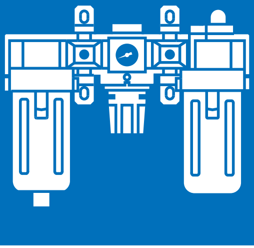
CHELIC®

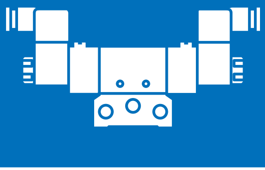
# PNEUMATIC
# PRODUCT CATALOGS

2-9（A）

## Air unit

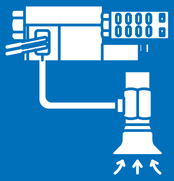


## Control Valves

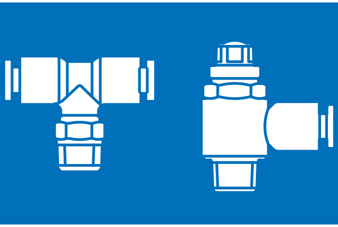


## Directional Control

## Vacuum Equipment



## Fittings



# AUTOMATION PRODUCT CATALOGS 2-9(A)

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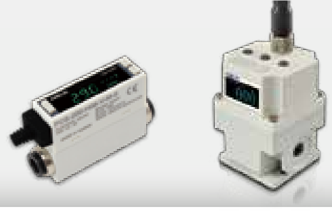

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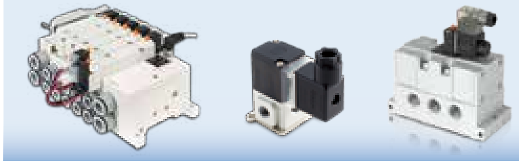

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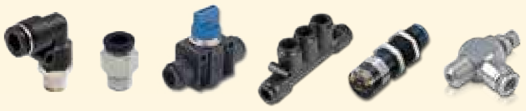

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The specification are subject to change without advance notice.

## ABOUT CHELIC

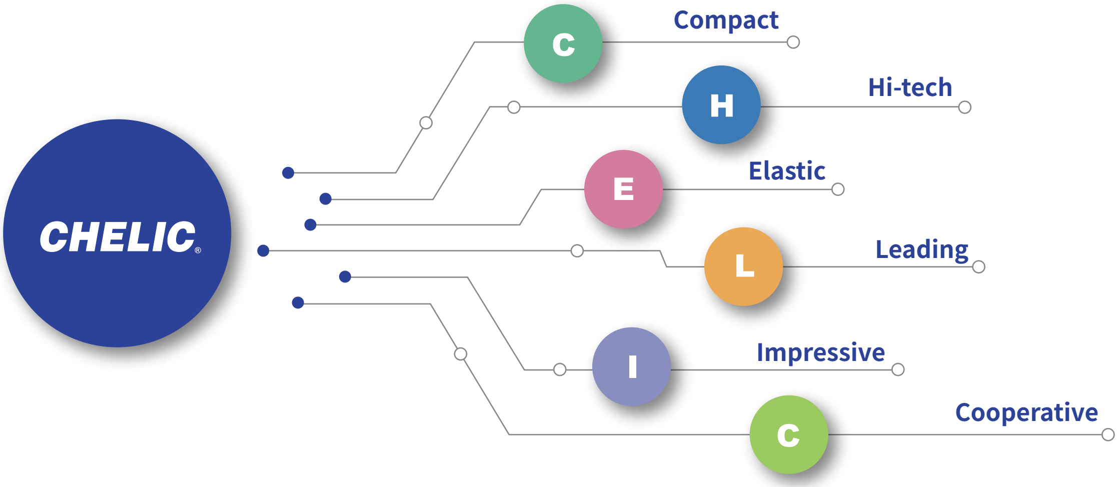
**CHELIC** was founded in 1986 and with headquarter in New Taipei City of Taiwan. Our main manufacture sites are Taiwan New Taipei Factory and Shanghai Song Jiang Factory. We have specialized in manufacturing pneumatic and electric actuator automation components including air units, control valves, actuators, pneumatic accessories, vacuum units, automatic modularized products and electro-control unit which are allocated and used widely in machinery sectors such as production facilities, inspection machines, packing machines, forming machines, repairmen equipment and factory automation.

