

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

Series VFR3000

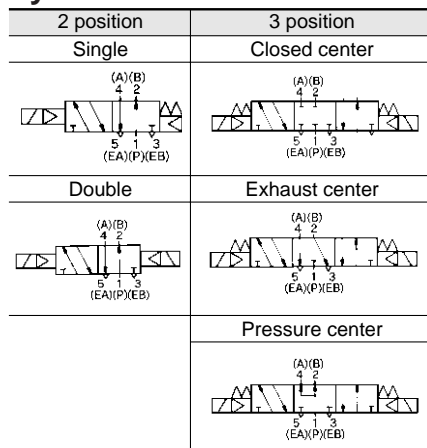


Plug-in



Non plug-in

Symbol



Model

| Configuration | Model | | Port size Rc(PT) | Effective area (mm ²) (Cv) | Max. ⁽¹⁾ operating frequency (Hz) | Response ⁽²⁾ time (ms) | Weight ⁽³⁾ (kg) | SY | |
|---------------|-----------------|-------------|---------------------|---|--|--|-------------------------------|--------------------------|--------------------------|
| | Plug-in | Non plug-in | | | | | | | |
| 2 position | Single | VFR310□ | VFR311□ | 1/4 | 37.8(2.1) | 5 | 30 or less | 0.61 (0.64) <0.58> | |
| | | VFR320□ | VFR321□ | 3/8 | 41.4(2.3) | | | | |
| | Double | VFR310□ | VFR314□ | 1/4 | 37.8(2.1) | 5 | 30 or less | 0.71 (0.74) <0.69> | |
| | | VFR320□ | VFR324□ | 3/8 | 41.4(2.3) | | | | |
| 3 position | Closed center | VFR330□ | VFR331□ | 1/4 | 34.2(1.9) | 3 | 50 or less | 0.72 (0.75) <0.71> | |
| | | VFR330□ | VFR334□ | 3/8 | 36(2.0) | | | | |
| | Exhaust center | VFR340□ | VFR341□ | VFR344□ | 1/4 | P→A, B: 34.2(1.9) A, B→EA, EB: 45(2.5) A, B→EA, EB: 27(1.5) (Normal position) | 3 | 50 or less | 0.72 (0.75) <0.71> |
| | | | | | 3/8 | P→A, B: 36(2.0) A, B→EA, EB: 50.4(2.8) A, B→EA, EB: 28.8(1.6) (Normal position) | | | |
| | Pressure center | VFR350□ | VFR351□ | VFR354□ | 1/4 | 39.6(2.2) Normal position: 16.2(0.9) | 3 | 50 or less | 0.72 (0.75) <0.71> |
| | | | | | 3/8 | 41.4(2.3) Normal position: 16.2(0.9) | | | |



Note 1) Min. operating frequency is once in 30 days. (Based on JIS B8375)
 Note 2) Based on dynamic performance test, JIS B8375-1981. (0.5MPa, coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
 Note 3) In case of VFR3□00-□FZ-02-03. (): VFR3□10-DZ□-02-03 < >: VFR3□40-□G-02-03

Standard Specifications

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



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

Option Specifications

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



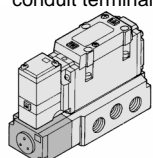
Note 1) Operating pressure: 0 to 0.9MPa
 Pilot pressure: 2 position single/3 position 0.2 to 0.9MPa
 2 position double 0.1 to 0.9MPa

VFR3000

How to Order

Electrical entry

F: Plug-in conduit terminal



Option

| | |
|---|---|
| - | None |
| Z | With indicator light/surge voltage suppressor |

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

| | |
|----|--------|
| - | Side |
| B* | Bottom |

*Option

Port size (P, A, B, EA, EB port)

| | |
|----|-------------------|
| - | Without sub-plate |
| 02 | Rc(PT) 1/4 |
| 03 | Rc(PT) 3/8 |

*Bottom piping: Rc(PT) 1/4

Plug-in VFR3 1 0 0 □ 5 F □ □ □ 02

Non plug-in VFR3 1 1 1 □ 1 D □ □ □ 02

Common electrical entry

Non plug-in VFR3 1 4 0 □ 1 G □ □ □ 02

Individual electrical entry

Common electrical entry

Configuration

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

Body option

| | |
|----|------------------------|
| 0 | Standard |
| 1* | Direct manual override |

*Option

Pilot

| | |
|----|----------------|
| - | Internal pilot |
| R* | External pilot |

*Option

Voltage

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

*Option

Option/VFR3□1□

| | |
|----|---|
| - | None |
| Z* | With indicator light/surge voltage suppressor |

*Only applicable to DIN connector

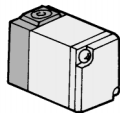
Option/VFR3□4□

| | |
|----|---|
| - | None |
| Z* | With indicator light/surge voltage suppressor |
| S* | With surge voltage suppressor |

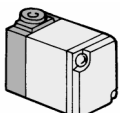
*Indicator light is not available on grommet. ("Z") Surge voltage suppressor ("S") is available only on grommet.

