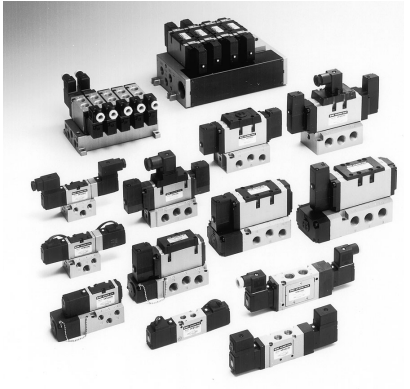


5 Port Pilot Solenoid Valve
Metal Seal
Series VFS

CE UKCA

Models and Variations

Series		Port Size: Effective area (mm²) (Nl/min)	Configuration	Voltage	Electrical entry	Option (Indicator light and surge suppressor)	Manual override
Body ported	VFS1000	1/8: 9.0 (491)	2 position single 2 position double 3 position closed centre 3 position exhaust centre 3 position pressure centre	Standard 100V AC50/60Hz 200V AC50/60Hz 24V DC Option 110 to 120V AC50/60Hz 220V AC50/60Hz 240V AC50/60Hz 12V DC 100V DC	DIN connector (D)(Y)	☐ With indicator light and surge voltage suppressor •Din connector (DZ)(YZ)	Non-locking push style (Flush) Non-locking push style (Extended) Locking style (Slotted) Locking style* (Lever)
	VFS2000	1/8: 16.2 (883) 1/4: 18 (981)					
	VFS3000	1/4: 32.4 (1777) 3/8: 36.0 (1963)					

*Locking style (Lever) is not available for direct mount series VFS2000, 3000.

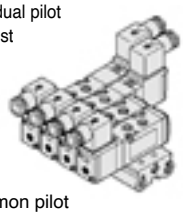
Series		Port Size: Effective area (mm²) (Nl/min)	Configuration	Voltage	Electrical entry	Option (Indicator light and surge suppressor)	Manual override
Base mounted	VFS2000 Plug-in Non plug-in	1/8: 12.6 (687) 1/4: 15 (815)	2 position single 2 position double 3 position closed centre	Standard 100V AC50/60Hz 200V AC50/60Hz 24V DC Option 110 to 120V AC50/60Hz 220V AC50/60Hz 240V AC50/60Hz 12V DC 100V DC	**Plug-in** Conduit terminal (F) **Non plug-in** DIN connector (D)(Y)	☐ With indicator light and surge voltage suppressor •Non plug-in Din connector (DZ)(YZ)	Non-locking push style (Flush) Non-locking push style (Extended)
	VFS3000 Plug-in Non plug-in	1/4: 32.4 (1777) 3/8: 36.0 (1963)	3 position exhaust centre 3 position pressure centre 3 position double check		**Plug-in** Conduit terminal (F) **Non plug-in** DIN connector (D)(Y)	☐ With indicator light and surge voltage suppressor •Plug-in Conduit terminal (FZ) •Non plug-in Din connector (DZ)(YZ)	Locking style (Slotted) Locking style (Lever)
	VFS4000 Plug-in Non plug-in	3/8: 59.4 (3239) 1/2: 64.8 (3533)					
	VFS5000 Plug-in Non plug-in	3/8: 78.7 (4319) 1/2: 97.2 (5300) 3/4: 102.6 (5595)					
	VFS6000 Plug-in Non plug-in	3/4: 162 (8833) 1: 180 (9815)	2 position single 2 position double				Non-locking push style (Flush)

Manifold Variations

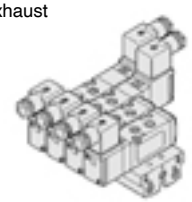
		Manifold Type						
		Bar base	Stacking base	Insert plug with lead wire	With terminal block	With multi-connector	With D-sub connector	Non plug-in
Body Ported	VFS1000	●						
	VFS2000	●						
	VFS3000		●					
Base Mounted Plug-in	VFS2000			●	●	●	●	
	VFS3000				●	●	●	
	VFS4000				●	●	●	
	VFS5000				●	●	●	
Base Mounted Non Plug-in	VFS2000							●
	VFS3000							●
	VFS4000							●
	VFS5000							●

Bar base
(Series VFS1000, 2000)

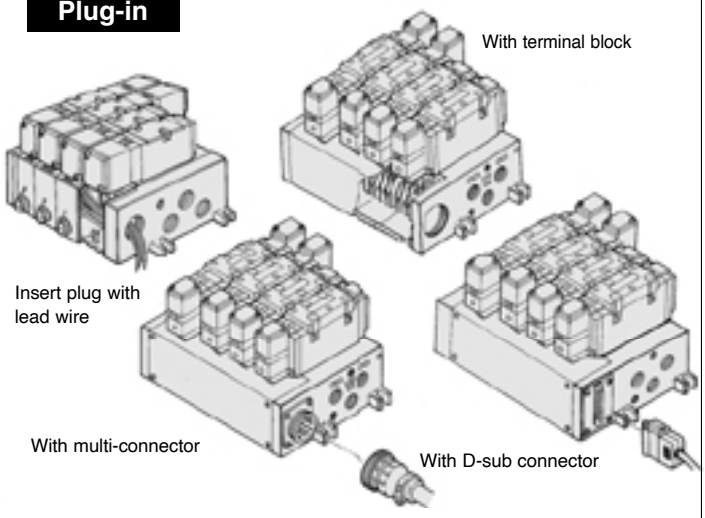
Individual pilot exhaust



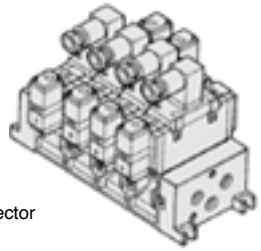
Common pilot exhaust



Plug-in



Non plug-in

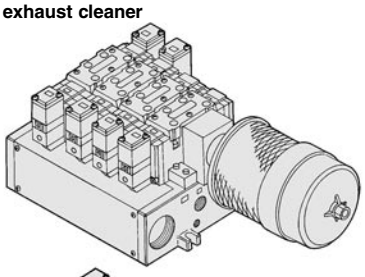


DIN connector

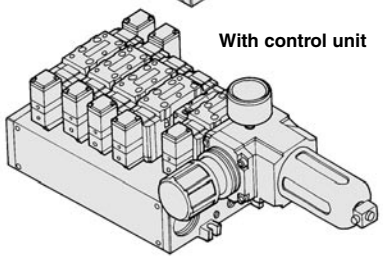
*Bottom porting is optional.

Manifold Options			Manifold Optional Parts									
With exhaust cleaner	With control unit	Serial interface unit	Individual SUP spacer	Individual EXH spacer	SUP block disk	EXH block disk	Interface speed control	Interface regulator	Air shut-off valve spacer	Air release valve spacer	Double check spacer	Blank plate
												●
												●
												●
	●	● (1)	●	●	●	●	●	●	●	●	●	●
●	●	● (1)	●	●	●	●	●	●		●	●	●
●	●	● (1)	●	●	●	●	●	●		●	●	●
●		● (1)	●	●	●	●	●	●			●	●
	●		●	●	●	●	●	●	●	●	●	●
●	●		●	●	●	●	●	●		●	●	●
●	●		●	●	●	●	●	●		●	●	●
●			●	●	●	●	●	●			●	●

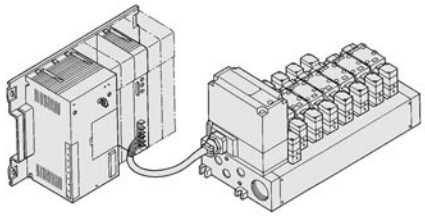
With exhaust cleaner



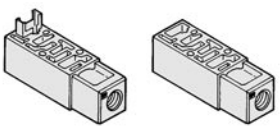
With control unit



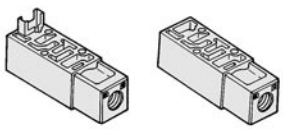
Serial interface unit



Individual SUP spacer

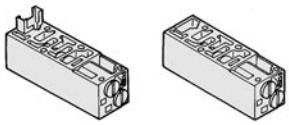


Individual EXH spacer

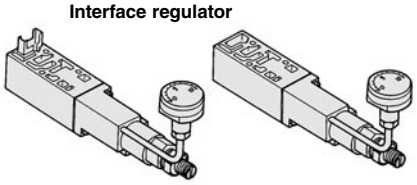


SUP/EXH block disk

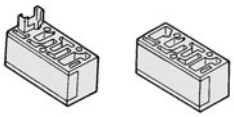
Interface speed control



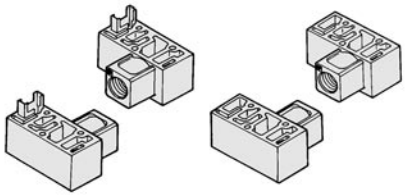
Interface regulator



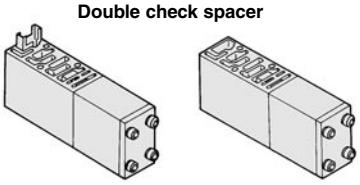
Air shutoff valve spacer



Air release valve spacer



Double check spacer



Note 1) Available.

⚠ Precautions

Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

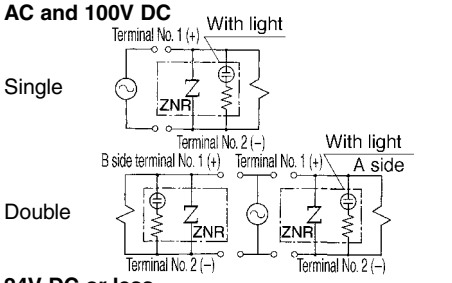
⚠ Caution

Light/Surge Voltage Suppressor/Electrical Entry — Single Unit

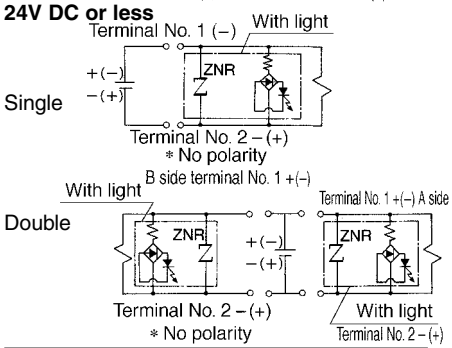
Body Ported
Series VFS1000, 2000, 3000

Light/Surge Voltage Suppressor

AC and 100V DC

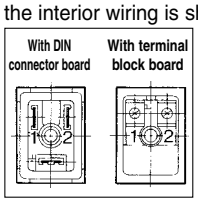


24V DC or less



Wiring

In the case of DIN connector and Terminal block (with indicator light/surge voltage suppressor), the interior wiring is shown below.

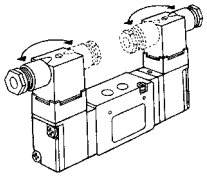


Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S. But, in the case of DIN connector board, it is not a terminal structure.

∗ No polarity

To Change Direction of DIN Connector

To change direction of DIN connector retaining screw, pull off outer cover, rotate connector board through 180˚. Replace cover and tighten screw.



Changing Direction of Electrical Entry and Manual Override (Series VFS1000 only)

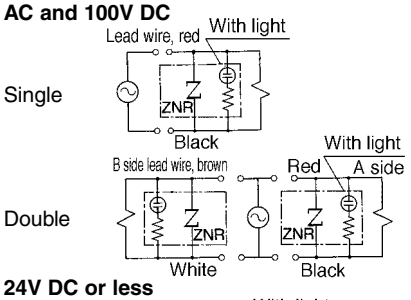
Loosen the set screw (M3-2pcs.), take out pilot operator, turn solenoid valve180° degrees to change the direction of lead wire and manual override. (Possible on Series VFS1000 only.)

Base Mounted — **Series VFS2000**

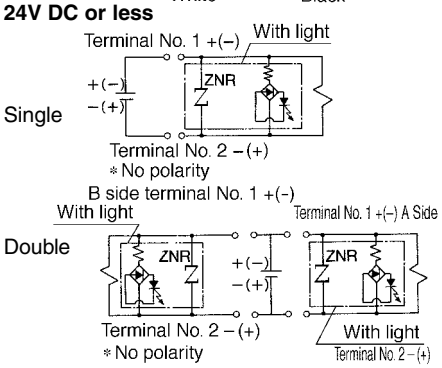
Light/Surge Voltage Suppressor

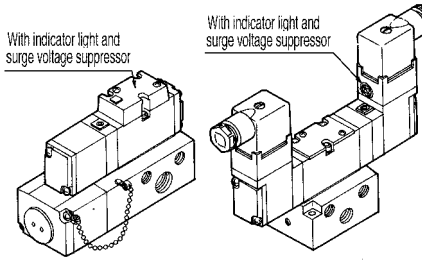
•In the case with surge voltage suppressor, surge voltage absorption device ZNR is attached to AC power.

AC and 100V DC



24V DC or less





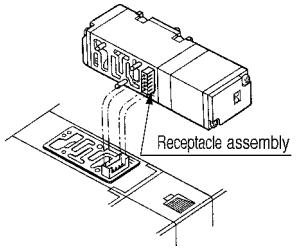
Plug-in **Non Plug-in**

How to Exchange

Solenoid valve

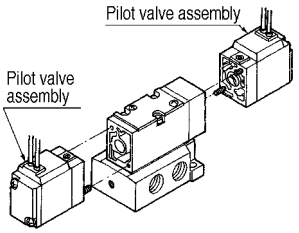
•Loosen 3 set screws (hexagonal socket head cap screw M3 X 31) and pull solenoid valve out vertically, otherwise it may cause damage to the solenoid valve. Never remove a valve at an angle.

•When mounting solenoid valve onto the base, plug pin ass'y (base-side) into receptacle ass'y (body-side) vertically.



Pilot valve

•When changing rated voltage and electrical entry etc., pilot valve assembly can be exchanged since this is a plug-in style.



Wiring

Valve/Sub-plate porting plug-in : T
Conduit with terminal (with terminal block)

•Remove junction cover ① of subplate, and you can see plug-in terminal block board ② (Part No. NVF2000-27A-1) attached to the inside of the subplate.

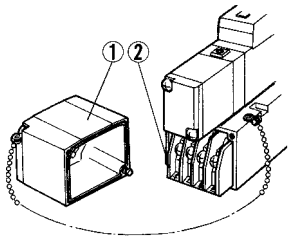
•The following markings are on the terminal block

Designation	Solenoid A-side	Solenoid B-side
Terminal block board marking	A	B

•No polarity

•When ground wiring and COM wiring are required, please specify separately.

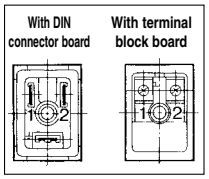
•Applicable terminal
1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S



Valve/Sub-plate porting non plug-in: D

•**G type:** Use lead wire from solenoid to connect with power side.

•**E, T, D-type:** In the case of a DIN connector and terminal block (with light/surge voltage suppressor), the interior wiring is shown below. Please connect with corresponding power side.



Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S. But in the case of with DIN connector board, is not a terminal structure.

∗ No polarity

Changing Direction of DIN Connector/Cable Entry

•Unscrew retaining screw, pull off outer cover, rotate connector board through 180˚. Replace cover and tighten screw.
Applicable cable: O. D. ø6 to ø8.

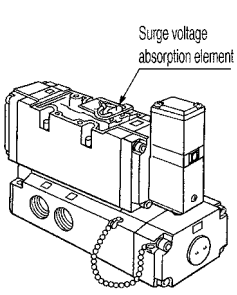
⚠ Caution

Light/Surge Voltage Suppressor/Electrical Entry — Single Unit

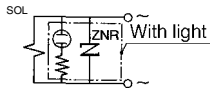
Base Mounted — **Series VFS3000, 4000, 5000, 6000**

Light/Surge Voltage Suppressor

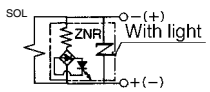
In the case of voltage suppressor, surge voltage absorption element is attached to terminal block on body area.



AC and 100V DC or



24V DC or less

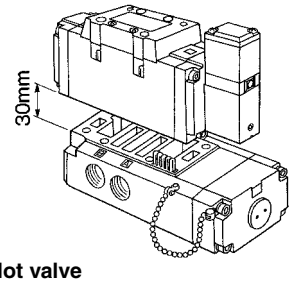


* **No polarity**

How to Exchange

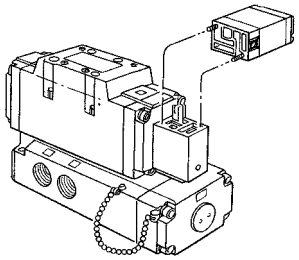
Solenoid valve

- 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 ass'y (base-side) into receptacle ass'y (body-side) vertically.



Pilot valve

- When changing the rated voltage, electrical entry, etc., pilot valve ass'y can be exchanged easily since this is plug-in style. Then, when changing the rated voltage with light/surge voltage suppressor, change of light/surge voltage suppressor substrate is also needed. So, order together with pilot valve assembly.



Light and surge voltage suppressor substrate part No.

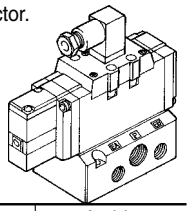
VFS3000	VFS3000-10A-□
VFS4000	VF4000-9A-□
VFS5000	AXT627-7A-□
VFS6000	VF4000-9A-□

-□: Voltage

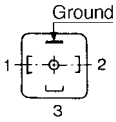
Wiring

DIN connector

- Male pin terminal of DIN connector block board of solenoid valve and wires as shown below. Please connect each valve to corresponding terminal block on connector.



DIN connector (Wiring)

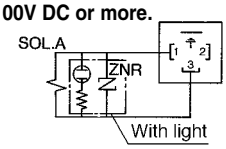


1	A side
2	B side
3	COM
⏚	Ground

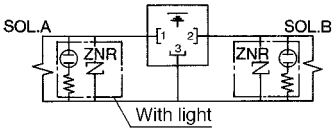
No polarity applies.

AC and 100V DC or more.

Single

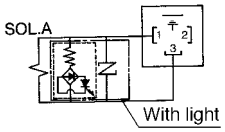


Double

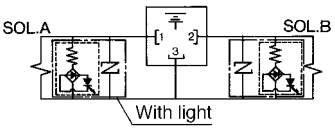


24V DC or less

Single



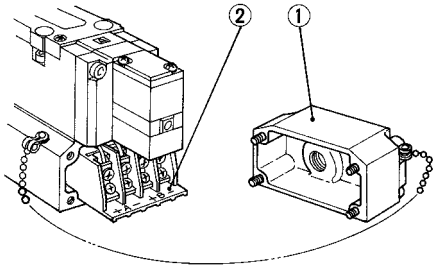
Double



- Cabtire cable
  Applicable cable O. D.: ø6.8 to ø11.5
- Applicable terminal
  Applicable terminal on block board: 3 (kinds)
  1.25Y-3L, 1.25-3.5S, 1.25-4M
- Connector/Clamping torque
  Set screw 6kgf-cm
  Terminal screw 9kgf-cm
- Incorrect common (DIN connector No.3) causes damage on power side circut.

Plug-in (with terminal)

- If removing the junction cover ① on the sub-plate, there appears the plug-in style terminal block ② attached to the inside of sub-plate.



- The following marking are on the terminal block. Connect with corresponding power side.

	Solenoid A side	Solenoid B side
Terminal block	A	B
Marking	+ −	+ −

- 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
- No polarity applies.

⚠ Caution

Maintenance

①A 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 please note that if pressurized states on SUP is left for a long time with inferior air quality, carbon powder and oil waste in the compressed air accumulate in the clearance of spool and the 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.

②In case foreign matter from the air source adheres to spool and sleeve, disassemble the adapter plate section and end plate section (return spring insert section).

Then, take out spool and sleeve from valve and clean them with trichlene or freon solutions, when cleaning, prevent O rings from touching cleaning solutions.

③When disassembling and re-assembling, 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 valves and solenoid valve bodies.

Pilot valve assembly

Set screw	Correct clamping torque (Nm)
M3	4.5 to 6

Solenoid valve body

Set screw	Correct clamping torque (Nm)
M3	8 to 12
M4	14 to 25
M5	28 to 50

How to Calculate Flow Rate

See p.0-36 for calculating flow rate.

Interface Regulator Specifications

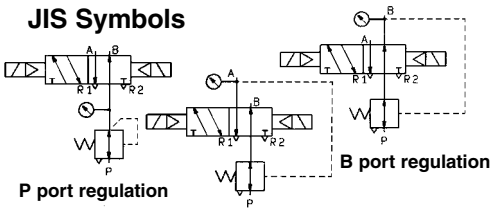
Model (1)		ARBF2000	ARBF3050			ARBF4050			ARBF5050		
Applicable solenoid valve series		VFS2000	VFS3000			VFS4000			VFS5000		
Regulation		P	A	B	P	A	B	P	A	B	P
Proof pressure		1.5MPa									
Max. operating pressure		1.0MPa									
Set pressure range		0.1 to 0.83MPa (2)									
Ambient and fluid temperature		5 to 60°C									
Gauge connecting port		M5	1/8								
Weight (kg)		0.16	0.46			0.72			0.83		
Effective area of the supply side (mm^2) (3)	P→A	5.5	21	18.5	11	35	31	26	44	38	32
S at P_1=0.7MPa, P_2=0.5MPa	P→B	5.1	18.5	22	12	31	31	24	38	40	31
Effective area of the exhaust side (mm^2) (3)	A→EA	12	40			55			90		
S at P_2=0.5MPa	B→EB	11	36			45			77		

Note 1) Set within the operating pressure range of solenoid valve.
Note 2) Synthesized effective area with solenoid valve 2 position single style.
Note 3) •To supply air to Interface Regulator P port is the only supply port except for when used with a reverse pressure valve.
•To combine a pressure center valve and the A and B port pressure reduction of a spacer style regulator, use the ARBF3000, 4000, or 5000 model.
•To combine a reverse pressure valve and a spacer style regulator, use the ARBF3000, 4000, or 5000 model. The P port pressure reduction cannot be used.
•To combine a double check valve and interface regulator, use the manifold or the sub-plate as a reference, and stack them in the order of the double check spacer, the interface regulator and the valve.
•A closed centre valve cannot be used combined with an interface regulator for applications of cylinder intermediate stops as there is leakage from the relief port of the interface regulator.

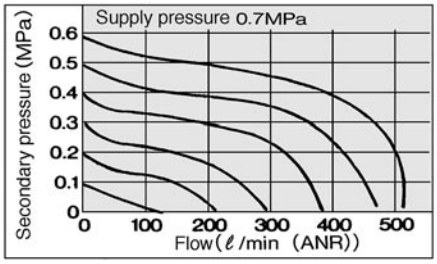
Flow Characteristics (P→A)

(Conditions: Supply pressure 0.7MPa. When 2 position solenoid valve is mounted.)

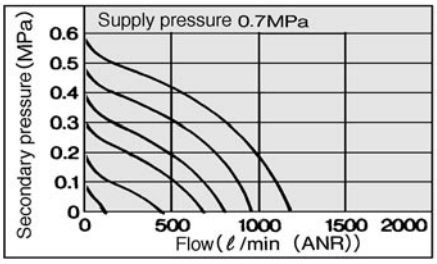
JIS Symbols



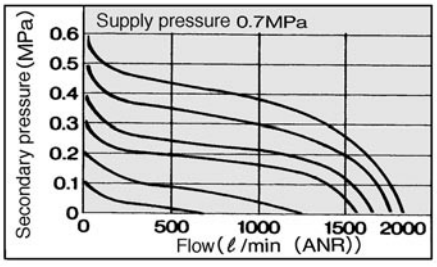
ARBF2000-00-P



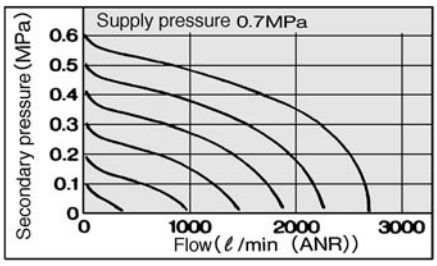
ARBF3050-00-P



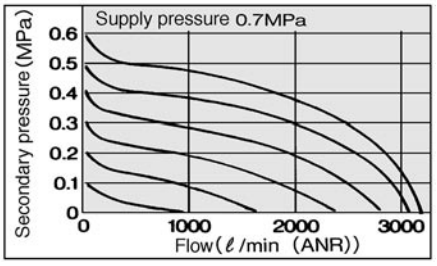
ARBF3050-00-A



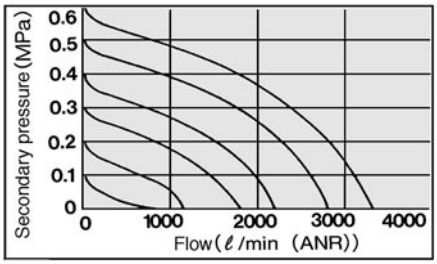
ARBF4050-00-P



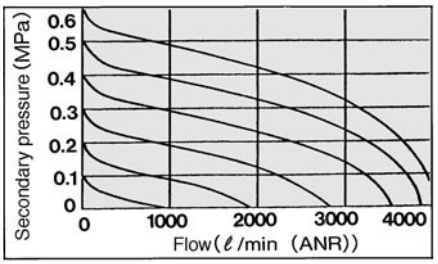
ARBF4050-00-A



ARBF5050-00-P



ARBF5050-00-A



⚠ Caution

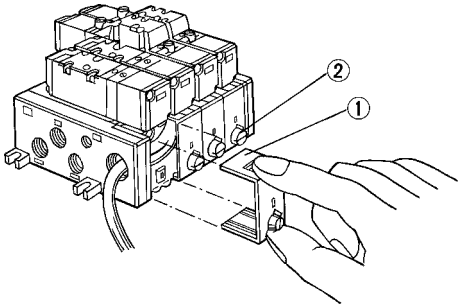
Wiring Manifold/Plug-in

01 Type Insert Plug with Lead Wire

Series VFS2000 (Only VFS2000) (Insert plug with lead wire is not available for VF3000, 4000, and 5000.)

How To Remove Junction Cover (01 Type)

•Turn the knob ② of junction cover ① on the manifold block side by hand or slotted screwdriver to the C□O direction (counter-clockwise) 90°. While holding the knob and upper part of junction cover, pull outward to remove junction cover.
When reassembling, do the opposite.

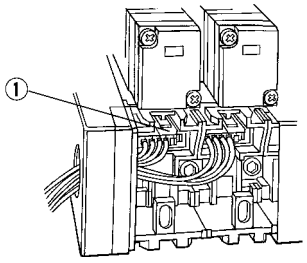


Wiring

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)
Please connect with corresponding power side.

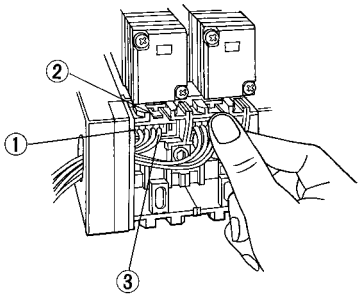
Power	Valve	Solenoid A	Solenoid B
AC	Single solenoid	Red, Black	—
DC	Double solenoid	Red, Black	Brown, White

∗ No polarity applies.
∗ Lead wire length is 1m.

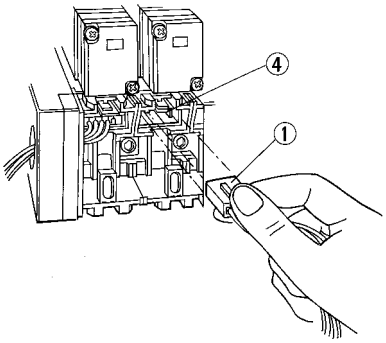


How To Use Insert Plug

•When removing insert plug ① from manifold base, push the lever area ② of insert plug downward with thumb and pull it together with the lead wire ③ outward.



•When placing the insert plug ① into the manifold base, push the lever area of insert 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.



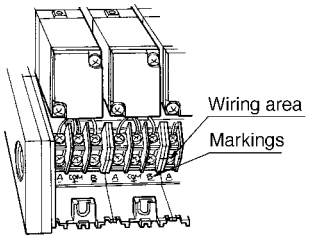
01T Type with Terminal Block

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.

Model \ Marking	A	COM	B
VFS2100	A side	COM	
VFS2200	A side	COM	B side
VFS2$\frac{3}{4}$00	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.
•No polarity.



Series VFS3000

Model \ Marking	A	COM	B
VFS3100	A side	COM	
VFS3200	A side	COM	B side
VFS3$\frac{3}{4}$00	A side	COM	B side

•Applicable terminal:
1.25-3.5M, 1.25Y-3L, 1.25-3M
•No polarlity.
•VFS 3000 has the marking + COM on the block board, but – COM specification is also available.

Series VFS4000, 5000

Model \ Marking	A+	A−	B+	B−
VFS$\frac{4}{5}$100	A side	A side		
VFS$\frac{4}{5}$200	A side	A side	B side	B side
VFS4$\frac{3}{4}$00 **VFS5$\frac{3}{4}$00**	A side	A side	B side	B side

•Applicable terminal:
1.25-3.5M, 1.25Y-3L, 1.25Y-3M
•No polarity

⚠ Caution

Lead Wire Wiring — Manifold/Plug-in

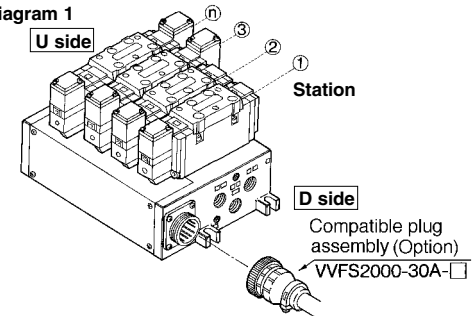
01C Type with Multi-connector

Series VFS2000, 3000, 4000, 5000

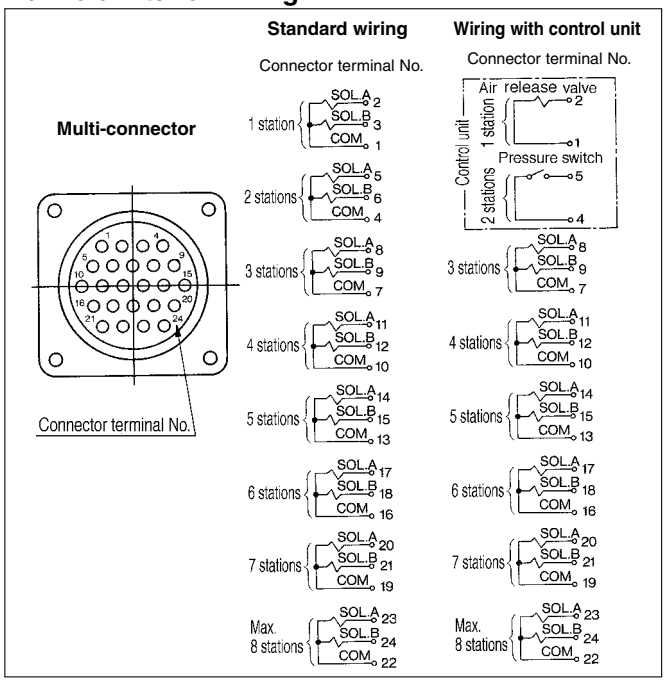
•Wiring

Manifold interior wiring is in accordance with + COM specifications and is connected with both the A side and B side of the solenoid valve by a receptacle terminal as shown below.

Diagram 1



Manifold Interior Wiring



Note 1) Maximum stations: 8 Note 2) No polarity

Note 3) Indications of stations are one station from D side regardless of the connector mounting side, D

Applicable Plug Assembly (Option)

Assembly part No.	Cable length	Components
VVFS2000-30A-1	1.5m	AMP Japan Plug: 206837-1 (1 pc.) Cable clamp: 206138-1 (1 pc.) Socket: 66105-2 (24 pcs.) Cable: VCTF24-wire, 0.75mm^2
VVFS2000-30A-2	3m	
VVFS2000-30A-3	5m	
VVFS2000-30A-4 *	7m	
VVFS2000-30A-5 *	10m	
VVFS2000-30A-6 *	15m	
VVFS2000-30A-7 *	20m	

*Option

Wire Color Table

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Lead wire colour	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	⑩	⑩	⑪	⑪	⑫	⑫
Dot marking	—	5	—	2	—	7	—	4	—	1	—	6	—	9	—	5	—	⑬	—	⑩	—	8	—	6

1Orange, 2Black, 3Green, 4Red, 5Blue, 6Yellow, 7Brown, 8White, 9Pink, ⑩Grey, ⑪Sky blue, ⑫Bright green, ⑬Purple

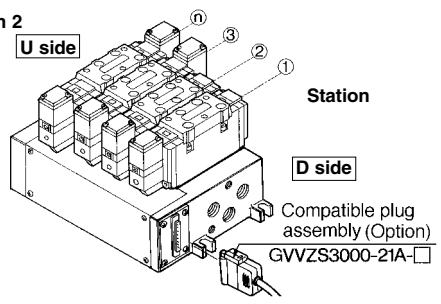
01F Type with D-sub Connector

Series VFS2000, 3000, 4000, 5000

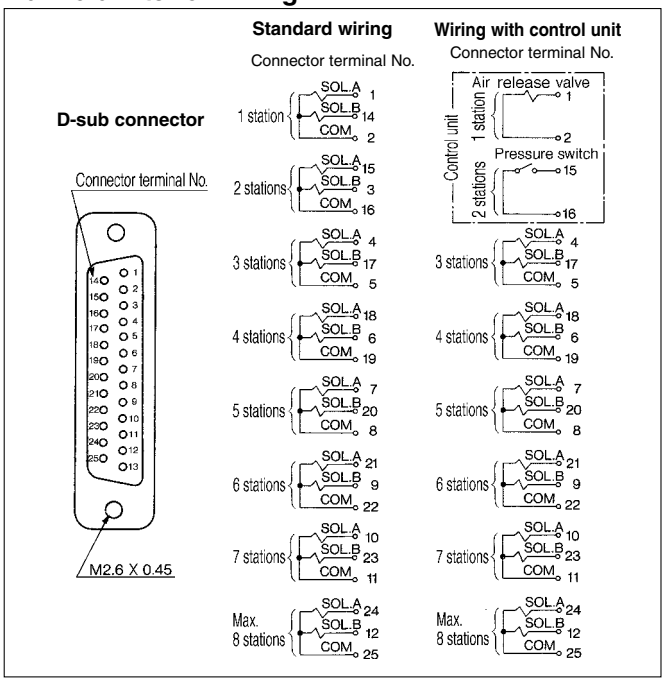
•Wiring

Manifold interior wiring is in accordance with + COM specifications and is connected with both the A side and B side of the solenoid valve by the receptacle terminal as shown below.

Diagram 2



Manifold Interior Wiring



Note 1) Maximum stations: 8 Note 2) No polarity

Note 3) Indications of stations are one station from D side regardless of the connector mounting side, D

Applicable Plug Assembly (Option)

Assembly part No.	Cable length	Components
GVVZS3000-21A-1S	1m	Plug: MIL standard D type connector 25 terminals Cable: 25-wire, 0.3mm^2
GVVZS3000-21A-2S	3m	
GVVZS3000-21A-3S	5m	
GVVZS3000-21A-4S	8m	
GVVZS3000-21A-5S	20m	

Wire Color Table

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Lead wire colour	8	7	4	6	10	9	5	4	2	8	10	4	8	7	8	6	8	10	8	9	8	7	8	7	8
Dot marking	—	—	—	—	—	—	—	—	—	—	9	5	3	3	6	7	10	7	9	7	5	5	4	4	2

1)Orange, 2)Black, 3)Green, 4)Red, 5)Blue, 6)Yellow, 7)Brown, 8)White, 9)Pink, 10)Grey, 11)Sky blue, 12)Bright green, 13)Purple

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

● **VFS1000 series is compatible with the old models, VF2□20 and VF2□30 series.**

Model

Type of actuation		Model		Port size	Flow rate characteristics						Max.[1] operating cycle (cpm)	Response[2] time (ms)	Weight[3] (kg)
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R1/R2)					
					C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
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 centre	**VFS1320**	**VFS1330**	1/8	1.6	0.20	0.37	1.8	0.20	0.41	600	20 or less	0.27
	Exhaust centre	**VFS1420**	**VFS1430**	1/8	1.7	0.18	0.38	1.9	0.19	0.44	600	20 or less	0.27
	Pressure centre	**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 8419: 2010 (once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
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

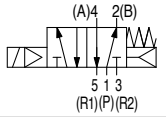
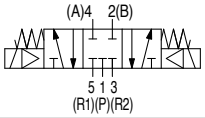
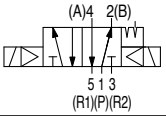
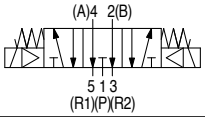
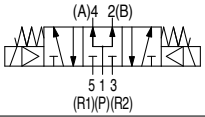
VFS1320-□D-01

VFS1120-□G-01-F

VFS1220-□E-01

VFS1120-□G-01

Symbol

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

Standard Specifications

Valve specifications	**Fluid**		Air
	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)
	Impact/Vibration resistance		150/50 m/s² [3]
	Enclosure		Dustproof (Equivalent to IP50) [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		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 energised 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 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.

VFS1000

How to Order

□ VFS1 [1] [20] – [1] [D] [ ] [ ] – [01] [ ] – [ ] – Q

Ordering source area code

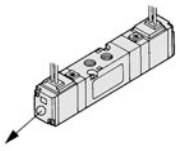
Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Configuration

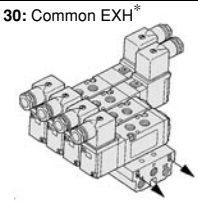
1	2 position single
2	2 position double
3	3 position closed centre
4	3 position exhaust centre
5	3 position pressure centre

Body (Pilot exhaust)

20: Individual EXH



30: Common EXH*



*Manifold only.

Protective class
class I (Mark: ⏚)

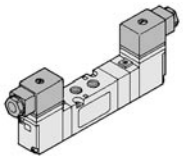
Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other (250 or less)

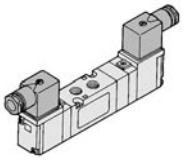
Order Made Contact SMC for other voltages (9)

Electrical entry

D: DIN connector
DO: Without connector



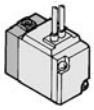
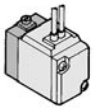
Y: DIN connector (DIN 43650)
YO: Without DIN connector



Indicator light/surge voltage suppressor

–	None
Z	With indicator light and surge voltage suppressor

Manual override

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

*Option

Port size

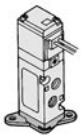
01	1/8

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Optional accessory

F: Foot bracket



*Only for VFS1120.

How to Order Pilot Valve Assembly

SF4 – [1] [DZ] [ ] – [21] – Q

Voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC (50/60Hz)
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other(250 or less)

Order Made Contact SMC for other voltages (9)

Protective class
class I (Mark: ⏚)

Electrical entry/Indicator light and surge voltage suppressor

D	DIN connector
DZ	DIN connector with indicator light and surge suppressor
DO	DIN connector*
DOZ	DIN connector with indicator light and surge suppressor*
Y	DIN Connector (DIN 43650B)
YO	Without connector

*Without DIN connector.

Manual override

–	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (Slotted)
C*	Locking style (Lever)

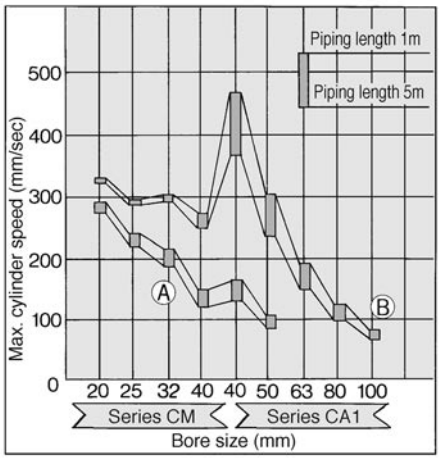
*Option

Applicable model

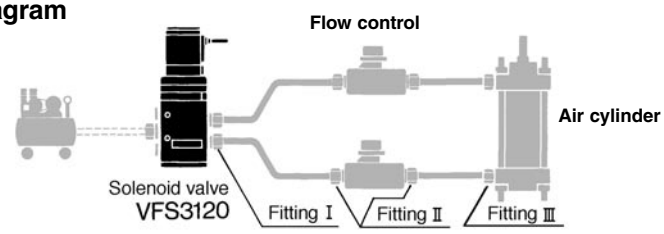
21	For VFS1□20	Individual pilot exhaust
22	For VFS1□30	Common pilot exhaust

Maximum Cylinder Speed

Conditions: Supply pressure 0.5MPa, Load factor 50%



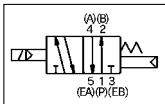
System diagram

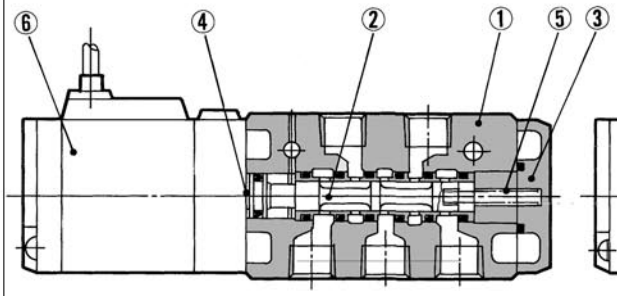


System	Solenoid valve	Port size	Nylon tube O.D./I.D.	Silencer	Speed controller	Fitting (Tube O.D. X Port size)		
						1	2	3
A	**VFS1□20-01**	1/8	ø4/3	AN110-01	AS1000-01 or AS2000-01	ø4 X 1/8	ø4 X 1/8	ø4 X 1/8 to 1/4
B	**VFS1□20-01**	1/8	ø6/4.5		AS4000-02	ø6 X 1/8	ø6 X 1/8	ø6 X 1/8 to 1/2

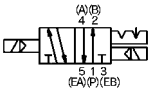
Construction

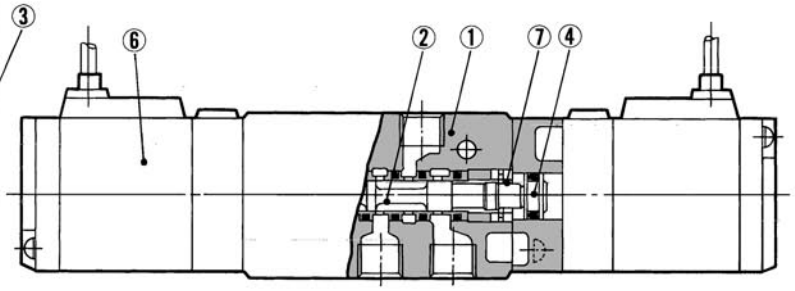
2 position single





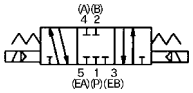
2 position double



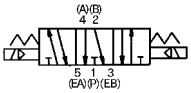


3 position closed centre/exhaust centre/pressure centre

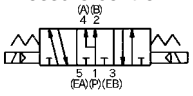
Closed centre

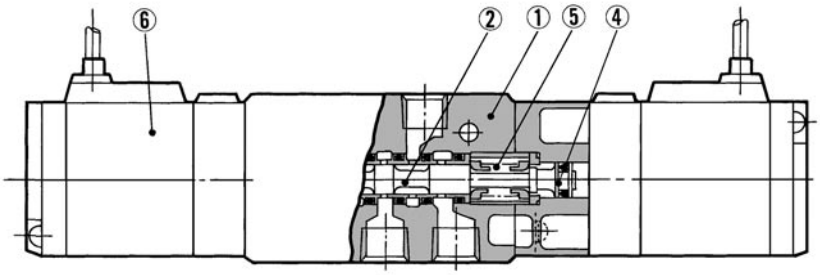


Exhaust centre



Pressure centre





Component Parts

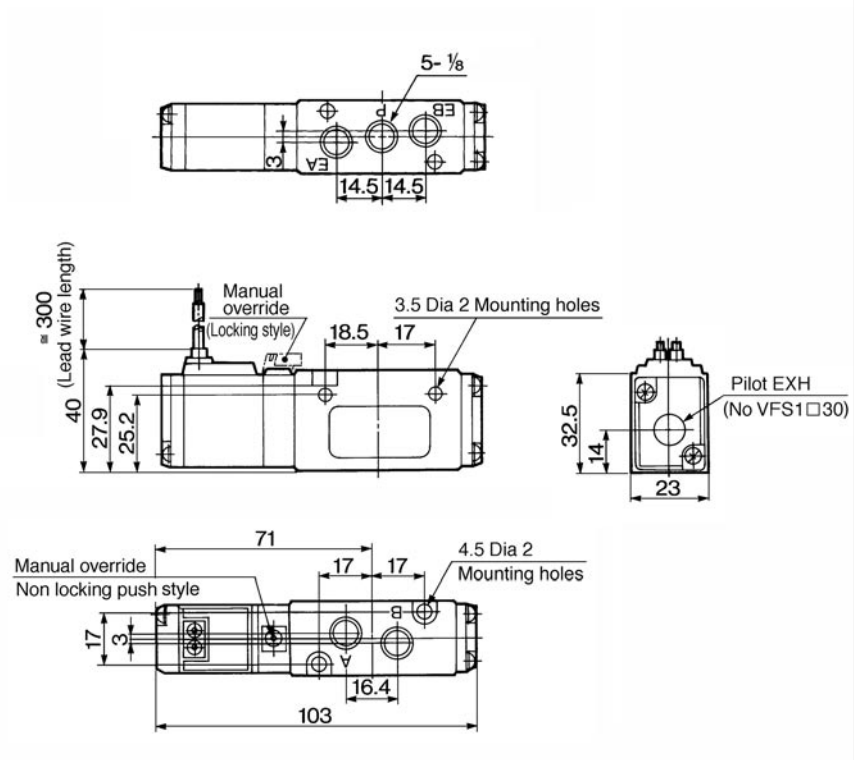
No.	Description	Material	Note
①	Body	Aluminium die-cast	Platinum silver
②	Spool/Sleeve	Stainless steel	—
③	End plate	Resin	—
④	Piston	Resin	—

Replacement Parts

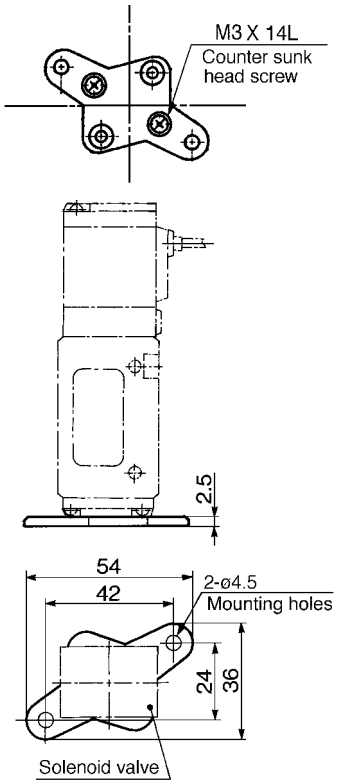
No.	Description	Material	Part No.		
			VFS1120	**VFS1220**	**VFS1320, 1420, 1520**
⑤	Return spring	Stainless steel	AXT626-6	—	AXT626-19
⑥	Pilot valve assembly	—	Refer to "How to order Pilot valve assembly" on p.1.17-10.		
⑦	Detent assembly	—	—	AXT624-11A	—

2 Position Single DIN Connector

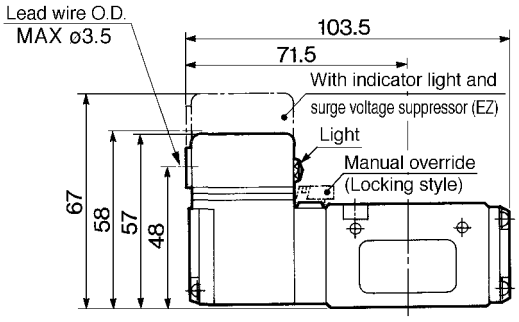
Grommet: VFS1120-□G



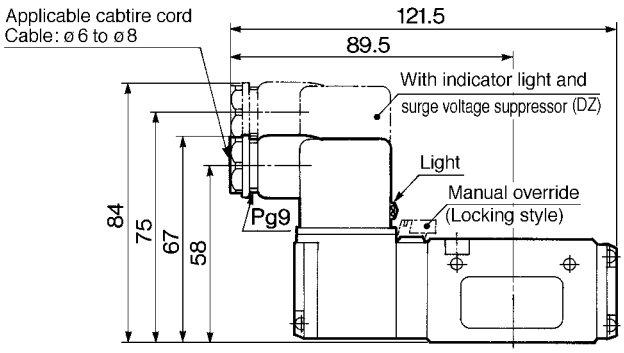
With bracket (F): AXT626-10A



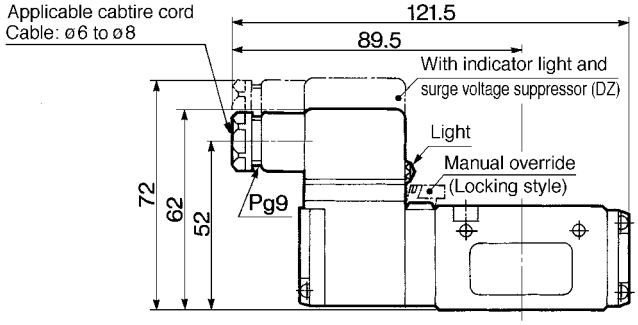
Grommet terminal: VFS1120-□E, EZ



DIN connector: VFS1120-□D, DZ

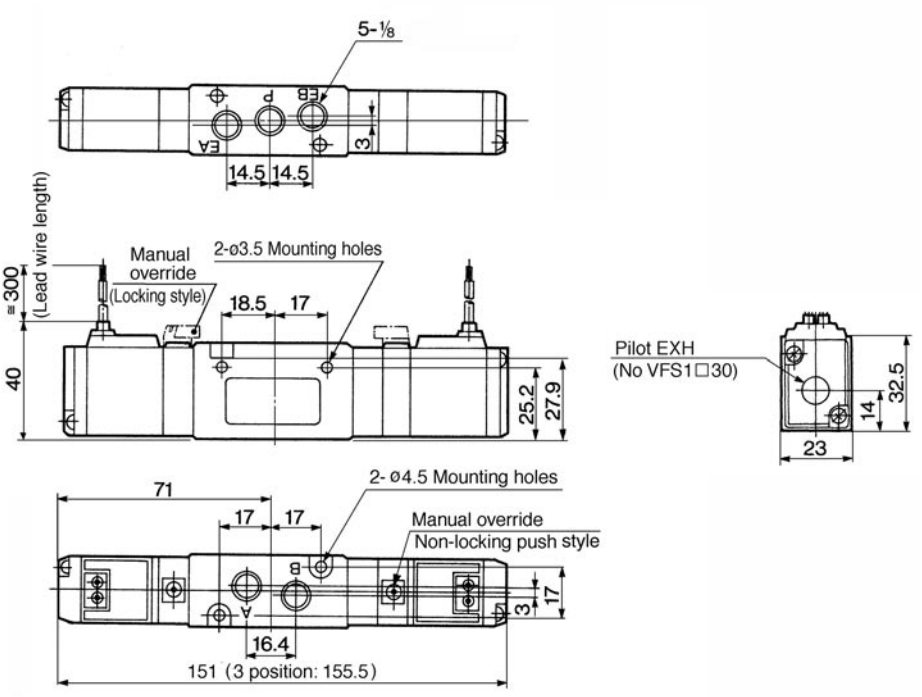


Conduit terminal: VFS1120-□T, TZ

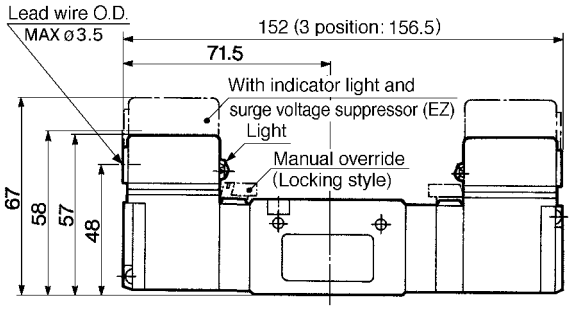


2 Position Double, 3 Position DIN Connector

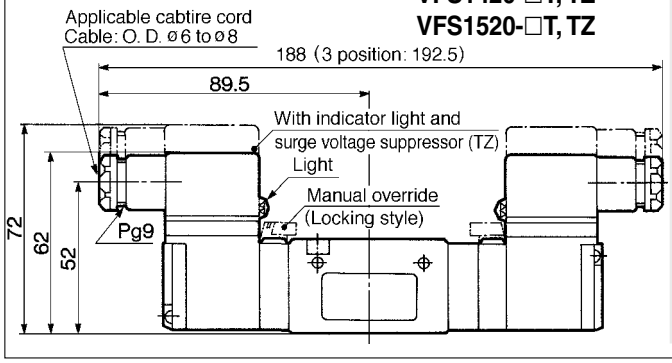
Grommet: VFS1220-□G, VFS1320-□G, VFS1420-□G, VFS1520-□G



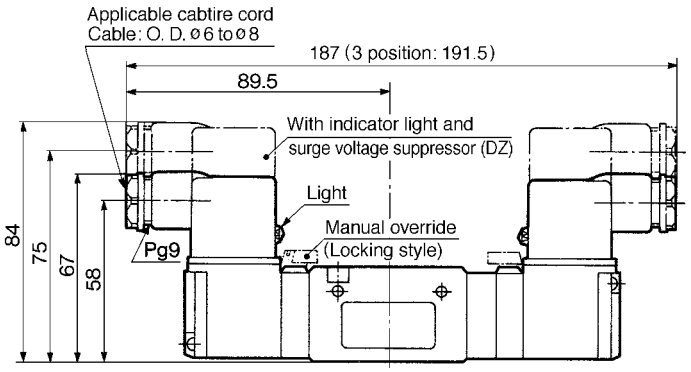
Grommet terminal: VFS1220-□E, EZ **VFS1320-□E, EZ**
VFS1420-□E, EZ
VFS1520-□E, EZ



Conduit terminal: VFS1220-□T, TZ **VFS1320-□T, TZ**
VFS1420-□T, TZ
VFS1520-□T, TZ



DIN connector: VFS1220-□D, DZ **VFS1320-□D, DZ**
VFS1420-□D, DZ
VFS1520-□D, DZ



Series VFS1000
Manifold/Bar Style

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

Protection of the environment 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

Specifications

Manifold base	Bar manifold, Body ported
Stations	Max. 15

Port Specifications

Symbol	Port specification		Porting specification (Connecting port size)		
			Base	Valve	Base
	P	EA, EB	P	A, B	EA, EB
1	Common	Common	Side/ 1/8	Top/ 1/8	Side/ 1/8

Option

Blank plate assembly	VVFS1000-10A-1	With gasket, screws

How to Order Manifold Base

□ VV5FS1 – 20 – 05 1 – 01 □ – Q

Series VFS1000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

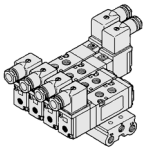
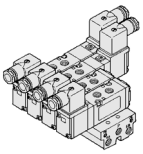
Symbol	Port specifications		Porting specifications
	P	EA, EB	
1	Common 1/8	Common 1/8	Top porting 1/8

P, EA, EB Port size
01— 1/8

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Base Model

Type	Pilot exhaust	Applicable valve
20	Individual EXH 	VFS1□20-□□-01
30	Common EXH 	VFS1□30-□□-01 ∗VFS1□20-□□-01 mountable

How to Order Manifold Base Assembly

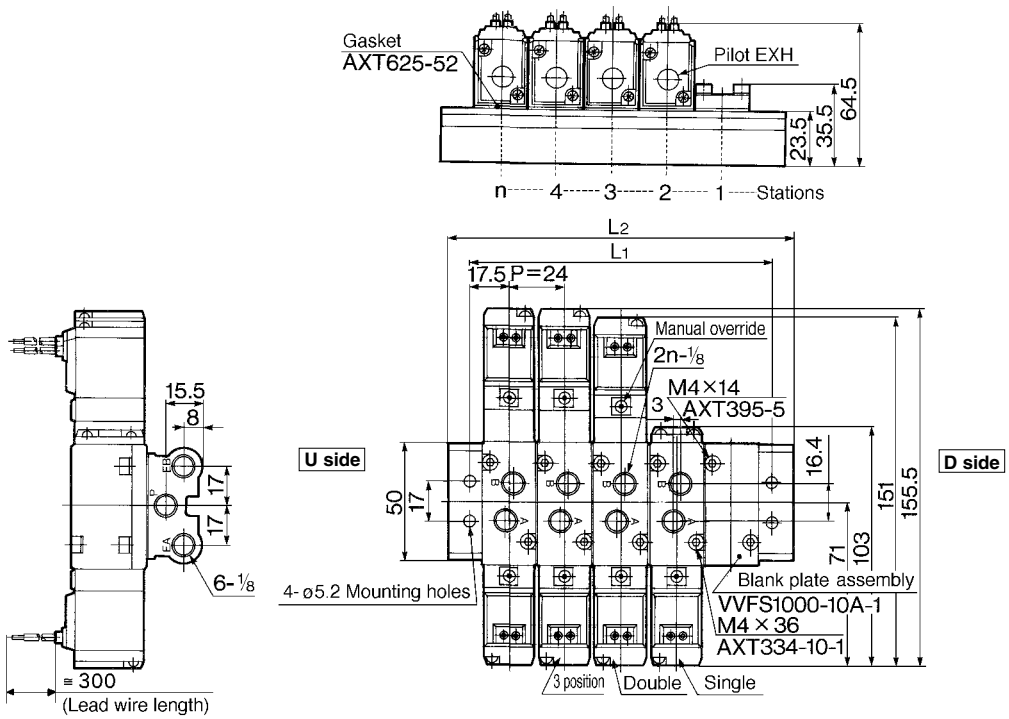
Please indicate manifold base style, valve model, and blank plate.

<<Example>>

(Manifold base style)	**VV5FS1-20-061-01-Q**	1
(2 position single)	**VFS1120-1D-01-Q**	3
(2 position double)	**VFS1220-1D-01-Q**	2
(Blank plate)	**VVFS1000-10A-1**	1

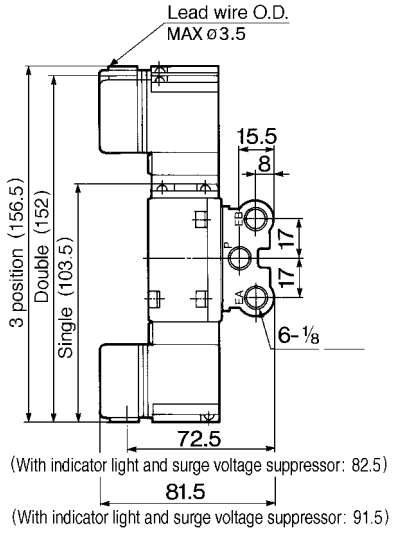
20 Type Manifold Pilot Individual Exhaust: VV5FS1-20- Station 1-01

Grommet: G

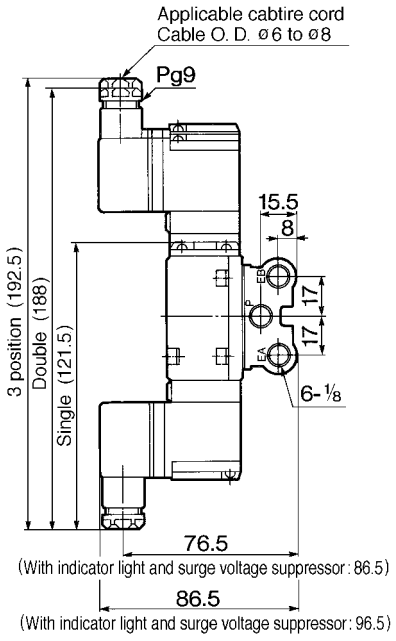


General formula of weight/Manifold M=0.049n+0.059 (kg) n: Station

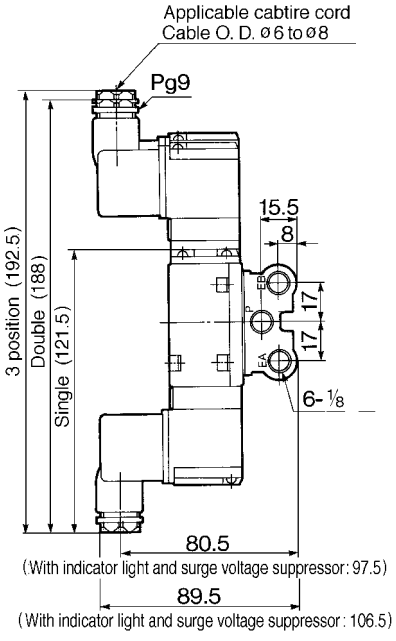
Grommet terminal: E, EZ



Conduit terminal: T, TZ



DIN connector: D, DZ

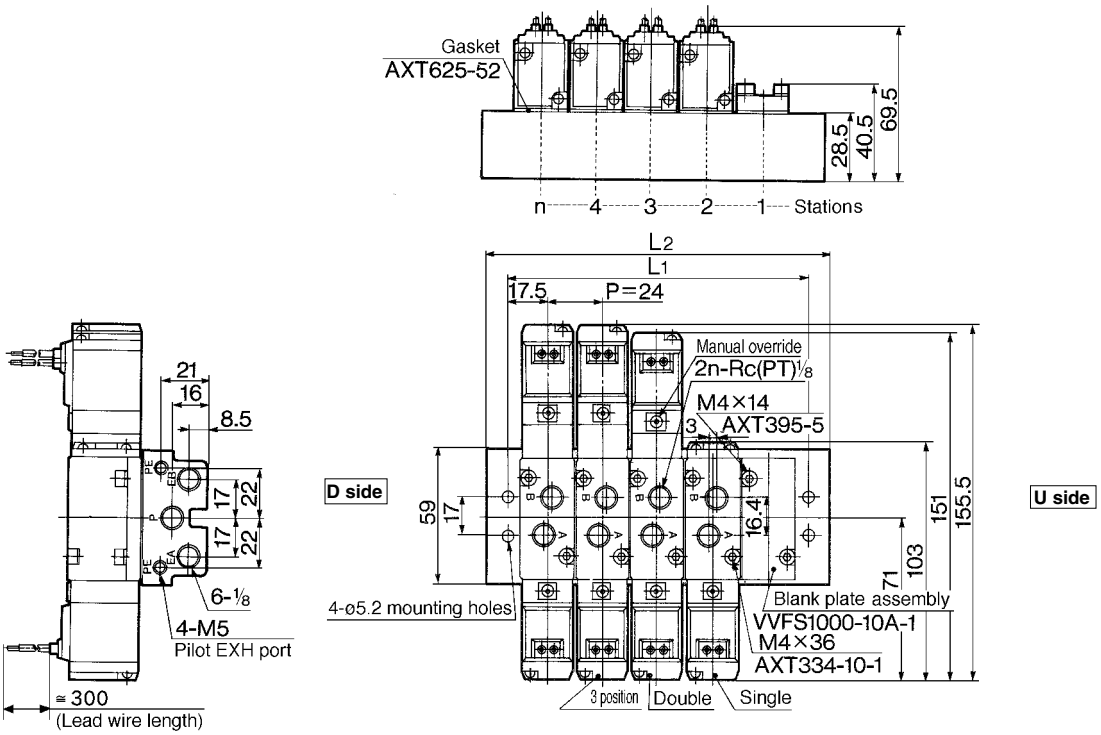


n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	59	83	107	131	155	179	203	227	251	L1=24 X n+11
L2	77	101	125	149	173	197	221	245	269	L2=24 X n+29

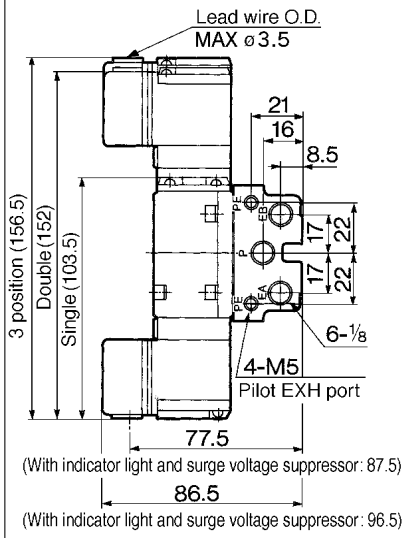
30 Type Manifold — Pilot Individual Exhaust: VV5FS1-30- Station 1-01

Grommet: G

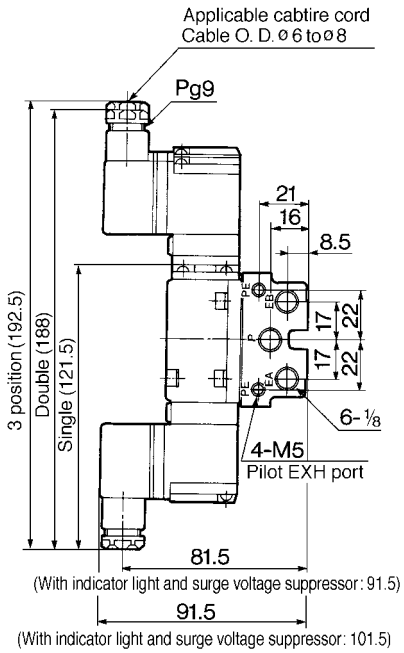


General formula of weight/Manifold M=0.079n+0.093 (kg) n: Station

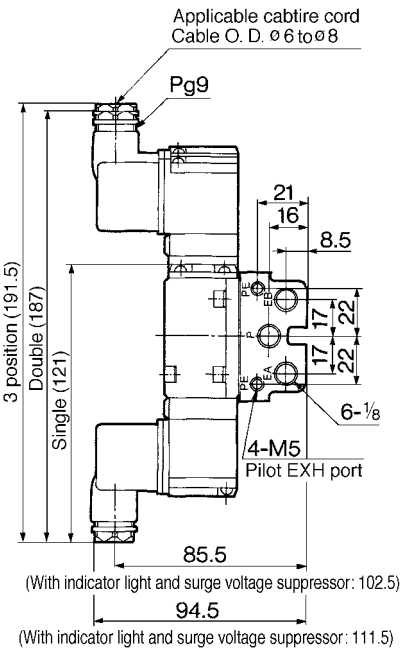
Grommet terminal: E, EZ



Conduit terminal: T, TZ



DIN connector: D, DZ



n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	59	83	107	131	155	179	203	227	251	L1=24 X n+11
L2	77	101	125	149	173	197	221	245	269	L2=24 X n+29

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

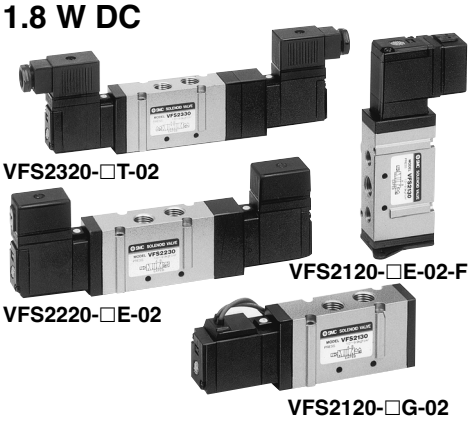
Model

Type of actuation		Model		Port size Rc	Flow rate characteristics						Max. (1) operating cycle (cpm)	Response time (ms) (2)	Weight (kg) (3)
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R1/R2)					
					C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
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 centre	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 centre	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 centre	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 8419: 2010 (once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
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



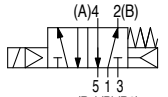
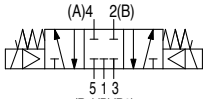
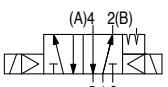
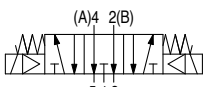
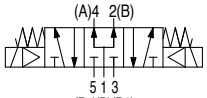
VFS2320-□T-02

VFS2120-□E-02-F

VFS2220-□E-02

VFS2120-□G-02

Symbol

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

Standard Specifications

Valve specifications	Fluid		Air
	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)
	Impact/Vibration resistance		150/50 m/s² (3)
	Enclosure		Dustproof (Equivalent to IP50) (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		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.