**CHELIC** has been a well-known brand in automation industry for years, and we have global distribution network; furthermore, we are the qualified OEM suppliers for tier-one international automation companies.

With our driven for innovation and quality improvement, we have dedicated to enhance customers production efficiency and lower the cost. We trust we will become a good partner and royalty backup.

## BRAND MEANING

TAIWAN CHELIC CO.,LTD. manufactures pneumatic components. We believe in the specialization of production and the solid manufacturing management. Our outstanding team produces every hi-tech product with 100% effort and dedication to guarantee the supplying the best-quality pneumatic components.
We expect we play a leading role in our industry trusted by our clients and established a long term and beneficial relationship with manufactures and clients. We continually cooperate and provide service to our customer and impress customer by our honest.



# COMPANY DEVELOPMENT

**1986**
Taiwan Chelic Corp. Ltd. founded and located in New Taipe City

**1995**
Obtained ISO 9002 to implementing Quality System thoroughly

**1998**
Obtained ISO 9001 invigorating Research and Development

**2001**
**TÜV** accredited that Electrical Safety qualification conformed to CE

**2001**
Shanghai Chelic Pneumatic Corp. established in Shanghai City

**2010**
The automated warehouse system and computerized management activated of new building located in Taishan of New Taipei City

**2011**
Intergrating all systems and information through out the Group

**2013**
The new plant in Songjiang, Shanghai started started to operate

**2014**
The Shenzhen branch activated providing service to domestic customers from southern China

**2015**
Being publicly listed company with stock code 4555

**2016**
6 designs included Rotary gripper and modular vacuum ejector awarded by 2017 TAIWAN EXCELLENCE AWARD

**2017**
8 designs included included direct operated solenoid valve, energy saving vacuum equipment,energy saving

**2018**
8 designs included included Electro-pneumatic regulator, Modularized vacuum ejector with manifold, Miniature pick up cylinder won the 2019 TAIWAN EXCELLENCE AWARD

**2019**
6 designs included awarded by 2020 TAIWAN EXCELLENCE AWARD such as Vacuum electric-regulator, Large capacity of energy-saving vacuum ejector and new design of FRL combinations.

**2020**
5 designs included Electric slide cylinder and Thin type vacuum ejector awarded by 2021 TAIWAN EXCELLENCE AWARD

**2021**
New factory open located in Zhejiang, China.

SHANGHAI
CHELIC

## Compressed air consumption, various flow rate conversion table

### Air flow and consumption

$$Q_A = (A_1 + A_2) \times L \times \frac{P+1.02}{1.02} \times 10^{-3}$$

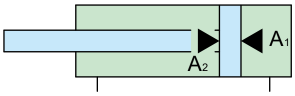
$$Q_B = 2 \times A_3 \times L_H \times \frac{P+1.02}{1.02} \times 10^{-3}$$

$$Q_n = (Q_A + Q_B) \times n$$

$Q_n$ : Air consumption of cylinder movement/ time ( L/min )
$Q_A$ : Air consumption of cylinder Backward/ time (L/time)
$Q_B$ : Air consumption of piping (Between solenoid valve and cylinder) (L/time)
$A_1$ : Piston area (cm²) (Pushing)
$A_2$ : Piston area (cm²) (Pulling)

$A_3$ : Inside diameter of piping (cm²)
$L$ : Stroke of cylinder (cm)
$L_H$ : Piping length (cm)
$P$ : Operation pressure (kgf/cm²)
$n$ : Operation frequency (time/min)