Pilot valve: manual override

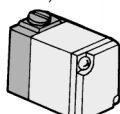
-: Non-locking push style (Flush)



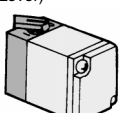
A*: Non-locking push style A (Extended)



B*: Locking style B (Slotted)

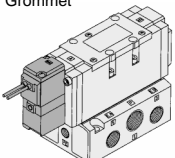


C*: Locking style C (Lever)

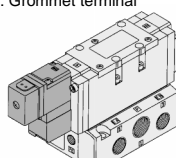


*Option

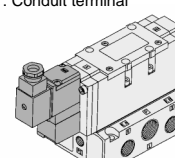
G: Grommet



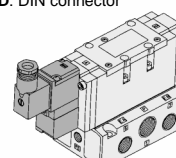
E: Grommet terminal



T: Conduit terminal



D: DIN connector



How to Order Pilot Valve Assembly

SF4 - 1 F □ - 70 - □

Voltage

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

*Option

Electrical entry/Indicator light and surge voltage suppressor

| Symbol | Electrical entry | Indicator | Surge voltage suppressor | Applicable solenoid valve |
|--------|------------------|-----------|--------------------------|---------------------------|
| F* | Plug-in | - | - | VFR3□0□ VFR3□1□ |
| G | Grommet | - | - | VFR3□4□ |
| GS | | - | ● | |
| E | Grommet terminal | - | - | VFR3□4□ |
| EZ | | ● | ● | |
| T | Conduit terminal | - | - | VFR3□4□ |
| TZ | | ● | ● | |
| D | DIN terminal | - | - | VFR3□4□ |
| DZ | | ● | ● | |

Manual override

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

*Option

Symbol

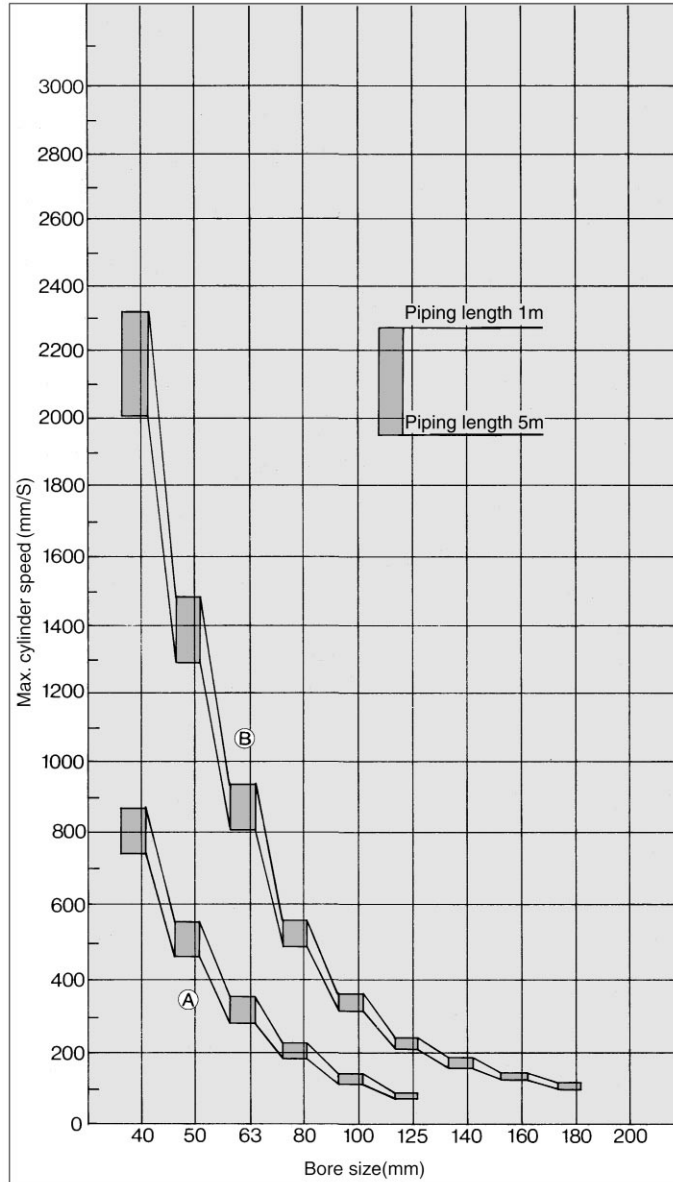
| Symbol | Applicable solenoid valve |
|--------|---------------------------|
| - | VFR3□0□ VFR3□1□ |
| 1 | VFR3□4□ |

*"VFR3□0□"/"VFR3□1□": Pilot valve assembly is all plug-in (F).

