⚠ Caution

Maintenance

1. A lot of carbon powder and oil waste from air sources (mostly from compressor) entering into the valve sometimes can lead to increased sliding resistance at the switching spool and cause valve malfunction.

In the worst case, spool can adhere to the valve. Therefore, supply air should be kept clean.

Also, if it is left for a long time exposed to an inferior quality of air under SUP pressure applied, carbon powders and oil wastes in the compressed air will be accumulated in the clearance of the spool and sleeve and can cause the spool to adhere to the valve.

The remedy for this case is to check the compressor lubrication oil and find out the least oxidizing compressor lubrication oil.

Meanwhile, a high filtration Mist Separator (Series AM) installed on the back of regular filter (Series AF) can prevent foreign particles from entering into the valve.

Besides, as lubricant for compressors, Faircoal A-80 (Nippon Mitsubishi Oil Corp.), Dafney CSS55, CS49 (Idemitsu Kosan Co., Ltd), etc. are commercially available on the market.

2. When disassembling and reassembling, please ensure that all components are in proper positions. Prevent gaskets from slipping, and clamp bolts down equally.

Use torques listed below when mounting pilot valve assemblies and solenoid valve bodies.

Pilot Valve Assembly: SF4-□-□

Holding screw	Proper tightening torque (N·m)
M3	0.45 to 0.6

Solenoid Valve Body

Holding screw	Proper tightening torque (N·m)
M3	0.8 to 1.2
M4	1.4 to 2.5
M5	2.8 to 5

How to Calculate the Flow Rate

Refer to front matters 44 to 47 for How to Calculate the Flow Rate.

Interface Regulator Specifications

Interface regulator ⁽³⁾	ARBF2000	ARBF3050	ARBF4050	ARBF5050
Applicable solenoid valve series	VFS2000	VFS3000	VFS4000	VFS5000
Regulating port	P	A B P	A B P	A B P
Proof pressure		1.5 MPa		
Maximum operating pressure		1.0 MPa		
Set pressure range ⁽¹⁾	0.05 to 0.83 MPa		0.1 to 0.83 MPa	
Ambient and fluid temperature		−5 to 60°C (No freezing)		
Port size for connection of pressure gauge	M5 x 0.8		Rc 1/8	
Weight (kg)	0.16	0.46	0.72	0.83
Effective area at supply side (mm ²) ⁽²⁾ S at P ₁ = 0.7 MPa, P ₂ = 0.5 MPa	P → A P → B	5.5 5.1	21 18.5 11 22 12	35 31 26 31 24 24 44 38 32 38 40 31
Effective area at exhaust side (mm ²) ⁽²⁾ S at P ₂ = 0.5 MPa	A → EA B → EB	12 11	40 36	55 45 90 77

Note 1) Set within the operating pressure range of solenoid valve.

Note 2) Synthesized effective area with solenoid valve 2 position single type.

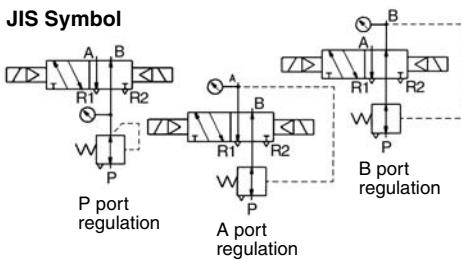
Note 3) • Operate an interface regulator only by applying pressure from the "P" port of the base, except when using it as a reverse pressure valve.

- To combine a pressure center valve and the A and B port pressure reduction of an interface regulator, use the ARBF3000, 4000, or 5000 model.
- To combine a reverse pressure valve and an interface regulator, use the ARBF3000, 4000, or 5000 model. Furthermore, the P port pressure reduction cannot be used for the reverse pressure valve.
- When combining a double check valve and an interface regulator, use a manifold or sub-plate as a basis, and stack them in the following order; the perfect spacer → the interface regulator → the valve.
- When a closed center valve is combined with the interface regulator's A, B port regulation, note that it cannot be used for intermediate stops of a cylinder because there is leakage from relief port on the regulator.

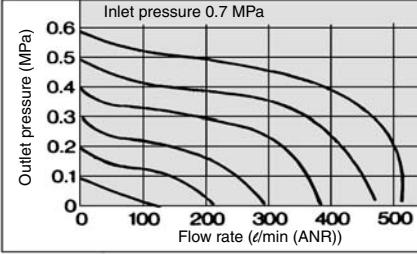
Flow Characteristics (P → A)

(Conditions: Inlet pressure 0.7 MPa. when 2 position solenoid valve is mounted.)

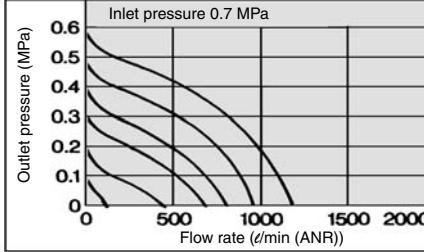
JIS Symbol



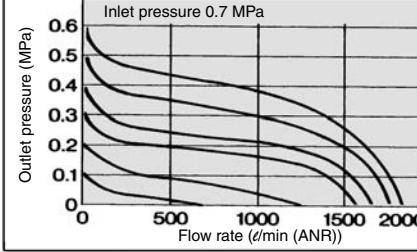
ARBF2000-00-P



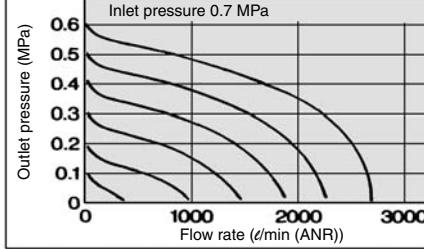
ARBF3050-00-P



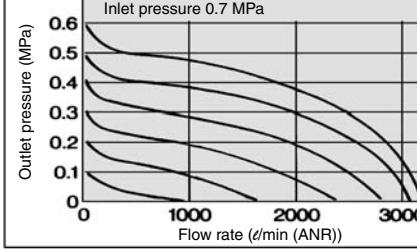
ARBF3050-00-A



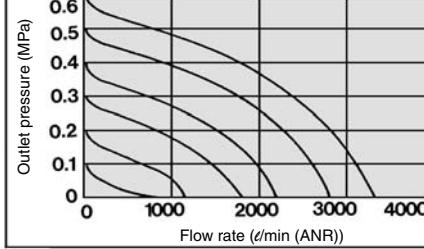
ARBF4050-00-P



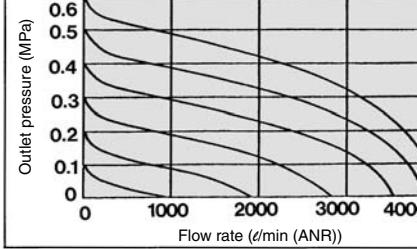
ARBF4050-00-A



ARBF5050-00-P



ARBF5050-00-A



SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

VFR

VQ7



Series VFS

Specific Product Precautions 4

Be sure to read before handling.

Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.

⚠ Caution

Lead Wire Connection Manifold/Plug-in

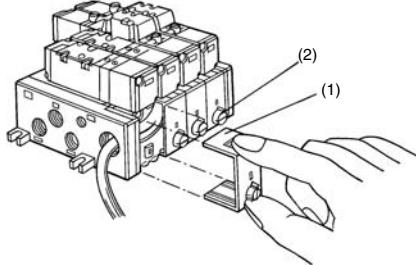
Type 01 Insert Plug with Lead Wire

Series VFS2000 (Insert plug with lead wire is not available for Series VF3000, 4000, and 5000.)