### Compressed air consumption table



Unit : L / min

| **Bore size** (mm) | | **10** | **12** | **16** | **20** | **25** | **32** | **40** | **50** | **63** | **80** | **100** | **125** | **160** | **200** | **250** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rod size** (mm) | | **4** | **6** | **6** | **8** | **10** | **12** | **16** | **20** | **20** | **25** | **25** | **36** | **40** | **40** | **50** |
| **Piston area** (cm²) | **A1** | 0.8 | 1.1 | 2.0 | 3.1 | 4.9 | 8.0 | 12.3 | 19.6 | 31.2 | 50.2 | 78.5 | 122.7 | 201 | 314.1 | 490.8 |
| | **A2** | 0.6 | 0.9 | 1.7 | 2.6 | 4.1 | 6.9 | 10.6 | 16.5 | 28.0 | 45.3 | 73.6 | 112.5 | 188.4 | 301.5 | 471.2 |
| **Operating air Pressure** (kgf/cm²) | **1** | 0.03 | 0.04 | 0.1 | 0.1 | 0.2 | 0.3 | 0.5 | 0.7 | 1.2 | 1.9 | 3.0 | 4.7 | 7.8 | 12.3 | 19.2 |
| | **2** | 0.04 | 0.06 | 0.1 | 0.2 | 0.3 | 0.4 | 0.7 | 1.1 | 1.8 | 2.9 | 4.6 | 7 | 11.7 | 18.5 | 28.9 |
| | **3** | 0.06 | 0.08 | 0.2 | 0.2 | 0.4 | 0.6 | 0.9 | 1.4 | 2.4 | 3.8 | 6.1 | 9.4 | 15.6 | 24.6 | 38.5 |
| | **4** | 0.07 | 0.1 | 0.2 | 0.3 | 0.5 | 0.7 | 1.2 | 1.8 | 3.0 | 4.8 | 7.6 | 11.7 | 19.5 | 30.8 | 48.1 |
| | **5** | 0.09 | 0.12 | 0.2 | 0.3 | 0.6 | 0.9 | 1.4 | 2.2 | 3.6 | 5.7 | 9.1 | 14.1 | 23.4 | 37 | 57.7 |
| | **6** | 0.1 | 0.14 | 0.3 | 0.4 | 0.6 | 1.0 | 1.6 | 2.5 | 4.1 | 6.7 | 10.6 | 16.4 | 27.3 | 43.1 | 67.4 |
| | **7** | 0.12 | 0.2 | 0.3 | 0.5 | 0.7 | 1.2 | 1.8 | 2.9 | 4.7 | 7.6 | 12.2 | 18.8 | 31.2 | 49.3 | 77 |
| | **8** | 0.13 | 0.2 | 0.3 | 0.5 | 0.8 | 1.3 | 2.1 | 3.3 | 5.3 | 8.6 | 13.7 | 21.1 | 35 | 55.4 | 86.6 |
| | **9** | 0.14 | 0.2 | 0.4 | 0.6 | 0.9 | 1.5 | 2.3 | 3.6 | 5.9 | 9.6 | 15.2 | 23.5 | 39 | 61.6 | 96.2 |

- The table is the total air consumption for a complete cycle of 100mm stroke.