Maximum Cylinder Speed

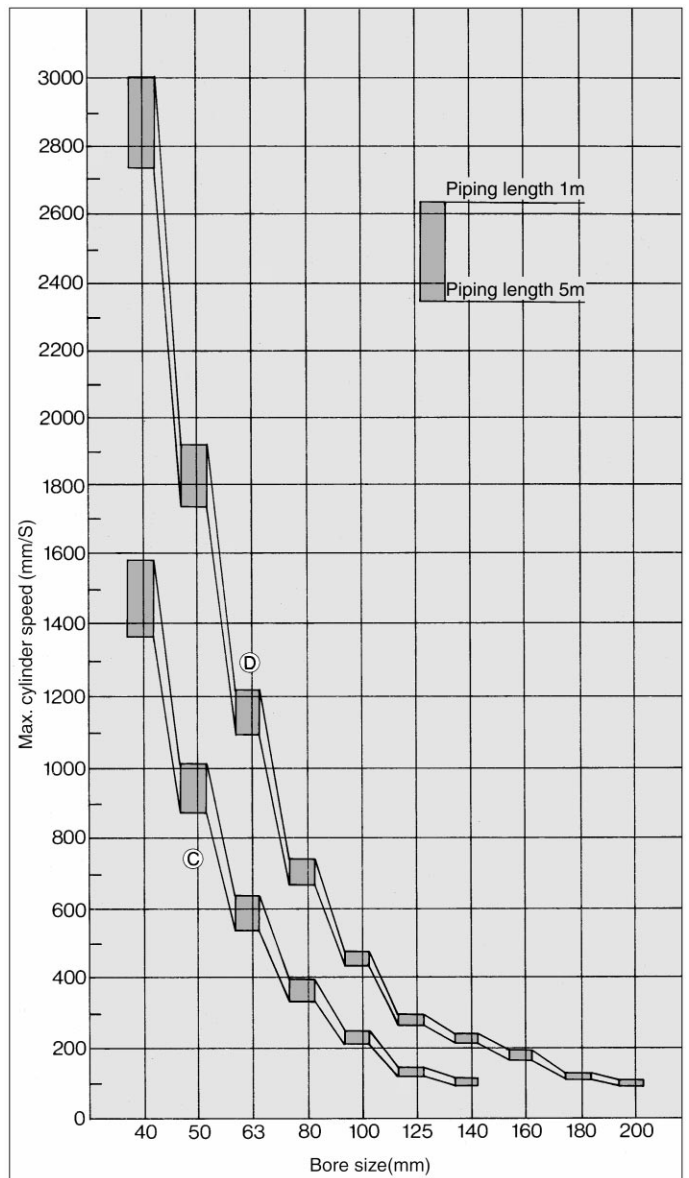
Condition: Supply pressure 5MPa, Load factor 50%

Rubber hose piping system



| System | Solenoid valve | Speed controller | Silencer | Fitting (Hose ID. X Fitting ID. X Port size) |
|--------|-----------------------------|-------------------------------------|------------------------------------|--|
| A | Series VFR3000 Rc(PT)1/4 | AS4000-02 (S=24mm ²) | AN200-02 (S=35mm ²) | ø6.3 X ø4.8 X 1/4 |
| B | Series VFR3000 Rc(PT)3/8 | AS420-03 (S=73mm ²) | AN300-03 (S=60mm ²) | ø9.5 X ø8 X 3/8 |

S. G. P. piping system



| System | Solenoid valve | Speed controller | Silencer | Fitting |
|--------|-----------------------------|-------------------------------------|------------------------------------|------------------|
| C | Series VFR3000 Rc(PT)1/4 | AS4000-02 (S=24mm ²) | AN200-02 (S=35mm ²) | Elbow 90° 5 pcs. |
| D | Series VFR3000 Rc(PT)3/8 | AS420-03 (S=73mm ²) | AN300-03 (S=60mm ²) | Elbow 90° 5 pcs. |

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

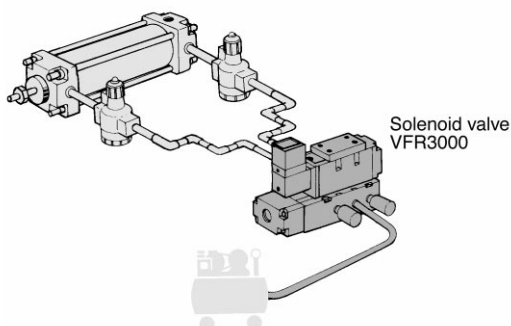
VZS

VFS

VS

VS7

System diagram



How to Order Sub-plate Assembly

<Side piping>

| | Plug-in | VFR3000 | - P - | 02 | Port size (P, A, B, EA, EB port) |
|--|-------------|---------|-------|----|-------------------------------------|
| | Non plug-in | VFS3000 | - S - | 02 | |

<Bottom piping>

| | Plug-in | VFR3000 | - P - B | 02 | Port size (P, A, B, EA, EB port) |
|--|-------------|---------|---------|----|-------------------------------------|
| | Non plug-in | VFS3000 | - S - B | 02 | |