How to remove junction cover (Type 01)

Turn the knob (2) of junction cover (1) on the manifold block side by hand or slotted screwdriver to the C → O direction (counterclockwise) 90°. While holding the knob and upper part of junction cover, pull outward to remove junction cover.

When reassembling, do the opposite.



Wiring

The insert plug (1) is attached to the manifold block and lead wire is plugged in with valve side as shown in the following list.

(Single solenoid: AXT624-52A-S-1)

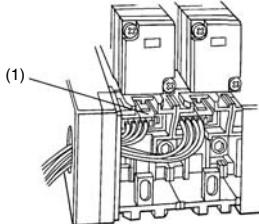
(Double solenoid: AXT624-52A-D-1)

Connect with corresponding power side.

Power supply	Valve model	Solenoid A	Solenoid B
AC	Single solenoid	Red, Black	—
DC	Double solenoid	Red, Black	Brown, White

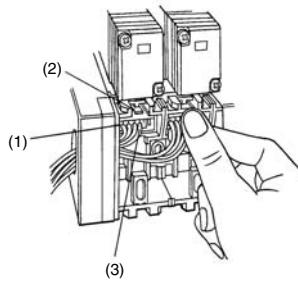
* There is no polarity.

* Lead wire length is 1 m.



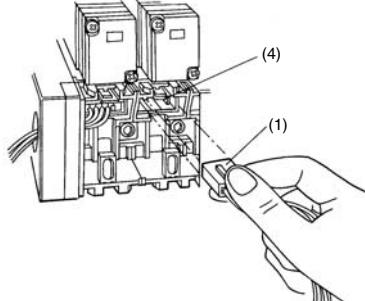
How to Use Insert Plug

- When removing insert plug (1) from manifold base, push the lever area (2) of inset plug downward with thumb and pull it together with the lead wire (3) outward.



- When placing the inset plug (1) into the manifold base, push the lever area of inset plug with thumb and plug it in its place in the receptacle housing (4) horizontally.

After plugging, pull lead wire out a little bit to ensure that insert plug is secure.



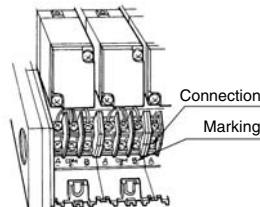
Type 01 with Terminal Block

Series VFS2000

- Remove junction cover of manifold, exposing terminal block attached to the manifold block. Lead wires from solenoid valve are connected with the terminals on upper side of terminal block. (On the terminal block, lead wire is connected with both A and B sides of solenoid valve in accordance with the corresponding markings A and B on the block.) Connect each lead wire of power side corresponding to respective solenoid valve on the lower terminal block. VFS2000 has the marking + COM on the block board, but - COM specification is also available.

Model	Terminal block marking	A	COM	B
VFS2100	A side	COM		
VFS2200	A side	COM	B side	
VFS2300	A side	COM	B side	

- Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S
- Plugging COM bridge (part no. AXT625-73: 5 stations) in between each + COM on the block board will make the specifications of all the stations + COM and enables you to understand the wiring process.
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m



Series VFS3000

Model	Terminal block marking	A	COM	B
VFS3100	A side	COM		
VFS3200	A side	COM	B side	
VFS3300	A side	COM	B side	

- Applicable terminal: 1.25-3.5M, 1.25Y-3L, 1.25-3M
- There is no polarity.
- VFS 3000 has the marking + COM on the block board, but - COM specification is also available.
- Tightening torque for terminal: 0.6 N·m

Model	Terminal block marking	A +	A -	B +	B -
VFS ₅ 100	A side	A side			
VFS ₅ 200	A side	A side	B side	B side	
VFS ₄ 300	A side	A side	B side	B side	
VFS ₅ 300	A side	A side	B side	B side	

- Applicable terminal: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m



Series VFS

Specific Product Precautions 5

Be sure to read before handling.

Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 7 for 3/4/5 Port Solenoid Valve Precautions.

⚠ Caution

Lead Wire Connection

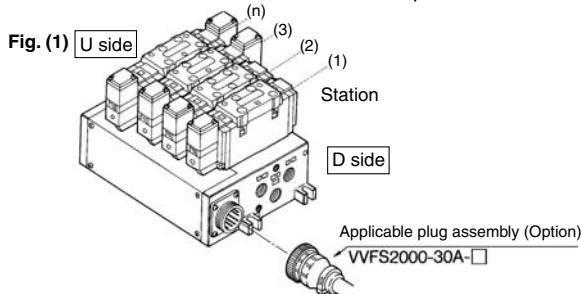
Manifold/Plug-in

Type 01C Circular Connector

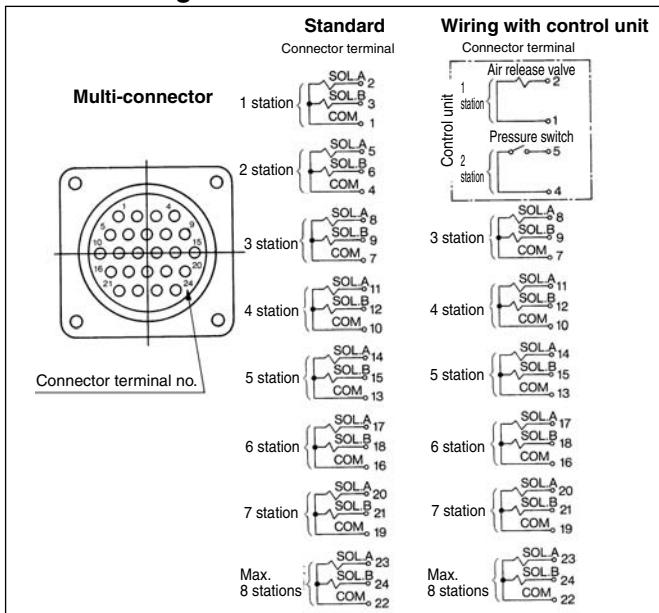
Series VFS2000/3000/4000/5000

• Wire connection specifications

Lead wire for both solenoid A and B sides in manifold are connected to connector terminal as COM specifications.



Internal Wiring of Manifold



Note 1) Maximum stations are 8.

Note 2) There is no polarity.

Note 3) Indication of stations are one station from D side regardless of the connector mounting side, D or U.

Applicable Plug Assembly (Option)

Assembly part no.	Cable length	Component parts
VVFS2000-30A-1	1.5 m	
VVFS2000-30A-2	3 m	
VVFS2000-30A-3	5 m	
VVFS2000-30A-4 *	7 m	
VVFS2000-30A-5 *	10 m	
VVFS2000-30A-6 *	15 m	
VVFS2000-30A-7 *	20 m	

* Option

Cable Color List of Each Terminal No.