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### Various flow rate conversion table

| **Unit** | **$m^3/s$** | **l /s** | **$cm^3/s$** | **$m^3/h$** | **$m^3/min$** | **L / h** | **L / min** | **ft/min (scfm)** | **gallon min UK** | **gallon min USA** |
|---|---|---|---|---|---|---|---|---|---|---|
| **$m^3/s$** | 1 | $10^3$ | $10^6$ | $3.6\times10^6$ | 60 | $3.6\times10^6$ | $60\times10^3$ | $2.12\times10^3$ | $13.2\times10^3$ | $15.85\times10^3$ |
| **L / s** | $10^{-3}$ | 1 | $10^3$ | 3.6 | $60\times10^{-3}$ | $3.6\times10^6$ | 60 | 2.12 | 13.2 | 15.85 |
| **$cm^3/s$** | $10^{-6}$ | $10^{-3}$ | 1 | $3.6\times10^{-3}$ | $60\times10^{-6}$ | 3.6 | $60\times10^{-3}$ | $2.12\times10^{-3}$ | $13.2\times10^{-3}$ | $15.85\times10^{-3}$ |
| **$m^3/h$** | $0.28\times10^{-3}$ | 0.28 | $0.28\times10^3$ | 1 | $16.67\times10^{-3}$ | $10^3$ | 16.67 | 0.59 | 3.67 | 4.4 |
| **$m^3/min$** | $16.67\times10^{-3}$ | 16.67 | $16.67\times10^3$ | 60 | 1 | $60\times10^3$ | $10^3$ | 35.31 | 219.97 | 264.17 |
| **L / h** | $0.28\times10^{-6}$ | $0.28\times10^{-3}$ | 0.28 | $10^{-3}$ | $16.67\times10^{-3}$ | 1 | $16.67\times10^{-3}$ | $0.59\times10^{-3}$ | $3.67\times10^{-3}$ | $4.4\times10^{-3}$ |
| **L / min** | $16.67\times10^{-6}$ | $16.67\times10^{-3}$ | 16.67 | $60\times10^{-3}$ | $10^{-3}$ | 60 | 1 | $35.31\times10^{-3}$ | $219.97\times10^{-3}$ | $264\times10^{-3}$ |
| **ft/min** (scfm) | $0.47\times10^{-3}$ | 0.47 | $0.47\times10^3$ | 1.699 | $28.32\times10^{-3}$ | $1.699\times10^3$ | 28.32 | 1 | 6.23 | 7.48 |
| **gallon** min UK | $75.79\times10^{-6}$ | $75.79\times10^{-3}$ | 75.77 | 0.273 | $4.55\times10^{-3}$ | $0.273\times10^3$ | 4.55 | 0.16 | 1 | 1.2 |
| **gallon** min USA | $63.09\times10^{-6}$ | $63.09\times10^{-3}$ | 63.09 | 0.227 | $3.79\times10^{-3}$ | $0.227\times10^3$ | 3.79 | 0.13 | 0.83 | 1 |

