

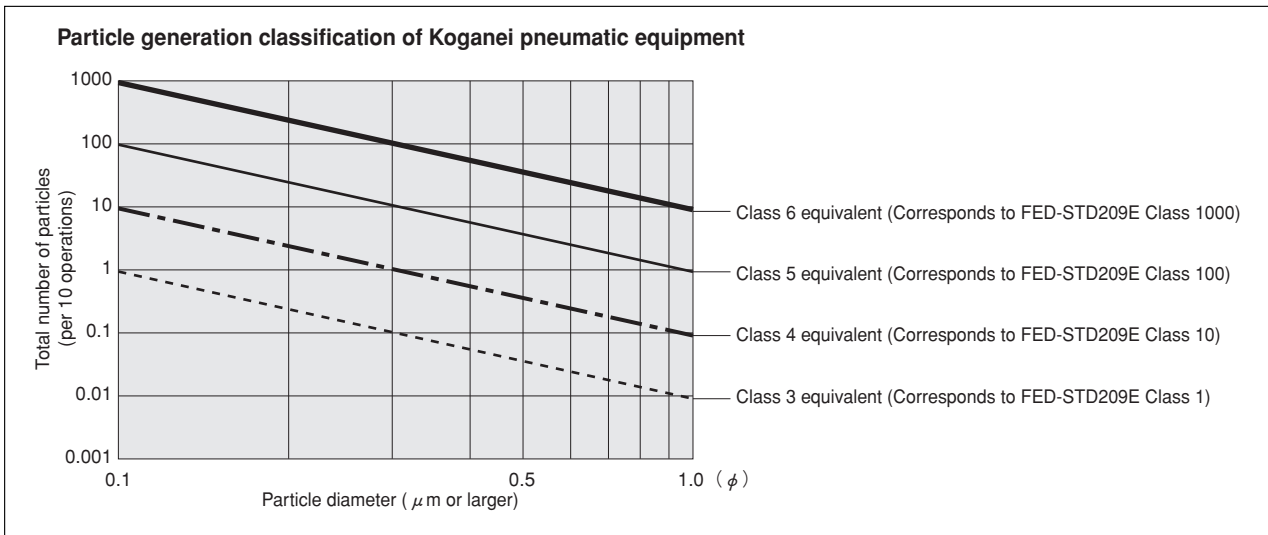


Koganei Clean System products provide complete support for the maintenance of a clean environment inside the cleanroom.

Koganei Clean System products meet the needs of the ultra-clean production environment. In everything from actuators and valves to air preparation and auxiliary equipment, anti-corrosion materials processing and other Koganei-developed design concepts serve to prevent particle contamination within the cleanroom. These perfectly designed mechanisms, which resolve even the slightest leaks to the outside during operations, have already won a high level of reliability.

Koganei Cleanliness

There is currently no standard in JIS or elsewhere for methods of evaluating cleanliness for pneumatic equipment in the cleanroom specifications. Therefore, to measure the effects of cleanroom contamination by pneumatic equipment, Koganei has decided to use “number of particles generated per 10 operations,” rather than particle density. Koganei has also developed classifications for application classes in cleanroom, based on JIS and other upper limit density tables, and on the company’s own experience.



- Remarks:
1. In the above table, product performance in terms of the number of particles generated per 10 operations is expressed as the upper limit of particles corresponding to the equivalent JIS or ISO class.
 2. In the above table, values in the JIS, ISO, and FED-STD upper limit density tables are calculated as upper density per liter.
 3. The classes shown are clean levels as classified in JIS and ISO.

From the above definitions, the Koganei clean level classes can be viewed as the level of average contamination per liter of surrounding air over a period of 10 operations in cleanroom. Air ventilation in cleanrooms is usually faster than 1 cycle per minute, and clean volumetric capacity is usually larger than 1 liter, which should provide a sufficient safety margin in practice.

Caution: The above conclusions are based on an ideal situation in which air ventilation is being implemented. For specific cases where air ventilation is not ensured, caution is needed since the clean classes cannot be maintained.

The clean system diagrams shown here are for Class 5 equivalent products. For Class 4 or Class 3 equivalent products, consult us.

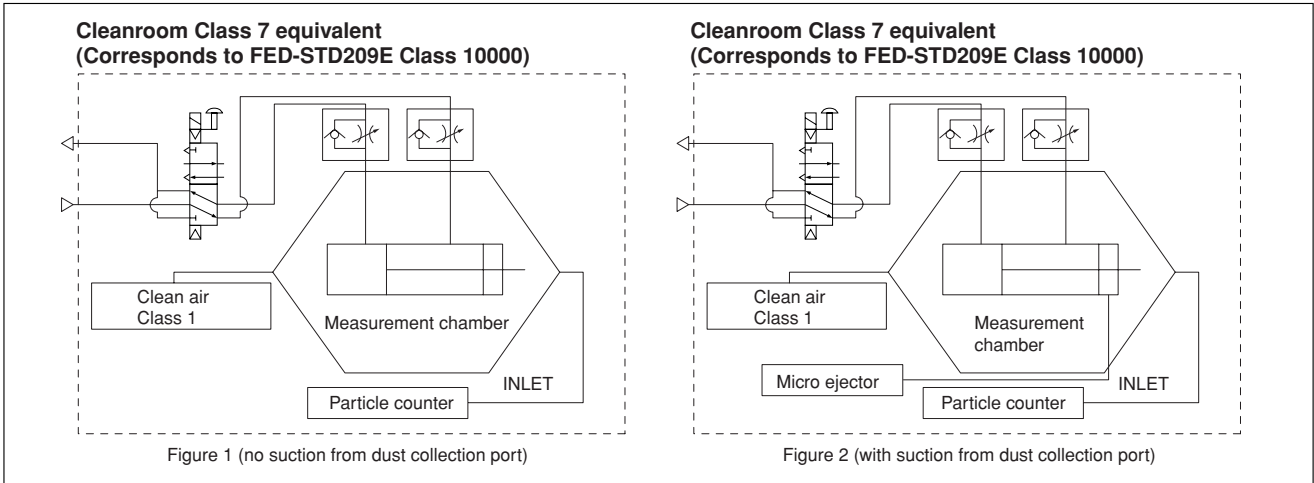
Evaluations of Cleanliness

Koganei has therefore specified its in-house measurement methods, to conduct evaluations on the cleanroom rating.

The number of particles of the Air Cylinder Cleanroom Specification is measured as shown in the method below.

1. Measurement conditions

1-1 Test circuit: Figure 1 (no suction), Figure 2 (with suction)



1-2 Operating conditions of tested cylinder

- Operating frequency: 1Hz
- Average speed: 500mm/s [20in./sec.]
- Applied pressure: 0.5MPa [73psi.]
- Suction condition: Microejector ME05, Primary side: 0.5MPa [73psi.] applied, Tube: $\phi 6$ [0.236in.]
- Mounting direction: Vertical
- Chamber volume: 8.3 ℓ [0.293ft.³]

2. Particle counter

- Manufacturer/model: RION/KM20
- Suction flow rate: 28.3 ℓ /min [1ft.³/min.]
- Particle diameter: 0.1 μm , 0.2 μm , 0.3 μm , 0.5 μm , 0.7 μm , 1.0 μm

3. Measurement method

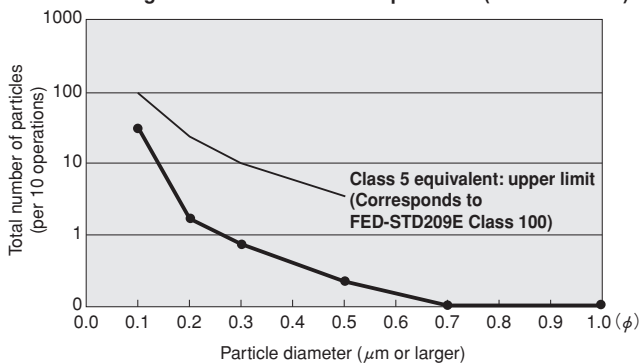
- 3-1 Confirmation of number of particles in the measurement system
Under the conditions in the above 1 and 2, using a particle counter to measure the sample for 9 minutes without operating the measurement sample, and confirmed the measured number of particle is 1 piece or less.
- 3-2 Measurement under operation
Under the conditions in the above 1 and 2, operating the measurement sample for 36 minutes, and measured the total values in the latter half of 18 minutes test.
- 3-3 Reconfirmation
Performed the measurement in 3-1 again, to reconfirm the number of particles in the measurement system.

4. Measurement results

● Cleanroom specification

Jig Cylinder (no suction from dust collection port)

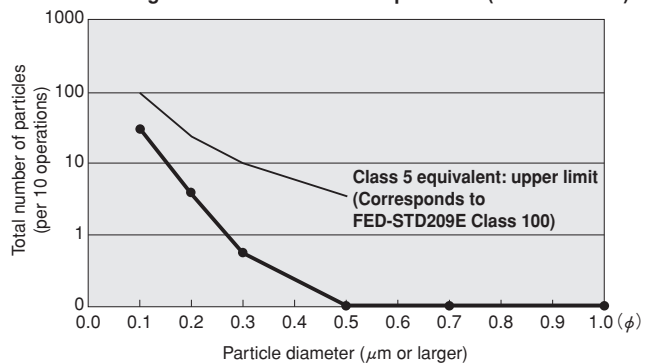
Particle generation over 1 million operations (CS-CDA16 \times 30)



● Cleanroom specification

Slim Cylinder (with suction from dust collection port)

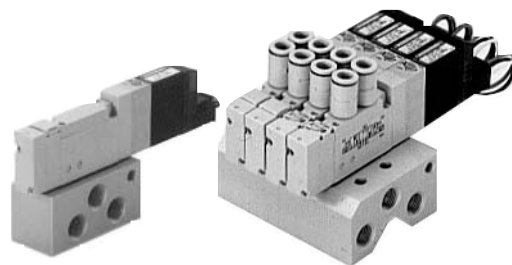
Particle generation over 1 million operations (CS-DA20 \times 100)



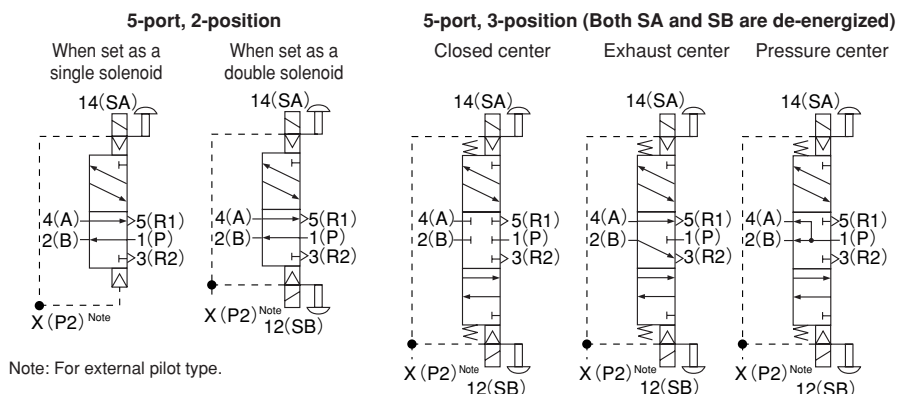
For “safety precautions” listed in the Clean System Product Drawings, see the materials below.