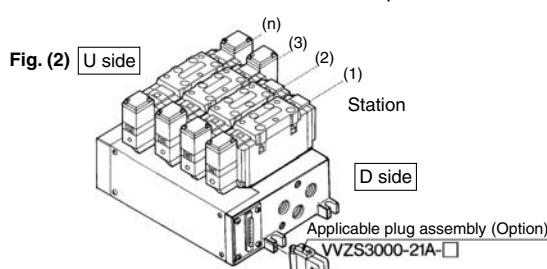
Terminal no.	1	2	3	4	5	6	7	8	9	10	11	12
Lead wire color	Orange	Orange	Black	Black	Green	Green	Red	Red	Blue	Blue	Yellow	Yellow
Dot marking	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes
Terminal no.	13	14	15	16	17	18	19	20	21	22	23	24
Lead wire color	Brown	Brown	White	White	Pink	Pink	Gray	Gray	Sky blue	Sky blue	Light green	Light green
Dot marking	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes

Type 01F D-sub Connector

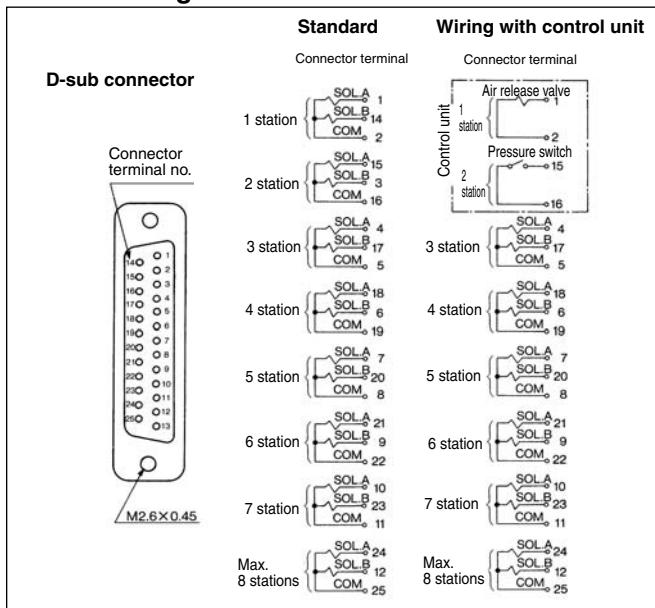
Series VFS2000/3000/4000/5000

• Wire connection specifications

Lead wire for both solenoid A and B sides in manifold are connected to connector terminal as COM specifications.



Internal Wiring of Manifold



Note 1) Maximum stations are 8.

Note 2) There is no polarity.

Note 3) Indication of stations are one station from D side regardless of the connector mounting side, D or U.

Applicable Plug Assembly (Option)

Assembly part no.	Cable length	Component parts
VVZS3000-21A-1	1.5 m	
VVZS3000-21A-2	3 m	
VVZS3000-21A-3	5 m	
VVZS3000-21A-4 *	8 m	
VVZS3000-21A-5 *	10 m	
VVZS3000-21A-6 *	15 m	
VVZS3000-21A-7 *	30 m	
VVZS3000-21A-8 *	20 m	

* Option

Cable Color List of Each Terminal No.

Terminal no.	1	2	3	4	5	6	7	8	9	10	11	12	13
Lead wire color	Black	Brown	Red	Orange	Yellow	Pink	Blue	Purple	Gray	White	White	Yellow	Orange
Dot marking	—	—	—	—	—	—	—	—	—	White	Black	Black	Red
Terminal no.	14	15	16	17	18	19	20	21	22	23	24	25	
Lead wire color	Yellow	Pink	Blue	Purple	Gray	Orange	Red	Brown	Pink	Gray	Black	White	
Dot marking	Black	Black	White	—	—	Black	White	Red	Red	Red	White	—	

SJ

SY

SV

SYJ

SZ

VP4

S0700

VQ

VQ4

VQ5

VQC

VQZ

SQ

VFS

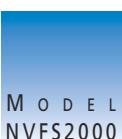
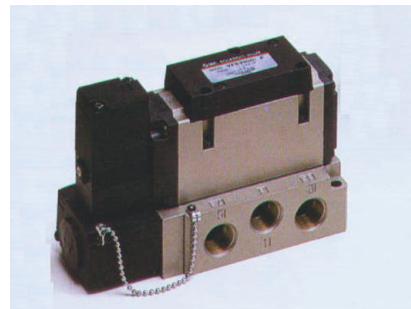
VFR

VQ7

SERIES NVFS 2000, 3000, 4000, 5000, 6000 5 PORT PILOT OPERATED BASE-MOUNTED / PLUG-IN TYPE

- ✓ Large Flow Capacity
- ✓ Low Power Consumption
- ✓ Long Life
- ✓ Ease Maintenance
- ✓ Many Variations Available

For further information, consult SMC Customer Service



MODEL
NVFS2000

Position	Number Of Solenoid	Type	Port Size	Cv Factor	Response Time (ms)
2 Position	Single	NVFS2100	1/8	0.7	15 or less
			1/4	0.83	
	Double	NVFS2200	1/8	0.7	13 or less
			1/4	0.83	
3 Position	Closed Center	NVFS2300	1/8	0.65	20 or less
	Exhaust Center		1/4	0.67	
	Pressure Center	NVFS2400	1/8	0.65	20 or less
	Pressure Center		1/4	0.67	
	Perfect (Double Check)	NVFS2500	1/8	0.4	20 or less
			1/4	0.4	25 or less



SYMBOLS

2 position	3 position
Single	Closed center
	
Double	Exhaust center
	
	Pressure center
	Perfect (double check)
	



TECHNICAL
SPECIFICATIONS
STANDARD

	Fluid	Air and Inert Gas
Valve	Max Operating Pressure	150 PSI (1MPa)
	Min Operating Pressure	15 PSI (0.1MPa)
	2 Position	
	3 Position	22 PSI (0.15MPa)
	Ambient & Fluid Temperature	14~140°F (-10~60°C)
	Lubrication	Not Required
Electrical	Pilot Operator Manual Override	Non Locking Push Type (Flush)
	Protection Construction	Dust Proof
Electrical	Rated	110VAC50/60Hz, 220V50/60Hz, 24V50/60Hz
	Voltage	12V, 24V
	Allowable Voltage Range	-15 ~ 10% Rated Voltage
	Coil Insulation	Class B or Equivalent
	Apparent Power AC	5.0VA/60Hz, 5.6VA/50Hz
	(Power Consumption)	2.3VA(1.5W)/60Hz, 3.4VA(2.1W)/50Hz
	Power Consumption DC	1.8W
	Electrical Entry	Plug In
		Conduit Terminal (Base Access)