VFS2000

How to Order

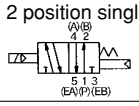
□ VFS2 [1] [20] [□] — [1] [D] [□] [□] — [01] [□] — [□] — Q

Ordering source area code

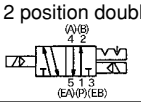
Code	
-	Japan, Asia Australia
E	Europe
N	North America

Configuration

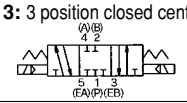
1: 2 position single



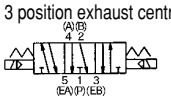
2: 2 position double



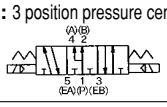
3: 3 position closed centre



4: 3 position exhaust centre



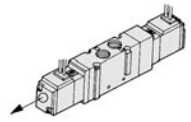
5: 3 position pressure centre



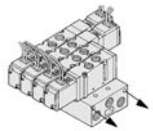
∗Reverse pressure: Can be used by external pilot specification.

Body (Pilot exhaust)

20: Individual EXH



30: Common EXH∗



∗Manifold only.

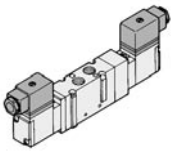
Pilot

—	Internal
R∗	External

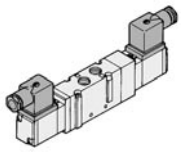
∗Option
Individual external pilot
(External pilot port: Body side)

Electrical entry

D: DIN connector
DO: Without connector



Y: DIN connector (DIN 43650)
YO: Without DIN connector



Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other,(250V or less)

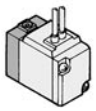
Order Made Contact SMC for other voltages (9)

Indicator light/surge voltage suppressor

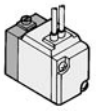
—	None
Z	With indicator light and surge voltage suppressor

Manual override

—: Non-locking push style (Flush)



A: Non-locking push style (Extended) ∗



B: Locking style (Slotted) ∗

∗Option

Port size

01	1/8
02	1/4

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Optional accessory

F: Foot bracket

∗Only for VFS2120.

How to Order Pilot Valve Assembly

SF4 — [1] [DZ] [□] — [12] — Q

Voltage

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

∗Option

Electrical entry/Indicator light and surge voltage suppressor

D	DIN connector
DZ	DIN connector with indicator light and surge suppressor
DO	DIN connector∗
DOZ	DIN connector with indicator light and surge suppressor∗
Y	DIN connector (DIN 43650B)
YO	DIN connector (DIN 43650B)∗

∗Without DIN connector

Manual override

—	Non-locking push style (Flush)
A∗	Non-locking push style (Extended)
B∗	Non-locking push style (Extended)

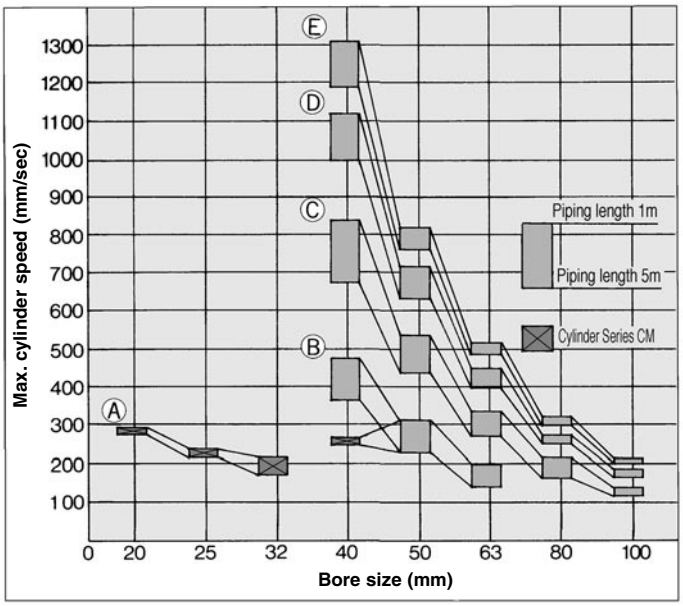
∗Option

Applicable model

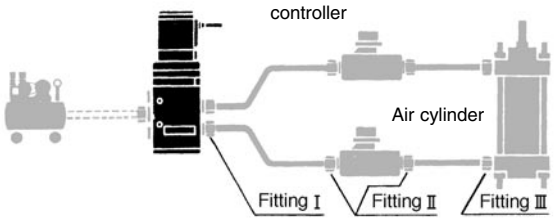
12	For VFS2□20	Individual pilot exhaust
13	For VFS2□30	Common pilot exhaust

Maximum Cylinder Speed

Conditions: Supply pressure 0.5MPa Load factor 50%, Stroke 100mm



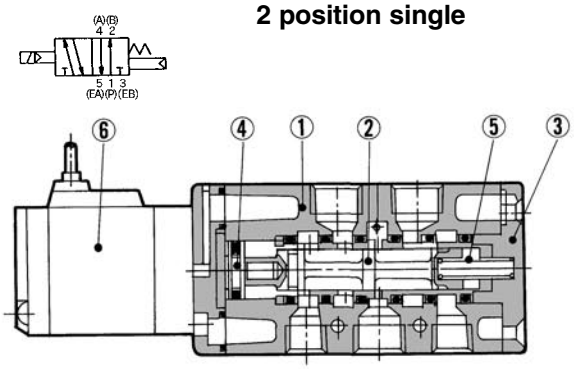
System diagram



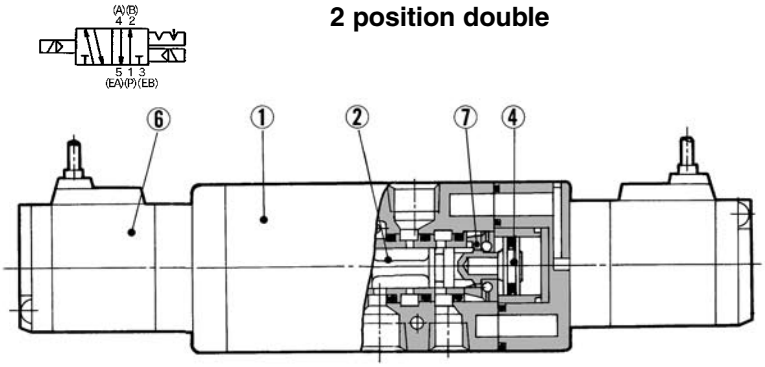
System	Solenoid valve	Port size	Nylon tube O.D./I.D.	Silencer	Speed Controller
A	**VFS2120-02**	1/4	ø4/3	AN110-01	AS2000-01
B	**VFS2120-02**	1/4	ø6/4.5	AN110-01	AS4000-02
C	**VFS2120-02**	1/4	ø8/6	AN110-01	AS4000-02
D	**VFS2120-02**	1/4	ø10/7.5	AN110-01	AS4000-02
E	**VFS2120-02**	1/4	ø12/9	AN110-01	AS4000-02

Construction

2 position single

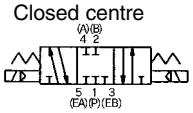


2 position double

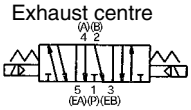


3 position closed centre/exhaust centre/pressure centre

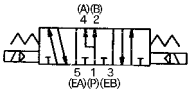
Closed centre

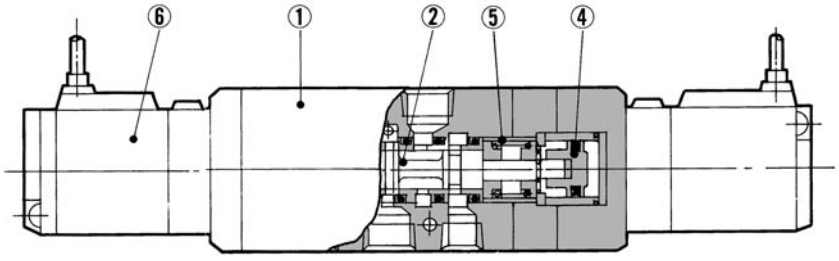


Exhaust centre



Pressure centre





Component Parts

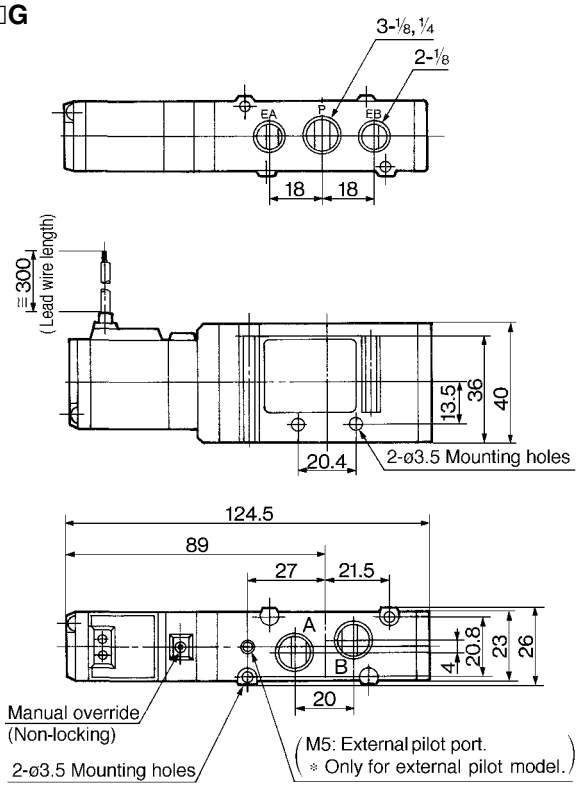
No.	Description	Material	Note
①	Body	Aluminium die-cast	Platinum silver
②	Spool/Sleeve	Stainless steel	—
③	End plate	Resin	—
④	Piston	Resin	—

Replacement Parts

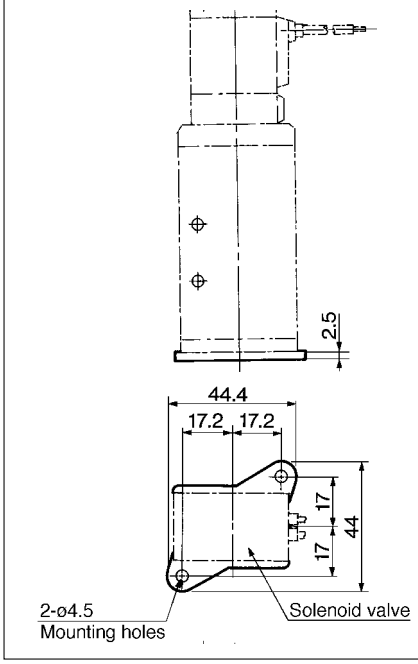
No.	Description	Material	Part No.		
			VFS2120	**VFS2220**	**VFS2320, 2420, 2520**
⑤	Return spring	Stainless steel	VFS2000-17-1	—	VFS2000-17-2
⑥	Pilot valve assembly	—	Refer to "How to order/Pilot valve assembly" on p.1.17-18.		
⑦	Detent assembly	—	—	VFN2000-8A	—

2 Position Single DIN Connector

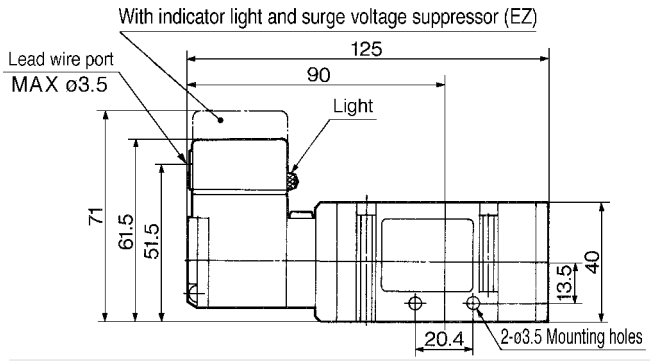
Grommet: VFS2120-□G



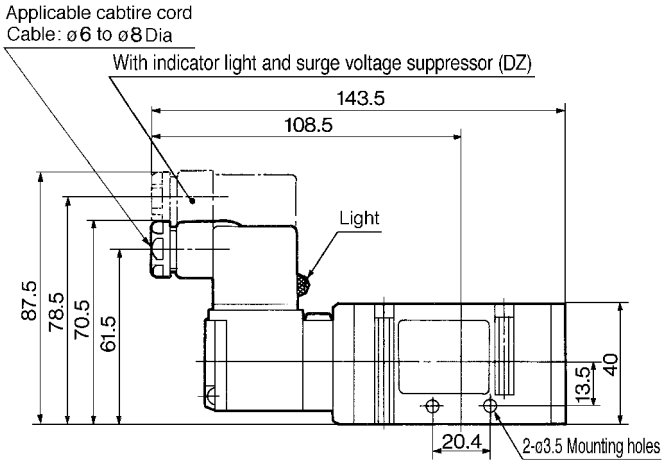
Foot bracket (F): VFN200-17A



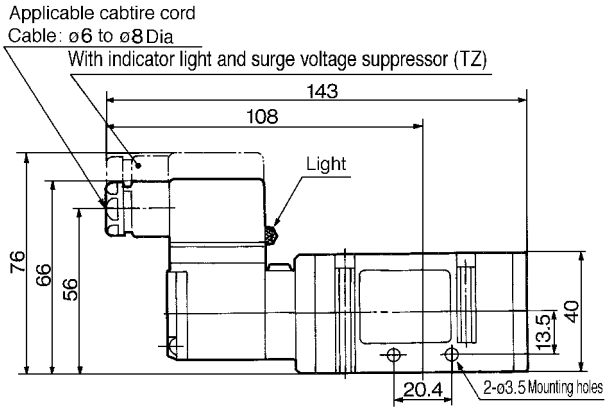
Grommet terminal: VFS2120-□E, EZ



DIN connector: VFS2120-□D, DZ

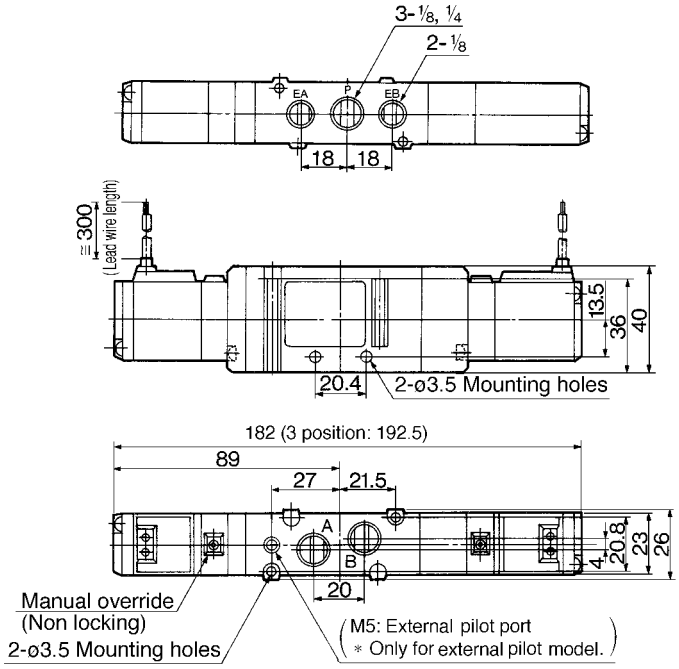


Conduit terminal: VFS2120-□T, TZ

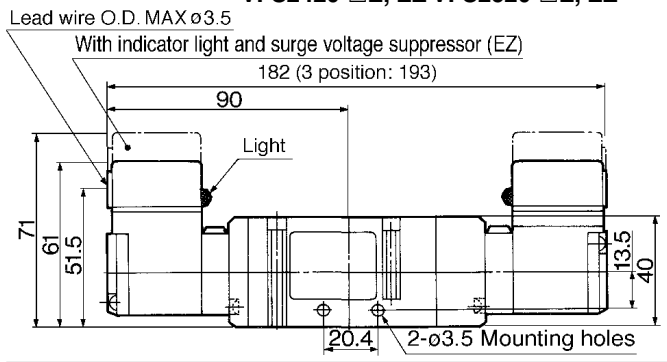


2 Position Double, 3 Position DIN Connector

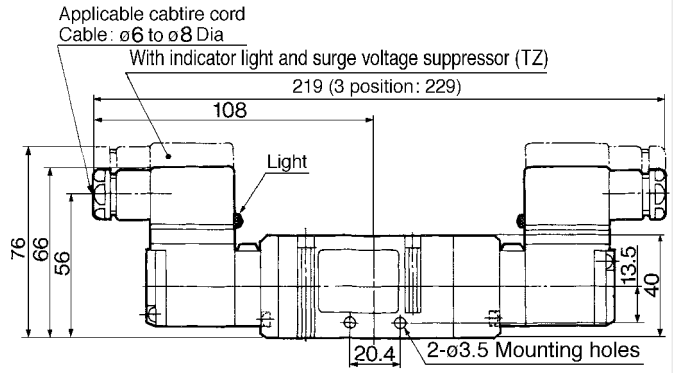
Grommet: VFS2220-□G, VFS2320-□G, VFS2420-□G, VFS2520-□G



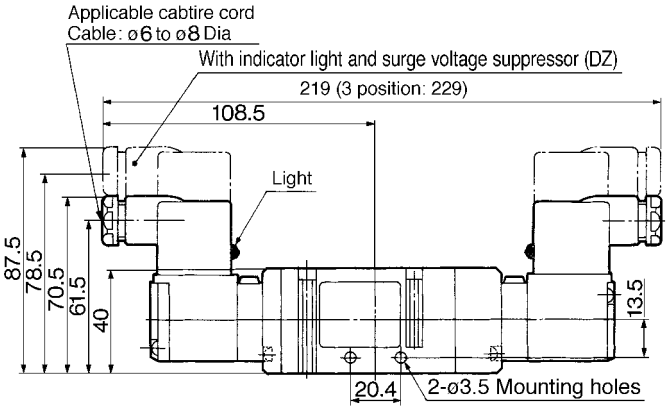
Grommet terminal: VFS2220-□E, EZ VFS2320-□E, EZ VFS2420-□E, EZ VFS2520-□E, EZ



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



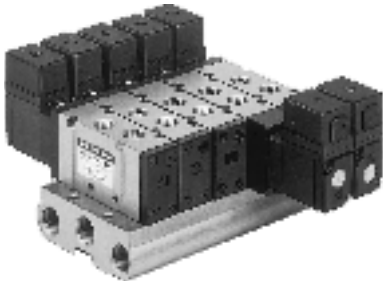
DIN connector: VFS2220-□D, DZ VFS2320-□D, DZ VFS2420-□D, DZ VFS2520-□D, DZ

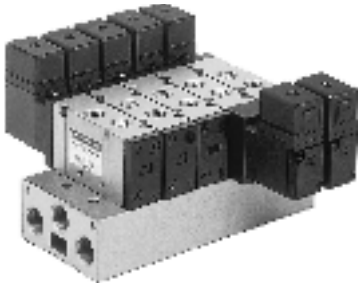


Series VFS2000
Manifold/Bar Style

Protection of the environment 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.





VV5FS2-30

Specifications

Manifold base	Bar manifold, Body ported
Stations	Max. 15

Port Specifications

Symbol	Port specification		Porting specification		
			Base	Valve	Base
	P	EA, EB	P	A, B	EA, EB
1	Common	Common	Side: 3/8	Top: 1/8, 1/4	Side: 3/8

Options

Blank plate assembly	VVFS2000-10A-1	With gasket, screws

How to Order Manifold Base

□VV5FS2-20-05-1-03□-Q

Series VFS2000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

P, EA, EB Port size
03- 3/8

Symbol

	Port specification		Porting spec.
	P	EA, EB	A, B
1	Common 3/8	Common 3/8	Top porting 3/8 1/4

Stations

02	2 stations
⋮	⋮
15	15 stations

Base Model

Type	Pilot exhaust	Applicable valve
20	Individual EXH	VFS2□20-□□-01/02
30	Common EXH	VFS2□30-□□-01/02 +VFS2□20-□□-01/02 can be attached.

How to Order Manifold Base Assembly

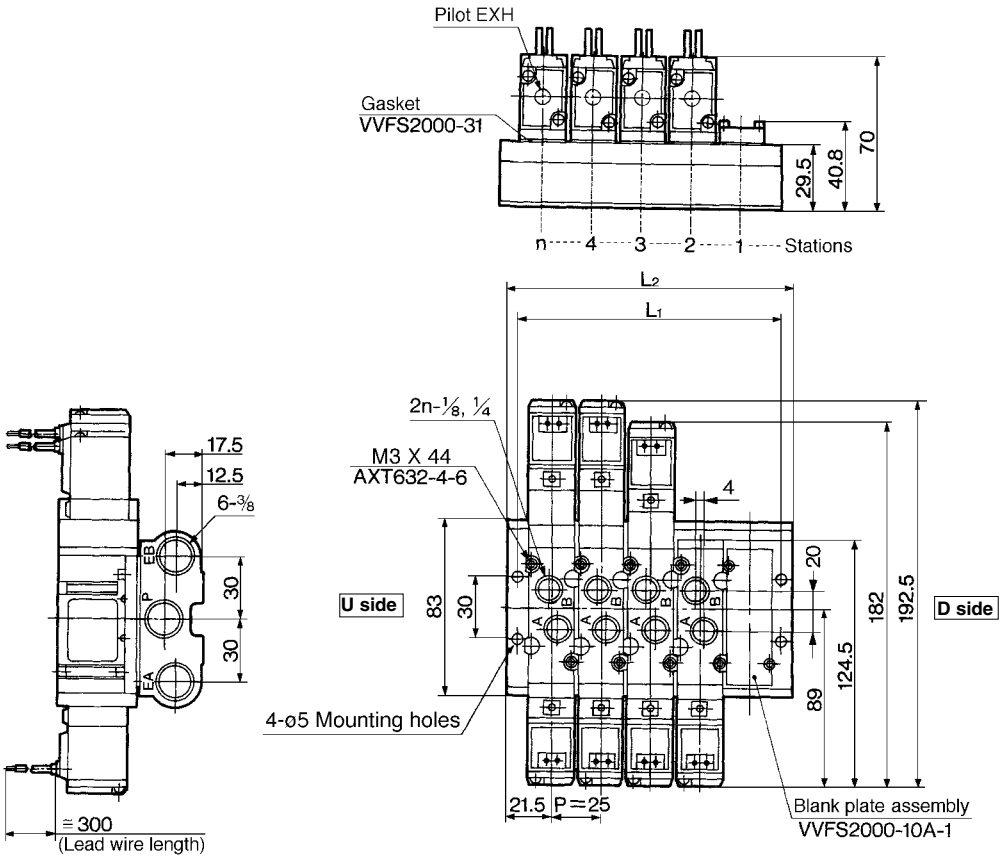
Please indicate manifold base style, valve model, and blank plate.

«Example»

(Manifold base)	VV5FS2-20-061-03-Q	1
(2 position single)	VFS2120-1D-02-Q	3
(2 position double)	VFS2220-1D-02-Q	2
(Blank plate)	VVFS2000-10A-1	1

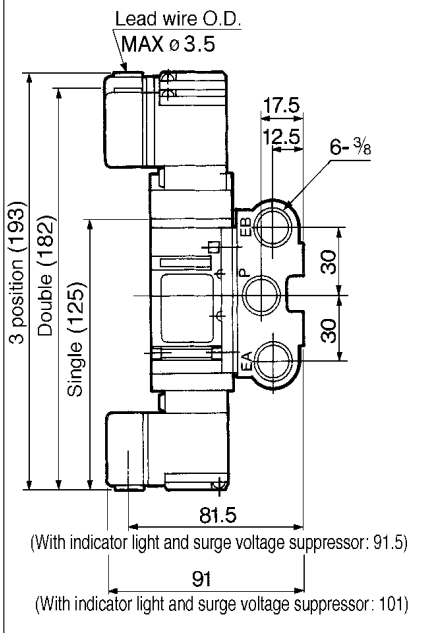
20 Type Manifold Pilot Individual Exhaust: VV5FS2-20- Station 1-03

Grommet: G

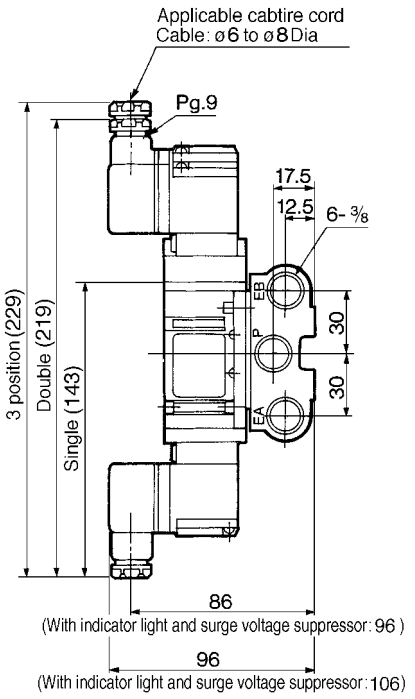


General formula of weight/Manifold M=0.108n+0.068 (kg) n: Station

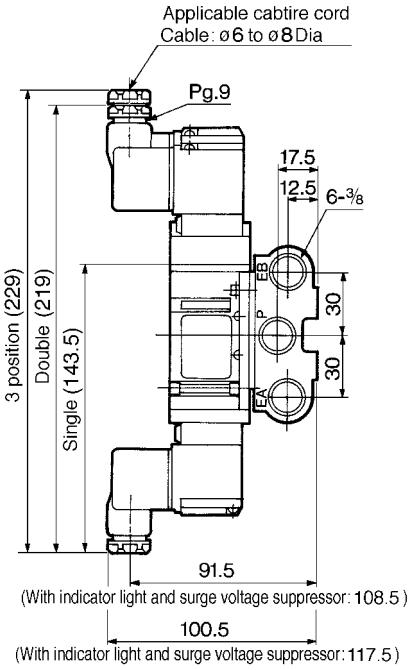
Grommet terminal: E, EZ



Conduit terminal: T, TZ



DIN connector: D, DZ

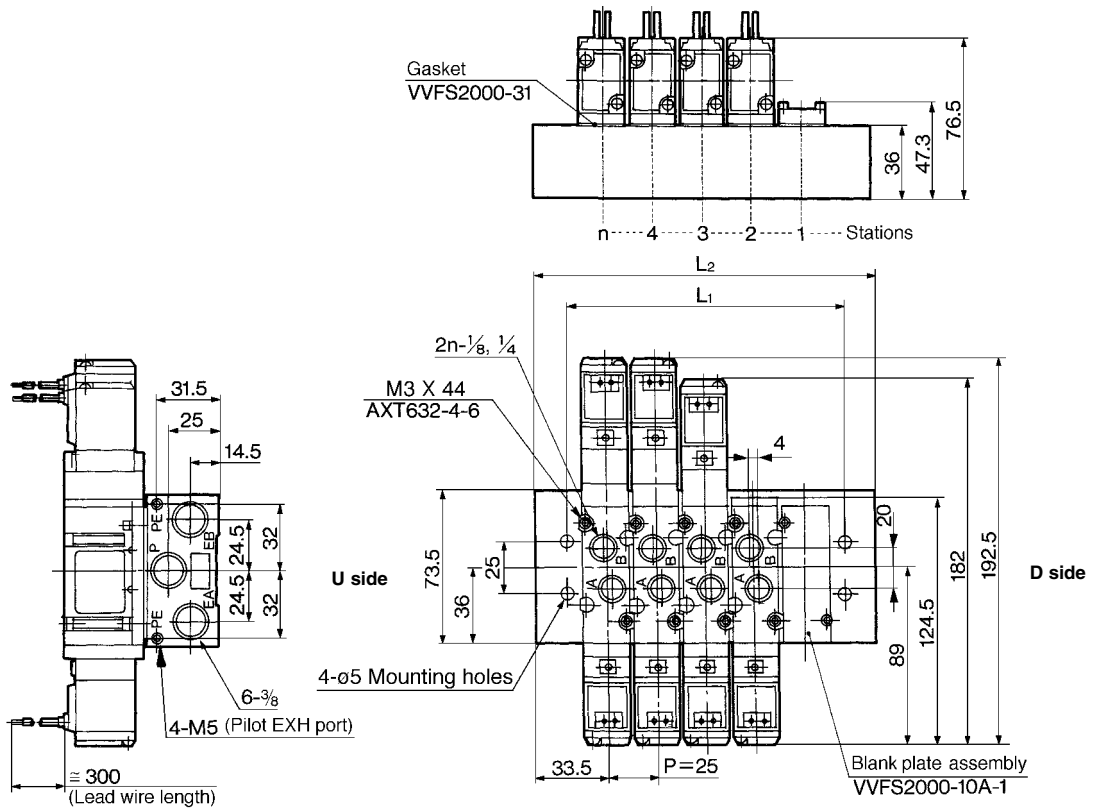


n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	58	83	108	133	158	183	208	233	258	L1=25 X n+8
L2	68	93	118	143	168	193	218	243	268	L2=25 X n+18

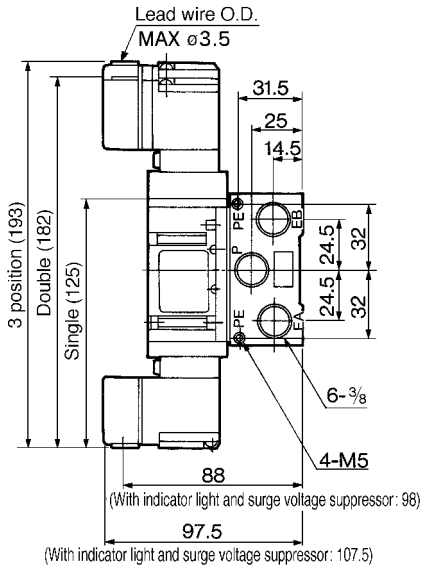
30 Type Manifold — Pilot Common Exhaust: VV5FS2-30- Station 1-03

Grommet: G

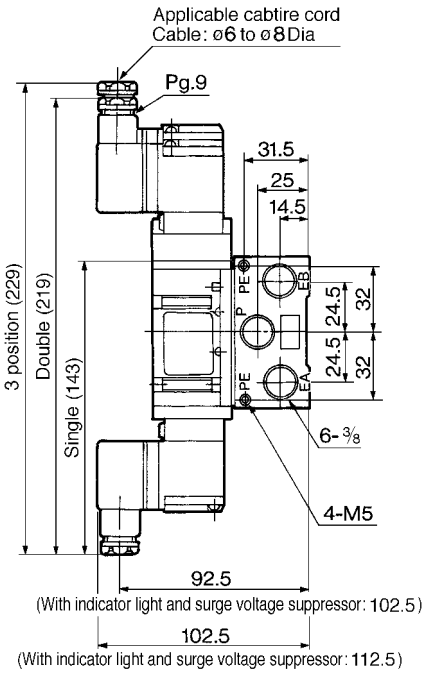


General formula of weight/Manifold M=0.12n+0.21 (kg) n: Station

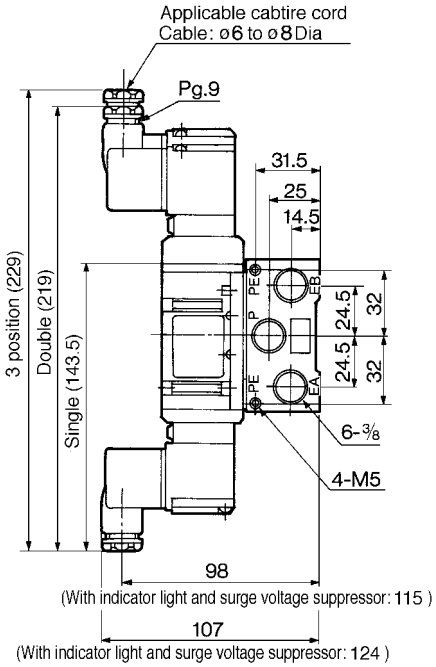
Grommet terminal: E, EZ



Conduit terminal: T, TZ



DIN connector: D, DZ



n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	62	87	112	137	162	187	212	237	262	L1=25 X n+12
L2	92	117	142	167	192	217	242	267	292	L2=25 X n+42

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

Model

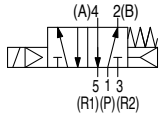
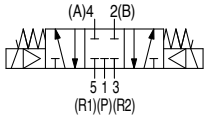
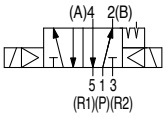
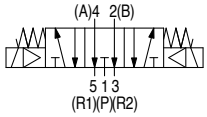
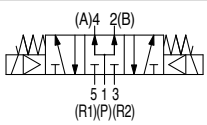
Type of actuation		Model		Port size Rc	Flow rate characteristics						Max.(1) operating cycle (cpm)	Response time(2) (ms)	Weight(3) (kg)
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)					
					C [dm³/(s·bar)]	b	Cv	C [dm3/(s·bar)]	b	Cv			
2 position	Single	VFS3120	VFS3130	1/4	5.0	0.20	1.1	6.8	0.30	1.7	1200	20 or less	0.33
				3/8	6.1	0.14	1.4	7.3	0.23	1.8			
	Double	VFS3220	VFS3230	1/4	5.0	0.20	1.1	6.8	0.3	1.7	1500	15 or less	0.43
				3/8	6.1	0.14	1.4	7.3	0.23	1.8			
3 position	Closed centre	VFS3320	VFS3330	1/4	5.0	0.20	1.1	6.3	0.27	1.6	600	40 or less	0.45
				3/8	5.7	0.20	1.4	6.8	0.21	1.7			
	Exhaust centre	VFS3420	VFS3430	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			
	Pressure centre	VFS3520	VFS3530	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 8419: 2010 (once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
Note 3) In the case of grommet type.
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

Symbol

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

Standard Specifications

Valve specifications	Fluid		Air
	Maximum operating pressure		1.0 MPa
	Minimun 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)
	Impact/Vibration resistance		150/50 m/s² (3)
	Enclosure		Dustproof (Equivalent to IP50) (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		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 reguired)
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)

VFS3000

How to Order

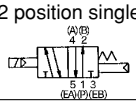
□ VFS3 [1] [20] □ – [1] [D] □ □ – [02] □ – □ – Q

Ordering source area code

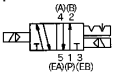
Code	areas
-	Japan, Asia Australia, England
E	Europe
N	North America

Configuration

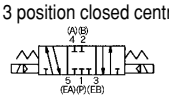
1: 2 position single



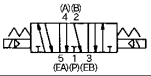
2: 2 position double



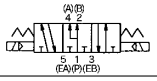
3: 3 position closed centre



4: 3 position exhaust centre



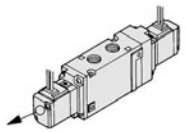
5: 3 position pressure centre



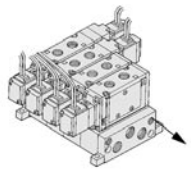
∗Reverse pressure: Can be used by external pilot specification.

Body (Pilot exhaust)

20: Individual EXH



30: Common EXH*



∗Manifold only.

Pilot

–	Internal
R*	External

∗Option

External pilot port: Body side. For 30 type, common external pilot (on manifold side).

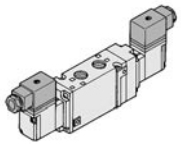
Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other,(250V or less)

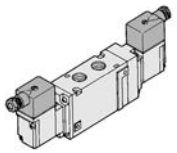
Order Made Contact SMC for other voltages (9)

Electrical entry

D: DIN connector
DO: Without connector



Y: DIN connector (DIN 43650)
YO: Without DIN connector

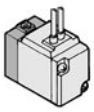


Indicator light/surge voltage suppressor

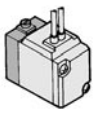
–	None
Z	With indicator light and surge voltage suppressor

Manual override

–: Non-locking push style (Flush)



A: Non-locking push style (Extended) *



B: Locking style (Slotted) *

∗Option

Port size

02	1/4
03	3/8

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Optional accessory

F: Foot bracket

∗Only for VFS3120.

Protective class

Protective class class I (Mark: ⏚)

How to Order Pilot Valve Assembly

SF4 – [1] [DZ] □ – [14] – Q

Voltage

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

Electrical entry/Indicator light and surge voltage suppressor

D	DIN connector
DZ	DIN connector with indicator light and surge suppressor
DO	DIN terminal*
DOZ	DIN connector with indicator light and surge suppressor*
Y	DIN connector (DIN 43650B)
YO	DIN connector (DIN 43650B)*

∗Without DIN connector.

Manual override

–	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (Lever)

∗Option

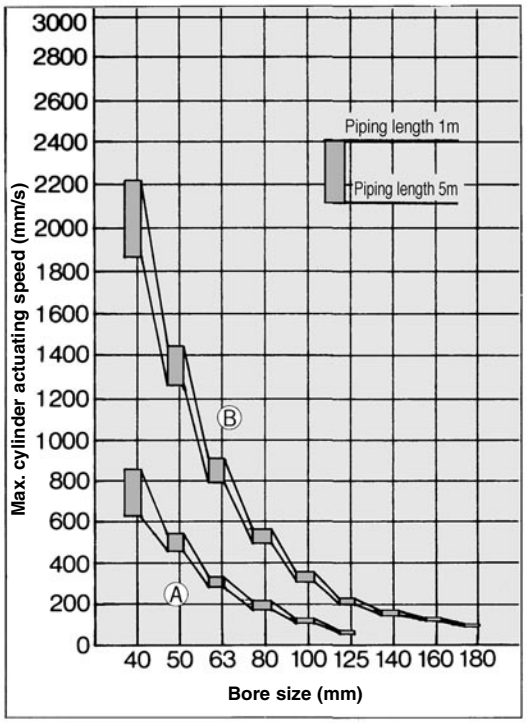
Applicable model

14	A side pilot operator for VFS3[1 2 3 4 5]20	Individual pilot exhaust
15	B side operator for VFS3220	
16	B side operator for VFS3[3 4 5]30	
17	A side operator for VFS3[1 2 3 4 5]30	Common pilot exhaust
18	B side operator for VFS3230	
19	B side operator for VFS3[3 4 5]30	

Maximum Cylinder Speed

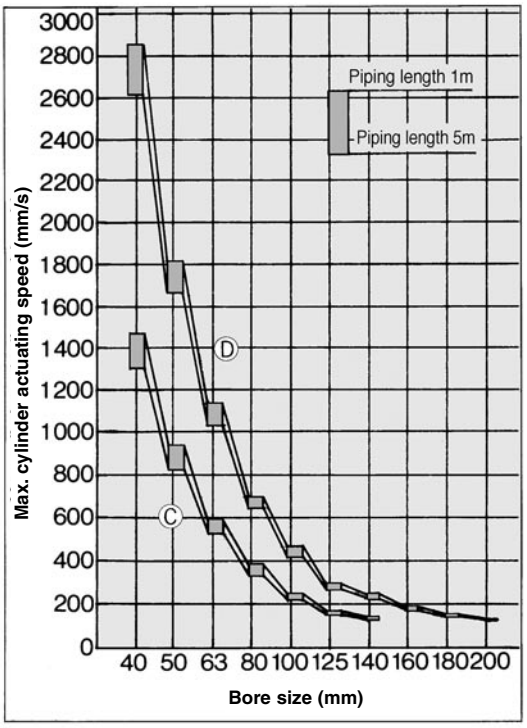
Rubber hose piping system

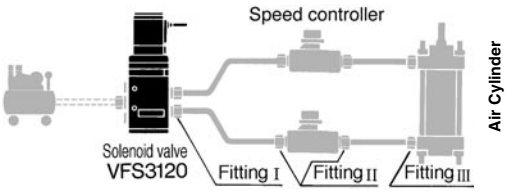
Conditions: Supply pressure 0.5MPa, Load factor 50%



Steel tube piping system

Conditions: Supply pressure 0.5MPa, Load factor 50%





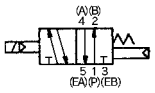
Rubber hose piping system

System	Solenoid valve	Speed controller	Silencer	Fitting
C	VFS3000-02 1/4	AS4000-02	AN200-02	90° Elbow 5pcs.
D	VFS3000-03 3/8	AS420-03		90° Elbow 5pcs.

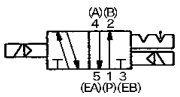
Steel tube piping system

System	Solenoid valve	Speed controller	Silencer	Fitting (Hose I. D. X Fitting I. D. X port size)
A	VFS3000-02 1/4	AS4000-02	AN200-02	ø6.3 X ø4.8 X1/4
B	VFS3000-03 3/8	AS420-03		ø9.5 X ø8 X3/8

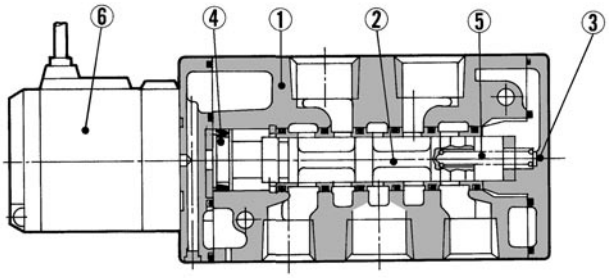
Construction

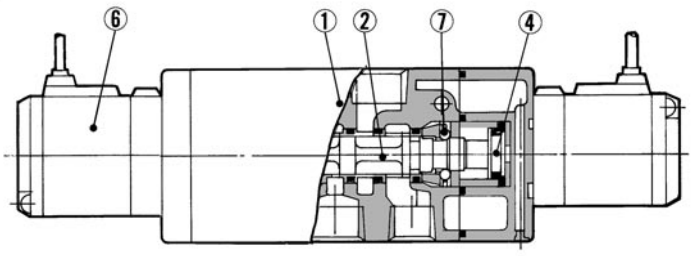


2 position sin-



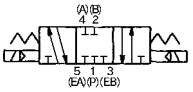
2 position double



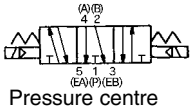


3 position closed centre/exhaust centre/pressure centre

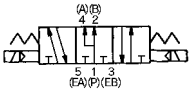
Closed centre

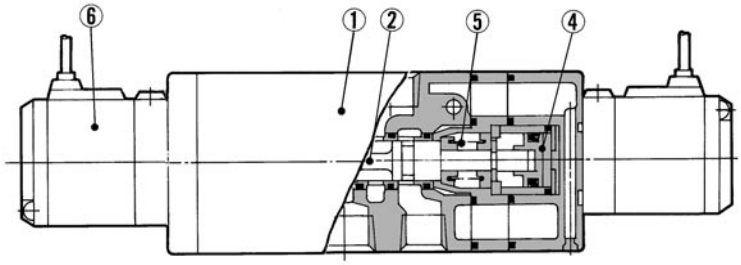


Exhaust centre



Pressure centre





Component Parts

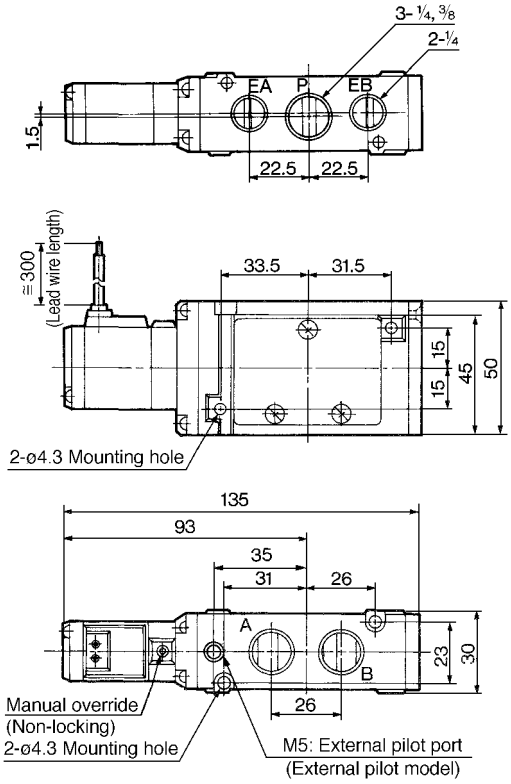
No.	Description	Material	Note
①	Body	Aluminium die-cast	Platinum silver
②	Spool/Sleeve	Stainless steel	—
③	End plate	Resin	Black
④	Piston	Resin	—

Replacement Parts

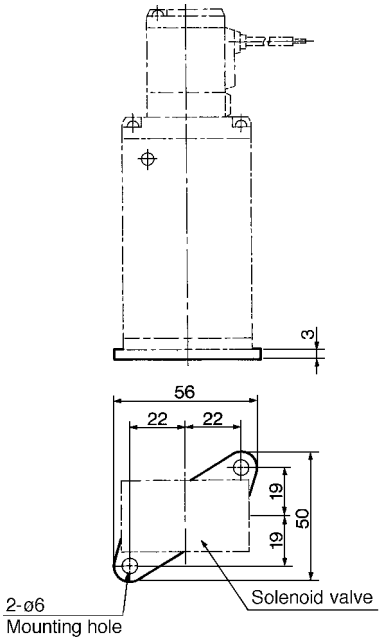
No.	Description	Material	Part No.		
			VFS3120	VFS3220	VFS3320, 3420, 3520
⑤	Return spring	Stainless steel	VFS3000-17-1	—	VFS3000-17-2
⑥	Pilot valve assembly	—	Refer to "How to order/Pilot valve assembly" on p.1.17-26.		
⑦	Detent assembly	—	—	VFS3000-9A	—

2 Position Single DIN Connector

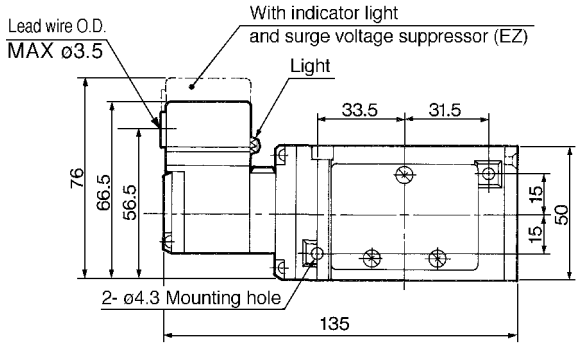
Grommet: VFS3120-□G



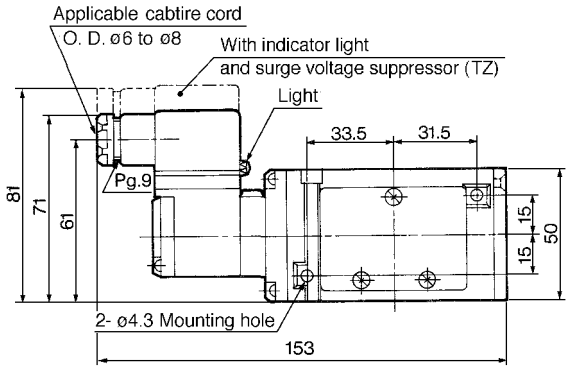
Foot bracket (F): VFS3000-52



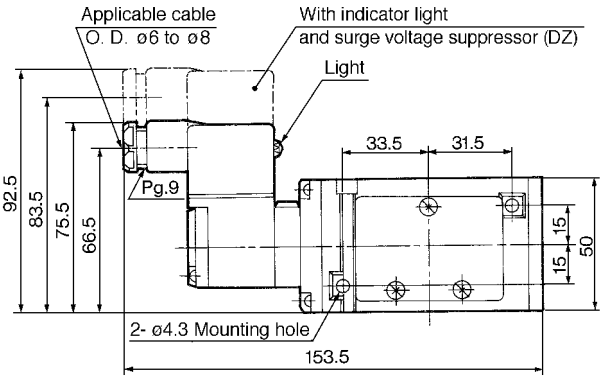
Grommet terminal: VFS3120-□E, EZ



Conduit terminal: VFS3120-□T, TZ

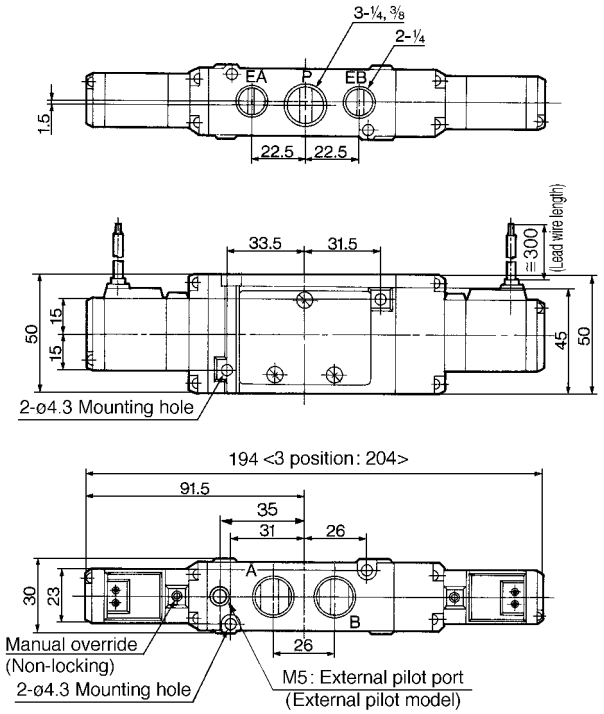


DIN connector: VFS3120-□D, DZ

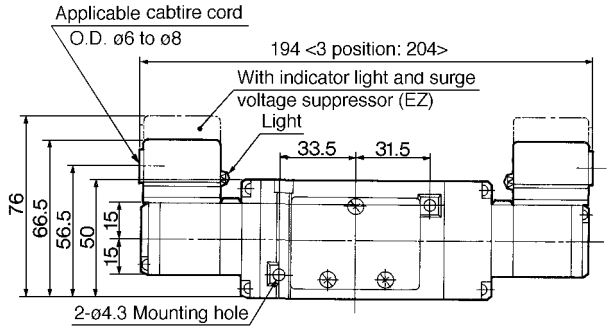


2 Position Double, 3 Position DIN Connector

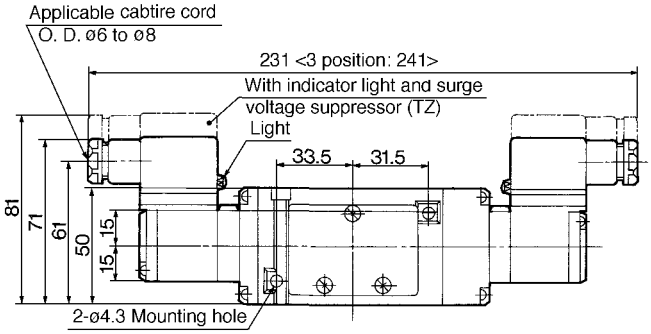
Grommet: VFS3220-□G, VFS3320-□G, VFS3420-□G, VFS3520-□G



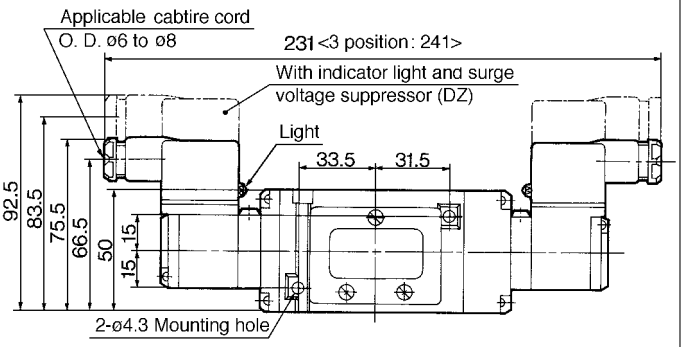
Grommet terminal: VFS3220-□E, EZ VFS3320-□E, EZ VFS3420-□E, EZ VFS3520-□E, EZ



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



DIN connector: VFS3220-□D, DZ VFS3320-□D, DZ VFS3420-□D, DZ VFS3520-□D, DZ



Series VFS3000
Manifold/Stacking Style

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

Specifications

Manifold base style	Stacking
Stations	Max. 15

Port Specifications

Symbol	Port specification		Porting specification		
			Base	Valve	Base
	P	EA, EB	P	A, B	EA, EB
1	Common	Common	Side: 3/8	Top: 1/4, 3/8	Side: 3/8

Options

Blank plate assembly	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.

How to Order Manifold Base

VV5FS3 – 31 – 05 1 – 03 – Q

Series VFS3000 Manifold

Ordering source area code

Code	areas
–	Japan, Asia Australia
E	Europe
N	North America

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

P, EA, EB port size
03– 3/8

Symbol

	Port specification		Porting spec.
	P	EA, EB	A, B
1	Common 3/8	Common 3/8	Top porting 1/4, 3/8

Stations

02	2 stations
↓	↓
15	15 stations

Base Model

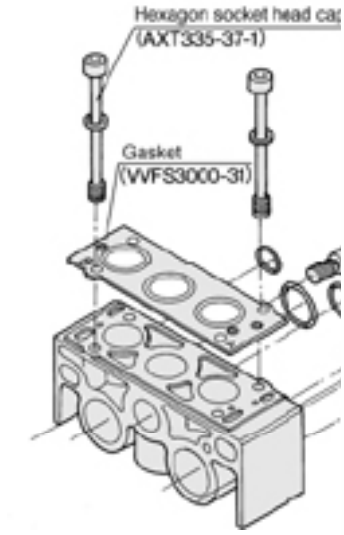
Type	Pilot exhaust	Applicable valve
31	Pilot common EXH	VFS3□20-□□-02/03 VFS3□30-□□-02/03

20 Type 30 Type

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

Manifold construction

Manifold block assembly VVFS3000-1A-30



¡For increasing the manifold bases, please prepare the manifold block assembly No.

How to Order Manifold Base Assembly

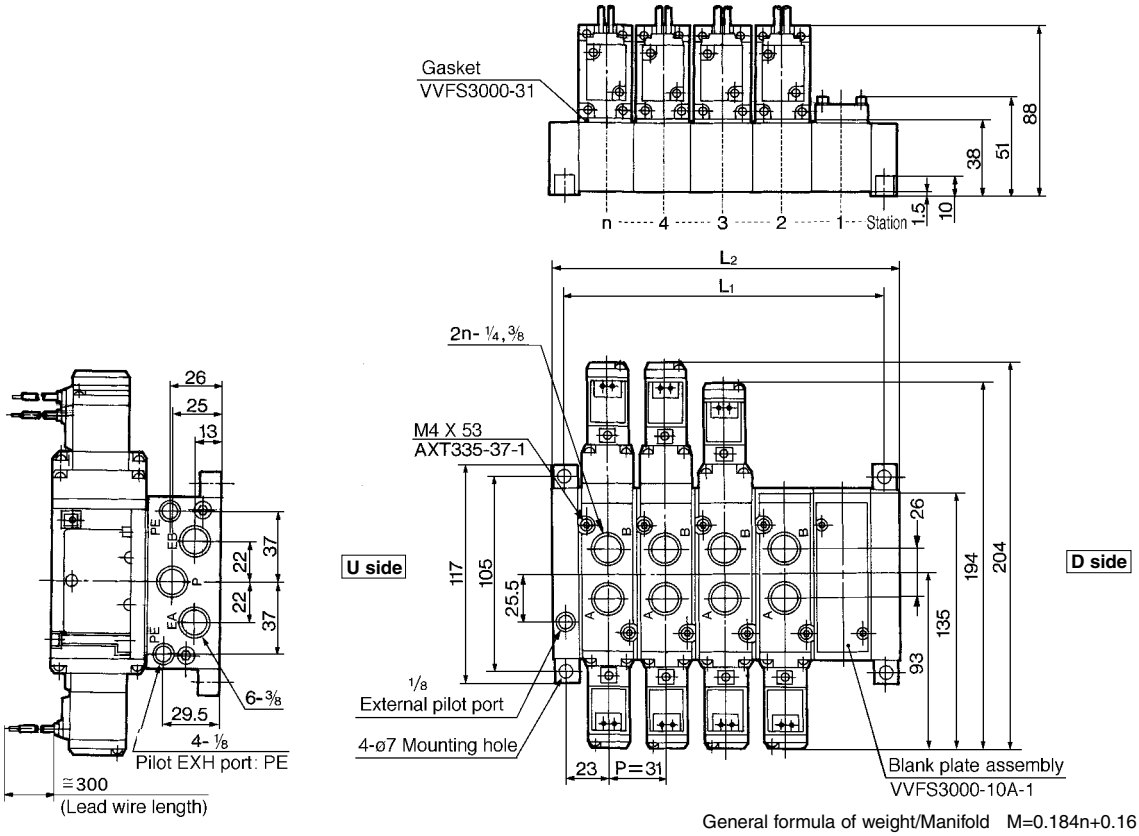
Please indicate manifold base style, valve model, and blank plate.

«Example»

(Manifold base) ☐ VV5FS3-31-051-03-Q ····· 1
(2 position single) ☐ VFS3130-1D-02-Q ····· 3
(2 position double) ☐ VFS3230-1D-02-Q ····· 2
(Blank plate) VVFS3000-10A-1 ····· 1

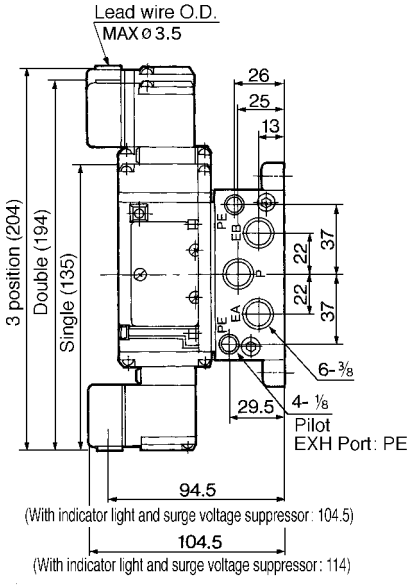
31 Type Manifold Pilot Common Exhaust: VV5FS3-31- Station 1-03

Grommet: G

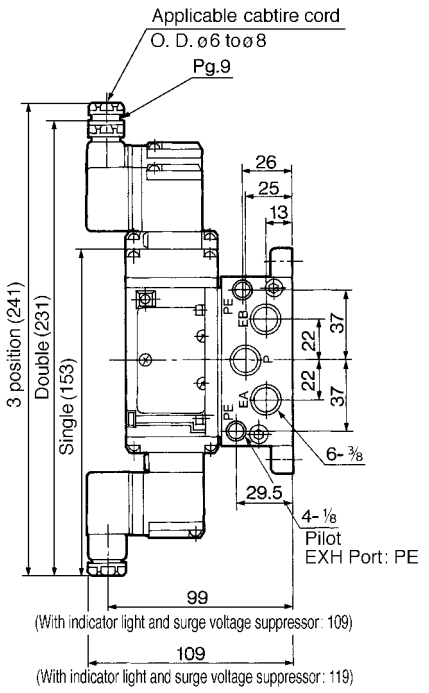


General formula of weight/Manifold M=0.184n+0.16 (kg) n: Station

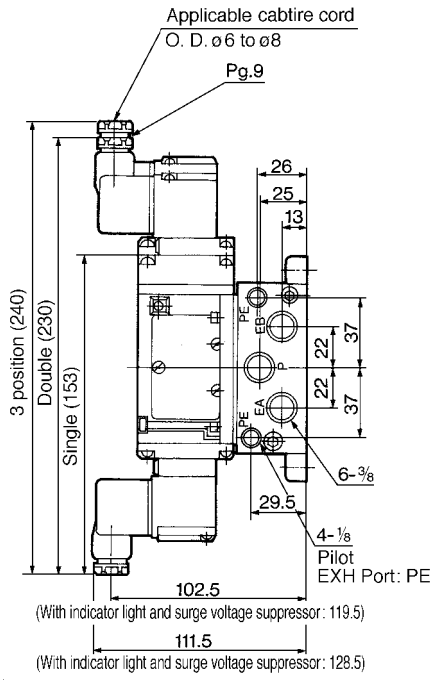
Grommet terminal: E, EZ



Conduit terminal: T, TZ



DIN connector: D, DZ



n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	77	108	139	170	201	232	263	294	325	L1=31 X n+15
L2	92	123	154	185	216	247	278	309	340	L2=31 X n+30

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

● **VFS2000 series is compatible with the old models, VF2□00 and VF2□10 series.**

Model

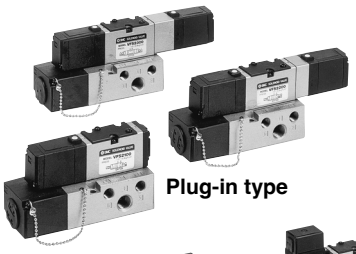
Type of actuation		Model		Port size Rc	Flow rate characteristics						Max.[1] operating cycle (cpm)	Response[2] time (ms)	Weight[3] (kg)
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)					
		Plug-in	Non plug-in		C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
2 position	Single	**VFS2100**	**VFS2110**	1/8	2.4	0.16	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			
3 position	Closed centre	**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			
	Exhaust centre	**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 centre	**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 8419: 2010 (Once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C)) However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
Note 3) Values for VFS2□00-□FZ-01.
Note 4) Factors of "Note 1)" and "Note 2)" are ones achieved in controlled clean air.