# RELATED CALCULATION INFORMATION

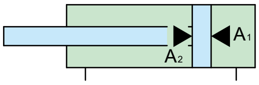
## Theroretic force and various pressure conversion table

### The calculation method of cylinder force

**F = P x A – f**

**F :** Cylinder force ( kgf )
**A :** Cross-sectional area ( cm² )
**P :** Operating pressure ( kgf/cm² )
**f :** Frictional force ( kgf )

### Compressed air consumption table



Unit: Kgf

| **Bore size** (mm) | | | **10** | **12** | **16** | **20** | **25** | **32** | **40** | **50** | **63** | **80** | **100** | **125** | **160** | **200** | **250** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rod size** (mm) | | | **4** | **6** | **6** | **8** | **10** | **12** | **16** | **20** | **20** | **25** | **25** | **36** | **40** | **40** | **50** |
| **Piston area** (cm²) | | A₁ | 0.8 | 1.1 | 2.0 | 3.1 | 4.9 | 8.0 | 12.5 | 19.6 | 31.2 | 50.2 | 78.5 | 122.7 | 201 | 314.1 | 490.8 |
| | | A₂ | 0.6 | 0.9 | 1.7 | 2.6 | 4.1 | 6.9 | 10.6 | 16.5 | 28.0 | 45.3 | 73.6 | 112.5 | 188.4 | 301.5 | 471.2 |
| **Operating air Pressure** (kgf/cm²) | **1** | A₁ | 0.8 | 1.1 | 2.0 | 3.1 | 4.9 | 8.0 | 12.6 | 19.6 | 31.2 | 50.2 | 78.5 | 122.7 | 201 | 314.1 | 490.8 |
| | | A₂ | 0.6 | 0.9 | 1.7 | 2.6 | 4.1 | 6.9 | 10.6 | 16.5 | 28.0 | 45.3 | 73.6 | 112.5 | 188.4 | 301.5 | 471.2 |
| | **2** | A₁ | 1.6 | 2.3 | 4.0 | 6.3 | 9.8 | 16.1 | 25.1 | 39.3 | 62.3 | 100.5 | 157.0 | 245.4 | 402.1 | 628.3 | 981.6 |
| | | A₂ | 1.2 | 1.7 | 3.5 | 5.3 | 8.2 | 13.8 | 21.1 | 33.0 | 56.0 | 90.7 | 147.2 | 225 | 376.9 | 603.1 | 942.4 |
| | **3** | A₁ | 2.4 | 3.4 | 6.0 | 9.4 | 14.7 | 24.1 | 37.7 | 58.9 | 93.5 | 150.7 | 235.5 | 368.1 | 603.1 | 942.4 | 1472.4 |
| | | A₂ | 1.8 | 2.5 | 5.2 | 7.9 | 12.4 | 20.7 | 31.7 | 49.5 | 84.0 | 136.0 | 220.8 | 337.5 | 565.4 | 904.7 | 1413.6 |
| | **4** | A₁ | 3.2 | 4.5 | 8.0 | 12.6 | 19.6 | 32.2 | 50.2 | 78.5 | 124.6 | 201.0 | 314.0 | 490.8 | 804.2 | 1256.6 | 1963.2 |
| | | A₂ | 2.4 | 3.4 | 6.9 | 10.6 | 16.5 | 27.6 | 42.2 | 65.9 | 112.1 | 181.3 | 294.4 | 450 | 753.9 | 1206.2 | 1884.8 |
| | **5** | A₁ | 4.0 | 5.7 | 10.1 | 15.7 | 24.5 | 40.2 | 62.8 | 98.1 | 155.8 | 251.2 | 392.5 | 613.5 | 1005.3 | 1570.8 | 2454 |
| | | A₂ | 3 | 4.2 | 8.7 | 13.2 | 20.6 | 34.5 | 52.8 | 82.4 | 140.1 | 226.7 | 368.0 | 562.5 | 942.4 | 1507.8 | 2356 |
| | **6** | A₁ | 4.7 | 6.8 | 12.1 | 18.9 | 29.4 | 48.2 | 75.4 | 117.8 | 186.9 | 301.4 | 471.0 | 736.2 | 1206.3 | 1884.9 | 2944.8 |
| | | A₂ | 3.6 | 5.1 | 10.4 | 15.8 | 24.7 | 41.5 | 63.3 | 98.9 | 168.1 | 272.0 | 441.6 | 675 | 1130.9 | 1809.4 | 2827.2 |
| | **7** | A₁ | 5.5 | 7.9 | 14.1 | 22.0 | 34.3 | 56.3 | 87.9 | 137.4 | 218.1 | 351.7 | 549.5 | 858.9 | 1407.4 | 2199.1 | 3435.6 |
| | | A₂ | 4.2 | 5.9 | 12.1 | 18.5 | 28.9 | 48.4 | 73.9 | 115.4 | 196.1 | 317.3 | 515.2 | 787.5 | 1319.4 | 2110.9 | 3298.4 |
| | **8** | A₁ | 6.3 | 9.0 | 16.1 | 25.1 | 39.3 | 64.3 | 100.5 | 157.0 | 249.3 | 401.9 | 628.0 | 981.6 | 1608.4 | 2513.2 | 3926.4 |
| | | A₂ | 4.8 | 6.8 | 13.8 | 21.1 | 33.0 | 55.3 | 84.4 | 131.9 | 224.1 | 362.7 | 588.8 | 900 | 1507.9 | 2412.5 | 3769.6 |
| | **9** | A₁ | 7.1 | 10.2 | 18.1 | 28.3 | 44.2 | 72.3 | 113.0 | 176.6 | 280.4 | 452.2 | 706.5 | 1104.3 | 1809.5 | 2827.4 | 4417.2 |
| | | A₂ | 5.4 | 7.6 | 15.5 | 23.8 | 37.1 | 62.2 | 95.0 | 148.4 | 252.1 | 408.0 | 662.4 | 1012.5 | 1696.4 | 2714.1 | 4240.8 |