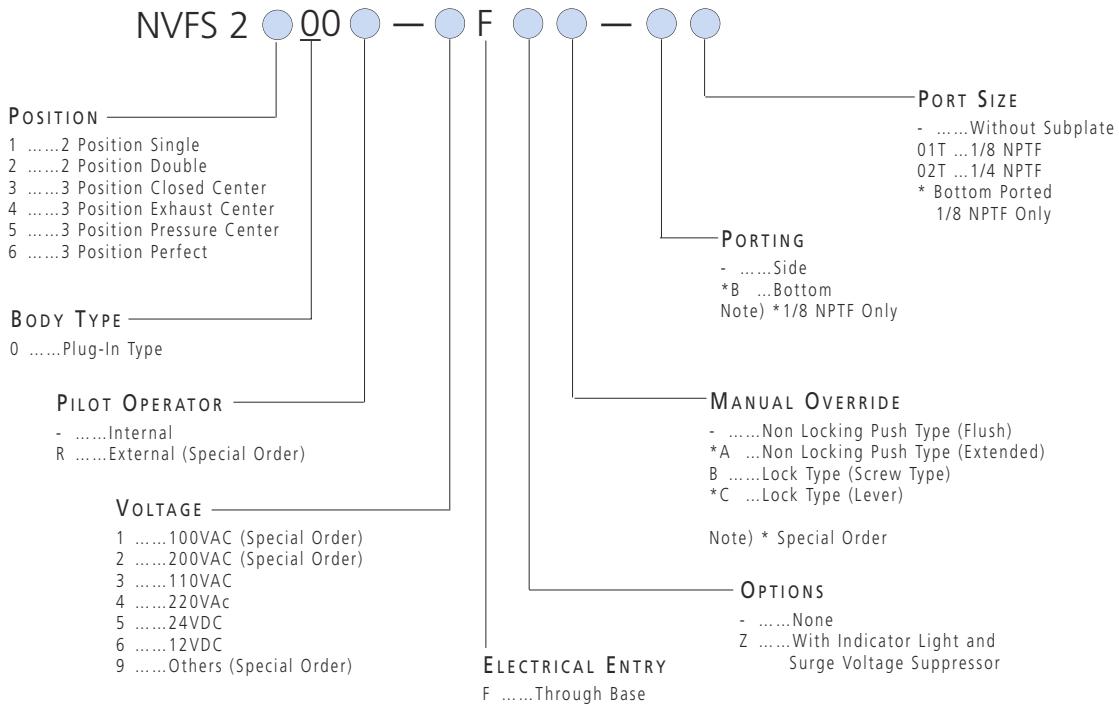


TECHNICAL
SPECIFICATIONS
OPTIONAL

Pilot Type	External Pilot Type
Manual Override	Non Locking Push Type (Extended), Lock Type (Tool), Lock Type (Lever)
Voltage	100V50/60Hz, 200V50/60Hz
	6V, 48V, 100V
Porting	Bottom Ported Subplate
Option	W/Indicator Light & Surge Voltage Suppressor

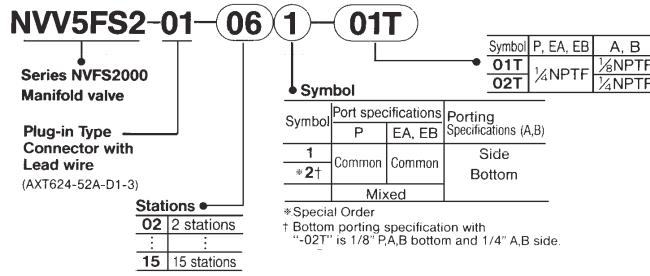
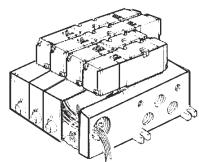


FOR FURTHER TECHNICAL
DETAILS ON THIS
PRODUCT, REQUEST
CATALOG REFERENCE
N233

HOW TO
ORDER
NVFS2000

 HOW TO
ORDER
MANIFOLD

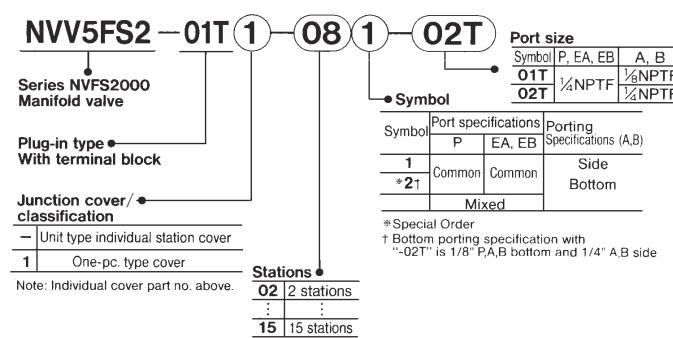
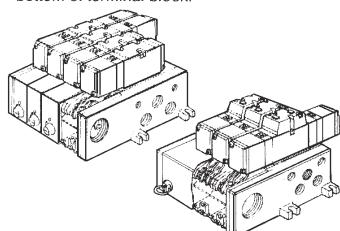
Plug in Type: Connector with Lead Wire (" wire harness")

- The insert plug is attached to the manifold block and is connected with valve side. Connect leads with corresponding power supply.



Plug-in Type: With Terminal Blocks

- Lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.


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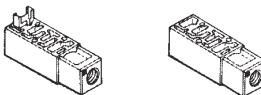
HOW TO
ORDER
MANIFOLD / OPTION PARTS ASSEMBLY

Manifold /Option Parts Ass'y

SUP Relocation spacer

An individual SUP spacer on manifold block can form individual P port for the valve.

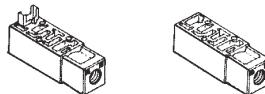
Body type	Plug-in type
1/8NPTF	NVFS2000-P-01T-1
1/4NPTF	NVFS2000-P-02T-1



EXH Relocation spacer

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

Body type	Plug-in type
1/8NPTF	NVFS2000-R-01T-1
1/4NPTF	NVFS2000-R-02T-1



SUP gallery block disc

When supplying manifold with more than one pressure, insert block disc in between stations subjected to different pressures.

Body type	Plug-in type
Part No.	AXT625-12A

EXH gallery block disc

When valve exhaust affects the other stations on the circuit or when externally piloted, dual pressure valve is used on a standard manifold, insert EXH block disc(s) in between stations to isolate valve exhaust.

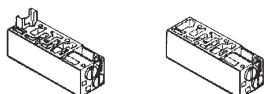
Body type	Plug-in type
Part No.	AXT625-12A



Interface speed control

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

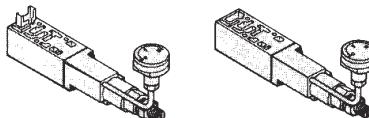
Body type	Plug-in type
Part No.	NVFS2000-20A-1 NVFS2000-20A-2



Interface regulator

Spacer type regulator on manifold block controls supply pressure to the valve. With standard gauge.

Body type	Plug-in type
Pressure Regulation P	NARBF2000-00-P-1



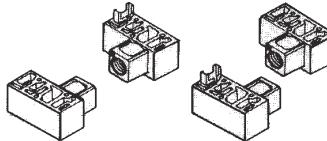
Air Shutoff valve spacer

The concurrent use of air shutoff valve spacer with NVFS2100 controls supply of air pressure to the manifold (3-way dump valve).

Specify location in **first (L)** or **last (R)** station of manifold.

Body type	Plug-in type
Part No.	NVFS2000-24A-1 ^L _R

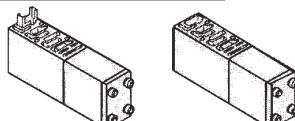
Note) L:U side mount R:D side mount



Double Check "Perfect" spacer

The concurrent use of perfect spacer with built-in double check valve can stop the cylinder at mid-position and hold for extended time without being affected by the air leakage across spool seals.

Body type	Plug-in type
Part No.	NVFS2000-22A-1



Blank plate

When disassembling valve for maintenance purposes or when spare manifold stations are required, install Blank plate on the manifold block.

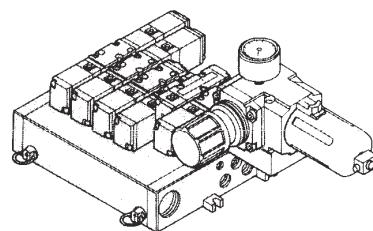
Body type	Plug-in type
Part No.	VVFS2000-10A

Manifold /Option

Control Unit

Plug-in type.

- Filter/Regulator, Pressure switch, and Air shutoff valve all combine to form one unit.
- Piping work eliminated.