- For actuators, see “Safety Precautions” on p. 45 of the Actuators General Catalog .
- For valves, see “Safety Precautions” on p. 31 of the Valves General Catalog.
- For air treatment and auxiliary equipment, see “Safety Precautions” on p.31 of the General Catalog of Air Treatment, Auxiliary, Vacuum.

KOGANEI LEAN SYSTEM SOLENOID VALVES F10 SERIES



Symbols



Specifications

| Item | Basic model | CS-F10T1 | CS-F10T3 CS-F10T4 CS-F10T5 | CS-F10T1G | CS-F10T3G CS-F10T4G CS-F10T5G | CS-F10T1V | CS-F10T3V CS-F10T4V CS-F10T5V |
|--|----------------------|---|----------------------------------|---|-------------------------------------|---|-------------------------------------|
| | Media | | Air | | | | |
| Operation type | | Internal pilot type | | External pilot type (for positive pressure) | | External pilot type (for vacuum) | |
| Effective area [CV] | mm ² | 5 [0.28] | 4.5 [0.25] | 5 [0.28] | 4.5 [0.25] | 5 [0.28] | 4.5 [0.25] |
| Port size | | M5×0.8, fittings for φ4 and φ6, Rc1/8 | | | | | |
| Lubrication | | Not required | | | | | |
| Operating pressure range | Main valve | 0.2~0.7MPa [29~102psi.] | | 0~0.7MPa [0~102psi.] ^{Note1} | | -100kPa~0.15MPa [-29.53in.Hg~22psi.] | |
| | External pilot | — | | 0.2~0.7MPa [29~102psi.] ^{Note1} | | 0.2~0.7MPa [29~102psi.] | |
| Proof pressure | MPa [psi.] | 1.05 [152] | | | | | |
| Response time ^{Note2} | DC12V, DC24V | 15/20 or below | 15/25 or below | 15/20 or below | 15/25 or below | 15/20 or below | 15/25 or below |
| ON/OFF time | AC100V | 15/20 or below | 15/25 or below | 15/20 or below | 15/25 or below | 15/20 or below | 15/25 or below |
| Maximum operating frequency | Hz | 5 | | | | | |
| Minimum time to energize for self holding ^{Note3} | ms | 50 | — | 50 | — | 50 | — |
| Operating temperature range (atmosphere and media) | °C [°F] | 5~50 [41~122] | | | | | |
| Shock resistance | m/s ² [G] | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} |
| Mounting direction | | Any | | | | | |

Notes: 1. When the main valve pressure is 0.2~0.7MPa [29~102psi.], set the external pilot pressure to the main valve pressure or higher, and 0.7MPa [102psi.] or less.

2. Values when air pressure is 0.5MPa [73psi.]. The values for 2-position valves are when used as a single solenoid, and the values for 3-position valves are those when switching from the neutral position of closed center.

3. When used as a double solenoid valve.

Solenoid Specifications

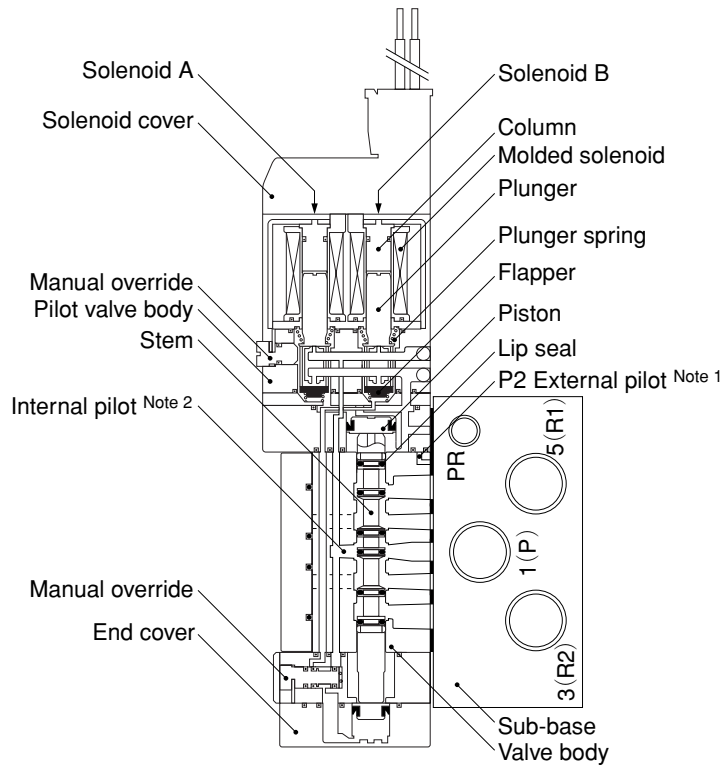
| Item | Rated voltage | DC12V | DC24V | AC100V |
|--|---------------|------------------------------|------------------------------|---|
| | Voltage range | V | 10.8~13.2 (12±10%) | 21.6~26.4 (24±10%) |
| Rated frequency | Hz | — | — | 50 60 |
| Current (when rated voltage is applied) | mA (r.m.s) | Starting | — | 10 ^{Note1} 10 ^{Note1} |
| | Energizing | 76 | 38 | 10 ^{Note1} 10 ^{Note1} |
| Power consumption | W | 0.9 | 0.9 | 1.0VA |
| Allowable leakage current | mA | 4.0 | 2.0 | 2.0 |
| Insulation resistance ^{Note2} | MΩ | Over 100 | | |
| Color of LED indicator | | 14(SA) : Red, 12(SB) : Green | 14(SA) : Red, 12(SB) : Green | 14(SA) : Red, 12(SB) : Green |
| Surge suppression (as standard) | | Flywheel diode | | Bridge diode |

Notes: 1. Since the AC types have built-in bridge diodes, the starting current and energizing current value are virtually the same.

2. Value at DC500V megger.

Inner Construction and Major Parts

● CS-F10T1-A1



Major Parts and Materials

| Parts | | Materials |
|-----------|-----------------|----------------------------|
| Valve | Body | Aluminum die-casting |
| | Stem | Aluminum alloy |
| | Lip seal | Synthetic rubber |
| | Flapper | |
| | Sub-base | Aluminum alloy (anodized) |
| | Plunger | Magnetic stainless steel |
| | Column | |
| End cover | Plastic | |
| Manifold | Body | Aluminum alloy (anodized) |
| | Monoblock | |
| | Block-off plate | Mild steel (nickel plated) |
| | Seal | Synthetic rubber |

Notes: 1. For external pilot type
 2. Not available with external pilot type

Order Codes

| | | | | | | | | | | | |
|--|---|----------------------------|------------------------------------|-------------------------|------------------------|---|--|------------------------------|----------------------|--------------------------------|--------------------------------------|
| CS-F10 - <input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/> | | | | | | | | | | | |
| Clean system F10 series valve basic model | | Pilot specification | | | Manual override | | Valve outlet type ^{Note 3} | | | | |
| | | Internal pilot | External pilot (positive pressure) | External pilot (vacuum) | Manual override button | Manual override lever (made to order) ^{Note 1} | Without inlet/outlet block | With A type outlet plate | With A type sub-base | With outlet port fitting block | With outlet port female thread block |
| <ul style="list-style-type: none"> ● For sub-base-mounted units (cannot be used for units without sub-base) ● For A type manifold ● For F type manifold | CS-F10T1 2-position (Both single and double solenoid use) CS-F10T3 3-position (Closed center) CS-F10T4 3-position (Exhaust center) CS-F10T5 3-position (Pressure center) | Blank | G | V | Blank | -R ^{Note 1} | Blank ^{Note 2} | -A1 ^{Note 2} | -A2 | -FJ ^{Note 2} | -FM ^{Note 2} |

Notes: 1. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1, the manual override lever is available for the A side only.
 2. Two manifold mounting screws are included.
 3. For the outlet port size, see the table at right.

Monoblock Manifold A type (Base Piping Type) Order Codes

| | | | | | | | | | | |
|---|---|----------|--------------------------------------|----------------------------------|----------------------------|----------------|--|-------------------|--|--------------------------------------|
| CS-F10M <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | | | | | | | | | | |
| Clean system F10 series manifold basic model | Number of units | A | Manifold outlet specification | | Pilot specification | | Station ^{Note 1} | Valve size | Valve specification | Pilot specification |
| | 2 : 2 units 3 : 3 units ⋮ 20 : 20 units | | With fitting block: φ 4, φ 6 | With female thread block: M5×0.8 | Internal pilot | External pilot | stn.1 : First stn.2 : Second stn.3 : Third ⋮ stn.20 : 20th | CS-F10 | T1 : 2-position, single solenoid specification T2 : 2-position, double solenoid specification ^{Note 2} T3 : 3-position, closed center T4 : 3-position, exhaust center T5 : 3-position, pressure center | Blank G V |
| CS-F10M | | | J | M | Blank | G | | | | |

Notes: 1. Valve mounting location is from the left, with the solenoid on top and the valve in front.
 2. This is a special model when ordering manifolds. If ordering valves only for repairs, etc., order CS-F□T1, and switch to the double solenoid specification for use.
 3. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1 or T2, the manual override lever is available for the A side only.
 4. Always enter -A1.