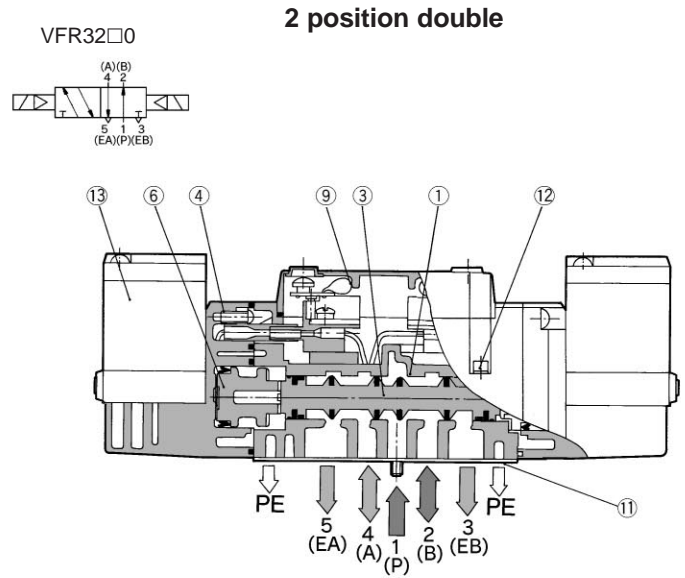
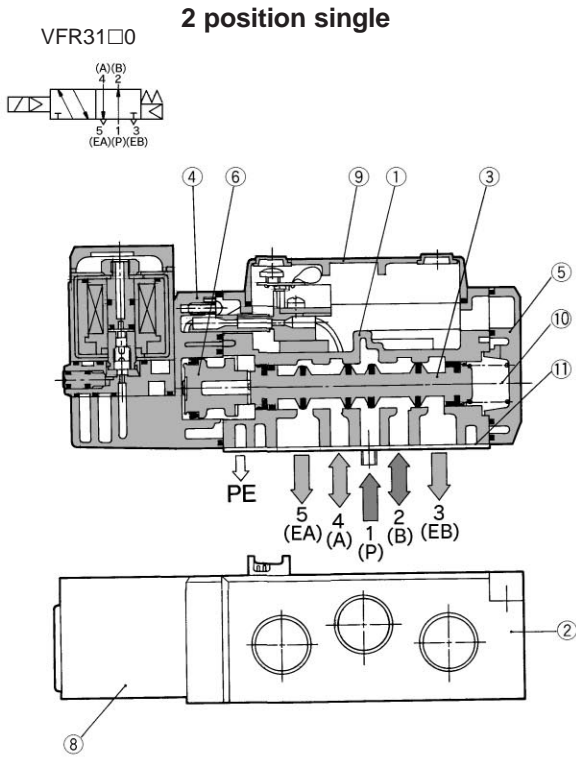


Note) Mounting bolts and gaskets are not attached.

Port size
(P, A, B, EA, EB port)
02 Rc(PT)1/4

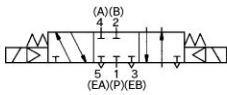
VFR3000

Construction

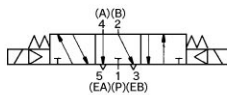


3 position closed center/exhaust center/pressure center

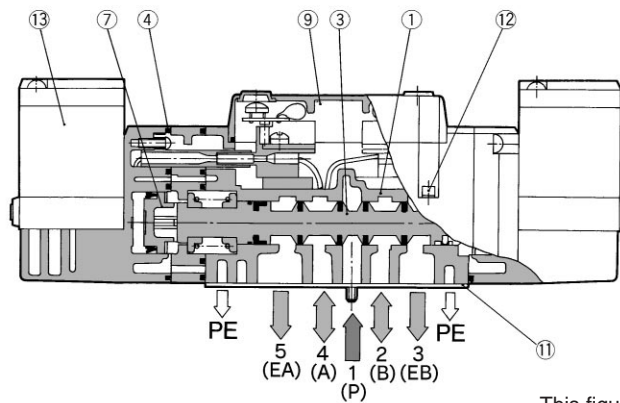
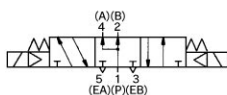
Closed center/VFR33□0



Exhaust center/VFR34□0



Pressure center/VFR35□0



This figure shows closed center.

Component Parts

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

Component Parts

| No. | Description | Material | Note |
|-----|----------------|-----------------|------|
| ⑥ | Piston | Resin | |
| ⑦ | Piston | Resin | |
| ⑧ | Junction cover | Resin | |
| ⑨ | Light cover | Resin | |
| ⑩ | Return spring | Stainless steel | |

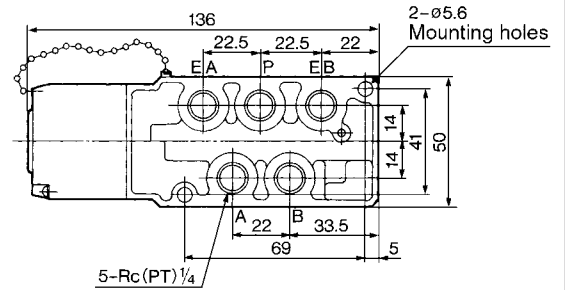
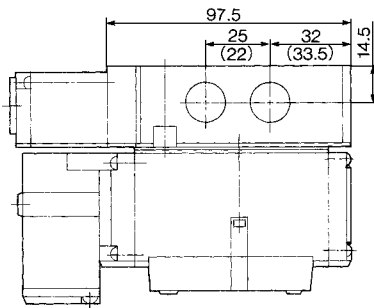
Replacement Parts