● Note : The above data for reference only, When come to actual practice, frictional force and the mechanical effeciency have to be taken into consideration.

### Pressure conversion table

| **Unit** | **Pa** | **KPa** | **MPa** | **bar** | **mbar** | **kgf/cm$^2$** | **cmH$_2$O** | **mmH$_2$O** | **mmHg** | **p.s.i.** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Pa** | 1 | $10^{-3}$ | $10^{-6}$ | $10^{-5}$ | $10^{-2}$ | $10.2\times10^{-6}$ | $10.2\times10^{-3}$ | $101.97\times10^{-3}$ | $7.5\times10^{-3}$ | $0.15\times10^{-3}$ |
| **kPa** | $10^{3}$ | 1 | $10^{-3}$ | $10^{-2}$ | 10 | $10.2\times10^{-3}$ | 10.2 | 101.97 | 7.5 | 0.15 |
| **MPa** | $10^{6}$ | $10^{3}$ | 1 | 10 | $10^{4}$ | 10.2 | $10.2\times10^{3}$ | $101.97\times10^{3}$ | $7.5\times10^{3}$ | $0.15\times10^{3}$ |
| **bar** | $10^{5}$ | $10^{2}$ | $10^{-1}$ | 1 | $10^{3}$ | 1.02 | $1.02\times10^{3}$ | $10.2\times10^{3}$ | 750.06 | 14.5 |
| **mbar** | $10^{2}$ | $10^{-1}$ | $10^{-4}$ | 10 | 1 | $1.02\times10^{-3}$ | 1.02 | 10.2 | 0.75 | $14.5\times10^{-3}$ |
| **kgf/cm$^2$** | 98066.5 | 98.07 | $98.07\times10^{-3}$ | 0.98 | 980.67 | 1 | 1000 | 10000 | 735.56 | 14.22 |
| **cmH$_2$O** | 98.0665 | $98.07\times10^{-3}$ | $98.07\times10^{-6}$ | $0.98\times10^{-3}$ | 0.98 | $10^{-3}$ | 1 | 10 | 0.74 | $14.22\times10^{-3}$ |
| **mmH$_2$O** | 9.80665 | $9.807\times10^{-3}$ | $9.807\times10^{-6}$ | $98.07\times10^{-6}$ | $98.07\times10^{-3}$ | $10^{-4}$ | 0.1 | 1 | $73.56\times10^{-3}$ | $1.42\times10^{-3}$ |
| **mmHg** | 133.32 | $133.32\times10^{-3}$ | $133.32\times10^{-6}$ | $1.33\times10^{-3}$ | 1.33 | $1.36\times10^{-3}$ | 1.36 | 13.6 | 1 | $19.34\times10^{-3}$ |
| **p.s.i.** | 6894.76 | 6.89 | $6.89\times10^{-3}$ | $68.95\times10^{-3}$ | 68.95 | $70.31\times10^{-3}$ | 70.31 | 703.07 | 51.71 | 1 |

### Conversion table of major force unit conversion of international standard unit and metric system unit

| **Name** | **Internation unit → Metric system unit** | **Metric system unit → Internation unit** |
|---|---|---|
| **Air pressure** | 1 MPa = 10.2 kgf/cm$^2$ | 1 kgf/cm$^2$ = 0.098 MPa |
| **Load** | 1 N = 0.102 kgf | 1 kgf = 9.8 N |
| **Torque** | 1 N · m = 0.102 kgf · m | 1 kgf · m = 9.8 N · m |
| **Vacuum pressure** | -1 kPa = 7.5 mmHg | -1 mmHg = 0.133 kPa |
| **Inertia force** | 1 kg · m$^2$ = 10.2 kgf · cm · Sec$^2$ | 1 kgf · cm · Sec$^2$ = 0.098 kg · m$^2$ |

## ⚠ Safety Notice/ Common Caution ①

Please read this safety notice carefully, pay attention to safety item while using this product, in order to prevent injury to human body and damage of property; thus, there are divided into three classes of "Danger","Warning", and "Caution" according to the extend of prevention.

| | |
|---|---|
| ⚠ **DANGER** | Obviously situated at "DANGER" state, may cause casualty if not avoided; take special safety protection and management to prevent the occurrence of "DANGER" |
| ⚠ **WARNING** | Condition of operation is situated at "DANGER" state, may cause casualty if not avoided; take special safety protection and management to prevent the occurrence of "DANGER" |
| ⚠ **CAUTION** | Condition of operation is situated at "DANGER" state, may cause minor or moderate injury and damage of property if not avoided; take safety protection and management |

- For safety protection and prevention of accident, please understand the condition of application and know the design, installation, procedure of usage and essential safety condition before using this product.
- Please use within the specification and requirement of this product; application beyond the specification may cause hazard. In case of special condition of application, take the confirmation of safety into account and then use it; in case of doubt in reading this information and related data, contact us before using.
- It is hazardous in error assemble and operation of compressed air and its accessories; so, while selecting the product, the related personnel of design, assemble, operating and service should possess sufficient knowledge and experience, and follow normal operating procedure, in order to maintain safe operation and good effect.
- The safety notice is made according to ISO 4414; pneumatic fluid power and JSI B 8370 general requirement of air system.

※The safety notice, if change anything, excuse we don't notify.

# Safety Notice/ Common Caution ②

This product suitable for application in general industrial equipment; adhere to the following caution while designing, assembling, using and maintenance.

## DANGER

**1 . Please never use in following application**

- **Use in operation, delivering and management of the appliance for the purpose of human** life and body.
- Use in operation which rise obvious "Danger" and safety concern to human life and body.
- Special for safety purpose, situation with impact of safety to human life and body.