Monoblock Manifold F type (Direct Piping Type) Order Codes

| | | | | | | | | |
|---|---|----------|--|-------------------|--|------------------------|-----------------------------|---|
| CS-F10M <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | | | | | | | | |
| Clean system F10 series manifold basic model | Number of units | F | Station ^{Note 1} | Valve size | Valve specification | Manual override | Valve outlet type | |
| | 2 : 2 units 3 : 3 units ⋮ 20 : 20 units | | stn.1 : First stn.2 : Second stn.3 : Third ⋮ stn.20 : 20th | CS-F10 | T1 : 2-position, single solenoid specification T2 : 2-position, double solenoid specification ^{Note 2} T3 : 3-position, closed center T4 : 3-position, exhaust center T5 : 3-position, pressure center | Blank | -R ^{Note 3} | Without outlet port fitting block With outlet port female thread block |
| CS-F10M | | | | | | | | |

Notes: 1. Valve mounting location is from the left, with the solenoid on top and the valve in front.
 2. This is a special model when ordering manifolds. If ordering valves only for repairs, etc., order CS-F□T1, and switch to the double solenoid specification for use.
 3. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1 or T2, the manual override lever is available for the A side only.

| Wiring specification | | | | | | Voltage |
|-----------------------|-----------------|-----------------|-----------------------|-----------------|-----------------|--------------------------|
| L type plug connector | | | S type plug connector | | | DC24V DC12V AC100V |
| Without connector | Lead wire | | Without connector | Lead wire | | |
| | 300mm [11.8in.] | 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | |
| Blank | -PL | -PL3 | -PN | -PS | -PS3 | |

| Valve outlet type (code) | Outlet port size |
|--------------------------|------------------|
| -A2 | Rc1/8 |
| -FJ | φ 4, φ 6 |
| -FM | M5×0.8 |

| Manual override | Valve outlet type | Wiring specification | | | | | | | | | | Voltage |
|-------------------------------|-----------------------|----------------------|-----------------|-----------------|------------------------------------|---------------------------|-------------------|-----------------|-----------------|------------------------------------|---------------------------|--------------------------|
| Blank -R ^{Note 3} | -A1 ^{Note 4} | L type connector | | | | | S type connector | | | | | DC24V DC12V AC100V |
| | | Without connector | Lead wire | | Pre-wired positive common terminal | | Without connector | Lead wire | | Pre-wired positive common terminal | | |
| | | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | |
| | | Blank | -PL | -PL3 | -CPL | -CPL3 | -PN | -PS | -PS3 | -CPS | -CPS3 | |

CS-F [Valve size] BP (for block-off plate)

| Wiring specification | | | | | | | | | | Voltage |
|----------------------|-----------------|-----------------|------------------------------------|---------------------------|-------------------|-----------------|-----------------|------------------------------------|---------------------------|--------------------------|
| L type connector | | | | | S type connector | | | | | DC24V DC12V AC100V |
| Without connector | Lead wire | | Pre-wired positive common terminal | | Without connector | Lead wire | | Pre-wired positive common terminal | | |
| | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | |
| Blank | -PL | -PL3 | -CPL | -CPL3 | -PN | -PS | -PS3 | -CPS | -CPS3 | |

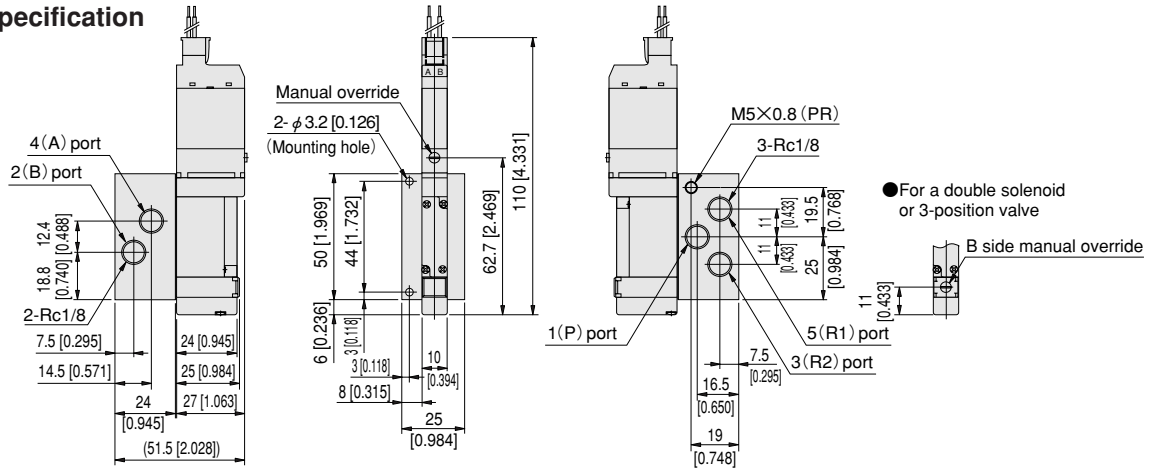
CS-F [Valve size] BP (for block-off plate)

Dimensions of Single Valve Unit mm [in.]

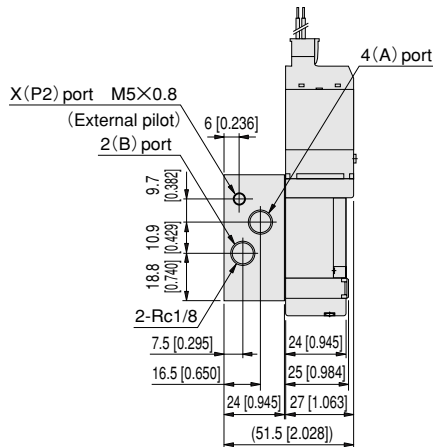
CS-F10T Valve specification Operation type -A2-PS

With an A type sub-base
S type plug connector

● Internal pilot specification

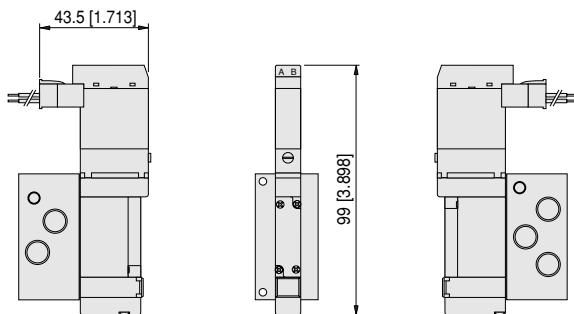


● External pilot specification



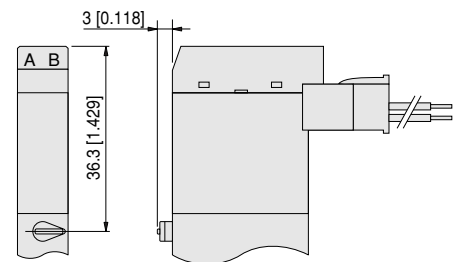
● Option

● L type plug connector : -PL



● Made to Order

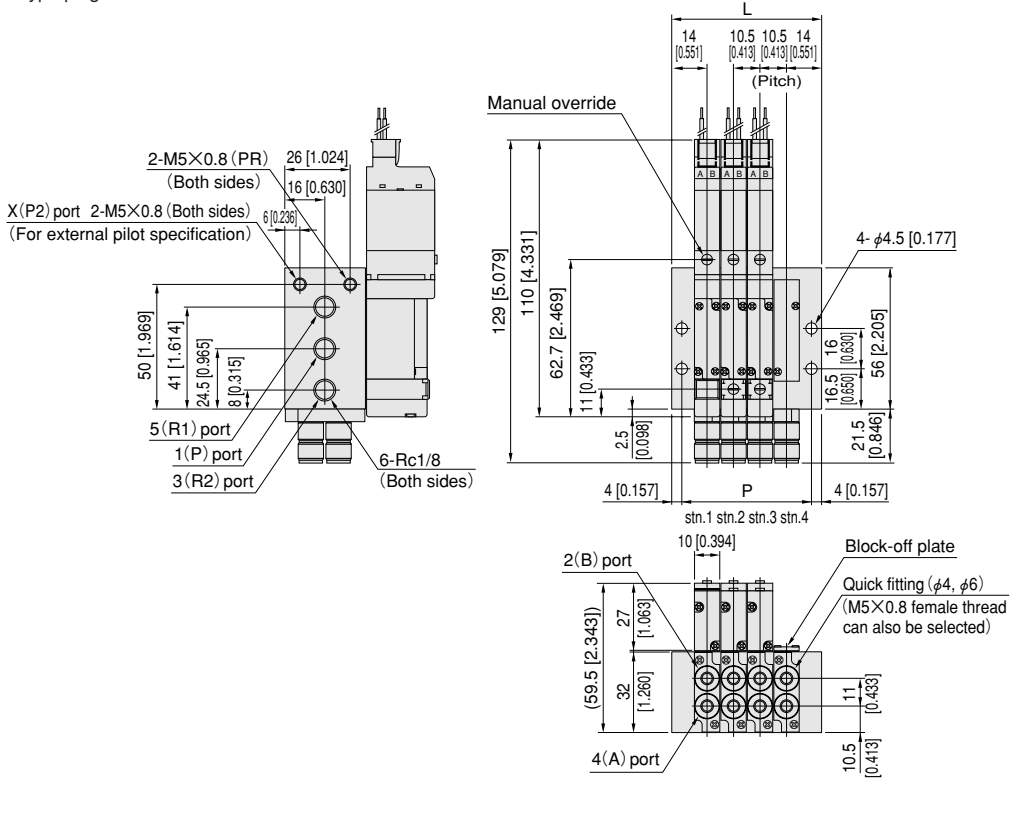
● Manual override lever



Dimensions of Monoblock Manifold A Type, F Type mm [in.]