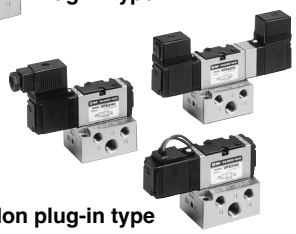
Compact yet provides a large flow capacity
1/4: C: 2.8 dm³/(s·bar)

Low power consumption: 1.8 W DC

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

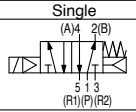
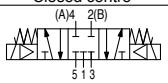
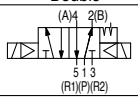
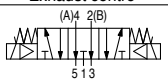
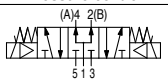
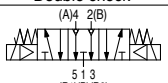


Plug-in type



Non plug-in type

Symbol

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

Standard Specifications

Valve specifications	**Fluid**		Air
	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)
	Impact/Vibration resistance		150/50 m/s² [3]
	Enclosure		Type G, E: Dustproof (Equivalent to IP50), Type F, T, D: Splashproof (Equivalent to IP54) [4] [6]
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.
Note 6) The F type enclosure described above shows that without the light/surge voltage suppressor. The F type enclosure with the light/surge voltage suppressor is equivalent to IP50.

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 938.

Sub-plate	L (mm)	Weight (kg)	Sonic conductance * C [dm³/(s·bar)]
Standard type	31.0	0.2	2.2
Compact type	25.5	0.13	2.8

* 2 position single Rc 1/4

How to Order

With insert plug with lead wire

With terminal block

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Porting

—	Side
B*	Bottom

*Option

Option

—	None
Z	With indicator light and surge voltage suppressor

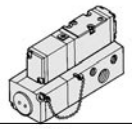
Port size

—		Without sub-plate	
01	1/8	Plug-in conduit terminal (with terminal block), Standard	Nℓ/min 687 (1)
02	1/4		Nℓ/min 815 (1)
P01(2)	1/8	Plug-in grommet (Insert plug with lead wire), Compact	Nℓ/min 589(1)
P02(2)	1/4		

Note 1) 2 position single
Note 2) Please note Cv factor and piping port location of compact sub-plate are different from ones of standard.

Body

O: Plug-in sub-plate



Electrical entry

F: Plug-in

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in

□VFS2 2 00 □—5 F □□—□ 01 □—Q

Non plug-in

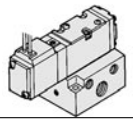
□VFS2 2 10 □—1 D □□—□ 02 □—Q

Configuration

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

Body

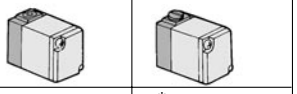
1: Non plug-in sub-plate



Pilot valve manual override

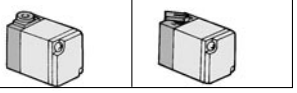
—: Non-locking push style (Flush)

B*: Locking style (Slotted)



A*: Non-locking push style (Extended)

C*: Locking style (Lever)



* Option

Port size

—		Without sub-plate	
01	1/8	Non plug-in Standard	Nℓ/min 687 (1)
02	1/4		Nℓ/min 815 (1)
(2) P01	1/8	Non plug-in Compact	Nℓ/min 589(1)
(2) P02	1/4		

Note 1) 2 position single
Note 2) Please note Cv factor and piping port location of compact sub-plate are different from ones of standard.

Indicator light/surge voltage suppressor

—	None
Z	With indicator light and surge voltage suppressor

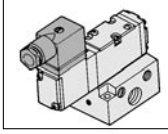
Pilot

—	Internal
R*	External

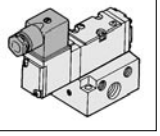
* Option. External pilot is possible only to the one with sub-plate.

Electrical entry

D: DIN connector
DO: Without connector



Y: DIN connector (DIN 43650)
YO: Without DIN connector



Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other,(250V or less)

Order Made Contact SMC for other voltages (9)

Protective class class I (Mark: ⏚)

How to Order Pilot Valve Assembly

SF4 — 1 DZ □ — 20 — Q

Voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC (50/60Hz)
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other, 250 or less

Order Made Contact SMC for other voltages (9)

Electrical entry/Indicator light and surge voltage suppressor.

D	DIN connector	Non plug-in
DZ	DIN connector with indicator light and surge voltage suppressor	
DO	DIN connector*	
DOZ	DIN connector with indicator light and surge voltage suppressor*	
Y	DIN connector (DIN 43650B)	
YO	DIN connector (DIN 43650B)*	

* Without DIN connector.

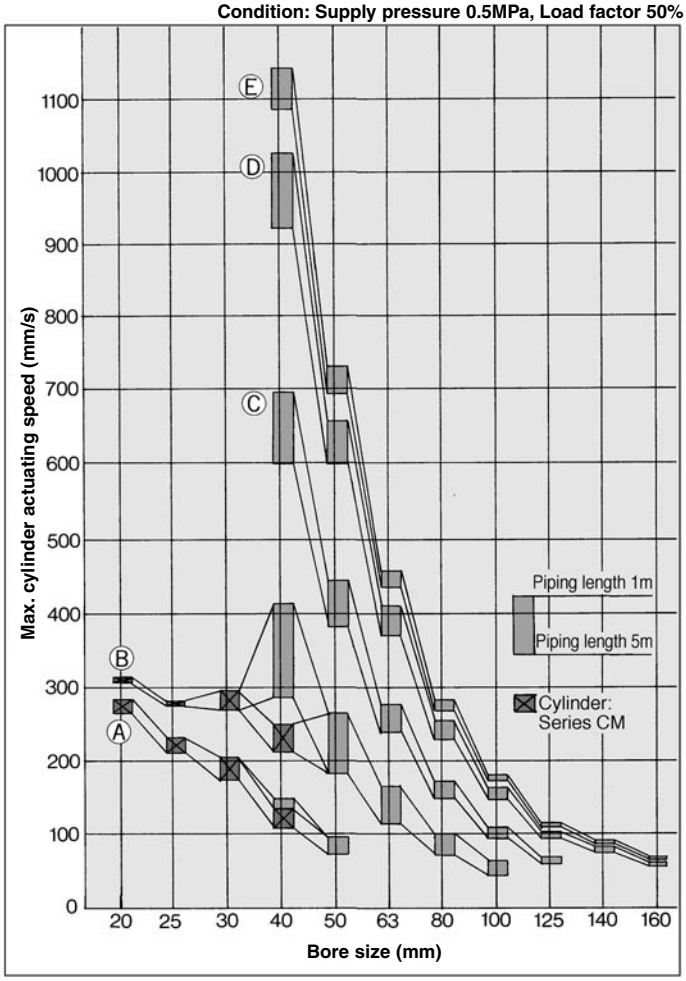
Manual override

—	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (Slotted)
C*	Locking style (Lever)

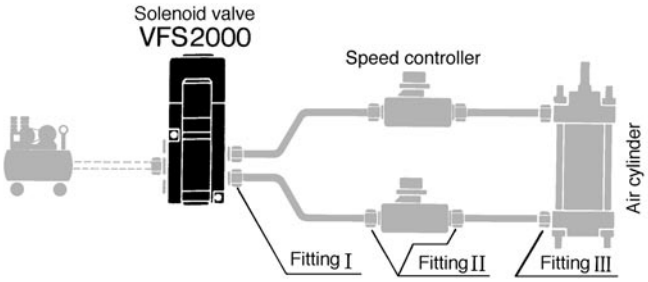
* Option

Maximum Cylinder Speed

Condition: Supply pressure 0.5MPa, Load factor 50%



System diagram



System components

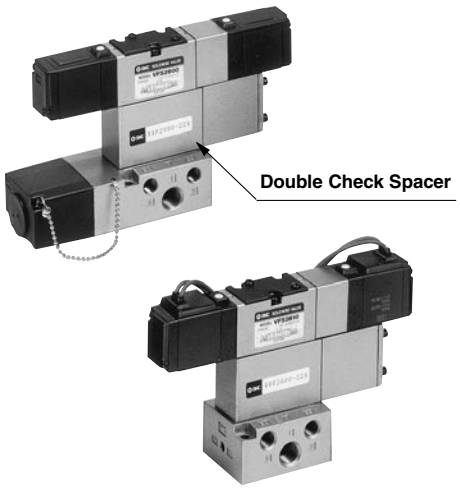
System	Solenoid valve	Speed controller	Silencer	Fitting (Tube O.D. X connecting thread)		
				1	2	3
A	VFS2000-01 1/8 (S=12.6mm²)	AS2000-01 (S=5mm²)	AN110-01 (S=35mm²)	ø4 X 1/8	ø4 X 1/8	ø4 X 1/8 to 1/4
B		AS3000-02 (S=12mm²)	AN110-01 (S=35mm²)	ø6 X 1/8	ø6 X 1/8	ø6 X 1/8 to 1/2
C		AS3000-02 (S=12mm²)	AN110-01 (S=35mm²)	ø8 X 1/8	ø8 X 1/8	ø8 X 1/8 to 1/2
D	VFS2000-02 1/4 (S=15mm²)	AS4000-02 (S=24mm²)	AN110-01 (S=35mm²)	ø10 X 1/4	ø10 X 1/4	ø10 X 1/4 to 1/2
E		AS4000-02 (S=24mm²)	AN110-01 (S=35mm²)	ø12 X 1/4	ø12 X 1/4	ø12 X 1/4 to 1/2

Note) The piping with a compact sub-plate of pipe connecting bore 1/8 and1/4 is equivalent to the system A, B, C.

Double Check Spacer Specifications

Holding cylinder mid-position for a long periods.

The concurrent use of double check spacer with built-in double check valve can stop cylinder or mid-position and hold it without being affected by air leakage spool seals.



Specifications

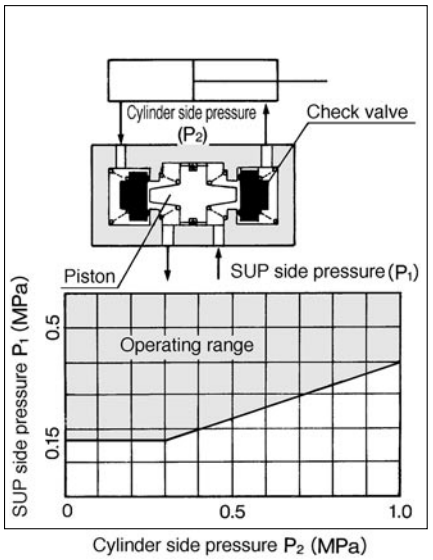
Double check spacer	Plug-in		Non plug-in	
	VVFS2000-22A-1		VVFS2000-22A-2	
Applicable solenoid valve	VFS2400-□F		VFS2410-□ G E T D	
Leakage* (cm³/min) (ANR)	Solenoid one side energized	P	EA	210 or less
			EB	
	Solenoid both sides de-energized	P	EA	210 or less
			EB	
		A	EA	0
		B	EB	

*Supply pressure 0.5MPa

⚠ Precaution

- 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 mid-position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

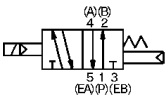
Check Valve Operation

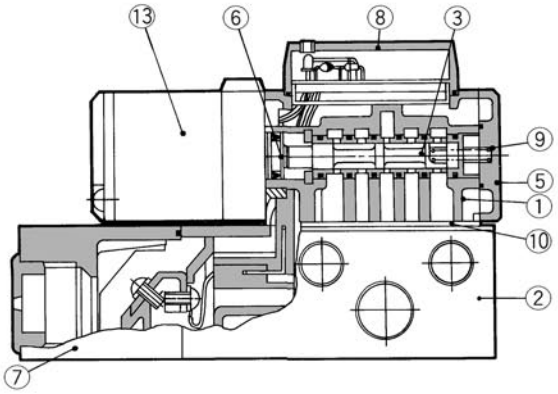


- The combination of VFS21$^{0}_{1}$0, VFS22$^{0}_{1}$0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

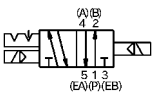
Construction

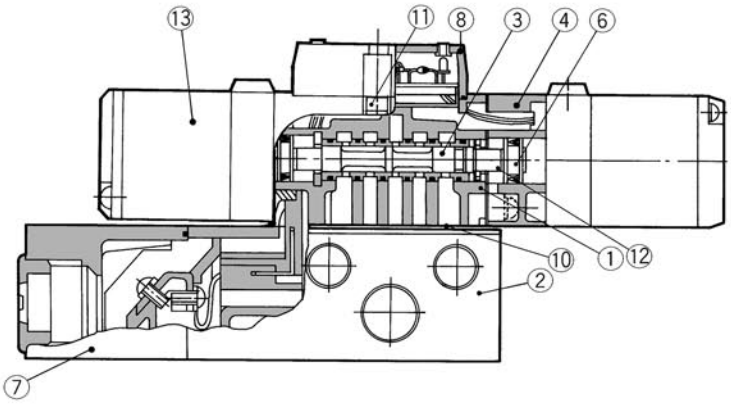
2 position single





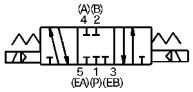
2 position double



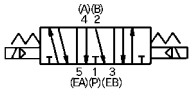


3 position closed centre/exhaust centre/pressure centre

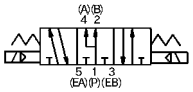
Closed centre

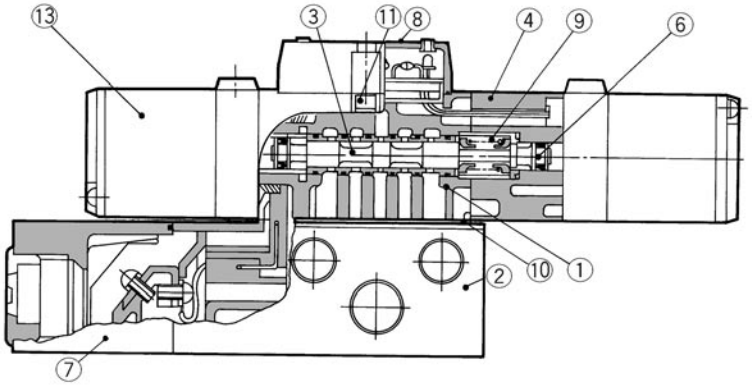


Exhaust centre



Pressure centre





Component Parts

No.	Description	Material	Note
①	Body	Aluminium die-cast	Platinum silver
②	Sub-plate	Aluminium die-cast	Platinum silver
③	Spool/Sleeve	Stainless steel	—
④	Adaptor plate	Aluminium die-cast	Platinum silver
⑤	End plate	Resin	Black
⑥	Piston	Resin	—
⑦	Junction cover	Resin	—
⑧	Light cover	Resin	—

Subplate Assembly (Standard)

Plug-in	VFS2000-LP-$^{01}_{02}$
Non plug-in	VFS2000-LS-$^{01}_{02}$

∗ Without mounting screw and gasket .

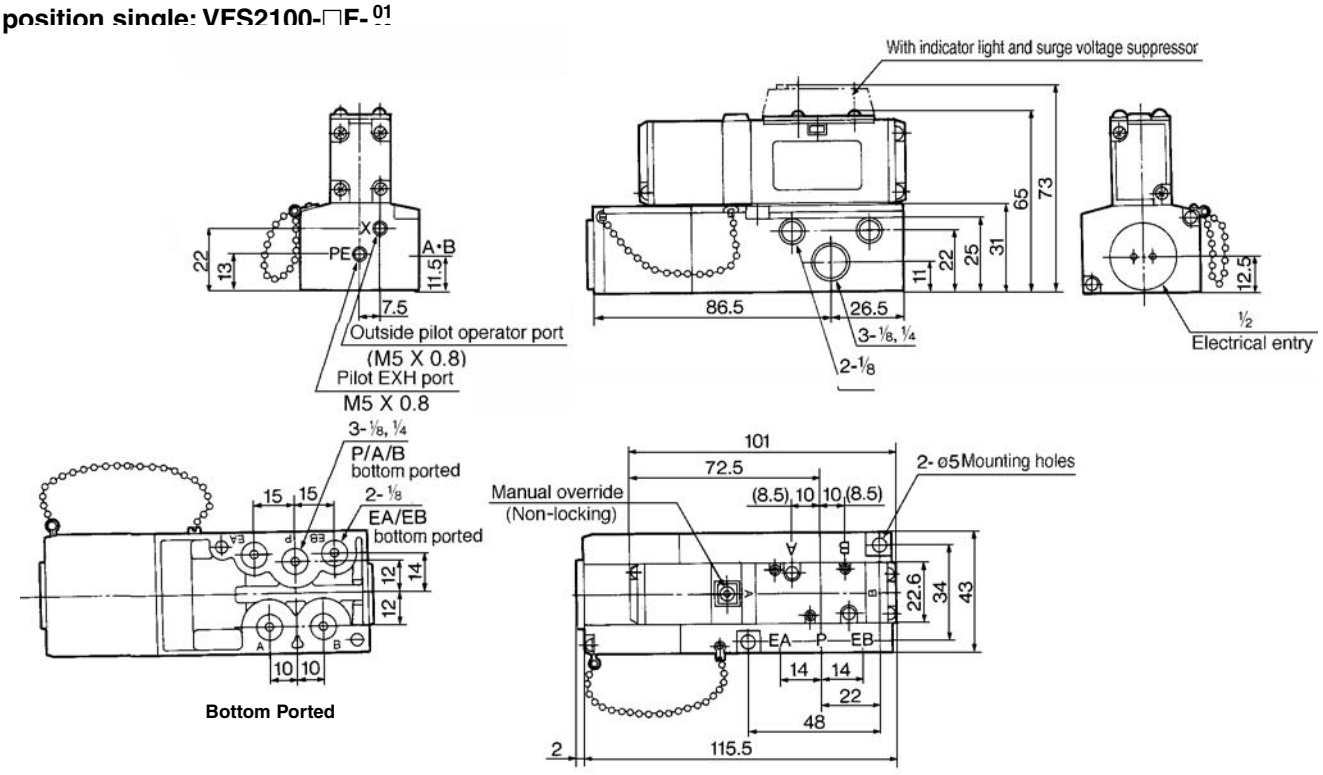
∗ Refer to p.1.17-52 for compact style.

Replacement Parts

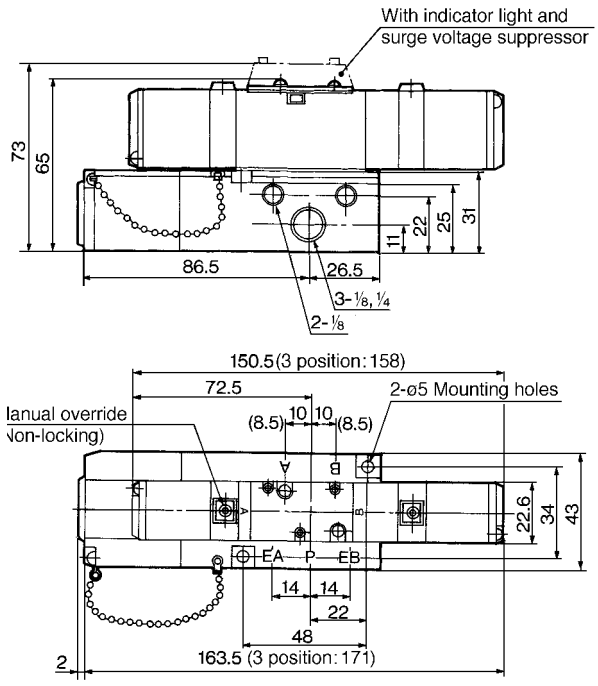
No.	Description	Material	Part No.		
			VFS21□□	**VFS22□□**	**VFS23□□, 24□□, 25**
⑨	Return spring	Stainless steel	NVF2000-48	—	AXT624-19-1
⑩	Gasket	NBR	AXT624-20-2	AXT624-20-2	AXT624-20-2
⑪	Hexagonal soket head cap screw	Steel	AXT624-26	AXT624-26	AXT624-26
⑫	Detent assembly	—	—	AXT624-11A	—
⑬	Pilot valve assemby	—	Refer to "How to order/Pilot valve assembly" on p.1.17-34.		

Plug-in 2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double Check

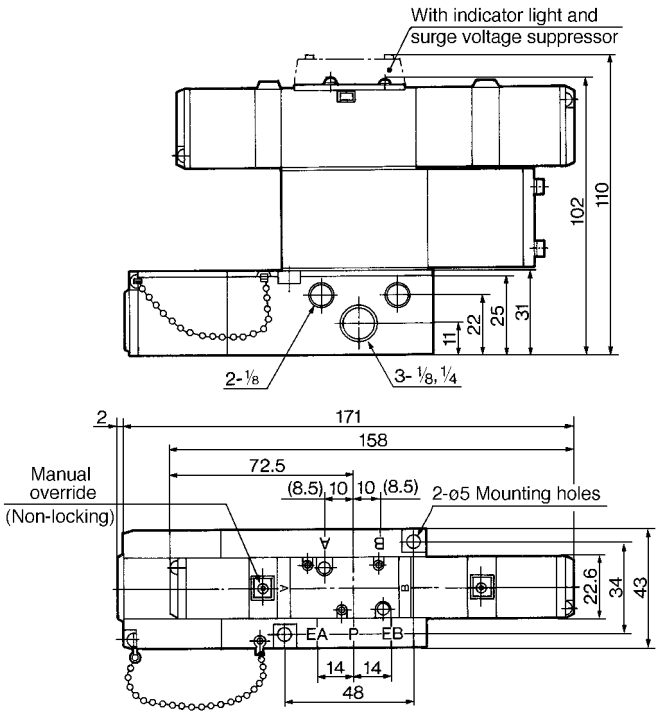
2 position single: VFS2100-□F-^{01}



2 position double: VFS2200-□F-$^{01}_{02}$
3 position closed centre: VFS2300-□F-$^{01}_{02}$
3 position exhaust centre: VFS2400-□F-$^{01}_{02}$
3 position pressure centre: VFS2500-□F-$^{01}_{02}$

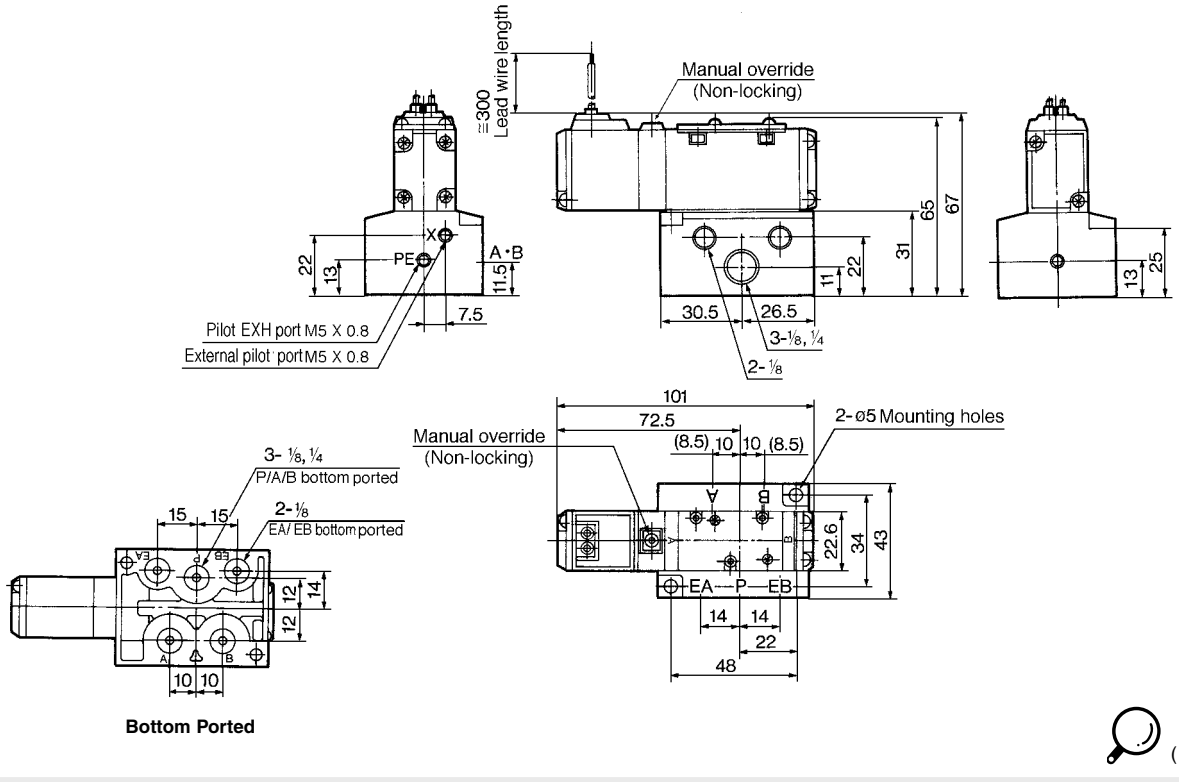


3 position double check: VFS2600-□F-$^{01}_{02}$



Non Plug-in 2 Position Single

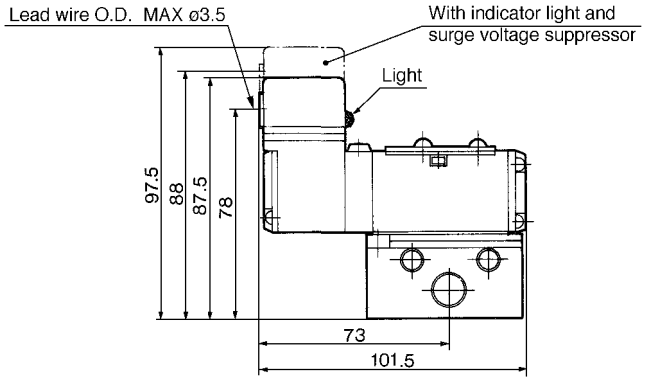
Grommet: VFS2110-□G-$^{01}_{02}$



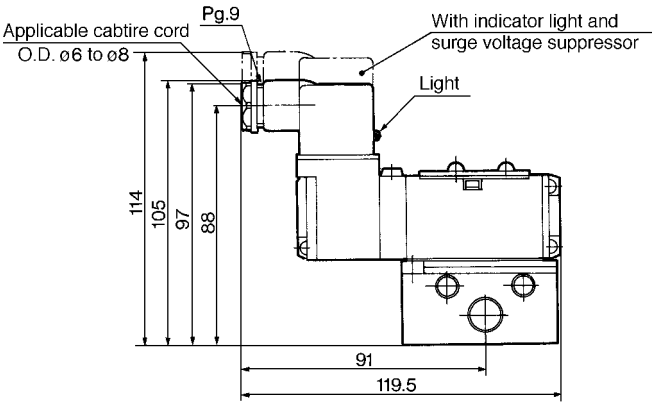
Bottom Ported

( ):1/8

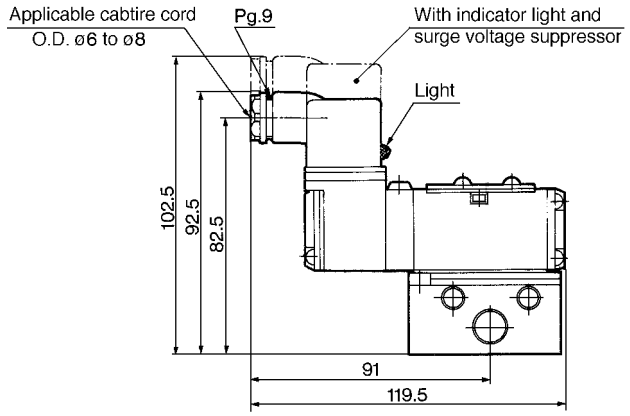
Grommet terminal: VFS2110-□E-$^{01}_{02}$



DIN connector: VFS2110-□D-$^{01}_{02}$

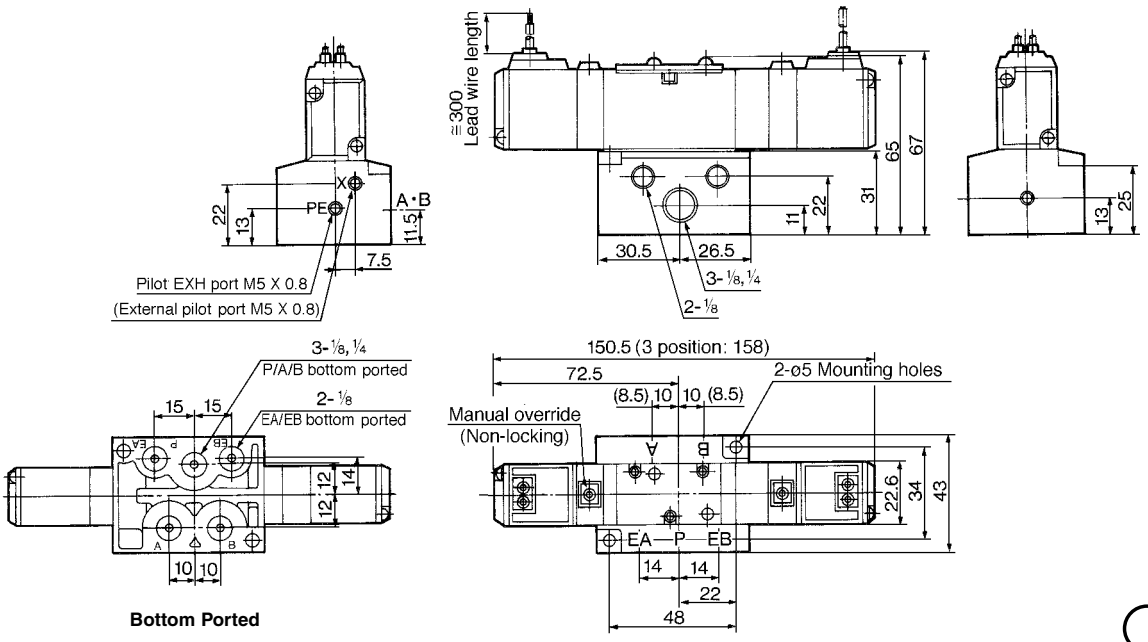


Conduit terminal: VFS2110-□T-$^{01}_{02}$



Non Plug-in 2 Position Double, 3 Position Closed Centre/Exhaust Centre/Pressure centre

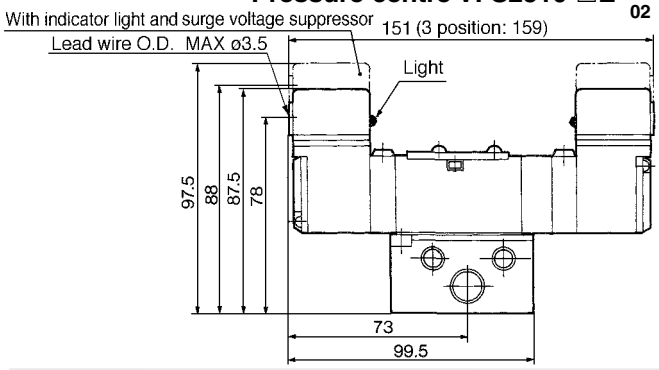
Grommet: 2 position double VFS2210-□G-$^{01}_{02}$ 3 position closed centre VFS2310-□G-$^{01}_{02}$
3 position exhaust centre VFS2410-□G-$^{01}_{02}$ 3 position pressure centre VFS2510-□G-$^{01}_{02}$



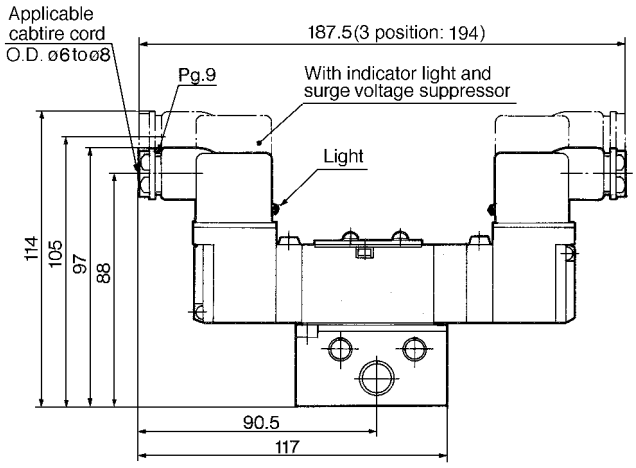
Bottom Ported

( ):1/8

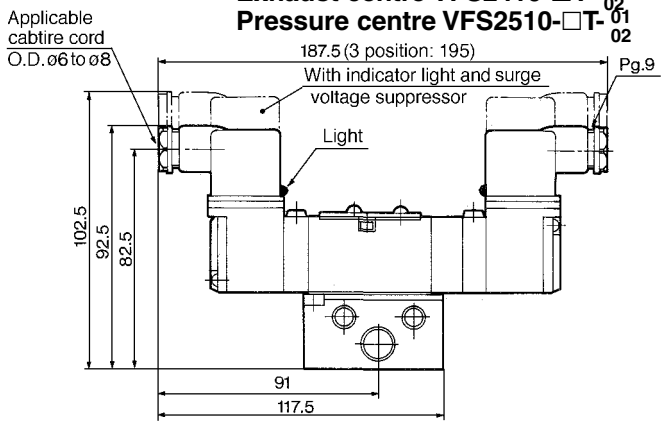
Grommet terminal: Double VFS2210-□E-$^{01}_{02}$
Closed centre VFS2310-□E-$^{01}_{02}$
Exhaust centre VFS2410-□E-$^{01}_{02}$
Pressure centre VFS2510-□E-$^{01}_{02}$



DIN connector: Double VFS2210-□D-$^{01}_{02}$
Closed centre VFS2310-□D-$^{01}_{02}$
Exhaust centre VFS2410-□D-$^{01}_{02}$
Pressure centre VFS2510-□D-$^{01}_{02}$

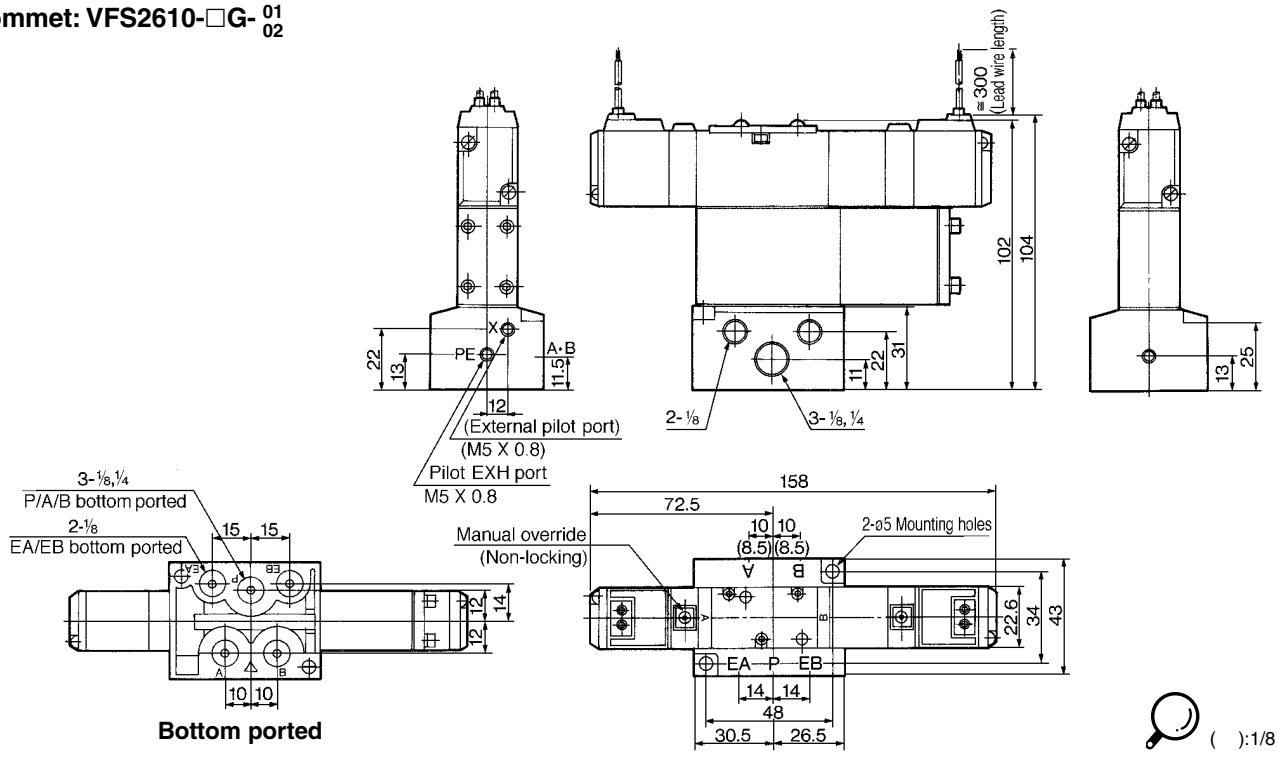


Conduit terminal: Double VFS2210-□T-$^{01}_{02}$
Closed centre VFS2310-□T-$^{01}_{02}$
Exhaust centre VFS2410-□T-$^{01}_{02}$
Pressure centre VFS2510-□T-$^{01}_{02}$

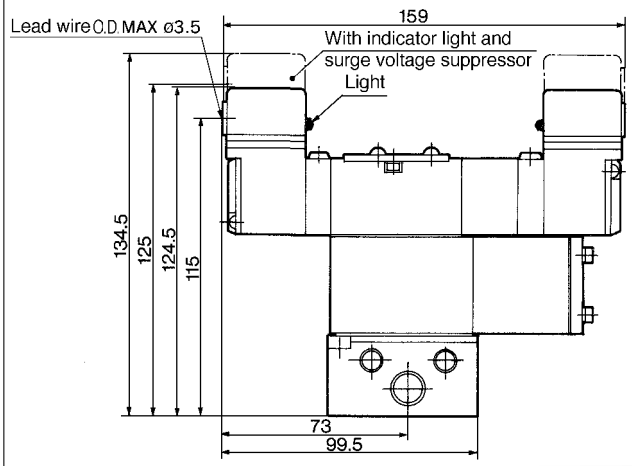


Non Plug-in 3 Position Double Check

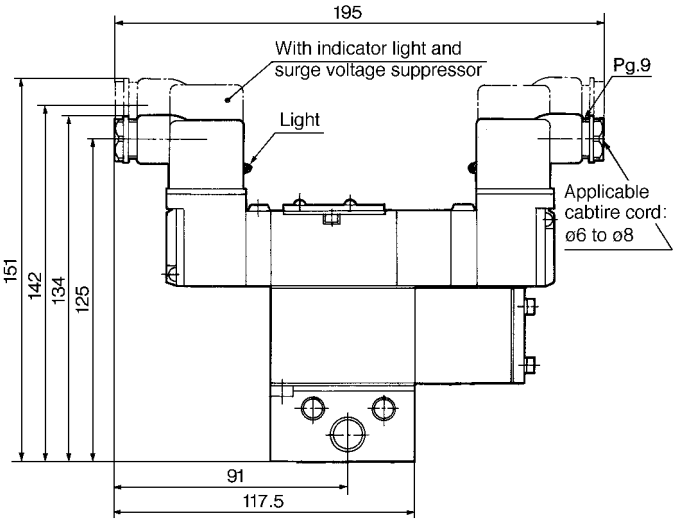
Grommet: VFS2610-□G-$^{01}_{02}$



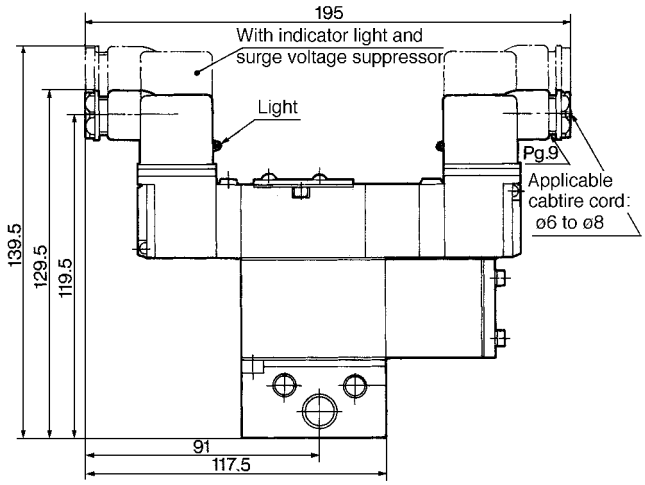
Grommet terminal: VFS2610-□E-$^{01}_{02}$



DIN connector: VFS2610-□D-$^{01}_{02}$

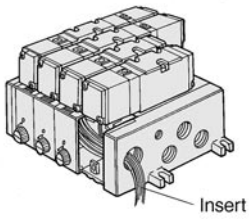


Conduit Terminal: VFS2610-□T-$^{01}_{02}$



Plug-in: Insert Plug with 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.



□ VV5FS2 − 01 − 06 1 − 01 □ −Q

Series VFS2000 Manifold

Plug-in: Insert plug with lead wire

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting A, B
1	Com.	Com.	Side
2*			Bottom
3*	Com.	Indi.	Side
4*			Bottom
5*	Indi.	Com.	Side
6*			Bottom
7*	Indi.	Indi.	Side
8*			Bottom

*Option

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

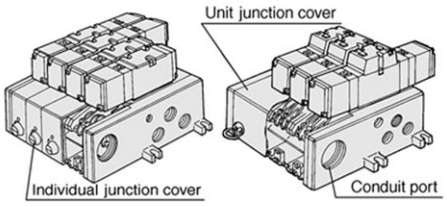
Port size

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

*Bottom porting: 1/8 only.

Plug-in: 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.



□ VV5FS2 −01T 1 − 08 1 − 02 □ −Q

Series VFS2000 Manifold

Plug-in with terminal block

Junction cover

—	Separate junction cover
1	One-piece junction cover

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting A, B
1	Com.	Com.	Side
2*			Bottom
3*	Com.	Indi.	Side
4*			Bottom
5*	Indi.	Com.	Side
6*			Bottom
7*	Indi.	Indi.	Side
8*			Bottom

*Option

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Port size

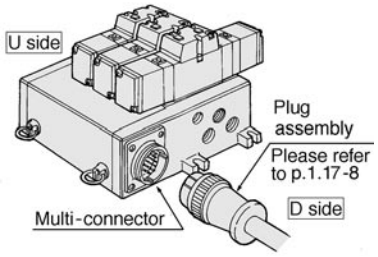
Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
M		Mix

*Bottom porting: 1/8 only.

Plug-in: With Multi-connector

(Wiring specifications: Please refer to p.1.17-8)

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



□ VV5FS2 −01C D 1 − 05 2 − 01 □ −Q

Series VFS2000 Manifold

Plug-in With multi-connector

Mounting direction of connector

D	D side mounting
U	U side mounting

Junction cover

1	Unit junction cover

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
08	8 stations

*Max: 8 stations.

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting A, B
1	Com.	Com.	Side
2*			Bottom
3*	Com.	Indi.	Side
4*			Bottom
5*	Indi.	Com.	Side
6*			Bottom
7*	Indi.	Indi.	Side
8*			Bottom

*Option

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Port size

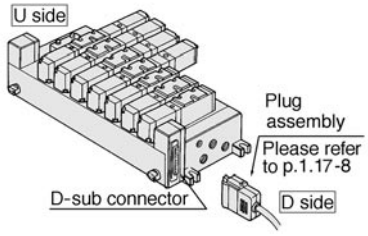
Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
M		Mix

*Bottom porting: 1/8 only.

Plug-in: With D-sub Connector

(Wiring specifications: Please refer to p.1.17-8)

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



□ VV5FS2 −01F U 1 − 06 1 − 01 □ −Q

Series VFS2000 Manifold

Plug-in with D-sub connector

Mounting direction of connector

D	D side mounting
U	U side mounting

Junction cover

1	One-piece junction cover

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
08	8 stations

*Max: 8 stations.

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting A, B
1	Com.	Com.	Side
2*			Bottom
3*	Com.	Indi.	Side
4*			Bottom
5*	Indi.	Com.	Side
6*			Bottom
7*	Indi.	Indi.	Side
8*			Bottom

*Option

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

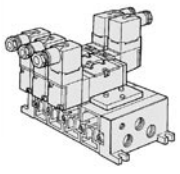
Port size

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

*Bottom porting: 1/8 only.

Non Plug-in: DIN Connector

- Wiring for every valve



□ VV5FS2 − 10 − 05 2 − 01 □ −Q

Series VFS2000 Manifold

Non plug-in

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
15	8 stations

*Option

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting A, B
1	Com.	Com.	Side
2*			Bottom
3*	Com.	Indi.	Side
4*			Bottom
5*	Indi.	Com.	Side
6*			Bottom
7*	Indi.	Indi.	Side
8*			Bottom

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Port size

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

*Bottom porting: 1/8 only.

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 singel EXH spacer, the composition symbol mark is "1".

Manifold Specifications

Base Style	Wiring	Porting	Port size		No. of Stations	Applicable solenoid valve
		A, B port	P, EA, EB	A, B		
Plug-in **VV5FS2-01□**	•Insert plug with lead wire •With terminal block •With multi connector •With D-sub connector	Side Bottom	1/4	1/8, 1/4	2 to 15	VFS2□00-□F
Non plug-in VV5FS2-10	•Grommet •Grommet terminal •Conduit terminal •DIN connector					VFS2□10-□G VFS2□10-□E VFS2□10-□T VFS2□10-□D

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

Manifold Stations and Effective Area (mm²) (Cv factor)

Porting/No. of stations	First station	Fifth station	Tenth station	Fifteenth station
P→A or B	12.4 (677)	12.4 (677)	12.3 (667)	12.2 (667)
A→EA, B→EB	14.6 (795)	14.6 (795)	14.6 (795)	14.5 (795)

∗2 position single. Port size: 1/4

How to Order Manifold

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

<<Example>>

•Plug-in with terminal block - 6 stations
(Manifold base)
VV5FS2-01T1-061-02 ····· 1
(2 position single) VFS2100-5FZ ····· 3
(2 position double) VFS2200-5FZ ····· 2
(Blank plate) VVFS2000-10A ····· 1

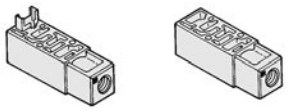
•Non plug-in - 6 stations
(Manifold base mounted style)
VV5FS2-10-061-01 ····· 1
(2 position single) VFS2100-5 ····· 5
(3 position exhaust center) VFS2410-5D ····· 1
(Individual EXH spacer) VVFS2000-R-01-2 ····· 1

Manifold/Option Parts Assembly

Individual SUP spacer

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

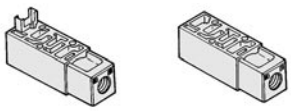
	Body	Plug-in	Non plug-in
Part No.	1/8	VVFS2000-P-01-1	VVFS2000-P-01-2
	1/4	VVFS2000-P-02-1	VVFS2000-P-02-2



Individual EXH spacer

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

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



SUP block disk

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

Body	Plug-in	Non plug-in
Part No.	AXT625-12A	

EXH block disk

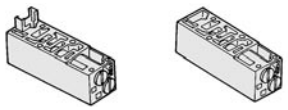
When valve exhaust affects the other stations on the circuit or when the reverse pressure valve is used to standard manifold valve, insert EXH block plate in between stations to separate valve exhaust.

Body	Plug-in	Non plug-in
Part No.	AXT625-12A	

Interface speed control

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

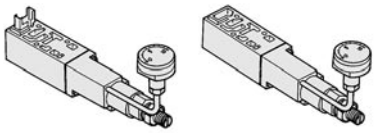
Body	Plug-in	Non plug-in
Part No.	VVFS2000-20A-1	VVFS2000-20A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve.

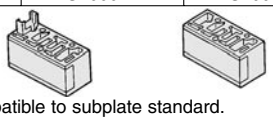
Body	Plug-in	Non plug-in
P port regulation	ARBF2000-00-P-1	ARBF2000-00-P-2



Air shuttoff valve spacer

When stopping supply air and releasing residual pressure after completion of work, actuators may move from original position. Air shuttoff valve spacer makes it possible to stop actuators in original position for extended periods.

Body	Plug-in	Non plug-in
Part No.	VVFS2000-21A-1	VVFS2000-21A-2



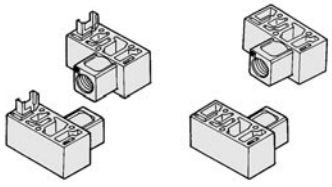
∗Incompatible to subplate standard.

Air release valve spacer

The concurrent use of air release valve spacer with VFS21□0 can release air.

Body	Plug-in	Non plug-in
Part No.	VVFS2000-24A-1$^{L}_{R}$	VVFS2000-24A-2$^{L}_{R}$

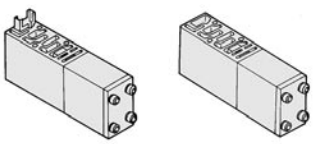
Note) L: U side mount R: D side mount



Double check spacer

The concurrent use of double check spacer with built-in double check valve can stop the cylinder at mid-position and hold for a long time without being affected by the air leakage across spool seals.

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



Blank plate

When disassembling valve for maintenance purposes or when spare manifold stations are requied, install a blank plate on the manifold block.

Body	Plug-in	Non plug-in
Part No.	VVFS2000-10A	

Accessory

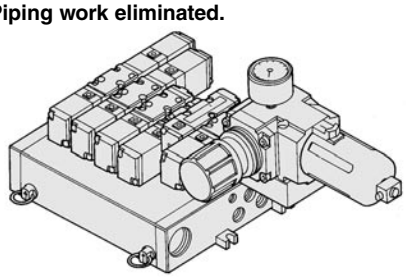
One pair of gasket and mounting thread is attached to every option parts assembly.

Manifold Options

With control unit

Plug-in/Non plug-in

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

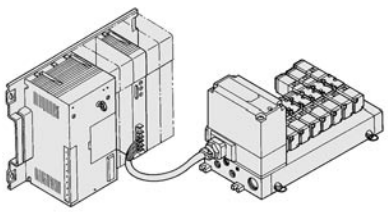


For more information, please refer to p.1.17-47.

With serial interface unit

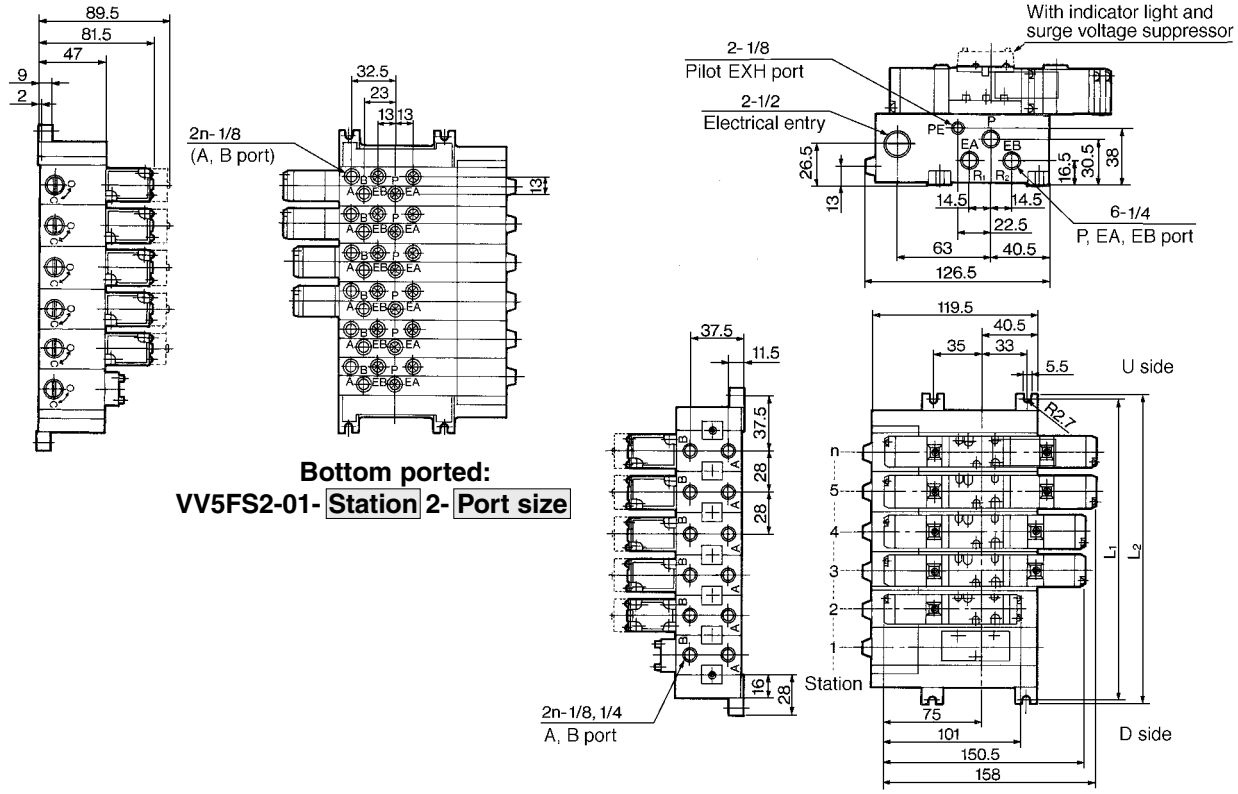
Plug-in

- **Solenoid valve wiring process reduced considerably.**
- **Disperse installation possible.**
  Manifold solenoid valve: 8 stations max, 32 positions (512 solenoids).
- **Maintenance and inspection are easy.**



Manifold Plug-in/Non Plug-in

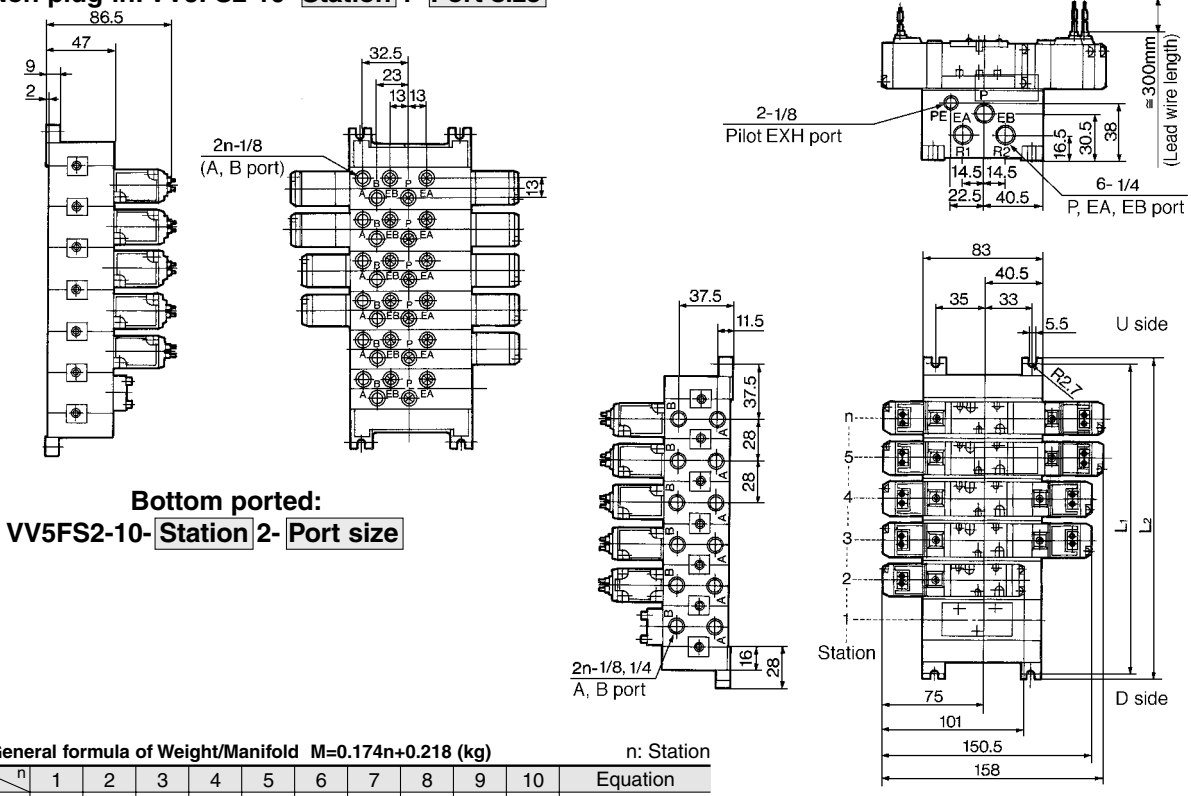
Plug-in (Insert plug with lead wire): VV5FS2-01- Station 1- Port size



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

General formula of Weight/Manifold M=0.201n+0.299 (kg) n: Station

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



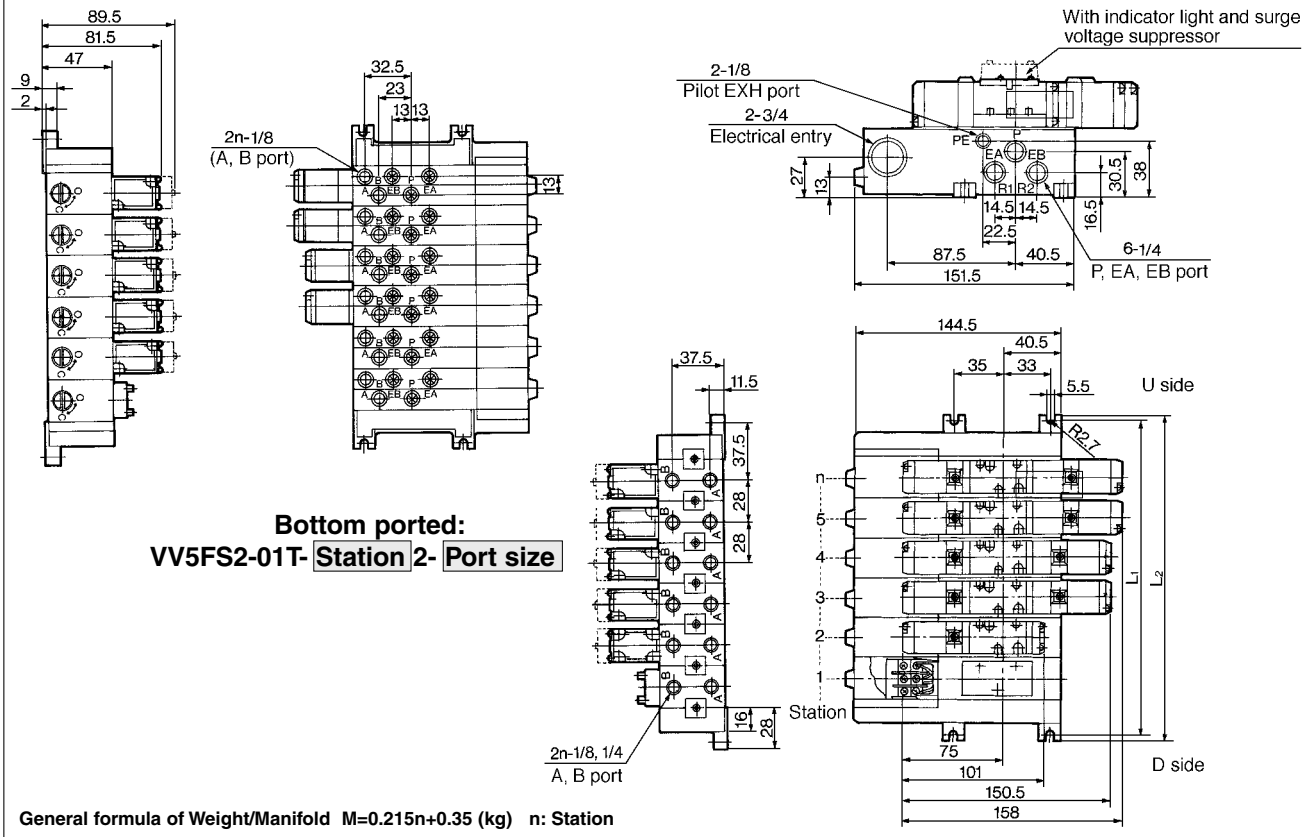
Bottom ported:
VV5FS2-10- Station 2- Port size

General formula of Weight/Manifold M=0.174n+0.218 (kg) n: Station

L \ n	1	2	3	4	5	6	7	8	9	10	Equation
L1	75	103	131	159	187	215	243	271	299	327	L1=28 X n+47
L2	84	112	140	168	196	224	252	280	308	336	L2=28 X n+56

Manifold Plug-in: Individual/One-piece Junction Cover

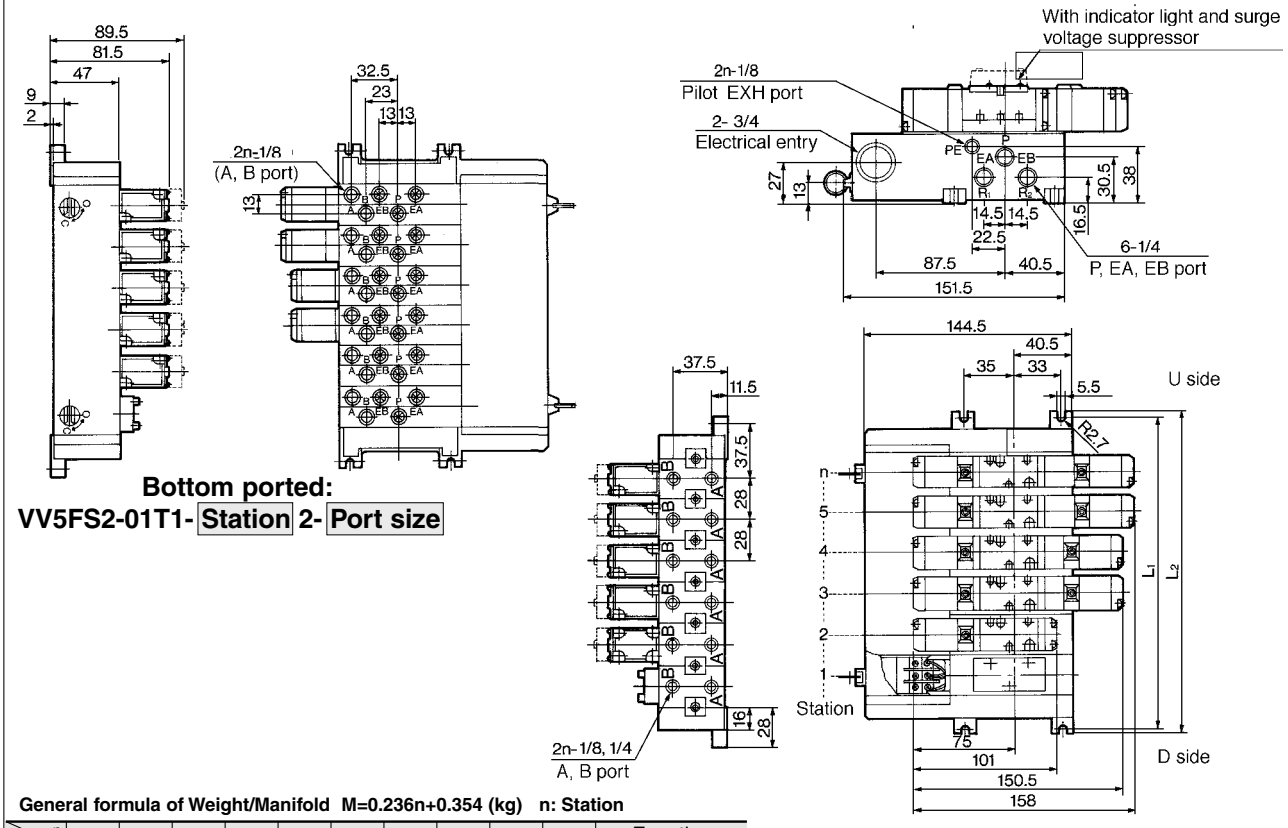
Plug-in with terminal block (Individual junction covers): VV5FS2-01T- Station 1- Port size