For more information,
Please refer to catalog N233

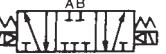
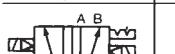
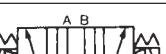
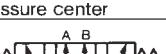
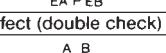


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DETAILS ON THIS
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MODEL
NVFS3000

Position	Number Of Solenoid	Type	Port Size (NPTF)	Cv Factor	Response Time (ms)
2 Position	Single	NVFS3100	1/4	1.8	20 or less
			3/8	2	15 or less
	Double	NVFS3200	1/4	1.8	
			3/8	2	40 or less
3 Position	Closed Center	NVFS3300	1/4	1.8	
			3/8	2	40 or less
	Exhaust Center	NVFS3400	1/4	1.8	
			3/8	2	40 or less
	Pressure Center	NVFS3500	1/4	1.8	
			3/8	2	50 or less
	Perfect (Double Check)	NVFS3600	1/4	1.1	
			3/8	1.2	

SYMBOLS

2 position	3 position
Single	Closed center
	
Double	Exhaust center
	
	Pressure center
	
	Perfect (double check)
	

 TECHNICAL
SPECIFICATIONS
STANDARD

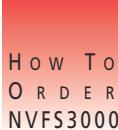
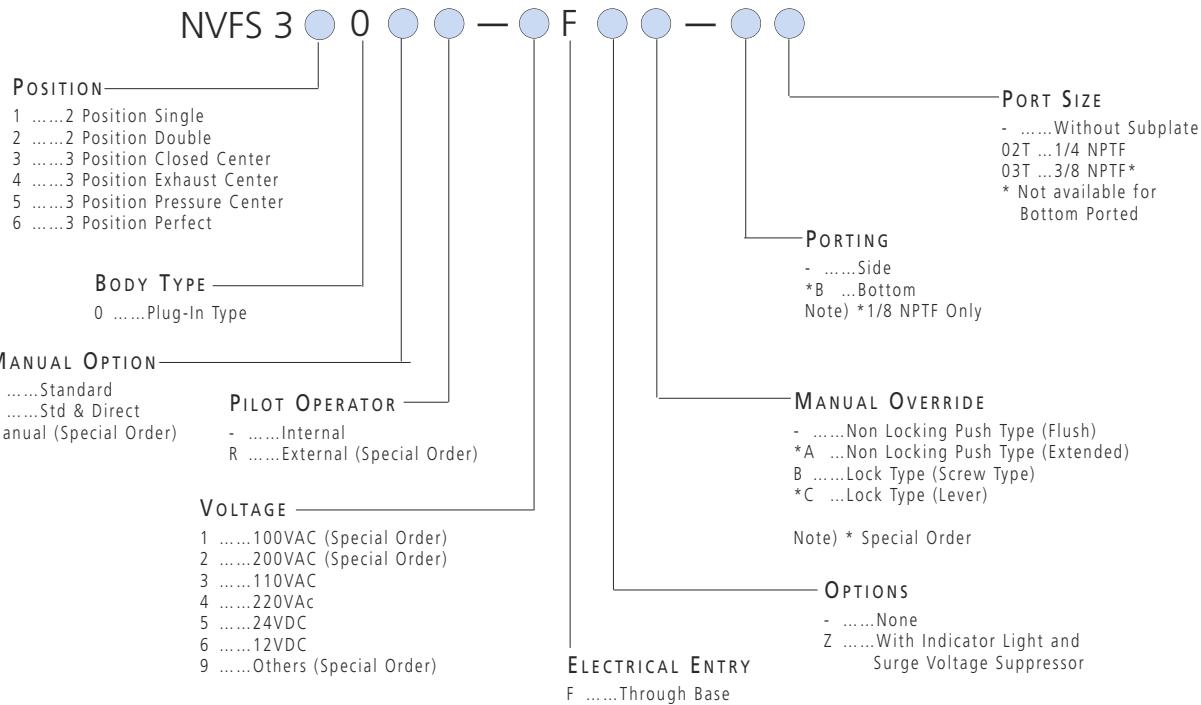
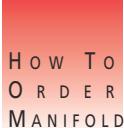
Fluid		Air and Inert Gas
Max Operating Pressure		150 PSI (1MPa)
Min Operating Pressure		22 PSI (0.15MPa)
Ambient & Fluid Temperature		14~140°F (-10~60°C)
Lubrication		Not Required
Pilot Operator Manual Override		Non Locking Push Type (Flush)
Protection Construction		Dust Proof
Valve	Rated	110VAC50/60Hz, 220V50/60Hz, 24V50/60Hz
	Voltage	12V, 24V
Allowable Voltage Range		-15 ~ 10% Rated Voltage
Coil Insulation		Class B or Equivalent
Electrical	Apparent Power AC	InRush 5.0VA/60Hz, 5.6VA/50Hz
	(Power Consumption)	Holding 2.3VA(1.5W)/60Hz, 3.4VA(2.1W)/50Hz
Power Consumption DC		1.8W
Electrical Entry		Plug In Conduit Terminal (Base Access)

 TECHNICAL
SPECIFICATIONS
OPTIONAL

Pilot Type	External Pilot Type	
Manual Override	Main Valve	Direct Manual Override Type
	Pilot Operator	Non Locking Push Type (Extended), Lock Type (Tool), Lock Type (Lever)
Voltage	AC	100V50/60Hz, 200V50/60Hz
	DC	6V, 48V, 100V
Porting	Bottom Ported Subplate	
Option	W/Indicator Light & Surge Voltage Suppressor	

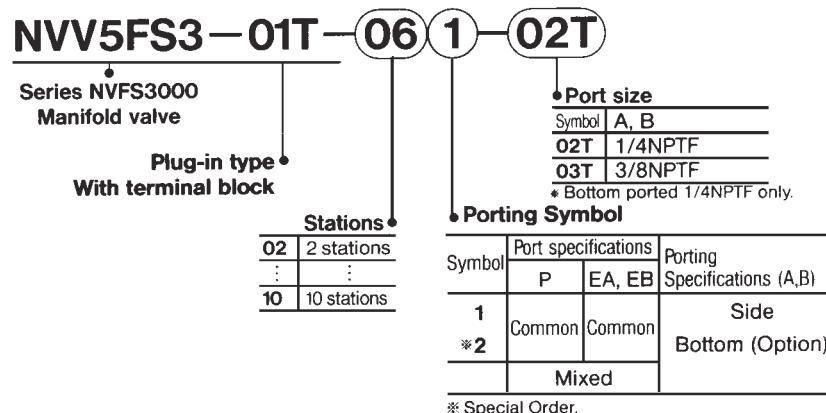
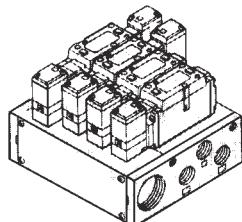
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**How To
ORDER
NVFS3000**


**How To
ORDER
MANIFOLD**

Plug-in Type: With Terminal Blocks

- Lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



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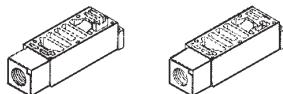
HOW TO
ORDER
MANIFOLD / OPTION PARTS ASSEMBLY

Manifold/Option Parts

SUP Relocation spacer

An individual SUP spacer on manifold block can form individual P port for the valve.

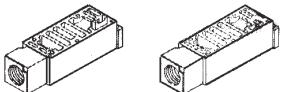
Body type	Plug-in type
Part No.	NWFS3000-P-03T-1



EXH Relocation spacer

An individual EXH spacer on the manifold block can form individual R port for the valve.

Body type	Plug-in type
Part No.	NWFS3000-R-03T-1



SUP gallery block disc

When supplying manifold with more than one pressure, insert block disc in between stations subjected to different pressures.