CS-F10M Number of units A J M Pilot specification (base piping type)

Monoblock manifold A type
Manifold with outlet port different size fitting blocks
S type plug connector

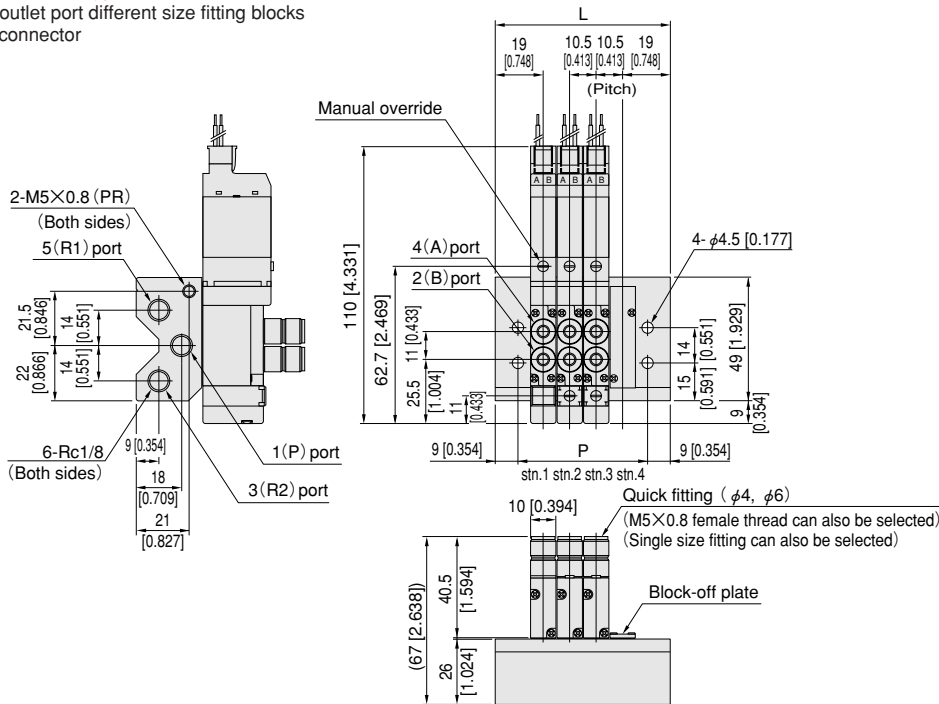


Unit dimensions

| No. of units | L | P |
|--------------|---------------|---------------|
| 2 | 38.5 [1.516] | 30.5 [1.201] |
| 3 | 49.0 [1.929] | 41.0 [1.614] |
| 4 | 59.5 [2.343] | 51.5 [2.028] |
| 5 | 70.0 [2.756] | 62.0 [2.441] |
| 6 | 80.5 [3.169] | 72.5 [2.854] |
| 7 | 91.0 [3.583] | 83.0 [3.268] |
| 8 | 101.5 [3.996] | 93.5 [3.681] |
| 9 | 112.0 [4.409] | 104.0 [4.094] |
| 10 | 122.5 [4.823] | 114.5 [4.508] |
| 11 | 133.0 [5.236] | 125.0 [4.921] |
| 12 | 143.5 [5.650] | 135.5 [5.335] |
| 13 | 154.0 [6.063] | 146.0 [5.748] |
| 14 | 164.5 [6.476] | 156.5 [6.161] |
| 15 | 175.0 [6.890] | 167.0 [6.575] |
| 16 | 185.5 [7.303] | 177.5 [6.988] |
| 17 | 196.0 [7.717] | 188.0 [7.402] |
| 18 | 206.5 [8.130] | 198.5 [7.815] |
| 19 | 217.0 [8.543] | 209.0 [8.228] |
| 20 | 227.5 [8.957] | 219.5 [8.642] |

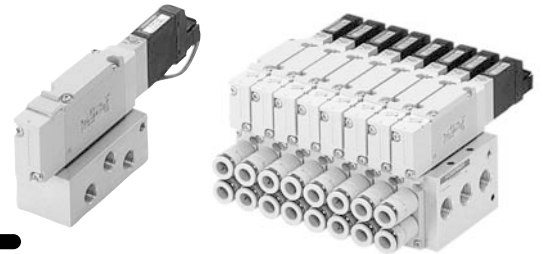
CS-F10M Number of units F (direct piping type)

Monoblock manifold F type
Valves with outlet port different size fitting blocks
S type plug connector

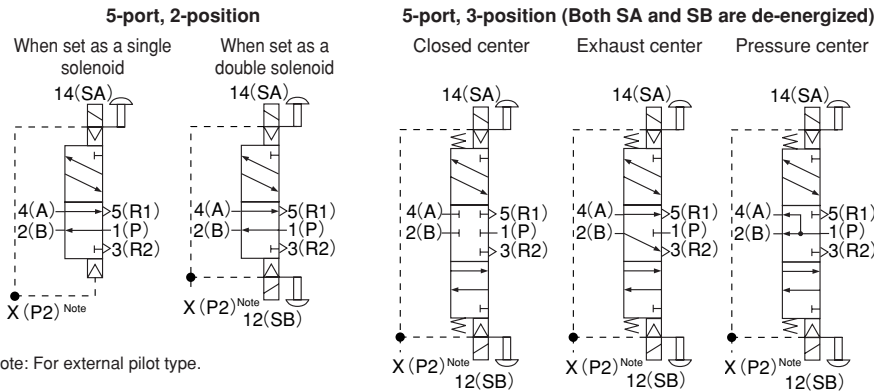


Unit dimensions

| No. of units | L | P |
|--------------|---------------|---------------|
| 2 | 48.5 [1.909] | 30.5 [1.201] |
| 3 | 59.0 [2.323] | 41.0 [1.614] |
| 4 | 69.5 [2.736] | 51.5 [2.028] |
| 5 | 80.0 [3.150] | 62.0 [2.441] |
| 6 | 90.5 [3.563] | 72.5 [2.854] |
| 7 | 101.0 [3.976] | 83.0 [3.268] |
| 8 | 111.5 [4.390] | 93.5 [3.681] |
| 9 | 122.0 [4.803] | 104.0 [4.094] |
| 10 | 132.5 [5.217] | 114.5 [4.508] |
| 11 | 143.0 [5.630] | 125.0 [4.921] |
| 12 | 153.5 [6.043] | 135.5 [5.335] |
| 13 | 164.0 [6.457] | 146.0 [5.748] |
| 14 | 174.5 [6.870] | 156.5 [6.161] |
| 15 | 185.0 [7.283] | 167.0 [6.575] |
| 16 | 195.5 [7.697] | 177.5 [6.988] |
| 17 | 206.0 [8.110] | 188.0 [7.402] |
| 18 | 216.5 [8.524] | 198.5 [7.815] |
| 19 | 227.0 [8.937] | 209.0 [8.228] |
| 20 | 237.5 [9.350] | 219.5 [8.642] |



Symbols



Note: For external pilot type.

Specifications

| Basic model | | CS-F15T1 | CS-F15T3 CS-F15T4 CS-F15T5 | CS-F15T1G | CS-F15T3G CS-F15T4G CS-F15T5G | CS-F15T1V | CS-F15T3V CS-F15T4V CS-F15T5V |
|--|----------------|---|----------------------------------|---|-------------------------------------|---|-------------------------------------|
| Media | | Air | | | | | |
| Operation type | | Internal pilot type | | External pilot type (for positive pressure) | | External pilot type (for vacuum) | |
| Effective area [CV] | | mm ² 10 [0.56] | | | | | |
| Port size | | Fitting for φ 6 and φ 8, Rc1/8 | | M5×0.8, Fitting for φ 6 and φ 8, Rc1/8 | | | |
| Lubrication | | Not required | | | | | |
| Operating pressure range | Main valve | 0.15~0.7MPa [22~102psi.] | | 0~0.7MPa [0~102psi.] ^{Note1} | | -100kPa~0.15MPa [-29.53in.Hg~22psi.] | |
| | External pilot | — | | 0.2~0.7MPa [29~102psi.] ^{Note1} | | 0.2~0.7MPa [29~102psi.] | |
| Proof pressure | | MPa [psi.] 1.05 [152] | | | | | |
| Response time ^{Note2} | DC12V, DC24V | 20/30 or below | 15/50 or below | 20/30 or below | 15/50 or below | 20/30 or below | 15/50 or below |
| | ms AC100V | 20/30 or below | 15/50 or below | 20/30 or below | 15/50 or below | 20/30 or below | 15/50 or below |
| ON/OFF time | | 20/30 or below | 15/50 or below | 20/30 or below | 15/50 or below | 20/30 or below | 15/50 or below |
| Maximum operating frequency | | Hz 5 | | | | | |
| Minimum time to energize for self holding ^{Note3} | | 50 | — | 50 | — | 50 | — |
| Operating temperature range (atmosphere and media) °C [°F] | | 5~50 [41~122] | | | | | |
| Shock resistance | | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} |
| Mounting direction | | Any | | | | | |

- Notes: 1. When the main valve pressure is 0.2~0.7MPa [29~102psi.], set the external pilot pressure to the main valve pressure or higher, and to 0.7MPa [102psi.] or less.
 2. Values when air pressure is 0.5MPa [73psi.]. The values for 2-position valves are when used as a single solenoid, and the values for 3-position valves are those when switching from the neutral position of closed center.
 3. When used as a double solenoid valve.

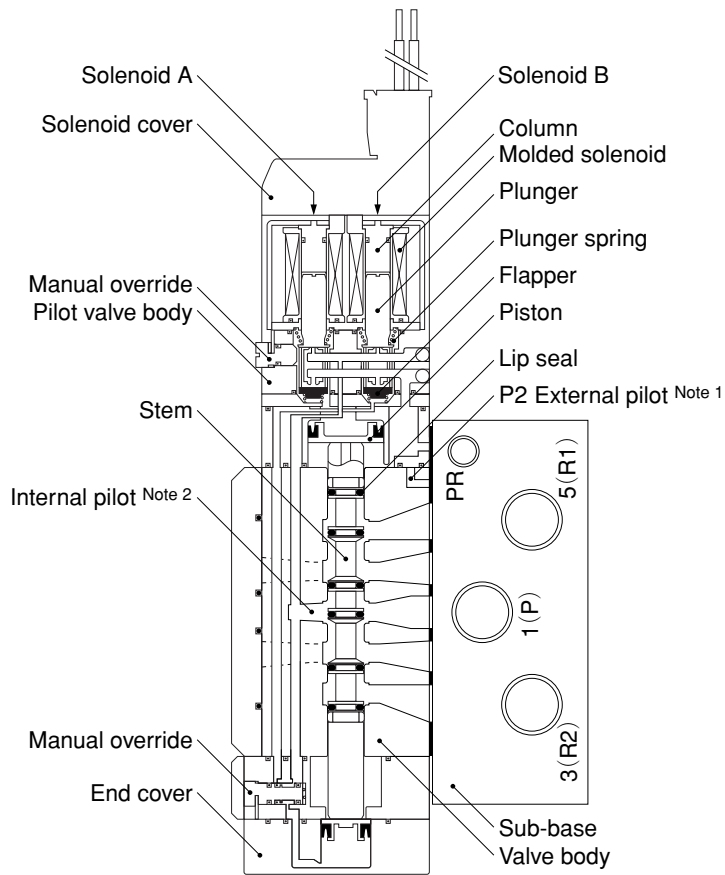
Solenoid Specifications

| Rated voltage | | DC12V | DC24V | AC100V |
|---|---------------------|------------------------------|------------------------------|---|
| Voltage range | | V 10.8~13.2 (12±10%) | 21.6~26.4 (24±10%) | 90~110 (100±10%) |
| Rated frequency | | Hz — | — | 50 60 |
| Current (when rated voltage is applied) | mA (r.m.s) Starting | — | — | 10 ^{Note 1} 10 ^{Note 1} |
| | Energizing | 76 | 38 | 10 ^{Note 1} 10 ^{Note 1} |
| Power consumption | | W 0.9 | 0.9 | 1.0VA |
| Allowable leakage current | | mA 4.0 | 2.0 | 2.0 |
| Insulation resistance ^{Note 2} | | MΩ Over 100 | | |
| Color of LED indicator | | 14(SA) : Red, 12(SB) : Green | 14(SA) : Red, 12(SB) : Green | 14(SA) : Red, 12(SB) : Green |
| Surge suppression (as standard) | | Flywheel diode | | Bridge diode |

- Notes: 1. Since the AC types have built-in bridge diodes, the starting current and energizing current value are virtually the same.
 2. Value at DC500V megger.