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

General formula of Weight/Manifold M=0.215n+0.35 (kg) n: Station

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



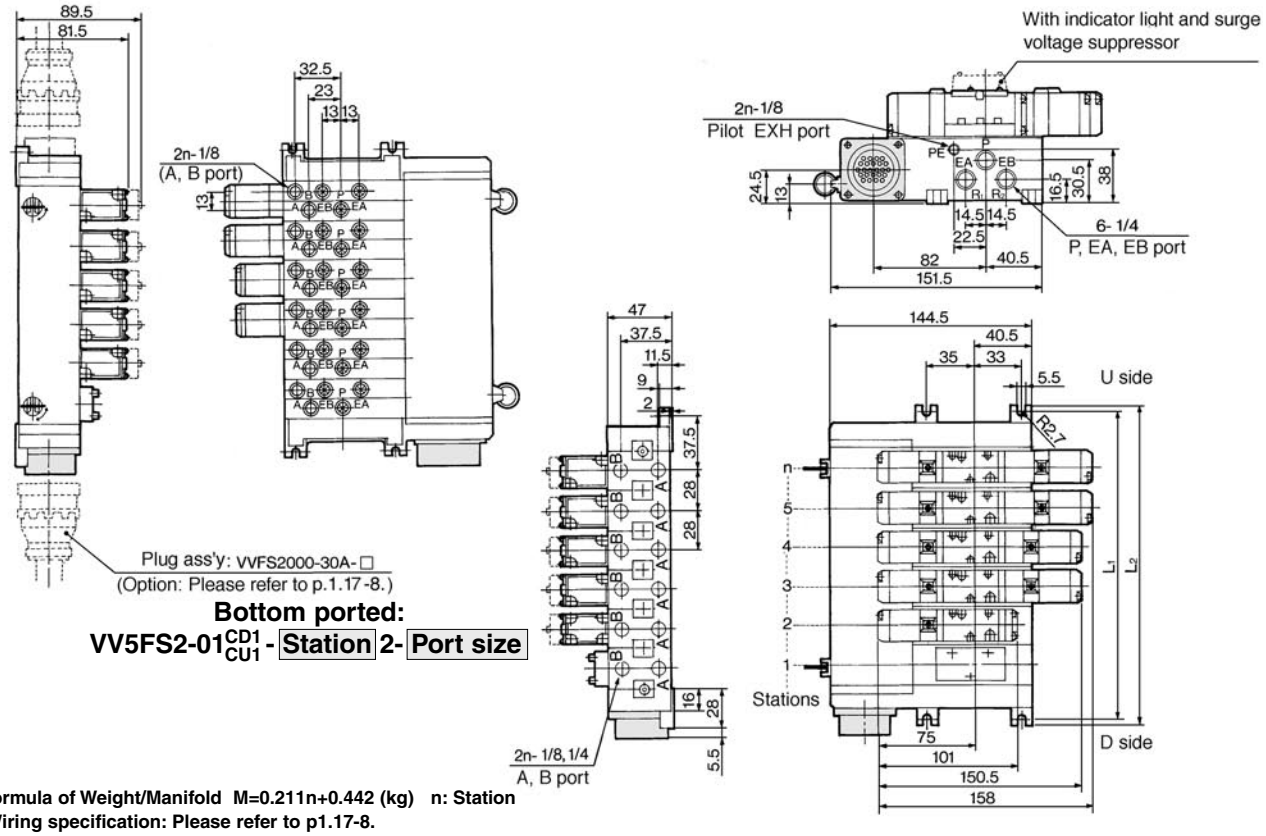
Bottom ported:
VV5FS2-01T1- Station 2- Port size

General formula of Weight/Manifold M=0.236n+0.354 (kg) n: Station

L \ n	1	2	3	4	5	6	7	8	9	10	Equation
L1	75	103	131	159	187	215	243	271	299	327	L1=28 X n+47
L2	84	112	140	168	196	224	252	280	308	336	L2=28 X 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

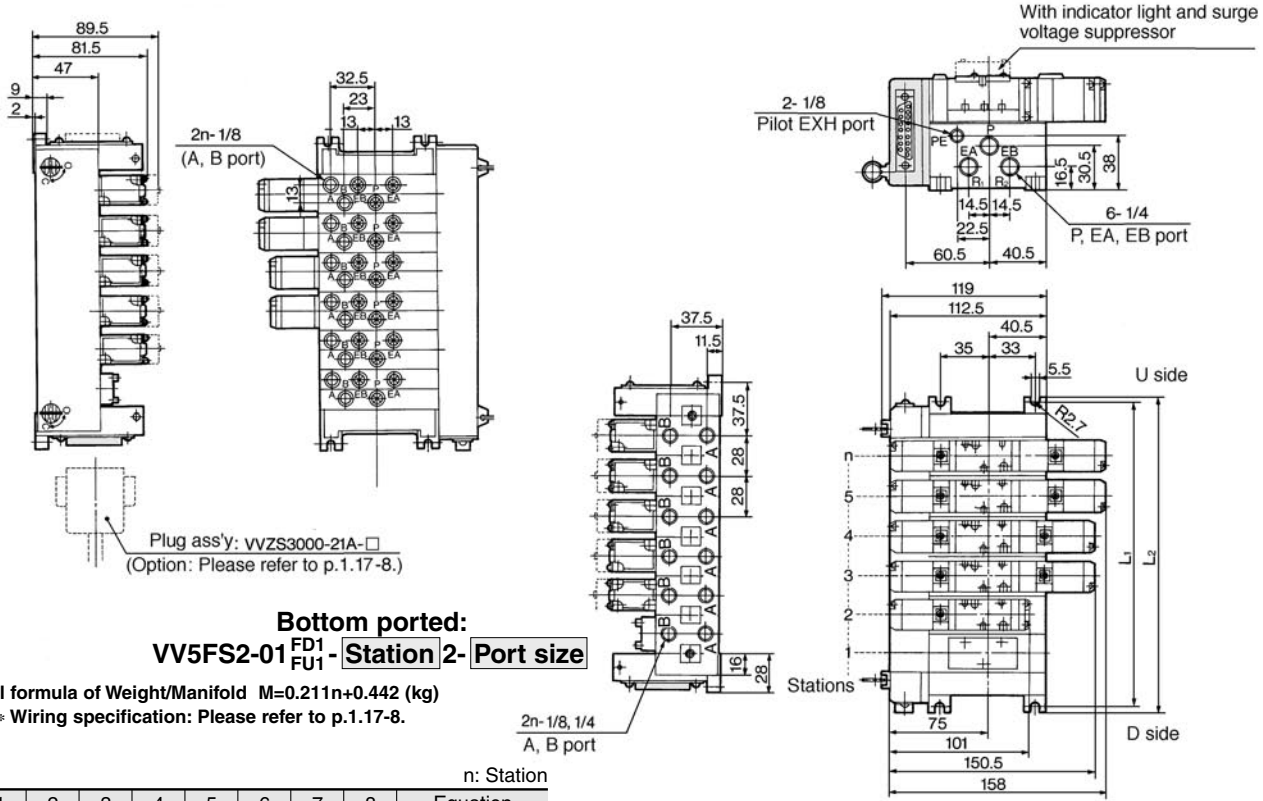


Bottom ported:
VV5FS2-01$^{CD1}_{CU1}$ - Station 2- Port size

General formula of Weight/Manifold M=0.211n+0.442 (kg) n: Station

* **Wiring specification: Please refer to p1.17-8.**

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



Bottom ported:
VV5FS2-01$^{FD1}_{FU1}$ - Station 2- Port size

General formula of Weight/Manifold M=0.211n+0.442 (kg)

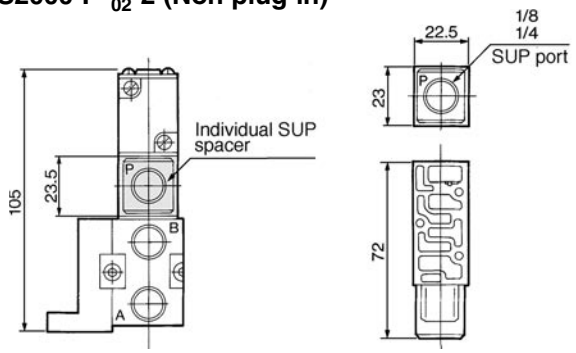
* **Wiring specification: Please refer to p.1.17-8.**

n: Station

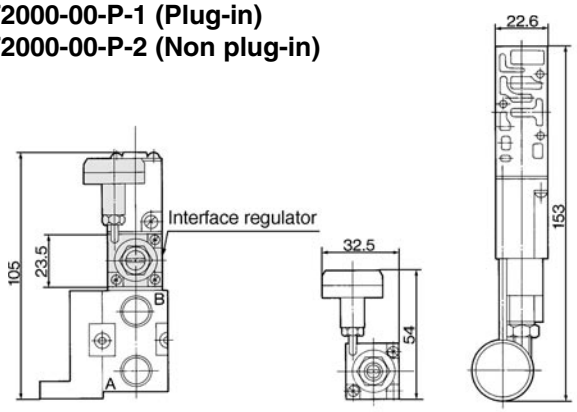
L \ n	1	2	3	4	5	6	7	8	Equation
L1	75	103	131	159	187	215	243	271	L1=28 X n+47
L2	84	112	140	168	196	224	252	280	L2=28 X n+56

Manifold/Option Parts — Plug-in/Non Plug-in

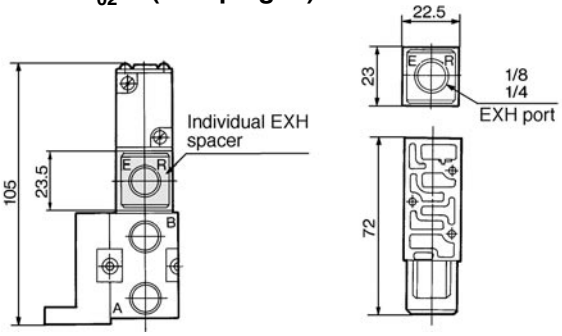
Individual SUP spacer:
VVFS2000-P-$^{01}_{02}$-1 (Plug-in)
VVFS2000-P-$^{01}_{02}$-2 (Non plug-in)



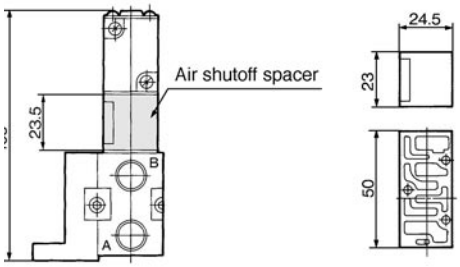
Interface regulator:
ARBF2000-00-P-1 (Plug-in)
ARBF2000-00-P-2 (Non plug-in)



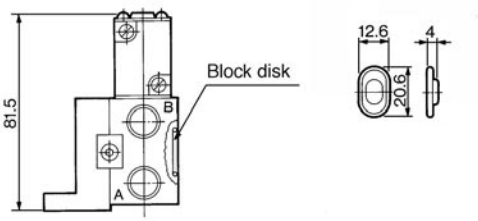
Individual EXH spacer:
VVFS2000-R-$^{01}_{02}$-1 (Plug-in)
VVFS2000-R-$^{01}_{02}$-2 (Non plug-in)



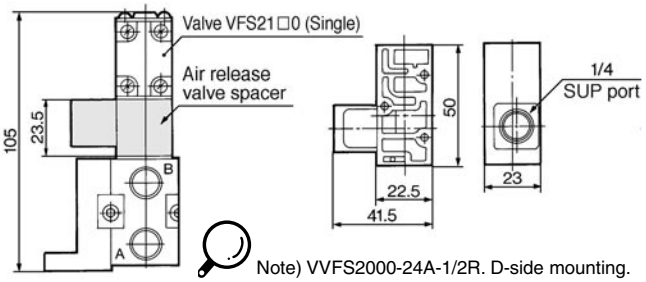
Air shutoff valve spacer:
VVFS2000-21A-1 (Plug-in)
VVFS2000-21A-2 (Non plug-in)



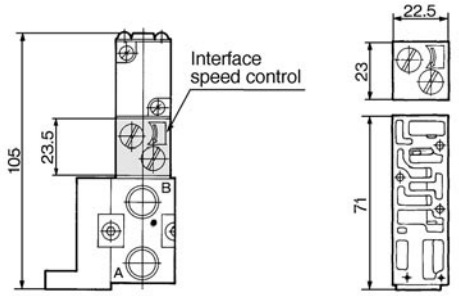
SUP/EXH block disk: AXT625-12A



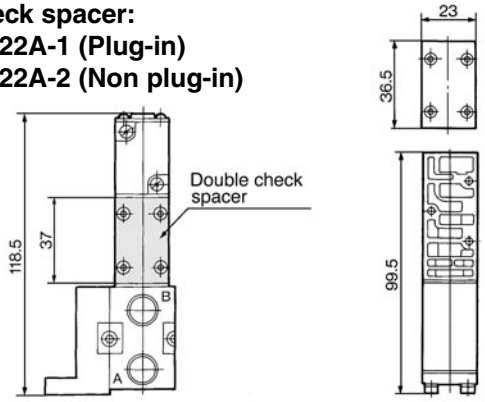
Air release valve spacer:
VVFS2000-24A-1$^{R}_{L}$ (Plug-in)
VVFS2000-24A-2$^{R}_{L}$ (Non plug-in)



Interface speed control:
VVFS2000-20A-1 (Plug-in)
VVFS2000-20A-2 (Non plug-in)



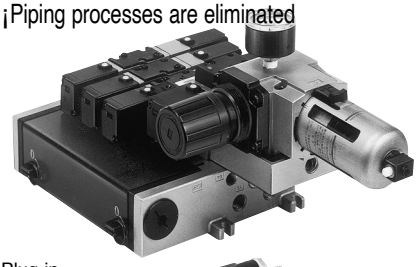
Double check spacer:
VVFS2000-22A-1 (Plug-in)
VVFS2000-22A-2 (Non plug-in)



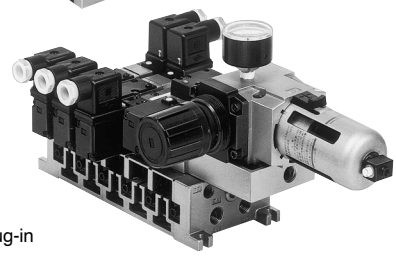
Manifold with Control Unit

¡Control units (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



Non plug-in

⚠ Precautions

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

Manifold specifications

Manifold style	Plug-in: VV5FS2-01□	Non plug-in: VV5FS2-10
Wiring	Insert plug with lead wire With terminal block With multi-connector With D-sub connector	Grommet Grommet terminal Conduit terminal DIN connector
Applicable valve	VFS2□00-□F	VFS2□10-□G, VFS2□10-□E VFS2□10-□T, VFS2□10-□D
Porting specifications	Common SUP, Common EXH	
	A, B port: Side: 1/8, 1/4 Bottom: 1/8 (Option)	
	P, EA, EB port: Side: 1/4 Bottom: 1/8 (Option)	
No. of stations	2 to 15*	

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

Control Unit/Specifications

Air filter (with auto drain/with manual drain)	
Filtration	5μm
Regulator	
Set Press (Secondary)	0.05 to 0.85MPa
Pressure switch (1)	
Set press. range: OFF	0.1 to 0.6MPa
Differential	0.08MPa or less
Contact	1a
Light	LED (Red)
Max. switch capacity	2V AC, 2W DC
Max. operating current	24V AC, DC. or less: 50mA
Air release valve (Single only)	
Operating press. range	0.1 to 1.0MPa

Control unit/Options

Air release valve spacer (2)	<Plug-in type> VVFS2000-24A-1R (D side mounting) VVFS2000-24A-1L (U side mounting)	
	<Non plug-in type> VVFS2000-24A-2R (D side mounting) VVFS2000-24A-2L (U side mounting)	
Pressure switch (3)	IS1000P-2-1	
Blanking plate	With control unit/Filter regulator	MP2-2
	Pressure switch	MP3-2
	Release valve	AXT625-18A
Filter element	AF30P-060S	
Regulator with filter	Manually operated	INA-13-794G
	Auto-drain type	INA-13-806G

Note 1) Voltage: 24 VDC to 100 VAC
Inner voltage drop: 4 V
Note 2) Refer to manifold option parts on page 1.17-42.
Note 3) The non plug-in type cannot be mounted afterwards.

CE UKCA

How to Order

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

□ VV5FS2 – 10 □ □ – 08 1 – 01 □ – AP □ – Q

Series VFS2000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Base style/Wiring

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

Connector mounting direction

Symbol	Connector mounting	Applicable base
—	None	01, 01T, 10
D	D side	01C, 01F
U	U side	

Junction cover

—	Individual style
1	Unit style

Individual: Base style 01, 01T
Unit: Base style 01T, 01C, 01F

Stations

02	2 stations
⋮	⋮
15*	15 stations

*Base style 01, 01T, 10: 2 to 15 stations
01C, 01F: 2 to 8 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2*			Bottom
3*	Common	Individual	Side
4*			Bottom
5*	Individual	Common	Side
6*			Bottom
7*	Individual	Individual	Side
8*			Bottom

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

Protective class
class I (Mark: ⏚)

Port size

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

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Voltage of air release valve

—	None (F, G type only)
1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other,(250V or less)

Order Made Contact SMC for other voltages (9)

Control unit

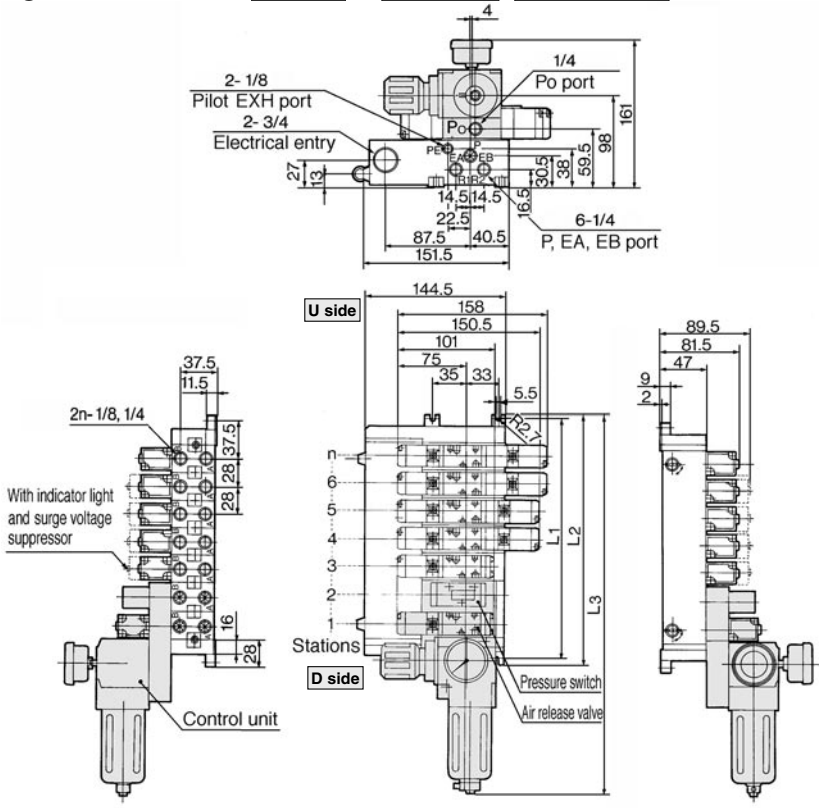
Control equipment \ Symbol	—	A	AP	M	MP	F	G	C	E
Air filter with auto drain		●	●			●			
Air filter with manual drain				●	●		●		
Regulator		●	●	●	●	●	●		
Air release valve		●	●	●	●			●	●
Pressure switch			●		●				
Blank plate (Air release valve)						●	●		
Blank plate (Filter Regulator)								●	
Mounting manifold block		2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	1 station

Plase indicate manifold base mounting style, corresponding valve, and option parts.

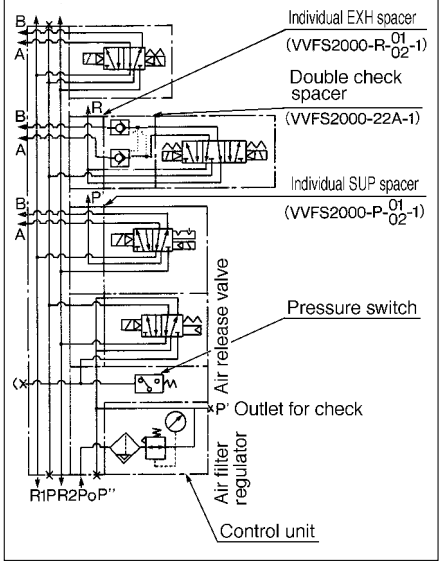
≪Example≫
Plug-in with terminal block
(Manifold base) **VV5FS2-01T1-091-02-MP-Q** ····· 1
(2 position single) **VFS2100-5FZ-Q** ····· 5
(2 position double) **VFS2200-5FZ-Q** ····· 2
*2 stations are needed to mount control unit.
Non plug-in
(Manifold base) **VV5FS2-10-071-01-M-Q**····· 1
(2 position single) **VFS2110-5D-Q**····· 5
*2 stations are needed to mount control unit.

Manifold with Control Unit — Plug-in/Non Plug-in

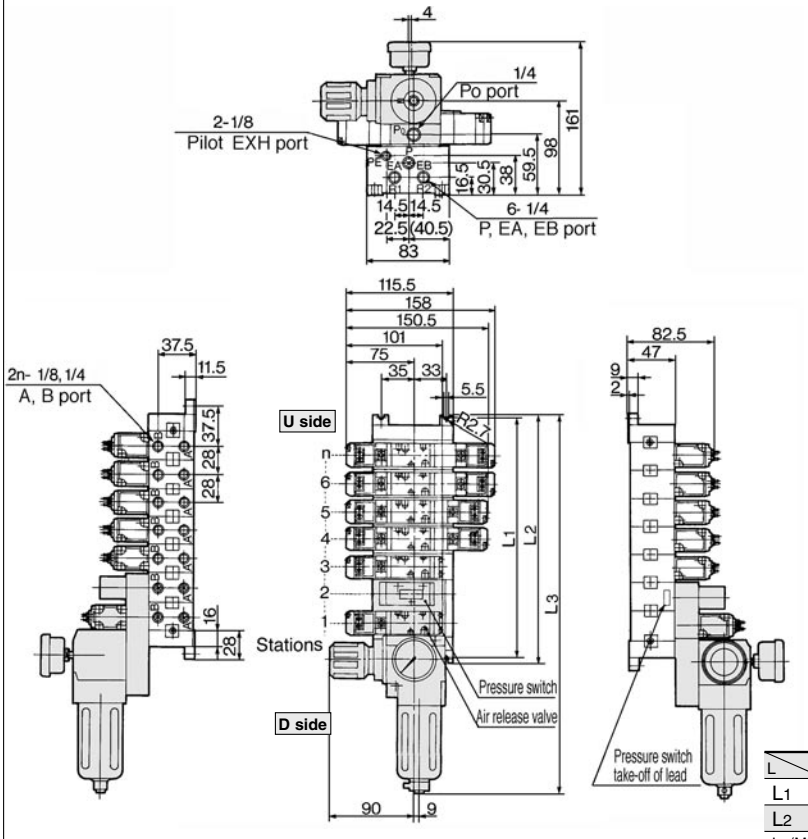
Plug-in: VV5FS2-01T- Station 1- Port size - Control unit



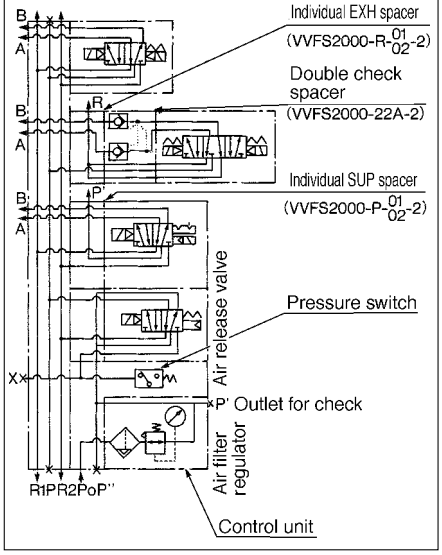
Example for manifold



Non Plug-in: VV5FS2-10- Station 1- Port size - Control unit



Example for manifold



n: Station

L \ n	3	4	5	6	7	8	9	10	Equation
L_1	131	159	187	215	243	271	299	327	L_1=28 X n+47
L_2	140	168	196	224	252	280	308	336	L_2=28 X n+56
L_3 (MP)	278	306	334	362	390	418	446	474	L_3=28 X n+194
L_3 (AP)	319.5	347.5	375.5	403.5	431.5	459.5	487.5	515.5	L_3=28 X n+235.5

Splash Proof Manifold (Equivalent to IP65)

Manifold Specifications

Model	VV5FS2-01WTB$^{U}_{D}$		VV5FS2-01W
Wiring	Common terminal box		Insert plug with lead wire
Applicable solenoid valve	VFS2□00-□F-X54		
Porting	Common SUP, Common EXH		
	A, B port	Side: 1/8 1/4 Bottom: 1/8 (Option)	
	P, EA, EB port	Side: 1/4	
Stations	2 to 10		2 to 15

How to Order

Manifold

□ VV5FS2 − 01WTBU − 08 − 1 − 02 □ − Q

Plug-in drip proof manifold (Equivalent to IP65)

01WTBU	Common terminal box (U side mounting)
01WTBD	Common terminal box (D side mounting)
01W	Insert plug lead wire

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Protective class class I (Mark: ⏚)

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

Symbol	Port specifications	Porting
	P, EA, EB	A, B
1	Common	Side
2*		Bottom

*Option

Connecting port size

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

*Bottom porting: 1/8 only

Thread

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Valve

□ VFS2 1 00 □ − 5 F □ □ − X54 − Q

Configuration

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

Pilot

—	Internal pilot
R*	External pilot

*Option

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Protective class class I (Mark: ⏚)

Voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other, (250V or less)

Order Made Contact SMC for other voltages (9)

Optional

—	None
Z	With indicator light and surge voltage suppressor

Pilot valve manual override

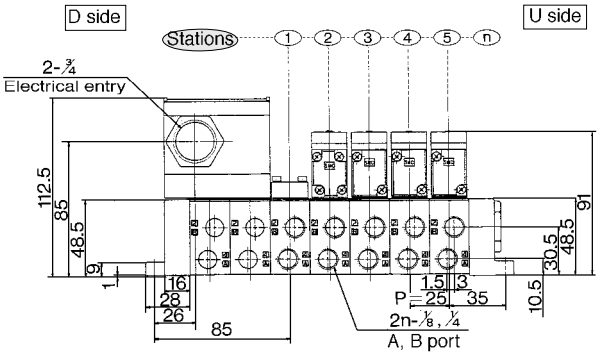
—	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (Slotted)
C*	Locking style (Lever)

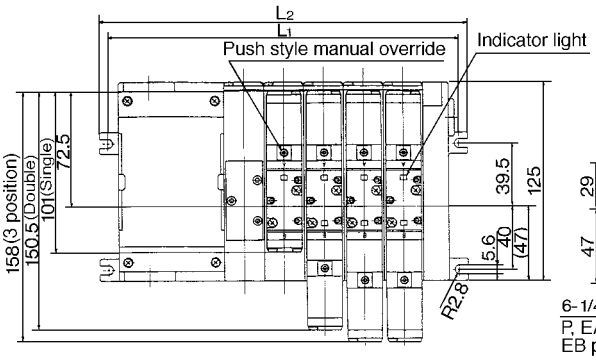
*Option

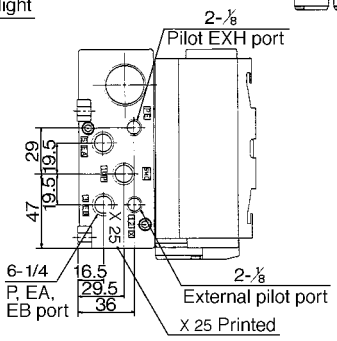
Splash proof

Splash Proof Manifold

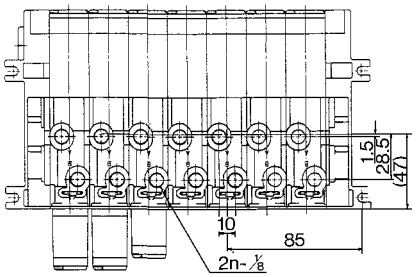
With common terminal box: VV5FS2-01WTB$^{U}_{D}$- Station 1- Port size







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

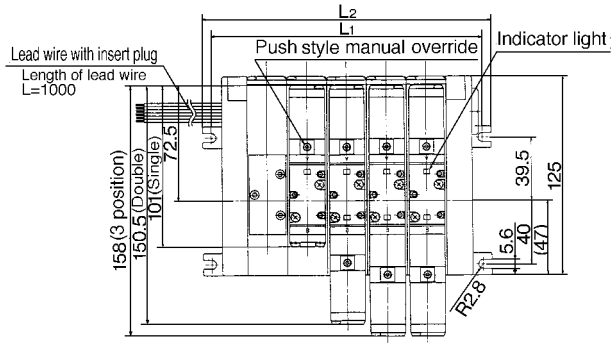


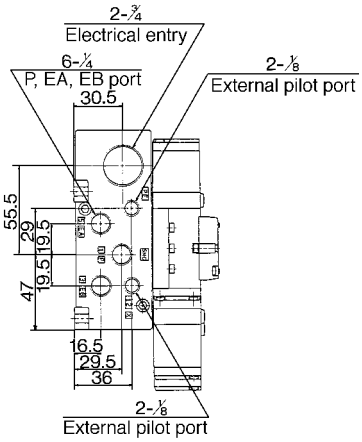
n: Station

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

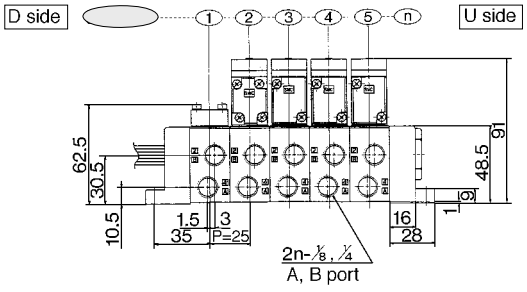
∗Terminal mounting stations are not included. Indicates Solenoid valve mounting stations.

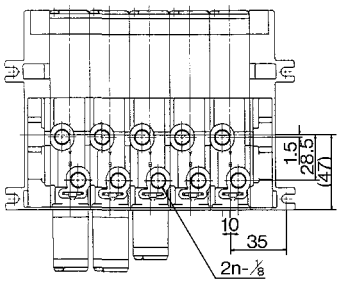
With insert plug lead wire: VV5FS2-01W- Station 1- Port size





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

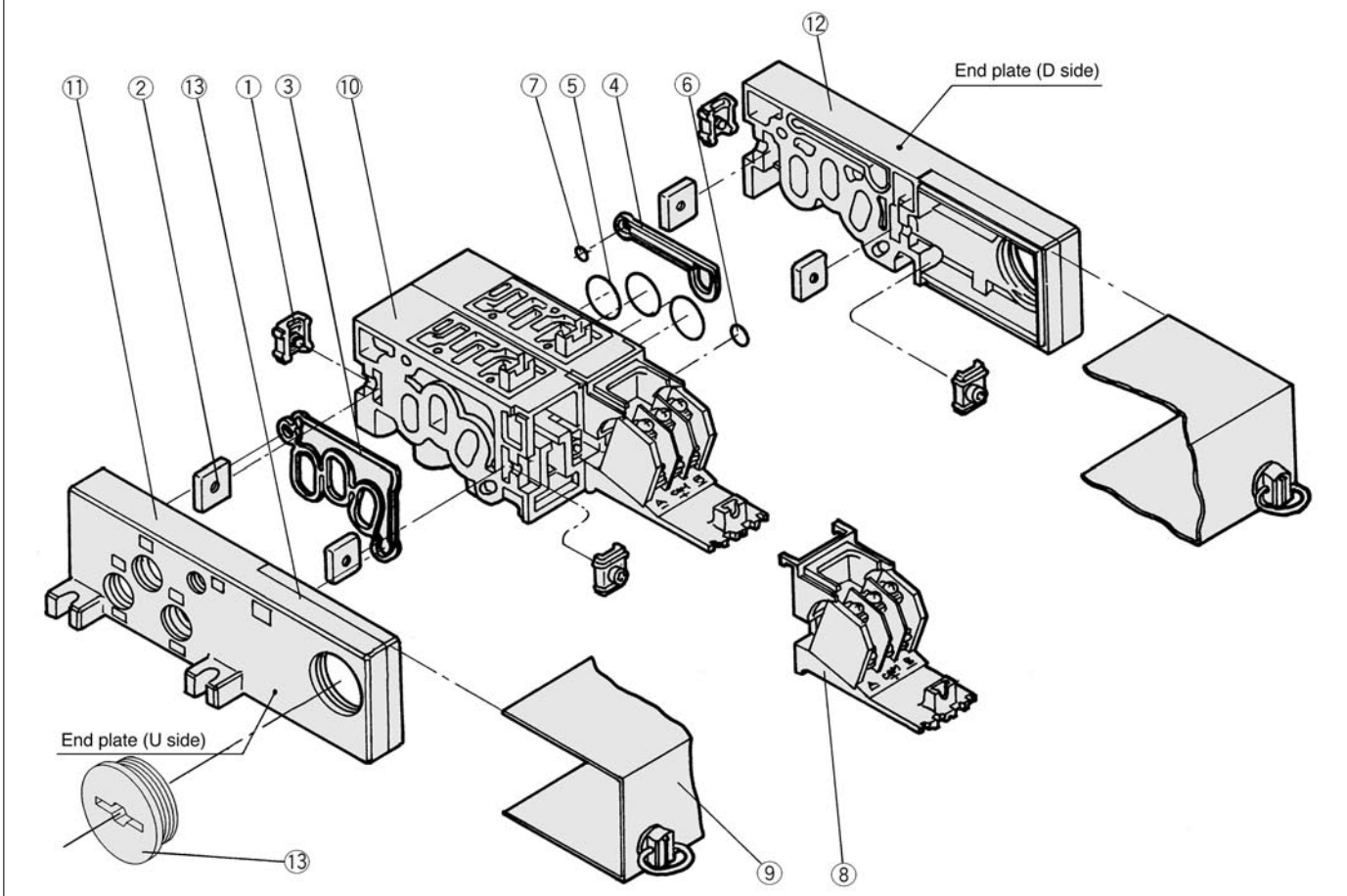




n: Station

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

Manifold Base Construction Plug-in/Non Plug-in



Replacement Parts

No.	Description	Material		Part No.
①	Metal joint A	Steel plate		AXT625-4-1
②	Metal joint 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
⑧	Adapter plate	Resin	01	AXT625-6
	Adapter plate assembly	—	01T	AXT625-28-1A
			01T1	(Terminal section with adapter plate)
	Adapter plate	Resin	01C	AXT625-28-1
			01F	VVF2000-26-6
			01SU	AXT625-6

No.	Description	Material		Part No.
⑨	Junction cover assembly	—	01	AXT625-7A
			01T	AXT625-28-3A
			01T1	AXT625-28-7A-[stations]
			01C	
			01F	VVF2000-26-5A-[stations]
			01SU	AZ738-10A-[stations]
⑪	Rubber plug	NBR	01	AXT333-12
			01T 01SU	AXT625-22
	Plug	—	01W	EXP22S

¡For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly ⑩ . For plug-in: 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 temminal block.

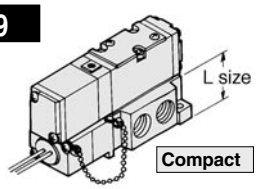
Replacement Parts sub assembly

No.	Description	Ass'y part No.	Components parts	Applicable manifold base
⑩	Manifold block assembly	AXT625-01A-$\frac{1}{2}$ (1)	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 Insert plug with lead wire
		AXT625-20A-$\frac{1}{2}$ (1)	Manifold block ⑩, Metal joint ①, ②. O ring ⑤, ⑥, ⑦ Terminal ⑧. Junction cover ⑨, Adaptor plate, Pin housing, Guide	Plug-in with terminal block
		AXT625-10A-$\frac{1}{2}$ (1)	Manifold block ⑪, Metal joint ①, ②, O ring ⑤, ⑥, ⑦	Non plug-in
⑪	End plate (U side) assembly	AXT625-2A	End plate (U) ⑪, Metal joint ①, ②, Gasket A ③, Guard ⑬	Plug-in Insert plug with lead wire
		AXT625-2A-20	End plate (U) ⑪, Metal joint ①, ②, Gasket A ③, Guard ⑬	Plug-in with terminal block
		AXT625-2A-10	End plate (U) ⑪, Metal joint ①, ②, Gasket A ③, Guard ⑬	Non plug-in
⑫	End plate (D side) assembly	AXT625-3A	End plate (U) ⑫, Metal joint ①, ②, Gasket B ④, Guard ⑬ Steel ball	Plug-in Insert plug with lead wire
		AXT625-3A-20	End plate (U) ⑫, Metal joint ①, ②, Gasket B ④, Guard ⑬ Steel ball	Plug-in with terminal block
		AXT625-3A-10	End plate (U) ⑫, Metal joint ①, ②, Gasket B ④, Guard ⑬ Steel ball	Non plug-in

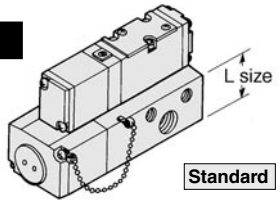
Note 1) A, B ports: $\frac{1}{8}$, $\frac{1}{4}$.

Light Compact Style Sub-plate/Nℓ/min: 589

Nℓ/min 589



Nℓ/min 815



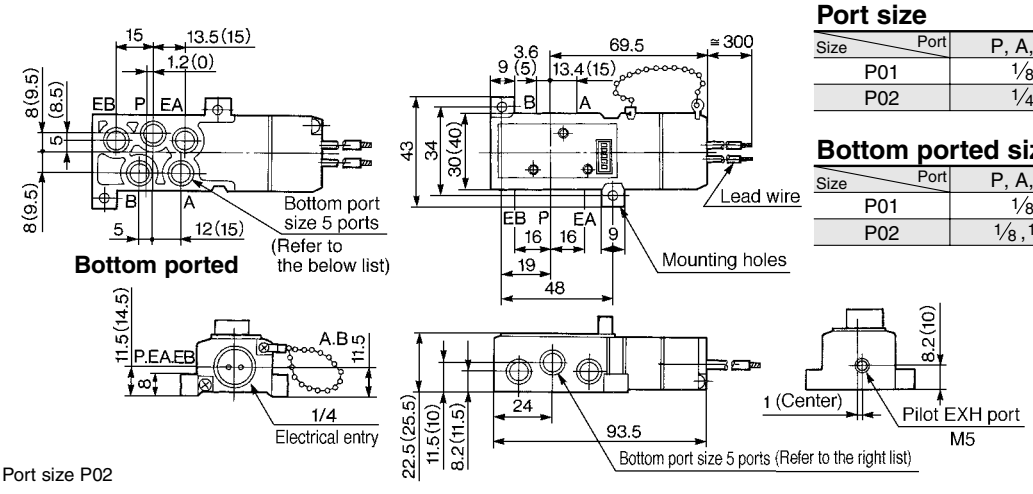
Sub-plate

Style	L (mm)	Weight (kg)	Nℓ/min Effective area (1)
Compact	25.5	0.13	10.8 (589)
Standard	31	0.2	15 (815)

Note 1) 2 position single. 1/4

Sub-plate — Compact: Plug-in/Grommet (Insert plug with lead wire)

VFS2□00-□F-P01, P02 Sub-plate assembly part No.: VFS2000-CP- $^{01}_{02}$ (01: 1/8, 02: 1/4)



( ): Port size P02

Port size

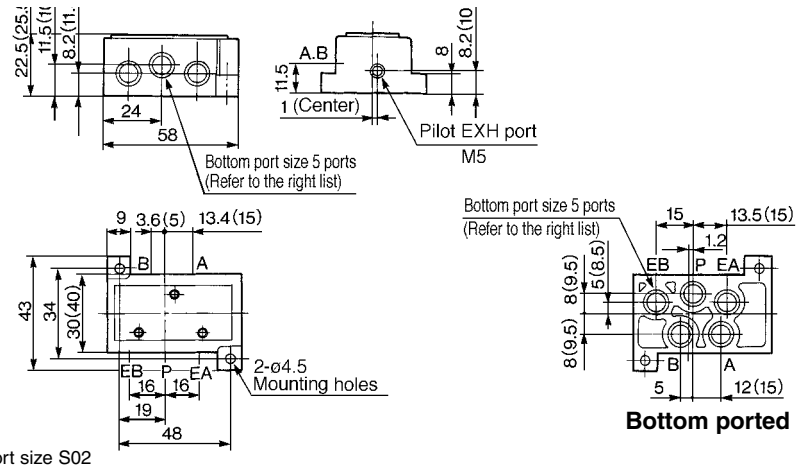
Size \ Port	P, A, B	EA, EB
P01	1/8	1/8
P02	1/4	1/8

Bottom ported size

Size \ Port	P, A, B	EA, EB
P01	1/8	M5
P02	1/8, 1/4	1/8

Sub-plate — Compact: Non Plug-in

VFS2□10-□□-S01, S02 Sub-plate assembly part No.: VFS2000-CS- $^{01}_{02}$ (01: 1/8, 02: 1/4)



( ): Port size S02

Port size

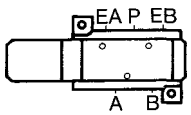
Size \ Port	P, A, B	EA, EB
S01	1/8	1/8
S02	1/4	1/8

Bottom ported size

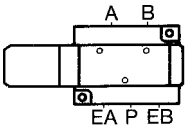
Size \ Port	P, A, B	EA, EB
S01	1/8	M5
S02	1/8, 1/4	1/8

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

VFS2□□0-□□ $^{-P01, 02}_{-S01, 02}$: Compact



VFS2□□0-□□-$^{01}_{02}$: Standard



Wiring

Compact: Plug-in/Grommet
(Insert plug with lead wire)

- The insert plug 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.

Sol.	A side		B side	
Lead wire colour	Red	Black	Brown	White

- No polarity.

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

Model

Type of actuation		Model		Port size Rc	Flow rate characteristics						Max.[1] operating cycle (cpm)	Response time[2] (ms)	Weight[3] (kg)
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R1/R2)					
		Plug-in	Non plug-in		C [dm³/(s·bar)]	b	Cv	C [dm³/(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			
	Double	**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			
3 position	Closed centre	**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 centre	**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 centre	**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			
	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 8419: 2010 (once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
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.

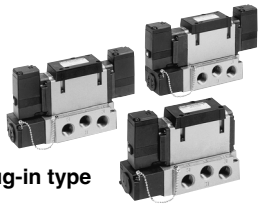
Compact yet provides a large flow capacity
3/8: C: 5.8 dm³/(s·bar)

Low power consumption: 1.8 W DC

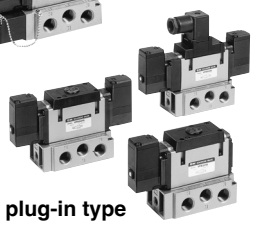
Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in

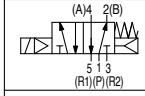
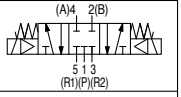
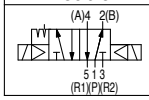
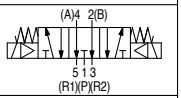
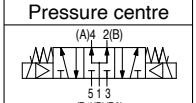
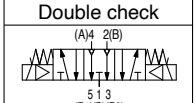


Plug-in type



Non plug-in type

Symbol

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

Standard Specifications

Valve specifications	**Fluid**		Air
	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)
	Impact/Vibration resistance		150/50 m/s² [3]
	Enclosure		Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) [4] [6]
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.
Note 6) The F and D type enclosures described above show those without the light/surge voltage suppressor. The F and D type enclosures with the light/surge voltage suppressor are equivalent to IP50.

Option

Pilot type		External pilot Note)
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

VFS3000

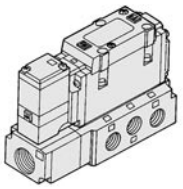
How to Order

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

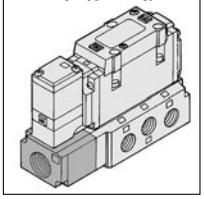
Body

O: Plug-in sub-plate



Electrical entry

F: Plug-in conduit with terminal



Porting

—	Side
B*	Bottom

*Option

Port size

—	Without sub-plate
02	1/4
03	3/8

*Bottom ported: Only 1/4.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in □ VFS3 1 0 0 □ — 1 F □ □ — □ 02 □ — Q

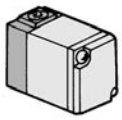
Non plug-in □ VFS3 2 1 1 □ — 2 D □ □ — □ 02 □ — Q

Option

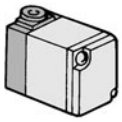
—	None
Z	With indicator light and surge voltage suppressor

Pilot valve manual override

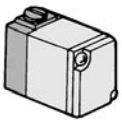
—: Non-locking push style (Flush)



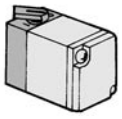
A*: Non-locking push style (Extended)



B*: Locking style (Slotted)



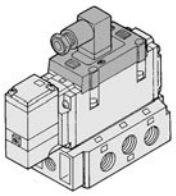
C*: Locking style (Lever)



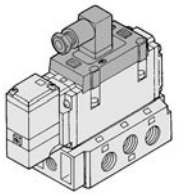
*Option

Electrical entry

D: DIN connector
DO: Without connector



Y: DIN connector (DIN 43650)
YO: Without DIN connector



Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other,(250V or less)

Order Made Contact SMC for other voltages (9)

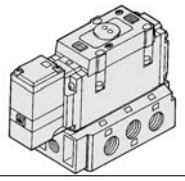
Configuration

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

*External pilot style can be used when using with reverse pressure.

Body

1: Non plug-in sub-plate



Pilot

—	Internal
R*	External

*Option

Body option

0	Standard
1*	Direct manual override

*Option

Protective class class I (Mark: ⏚)

How to Order Pilot Valve Assembly

SF4 — 1 F □ — 30-Q

Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other,(250V or less)

Manual override

Symbol	Classification
—	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (slotted)
C*	Locking style (lever)

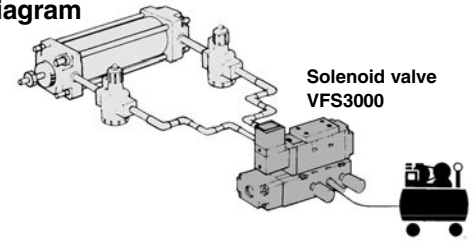
*Option

Order Made Contact SMC for other voltages (9)

*Refer to p.1.17-5 for voltage conversion.

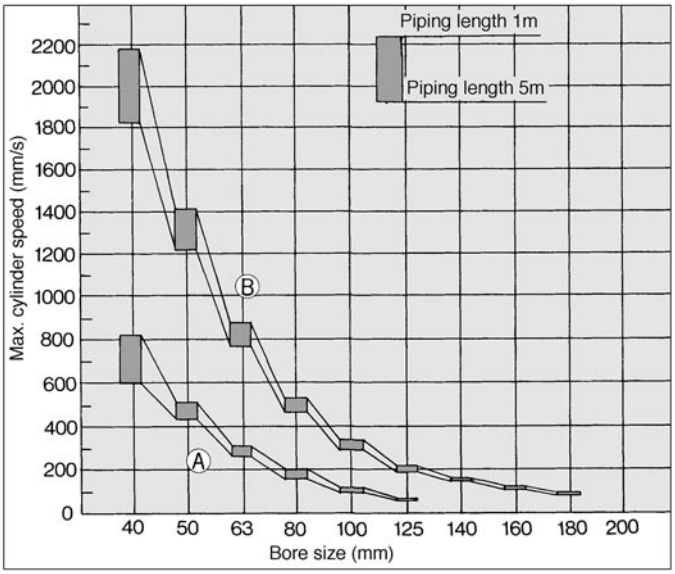
Maximum Cylinder Speed

System diagram



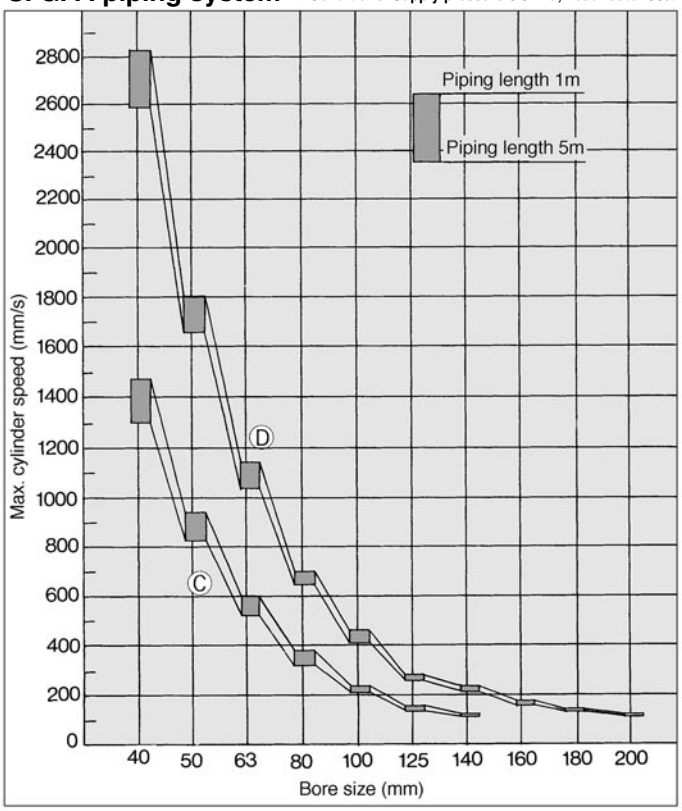
Rubber hose piping system

Conditions: Supply pressure 0.5MPa, Load factor 50%



S. G. P. piping system

Conditions: Supply pressure 0.5MPa, Load factor 50%



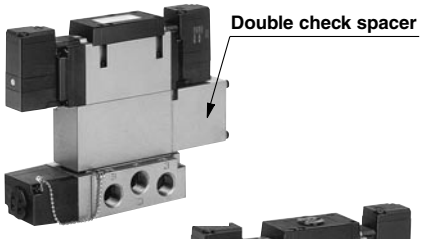
System	Solenoid valve	Speed controller	Silencer	Fitting (Hose I. D. X Fitting I. D. X Port Size)
A	VFS3000-02 1/4 (S=32.4mm²)	AS4000-02 (S=24mm²)	AN200-02 (S=35mm²)	ø6.3 X ø4.8 X 1/4
B	VFS3000-03 3/8 (S=36mm²)	AS420-03 (S=73mm²)	AN300-03 (S=60mm²)	ø9.5 X ø8 X 3/8

System	Solenoid valve	Speed controller	Silencer	Fitting
C	VFS3000-02 1/4 (S=32.4mm²)	AS4000-02 (S=24mm²)	AN200-02 (S=35mm²)	Elbow 90° 5 pcs.
D	VFS3000-03 3/8 (S=36mm²)	AS420-03 (S=73mm²)	AN300-03 (S=60mm²)	Elbow 90° 5 pcs.

Double Check Spacer/Specification

Holding cylinder mid-position for long periods.

The concurrent use of double check spacer with built-in double check valve can stop cylinder or mid-position and hold it without being affected by air leakage spool seals.



Plug-in

Non plug-in

Specifications

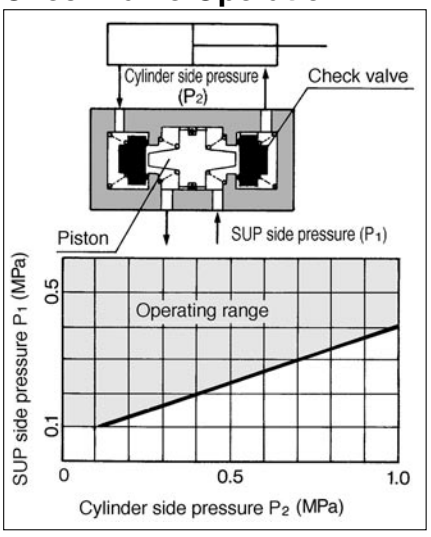
Double check spacer	Plug-in			Non plug-in
	VVFS3000-22A-1			VVFS3000-22A-2
Applicable solenoid valve	VFS3400-□F			VFS3410-□D VFS3410-□E
Leakage* (cm³/min)	Solenoid one side energized	P	EA	230 or less
			EB	
	Solenoid both side de-energized	P	EA	230 or less
			EB	
		A	EA	0
		B	EB	

*Supply pressure: 0.5MPa

⚠ Precaution

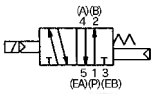
- In the case of 3 position double check valve (VFS36□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal.
  If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at mid-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

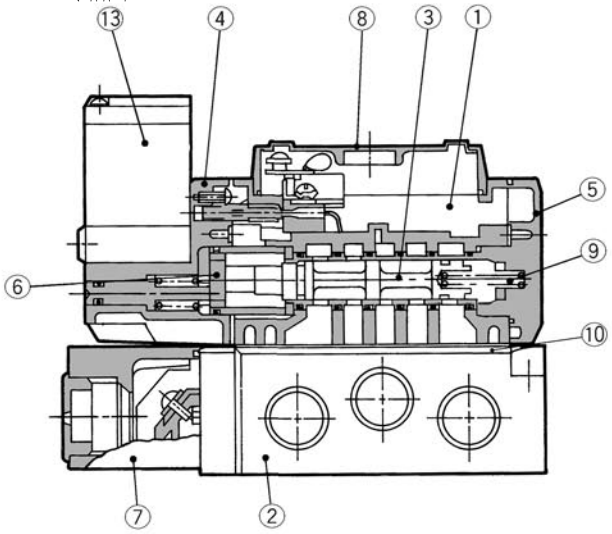


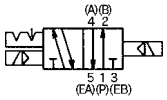
- The combination of VFS31 $^{0}_{1}$0, VFS32 $^{0}_{1}$0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

Construction

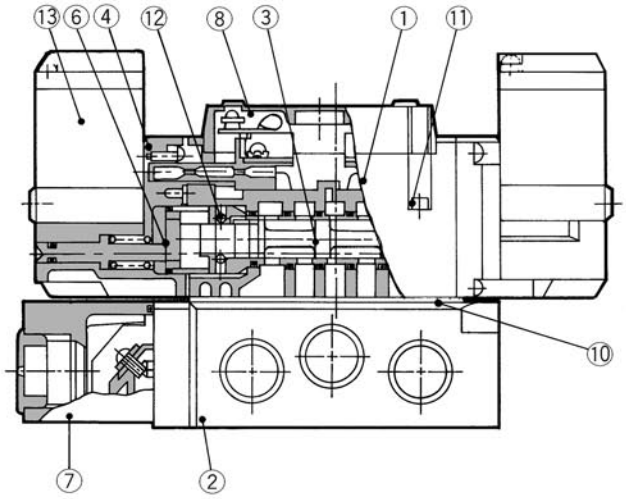


2 position single



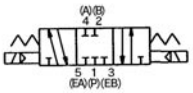


2 position double



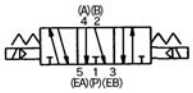
3 position closed centre/exhaust centre/pressure centre

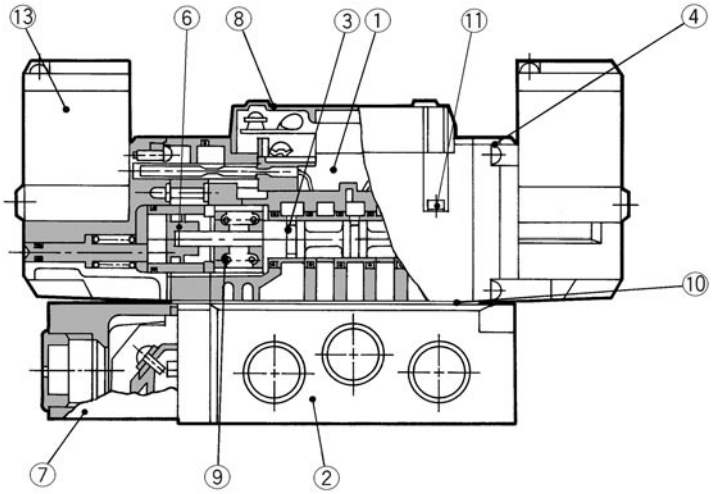
Closed centre



Exhaust centre

Pressure centre





Component Parts

No.	Description	Material	Note
①	Body	Aluminium die-cast	Platinum silver
②	Sub plate	Aluminium die-cast	Platinum silver
③	Spool/Sleeve	Stainless steel	—
④	Adaptor plate	Resin	Black
⑤	End plate	Resin	Black
⑥	Piston	Resin	—
⑦	Junction cover	Resin	—
⑧	Light cover	Resin	—

Sub-plate Assembly

Plug-in	VFS3000-P-$^{02}_{03}$
Non plug-in	VFS3000-S-$^{02}_{03}$

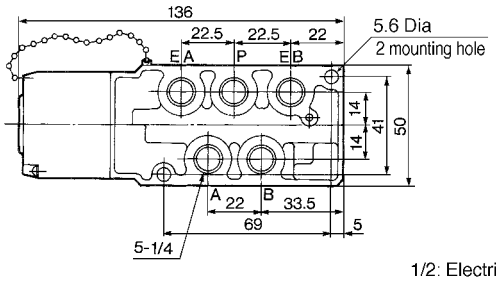
∗Without mounting screw and gasket.

Replacement Parts

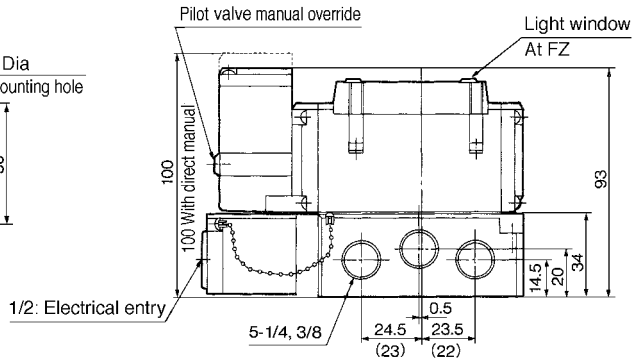
No.	Description	Material	Part No.		
			VFS31□□	**VFS32□□**	**VFS33□□, 34□□, 35□□**
⑨	Return spring	Stainless steel	VFS3000-17-1	—	VFS3000-17-2
⑩	Gasket	NBR	VFS3000-20	VFS3000-20	VFS3000-20
⑪	Hexagonal socket head cap screw	Steel	M3 X 32	M3 X 32	M3 X 32
⑫	Detent assembly	—	—	VFS3000-9A	—
⑬	Pilot valve assembly	—	Refer to "How to order Pilot valve assembly" on p.1.17-54.		