| No. | Description | Material | Part No. | | |
|-----|----------------------------|----------|---|-------------------|---------------------|
| | | | VFR31□□ | VFR32□□ | VFR33□□, 34□□, 35□□ |
| ⑪ | Gasket | NBR | VFR3000-26-4 | VFR3000-26-4 | VFR3000-26-4 |
| ⑫ | Hex. socket head cap screw | Steel | AXT632-3(M3 X 32) | AXT632-3(M3 X 32) | AXT632-3(M3 X 32) |
| ⑬ | Pilot valve assembly | - | Refer to "How to Order Pilot Valve Assembly on p. 1.7-28. | | |
| - | Sub-plate assembly | - | Refer to "How to Order Sub plate Assembly on p.1.7-29. | | |

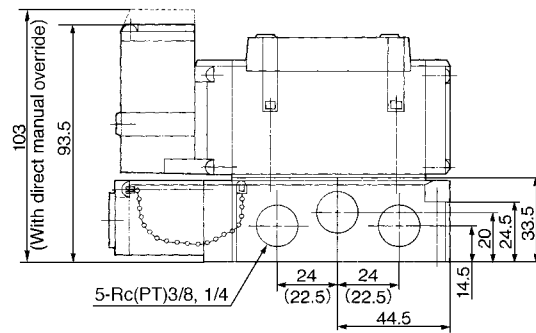
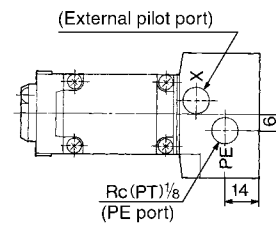
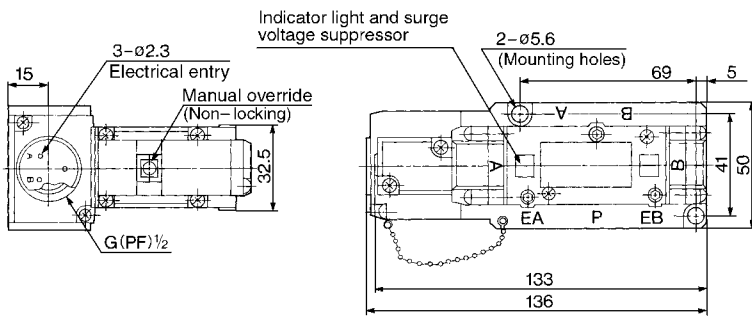


Plug-in 2 Position Single/Double, 3 Position Closed Center/Exhaust Center/Pressure Center

2 position single: VFR310⁰₁-□FZ

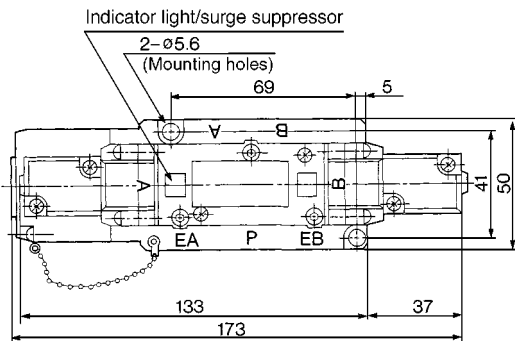


Bottom piping



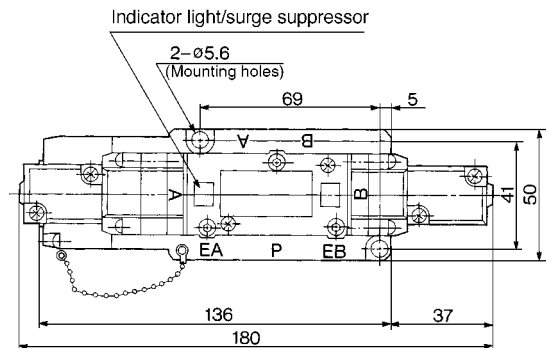
(): Rc(PT)1/4

2 position double: VFR320⁰₁-□FZ



*Other dimensions are the same as single.

3 position closed center: VFR330⁰₁-□FZ
 3 position exhaust center: VFR3400⁰₁-□FZ
 3 position pressure center: VFR3500⁰₁-□FZ



*Other dimensions are the same as single.



- 2 position single — SV5FR31, #1+#7
- 2 position double — SV5FR31, #2+#7
- 3 position — SV5FR31, #3+#7
- Bottom piping — SV5FR31, #7 is changed for #8.