Inner Construction and Major Parts

● CS-F15T1-A1



Major Parts and Materials

| Parts | | Materials |
|----------|-----------------|-------------------------------------|
| Valve | Body | Aluminum die-casting |
| | Stem | Aluminum alloy |
| | Lip seal | Synthetic rubber |
| | Flapper | |
| | Sub-base | Aluminum alloy (anodized) |
| | Plunger | Magnetic stainless steel |
| | Column | |
| | End cover | Plastic |
| Manifold | Body | Monoblock Aluminum alloy (anodized) |
| | Block-off plate | |
| | Seal | Synthetic rubber |

Notes: 1. For external pilot type
 2. Not available with external pilot type

Order Codes

| | | | | | | | | | | | |
|--|---|----------------------------|------------------------------------|-------------------------|------------------------|---|--|------------------------------|----------------------|--------------------------------|--------------------------------------|
| CS-F15 - <input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/> | | | | | | | | | | | |
| Clean system F15 series valve basic model | | Pilot specification | | | Manual override | | Valve outlet type ^{Note 3} | | | | |
| | | Internal pilot | External pilot (positive pressure) | External pilot (vacuum) | Manual override button | Manual override lever (made to order) ^{Note 1} | Without inlet/outlet block | With A type outlet plate | With A type sub-base | With outlet port fitting block | With outlet port female thread block |
| <ul style="list-style-type: none"> ● For sub-base-mounted units (cannot be used for units without sub-base) ● For A type manifold ● For F type manifold | CS-F15T1 2-position (Both single and double solenoid use) CS-F15T3 3-position (Closed center) CS-F15T4 3-position (Exhaust center) CS-F15T5 3-position (Pressure center) | Blank | G | V | Blank | -R ^{Note 1} | Blank ^{Note 2} | -A1 ^{Note 2} | -A2 | -FJ ^{Note 2} | -FM ^{Note 2} |

Notes: 1. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1, the manual override lever is available for the A side only.
 2. Two manifold mounting screws are included.
 3. For the outlet port size, see the table at right.

Monoblock Manifold A type (Base Piping Type) Order Codes

| | | | | | | | | | | |
|---|---|----------|--------------------------------------|---------------------------------|----------------------------|----------------|--|-------------------|--|--------------------------------------|
| CS-F15M <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | | | | | | | | | | |
| Clean system F15 series manifold basic model | Number of units | A | Manifold outlet specification | | Pilot specification | | Station ^{Note 1} | Valve size | Valve specification | Pilot specification |
| | 2 : 2 units 3 : 3 units ⋮ 20 : 20 units | | With fitting block: $\phi 6, \phi 8$ | With female thread block: Rc1/8 | Internal pilot | External pilot | stn.1 : First stn.2 : Second stn.3 : Third ⋮ stn.20 : 20th | CS-F15 | T1 : 2-position, single solenoid specification T2 : 2-position, double solenoid specification ^{Note 2} T3 : 3-position, closed center T4 : 3-position, exhaust center T5 : 3-position, pressure center | Blank G V |
| CS-F15M | | | J | M | Blank | G | | | | |

Notes: 1. Valve mounting location is from the left, with the solenoid on top and the valve in front.
 2. This is a special model when ordering manifolds. If ordering valves only for repairs, etc., order CS-F□T1, and switch to the double solenoid specification for use.
 3. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1 or T2, the manual override lever is available for the A side only.
 4. Always enter -A1.

Monoblock Manifold F type (Direct Piping Type) Order Codes

| | | | | | | | | |
|--|---|----------|--|-------------------|--|------------------------|-----------------------------|---|
| CS-F15M <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | | | | | | | | |
| Clean system F15 series manifold basic model | Number of units | F | Station ^{Note 1} | Valve size | Valve specification | Manual override | Valve outlet type | |
| | 2 : 2 units 3 : 3 units ⋮ 20 : 20 units | | stn.1 : First stn.2 : Second stn.3 : Third ⋮ stn.20 : 20th | CS-F15 | T1 : 2-position, single solenoid specification T2 : 2-position, double solenoid specification ^{Note 2} T3 : 3-position, closed center T4 : 3-position, exhaust center T5 : 3-position, pressure center | Blank | -R ^{Note 3} | Without outlet port fitting block With outlet port female thread block |
| CS-F15M | | | | | | | -FJ | -FM |

Notes: 1. Valve mounting location is from the left, with the solenoid on top and the valve in front.
 2. This is a special model when ordering manifolds. If ordering valves only for repairs, etc., order CS-F□T1, and switch to the double solenoid specification for use.
 3. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1 or T2, the manual override lever is available for the A side only.

| Wiring specification | | | | | | Voltage |
|-----------------------|-----------------|-----------------|-----------------------|-----------------|-----------------|--------------------------|
| L type plug connector | | | S type plug connector | | | DC24V DC12V AC100V |
| Without connector | Lead wire | | Without connector | Lead wire | | |
| | 300mm [11.8in.] | 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | |
| Blank | -PL | -PL3 | -PN | -PS | -PS3 | |

| Valve outlet type (code) | Outlet port size |
|--------------------------|------------------|
| -A2 | Rc1/8 |
| -FJ | φ6, φ8 |
| -FM | Rc1/8 |

| Manual override | Valve outlet type | Wiring specification | | | | | | | | | | Voltage |
|-------------------------------|-----------------------|----------------------|-----------------|-----------------|------------------------------------|---------------------------|-------------------|-----------------|-----------------|------------------------------------|---------------------------|--------------------------|
| Blank -R ^{Note 3} | -A1 ^{Note 4} | L type connector | | | | | S type connector | | | | | DC24V DC12V AC100V |
| | | Without connector | Lead wire | | Pre-wired positive common terminal | | Without connector | Lead wire | | Pre-wired positive common terminal | | |
| | | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | |
| | | Blank | -PL | -PL3 | -CPL | -CPL3 | -PN | -PS | -PS3 | -CPS | -CPS3 | |

CS-F [Valve size] BP (for block-off plate)

| Wiring specification | | | | | | | | | | Voltage |
|----------------------|-----------------|-----------------|------------------------------------|---------------------------|-------------------|-----------------|-----------------|------------------------------------|---------------------------|--------------------------|
| L type connector | | | | | S type connector | | | | | DC24V DC12V AC100V |
| Without connector | Lead wire | | Pre-wired positive common terminal | | Without connector | Lead wire | | Pre-wired positive common terminal | | |
| | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | |
| Blank | -PL | -PL3 | -CPL | -CPL3 | -PN | -PS | -PS3 | -CPS | -CPS3 | |

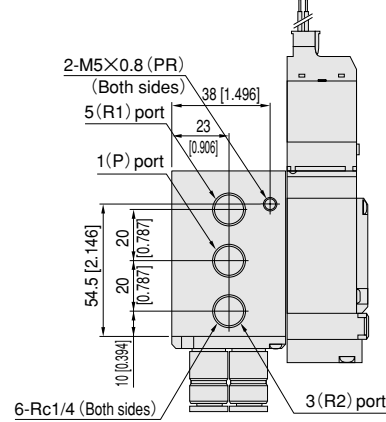
CS-F [Valve size] BP (for block-off plate)

Dimensions of Monoblock Manifold A Type, F Type mm [in.]

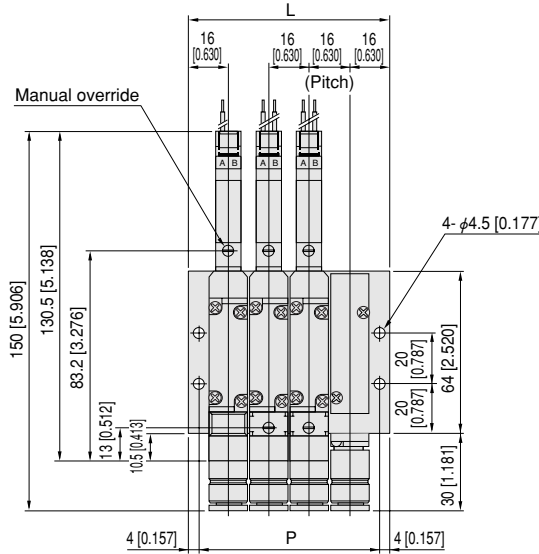
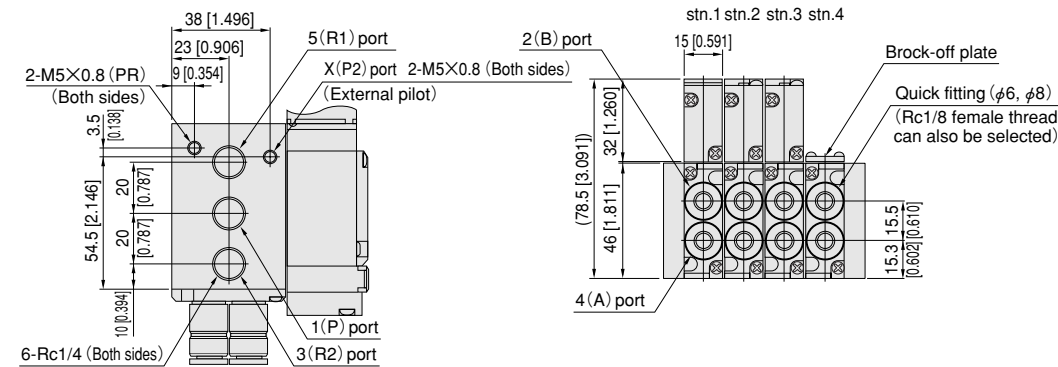
CS-F15M Number of units A ^J Pilot specification (base piping type)