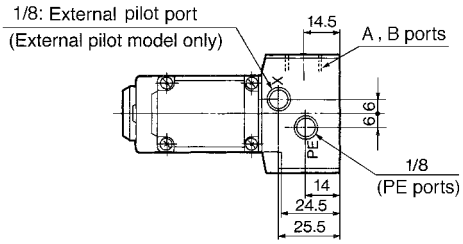
Plug-in 2 Position Single, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double Check

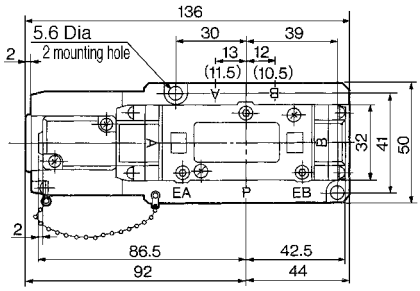
2 position single: VFS3100-□F



Bottom Ported

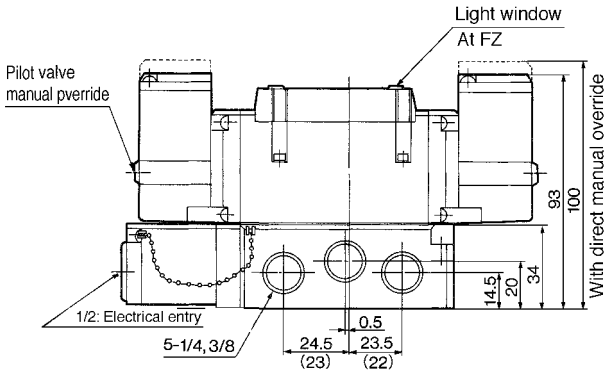


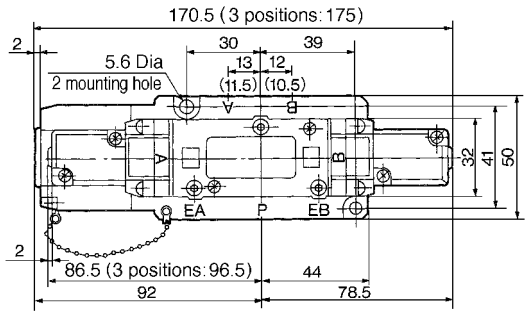





( ):1/4

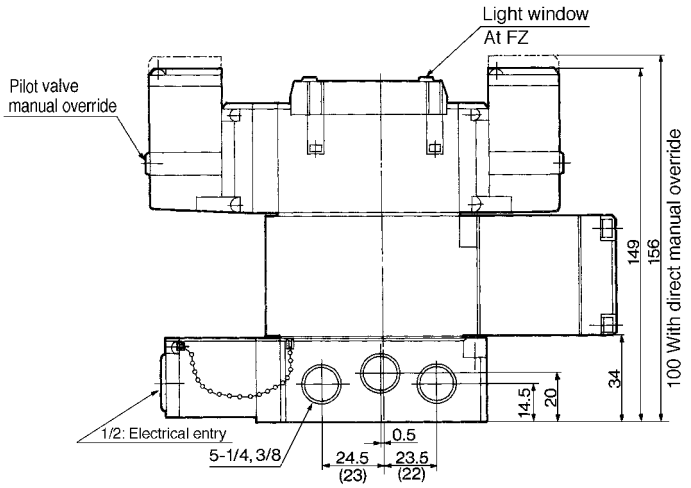
2 position double: VFS3200-□F
3 position closed centre: VFS3300-□F
3 position exhaust centre: VFS3400-□F
3 position pressure centre: VFS3500-□F

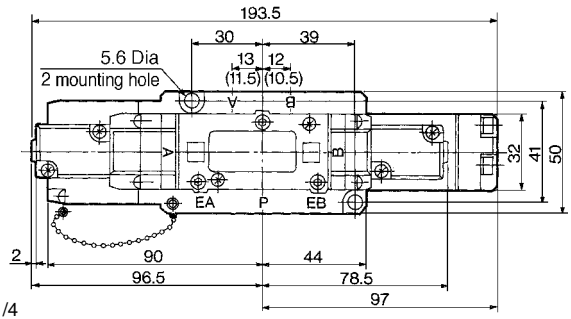





( ):1/4

3 position double check: VFS3600-□F

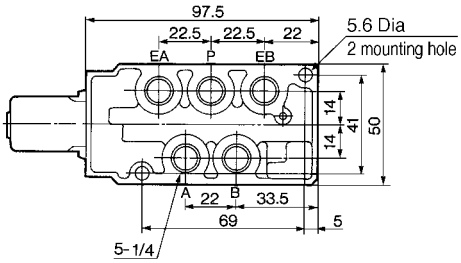


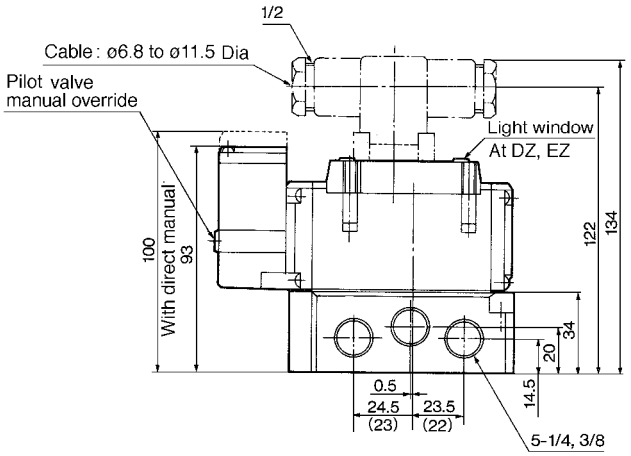



( ):1/4

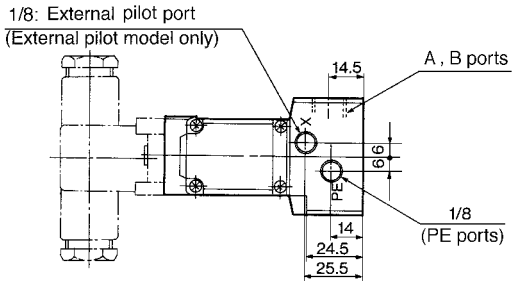
Non Plug-in | **2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double Check**

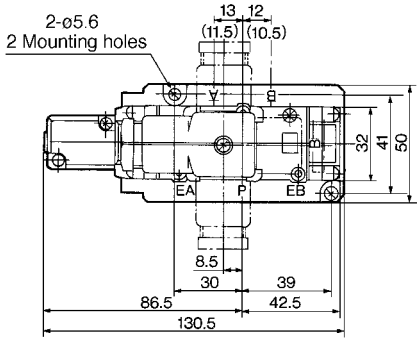
2 position single: VFS3110-□E, VFS3110-□D





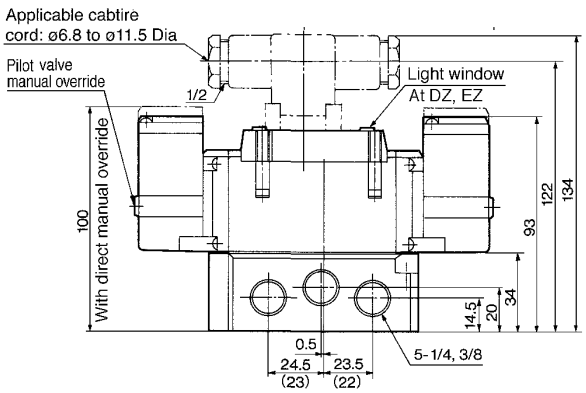
Bottom Ported

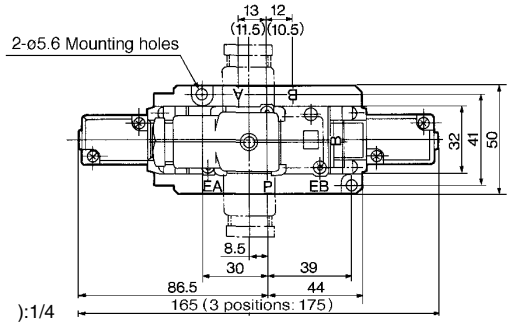





( ):1/4

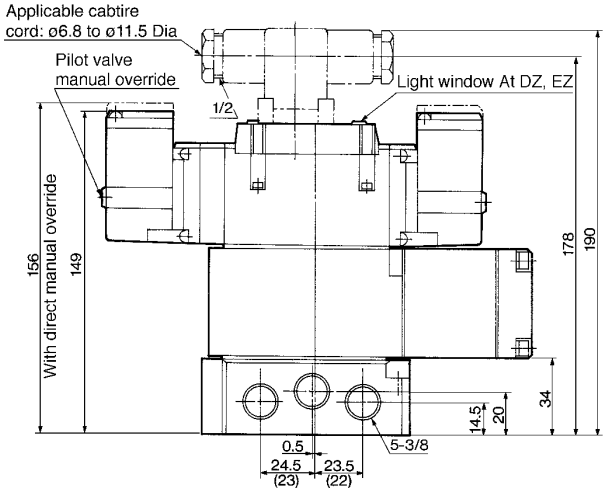
2 position double: VFS3210-□E, VFS3210-□D
3 position closed centre: VFS3310-□E, VFS3310-□D
3 position exhaust centre: VFS3410-□E, VFS3410-□D
3 position pressure centre: VFS3510-□E, VFS3510-□D

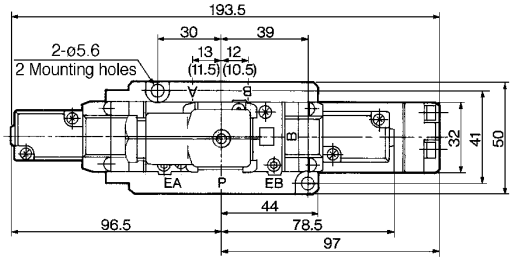





( ):1/4

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



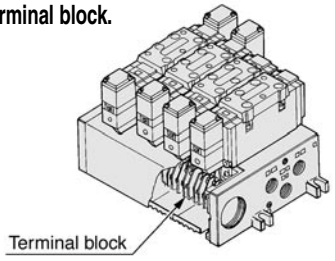



( ):1/4

Series VFS3000
Manifold

Plug-in: 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.



□ VV5FS3 − 01T − 06 1 − 02 □ − Q

Series VFS3000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Plug-in with terminal block

Stations

02	2 stations
⋮	⋮
10	10 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom*

*Option

Port size

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

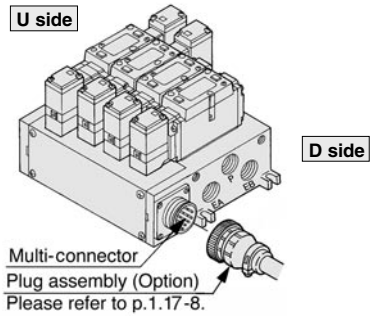
Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in: With Multi Connector

(Wiring specifications: Please refer to p.1.17-8.)

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



□ VV5FS3 − 01C D − 05 2 − 02 □ − Q

Series VFS3000 Manifold

Plug-in with multi-connector

Mounting direction of connector

D	D side mounting
U	U side mounting

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
08*	8 stations

*Max: 8 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom*

*Option

Port size

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

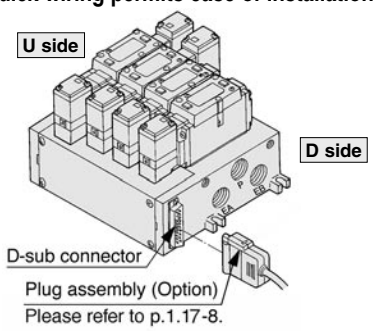
Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in: With D-Sub Connector

(Wiring specifications: Please refer to p.1.17-8.)

•Wide range of interchangeability
(MIL Spec DIN connector terminal 25 pcs attached.)
•Quick wiring permits ease of installation.



□ VV5FS3 − 01F D − 06 1 − 02 □ − Q

Series VFS3000 Manifold

Plug-in with D-sub connector

Mounting direction of connector

D	D side mounting
U	U side mounting

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Stations

02	2 stations
⋮	⋮
08*	8 stations

*Max: 8 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom*

*Option

Port size

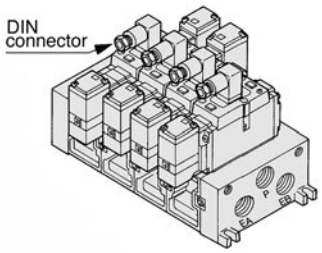
Symbol	P, EA, EB	A, B
02	1/2	1/4
03		3/8
M		Mix

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Non Plug-in: DIN Connector

•Wiring for every valve



□ VV5FS3 − 10 − 05 2 − 02 □ − Q

Series VFS3000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Non Plug-in

Stations

02	2 stations
⋮	⋮
10	10 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom*

*Option

Port size

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

Thread

–	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Manifold Specifications

Base style	Wiring	Porting	Port size		No. of stations	Applicable solenoid valve
		A, B port	P, EA, EB	A, B		
Plug-in **VV5FS3-01□**	•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 **VV5FS3-10**	•DIN Connector •Grommet terminal					VFS3□10-□D

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.

Manifold Stations and Effective Area (mm^2) (Nℓ/min)

Porting/No. of stations	First station	Fifth station	Tenth station
P→A or B	34.2 (1865)	32.4 (1767)	32.4 (1767)
A→EA, B→EB	39.6 (2159)	37.8 (2061)	37.8 (2061)

* Port size: 3/8

How to Order Manifold

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

<<Example>>
•Plug-in with terminal block —— 6 stations
(Manifold base) VV5FS3-01T-061-02 ····· 1
(2 position single) VFS3100-5FZ ····· 3
(2 position double) VFS3200-5FZ ····· 2
(Blank plate) VVFS3000-R-03-2 ····· 1

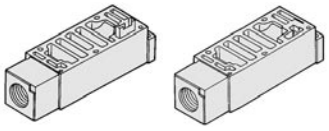
<<Example>>
•Non Plug-in with terminal block —— 6 stations
(Manifold base) VV5FS3-10-061-03 ····· 1
(2 position single) VFS3110-5D ····· 5
(3 position exhaust centre) VFS3410-5D····· 1
(Individual EXH spacer) VVFS300-R-03-2 ····· 1

Manifold/Option Parts Assembly

Individual SUP spacer

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

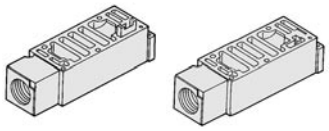
Body	Plug-in	Non plug-in
Part No.	VVFS3000-P-03-1	VVFS3000-P-03-2



Individual EXH spacer

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

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



SUP block disk *

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

Body	Plug-in	Non plug-in
Part No.	AXT636-1A	

EXH block disk *

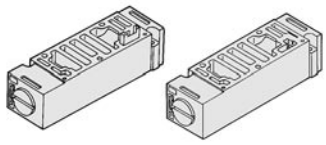
When valve exhaust affects the other stations on the circuit or when the reverse pressure valve is used to standard manifold valve, insert EXH block plate between stations to separate valve exhaust.

Body	Plug-in	Non plug-in
Part No.	AXT636-1A	

Interface speed control

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

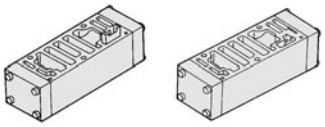
Body	Plug-in	Non plug-in
Part No.	VVFS3000-20A-1	VVFS3000-20A-2



Double check spacer

The concurrent use of double check spacer with built-in double check valve can stop the cylinder at mid-position and hold for a long time without being affected by the air leakage across spool seals.

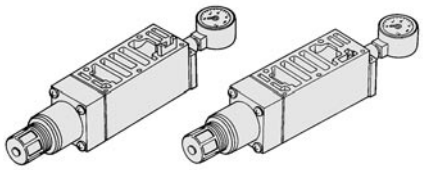
Body	Plug-in	Non plug-in
Part No.	VVFS3000-22A-1	VVFS3000-22A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. Refer to p.1.17-6 for flow charactristic.

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



Blank plate

When disassembling valve for maintenance purposes or when spare manifold stations are required, install a blank plate on the manifold block.

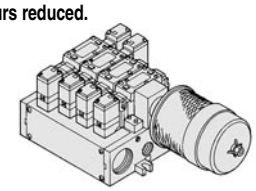
Body	Plug-in	Non plug-in
Part No.	VVFS3000-10A	

Manifold Options

With exhaust cleaner

Plug-in/Non plug-in

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

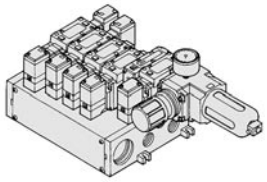


For more information, please refer to p.1.17-63.

With control unit

Plug-in/Non plug-in

•Filter, regulation valve, pressure switch and air release valve are all combined to form one unit.

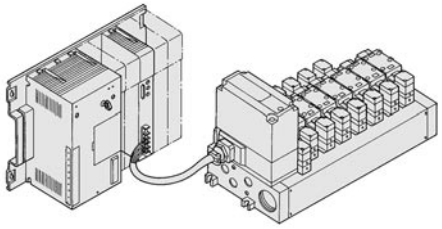


For more information, please refer to p.1.17-65.

With serial interface unit

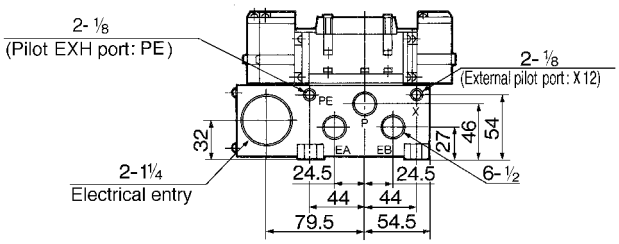
Plug-in

•Solenoid valve wiring process reduced considerably.
•Disperse installation possible.
Manifold solenoid valve: 8 stations max, 32 positions (512 solenoids).
•Maintenance and inspection are easy.

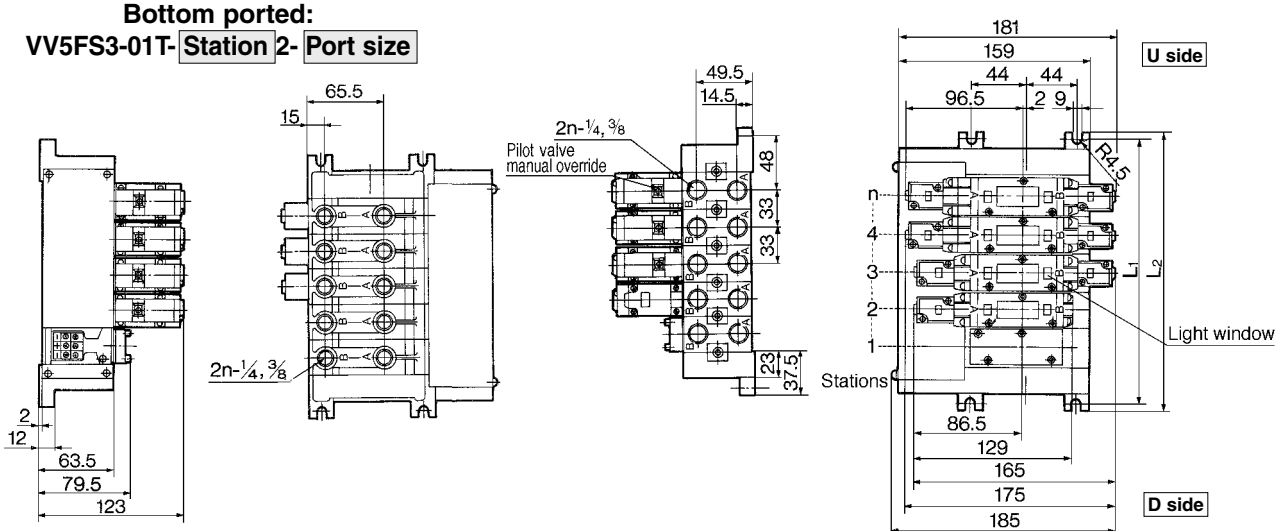


Manifold Plug-in/Non Plug-in

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

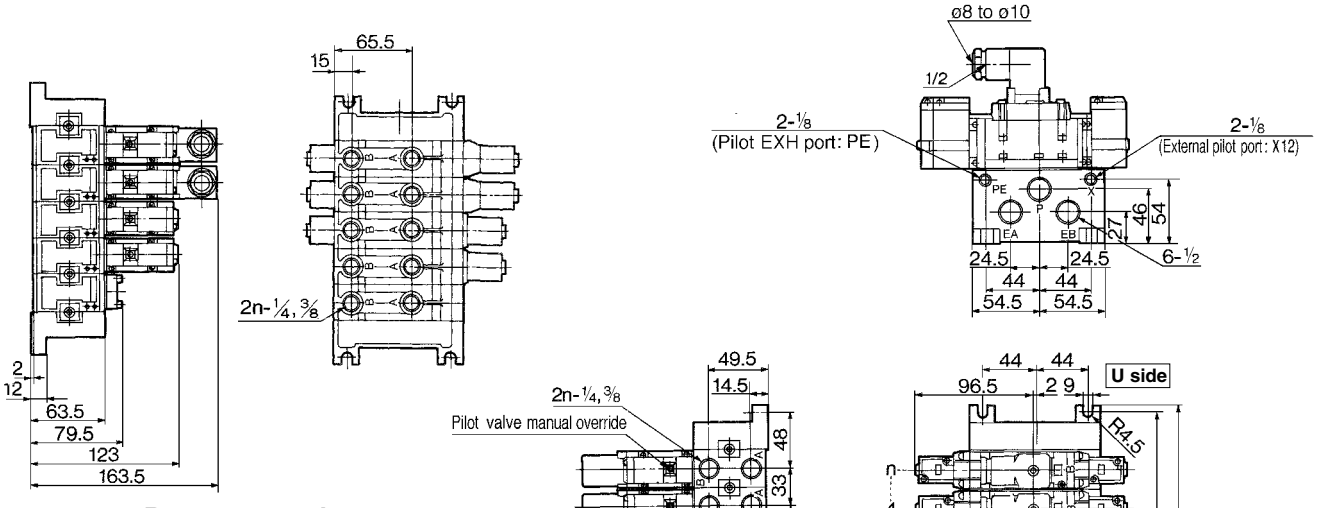


Bottom ported:
VV5FS3-01T- Station 2- Port size



General formula of weight M=0.405n+0.665 (kg) n: Station

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



Bottom ported:
VV5FS3-10- Station 2- Port size

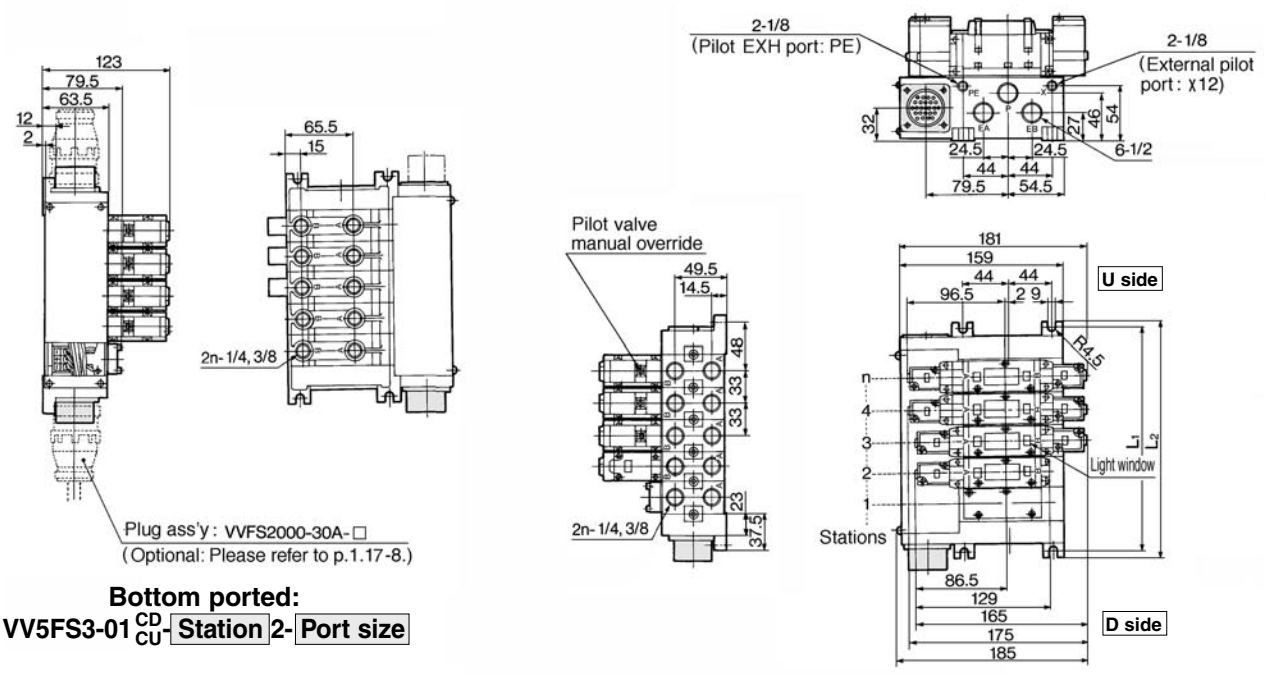
General formula of weight M=0.309n+0.532 (kg)

n: Station

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

Manifold Plug-in with Multi-connector/With D-sub connector

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

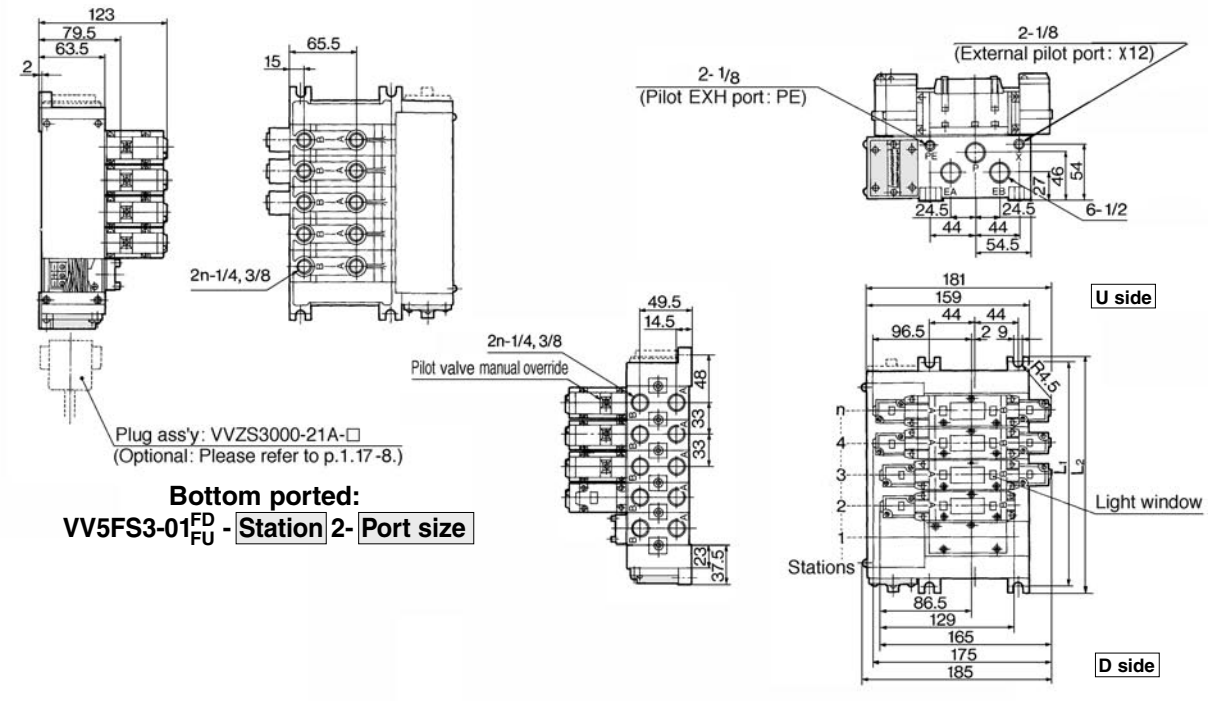


Bottom ported:
VV5FS3-01 $^{CD}_{CU}$- Station 2- Port size

General formula of weight/Manifold M=0.41n+0.753 (kg) n: Station

* For Wiring specifications, please refer to p.1.17-8.

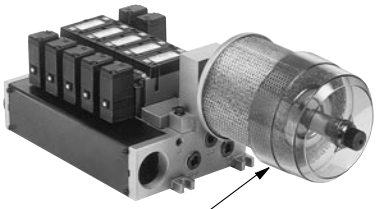
Plug-in with D-sub connector: VV5FS3-01FD- Station 1- Port size , VV5FS3-01FU- Station 1- Port size



Bottom ported:
VV5FS3-01 $^{FD}_{FU}$ - Station 2- Port size

Manifold with Exhaust Cleaner

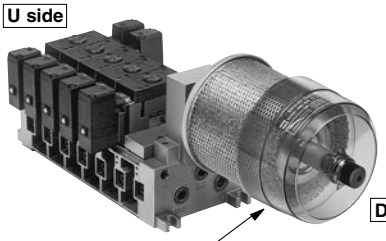
- **Serves to protect work environment.**
- **Valve exhaust noise dampening: 35dB or more.**
- **Collection rate of drainage and oil mist: 99.9% or more.**
- **Piping process reduced.**



Plug-in

Exhaust cleaner AMC610-10
(Optional)

U side



D side

Non plug-in

Exhaust cleaner AMC610-10
(Optional)

Manifold Specifications

Manifold style	Plug-in: VV5FS3-01□		Non plug-in: VV5FS3-10
Wiring	With terminal block board With multi-connector With D-sub connector		DIN connector
Applicable valve	VFS3□00-□F		VFS3□10-□D
Porting	Common SUP, Common EXH		
	A, B Port	1/4, 3/8	
	P, EA, EB port	P: 1/2, EXH: 1	
No. of stations	2 to 10 (1)		
Applicable exhaust cleaner	AMC610-10 (Connecting port size 1) (2)		

Note 1) With multi-connector, or with D-sub connector: 8 stations maximum.
Note 2) Exhaust cleaner "AMC610-10" is not attached.

How to Order

□ VV5FS3 – 10 □ – 06 1 – 03 □ – CD – Q

Series VFS3000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Base style/Wiring

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

Connector mounting direction

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

Stations

02	2 stations
⋮	⋮
10	10 stations

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

Port size

Symbol	P	A, B
02	1/2	1/4
03		3/8
M		Mix

Symbol

Symbol	Port specifications		Porting (A, B)
	P	EA, EB	
1	Common	Common	Side
2			Bottom*

*Option

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Exhaust cleaner mounting direction

Symbol	Exhaust cleaner mounting direction	
CD	D side	D side mounting
CU	U side	U side mounting

Please indicate manifold base mounting style, corresponding valve, and option parts.

≪Example≫

`Plug-in with terminal block (6 stations)

(Manifold base)	**VV5FS3-01T-061-03-CD-Q**	1
(2 position single)	**VFS3100-5FZ-Q**	3
(2 position double)	**VFS3200-5FZ-Q**	2
(Blank plate)	**VVFS3000-10A**	1
(Exhaust cleaner)	**AMC610-10**	1

`Non plug-in (6 stations)

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

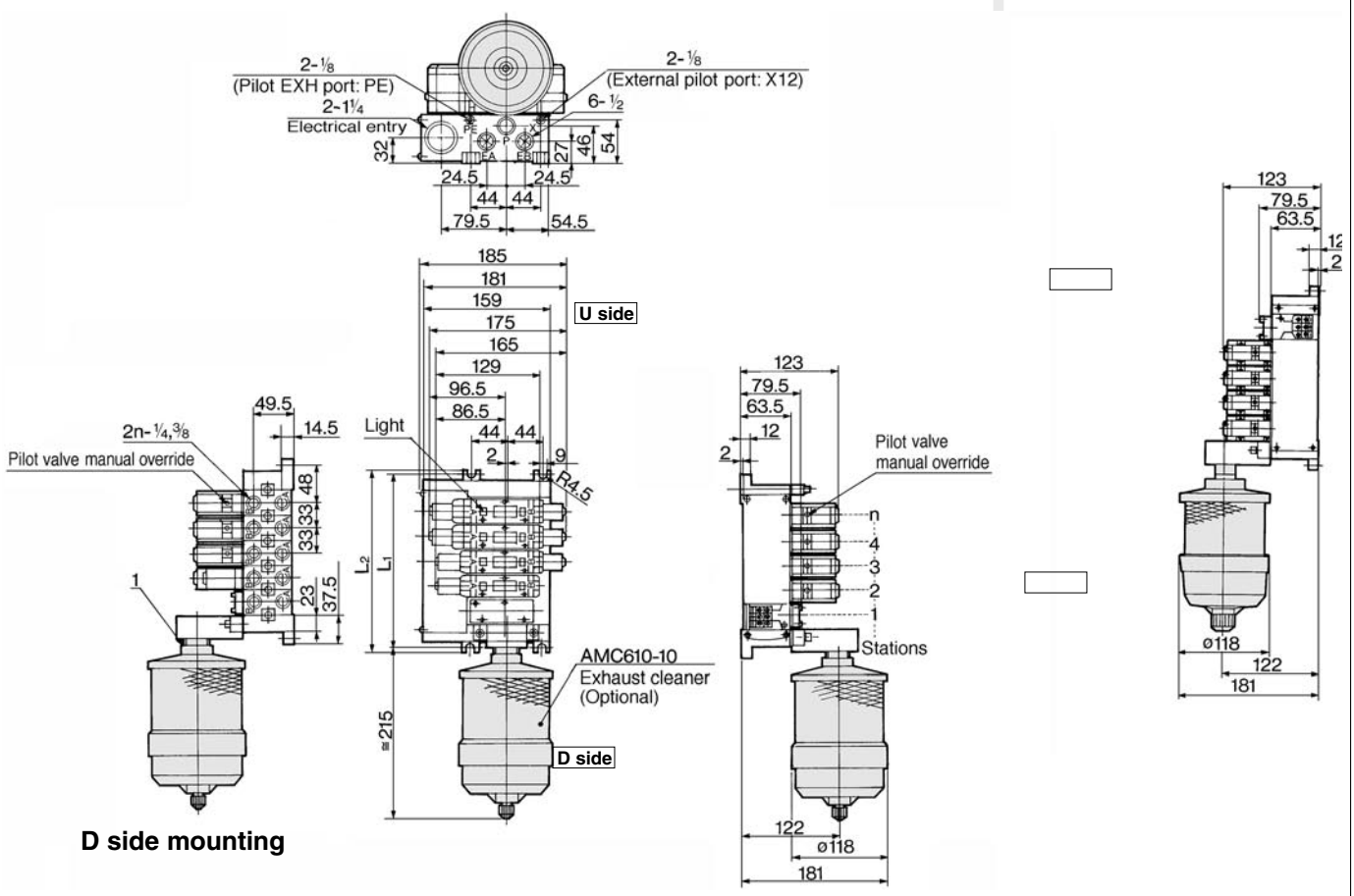
⚠ Precautions

When using exhaust cleaner, mount it downwards.

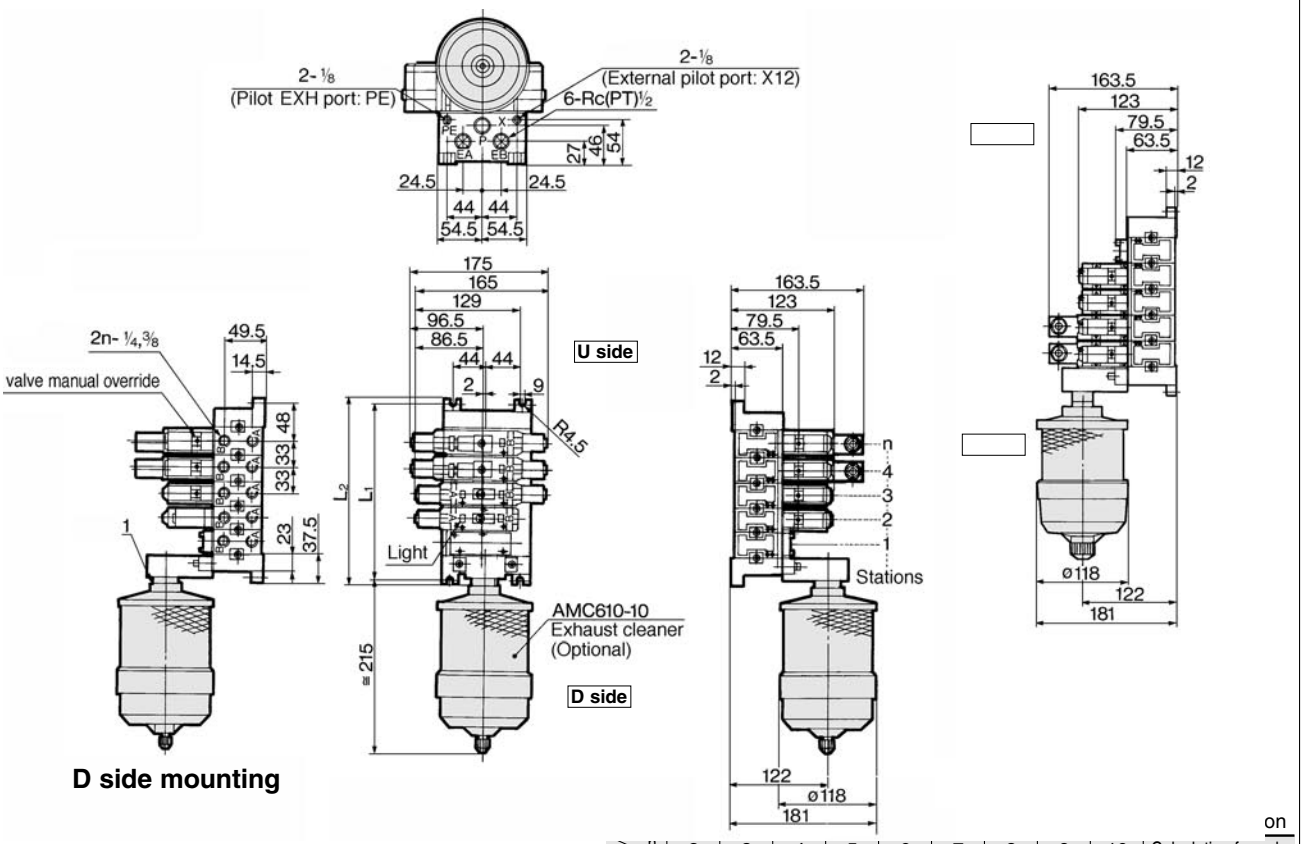
*Refer to p.5-3-1 for details on exhaust cleaners.

Manifold for Exhaust Cleaner — Plug-in/Non plug-in

Plug-in: VV5FS3-01T- Station 1- Port size - CD / CU



Non plug-in: VV5FS3-10- Station 1- Port size - CD / CU

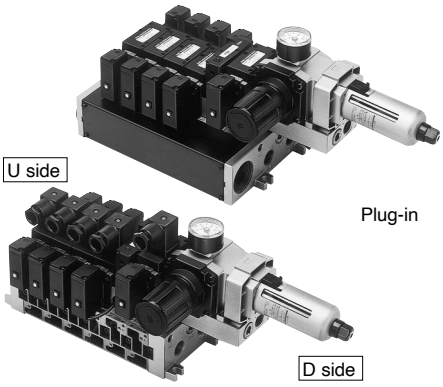


n

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

Manifold with Control Unit

- Control units (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.



Manifold Specifications

Manifold style	Plug-in: VV5FS3-01□		Non plug-in: VV5FS3-10
Wiring	With terminal block With multi-connector With D-sub connector		DIN connector
Applicable valve	VFS3□00-F□		VFS3□10-□D
Porting specifications	Common SUP, Common EXH		
	A,B port	1/4 , 3/8	
	P, EA, EB port	1/2	
No. of stations	2 to 10*		

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

Control Unit/Specifications

Air filter (With auto drain/with manual drain)	
Filtration	5 μm
Regulator	
Set press. (Secondary)	0.05 to 0.85MPa
Pressure switch (1)	
Set press. range: OFF	0.1 to 0.6MPa
Differential	0.08MPa or less
Contact	1a
Light	LED (Red)
Max. switch capacity	2V AC, 2W DC
Max. operating current	24V AC, DC or less: 50mA
Air release valve (Single only)	
Operating press. range	0.1 to 1.0MPa

Control Unit/Optional

Air release valve spacer (□)	□Plug-in type□ VVFS3000-□□A-1R (D side mounting)	
	□Non plug-in type□ VVFS3000-□□A-□R (D side mounting)	
Pressure switch (3)	□S1000P-□-1	
□lan□ing plate	Filter regulator	MP□-3
	Pressure switch	MP3-□
	Release valve	VVFS3000-□□A-10
Filter element	□NA-13-□5□-1□-5□	
Regulator with filter	Manually operated	□NA-13-□5□□
	Auto-drain type	□NA-13-□5□D□

Note 1) Voltage□ □□ VDC to 100 VAC
□nner voltage drop□ □ V
Note □) Combination of valve VFS31□□ (single) and a releas valve spacer can be used an air release valve.
Note 3) □he non plug-in type cannot be mounted afterwards.

Precautions

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

How to Order

□ VV5FS3 – 10 □ – 08 1 – 02 □ – AP □ – Q

Series VFS3000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Base style/Wiring

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

Connector mounting direction

Symbol	Connector mounting	Applicable base
—	None	01T, 10
D	D side	01C, 01F
U	U side	

Stations

02	2 stations
⋮	⋮
10	10 stations

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

Porting specification

Symbol	Port specification		Porting
	P	EA, EB	(A, B)
1	Common	Common	Side
2			Bottom*

*Option

Port size

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

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Voltage for air release valve

—	Without air release valve (F, G type only)
5	24V DC
9	Other (50 or less)

Order Made Contact SMC for other voltages (9)

Control unit

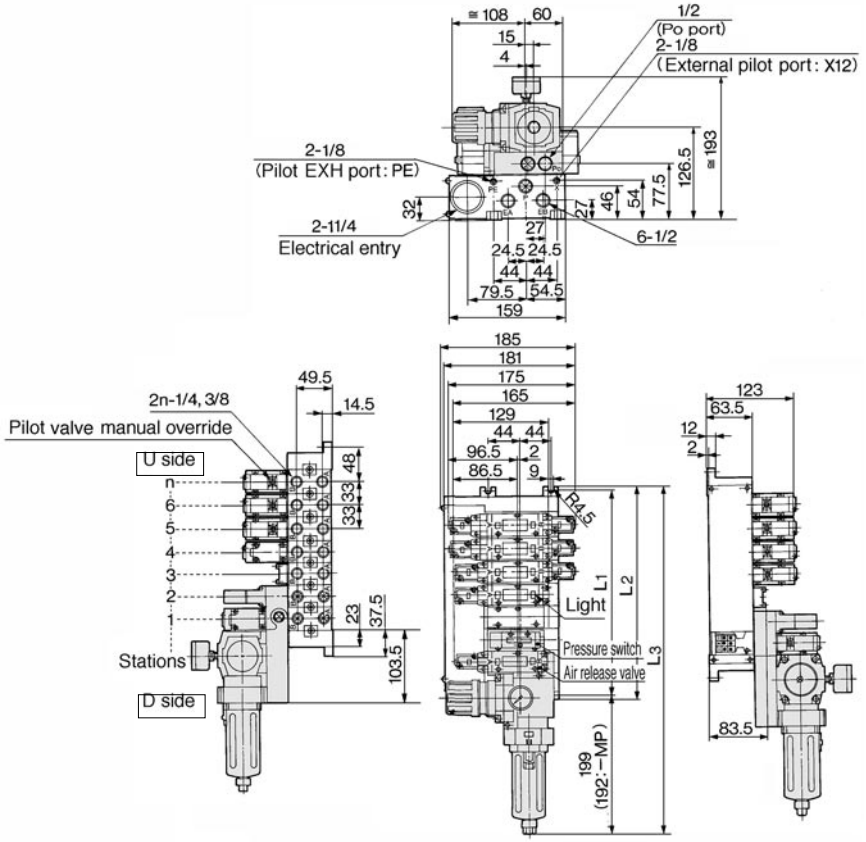
Control equipment \ Symbol	—	A	AP	M	MP	F	G	C	E
Air filter with auto drain		●	●			●			
Air filter with manual drain				●	●		●		
Regulator		●	●	●	●	●	●		
Air release valve		●	●	●	●			●	●
Pressure switch*			●		●				
Blank plate (Air release valve)						●	●		
Blank plate (Filter, regulator)								●	
Required manifold block	2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	1 station

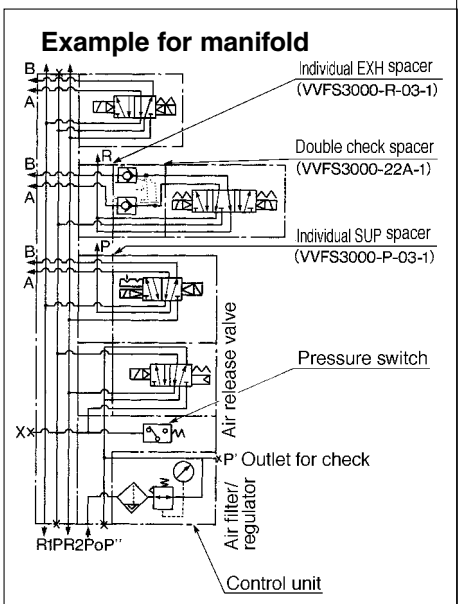
Please indicate manifold base mounting style, corresponding valve, and option parts.

≪Ordering example≫ Plug-in with terminal block—Requires 2 stations
(Manifold base) **VV5FS3-01T-081-03-AP-Q**····· 1
(2 position single) **VFS3100-5FZ-Q**····· 4
(2 position double) **VFS3200-5FZ-Q**····· 2
≪Ordering example≫ Non plug-in—Requires 2 stations
(Manifold base) **VV5FS3-10-061-03-A-Q**····· 1
(2 position single) **VFS3110-5D-Q**····· 4

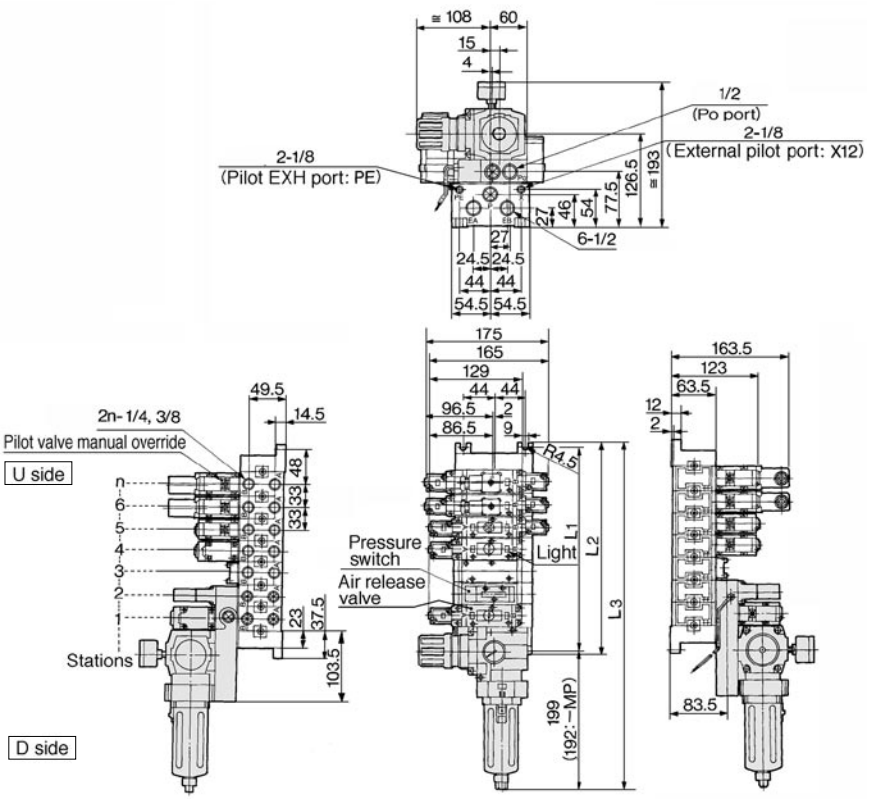
Manifold with Control | Plug-in/Non Plug-in

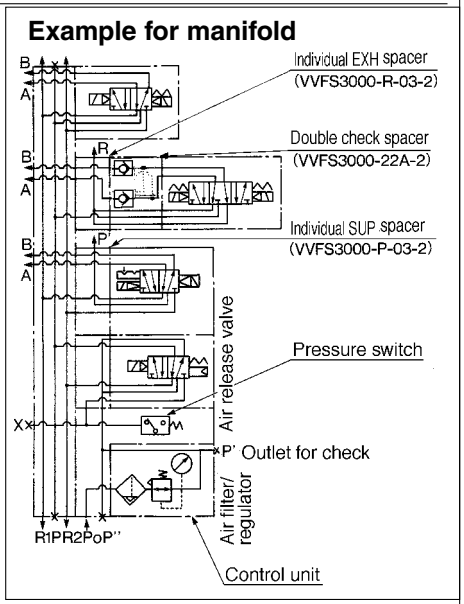
Plug-in: VV5FS3-01T- Station 1- Port size -AP





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

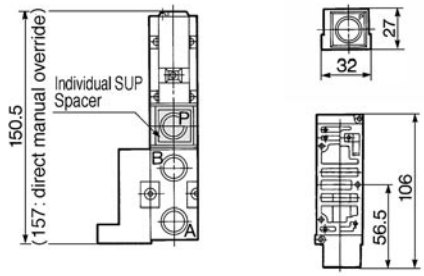




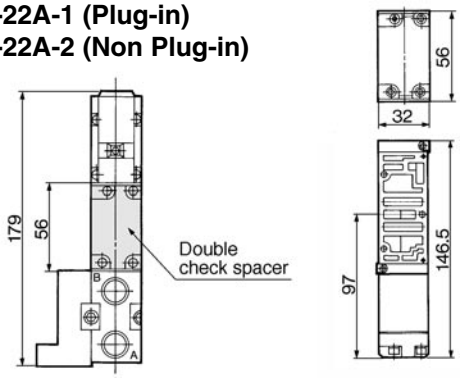
L \ n	3	4	5	6	7	8	9	10	Calculation
L_1	162	195	228	261	294	327	360	393	L_1=33 X n+63
L_2	174	207	240	273	306	339	372	405	L_2=33 X n+75
L_3(MP)	358	391	424	457	490	523	556	589	L_3=33 X n+259
L_3(AP)	379.5	412.5	445.5	478.5	511.5	544.5	577.5	610.5	L_3=33 X n+280.5

Manifold Option — Plug-in/Non Plug-in

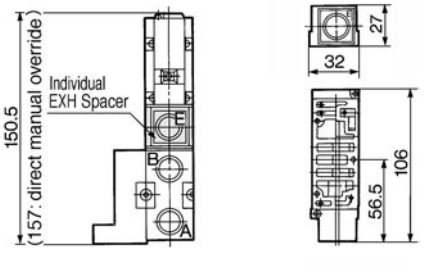
Individual SUP spacer:
VVFS3000-P-03-1 (Plug-in)
VVFS3000-P-03-2 (Non Plug-in)



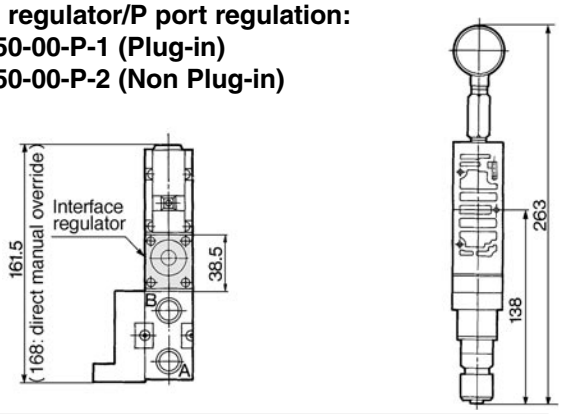
Double check spacer:
VVFS3000-22A-1 (Plug-in)
VVFS3000-22A-2 (Non Plug-in)



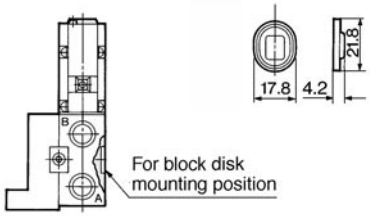
Individual EXH spacer:
VVFS3000-R-03-1 (Plug-in)
VVFS3000-R-03-2 (Non Plug-in)



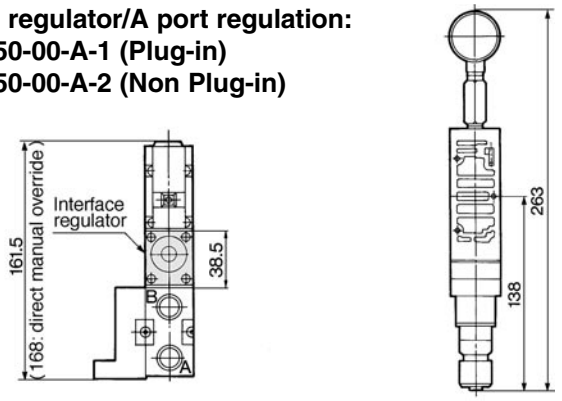
Interface regulator/P port regulation:
ARBF3050-00-P-1 (Plug-in)
ARBF3050-00-P-2 (Non Plug-in)



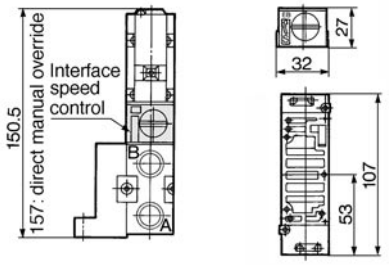
SUP, EXH block disk: AXT636-1A



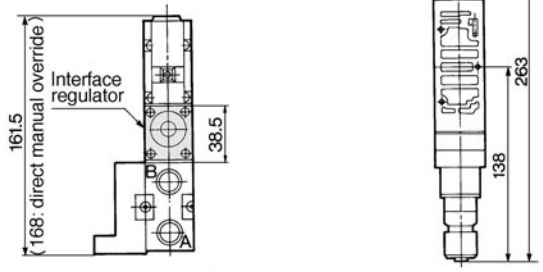
Interface regulator/A port regulation:
ARBF3050-00-A-1 (Plug-in)
ARBF3050-00-A-2 (Non Plug-in)



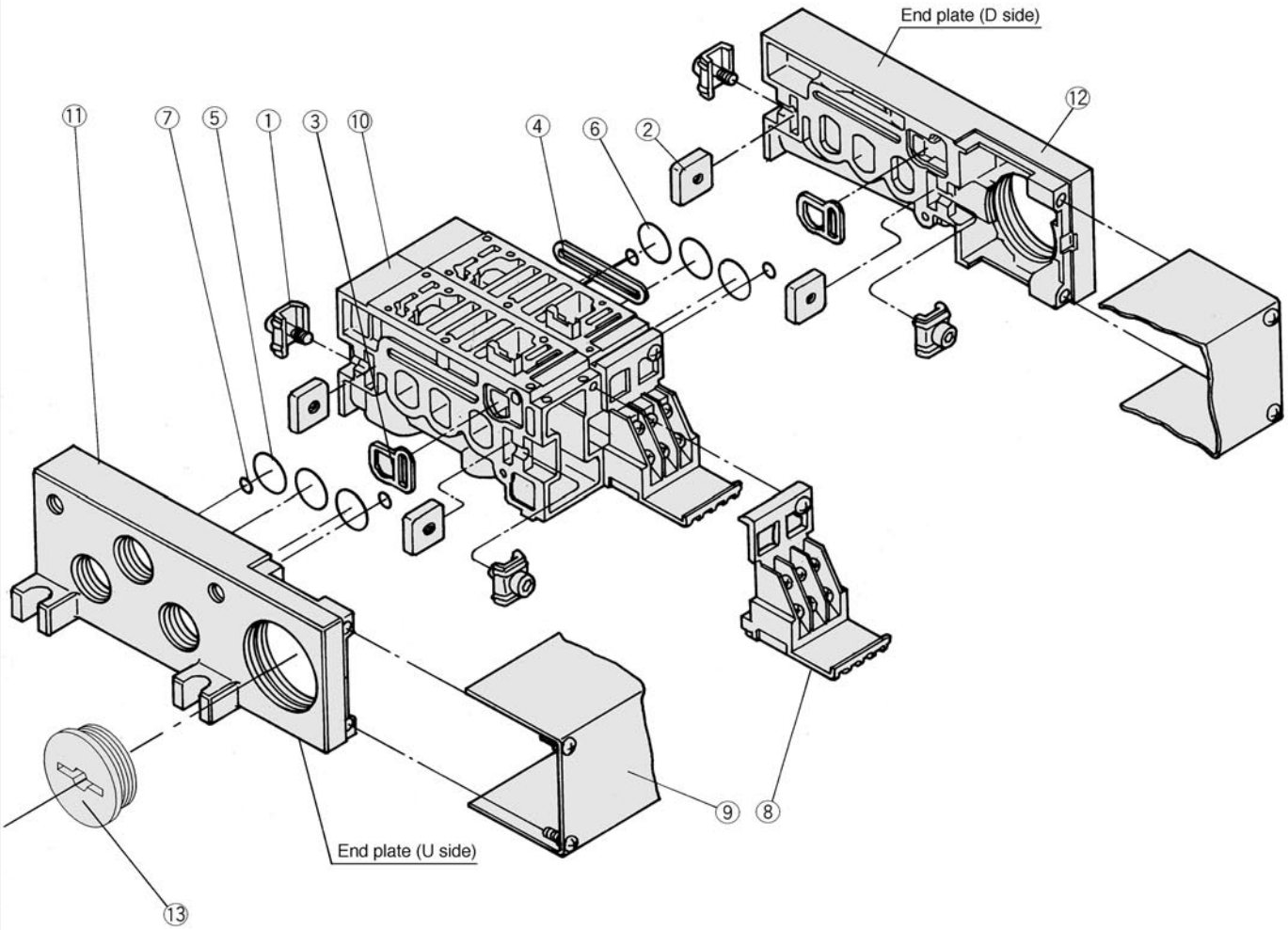
Interface speed control:
VVFS3000-20A-1 (Plug-in)
VVFS3000-20A-2 (Non Plug-in)



Interface regulator/B port regulation:
ARBF3050-00-B-1 (Plug-in)
ARBF3050-00-B-2 (Non Plug-in)



Manifold Base Construction — Plug-in/Non Plug-in



Replacement Parts

No.	Description	Material	Part No.
①	Metal joint A	Steel plate	VVFS3000-5-1A
②	Metal joint B	Steel plate	VVFS3000-5-2
③	Gasket	NBR	VVFS3000-7
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-[stations]
		For 01SU	AZ738-22A-[stations]
⑬	Rubber plug	NBR	AXT336-9

•For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly 9. For plug-in: The manifold base with terminal stand (integrated with a junction cover) is required with the 8 junction cover assembly.

Replacement Parts Sub-assembly

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

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

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

Model

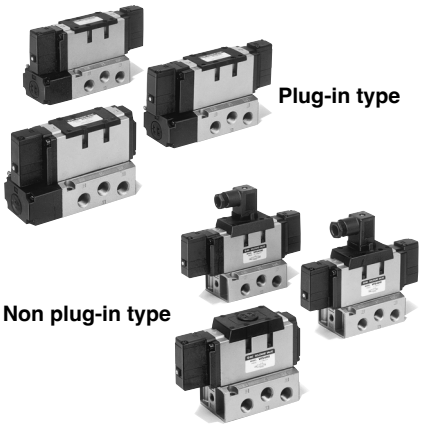
Type of actuation		Model: Plug-in	Model: Non plug-in	Port size	Flow rate characteristics (1): 1 → 4/2 (P → A/B) C [dm³/(s·bar)]	b	Cv	4/2 → 5/3 (A/B → R1/R2) C [dm³/(s·bar)]	b	Cv	Max. (1) operating cycle (cpm)	Response (2) time (ms)	(3)(4) Weight (kg)
2 position	Single	**VFS4100**	**VFS4110**	3/8	11	0.18	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			
	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 centre	**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			
	Exhaust centre	**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			
	Pressure centre	**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			
	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 8419: 2010 (once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
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.

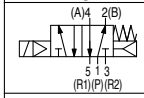
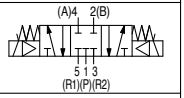
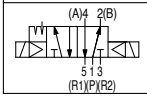
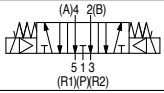
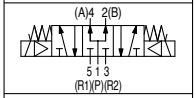
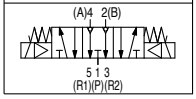
Compact yet provides a large flow capacity 1/2: C: 12 dm³/(s·bar)

Low power consumption: 1.8 W DC

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



Symbol

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

Standard Specifications

Valve specifications	**Fluid**		Air
	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)
	Impact/Vibration resistance		150/50 m/s² (3)
	Enclosure		Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) (4) (6)
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.
Note 6) The F and D type enclosures described above show those without the light/surge voltage suppressor. The F and D type enclosures with the light/surge voltage suppressor are equivalent to IP50.

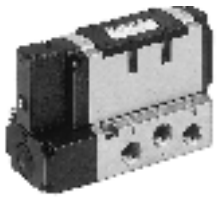
Option Specifications

Pilot type		External pilot Note)
Manual override	**Main valve**	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

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

VFS4000

How to Order

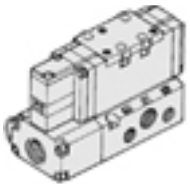


Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

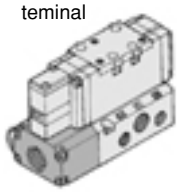
Body

O: Plug-in sub-plate



Electrical entry

F: Plug-in conduit teminal



Porting

—	Side
B*	Bottom

*Option

*Option
In an external pilot specification, bottom porting is impossible.

Port size

—	Without sub-plate
03	3/8
04	1/2

*EA, EB: 3/8

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in VFS4 2 0 0 — 5 F — 03 — Q

Non plug-in VFS4 2 1 0 — 1 D — 03 — Q

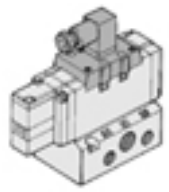
Configuration

1	2 position single	5	3 position pressure centre
2	2 position double	6	3 position double check
3	3 position closed centre		
4	3 position exhausl centre		

*For reverse pressure, it is applicable in external pilot specification.

Body

1: Non plug-in sub-plate



Body option

0	Standard
1*	Direct manual override

*Option

Protective class class I (Mark: ⏚)

Pilot

—	Internal
R*	External

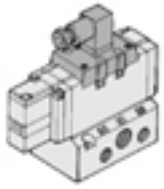
*Option

Indicator light/surge voltage suppressor

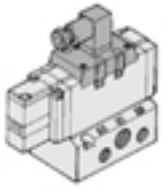
—	None
Z	With indicator light and surge voltage suppressor

Electrical entry

D: DIN connector
DO: Without connector



Y: DIN connector (DIN 43650)
YO: Without DIN connector



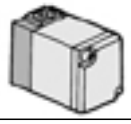
Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other (250 or less)

Order Made Contact SMC for other voltages (9)

Pilot valve manual override

—: Non-locking push style (Flush)



A*: Non-locking push style (Extended)

B*: Locking style (Slotted)

C*: Locking style (Lever)

*Option

How to Order Pilot Valve Assembly

SF4 — 1 F □ — 30 — Q

Voltage

1	100V AC (50/60Hz)
2	200V AC (50/60Hz)
3	110V to 120V AC (50/60Hz)
4	220V AC (50/60Hz)
5	24V DC
6	12V DC
7	240V AC (50/60Hz)
9	Other (250 or less)

Manual override

—	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (Slotted)
C*	Locking style (Lever)

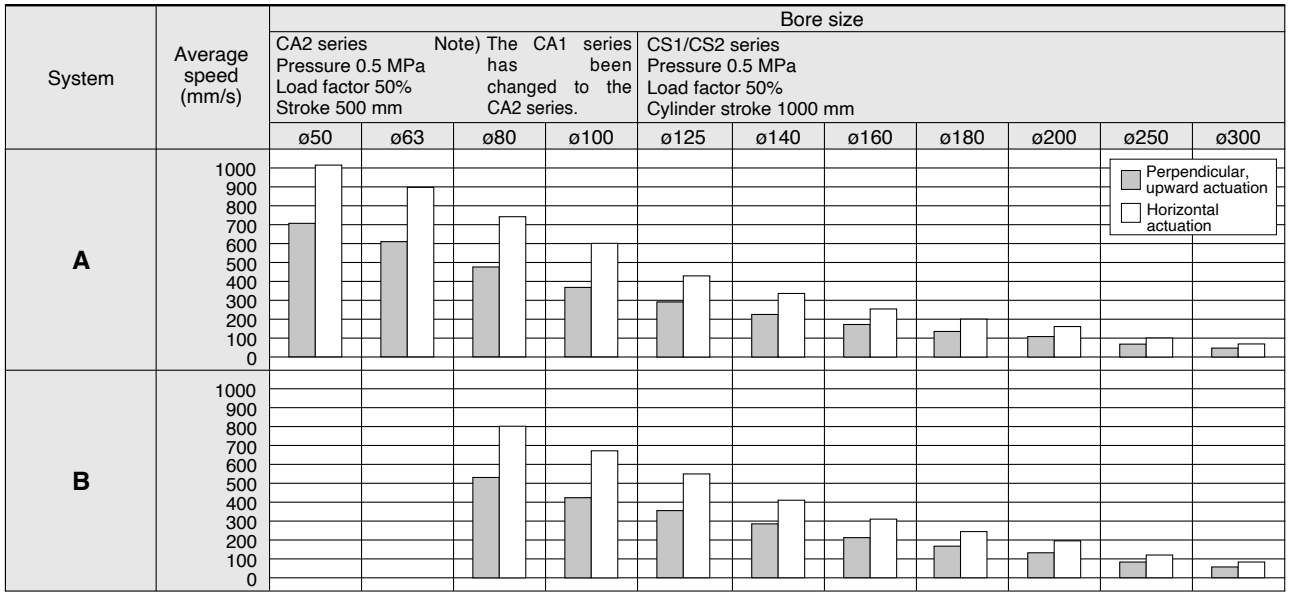
*Option

Contact SMC for other voltages (9)

*Refer to p.1.17-5 for voltage conversion.

Cylinder Speed Chart

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



System Components

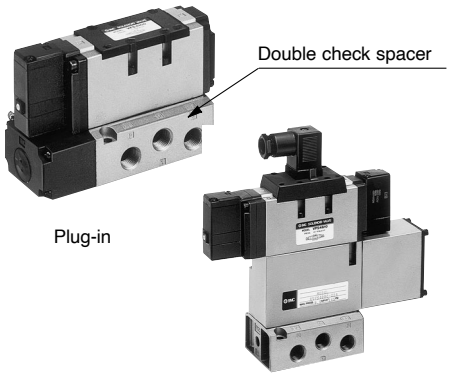
System	Solenoid valve	Speed controller	Silencer	SGP (Steel pipe) Port size x Length
A	VFS4000 Series Rc3/8	AS420-03 (S = 73 mm²)	AN30-03 (S = 60 mm²)	10A x 1
B	VFS4000 Series Rc1/2	AS420-04 (S = 97 mm²)	AN30-03 (S = 60 mm²)	15A x 1

* 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 mass x 9.8)/Theoretical force) x 100%

Double Check Spacer/Specification

Holding cylinder mid-position for a long periods

The concurrent use of double check spacer with built-in double check valve can stop cylinder or mid-position and hold it without being affected by air leakage spool seals.