Body type	Plug-in type
Part No.	AXT636-1A



EXH gallery block disc

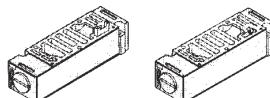
When valve exhaust affects the other stations on the circuit or when externally piloted, dual pressure valve is used on a standard manifold, insert EXH block disc(s) in between stations to separate valve exhaust.

Body type	Plug-in type
Part No.	AXT636-1A

Interface Speed Control

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

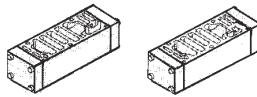
Body type	Plug-in type
Part No.	NWFS3000-20A-1



Double Check "Perfect" spacer

The concurrent use of perfect spacer with built-in double check valve can stop the cylinder at mid-position and hold for extended time without being affected by normal air leakage across spool seals.

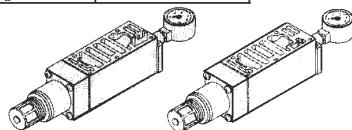
Body type	Plug-in type
Part No.	NWFS3000-22A-1



Interface regulator

Spacer type regulating valve on manifold block can regulate the pressure to the valve.

Body type	Plug-in type
Pressure regulation P	NARBF3000-N0-P-1
Pressure regulation A	NARBF3000-N0-A-1
Pressure regulation B	NARBF3000-N0-B-1



Blank plate

When disassembling valve for maintenance purposes or when spare manifold stations are required, install Blank plate on the manifold block.

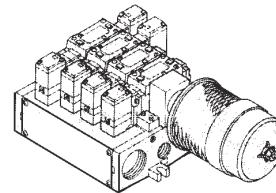
Body type	Plug-in type
Part No.	VVFS3000-10 A

Manifold Options

Exhaust Cleaner Unit

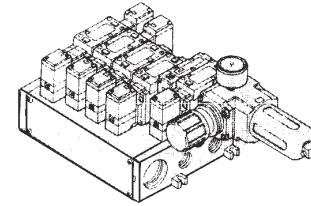
Plug-in type

- Valve exhaust noise damping: 35dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.



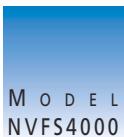
Control Unit

- Filter/Regulator, Pressure switch, and Air shutoff valve all combine to form one unit.
- Piping work eliminated.



For more information, refer to catalog N233





MODEL

NVFS4000

Position	Number Of Solenoid	Type	Port Size (NPTF)	Cv Factor	Response Time (ms)
2 Position	Single	NVFS4100	3/8	3.3	40 or less
			1/2	6	
	Double	NVFS4200	3/8	3.3	15 or less
			1/2	3.6	
3 Position	Closed Center	NVFS4300	3/8	2.8	50 or less
			1/2	3	
	Exhaust Center	NVFS4400	3/8	2.8	50 or less
			1/2	3	
	Pressure Center	NVFS4500	3/8	3.2	50 or less
			1/2	3.4	
	Perfect (Double Check)	NVFS4600	3/8	1.7	55 or less
			1/2	1.8	



SYMBOLS

2 position	3 position
Single	Closed center
Double	Exhaust center
	Pressure center
	Perfect (double check)

TECHNICAL
SPECIFICATIONS
STANDARD

Fluid			Air and Inert Gas	
Max Operating Pressure			150 PSI (1MPa)	
Min Operating Pressure	2 Position		15 PSI (0.1MPa)	
Ambient & Fluid Temperature	3 Position		22 PSI (0.15MPa)	
Lubrication			Note 1) 14~140°F (-10~60°C)	
Pilot Operator Manual Override			Note 2) Not Required	
Protection Construction			Non Locking Push Type (Flush)	
Electrical	Rated	AC	Dust Proof	
	Voltage	DC	110VAC50/60Hz, 220V50/60Hz, 24V50/60Hz	
	Allowable Voltage Range		12V, 24V	
	Coil Insulation		-15 ~ 10% Rated Voltage	
	Apparent Power AC (Power Consumption)	InRush Holding	Class B or Equivalent	
	Power Consumption DC		5.0VA/60Hz, 5.6VA/50Hz	
	Electrical Entry	Plug In	2.3VA(1.5W)/60Hz, 3.4VA(2.1W)/50Hz	
			1.8W	
			Conduit Terminal (Base Access)	