Monoblock manifold A type
Manifold with outlet port different size fitting blocks
S type plug connector

Internal pilot specification



External pilot specification

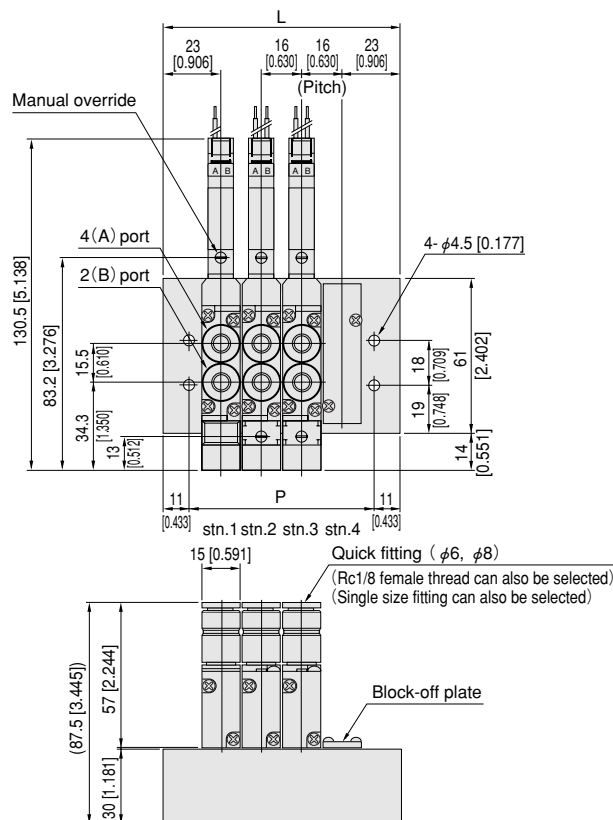
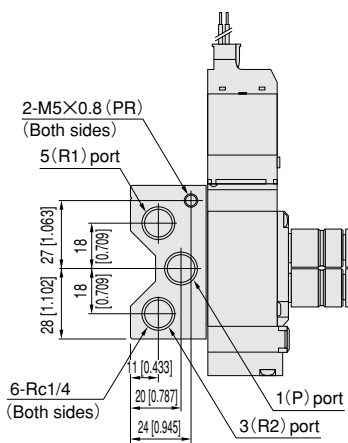


Unit dimensions

| No. of units | L | P |
|--------------|--------------|--------------|
| 2 | 48 [1.890] | 40 [1.575] |
| 3 | 64 [2.520] | 56 [2.205] |
| 4 | 80 [3.150] | 72 [2.835] |
| 5 | 96 [3.780] | 88 [3.465] |
| 6 | 112 [4.409] | 104 [4.094] |
| 7 | 128 [5.039] | 120 [4.724] |
| 8 | 144 [5.669] | 136 [5.354] |
| 9 | 160 [6.299] | 152 [5.984] |
| 10 | 176 [6.929] | 168 [6.614] |
| 11 | 192 [7.559] | 184 [7.244] |
| 12 | 208 [8.189] | 200 [7.874] |
| 13 | 224 [8.819] | 216 [8.504] |
| 14 | 240 [9.449] | 232 [9.134] |
| 15 | 256 [10.079] | 248 [9.764] |
| 16 | 272 [10.709] | 264 [10.394] |
| 17 | 288 [11.339] | 280 [11.024] |
| 18 | 304 [11.969] | 296 [11.654] |
| 19 | 320 [12.598] | 312 [12.283] |
| 20 | 336 [13.228] | 328 [12.913] |

CS-F15M Number of units F (direct piping type)

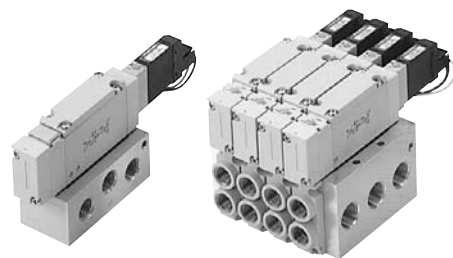
Monoblock manifold F type
Valves with outlet port different size fitting blocks
S type plug connector



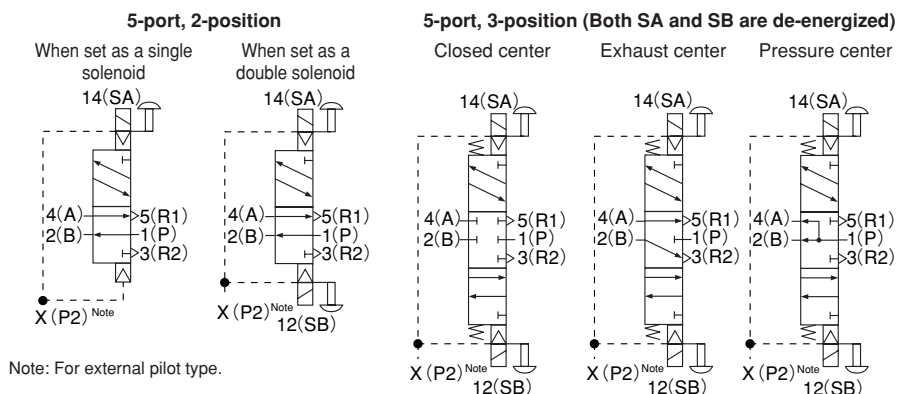
Unit dimensions

| No. of units | L | P |
|--------------|--------------|--------------|
| 2 | 62 [2.441] | 40 [1.575] |
| 3 | 78 [3.071] | 56 [2.205] |
| 4 | 94 [3.701] | 72 [2.835] |
| 5 | 110 [4.331] | 88 [3.465] |
| 6 | 126 [4.961] | 104 [4.094] |
| 7 | 142 [5.591] | 120 [4.724] |
| 8 | 158 [6.220] | 136 [5.354] |
| 9 | 174 [6.850] | 152 [5.984] |
| 10 | 190 [7.480] | 168 [6.614] |
| 11 | 206 [8.110] | 184 [7.244] |
| 12 | 222 [8.740] | 200 [7.874] |
| 13 | 238 [9.370] | 216 [8.504] |
| 14 | 254 [10.000] | 232 [9.134] |
| 15 | 270 [10.630] | 248 [9.764] |
| 16 | 286 [11.260] | 264 [10.394] |
| 17 | 302 [11.890] | 280 [11.024] |
| 18 | 318 [12.520] | 296 [11.654] |
| 19 | 334 [13.150] | 312 [12.283] |
| 20 | 350 [13.780] | 328 [12.913] |

KOGANEI LEAN SYSTEM SOLENOID VALVES F18 SERIES



Symbols



Specifications

| Item | Basic model | CS-F18T1 | CS-F18T3 CS-F18T4 CS-F18T5 | CS-F18T1G | CS-F18T3G CS-F18T4G CS-F18T5G | CS-F18T1V | CS-F18T3V CS-F18T4V CS-F18T5V |
|--|----------------------|---|----------------------------------|---|-------------------------------------|---|-------------------------------------|
| | Media | | Air | | | | |
| Operation type | | Internal pilot type | | External pilot type (for positive pressure) | | External pilot type (for vacuum) | |
| Effective area [CV] | mm ² | 18 [1] | | | | | |
| Port size | | Fitting for ϕ 8 and ϕ 10, Rc1/4 | | M5×0.8, Fitting for ϕ 8 and ϕ 10, Rc1/4 | | | |
| Lubrication | | Not required | | | | | |
| Operating pressure range | Main valve | 0.15~0.7MPa [22~102psi.] | | 0~0.7MPa [0~102psi.] ^{Note1} | | -100kPa~0.15MPa [-29.53in.Hg~22psi.] | |
| | External pilot | — | | 0.2~0.7MPa [29~102psi.] ^{Note1} | | 0.2~0.7MPa [29~102psi.] | |
| Proof pressure | MPa [psi.] | 1.05 [152] | | | | | |
| Response time ^{Note2} | DC12V, DC24V | 25/35 or below | 15/70 or below | 25/35 or below | 15/70 or below | 25/35 or below | 15/70 or below |
| ON/OFF time | AC100V | 25/35 or below | 15/70 or below | 25/35 or below | 15/70 or below | 25/35 or below | 15/70 or below |
| Maximum operating frequency | Hz | 5 | | | | | |
| Minimum time to energize for self holding ^{Note3} | ms | 50 | — | 50 | — | 50 | — |
| Operating temperature range (atmosphere and media) | °C [°F] | 5~50 [41~122] | | | | | |
| Shock resistance | m/s ² {G} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} | 1373 {140.0} (Axial direction 294.2 {30.0}) | 294.2 {30.0} |
| Mounting direction | | Any | | | | | |

Notes: 1. When the main valve pressure is 0.2~0.7MPa [29~102psi.], set the external pilot pressure to the main valve pressure or higher, and to 0.7MPa [102psi.] or less.

2. Values when air pressure is 0.5MPa [73psi.]. The values for 2-position valves are when used as a single solenoid, and the values for 3-position valves are those when switching from the neutral position of closed center.