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

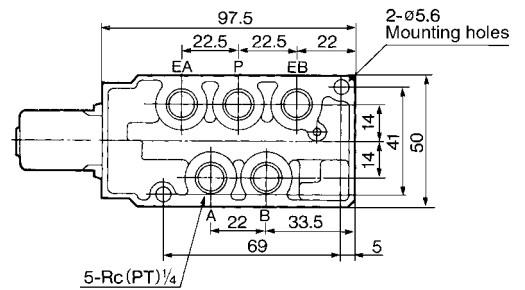
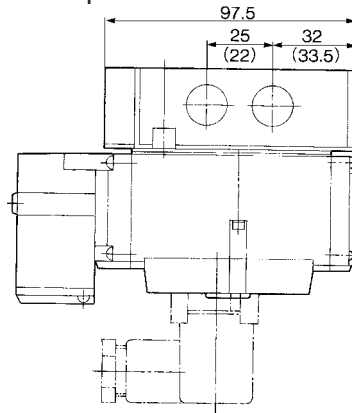
VS7

VFR3000

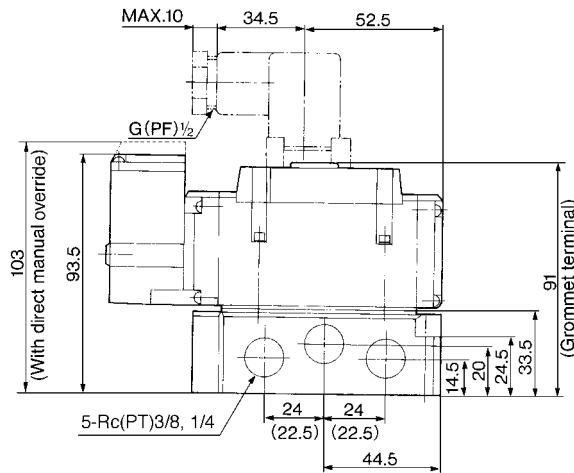
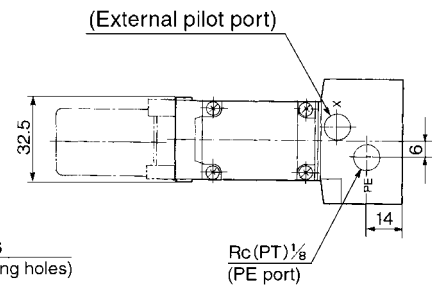
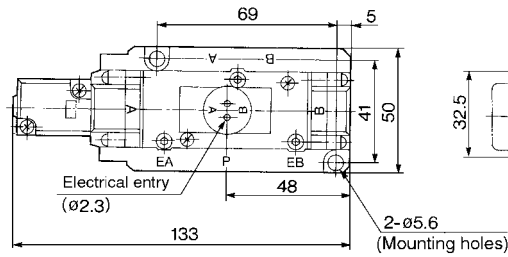
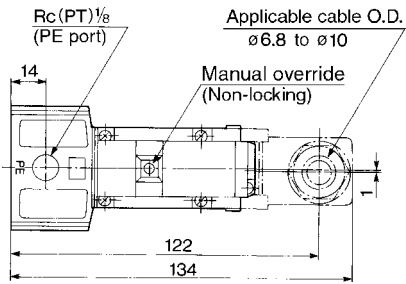


Non Plug-in 2 Position Single/Double, 3 Position Closed Center/Exhaust Center/Pressure Center

2 position single: VFR311⁰₁-□E/EVFR311⁰₁-□DZ

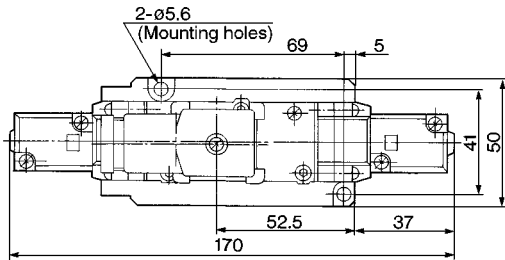


Bottom piping



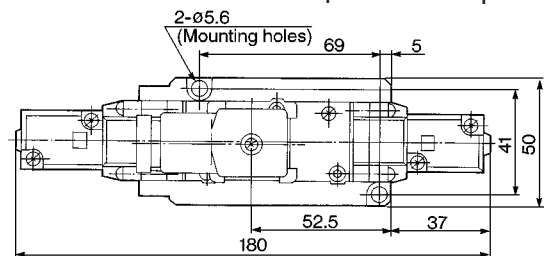
(): Rc(PT)1/4

2 position double:
VFR321⁰₁-□E/VFR321⁰₁-□DZ



*Other dimensions are the same as single.

3 position closed center: VFR331⁰₁-□E/VFR331⁰₁-□DZ
3 position exhaust center: VFR341⁰₁-□E/VFR341⁰₁-□DZ
3 position pressure center: VFR351⁰₁-□E/VFR351⁰₁-□DZ



*Other dimensions are the same as single.