Specifications

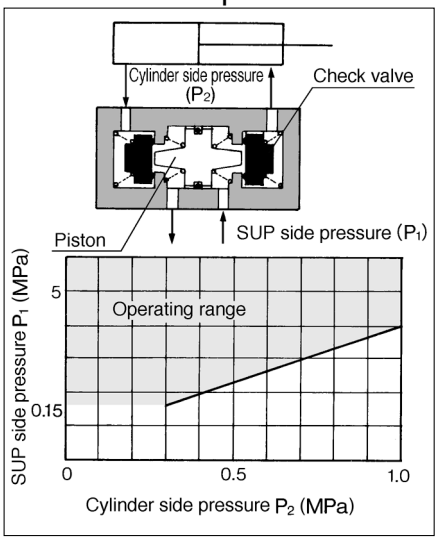
Double check spacer	Plug-in		□on plug-in	
	VVFS4000-22A-1		**VVFS4000-22A-2**	
Applicable solenoid valve	VFS4400-□F		VFS4410-□D VFS4410-□□	
□eakage* (cm³ / min)	Solenoid one side energized	P	□A	230 or less
			□B	
	Solenoid both sides de-energized	P	□A	230 or less
			□B	
		A	□A	0
		B	□B	

Supply pressure□ 0.□□Pa

⚠ Precautions

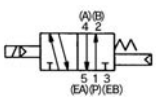
- In the case of 3 position double check valve (VFS46□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal.
  If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at mid-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

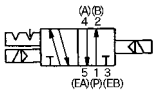


- The combination of VFS41$^{0}_{1}$0, VFS42$^{0}_{1}$0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

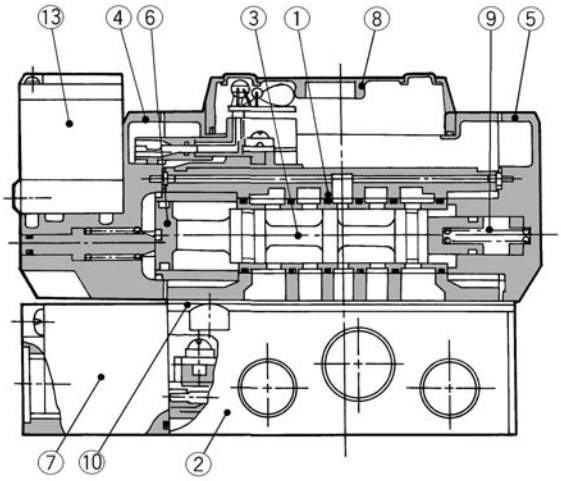
Construction

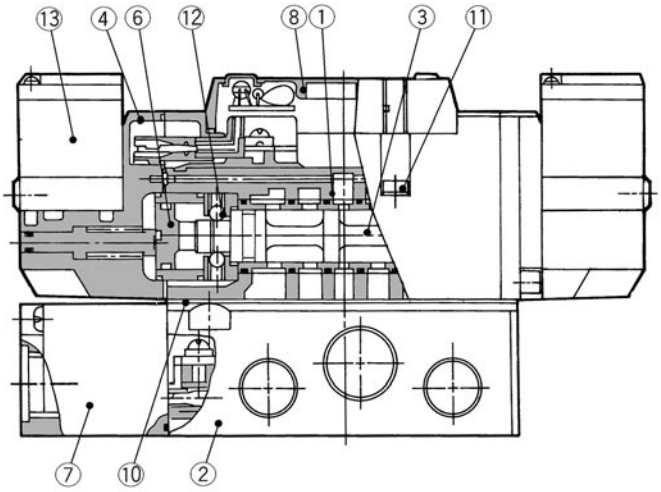


2 position single



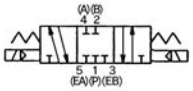
2 position dou-



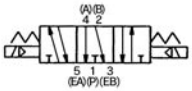


3 position closed centre/exhaust centre/pressure centre

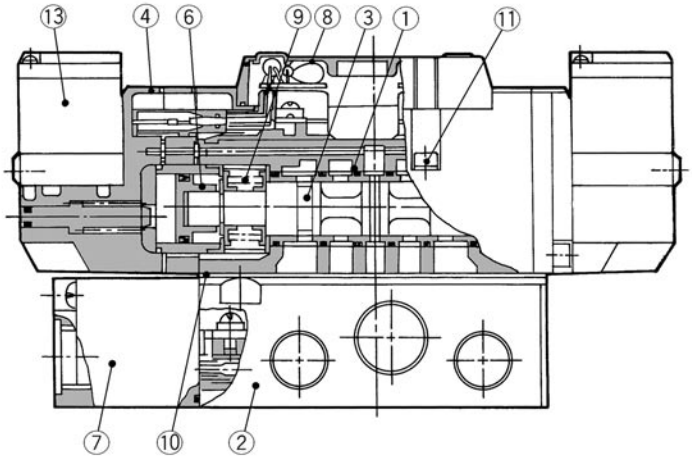
Closed centre



Exhaust centre



Pressure centre



Component Parts

No.	Description	Material	Note
①	Body	Aluminium die cast	Platinum silver
②	Sub plate	Aluminium die cast	Platinum silver
③	Spool/Sleeve	Stainless steel	
④	Adaptor plate	Aluminium die cast	Black
⑤	End plate	Aluminium die cast	Black
⑥	Piston	Resin	
⑦	Junction cover	Resin	
⑧	Light cover	Resin	

Sub-plate Assembly

Plug-in	VFS4000-P-$^{03}_{04}$
Non plug-in	VFS4000-S-$^{03}_{04}$

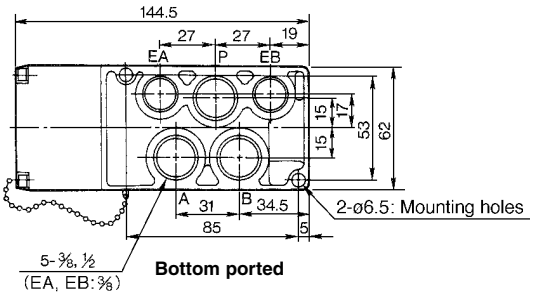
∗Without mounting screw and gasket.

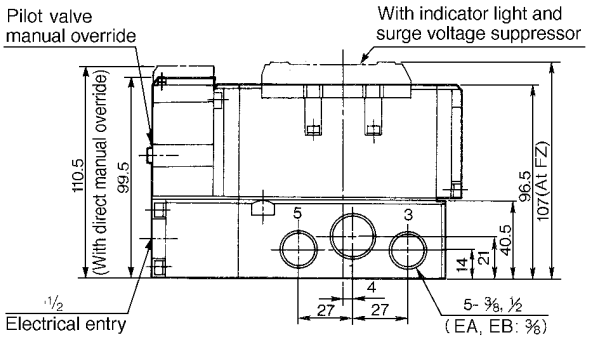
Replacement Parts

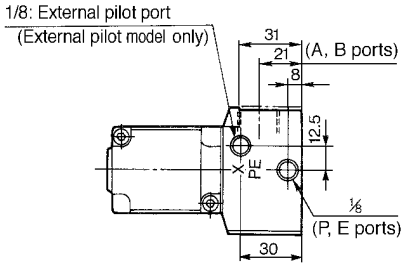
No.	Description	Material	Part No.		
			VFS41□□	**VFS42□□**	**VFS43□□, 44□□, 45□□**
⑨	Return spring	Stainless steel	VF4000-18-1	—	VF4000-18-2A
⑩	Gasket	NBR	VF4000-20-1	VF4000-20-1	VF4000-20-1
⑪	Hexagonal socket head cap screw	Steel	M4 X 40	M4 X 40	M4 X 40
⑫	Detent assembly	—	—	VF4000-12A	—
⑬	Pilot valve assembly	—	Refer to "How to order Pilot valve assembly" on p.1.17-70.		

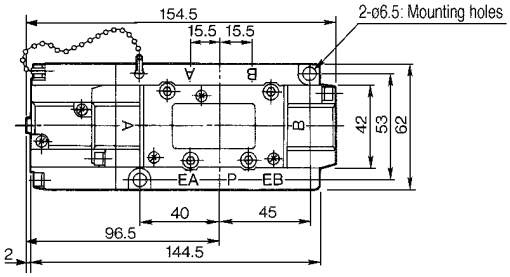
Plug-in 2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double

2 position single: VFS4100-□F

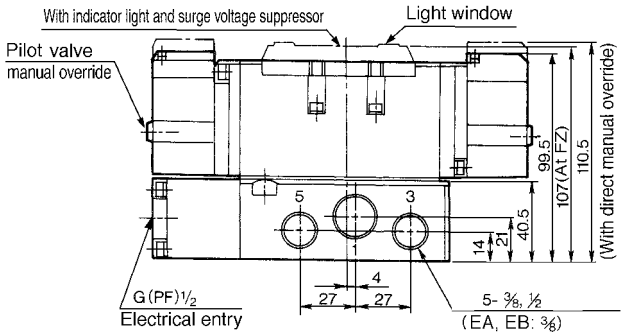


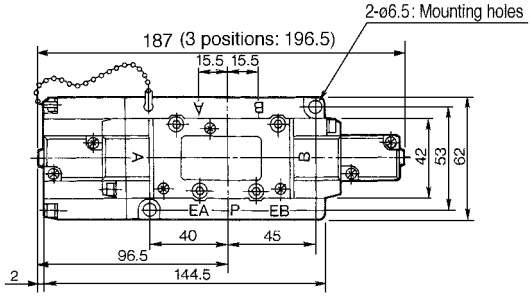




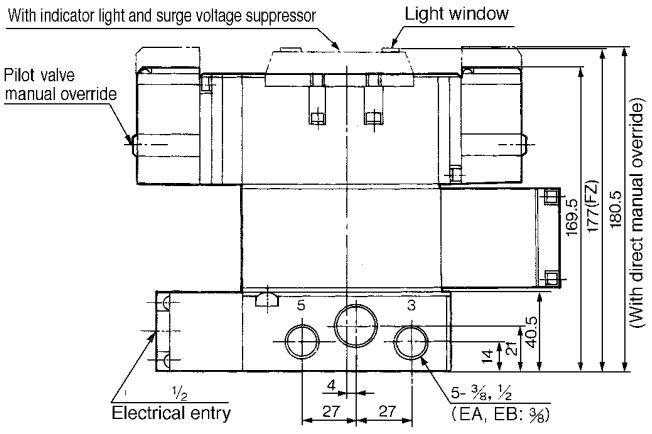


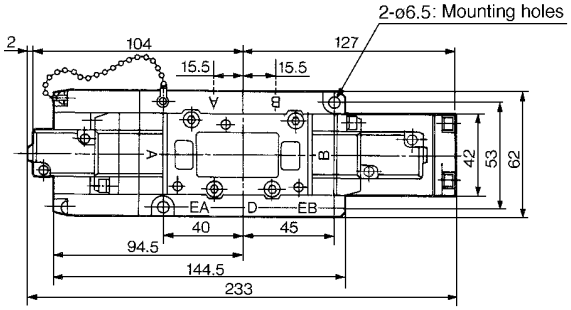
2 position double: VFS4200-□F
3 position closed centre: VFS4300-□F
3 position exhaust centre: VFS4400-□F
3 position pressure centre: VFS4500-□F





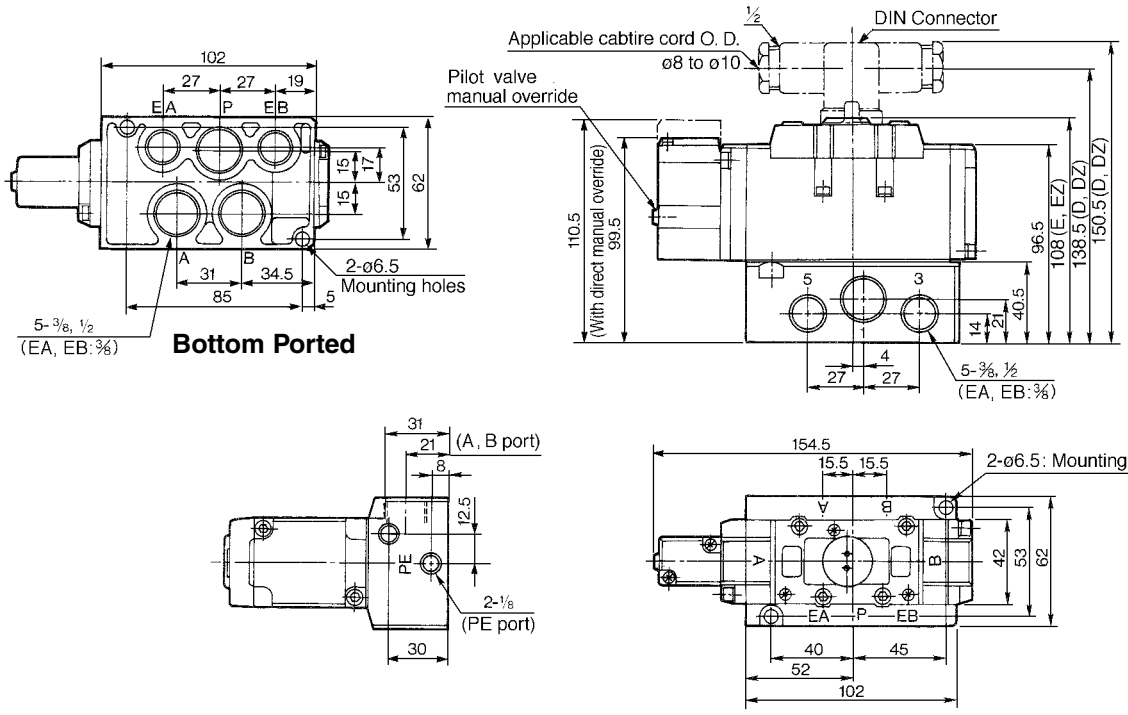
3 position double check: VFS4600-□F



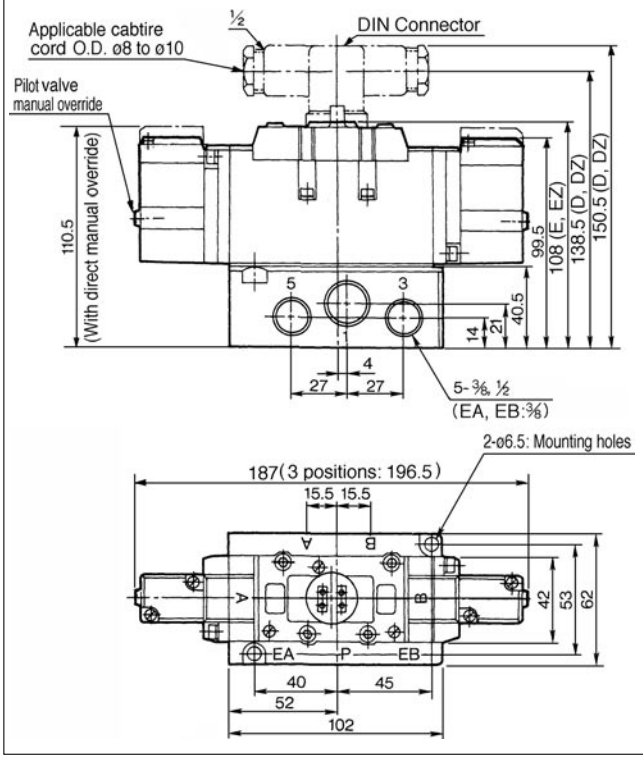


Non Plug- **2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double**

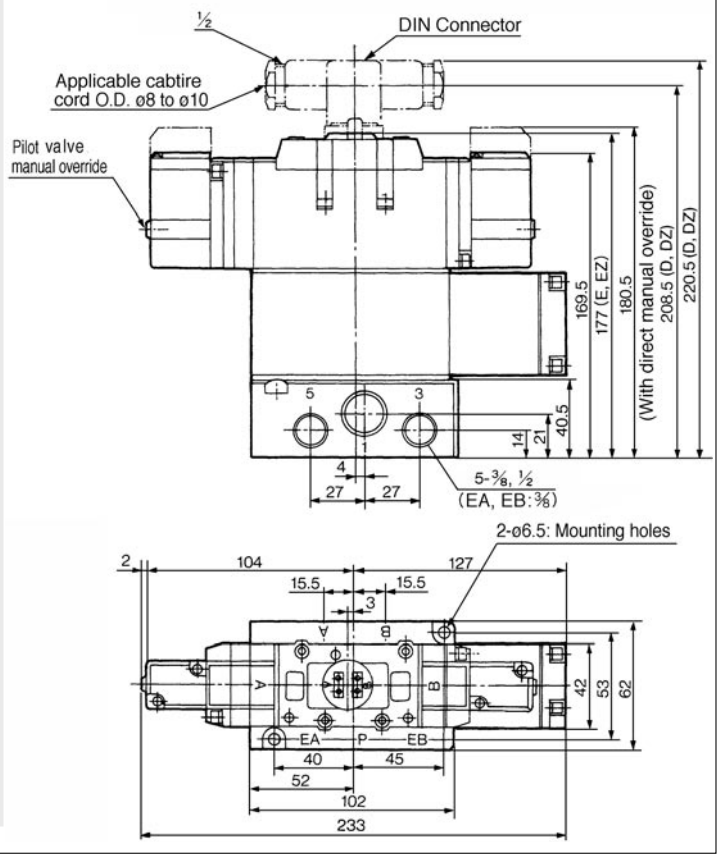
2 position single: VFS4110-□D



2 position double: VFS4200-□D
3 position closed centre: VFS4310-□D
3 position exhaust centre: VFS4410-□D
3 position pressure centre: VFS4510-□D



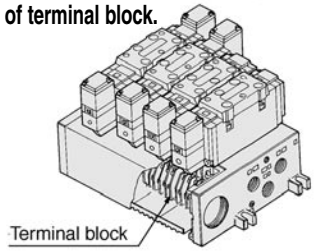
3 position double check: VFS4610-□D



Series VFS4000
Manifold

Plug-in: 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.



□ VV5FS4 − 01T − 06 1 − 03 □ − Q

Series VFS4000 Manifold

Plug-in with terminal block

Stations

02	2 stations
⋮	⋮
10	10 stations

Port size

Symbol	P, EA, EB	A, B
03	1/2	3/8
04		1/2
M		Mix

∗Bottom ported: Only 3/8 .

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Symbol

Symbol	Port specifications		Porting (A, B)
	P	EA, EB	
1	Common	Common	Side
2			Bottom∗

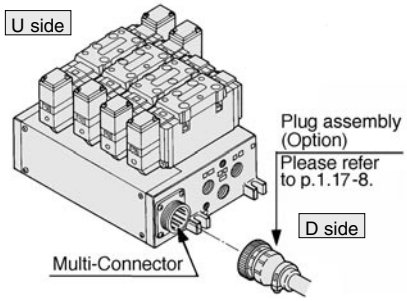
∗Option

Plug-in: With Multi-connector

(Wiring specifications ∗Please refer to p1.17-8.)

•Master connection of power and solenoid valves.

•Quick wiring permits easier installation.



□ VV5FS4 − 01C D − 05 2 − 03 □ − Q

Series VFS4000 Manifold

Plug-in with multi-connector

Mounting direction of connector

D	D side mounting
U	U side mounting

Stations

02	2 stations
⋮	⋮
08∗	8 stations

∗Max: 8 stations.

Port size

Symbol	P, EA, EB	A, B
03	1/2	3/8
04		1/2
M		Mix

∗Bottom ported: Only 3/8.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Symbol

Symbol	Port specifications		Porting (A, B)
	P	EA, EB	
1	Common	Common	Side
2			Bottom∗

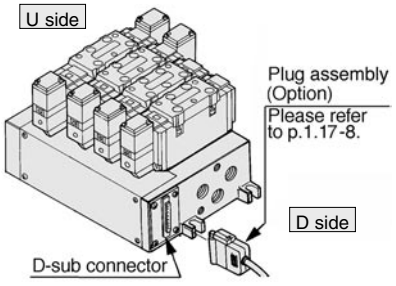
∗Option

Plug-in: With D-sub Connector

(Wiring specifications ∗Please refer to p.1.17-

•Wide range of interchangeability
(MIL Spec DIN connector terminal 25 pcs attached.)

•Quick wiring permits easier installation.



□ VV5FS4 − 01F D − 06 1 − 03 □ − Q

Series VFS4000 Manifold

Plug-in with D-sub connector

Mounting direction of connector

D	D side mounting
U	U side mounting

Stations

02	2 stations
⋮	⋮
08∗	8 stations

∗Max: 8 stations.

Port size

Symbol	P, EA, EB	A, B
03	1/2	3/8
04		1/2
M		Mix

∗Bottom ported: Only 3/8.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

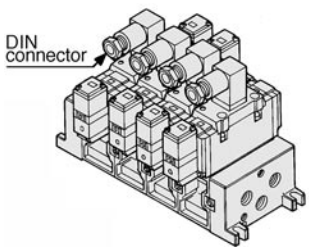
Symbol

Symbol	Port specifications		Porting (A, B)
	P	EA, EB	
1	Common	Common	Side
2			Bottom∗

∗Option

Non Plug-in: DIN Connector

•Wiring for every valve.



□ VV5FS4 − 10 − 05 2 − 03 □ − Q

Series VFS4000 Manifold

Non Plug-in

Stations

02	2 stations
⋮	⋮
10	10 stations

Port size

Symbol	P, EA, EB	A, B
03	1/2	3/8
04		1/2
M		Mix

∗Bottom ported: Only 3/8.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Symbol

Symbol	Port specifications		Porting (A, B)
	P	EA, EB	
1	Common	Common	Side
2			Bottom∗

∗Option

Manifold Specifications

Base style	Wiring	Porting	Port size		No. of stations	Applicable solenoid valve
		A, B port	P, EA, EB	A, B		
Plug-in **VV5FS4-01□**	•With terminal block •With multi-connector •With D-sub connector	Side, Bottom	1/2	3/8, 1/2	2-10 *	VFS4□00-□F
Non plug-in **VV5FS4-10**	•DIN Connector					VFS4□10-□D

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

Manifold Stations and Effective Area (mm^2) (Nℓ/min Factor)

Porting/No. of stations	First station	Fifth station	Tenth station
P → A or B	50.4 (2748)	48.6 (2650)	47.7 (2257)
A→EA, B→EB	57.6 (3140)	55.8 (3043)	55.8 (3043)

* Port size:1/2

How to Order Manifold

Please indicate manifold base mounting style, corresponding valve, and option parts.

•Plug-in with terminal block - 6 stations
(Manifold base) VV5FS4-01T-061-03-Q····· 1
(2 position single) VFS4100-5FZ -Q ····· 3
(2 position double) VFS4200-5FZ -Q····· 2
(Blanking plate) VFS4000-10A ····· 1

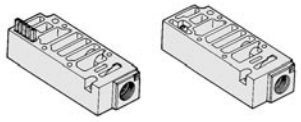
•Non plug-in - 6 stations
(Manifold base) VV5FS4-10-061-04-Q ····· 1
(2 position single) VFS4110-5D-Q····· 5
(3 position exhaust center) VFS4110-5D-Q · 1
(Individual EXH spacer) VVFS4000-R-04-2 ····· 1

Manifold/Option Parts Assembly

Individual SUP spacer

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

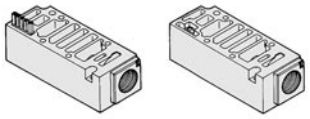
Body	Plug-in	Non plug-in
Part No.	VVFS4000-P-03-1	VVFS4000-P-03-2



Individual EXH spacer

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

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



* SUP block disk

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

Body	Plug-in	Non plug-in
Part No.	AXT634-10A	

* EXH block disk

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	Plug-in	Non plug-in
Part No.	AXT634-11A	

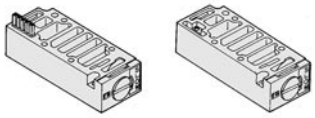
EXH block disk

SUP block disk

Interface speed control

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

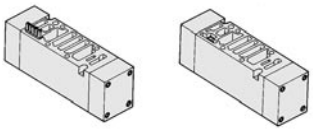
Body	Plug-in	Non plug-in
Part No.	VVFS4000-20A-1	VVFS4000-20A-2



Double check spacer

The concurrent use of double check spacer with built-in double check valve can stop the cylinder at mid-position and hold for a long time without being affected by the air leakage across spool seals.

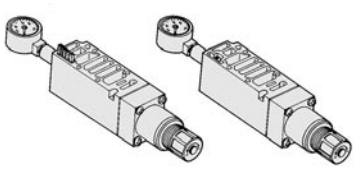
Body	Plug-in	Non plug-in
Part No.	VVFS4000-22A-1	VVFS4000-22A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (Refer to p.1.17-6 for flow characteristic).

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



Blank plate

When disessembling valve for maintenance purposes or when spare manifold stations are required, install a blank plate on the manifold block.

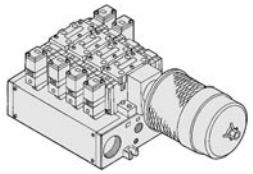
Body	Plug-in	Non plug-in
Part No.	VVFS4000-10A	

Manifold Options

With exhaust cleaner

Plug-in/Non plug-in

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

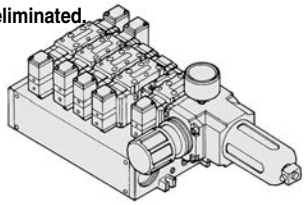


For more information, please refer tp p.1.17-79.

With control unit

Plug-in/Non plug-in

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

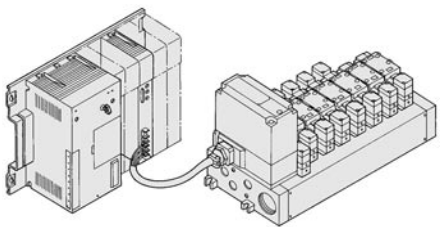


For more information, please refer to p.1.17-81.

With serial interface unit

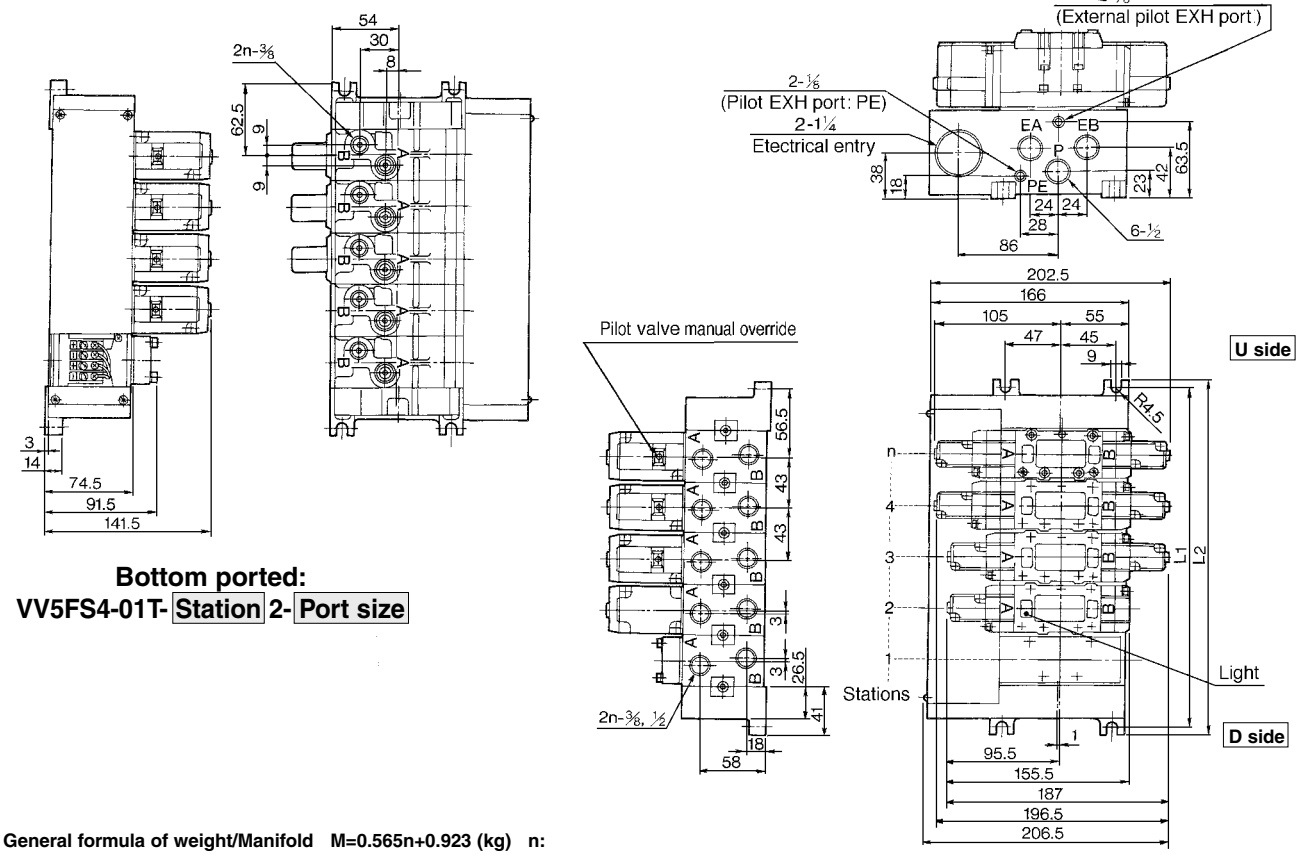
plug-in

- **Solenoid valve wiring process reduced considerably.**
- **Disperse installation possible.**
- **Manifold solenoid valve: 8 stations max, 32 positions (512 solenoids).**
- **Maintenance and inspection are easy.**



Plug-in/Non Plug-in

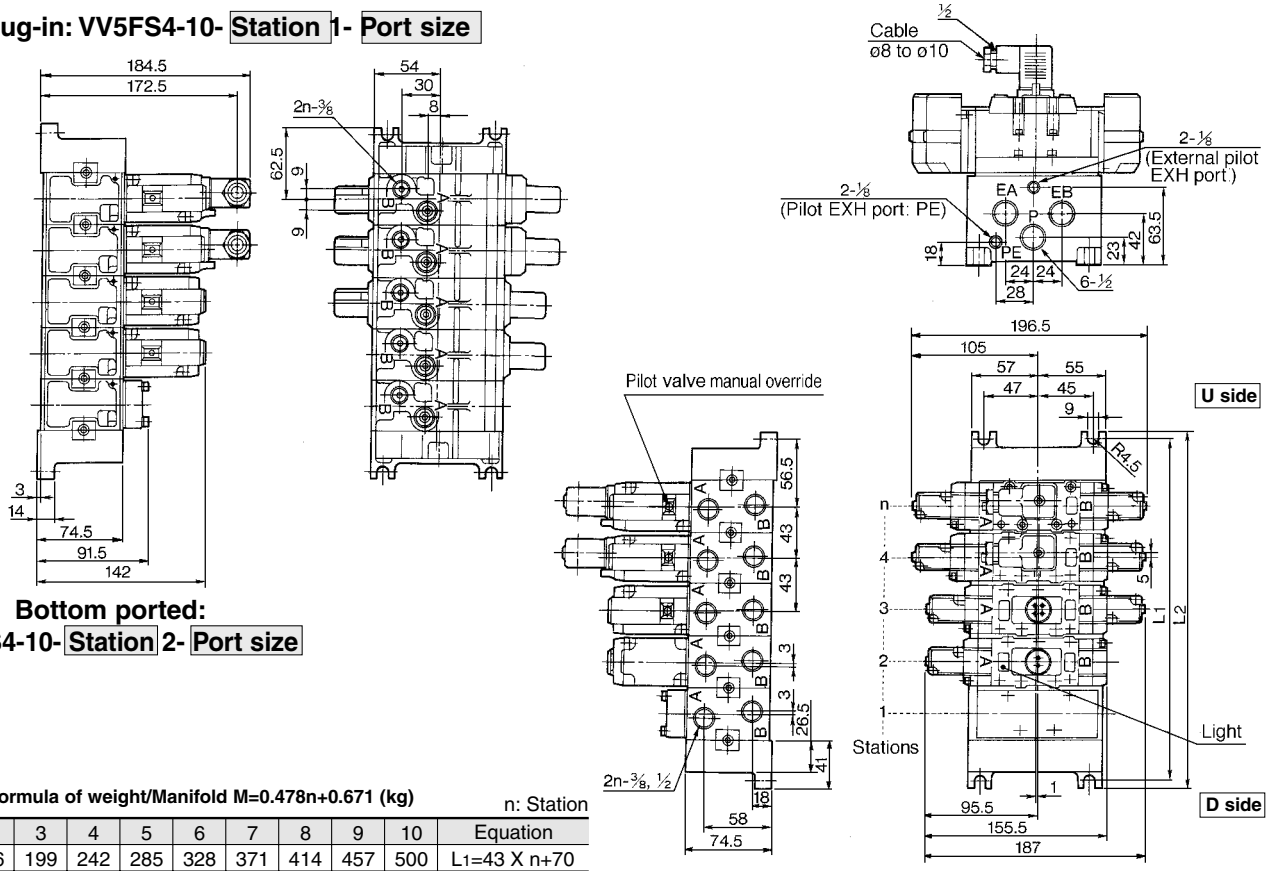
Plug-in (With terminal block): VV5FS4-01T- Station 1- Port size



Bottom ported:
VV5FS4-01T- Station 2- Port size

General formula of weight/Manifold M=0.565n+0.923 (kg) n:

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



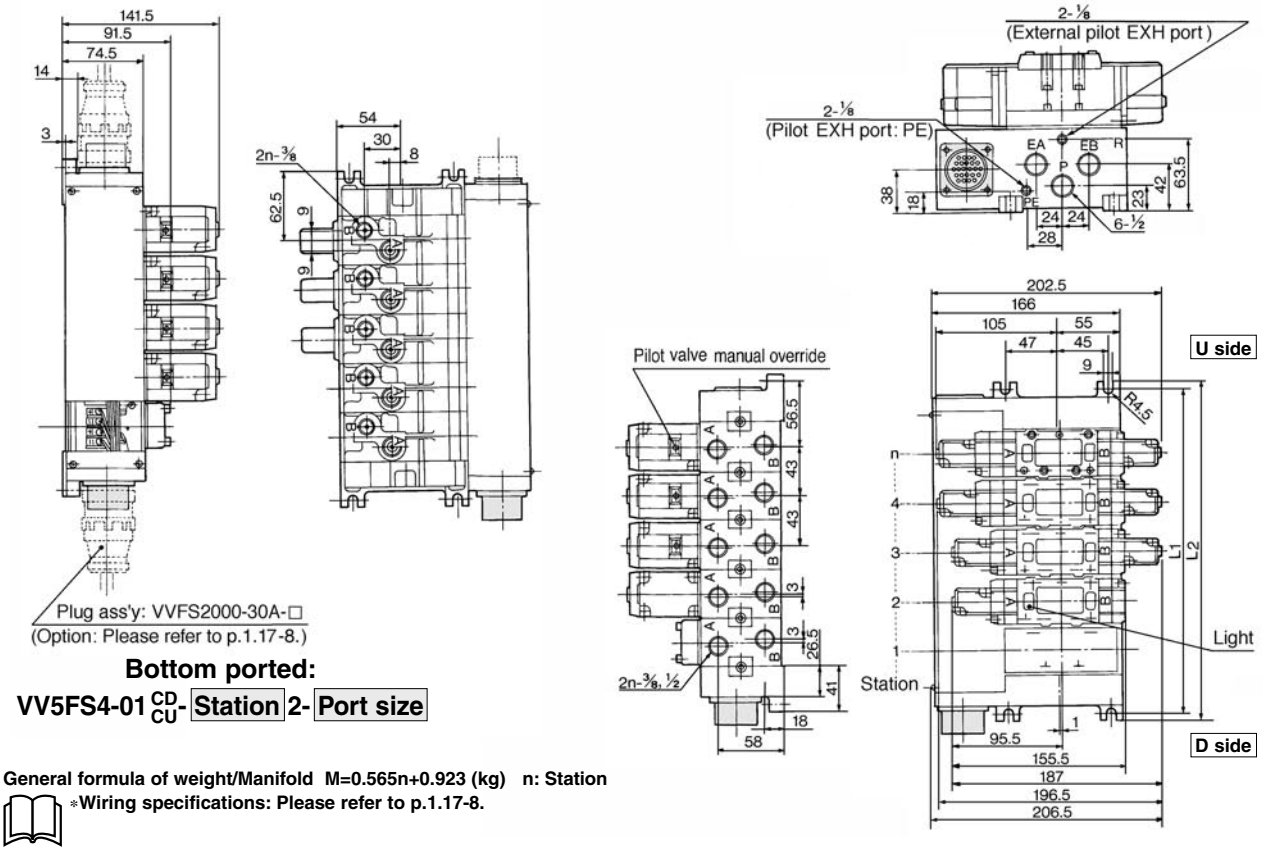
Bottom ported:
VV5FS4-10- Station 2- Port size

General formula of weight/Manifold M=0.478n+0.671 (kg) n: Station

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

Plug-in with Multi-Connector/With D-sub Connector

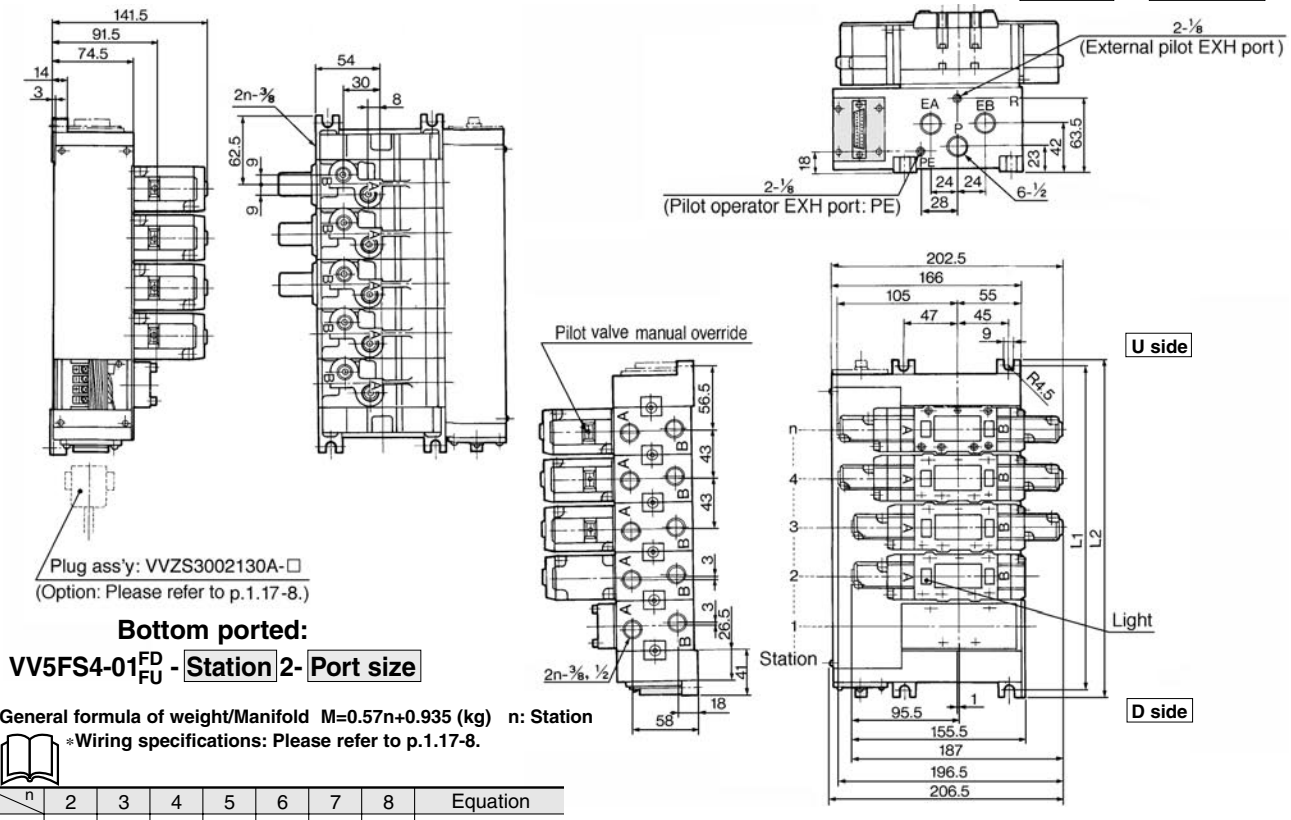
Plug-in with Multi-connector: VV5FS4-01CD- Station 1- Port size , VV5FS4-01CU- Station 1- Port size



Bottom ported:
VV5FS4-01 CD/CU- Station 2- Port size

General formula of weight/Manifold M=0.565n+0.923 (kg) n: Station
***Wiring specifications: Please refer to p.1.17-8.**

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



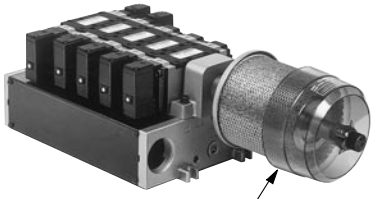
Bottom ported:
VV5FS4-01 FD/FU - Station 2- Port size

General formula of weight/Manifold M=0.57n+0.935 (kg) n: Station
***Wiring specifications: Please refer to p.1.17-8.**

L \ n	2	3	4	5	6	7	8	Equation
L1	156	199	242	285	328	371	414	L1=43 X n+70
L2	168	211	254	297	340	383	426	L2=43 X n+82

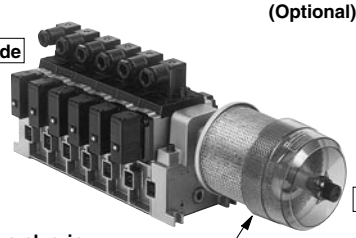
Manifold with Exhaust Cleaner

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



Plug-in

Exhaust cleaner (Optional)



U side

D

Non plug-in

Exhaust cleaner (Optional)

Manifold Specifications

Manifold style	Plug-in: VV5FS4-01□	Non plug-in: VV5FS4-10
Wiring	With terminal block With multi-connector With D-sub connector	DIN connector
Applicable valve	VFS4□00-□F	VFS4□10-□D
Porting	Common SUP, Common EXH	
	A, B port: Side: 3/8, 1/2, Bottom: 3/8 (option)	
	P, EA, EB port: P: 1/2, EXH: 1 / 1 1/2	
No. of stations	2 to 10 (1)	
Applicable exhaust cleaner	AMC610-10 (Connecting port size 1), AMC810-14 (Connecting port size 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 cleaner AMC610-10 and AMC810-14 are not attached.

How to Order

□ VV5FS4 – 10 □ – 06 1 – 03 □ – CD – Q

Series VFS4000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Base style

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

Connector mounting direction

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

Stations

02	2 stations
⋮	⋮
10	10 stations

Base style 01T, 10: 2-10 stations
Base style 01C, 01F: 2-8 stations

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom*

*Option

Port size

Symbol	P	A, B
03	1/2	3/8
04		1/2
M		Mix

*Bottom ported: Only 3/8.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Exhaust cleaner mounting direction

Symbol	Exhaust cleaner mounting direction	
CD	D side	D side mounting
CU	U side	U side mounting

*Please indicate exhaust cleaner size or port size.

Please indicate manifold base mounting style, corresponding valve, and option parts.

≪Example≫

•Plug-in with terminal block (6 stations)

(Monifold base)	**VV5FS4-01T-061-03-CD-Q**	1
(2 position single)	**VFS4100-5FZ-Q**	3
(2 position double)	**VFS4200-5FZ-Q**	2
(Blank plate)	**VVFS4000-10A**	1
(Exhaust cleaner)	**AMC610-10**	1

•Non plug-in (6 stations)

(Manifold base)	**VV5FS4-10-061-04-CU-Q**	1
(2 position single)	**VFS4110-5D-Q**	3
(2 position double)	**VFS4210-5D-Q**	2
(Blank plate)	**VVFS4000-10A**	1
(Exhaust cleaner)	**AMC810-14**	1

⚠ Precautions

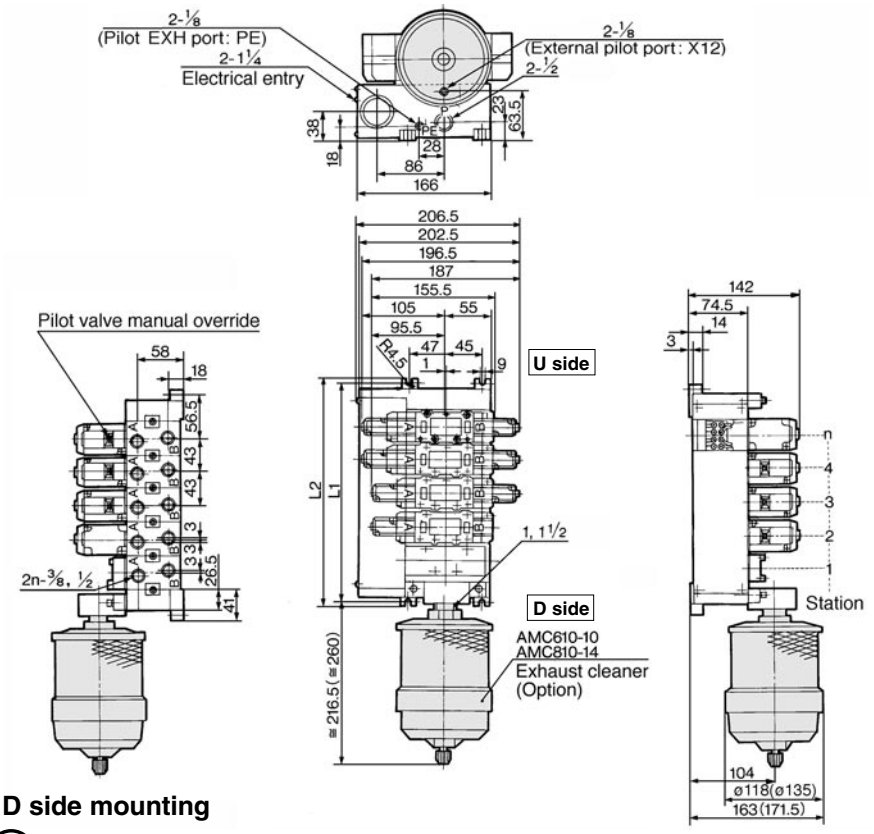
When using exhaust cleaner, mount it downwards.

⚠ Protective class class I (Mark: ⏚)

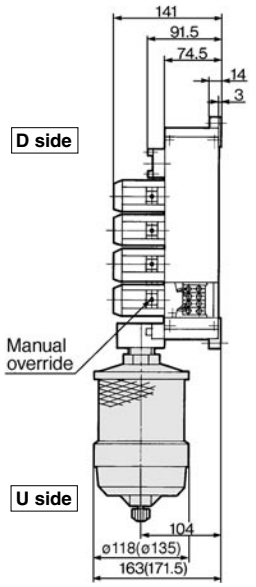
Refer to p.5.3-1 for details on exhaust cleaners.

Manifold with Exhaust — Plug-in/Non Plug-in

Plug-in: VV5FS4-01T- Station 1- Port size - CD CU



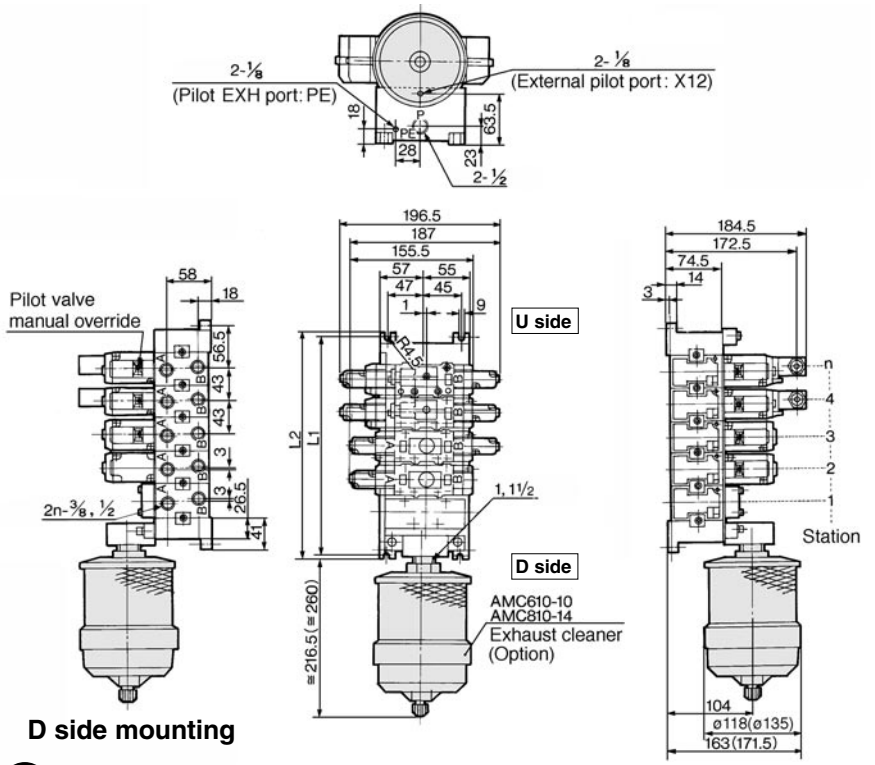
D side mounting



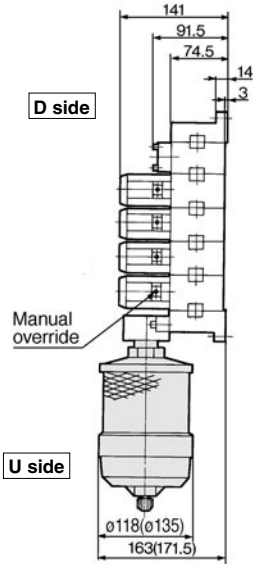
U side mounting

( ) : AMC810

Non plug-in: VV5FS4-10- Station 1- Port size - CD CU



D side mounting



U side mounting

( ) : AMC810

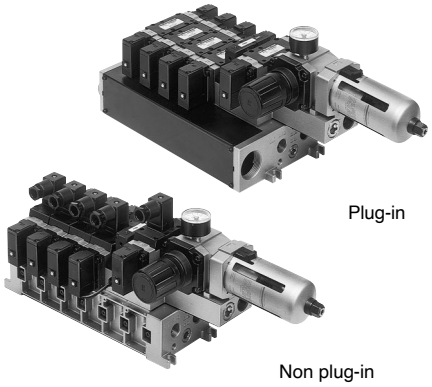
n: Station

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



Plug-in

Non plug-in

Precautions

When using an air filler with auto drain or manual drain, mount the filter vertcally.

Manifold Specifications

Manifold style	Plug-in: VV5FS4-01□		Non plug-in: VV5FS4-10
Wiring	With terminal block With multi-connector With D-sub connector		DIN connector
Applicable valve	VFS4□00-□F		VFS4□10-□D
Porting specifications	Common SUP, Common EXH		
	A, B port	Side: 3/8, 1/2, Bottom: 3/8	
	P, EA, EB port	Side: 1/2	
No. of stations	2 to 10 (1)		

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

Control Unit/Specifications

Air fillter (With auto drain/With manual drain)	
Filtration	5 μm
Regulator	
Set press. (Secondary)	0.05 to 0.85MPa
Pressure switch (1)	
Set press. range: OFF	0.1 to 0.6MPa
Differential	0.08MPa or less
Contact	1a
Light	LED (RED)
Max. switch capacity	2VA (AC), 2W (DC)
Max. operating current	24V AC, DC or less: 50mA
Air release valve (Single only)	
Operating press. range	0.1 to 1.0MPa

Control Unit/Options

Air release valve spacer (2)	<Plug-in type> VVFS4000-24A-1R (D side mounting)	
	<Non plug-in type> VVFS4000-24A-2R (D side mounting)	
Pressure switch	IS1000P-2-1	
Blanking plate (3)	Filter regulator	MP2-3
	Pressure switch	MP3-2
	Release valve	VVFS4000-24A-10
Filter element	11104-5B	
Regulator with filter	Manually operated	INA-13-864G
	Auto-drain type	INA-13-864DG

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

□ VV5FS4 – 01C D – 08 1 – 03 □ – AP □ – Q

Series VFS4000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Base style/wiring

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

Connector mounting direction

Symbol	Connector mounting	Applicable base
—	None	01T, 10
D	D side	01C, 01F
U	U side	

Stations

02	2 stations
⋮	⋮
10*	10 stations

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

Symbol

Symbol	Port specifications		Porting
	P	EA, EB	(A, B)
1	Common	Common	Side
2			Bottom*

∗ Option

Port size

Symbol	P, EA, EB	A, B
03	1/2	3/8
04		1/2
M		Mix

∗Bottom ported: Only 3/8 .

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Voltage of air release valve

—	None (F, G type only)
5	24V DC
9	Other (50 or less)

Order Made Contact SMC for other voltages (9)

Control unit

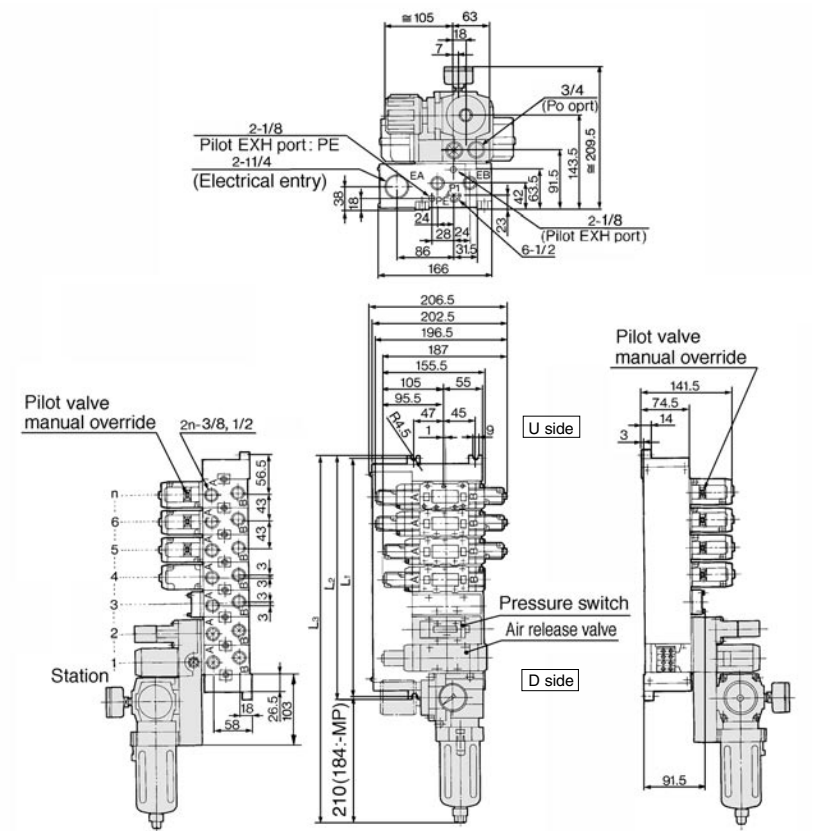
Control apparatus \ Symbol	—	A	AP	M	MP	F	G	C	E
Air filter with auto drain		●	●			●			
Air filter with manual drain				●	●		●		
Regulator		●	●	●	●	●	●		
Air release valve		●	●	●	●			●	●
Pressure switch*			●		●				
Blank plate (Air release valve)						●	●		
Blank plate (Filter, Regulator)								●	
Mounting manifold block		2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	2 stations	1 station

Please indicate manifold base mounting style, corresponding valve, and option parts.

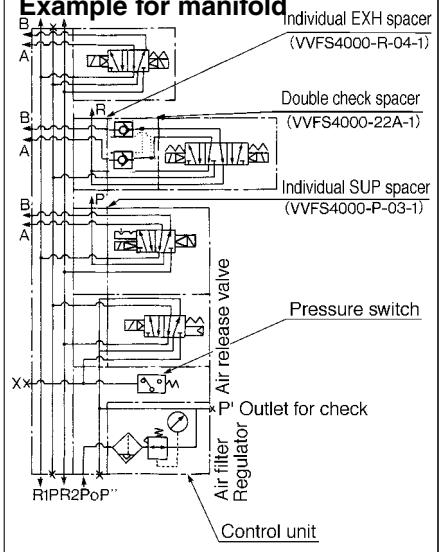
≪Example≫ •Plug-in with terminal block In order to mount control unit, it requires 2 stations.
(Manifold base) **VV5FS4-01T-081-03-AP-Q**····· 1
(2 position single) **VFS4100-5FZ-Q**····· 4
(2 position double) **VFS4200-5FZ-Q**····· 2
•Non Plug-in - In order to mount control unit, it requires 2 stations.
(Manifold base) **VV5FS4-10-061-03-A-Q**····· 1
(2 position single) **VFS4110-5D-Q**····· 4

Manifold with control — Plug-in/Non Plug-in

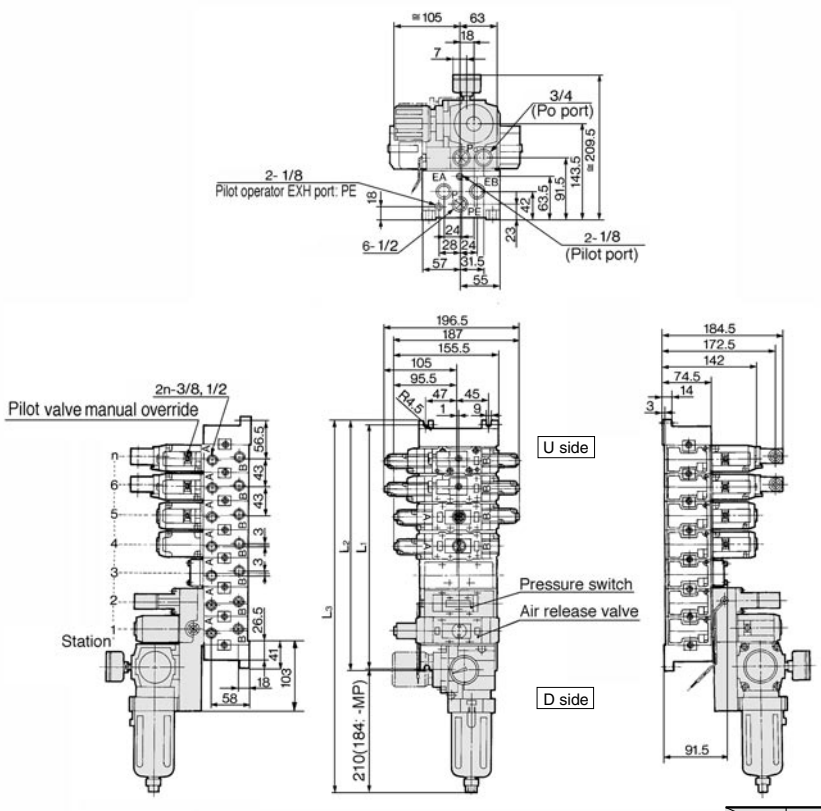
Plug-in: VV5FS4-01T- Station 1- Port size -AP



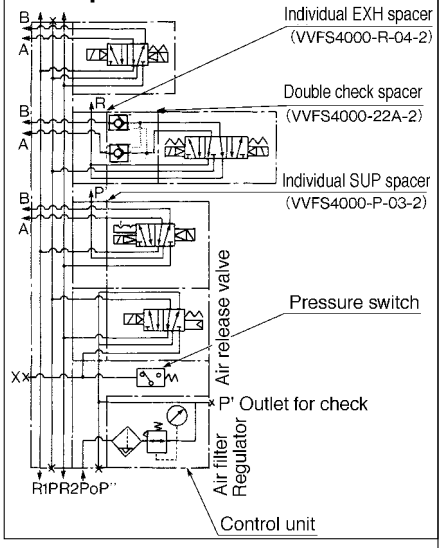
Example for manifold



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



Example for manifold

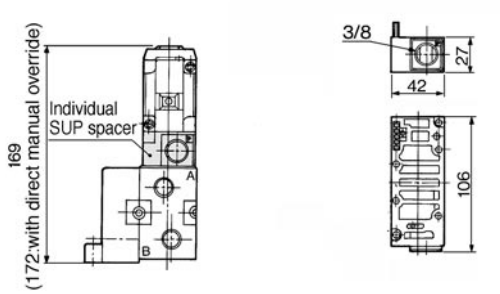


n: Station

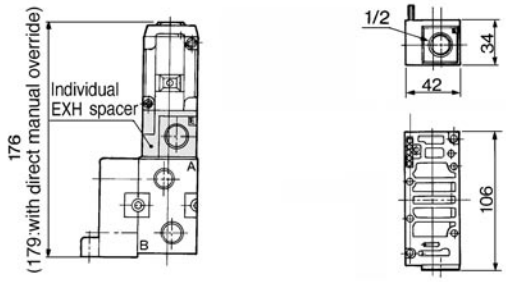
L \ n	3	4	5	6	7	8	9	10	Equation
L_1	199	242	285	328	371	414	457	500	L_1=43 X n+70
L_2	211	254	297	340	383	426	469	512	L_2=43 X n+82
L_3 (MP)	385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L_3=43 X n+256.5
L_3 (AP)	427	470	513	556	599	642	685	728	L_3=43 X n+298

Manifold Optional — Plug-in/Non Plug-in

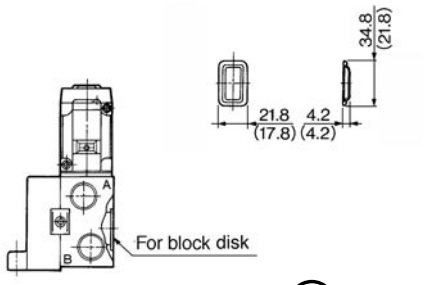
Individual SUP spacer:
VVFS4000-P-03-1 (Plug-in)
VVFS4000-P-03-2 (Non plug-in)



Individual EXH spacer:
VVFS4000-R-04-1 (Plug-in)
VVFS4000-R-04-2 (Non plug-in)

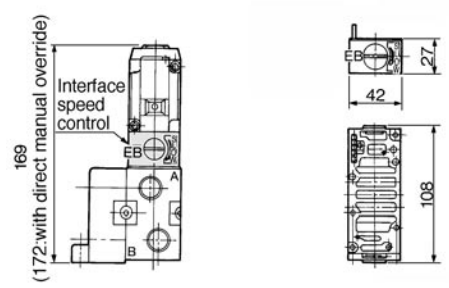


SUP block disk: AXT634-10A
EXH block disk: AXT634-11A

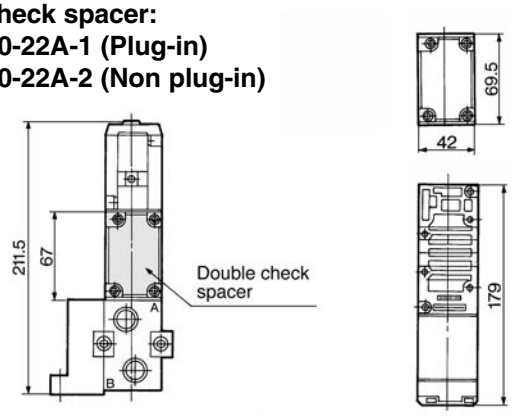


( ): EXH block disk

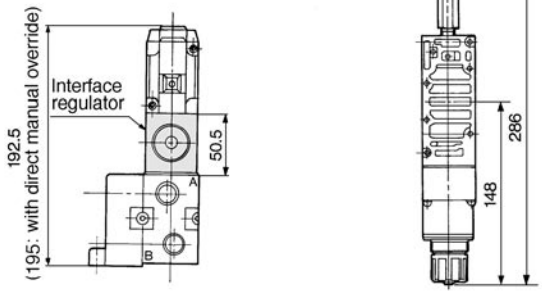
Interface speed control:
VVFS4000-20A-1 (Plug-in)
VVFS4000-20A-2 (Non plug-in)



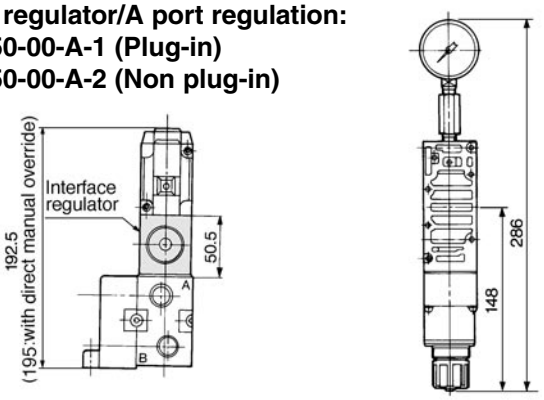
Double check spacer:
VVFS4000-22A-1 (Plug-in)
VVFS4000-22A-2 (Non plug-in)



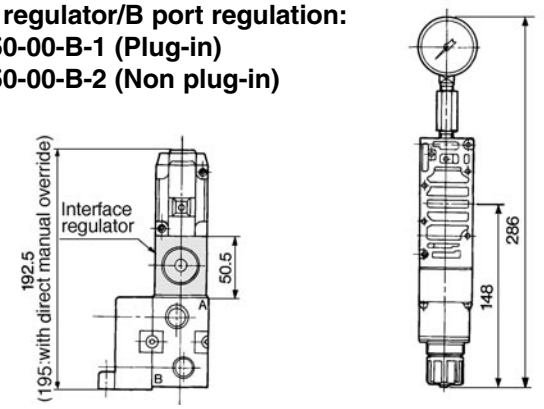
Interface ragulator/P port ragulation:
ARBF4050-00-P-1 (Plug-in)
ARBF4050-00-P-2 (Non plug-in)



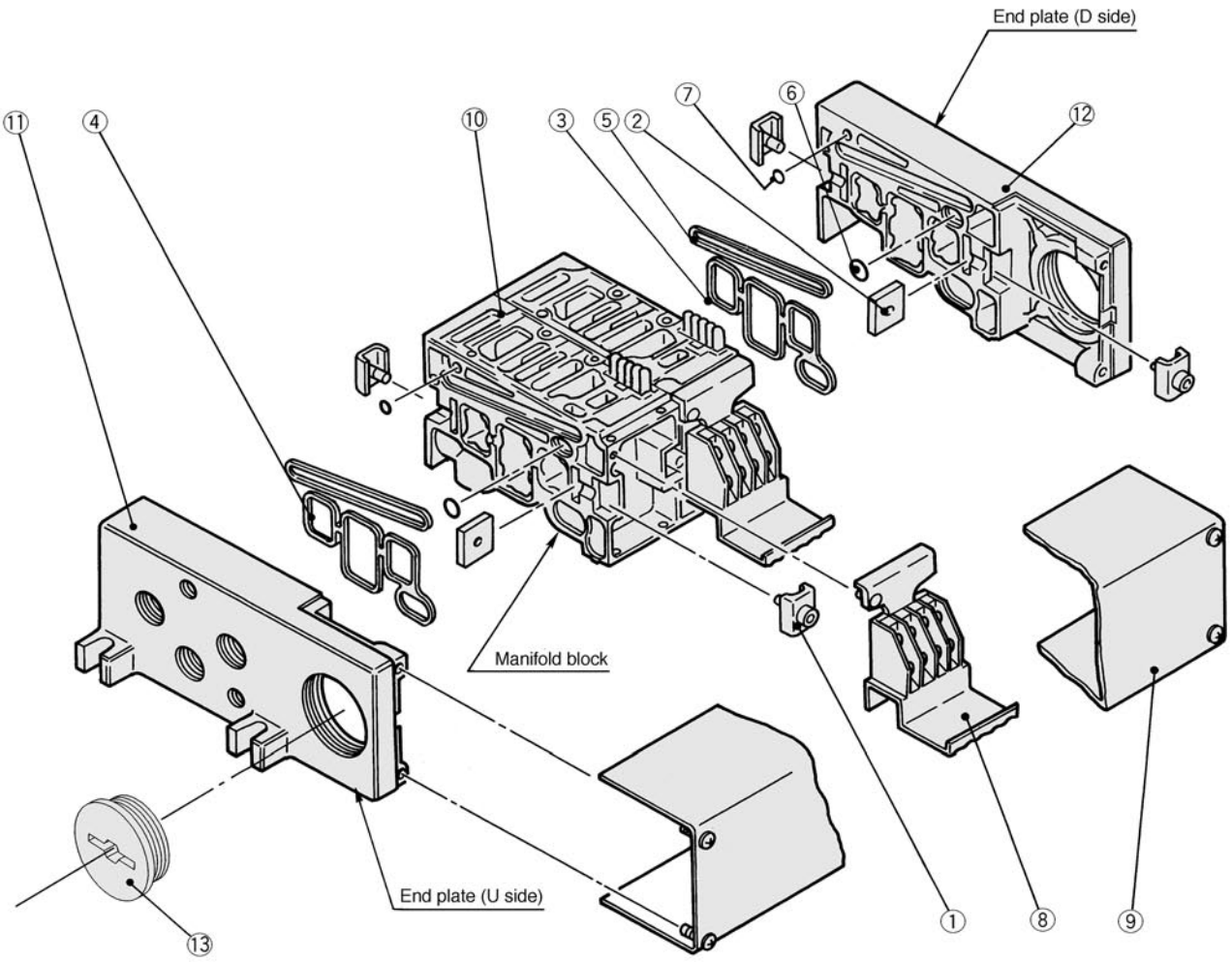
Interface regulator/A port regulation:
ARBF4050-00-A-1 (Plug-in)
ARBF4050-00-A-2 (Non plug-in)



Interface regulator/B port regulation:
ARBF4050-00-B-1 (Plug-in)
ARBF4050-00-B-2 (Non plug-in)



Manifold Base Construction — Plug-in/Non Plug-in



Replacement Parts

No.	Description	Material	Part No.
①	Metal joint A	Steel plate	VVF4000-5-1A
②	Metal joint B	Steel plate	VVF4000-5-2
③	Gasket	NBR	VVF4000-7 (For end plate)
④	Gasket	NBR	VVF4000-7-1 (For manifold block)
⑤	Gasket	NBR	VVF4000-8
⑥	O ring	NBR	AS568-011
⑦	O ring	NBR	P-3
⑧	Terminal assembly	—	VVFS4000-6A
⑨	Junction cover assembly	01T	VVF4000-4A-stations
		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: 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 Bace/Construction: Plug-in with terminal block.