3. When used as a double solenoid valve.

Solenoid Specifications

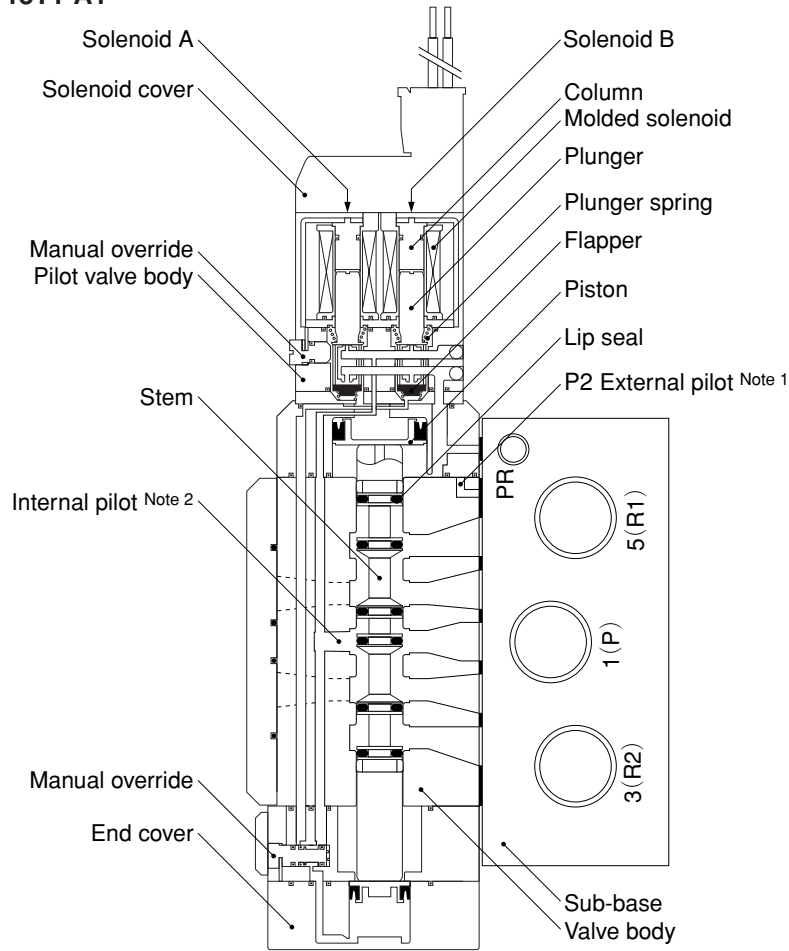
| Item | Rated voltage | DC12V | DC24V | AC100V |
|---|---------------|------------------------------|------------------------------|--|
| | Voltage range | V | 10.8~13.2 (12±10%) | 21.6~26.4 (24±10%) |
| Rated frequency | Hz | — | — | 50 60 |
| Current (when rated voltage is applied) | mA (r.m.s) | — | — | 15 ^{Note 1} 15 ^{Note 1} |
| | Starting | — | — | 15 ^{Note 1} 15 ^{Note 1} |
| | Energizing | 76 | 38 | 15 ^{Note 1} 15 ^{Note 1} |
| Power consumption | W | 0.9 | 0.9 | 1.5VA |
| Allowable leakage current | mA | 4.0 | 2.0 | 4.0 |
| Insulation resistance ^{Note 2} | MΩ | Over 10 | | |
| Color of LED indicator | | 14(SA) : Red, 12(SB) : Green | 14(SA) : Red, 12(SB) : Green | 14(SA) : Red, 12(SB) : Green |
| Surge suppression (as standard) | | Flywheel diode | | Bridge diode |

Notes: 1. Since the AC types have built-in bridge diodes, the starting current and energizing current value are virtually the same.

2. Value at DC500V megger.

Inner Construction and Major Parts

● CS-F18T1-A1



Major Parts and Materials

| Parts | | Materials |
|-----------|-----------------|----------------------------|
| Valve | Body | Aluminum die-casting |
| | Stem | Aluminum alloy |
| | Lip seal | Synthetic rubber |
| | Flapper | Synthetic rubber |
| | Sub-base | Aluminum alloy (anodized) |
| | Plunger | Magnetic stainless steel |
| | Column | Magnetic stainless steel |
| End cover | Plastic | |
| Manifold | Body | Aluminum alloy (anodized) |
| | Block-off plate | Mild steel (nickel plated) |
| | Seal | Synthetic rubber |

Notes: 1. For external pilot type

2. Not available with external pilot type

Order Codes

| | | | | | | | | | | | |
|--|---|---------------------|------------------------------------|-------------------------|------------------------|---|-------------------------------------|------------------------------|----------------------|--------------------------------|--------------------------------------|
| CS-F18 - [] - [] - [] - [] - [] | | | | | | | | | | | |
| Clean system F18 series valve basic model | | Pilot specification | | | Manual override | | Valve outlet type ^{Note 3} | | | | |
| | | Internal pilot | External pilot (positive pressure) | External pilot (vacuum) | Manual override button | Manual override lever (made to order) ^{Note 1} | Without inlet/outlet block | With A type outlet plate | With A type sub-base | With outlet port fitting block | With outlet port female thread block |
| <ul style="list-style-type: none"> ● For sub-base-mounted units (cannot be used for units without sub-base) ● For A type manifold ● For F type manifold | CS-F18T1 2-position (Both single and double solenoid use) CS-F18T3 3-position (Closed center) CS-F18T4 3-position (Exhaust center) CS-F18T5 3-position (Pressure center) | Blank | G | V | Blank | -R ^{Note 1} | Blank ^{Note 2} | -A1 ^{Note 2} | -A2 | -FJ ^{Note 2} | -FM ^{Note 2} |

Notes: 1. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1, the manual override lever is available for the A side only.
 2. Two manifold mounting screws are included.
 3. For the outlet port size, see the table at right.

Monoblock Manifold A type (Base Piping Type) Order Codes

| | | | | | | | | | |
|--|---|-------------------------------|-------------------------------|---------------------------------|----------------|---------------------------|--|---------------------|--|
| CS-F18M [] [] [] [] [] [] [] [] [] | | | | | | | | | |
| Clean system F18 series manifold basic model | Number of units | Manifold outlet specification | | Pilot specification | | Station ^{Note 1} | Valve size | Valve specification | Pilot specification |
| | 2 : 2 units 3 : 3 units ⋮ 20 : 20 units | A | With fitting block: φ 8, φ 10 | With female thread block: Rc1/4 | Internal pilot | External pilot | stn.1 : First stn.2 : Second stn.3 : Third ⋮ stn.20 : 20th | CS-F18 | T1 : 2-position, single solenoid specification T2 : 2-position, double solenoid specification ^{Note 2} T3 : 3-position, closed center T4 : 3-position, exhaust center T5 : 3-position, pressure center |
| CS-F18M | | | | Blank | G | | | | |

Notes: 1. Valve mounting location is from the left, with the solenoid on top and the valve in front.
 2. This is a special model when ordering manifolds. If ordering valves only for repairs, etc., order CS-F□T1, and switch to the double solenoid specification for use.
 3. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1 or T2, the manual override lever is available for the A side only.
 4. Always enter -A1.

Monoblock Manifold F type (Direct Piping Type) Order Codes

| | | | | | | | |
|--|---|---------------------------|--|---------------------|--|---|---|
| CS-F18M [] [] [] [] [] [] [] [] [] | | | | | | | |
| Clean system F18 series manifold basic model | Number of units | Station ^{Note 1} | Valve size | Valve specification | Manual override | Valve outlet type | |
| | 2 : 2 units 3 : 3 units ⋮ 20 : 20 units | F | stn.1 : First stn.2 : Second stn.3 : Third ⋮ stn.20 : 20th | CS-F18 | T1 : 2-position, single solenoid specification T2 : 2-position, double solenoid specification ^{Note 2} T3 : 3-position, closed center T4 : 3-position, exhaust center T5 : 3-position, pressure center | Blank -R ^{Note 3} | Without outlet port fitting block -FJ |
| CS-F18M | | | | | | | |

Notes: 1. Valve mounting location is from the left, with the solenoid on top and the valve in front.
 2. This is a special model when ordering manifolds. If ordering valves only for repairs, etc., order CS-F□T1, and switch to the double solenoid specification for use.
 3. The manual override lever is made to order. Consult us for delivery. When the valve specification is T1 or T2, the manual override lever is available for the A side only.

| Wiring specification | | | | | | Voltage |
|-----------------------|-----------------|-----------------|-----------------------|-----------------|-----------------|--------------------------|
| L type plug connector | | | S type plug connector | | | |
| Without connector | Lead wire | | Without connector | Lead wire | | |
| | 300mm [11.8in.] | 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | |
| Blank | -PL | -PL3 | -PN | -PS | -PS3 | DC24V DC12V AC100V |

| Valve outlet type (code) | Outlet port size |
|--------------------------|-------------------|
| -A2 | Rc1/4 |
| -FJ | $\phi 8, \phi 10$ |
| -FM | Rc1/4 |

| Manual override | Valve outlet type | Wiring specification | | | | | | | | | | Voltage |
|-------------------------------|-----------------------|----------------------|-----------------|-----------------|------------------------------------|---------------------------|-------------------|-----------------|-----------------|------------------------------------|---------------------------|--------------------------|
| Blank -R ^{Note 3} | -A1 ^{Note 4} | L type connector | | | | | S type connector | | | | | |
| | | Without connector | Lead wire | | Pre-wired positive common terminal | | Without connector | Lead wire | | Pre-wired positive common terminal | | |
| | | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | |
| | | Blank | -PL | -PL3 | -CPL | -CPL3 | -PN | -PS | -PS3 | -CPS | -CPS3 | DC24V DC12V AC100V |

CS-F [Valve size] BP (for block-off plate)

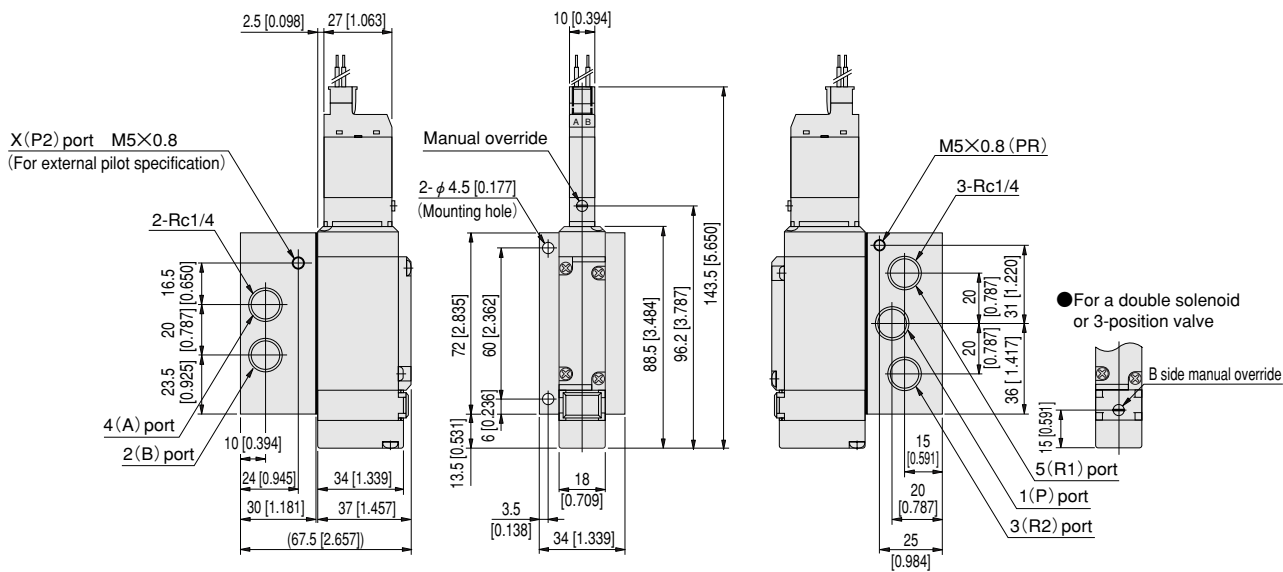
| Wiring specification | | | | | | | | | | Voltage |
|----------------------|-----------------|-----------------|------------------------------------|---------------------------|-------------------|-----------------|-----------------|------------------------------------|---------------------------|--------------------------|
| L type connector | | | | | S type connector | | | | | |
| Without connector | Lead wire | | Pre-wired positive common terminal | | Without connector | Lead wire | | Pre-wired positive common terminal | | |
| | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | | 300mm [11.8in.] | 3000mm [118in.] | Lead wire 300mm [11.8in.] | Lead wire 3000mm [118in.] | |
| Blank | -PL | -PL3 | -CPL | -CPL3 | -PN | -PS | -PS3 | -CPS | -CPS3 | DC24V DC12V AC100V |

CS-F [Valve size] BP (for block-off plate)

Dimensions of Single Valve Unit mm [in.]