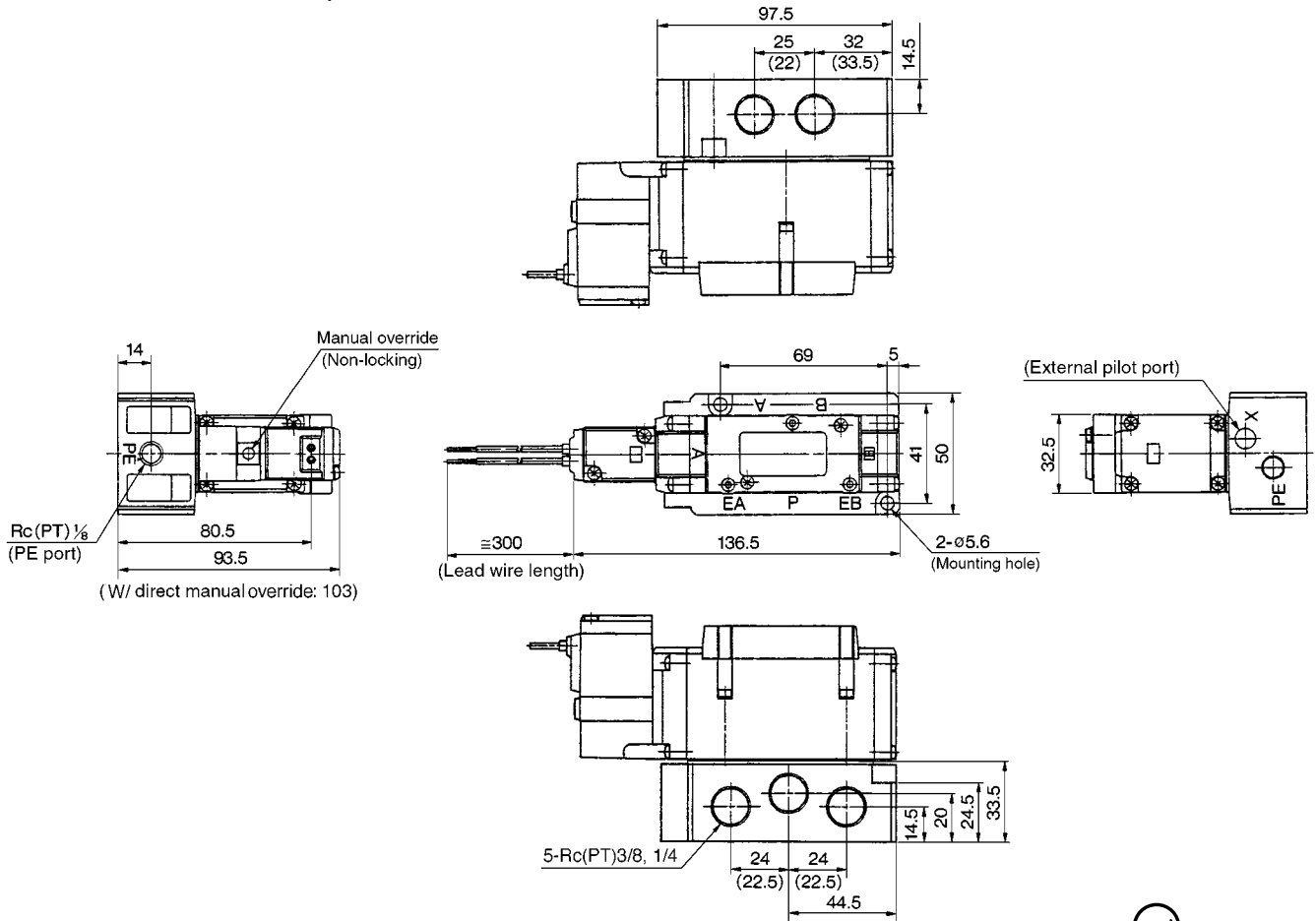
- 2 position single grommet terminal — SV5FR31, #1+#7
- 2 position double grommet terminal — SV5FR31, #2+#7
- 3 position grommet terminal — SV5FR31, #3+#7

- Bottom piping — SV5FR31, #7 is changed for #8.
- DIN connector — SV5FR31, (#9, #001) are added.



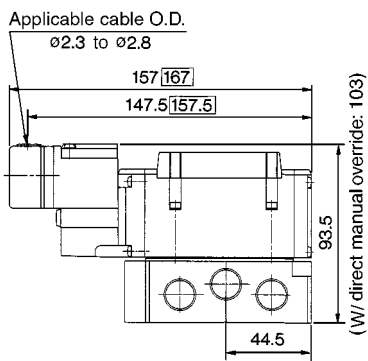
Non plug-in 2 Position Single

2 position single: VFR314⁰₁-□G



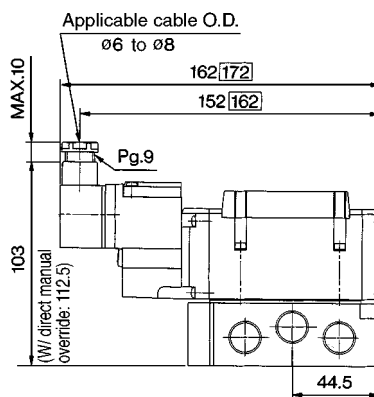
() : Rc(PT)1/4

E: Grommet terminal



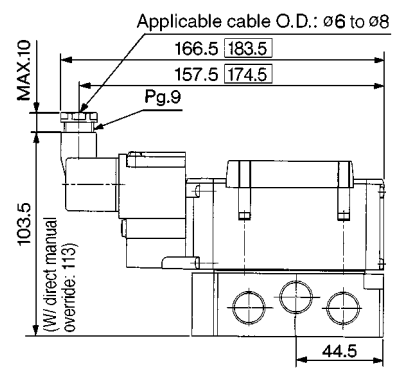
□: With indicator light and surge voltage suppressor

T: Conduit terminal



□: With indicator light and surge voltage suppressor

D: DIN connector



□: With indicator light and surge voltage suppressor

SY

SYJ

SX

VK

VZ

VF

VFR

VP7

VP4

VQ

VQ4

VQZ

VQD

VZS

VFS

VS

VS7

2 position single — SV5FR31, #1 and #7 are changed.