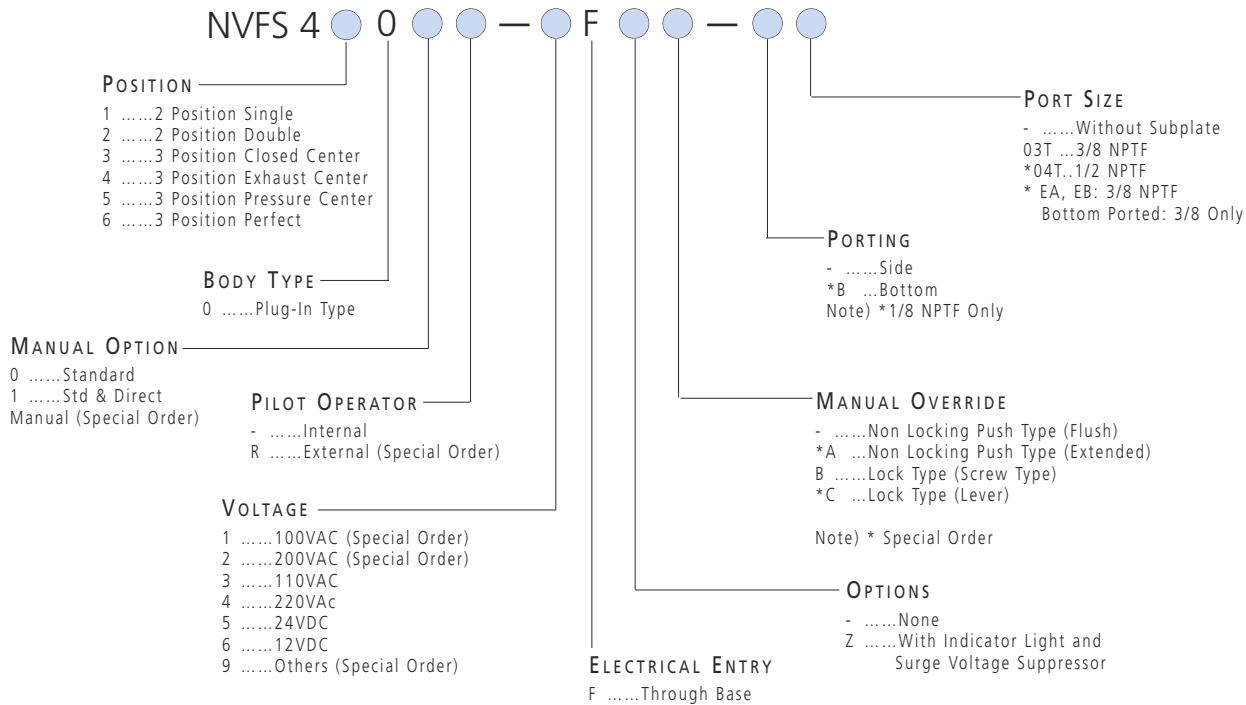
Note 1) Use Dry Air at Low Temperature

Note 2) Use Turbine Oil No 1 (ISOVG32), if lubricated

TECHNICAL
SPECIFICATIONS
OPTIONAL

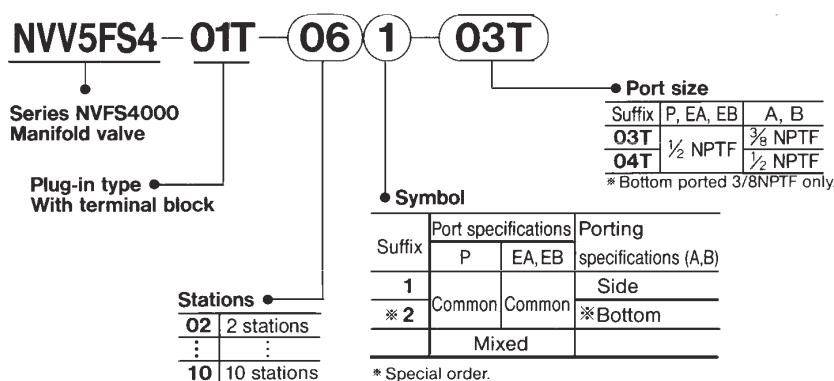
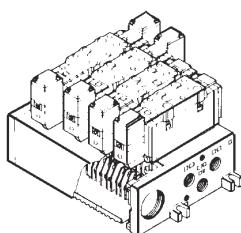
Pilot Type		External Pilot Type
Manual Override	Main Valve	Direct Manual Override Type
	Pilot Operator	Non Locking Push Type (Extended), Lock Type (Tool), Lock Type (Lever)
Voltage	AC	100V50/60Hz, 200V50/60Hz
	DC	6V, 48V, 100V
Porting	Bottom Ported Subplate	
Option	W/Indicator Light & Surge Voltage Suppressor	

FOR FURTHER TECHNICAL
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How To
ORDER
NVFS4000

 How To
ORDER
MANIFOLD

Plug-in Type: With Terminal Block

● Lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



SEE INSIDE FRONT COVER FOR
DETAILS OF YOUR LOCAL SALES OFFICE



FOR FURTHER TECHNICAL
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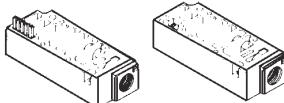
HOW TO
ORDER
MANIFOLD / OPTION PARTS ASSEMBLY

Manifold / Option Parts

SUP Relocation spacer

An individual SUP spacer on manifold block can form individual P port for the valve.

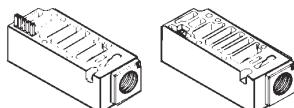
Body type	Plug-in type
Part No.	NVVFS4000-P-03T-1



EXH Relocation spacer

An individual EXH spacer on manifold block can form individual R port for the valve.

Body type	Plug-in type
Part No.	NVVFS4000-R-04T-1



SUP gallery block disc

When supplying manifold with more than one pressure, insert block disc in between stations subjected to different pressures.

Body type	Plug-in type
Part No.	AXT634-10A



SUP block disc

EXH gallery block disc

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

Body type	Plug-in type
Parts No.	AXT634-11A

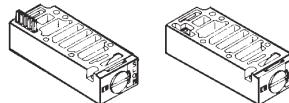


EXH block disc

Interface speed control

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

Body type	Plug-in type
Part No.	NVVFS4000-20A-1

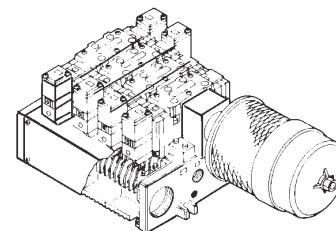


Manifold Options

With exhaust cleaner unit

Plug-in type

- Valve exhaust noise damping: 35db or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.

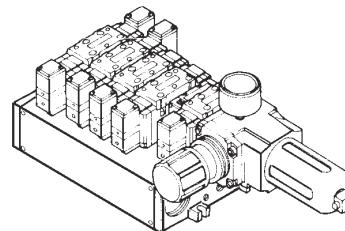


For more information,
refer to catalog N233

With Control Unit

Plug-in type

- Filter/Regulator, Pressure Switch, and Air shutoff valve all combine to form one unit.
- Piping work eliminated.

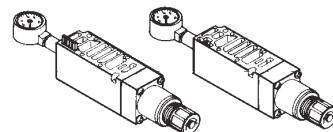


For more information,
refer to catalog N233

Interface regulator

Spacer type regulating valve on manifold block can regulate the pressure to the valve. With std. gauge.

Body type	Plug-in type
Pressure Regulation P	NARBF4000-N0-P-1
Pressure Regulation A	NARBF4000-N0-A-1
Pressure Regulation B	NARBF4000-N0-B-1



Blank plate: VVFS4000-10A

When disassembling valve for maintenance purposes or when spare manifold stations are required, install Blank plate on the manifold block.

Body type	Plug-in type
Part No.	VVFS4000-10A



FOR FURTHER TECHNICAL
DETAILS ON THIS
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MODEL
NVFS5000

Position	Number Of Solenoid	Type Plug-In	Port Size (NPTF)	Cv Factor	Response Time (ms)
2 Position	Single	NVFS5100	3/8	4.4	45 or less
			1/2	5.4	
			3/4	5.7	
	Double	NVFS5200	3/8	4.4	25 or less
			1/2	5.4	
			3/4	5.7	
3 Position	Closed Center	NVFS5300	3/8	3.7	55 or less
			1/2	4.6	
			3/4	4.8	
	Exhaust Center	NVFS5400	3/8	3.9	55 or less
			1/2	4.8	
			3/4	5	
3 Position	Pressure Center	NVFS5500	3/8	3.9	55 or less
			1/2	4.8	
			3/4	4.9	
	Perfect (Double Check)	NVFS5600	3/8	2.2	60 or less
			1/2	2.7	
			3/4	2.8	

SYMBOLS

2 position	3 position
Single	Closed center
	
Double	Exhaust center
	
	Pressure center
	
	Perfect (double check)
	

 TECHNICAL
SPECIFICATIONS
STANDARD

Fluid		Air and Inert Gas
Max Operating Pressure		150 PSI (1MPa)
Min Operating Pressure		15 PSI (0.15MPa)
Ambient & Fluid Temperature		Note 1) 14~140°F (-10~60°C)
Lubrication		Note 2) Not Required
Pilot Operator Manual Override		Non Locking Push Type (Flush)
Protection Construction		Dust Proof
Valve	Rated	110VAC50/60Hz, 220V50/60Hz, 24V50/60Hz
	Voltage	12V, 24V
Allowable Voltage Range		-15 ~ 10% Rated Voltage
Coil Insulation		Class B or Equivalent
Electrical	Apparent Power AC	InRush 5.0VA/60Hz, 5.6VA/50Hz
	(Power Consumption)	Holding 2.3VA(1.5W)/60Hz, 3.4VA(2.1W)/50Hz
Power Consumption DC		1.8W
Electrical Entry		Conduit Terminal (Base Access)