No.	Description	Assembly 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
		VVF4000-1A-2-$^{03}_{04}$	Manifold block ⑩, Metal joint ①, ②, Gasket ④	Non Plug-in
⑪	End plate assembly (U side)	VVF4000-2A-1	End plate(U) ⑪, Metal joint ①, ②	Plug-in
		VVF4000-2A-2	End plate(U) ⑪, Metal joint ①, ②	Non Plug-in
⑫	End plate assembly (D side)	VVF4000-3A-1	End plate(D) ⑫, Metal joint ①, ②, Gasket ③, ⑤, O ring ⑥, ⑦	Plug-in
		VVF4000-3A-2	End plate(D) ⑫, Metal joint ①, ②, Gasket ③, ⑤, O ring ⑥, ⑦	Non Plug-in

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

● **VFS5000 series is compatible with the old models, VF6□00 and VF6□10 series.**

Model

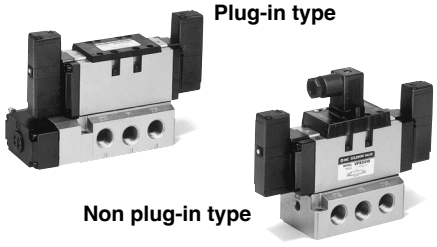
Type of actuation		Model		Port size Rc	Flow rate characteristics						Max.[1] operating cycle (cpm)	Response[2] time (ms)	[3] Weight (kg)
					1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)					
		Plug-in	Non plug-in		C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
2 position	Single	**VFS5100**	**VFS5110**	3/8	15	0.30	3.7	15	0.30	4.1	600	45 or less	0.88
				1/2	16	0.15	3.7	19	0.15	4.5			
				3/4	17	0.15	3.9	20	0.13	4.7			
	Double	**VFS5200**	**VFS5210**	3/8	15	0.30	3.7	15	0.30	4.1	600	25 or less	1.06
				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 centre	**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			
	Exhaust centre	**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			
	Pressure centre	**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			
	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 8419: 2010 (once per 30 days) for the minimum operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
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.

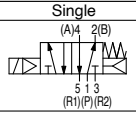
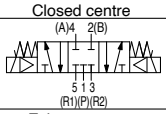
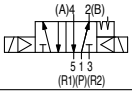
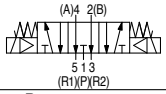
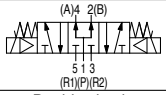
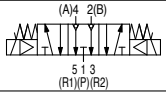
Compact yet provides a large flow capacity 3/4: C: 20 dm³/(s·bar)

Low power consumption: 1.8 W DC

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



Symbol

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

Standard Specifications

Valve specifications	**Fluid**		Air
	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)
	Impact/Vibration resistance		150/50 m/s² [3]
	Enclosure		Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) [4] [6]
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.
Note 6) The F type enclosure described above shows that without the light/surge voltage suppressor. The F type enclosure with the light/surge voltage suppressor is equivalent to IP50.

Option Specifications

Pilot type		External pilot Note)
Manual override	**Main valve**	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

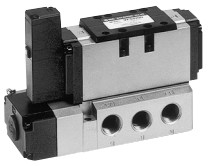
Note) Operating pressure: 0 to 1.0 MPa
Pilot pressure: 0.1 to 1.0 MPa

VFS5000

How to Order

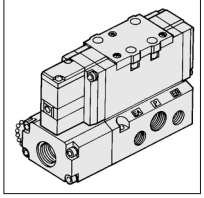
Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America



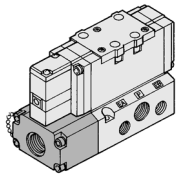
Body

O: Plug-in sub-plate



Electrical entry

F: Plug-in conduit with terminal



Porting

—	Side
B*	Bottom

*Option
Bottom piping not available for external pilot specification

Port size

—	Without sub-plate
03	3/8
04	1/2
06	3/4

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in □VFS5 1 0 0 □ — 2 F □ □ — □ 04 □ –Q

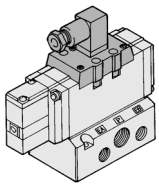
Non plug-in □VFS5 1 1 0 □ — 5 D □ □ — □ 06 □ –Q

Configuration

1	2 position single	5	3 position pressure centre
2	2 position double	6	3 position double check
3	3 position closed centre		
4	3 position exhausl centre		

Body

1: Non plug-in sub-plate



Body option

0	Standard
1*	Direct manual override

* Option

Protective class I (Mark: ⏚)

Pilot

—	Internal
R*	External

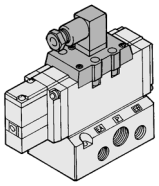
* Option

Option

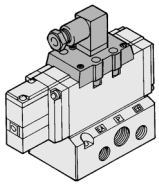
—	None
Z	With indicator light and surge voltage suppressor

Electrical entry

D: DIN connector
DO: without DIN connector



Y: DIN connector (DIN 43650B)
YO: without DIN connector



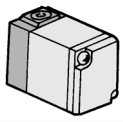
Voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other (250 or less)

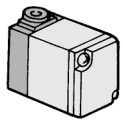
Order Made Contact SMC for other voltages (9)

Pilot valve manual override

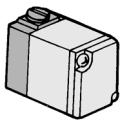
—: Non-locking push style (Flush)



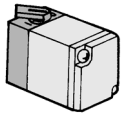
A*: Non-locking push style (Extended)



B*: Locking style (Slotted)



C*: Locking style (Lever)



* Option

How to Order Pilot Valve Assembly

SF4 – 1 F □ – 30 – Q

Voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other(250 or less)

Order Made Contact SMC for other voltages (9)

Manual override

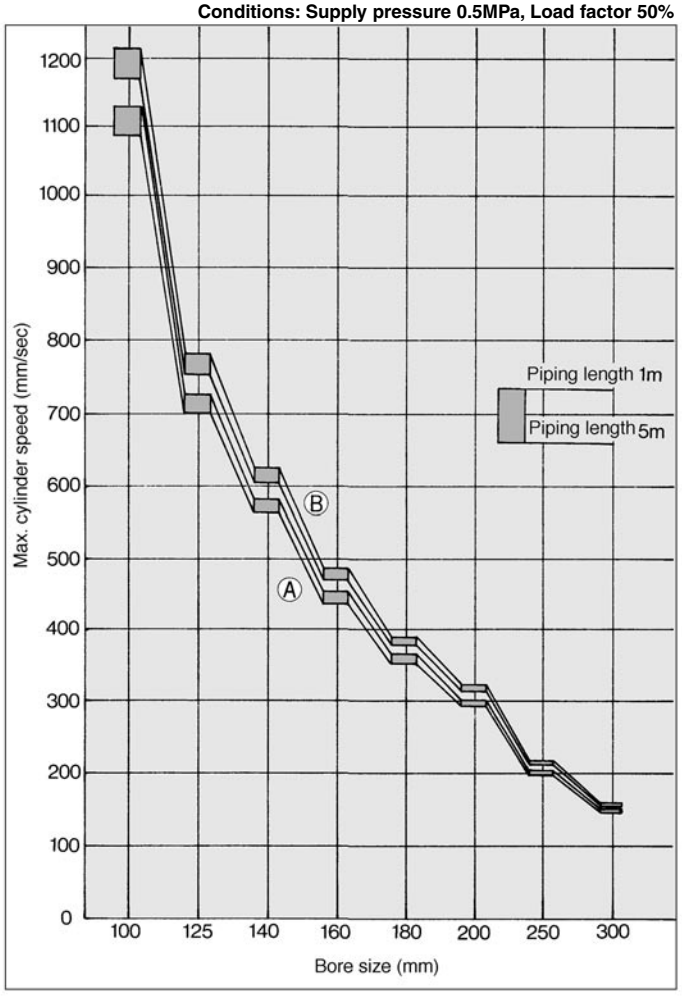
—	Non-locking push style (Flush)
A*	Non-locking push style (Extended)
B*	Locking style (Slotted)
C*	Locking Style (Lever)

* Option

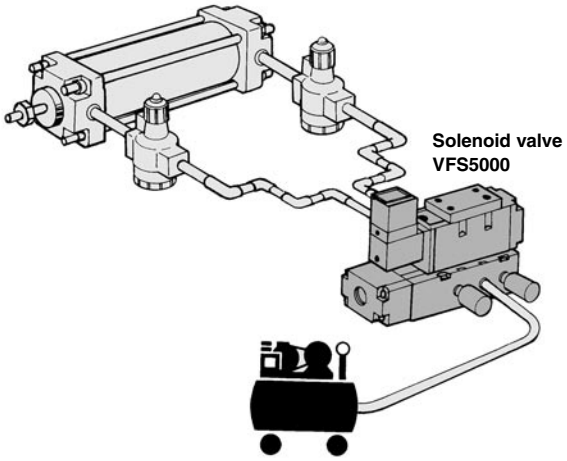
* Refer to p.1.17-5 for voltage conversion.

Maximum Cylinder Speed

Conditions: Supply pressure 0.5MPa, Load factor 50%



System diagram



Rubber hose piping system

Symbol	Solenoid valve	Speed controller	Silencer	Piping
A	VFS5000-06 {3/4} (S=102.6mm²)	AS500-06 {3/4} (S=120mm²)	AN500-06 {3/4} (S=160mm²)	3/4 B (Fittings 4 pcs.)

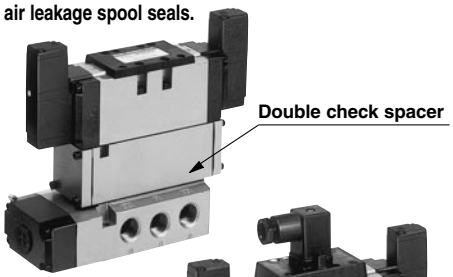
S. G. P. Piping system

Symbol	Solenoid valve	Speed controller	Silencer	Piping
B	VFS5000-06 {3/4} (S=102.6mm²)	AS500-06 {3/4} (S=120mm²)	AN500-06 {3/4} (S=160mm²)	3/4 B (Fittings 4 pcs.)

Double Check Spacer/Specification

Holding cylinder mid-position for a long periods

The concurrent use of double check spacer with built-in double check valve can stop cylinder or mid-position and hold it without being affected by air leakage spool seals.



Plug-in

Non plug-in

Specifications

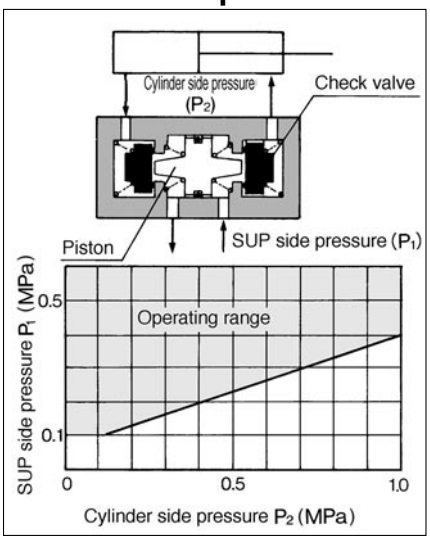
Double check spacer	Plug-in		Non plug-in	
	VVFS5000-22A-1		**VVFS5000-22A-2**	
Applicable solenoid valve	VFS5400-□F		VFS5410-□D	
Leakage (cm³/min)*	Solenoid one side energized	P	EA	320 or less
			EB	
	Solenoid both sides de-energized	P	EA	320 or less
			EB	
		A	EA	0
		B	EB	

*Supply pressure: 0.5MPa

⚠ Precautions

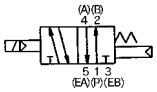
- In the case of 3 position double check valve (VFS56□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal.
  If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at mid-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

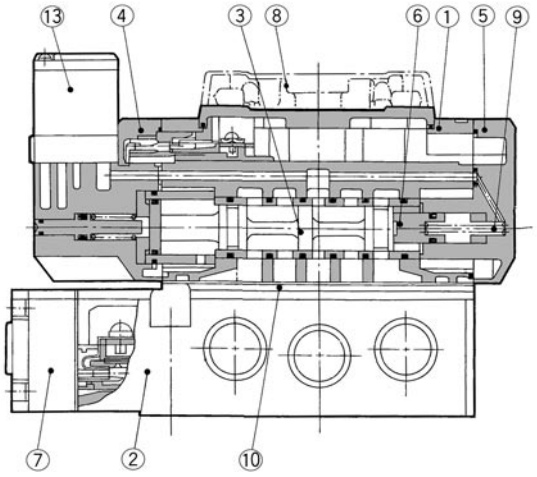


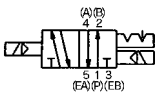
- The combination of VFS51 $^{0}_{1}$0, VFS52 $^{0}_{1}$0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

Construction

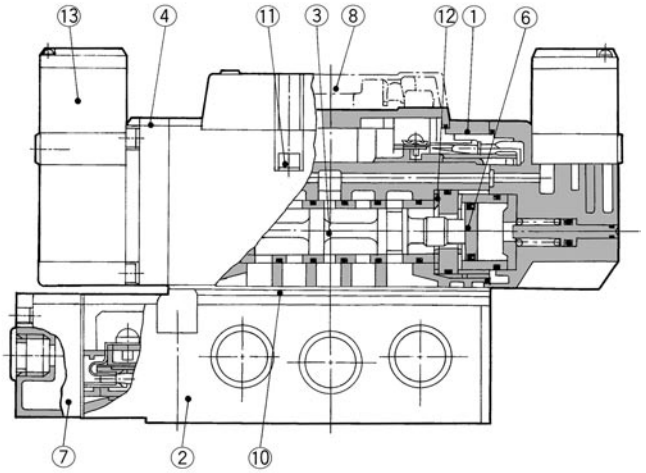


2 position single



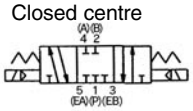


2 position double



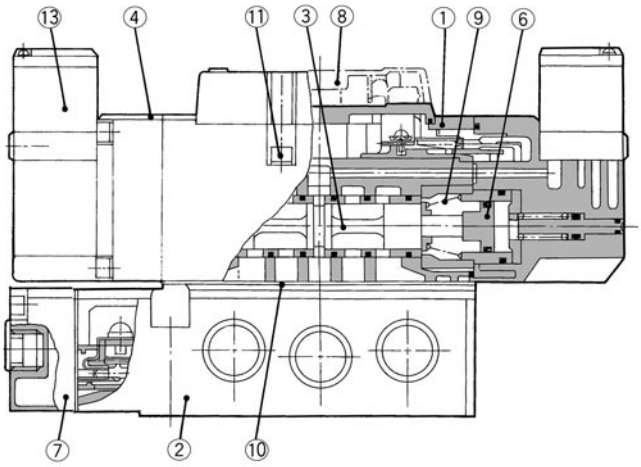
3 position closed centre/exhaust centre/pressure centre

Closed centre



Exhaust centre

Pressure centre



Component Parts

No.	Description	Material	Note
①	Body	Aluminium die cast	Platinum silver
②	Sub plate	Aluminium die cast	Platinum silver
③	Spool/Sleeve	Stainless steel	
④	Adaptor plate	Aluminium die cast	Black
⑤	End plate	Aluminium die cast	Black
⑥	Piston	Resin	
⑦	Junction cover	Resin	
⑧	Light cover	Resin	

Sub-plate Assembly

Plug-in	VFS5000-P-$^{03}_{04}_{06}$
Non Plug-in	VFS5000-S-$^{03}_{04}_{06}$

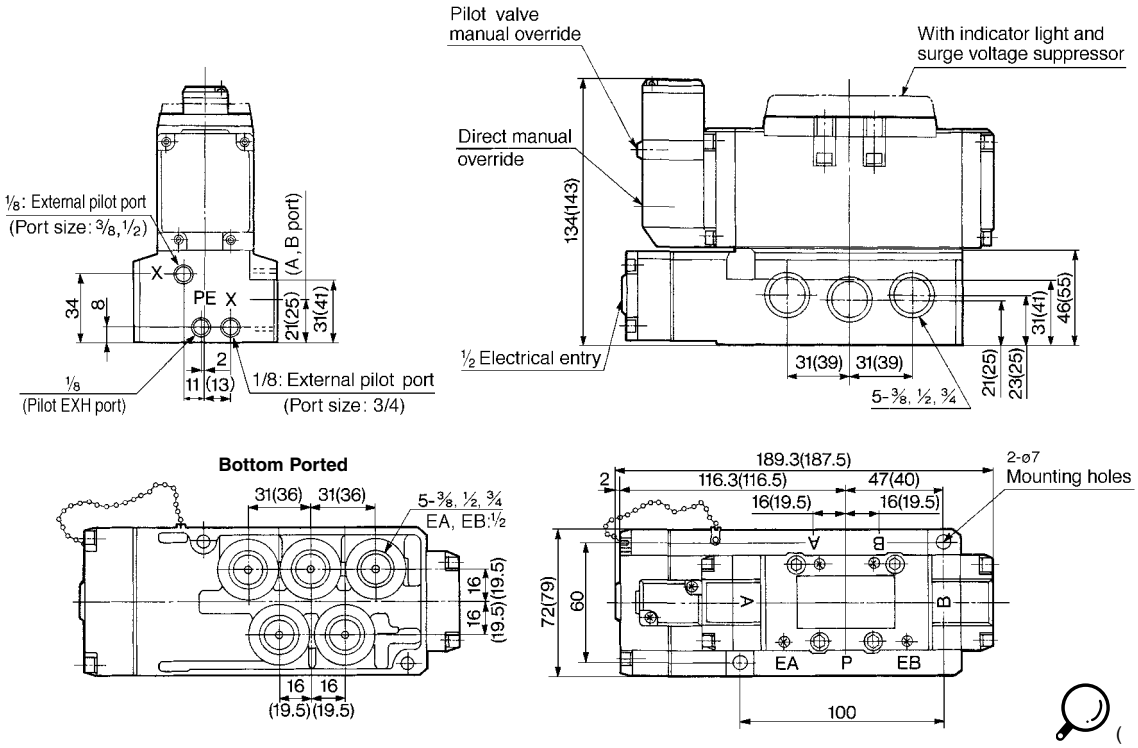
∗ Without mounting screw and gasket.

Replacement Parts

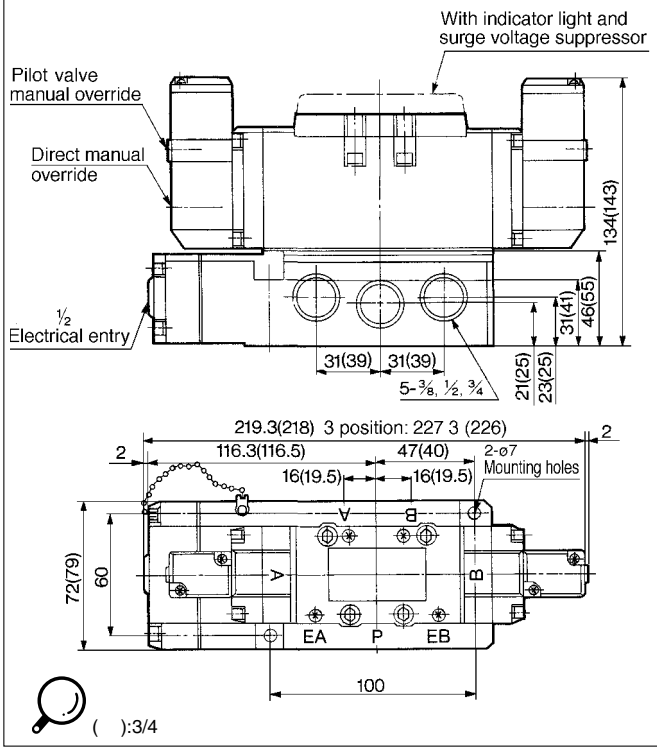
No.	Description	Material	Part No.		
			VFS51□□	**VFS52**□□	VFS53□□, 54□□, 55□□
⑨	Return spring	Stainless steel	VFS5000-9	—	AXT627-18
⑩	Gasket	NBR	AXT627-10-1	AXT627-10-1	AXT627-10-1
⑪	Hexagonal socket head cap screw	Steel	M5 X 50	M5 X 50	M5 X 50
⑫	Detent assembly	—	—	AXT510-9	—
⑬	Pilot valve assembly	—	Refer to “How to order Pilot valve assembly” on p.1.17-86.		

Plug- 2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double

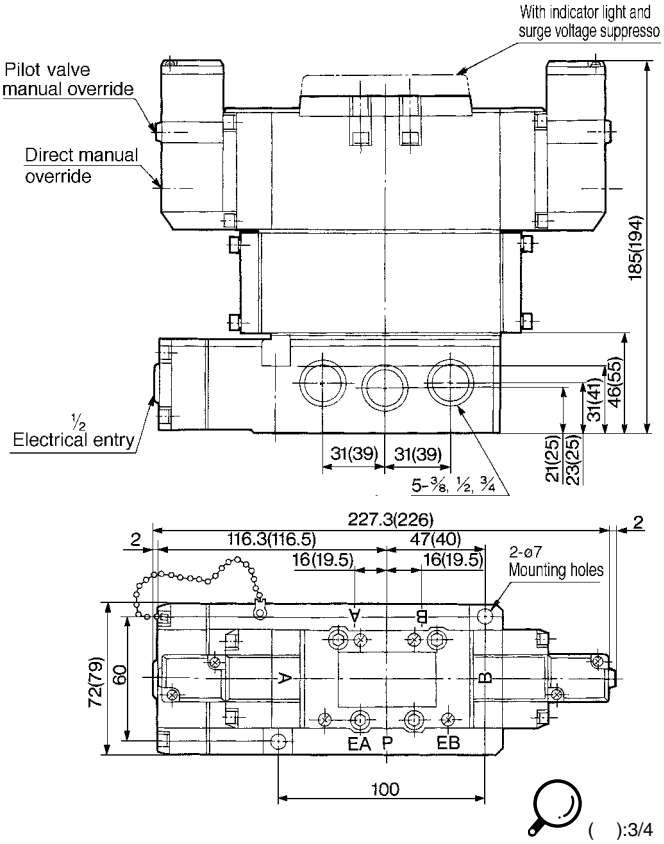
2 position single: VFS5100-□F



2 position double: VFS5200-□F
3 position closed centre: VFS5300-□F
3 position exhaust centre: VFS5400-□F
3 position pressure centre: VFS5500-□F

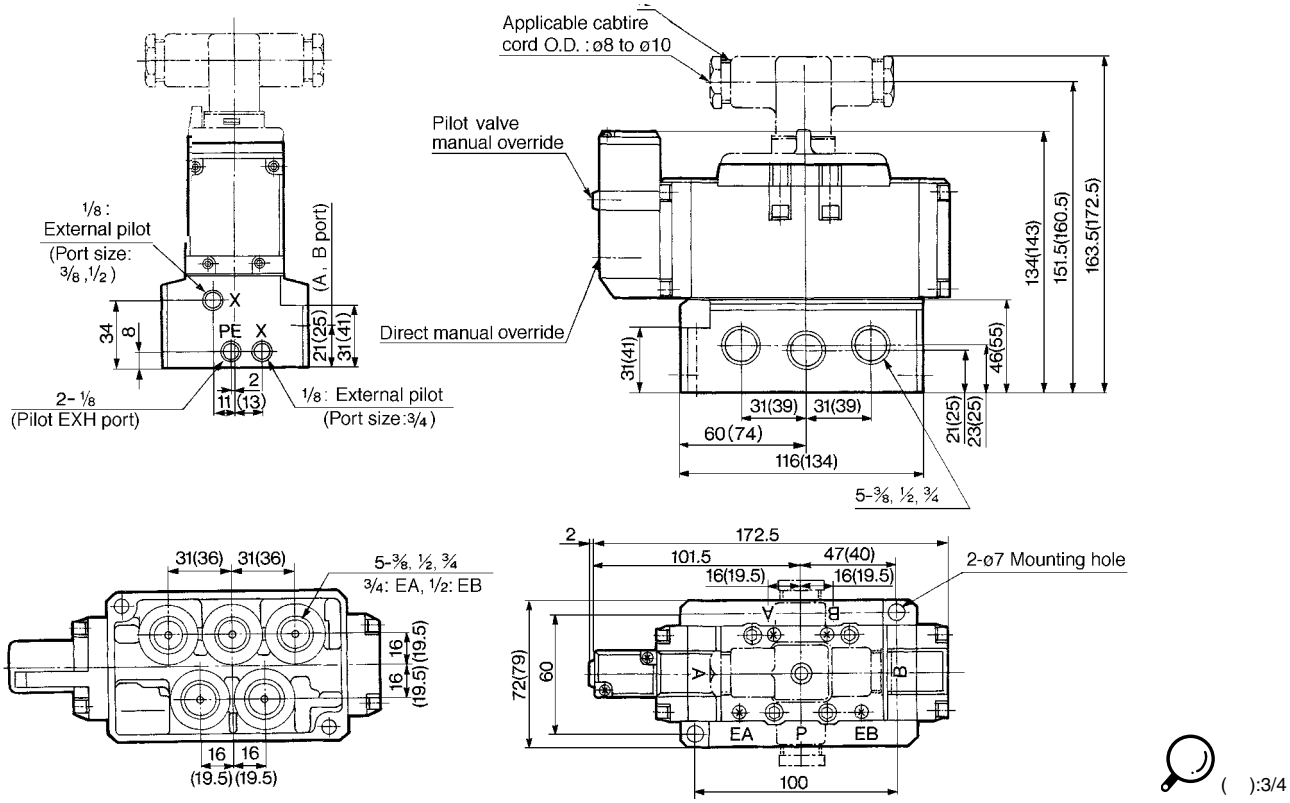


3 position double check: VFS5600-□F

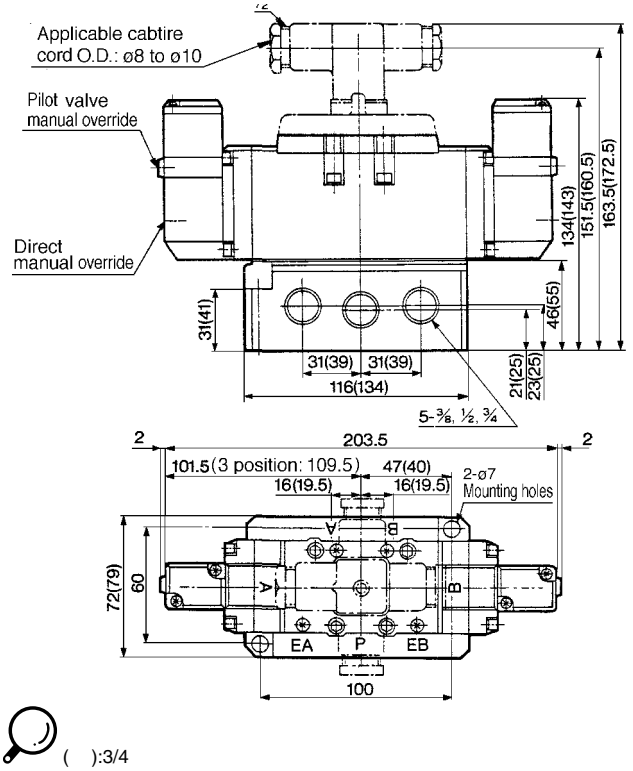


Non Plug- 2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre/Double

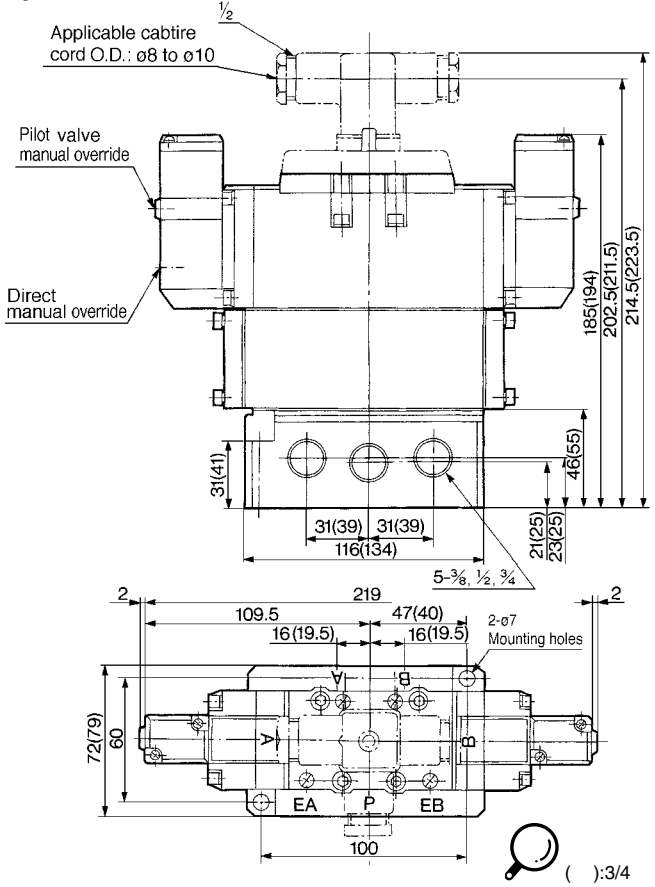
2 position single: VFS5110-□D



2 position double: VFS5210-□D
3 position closed centre: VFS5310-□D
3 position exhaust centre: VFS5410-□D
3 position pressure centre: VFS5510-□D



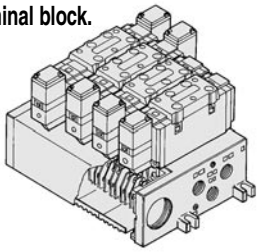
3 position double check: VFS5610-□D



Series VFS5000
Manifold

Plug-in: 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.



□ VV5FS5 − 01T − 06 1 − 04 □ − Q

Series VFS5000 Manifold
Plug-in with terminal block

Stations

02	2 stations
⋮	⋮
10	10 stations

Port size

Symbol	P, EA, EB	A, B
04	3/4	1/2
06		3/4
M		Mix

∗ Bottom ported: 1/2 only.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Symbol

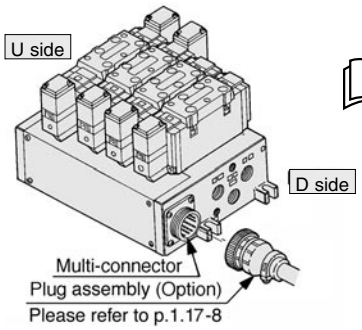
Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom∗

∗ Option

Plug-in: With Multi-connector

(Wiring specifications: Please refer to p.1.17-8.)

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



□ VV5FS5 − 01C D − 05 2 − 04 □ − Q

Series VFS5000 Manifold
Plug-in with multi-connector
Mounting direction of connector

D	D side mounting
U	U side mounting

Stations

02	2 stations
⋮	⋮
08	8 stations

∗ Max: 8 stations.

Port size

Symbol	P, EA, EB	A, B
04	3/4	1/2
06		3/4
M		Mix

∗ Bottom ported: 1/2 only.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Symbol

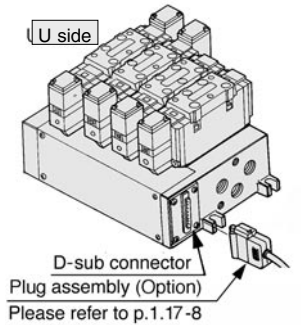
Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom∗

∗ Option

Plug-in: With D-sub Connector

(Wiring specifications: Please refer to p.1.17-8.)

•Wide range of interchangeability
(MIL Spec. DIN connector terminal 25 pcs attached.)
•Quick wiring permits easier installation.



□ VV5FS5 − 01F D − 06 1 − 04 □ − Q

Series VFS5000 Manifold
Plug-in with D-sub connector
Mounting direction of connector

D	D side mounting
U	U side mounting

Stations

02	2 stations
⋮	⋮
08	8 stations

∗ Max: 8 stations.

Port size

Symbol	P, EA, EB	A, B
04	3/4	1/2
06		3/4
M		Mix

∗ Bottom ported: 1/2 only.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

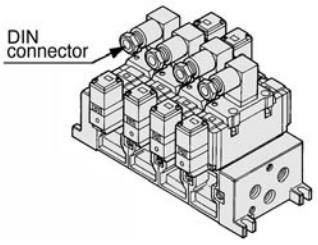
Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom∗

∗ Option

Non plug-in:DIN Connector

•Wiring for every valve.



□ VV5FS5 − 10 − 05 2 − 04 □ − Q

Series VFS5000 Manifold
Non plug-in

Stations

02	2 stations
⋮	⋮
10	10 stations

Port size

Symbol	P, EA, EB	A, B
04	3/4	1/2
06		3/4
M		Mix

∗ Bottom ported: 1/2 only.

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Symbol

Symbol	Port specifications P	Port specifications EA, EB	Porting (A, B)
1	Common	Common	Side
2			Bottom∗

∗ Option

Manifold Specifications

Base style	Wiring	Porting	Port size		No.of stations	Applicable solenoid valve
		A, B port	P, EA, EB	A, B		
Plug-in **VV5FS5-01□**	•With terminal block •With multi-connector •With D-sub connector	Side, Bottom	3/4	1/2 3/4	2 to 10 *	VFS5□00-□F
Non plug-in **VV5FS5-10**	•DIN Connector					VFS5□10-□D

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

Manifold Stations and Effective Area (mm²) (Nℓ/min)

Porting/No. of stations	First station	Fifth station	Tenth station
P→A or B	73.0 (3975)	73.0 (3975)	71.4 (3897)
A→EA, B→EB	88.2 (4809)	88.2 (4809)	88.2 (4809)

* Port size:1/2, 3/4

How to Order Manifold

Please indicate manifold base mounting style, corresponding valve, and option parts.

<<Example>>
•Plug-in with terminal block –6 stations
(Manifold base) VV5FS5-01T-061-04-Q····· 1
(2 position single) VFS5100-5FZ-Q ····· 3
(2 position double) VFS5200-5FZ-Q····· 2
(Blanking plate) VVFS5000-10A ····· 1

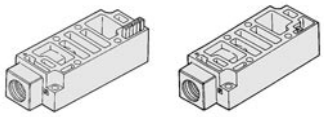
•Non plug-in - 6 stations
(Manifold base) VV5FS5-10-061-04-Q ·····1
(2 position single) VFS5110-5D-Q····· 5
(3 position exhaust centre) VVFS5410-5D-Q1
(Individual EXH spacer) AXT628-9A-2 ····· 1

Manifold/Option Parts Assembly

Individual SUP spacer

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

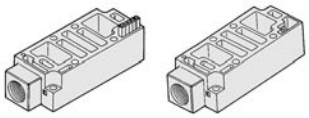
Body	Plug-in	Non plug-in
Part No.	VVFS5000-P-04-1	VVFS5000-P-04-2



Individual EXH spacer

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

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



SUP block disk

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

Body	Plug-in	Non plug-in
Part No.	AXT628-12A	

EXH block disk

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.

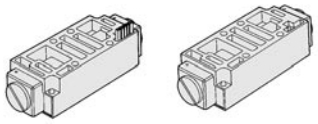
Body	Plug-in	Non plug-in
Part No.	AXT512-14-1A	

EXH block disk SUP block disk

Interface speed control

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

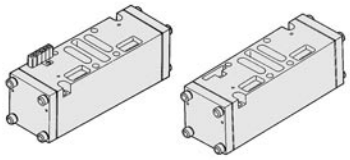
Body	Plug-in	Non plug-in
Part No.	VVFS5000-20A-1	VVFS5000-20A-2



Double check spacer

The concurrent use of double check spacer with built-in double check valve can stop the cylinder at mid-position and hold for a long time without being affected by the air leakage across spool seals.

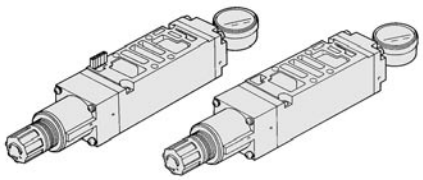
Body	Plug-in	Non plug-in
Part No.	VVFS5000-22A-1	VVFS5000-22A-2



Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. Refer to p.1.17-6 for flow characteristic.

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



Blank plate

When disassembling valve for maintenance purposes or when spare manifold stations are required, install a blank plate on the manifold block.

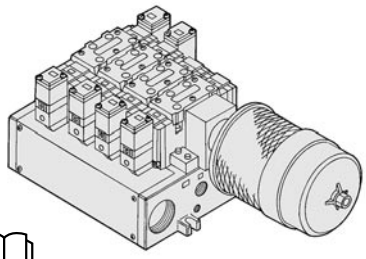
Body	Plug-in	Non plug-in
Part No.	VVFS5000-10A	

Manifold Options

With exhaust cleaner

Plug-in/Non plug-in

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

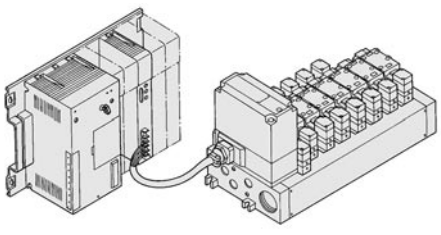


For more information, please refer to p.1.17-

With serial interface unit

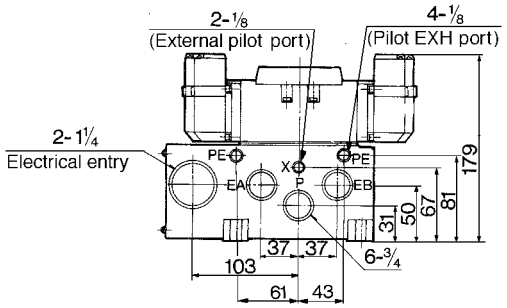
Plug-in

- **Solenoid valve wiring process reduced considerably.**
- **Disperse installation possible. Manifold solenoid valve: 8 stations max, 32 positions (512 solenoids).**
- **Maintenance and inspection are easy.**

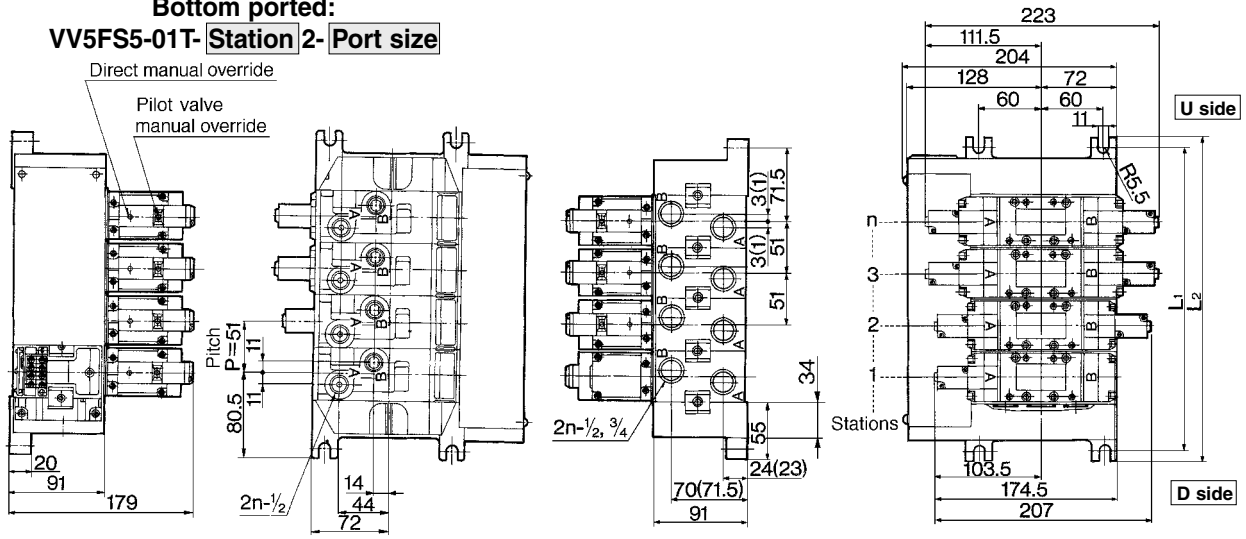


Manifold Plug-in/Non Plug-in

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



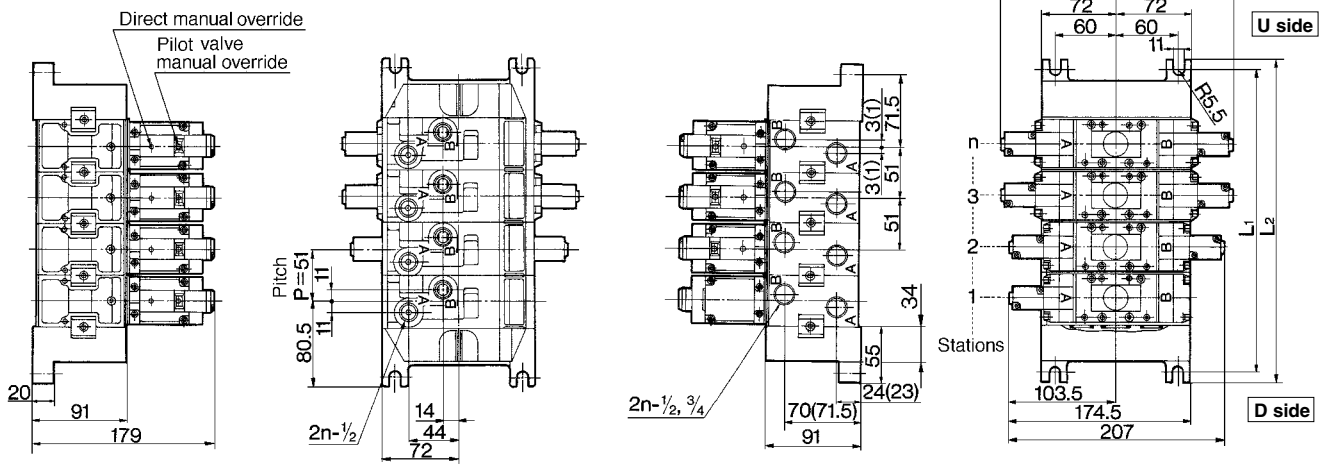
Bottom ported: VV5FS5-01T- Station 2- Port size



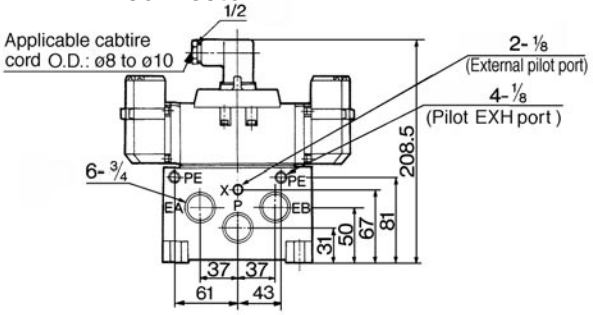
( ): A/B port 3/4

General formula of weight/Manifold M=0.911n+1.621 (kg) n:

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



VV5FS5-10- Station 2- Port size DIN connector



Grommet with terminal

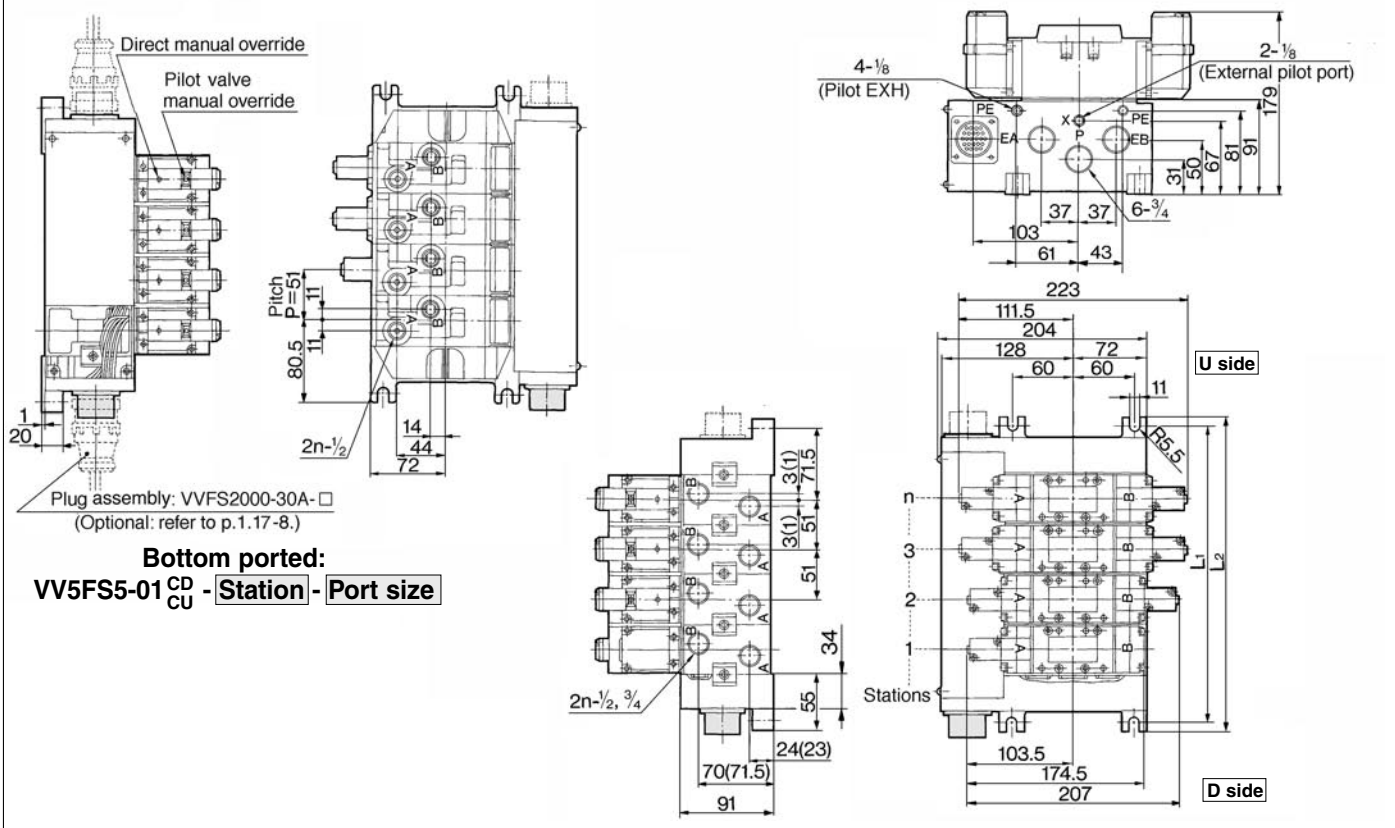
General formula of weight/Manifold M=0.811n+1.231 (kg) n:

( ): A/B port 3/4

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	194	245	296	347	398	449	500	551	602	L1=51 X n+92
L2	212	263	314	365	416	467	518	569	620	L2=51 X n+110

Plug-in with Multi-Connector/With D-Sub Connector

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

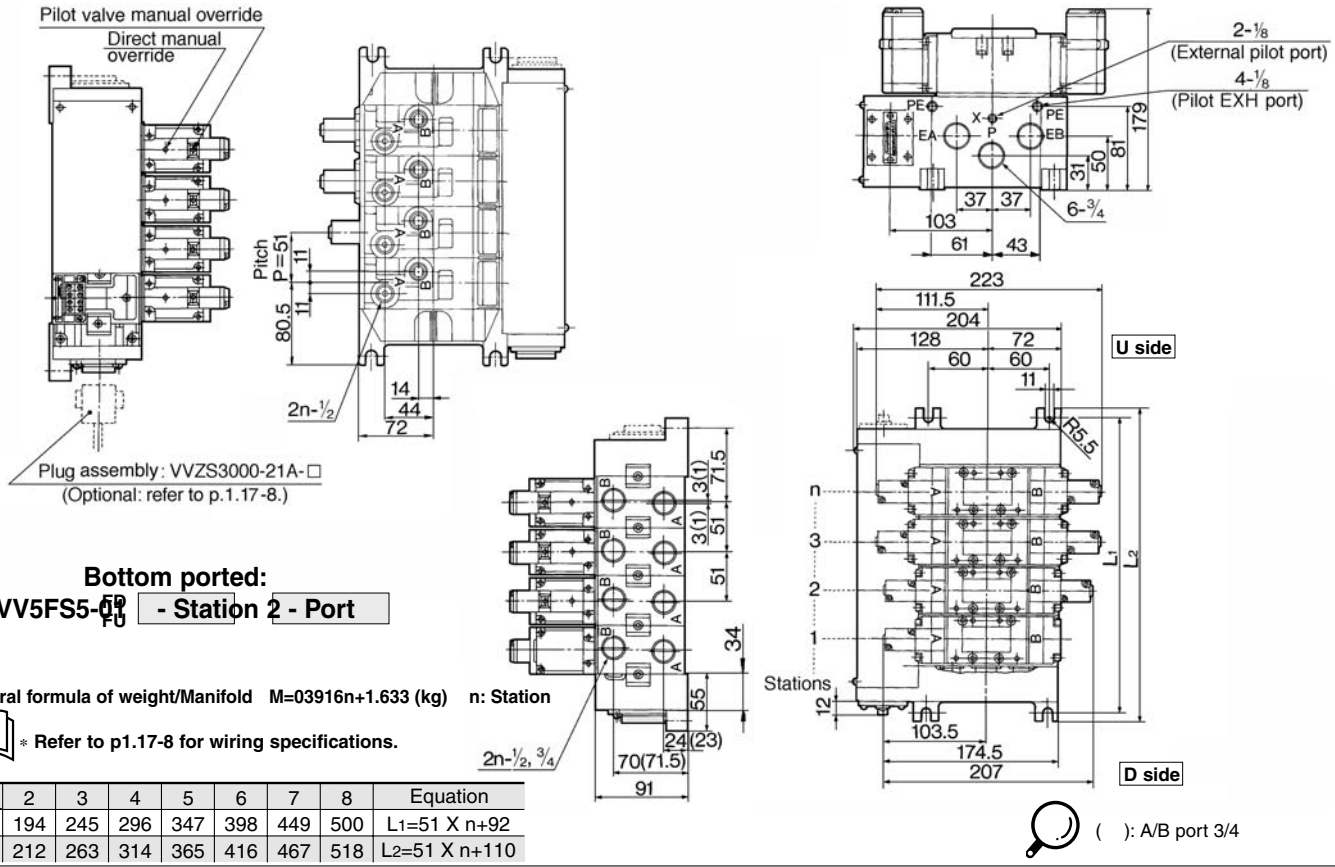


Bottom ported:
VV5FS5-01 CD/CU - Station - Port size

General formula of weight/Manifold M=0.916n+1.709 (kg) n:

( ): A/B port 3/4

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



Bottom ported:
VV5FS5-01 FD/FU - Station 2 - Port

General formula of weight/Manifold M=03916n+1.633 (kg) n: Station

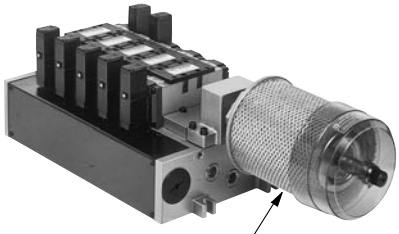
∗ **Refer to p1.17-8 for wiring specifications.**

( ): A/B port 3/4

L \ n	2	3	4	5	6	7	8	Equation
L1	194	245	296	347	398	449	500	L1=51 X n+92
L2	212	263	314	365	416	467	518	L2=51 X n+110

Manifold with Exhaust Cleaner

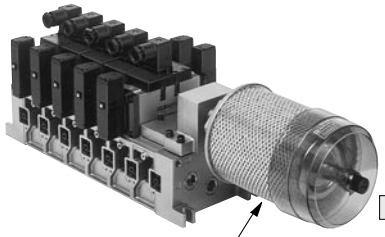
- **Serves to protect working environment.**
- **Valve exhaust noise dampening: 35dB or more.**
- **Collection rate of drainage and oil mist: 99.9% or more.**
- **Piping process reduced.**



Plug-in

Exhaust cleaner (Optional)

U side



D side

Non plug-in

Exhaust cleaner (Optional)

Manifold Specifications

Manifold Model	Plug-in: **VV5FS5-01□**	Non plug-in: **VV5FS5-10**
Wiring	With terminal block With multi-connector With D-sub connector	DIN connector Grommet terminal
Applicable valve	VFS5□00-□F	VFS5□10-□D, VFS5□10-□E
Porting Rc (PT)	Common SUP, Common EXH	
	A, B port	Side: 1/2, 3/4, Bottom: 1/2 (Option)
	P, EA, EB port	P: 3/4, EXH: 1 1/2
No.of stations	2 to 10 (1)	
Applicable exhaust cleaner	AMC810-14 (Connecting port 1 1/2 Rc (PT)) (2)	

Note 1) With multi connector, or with D-sub connector: 8 stations max.
Note 2) Exhaust cleaner: Not attached.

How to Order

□ VV5FS5 – 10 □ – 06 1 – 04 □ – CD – Q

Series VFS5000 Manifold

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

Base style

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

Connector mounting direction

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

Stations

02	2 stations
⋮	⋮
10	10 stations

Base style 01T, 10: 2-10 stations
Base style 01C, 01F: 2-8 stations

Symbol

Symbol	Port specifications		Porting
	P	EA, EB	(A, B)
1	Common	Common	Side
2			Bottom*

* Option

Port size

Symbol	P	A, B
04	3/4	1/2
06		3/4
M		Mix

* Bottom ported: Only 1/2

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Exhaust cleaner mounting direction

Symbol	Exhaust cleaner mounting direction	
CD	D side	D side mounting
CU	U side	U side mounting

Please indicate manifold base mounting style, corresponding valve, and option parts.

≪Example≫¡Plug-in with terminal block (6 stations)

(Manifold base)	**VV5FS5-01T-061-04-CD-Q**	1
(2 position single)	**VFS5100-5FZ-Q**	3
(2 position double)	**VFS5200-5FZ-Q**	2
(Blank plate)	**VVFS5000-10A**	1
(Exhaust cleaner)	**AMC810-14**	1

•Non plug-in (6 stations)

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

⚠ Precautions

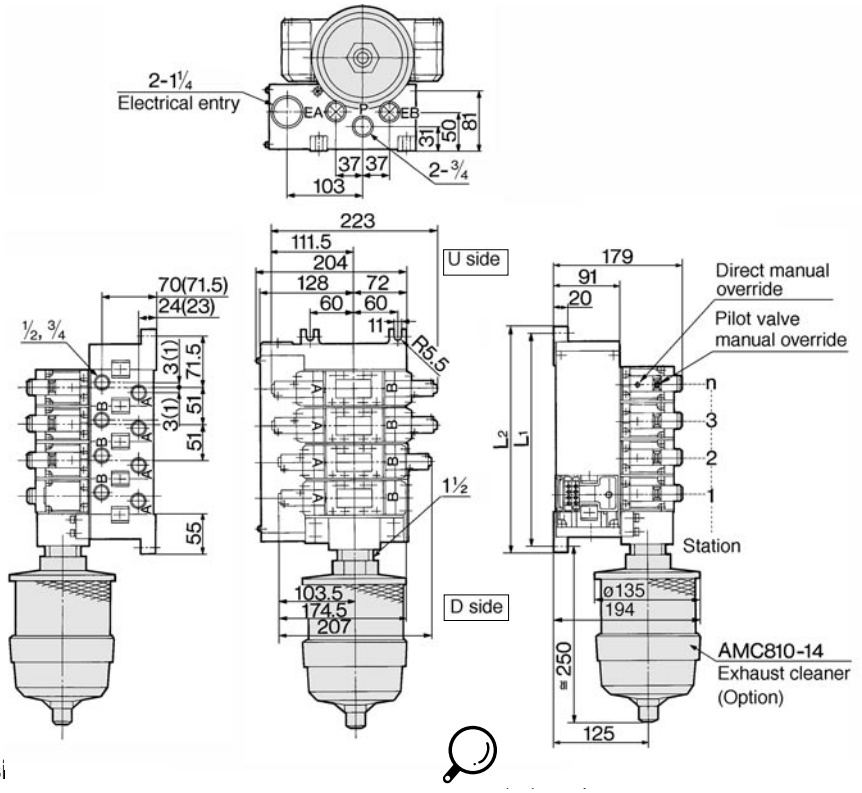
When using exhaust cleaner, mount it downwards.