VFR3000



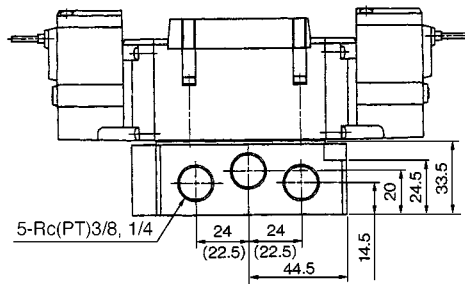
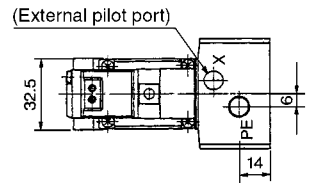
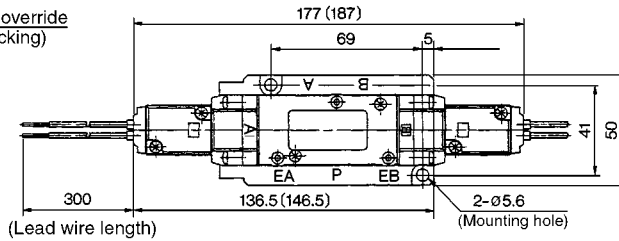
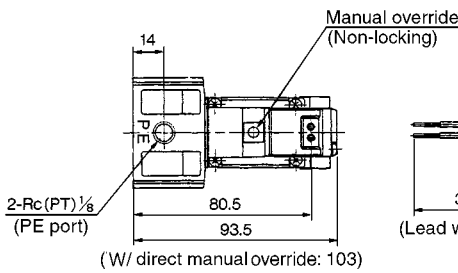
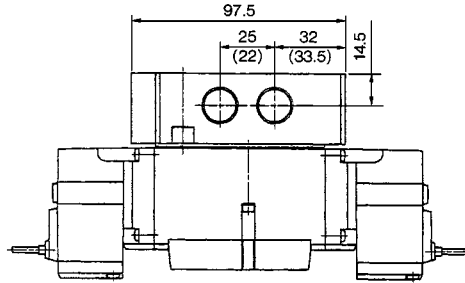
Non plug-in 2 Position Double/3 Position Closed Center/Exhaust Center/Pressure Center

2 position double: VFR324⁰₁-□G

3 position closed center: VFR334⁰₁-□G

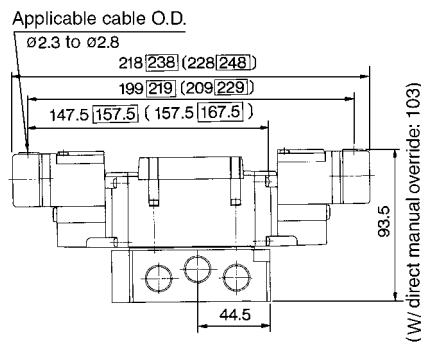
3 position exhaust center: VFR344⁰₁-□G

3 position pressure center: VFR354⁰₁-□G



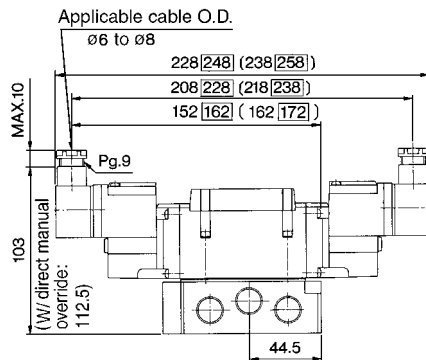
() : 3 position
() : Rc(PT)1/4

E: Grommet terminal



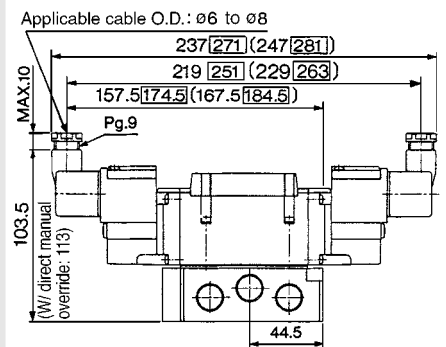
() : 3 position
□ : With indicator light and surge voltage suppressor

T: Conduit terminal



() : 3 position
□ : With indicator light and surge voltage suppressor

D: DIN connector



() : 3 position
□ : With indicator light and surge voltage suppressor

2 position double — SV5FR31, #2 and #7 are changed.
3 position — SV5FR31, #3 and #7 are changed.