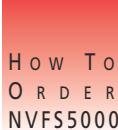
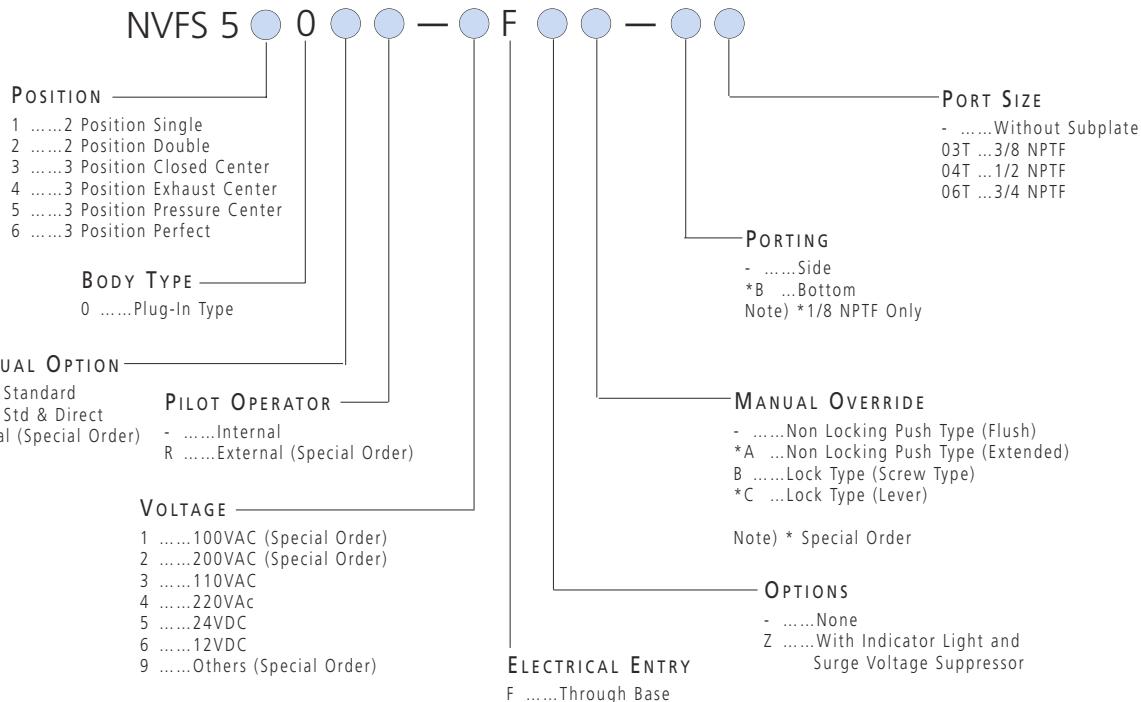
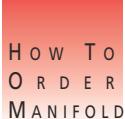
 TECHNICAL
SPECIFICATIONS
OPTIONAL

Pilot Type	External Pilot Type	
Manual Override	Main Valve	Direct Manual Override Type
	Pilot Operator	Non Locking Push Type (Extended), Lock Type (Tool), Lock Type (Lever)
Voltage		AC 100V50/60Hz, 200V50/60Hz
		DC 6V, 48V, 100V
Porting		Bottom Ported Subplate
Option		W/Indicator Light & Surge Voltage Suppressor

Note 1) Use Dry Air at Low Temperature

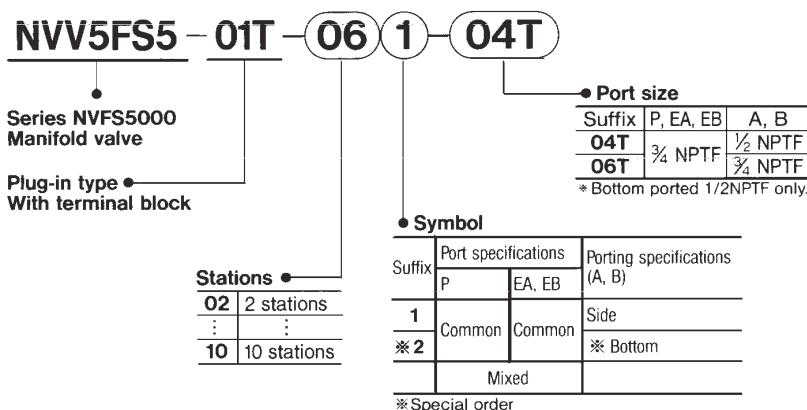
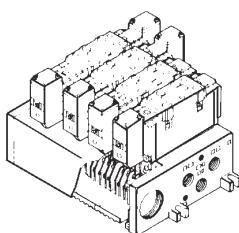
Note 2) Use Turbine Oil No 1 (ISOVG32), if lubricated


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 How To
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NVFS5000


 How To
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MANIFOLD

Plug-in Type: With Terminal Block

- Lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.


 FOR FURTHER TECHNICAL
DETAILS ON THIS
PRODUCT, REQUEST
CATALOG REFERENCE
N233

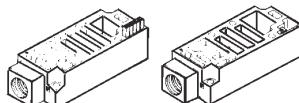
HOW TO
ORDER
MANIFOLD / OPTION PARTS ASSEMBLY

Manifold / Option Part's Ass'y

SUP Relocation spacer

An individual SUP spacer on manifold block can form individual P port for the valve.

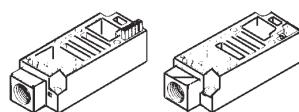
Body type	Plug-in type
Part No.	NVVFS5000-P-04T-1



EXH Relocation spacer

An individual EXH spacer on manifold block can form individual R port for the valve

Body type	Plug-in type
Part No.	NVVFS5000-R-04T-1



SUP gallery block disc

When supplying manifold with more than one pressure, insert block disc in between stations subjected to different pressures.

Body type	Plug-in type
Part No.	AXT628-12A



SUP block disc

EXH gallery block disc

When valve exhaust affects the other stations on the circuit or when externally piloted, dual pressure valve is used on a standard manifold, insert EXH block disc(s) in between stations to separate valve exhaust.

Body type	Plug-in type
Part No.	AXT512-14-1A

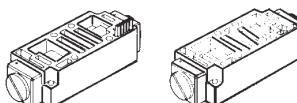


EXH block disc

Interface speed control

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

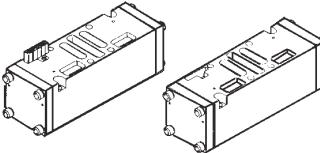
Body type	Plug-in type
Part No.	NVVFS5000-20A-1



Double Check "Perfect" spacer

The concurrent use of perfect spacer with built-in double check valve can stop the cylinder at mid-position and hold for extended time without being affected by normal air leakage across the spool seals.

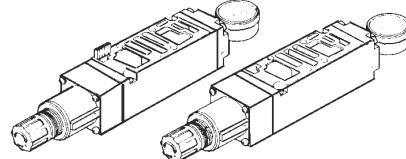
Body type	Plug-in type
Part No.	NVVFS5000-22A-1



Interface regulator

Spacer type regulating valve on manifold block can regulate the pressure to the valve.

Body type	Plug-in type
Pressure Regulation P	NARBF5000-N0-P-1
Pressure Regulation A	NARBF5000-N0-A-1
Pressure Regulation B	NARBF5000-N0-B-1



Blank plate

When disassembling valve for maintenance purposes or when spare manifold stations are required, install Blank plate on the manifold block.

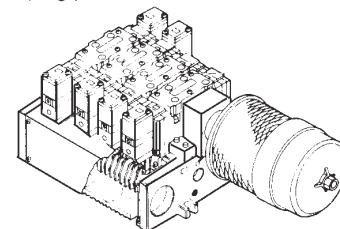
Body type	Plug-in type
Part No.	VVFS5000-10A

Manifold Options

With Exhaust Cleaner

Plug-in type

- Valve exhaust noise damping: 35dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.



For more information, Please refer to catalog N233



FOR FURTHER TECHNICAL DETAILS ON THIS PRODUCT, REQUEST CATALOG REFERENCE N233