⚠ Protective class class I (Mark: ⏚)

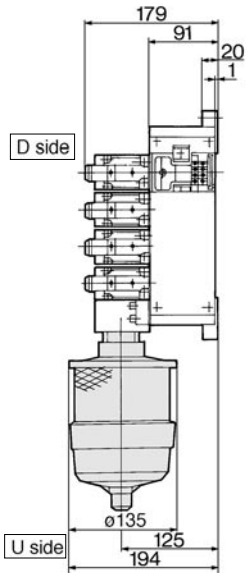
* **Refer to p.5.3-1 for Exhaust Cleaner details.**

Manifold with Exhaust — Plug-in/Non Plug-in

Plug-in: VV5FS5-01T- Station 1- Port size - CD CU

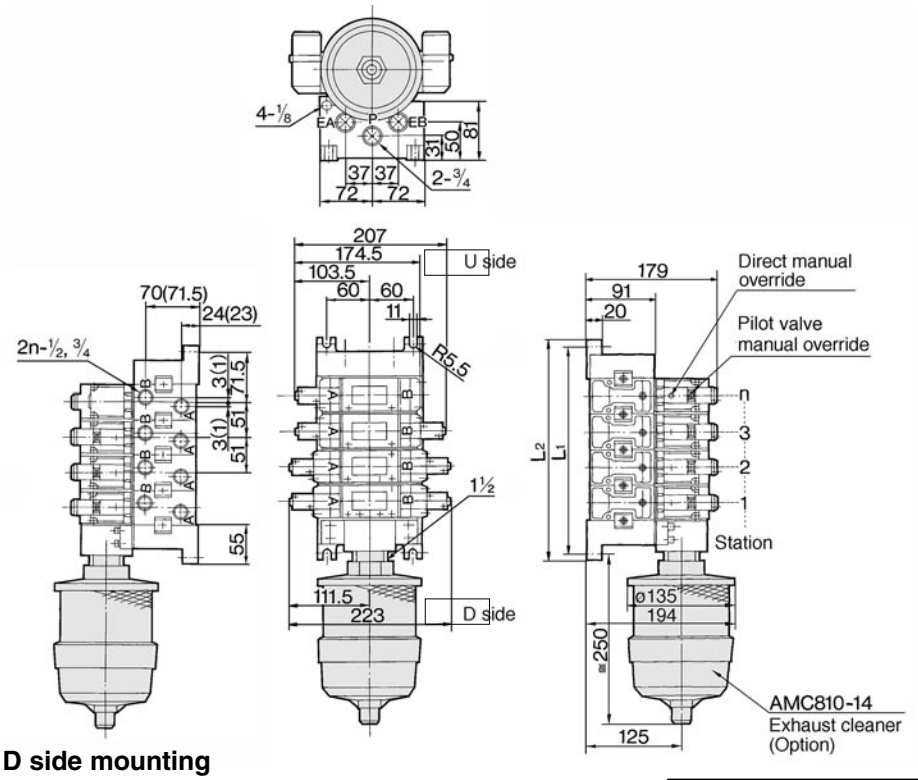


D si

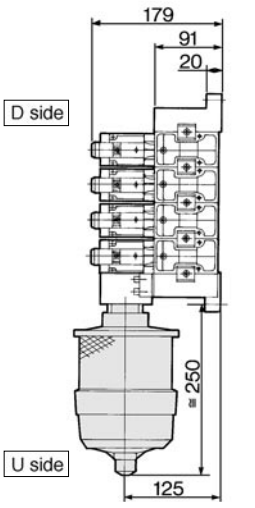


U side mounting

Non plug-in: VV5FS5-10- Station 1- Port size - CD CU



D side mounting



U side mounting

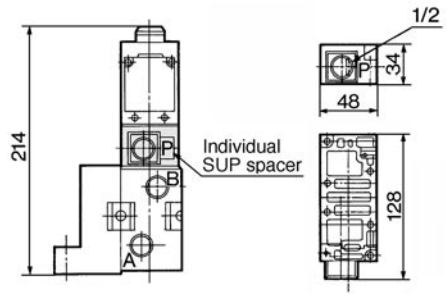
( ): A/B port 3/4

n: Station

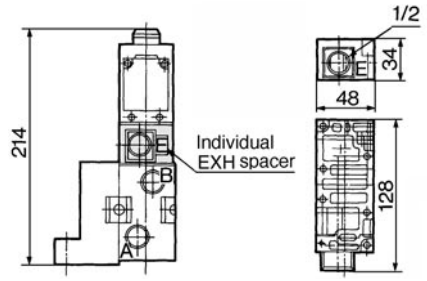
L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	194	245	296	347	398	449	500	551	602	L1=51 X n+92
L2	212	263	314	365	416	467	518	569	620	L2=51 X n+110

Manifold Option Parts Plug-in/Non Plug-in

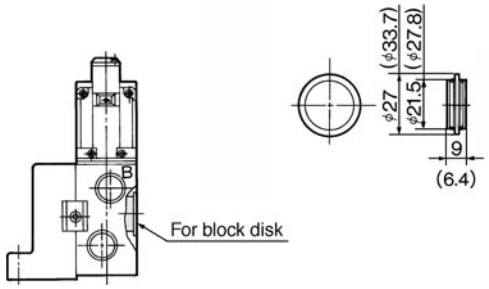
Individual SUP spacer:
VVFS5000-P-04-1 (Plug-in)
VVFS5000-P-04-2 (Non plug-in)



Individual EXH spacer:
VVFS5000-R-04-1 (Plug-in)
VVFS5000-R-04-2 (Non plug-in)

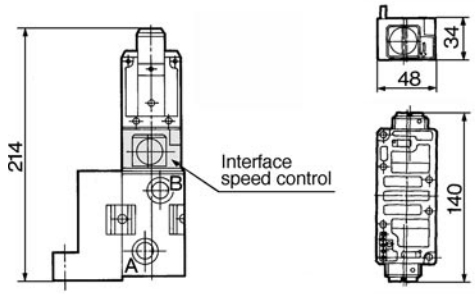


SUP block disk: AXT628-12A
EXH block disk: AXT512-14-1A

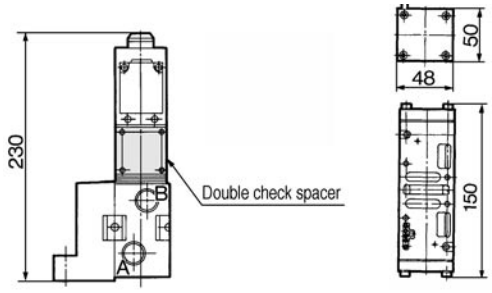


( ) : SUP block disk

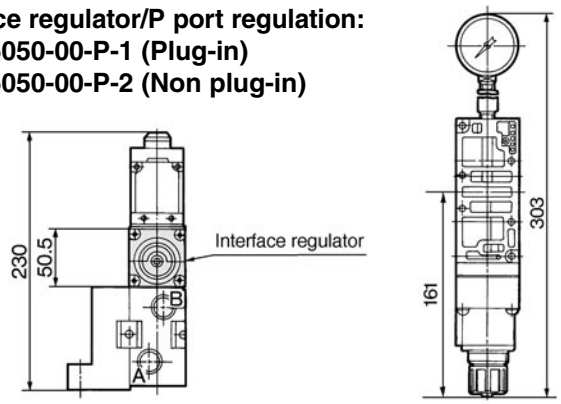
Interface speed control:
VVFS5000-20A-1 (Plug-in)
VVFS5000-20A-2 (Non plug-in)



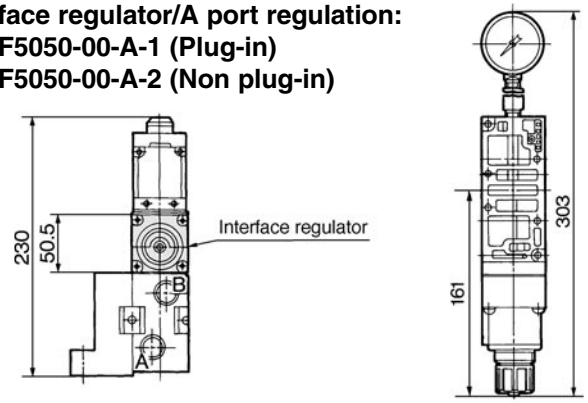
Double check spacer:
VVFS5000-22A-1 (Plug-in)
VVFS5000-22A-2 (Non plug-in)



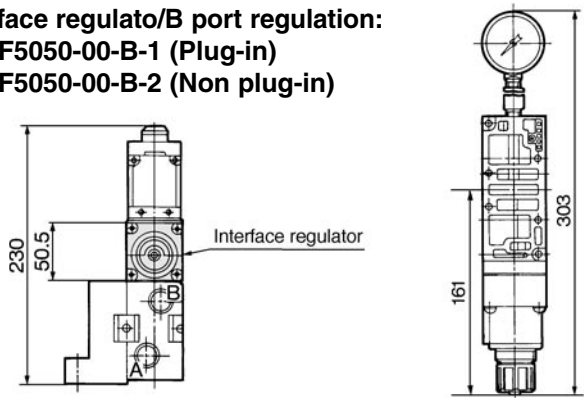
Interface regulator/P port regulation:
ARBF5050-00-P-1 (Plug-in)
ARBF5050-00-P-2 (Non plug-in)



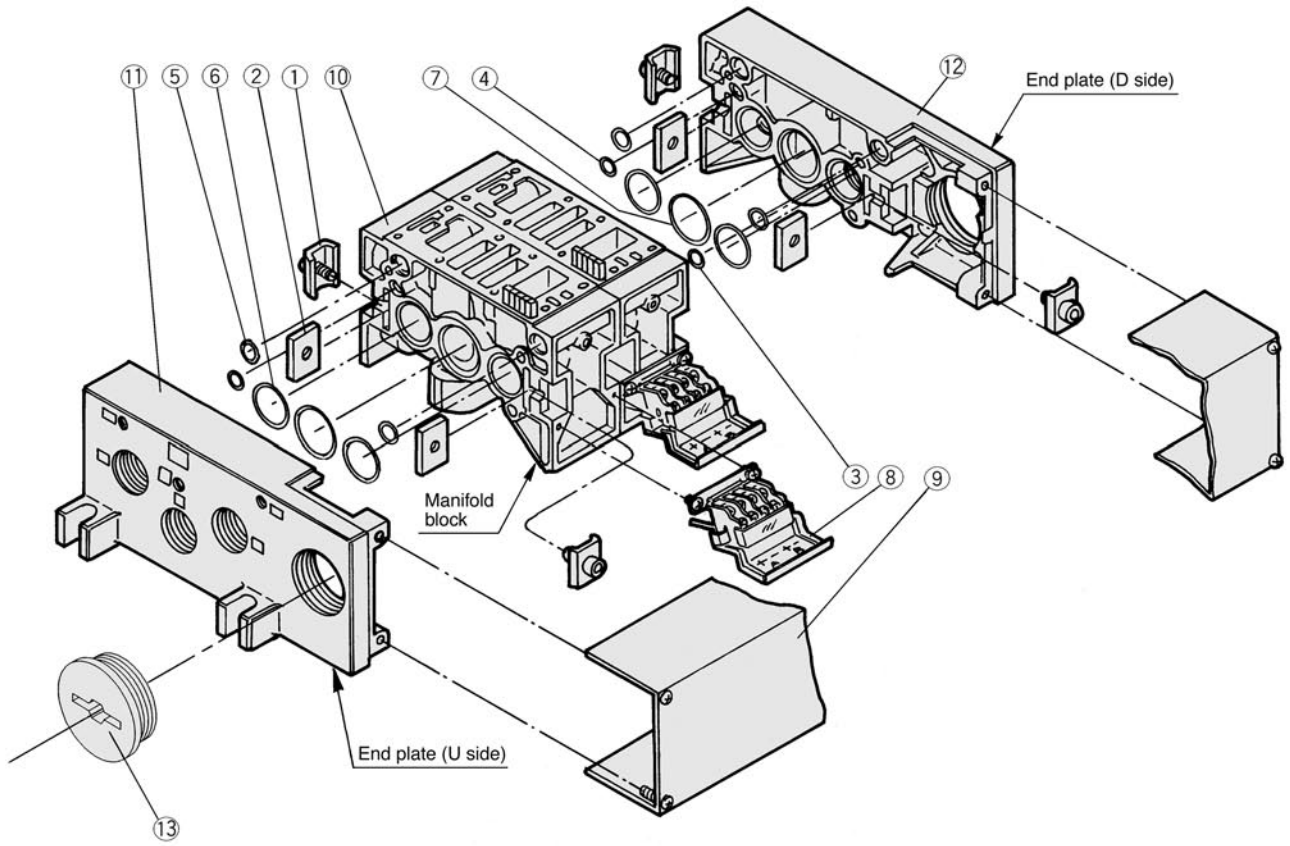
Interface regulator/A port regulation:
ARBF5050-00-A-1 (Plug-in)
ARBF5050-00-A-2 (Non plug-in)



Interface regulato/B port regulation:
ARBF5050-00-B-1 (Plug-in)
ARBF5050-00-B-2 (Non plug-in)



Manifold Base Construction Plug-in/Non Plug-in



Replacement Parts

No.	Description	Material	Part No.
①	Metal joint A	Steel plate	AXT628-6-1A
②	Metal joint 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]
		For 01SU	AZ738-31A-[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: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.

Replacement Parts Sub-assem-

Note) Manifold Base/Constraction: Plug-in 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
		VVFS5000-1A-2-$^{04}_{06}$	Manifold block ⑩, Metal joint ①, ②, O ring ③, ④, ⑤, ⑥, ⑦	Non plug-in
⑪	End plate (U side) assembly	VVFS5000-2A-1	End plate (U) ⑪, Metal joint ①, ②	Plug-in
		VVFS5000-2A-2	End plate (U) ⑪, Metal joint ①, ②	Non plug-in
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
		VVFS5000-3A-2	End plate (D) ⑫, Metal joint ①, ②, O ring ③, ④, ⑤, ⑥, ⑦	Non plug-in

5 Port Pilot Operated Solenoid Valve
Metal Seal, Plug-in/Non Plug-in
Series VFS6000

Model

Type of actuation		Model		Port size Rc	Flow rate characteristics						Max.[1] operating cycle (cpm)	Response time[2] (ms)	Weight[3] (kg)
					1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)					
		Plug-in	Non plug-in		C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv			
2 position	Single	**VFS6100**	**VFS6110**	3/4	29	0.10	6.8	38	0.10	9.0	180	160 or less	2.5
				1									
	Double	**VFS6200**	**VFS6210**	3/4	29	0.10	6.8	38	0.10	9.0	180	60 or less	2.75
				1									

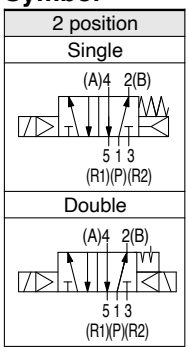
Note 1) Based on JIS B 8419: 2010 (once per 30 days) for the min. operating frequency.
Note 2) Based on JIS B 8419-2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (≈ 20°C))
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)
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 rate 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

Symbol



Standard Specifications

Valve specifications	**Fluid**			Air
	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)
	Impact/Vibration resistance			150/50 m/s² [3]
	Enclosure			Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) [4] [6]
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.
Note 6) The F and D type enclosures described above show those without the light/surge voltage suppressor. The F and D type enclosures with the light/surge voltage suppressor are equivalent to IP50.

Option Specifications

Pilot type		External pilot[Note]
Manual override	**Main valve**	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

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

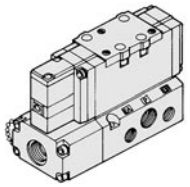
How to Order

Ordering source area code

Code	areas
-	Japan, Asia Australia
E	Europe
N	North America

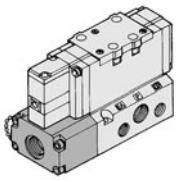
Body

O: Plug-in sub-plate



Electrical entry

F: Plug-in conduit terminal



Piping port

—	Side
B*	Bottom

*In case of option or external pilot, bottom piping is not available.

Without sub-plate

—	Without sub-plate
06	Rc (PT) 3/4
10	Rc (PT)1

Thread

—	Rc (PT)
N	NPT
T	NPTF
F	G (PF)

Plug-in □VFS6 1 0 0 □ — 5 F Z — □ 10 □ — Q

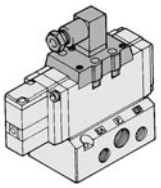
Non plug-in □VFS6 1 1 0 □ — 5 D Z — □ 10 □ — Q

Configuration

1	2 position single
2	2 position double

Body

1: Non plug-in sub-plate



Body option

0	Standard
1*	Direct manual override

* Option

Protective class class I (Mark: ⏚)

Pilot

—	Internal
R*	External

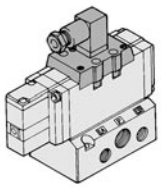
* Option

Option

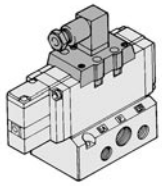
—	None
Z	With indicator light and surge voltage suppressor

Electrical entry

D: DIN connector
DO: Without connector



Y: DIN connector (DIN 43650)
YO: Without DIN connector



Voltage

1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other(250V or less)

Order Made Contact SMC for other voltages (9)

How to Order Pilot Valve Assembly

SF4 — 1 F — 22 — Q

Voltage

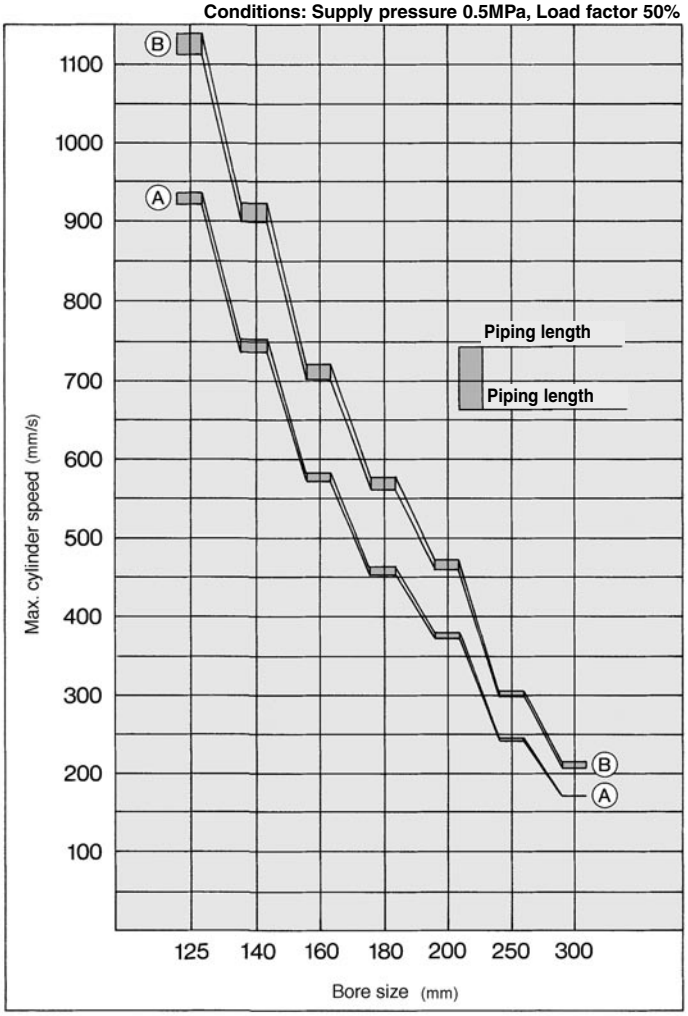
1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz
9	Other (250 or less)

Order Made Contact SMC for other voltages (9)

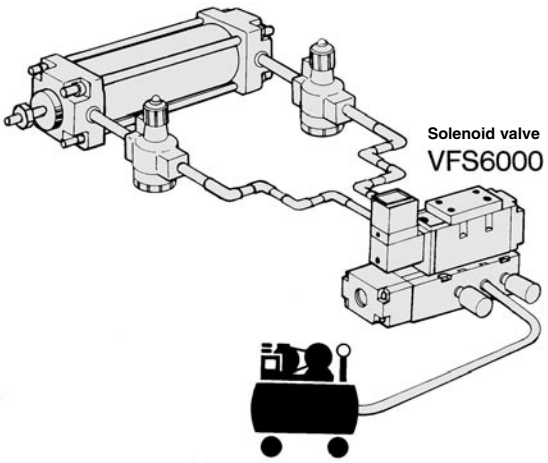
* Refer to the p.1.17-5 for voltage conversion.

Maximum Cylinder Speed

Conditions: Supply pressure 0.5MPa, Load factor 50%



System diagram



Rubber hose piping system

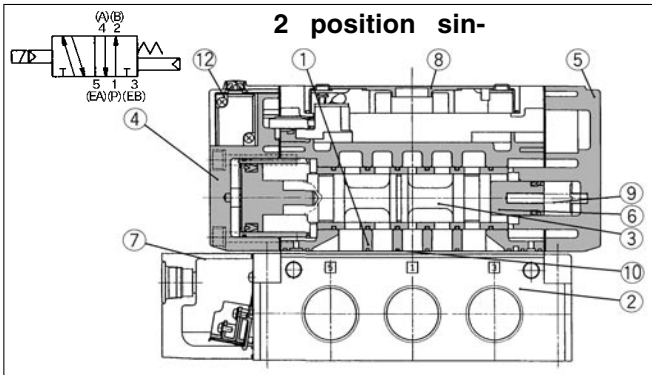
System	Solenoid valve	Speed controller	Silencer	Piping (Hose bore size)
A	VFS6000-10 {1} (S=180mm²)	AS600-10 {1} (S=230mm²)	AN600-10 {1} (S=270mm²)	1B (Fitting 4 pcs)

Steel piping system

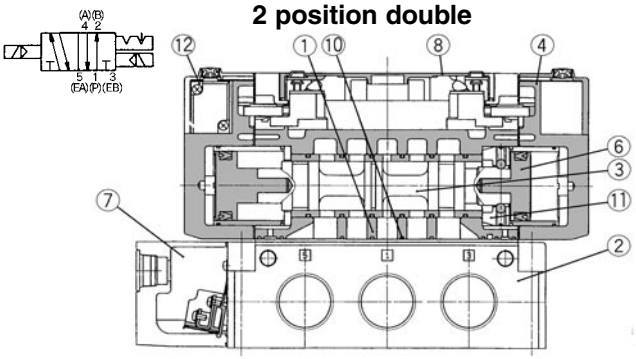
System	Solenoid valve	Speed controller	Silencer	Piping (Hose bore size)
B	VFS6000-10 {1} (S=180mm²)	AS600-10 {1} (S=230mm²)	AN600-10 {1} (S=270mm²)	1B (Fitting 4 pcs)

Construction

2 position sin-



2 position double



Component Parts

No.	Description	Material	Note
①	Body	Aluminium die-cast	Platinum silver
②	Sub-plate	Aluminium die-cast	Platinum silver
③	Spool/Sleeve	Stainless steel	
④	Adapter plate	Aluminium die-cast	Black
⑤	End plate	Aluminium die-cast	Black
⑥	Piston	Resin	
⑦	Junction cover	Resin	
⑧	Light cover	Resin	

Sub-plate Assembly

Plug-in	VFS6000-P-$^{06}_{10}$
Non plug-in	VFS6000-S-$^{06}_{10}$

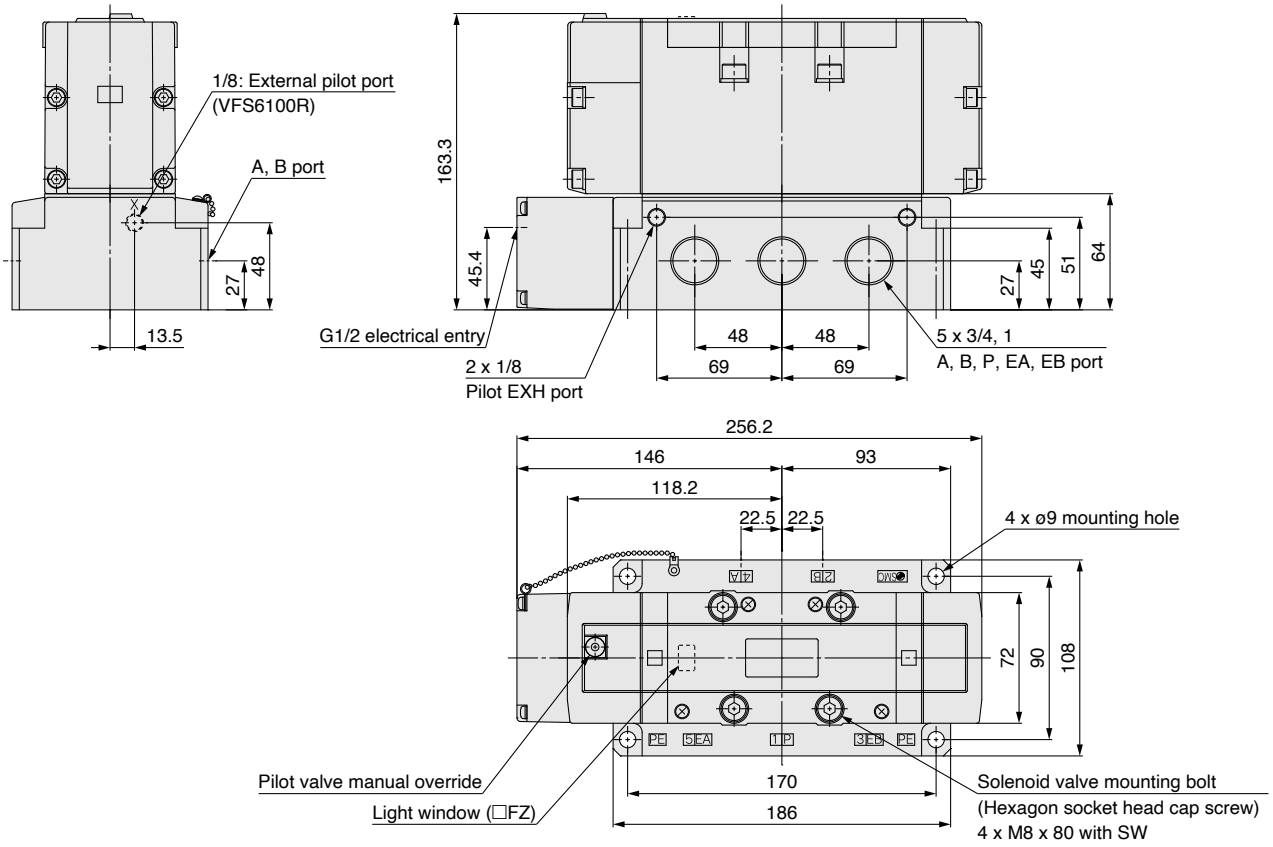
Mounting bolt and gasket are not included.

Replacement Parts

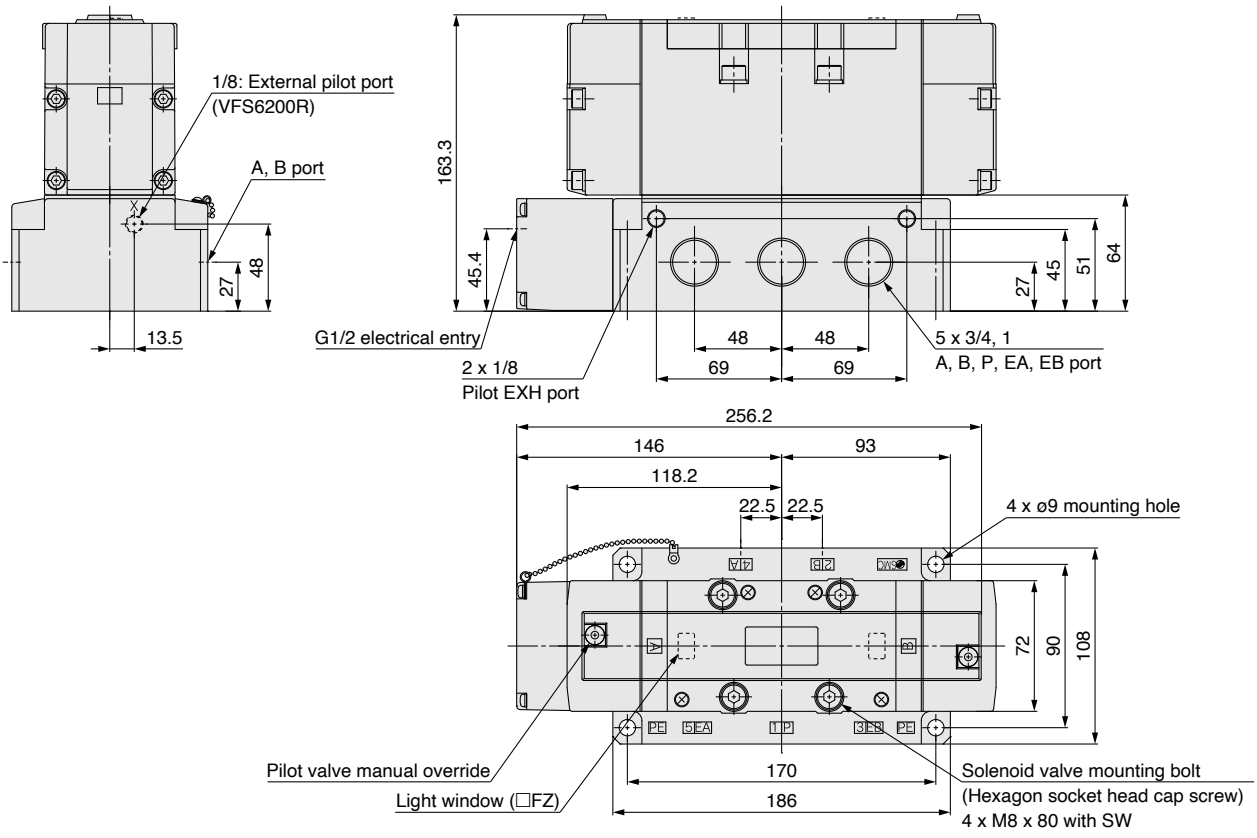
No.	Description	Material	Part No.	
			VFS61□□	VFS62□□
⑨	Return spring	Stainless steel	VFS6000-16-3	—
⑩	Gasket	NBR	VFS6000-15	VFS6000-15
⑪	Detent assembly	—	—	VFS6000-8A
⑫	Pilot valve assembly	—	Refer to the p.1.17-100 “How to Order Pilot valve assembly”.	

Plug-in — 2 Position single/Double

2 position single: VFS6100-□F

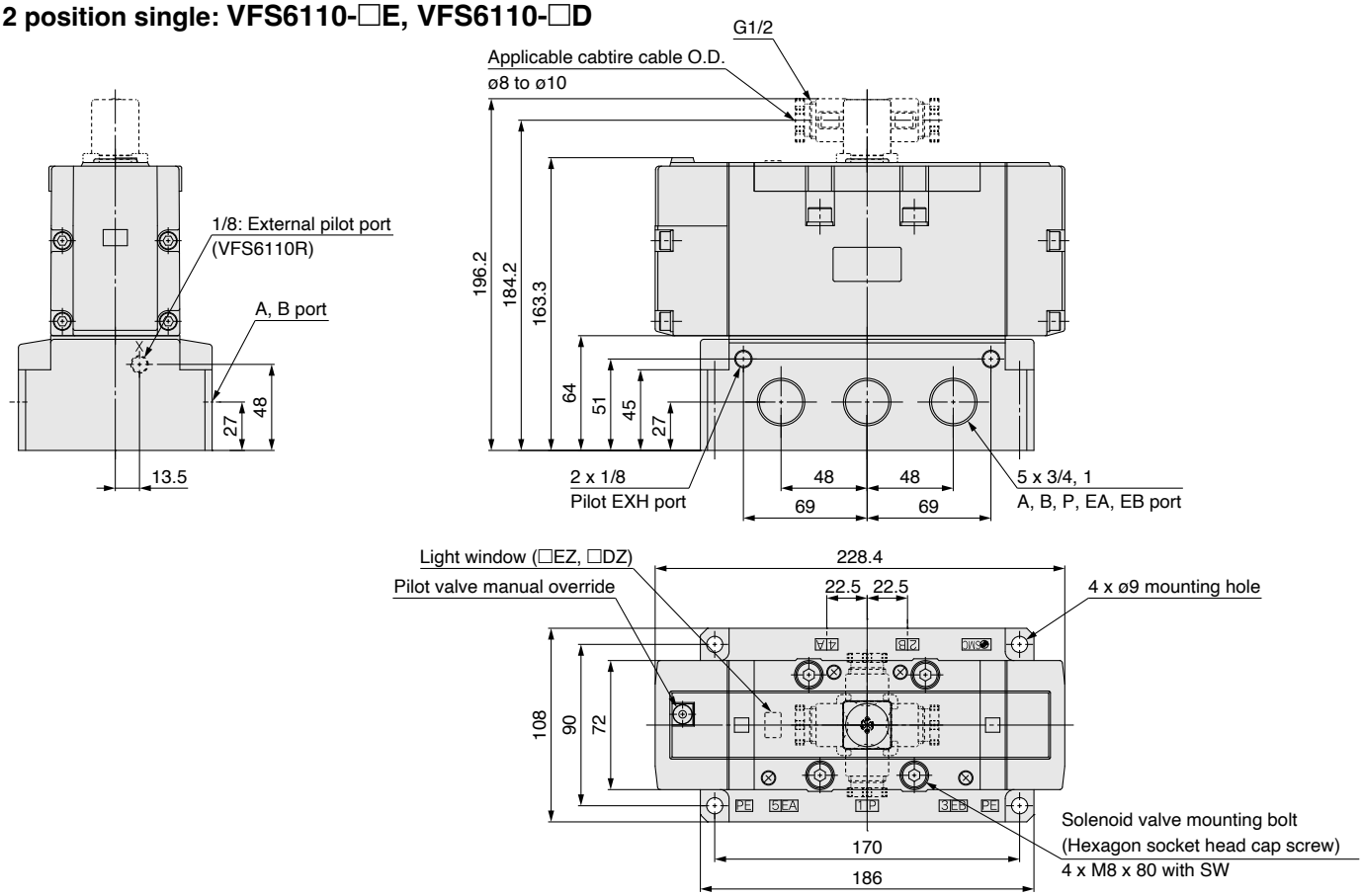


2 position double: VFS6200-□F

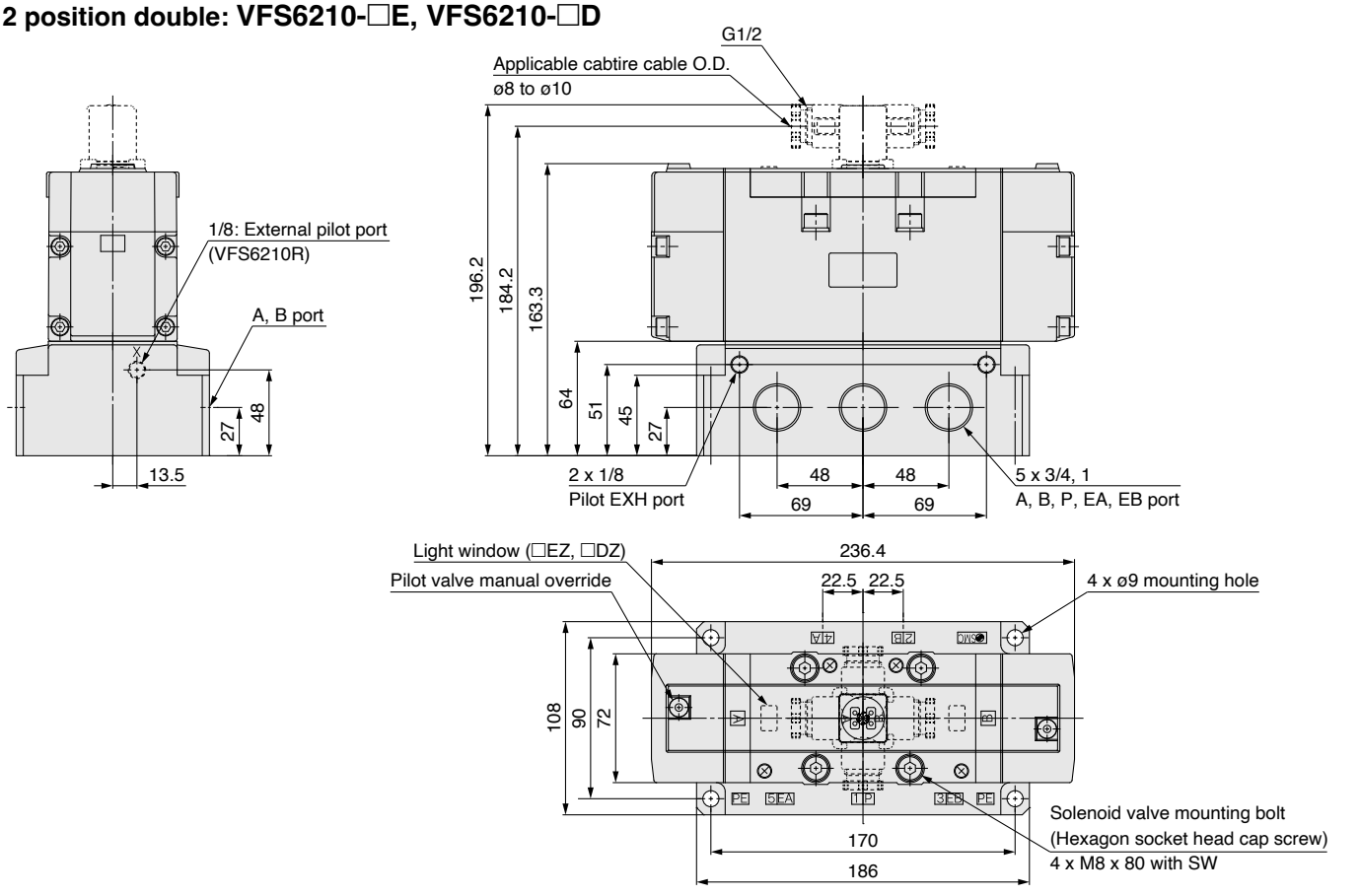


Non Plug-in — 2 Position single/Double

2 position single: VFS6110-□E, VFS6110-□D



2 position double: VFS6210-□E, VFS6210-□D



VFS Series
Specific Product Precautions 1

Be sure to read this before handling the products. For safety instructions and 3/4/5-port solenoid valve precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

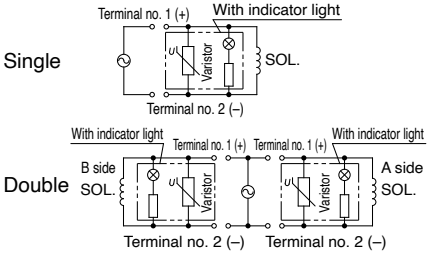
⚠Caution

Light/Surge Voltage Suppressor, Electrical Entry — Single unit

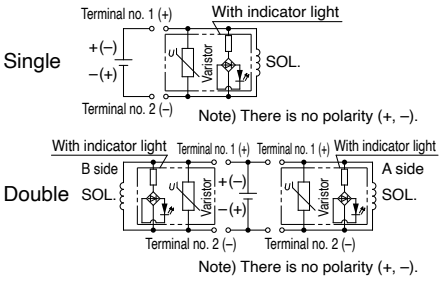
Body Ported
VFS1000/2000/3000 Series

Light/Surge Voltage Suppressor

AC and 100 VDC



24 VDC or less

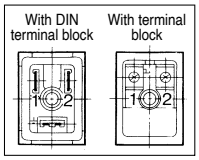


• Type G: Lead wire comes directly from the solenoid part. Connect it with the power source. Grommet with DC voltage surge voltage suppressor has polarity. Connect red lead wire to + (positive) side and black to – (negative) side.

Surge voltage suppressor	
DC	AC
Red + Diode Black –	Varistor

Wiring

In the case of DIN terminal and terminal block (with indicator light/surge voltage suppressor), the interior wiring is shown below.

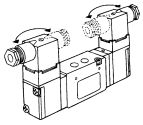


Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S, but in the case of with DIN terminal block, is not a terminal structure.

Note) There is no polarity.

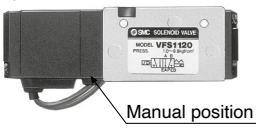
Changing Direction of DIN Terminal/Cable Entry

To change direction of DIN terminal retaining screw, pull off outer cover, rotate connector board through 180°. Replace cover and tighten screw.



Changing Direction of Electrical Entry and Manual Override

Loosen the set screw (M3–2 pcs.), take out pilot operator, turn solenoid valve 180° degrees to change the direction of lead wire and manual override. (Possible on the VFS1000 series only.)

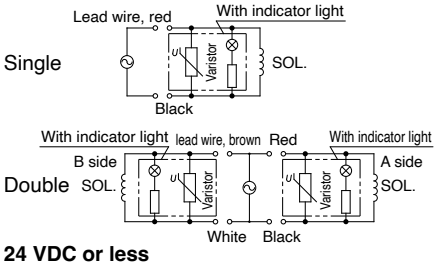


Base Mounted | **VFS2000 Series**

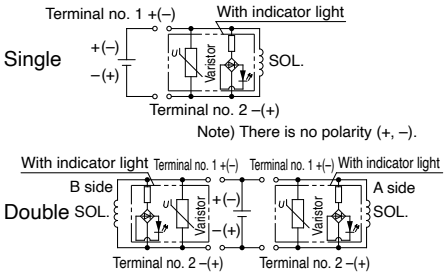
Light/Surge Voltage Suppressor

• In the case of surge voltage suppressor, surge voltage absorption device ZNR is attached to AC power.

AC and 100 VDC

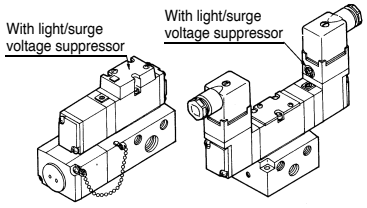


24 VDC or less



• Type G: Use lead wire from solenoid to connect with power side.
Grommet with DC voltage surge voltage suppressor has polarity. Connect red lead wire to + (positive) side and black to – (negative) side.

Surge voltage suppressor	
DC	AC
Red + Diode Black –	Varistor



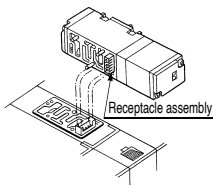
Plug-in type **Non plug-in type**

How to Exchange

Solenoid valve

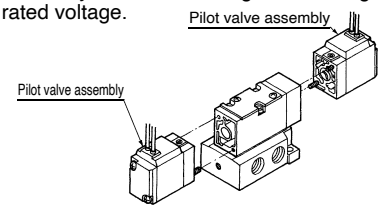
• Loosen 3 set screws (hexagonal socket head cap screw M3 x 31) and pull solenoid valve out vertically, otherwise it may cause damage to the solenoid valve. Never remove a valve at an angle.

• When mounting solenoid valve onto the base, plug pin assembly (base side) into receptacle assembly (body-side) vertically.



Exchange of pilot valve (Voltage exchange)

• When changing rated voltage and electrical entry etc., pilot valve assembly can be changed. But in case of a plug-in type with light/surge voltage suppressor, pilot valve assembly cannot be changed for changing rated voltage.



• When mounting pilot valve assemblies and solenoid valve bodies, tighten equally with the tightening torque shown in the right to prevent gaskets from slip-

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

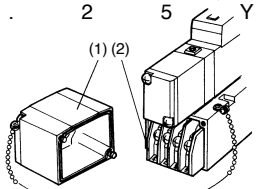
Electrical Connection

Single unit/Plug-in type sub-plate: T
Conduit terminal (With terminal block)

• If the junction cover (1) of the sub-plate is removed, you can see the plug-in type terminal block (2) (part no. NVF2000-27A-1) mounted inside the sub-plate. The following markings are on the terminal block board. Connect with corresponding power side.

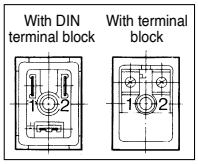
Description	Solenoid A side		Solenoid B side	
Terminal block marking	A +	A –	B +	B –

• There is no polarity.
• When ground wiring and COM wiring are required, please specify separately.
• Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S, but in the case of with DIN connector board, is not a terminal structure.
Tightening torque for terminal: 0.6 N·m



Single unit/Non plug-in type sub-plate: G, E, T, D

• **Type G**: Use lead wire from solenoid to connect with power side.
• **Type E, T, D**: In the case of a DIN terminal and terminal block (with light/surge voltage suppressor), the interior wiring is shown below. Connect with corresponding power



Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S, but in the case of with DIN connector board, is not a terminal structure.
Tightening torque for terminal: 0.6 N·m

Note) There is no polarity.

Changing Direction of DIN Terminal/Cable Entry

• **Change of the electrical entry of DIN type connector cable**
Unscrew retaining screw, pull off outer cover, rotate connector board through 180°. Replace cover and tighten screw. Applicable cable: O.D. ø6 to ø8.

VFS Series
Specific Product Precautions 2

Be sure to read this before handling the products. For safety instructions and 3/4/5-port solenoid valve precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

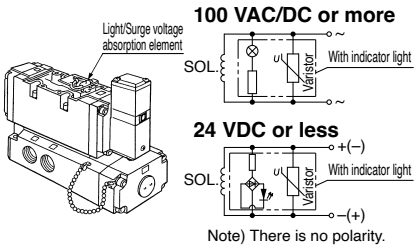
⚠ Caution

Light/Surge Voltage Suppressor, Electrical Entry — Single unit

Base Mounted — **VFS3000/4000/5000/6000 Series**

Light/Surge Voltage Suppressor

In the case of surge voltage suppressor, surge voltage absorption element is attached to terminal block on body area.

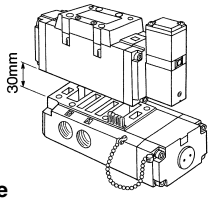


Note) There is no polarity.

How to Exchange

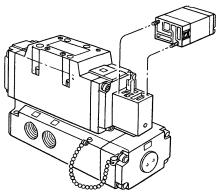
Solenoid valve

- 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.

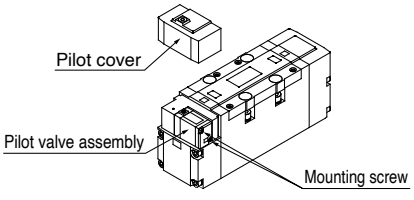


Pilot valve

- 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



VFS6000

Light/Surge Voltage Suppressor Substrate Part No.

VFS3000		VFS3000-10A-□#1
VFS4000	100V or more	VF4000-9A-□#1
	24V or less	VF4000-9B-□#1
VFS5000	100V or more	AXT627-7A-□#1
	24V or less	AXT627-7B-□#1
VFS6000	100V or more	VF4000-9A-□#1
	24V or less	VF4000-9B-□#1

-□: 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

- When mounting pilot valve assemblies and solenoid valve bodies, tighten equally with the tightening torque shown in the right to prevent gaskets from slip-

Pilot Valve Assembly SF4-□-□

Holding screw	Proper tightening torque (N·m)
M3	0.45 to 0.6

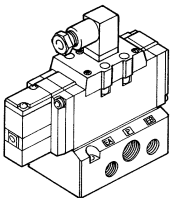
Solenoid Valve Body

Holding screw	Proper tightening torque (N·m)
M3	0.8 to 1.2
M4	1.4 to 2.5
M5	2.8 to 5

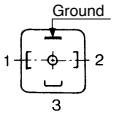
Lead Wire Connection

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.



DIN terminal (Wiring)

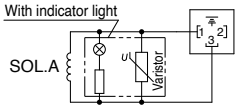


1	A side
2	B side
3	COM
⏚	Ground

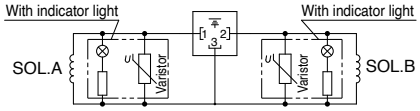
- There is no polarity.

100 VAC/DC or more

Single

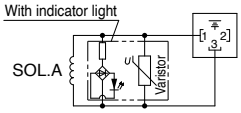


Double

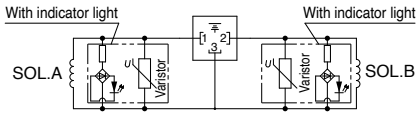


24 VDC or less

Single



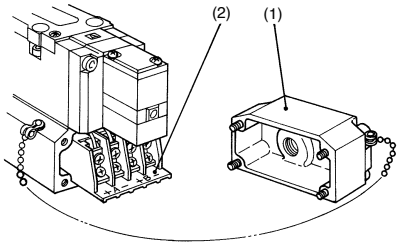
Double



- 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.



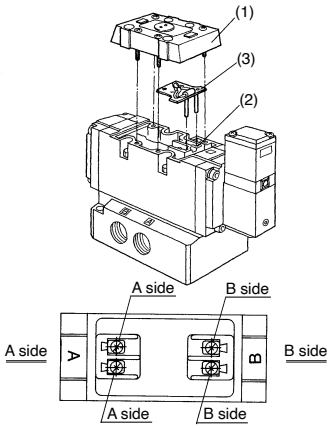
- The following markings are on the terminal block. Connect with corresponding power side.

	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

Specific Product Precautions 3

Be sure to read this before handling the products. For safety instructions and 3/4/5-port solenoid valve precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

⚠ Caution

How to Calculate the Flow Rate

Refer to the **Web Catalogue** for How to Calculate the Flow Rate.

Interface Regulator Specifications

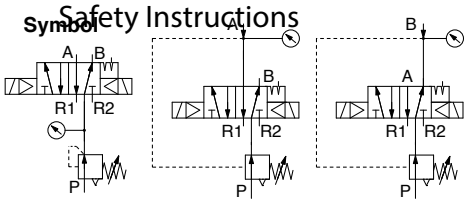
Interface regulator (3) (4)		ARBF2000	ARBF3050			ARBF4050			ARBF5050		
Applicable solenoid valve series		VFS2000	VFS3000			VFS4000			VFS5000		
Regulating port		P	A	B	P	A	B	P	A	B	P
Proof pressure		1.5 MPa									
Maximum operating pressure		1.0 MPa									
Set pressure range (1)		0.05 to 0.83 MPa	0.1 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	5.5	21	18.5	11	35	31	26	44	38	32
	P → B	5.1	18.5	22	12	31	31	24	38	40	31
Effective area at exhaust side (mm^2) (2) S at P_2 = 0.5 MPa	A → EA	12	40			55			90		
	B → EB	11	36			45			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 centre 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 centre 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.
Note 4) Note that the pressure gauge (G27) for the ARBF2000-00-P-□ cannot be used for the oil lubricating air.

Flow Rate Characteristics (P → A)

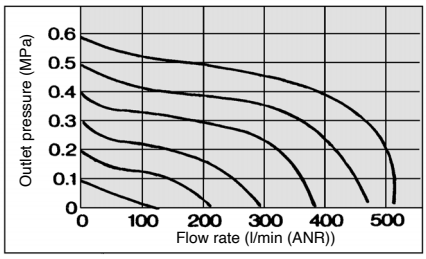
(Representative value conditions: Inlet pressure 0.7 MPa. when 2 position solenoid valve is mounted.)

Symbol

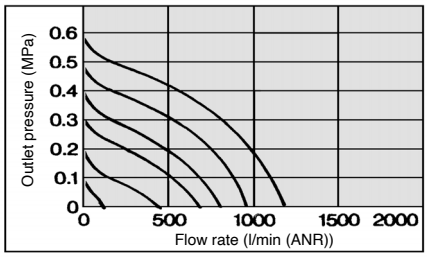


P port regulation | A port regulation | B port regulation

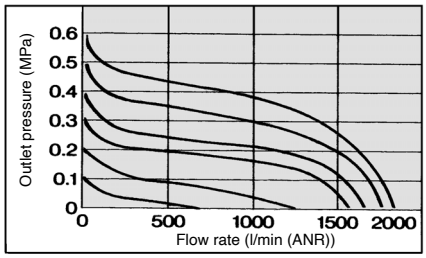
ARBF2000-00-P



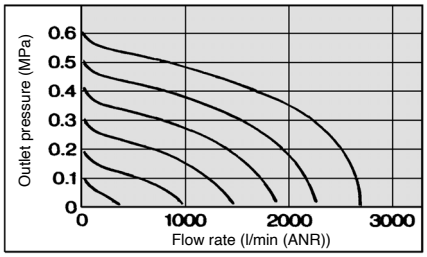
ARBF3050-00-P



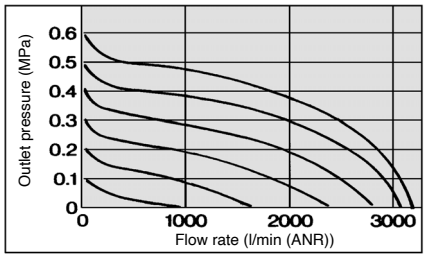
ARBF3050-00-A



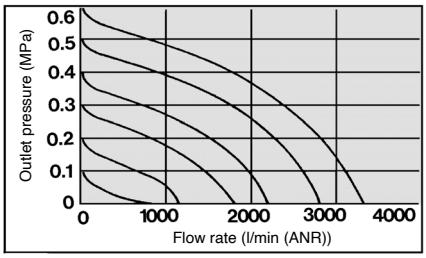
ARBF4050-00-P



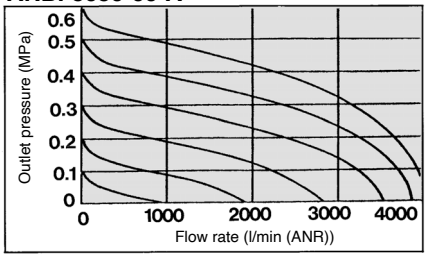
ARBF4050-00-A



ARBF5050-00-P



ARBF5050-00-A



VFS Series
Specific Product Precautions 4

Be sure to read this before handling the products. For safety instructions and 3/4/5-port solenoid valve precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

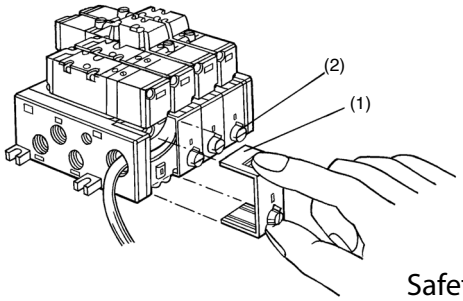
⚠ Caution

Lead Wire Connection Manifold/Plug-in

Type 01 Insert Plug with Lead Wire

VFS2000 Series
(Insert plug with lead wire is not available for the VF3000, 4000, and 5000 series.)

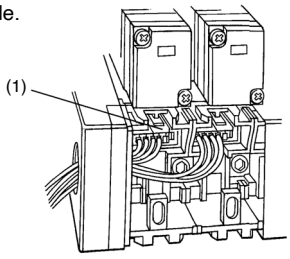
How to remove junction cover (Type 01)
Turn the knob (2) of junction cover (1) on the manifold block side by hand or slotted screwdriver to the C → O direction (counterclockwise) 90°. While holding the knob and upper part of junction cover, pull outward to remove junction cover.
When reassembling, do the opposite.



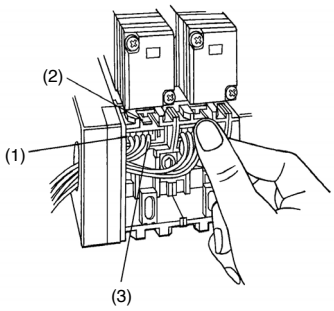
Wiring
The insert plug (1) is attached to the manifold block and lead wire is plugged in with valve side as shown in the following list.
(Single solenoid: AXT624-52A-S-1
Double solenoid: AXT624-52A-D-1)
Connect with corresponding power side.

Power supply	Valve model	Solenoid A	Solenoid B
AC DC	Single solenoid	Red, Black	—
	Double solenoid	Red, Black	Brown, White

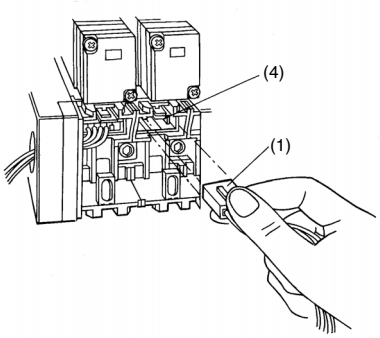
∗ There is no polarity.
∗ Lead wire length is 1 m.



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.



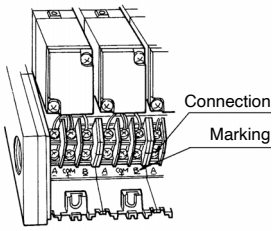
Type 01 with Terminal Block

VFS2000 Series

- 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
VFS2$^{3}_{4}$00	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.
(It is designed for 5 stations. So, cut the COM bridge according to the number of stations. Additionally, when it is used for 6 or more stations, combine the COM bridges and cut appropriately.)
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m



VFS3000 Series

Model \ Terminal block marking	A	COM	B
VFS3100	A side	COM	
VFS3200	A side	COM	B side
VFS3$^{3}_{4}$00	A side	COM	B side

- Applicable terminal: 1.25-3.5M, 1.25Y-3L, 1.25-3M
- Plugging the lead wire assembly for all COM in between COM terminals on the block board will make the specifications of all the stations all COM. This rationalizes the wiring.
Part no. of lead wire assembly for all COM (common to VFS3000, 4000, and 5000): AZ683-56A (Since it is designed for 20 terminals, the VFS3000 is applicable to up to 20 stations. Cut lead wires appropriately according to the number of stations.)
- 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

VFS4000/5000 Series

Model \ Terminal block marking	A +	A –	B +	B –
VFS$^{4}_{5}$100	A side	A side		
VFS$^{4}_{5}$200	A side	A side	B side	B side
VFS4$^{3}_{4}$00 **VFS5$^{3}_{4}$00**	A side	A side	B side	B side

- Applicable terminal: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M
- Plugging the lead wire assembly for all COM in between COM terminals on the block board will make the specifications of all the stations all COM. This rationalizes the wiring.
Part no. of lead wire assembly for all COM (common to VFS3000, 4000, and 5000): AZ683-56A (Since it is designed for 20 terminals, the VFS4000 and 5000 are applicable to up to 10 stations. Cut lead wires appropriately according to the number of stations.)
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m

VFS Series
Specific Product Precautions 5

Be sure to read this before handling the products. For safety instructions and 3/4/5-port solenoid valve precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

⚠ Caution

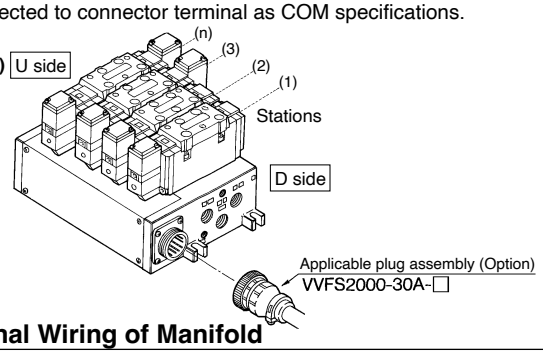
Lead Wire Connection Manifold/Plug-in

Type 01C Circular Connector

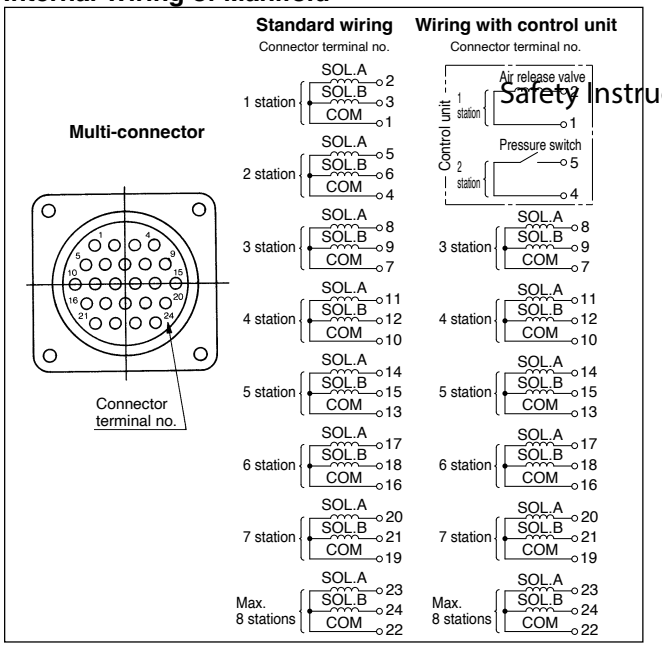
VFS2000/3000/4000/5000 Series

• **Wire connection specifications**
Lead wire for both solenoid A and B sides in manifold are connected to connector terminal as COM specifications.

Fig. (1) U side



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	Plug 206837-1 1 pc. Cable clamp 206138-1 1 pc. Socket 66101-2 24 pcs. Cable VCTF 24 cores x 0.75 mm² made by Tyco Electronics AMP K.K.
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 colour List of Each Terminal No.

Terminal no.	1	2	3	4	5	6	7	8	9	10	11	12
Lead wire colour	Orange	Orange	Black	Black	Green	Green	Red	Red	Blue	Blue	Yellow	Yellow
Dot marking	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes

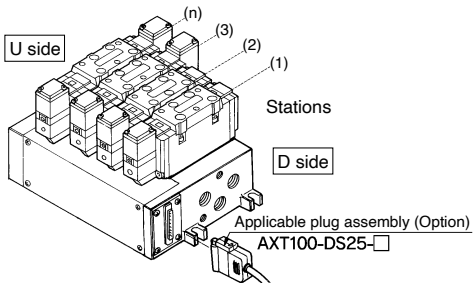
Terminal no.	13	14	15	16	17	18	19	20	21	22	23	24
Lead wire colour	Brown	Brown	White	White	Pink	Pink	Grey	Grey	Sky blue	Sky blue	Light green	Light green
Dot marking	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes

Type 01F D-sub Connector

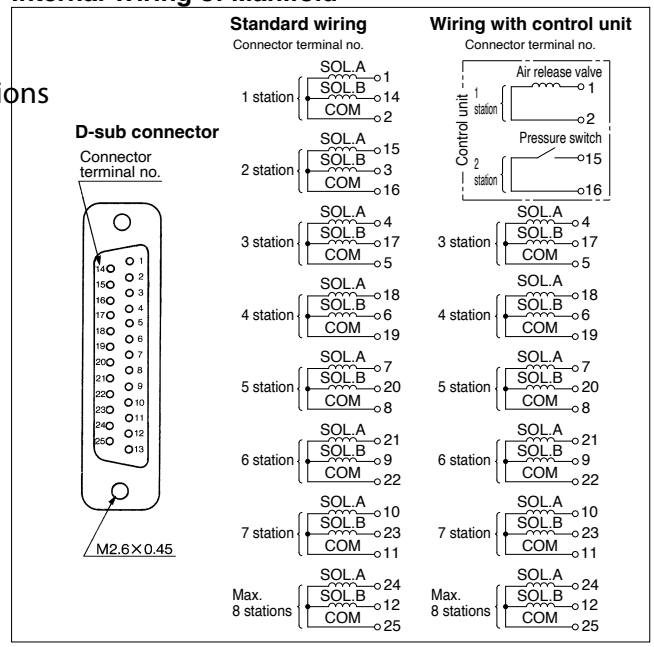
VFS2000/3000/4000/5000 Series

• **Wire connection specifications**
Lead wire for both solenoid A and B sides in manifold are connected to connector terminal as COM specifications.

Fig. (2) U side



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
AXT100-DS25-015	1.5 m	Plug: MIL standard D type connector 25 terminals Cable: 25 cores wire x 0.3 mm²
AXT100-DS25-030	3 m	
AXT100-DS25-050	5 m	
AXT100-DS25-080	8 m	
AXT100-DS25-100	10 m	
AXT100-DS25-150	15 m	
AXT100-DS25-200	30 m	
AXT100-DS25-300	20 m	

Cable colour List of Each Terminal No.

Terminal no.	1	2	3	4	5	6	7	8	9	10	11	12	13
Lead wire colour	Black	Brown	Red	Orange	Yellow	Pink	Blue	Purple	Grey	White	White	Yellow	Orange
Dot marking	—	—	—	—	—	—	—	White	Black	Black	Red	Red	Red

Terminal no.	14	15	16	17	18	19	20	21	22	23	24	25
Lead wire colour	Yellow	Pink	Blue	Purple	Grey	Orange	Red	Brown	Pink	Grey	Black	White
Dot marking	Black	Black	White	—	—	Black	White	White	Red	Red	White	—

⚠ Safety Instructions

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

⚠ **Danger:**	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ **Warning:**	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Caution:**	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

1) ISO 4414: Pneumatic fluid power – General rules and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power – General rules and safety requirements for systems and their components.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.
etc.

⚠ Warning

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

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

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

4. Our products cannot be used beyond their specifications.
Our products are not developed, designed, and manufactured to be used under the following conditions or environments.
Use under such conditions or environments is not covered.
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogues and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

⚠ Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not covered.
Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.
The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

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

Limited warranty and Disclaimer

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

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

Compliance Requirements

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

SMC Corporation (Europe)

Austria	+43 (0)2262622800	www.smc.at	office.at@smc.com
Belgium	+32 (0)33551464	www.smc.be	info@smc.be
Bulgaria	+359 (0)2807670	www.smc.bg	sales.bg@smc.com
Croatia	+385 (0)13707288	www.smc.hr	sales.hr@smc.com
Czech Republic	+420 541424611	www.smc.cz	office.at@smc.com
Denmark	+45 70252900	www.smcdk.com	smc.dk@smc.com
Estonia	+372 651 0370	www.smcee.ee	info.ee@smc.com
Finland	+358 207513513	www.smc.fi	smc.fi@smc.com
France	+33 (0)164761000	www.smc-france.fr	supportclient.fr@smc.com
Germany	+49 (0)61034020	www.smc.de	info.de@smc.com
Greece	+30 210 2717265	www.smchellas.gr	sales@smchellas.gr
Hungary	+36 23513000	www.smc.hu	office.hu@smc.com
Ireland	+353 (0)14039000	www.smcautomation.ie	technical.ie@smc.com
Italy	+39 03990691	www.smcitalia.it	mailbox.it@smc.com
Latvia	+371 67817700	www.smc.lv	info.lv@smc.com
Lithuania	+370 5 2308118	www.smclt.lt	info.lt@smc.com
Netherlands	+31 (0)205318888	www.smc.nl	info@smc.nl
Norway	+47 67129020	www.smc-norge.no	post.no@smc.com
Poland	+48 22 344 40 00	www.smc.pl	office.pl@smc.com
Portugal	+351 214724500	www.smc.eu	apoiocliente.pt@smc.com
Romania	+40 213205111	www.smcromania.ro	office.ro@smc.com
Russia	+7 (812)3036600	www.smc.eu	sales@smcru.com
Slovakia	+421 (0)413213212	www.smc.sk	sales.sk@smc.com
Slovenia	+386 (0)73885412	www.smc.si	office.si@smc.com
Spain	+34 945184100	www.smc.eu	post.es@smc.com
Sweden	+46 (0)86031240	www.smc.nu	order.se@smc.com
Switzerland	+41 (0)523963131	www.smc.ch	helpcenter.ch@smc.com
Turkey	+90 212 489 0 440	www.smcturkey.com.tr	satis@smcturkey.com.tr
UK	+44 (0)845 121 5122	www.smc.uk	sales.gb@smc.com
South Africa	+27 10 900 1233	www.smcza.co.za	Sales.za@smc.com

Printing DO 00 Printed in Spain