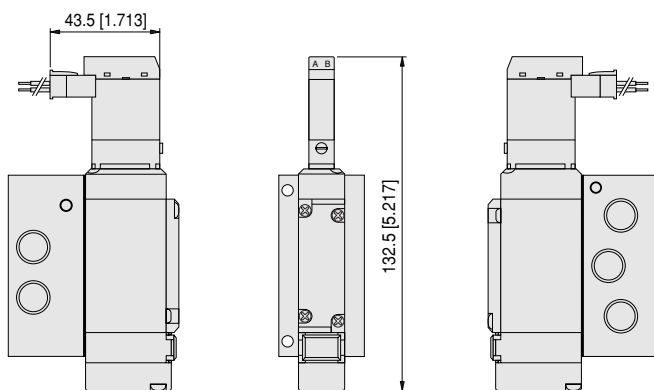
CS-F18T Valve specification **Operation type -A2-PS**

With an A type sub-base
S type plug connector



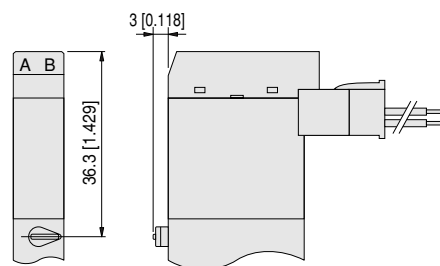
● **Option**

● L type plug connector: **-PL**



● **Made to Order**

● Manual override lever

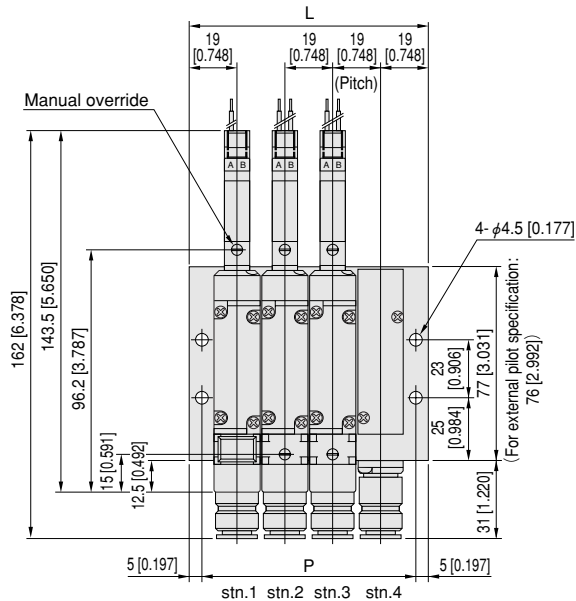
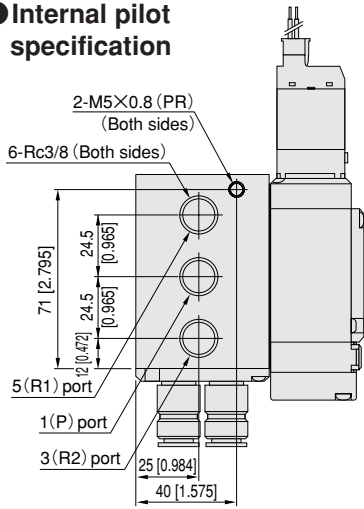


Dimensions of Monoblock Manifold A Type, F Type mm [in.]

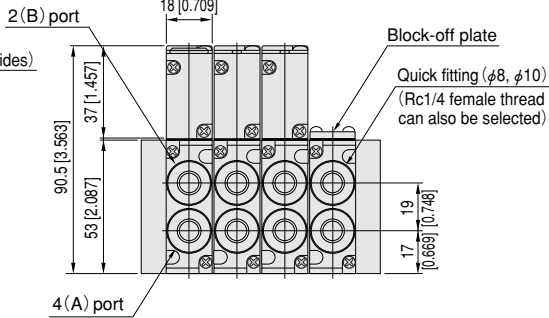
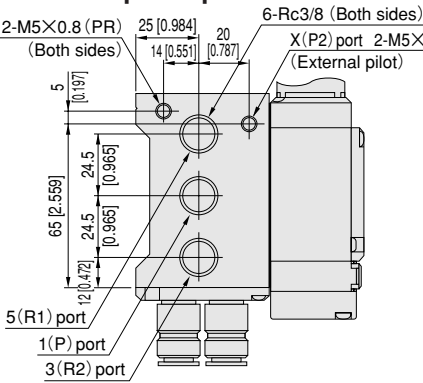
CS-F18M Number of units A J Pilot specification (base piping type)

Monoblock manifold A type
Manifold with outlet port different size fitting blocks
S type plug connector

Internal pilot specification



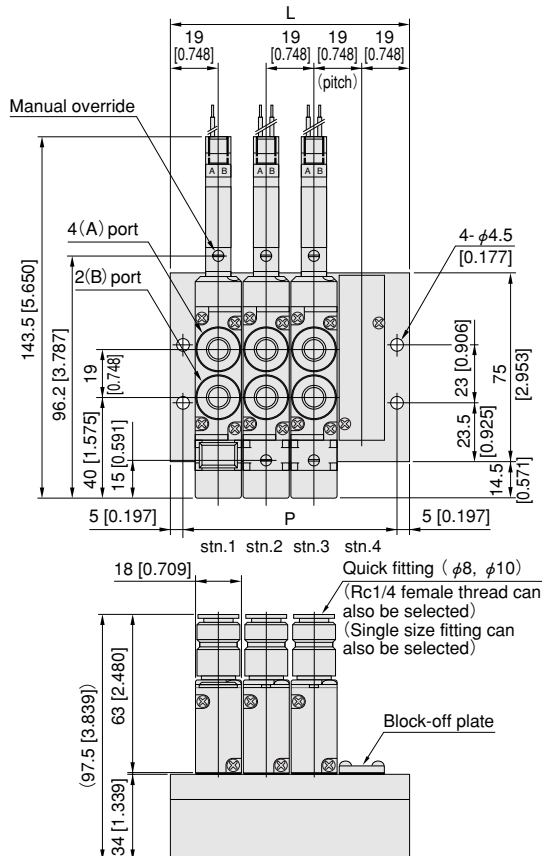
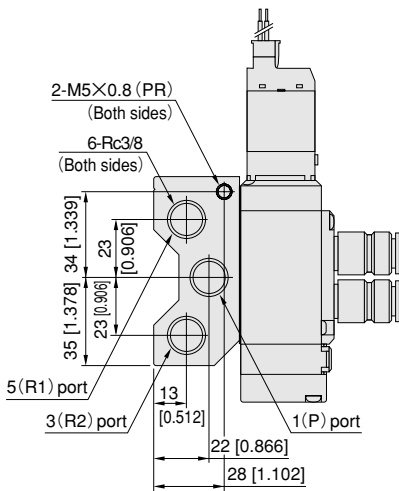
External pilot specification (Note)



Note: For the external pilot specifications, the body shape of the monoblock manifold A type differs from the internal pilot specifications.

CS-F18M Number of units F (direct piping type)

Monoblock manifold F type
Valves with outlet port different size fitting blocks
S type plug connector



Unit dimensions

| No. of units | L | P |
|--------------|--------------|--------------|
| 2 | 57 [2.244] | 47 [1.850] |
| 3 | 76 [2.992] | 66 [2.598] |
| 4 | 95 [3.740] | 85 [3.346] |
| 5 | 114 [4.488] | 104 [4.094] |
| 6 | 133 [5.236] | 123 [4.843] |
| 7 | 152 [5.984] | 142 [5.591] |
| 8 | 171 [6.732] | 161 [6.339] |
| 9 | 190 [7.480] | 180 [7.087] |
| 10 | 209 [8.228] | 199 [7.835] |
| 11 | 228 [8.976] | 218 [8.583] |
| 12 | 247 [9.724] | 237 [9.331] |
| 13 | 266 [10.472] | 256 [10.079] |
| 14 | 285 [11.220] | 275 [10.827] |
| 15 | 304 [11.969] | 294 [11.575] |
| 16 | 323 [12.717] | 313 [12.323] |
| 17 | 342 [13.465] | 332 [13.071] |
| 18 | 361 [14.213] | 351 [13.819] |
| 19 | 380 [14.961] | 370 [14.567] |
| 20 | 399 [15.709] | 389 [15.315] |

Unit dimensions

| No. of units | L | P |
|--------------|--------------|--------------|
| 2 | 57 [2.244] | 47 [1.850] |
| 3 | 76 [2.992] | 66 [2.598] |
| 4 | 95 [3.740] | 85 [3.346] |
| 5 | 114 [4.488] | 104 [4.094] |
| 6 | 133 [5.236] | 123 [4.843] |
| 7 | 152 [5.984] | 142 [5.591] |
| 8 | 171 [6.732] | 161 [6.339] |
| 9 | 190 [7.480] | 180 [7.087] |
| 10 | 209 [8.228] | 199 [7.835] |
| 11 | 228 [8.976] | 218 [8.583] |
| 12 | 247 [9.724] | 237 [9.331] |
| 13 | 266 [10.472] | 256 [10.079] |
| 14 | 285 [11.220] | 275 [10.827] |
| 15 | 304 [11.969] | 294 [11.575] |
| 16 | 323 [12.717] | 313 [12.323] |
| 17 | 342 [13.465] | 332 [13.071] |
| 18 | 361 [14.213] | 351 [13.819] |
| 19 | 380 [14.961] | 370 [14.567] |
| 20 | 399 [15.709] | 389 [15.315] |