**2 . Confirmation of safety shall avoid the following conditions which cause safety impact to human and damage of equipment.**

- Operation of machine, device should note to the drop of driven object or race at the rotation radius and operation range cause injury of human and damage of equipment.
- Operation of machine, device should note the air supply source and poor power supply and interruption and cause injury of human and damage of equipment.
- When restarting the machine, device may cause object flying out and cause injury of human and damage of equipment.

## WARNING

**1 . Please never use in following situation**

- In outdoor dusty condition.
- Avoid chemical, corrosive and inflammable gas; avoid sea water, high temperature place in surrounding.
- Exceed the condition in the specification of the product.
- In the place tend to receive rigorous shock impact, which affect the quality and stability of the product.

**2. Please don't make any modification or disassemble to the structure, function of the product.**

**3. Shut offthe power switch and air source properly before service and maintenance, avoid consequent hazard and damage of product.**

**4. Avoid consequent hazard and damage of product while assembling and operation.**

## CAUTION

**1. Pay attention to the cleanliness of the pipeline while laying the pipe, avoid dust, dirt and leak proof tape been sucked into the pipeline, affect the operation performance of the product.**

**2. There are itemized cautions for various product, please contact our sale personnel if any doubt arouse.**

- The FRL combinations include filter, regulator, and lubricator that filter and adjust the pressure then deliver oil during air supplying.
- The FRL could modularize with a pressure switch to detecting pressures. With the variety of combinations that apply in the different working environments.

## ▶ Airline Equipment - U series

**New**

F.R.L. Combinations

UFC 200 ~ 400 series

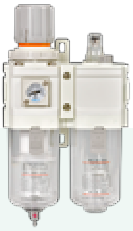
P.1-1.8

**New**

FR.L. Combinations

UFC 200 ~ 400 series

P.1-1.11



**New**

Air filter

UF 200 ~ 400 series

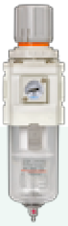
P.1-1.17

**New**

Filter regulator

UFR 200 ~ 400 series

P.1-1.14



**New**

Regulator

UR 200 ~ 400 series

P.1-1.26

**New**

Lubricator

UL 200 ~ 400 series

P.1-1.29

## ▶ Airline Equipment - N series

### F.R.L. Combinations

NC 100 ~ 500 series

P.1-2.4

### FR.L. Combinations

NFC 100 ~ 500 series

P.1-2.14

### Filter regulator

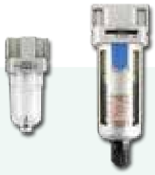
NFR 100 ~ 500 series

P.1-2.29

### Air filter

NF 100 ~ 500 series

P.1-2.47



### Regulator

NR 100 ~ 500 series

P.1-2.65

### Lubricator

NL 100 ~ 500 series

P.1-2.77

### Miniature regulator

NPR 100 ~ 300 series

P.1-2.73

### Large-sized filter

DM 200 ~ 800 series

P.1-2.90

### Auto drain valve

NDV 300, 500 series

P.1-2.106

## ▶ Airline Equipment

### Mist separator regulator

MFR 200 ~ 500 series

P.1-2.35

### Micro mist separator regulator

MFRD 200 ~ 500 series

P.1-2.41

### Mist separator

MF 200 ~ 500 series

P.1-2.53

## ► Airline Equipment

### Micro mist separator

MFD 200 ~ 500 series

P.1-2.59

### Standard regulator

ARX 150 series

P.1-2.71

### Precision regulator
( Energy Saving - No Overflow )

ERX 200 ~ 400 series

P.1-2.96

### Precision direct-operated regulator

ERP 200, 300 series

P.1-2.102

### Pressure gauge

PG 05 ~ 20 series

P.1-2.104

### Large-sized filter

AD 20 ~ 50 series

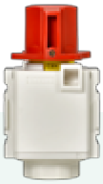
P.1-2.108

**New**

### Shut-off valve

UHS 200 ~ 400 series

P.1-1.34

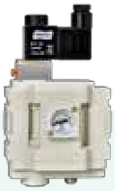


**New**

### Soft start-up valve

UV 400 series

P.1-1.38



### Pressure switch

PSN 10 ~ 41 series

P.1-2.23

## ▶ Airline Equipment - A/ B/ C series

### F.R.L. Combinations
AC, BC, CC series
P.1-3.4

### FR.L. Combinations
AFC, BFC, CFC series
P.1-3.10

### Filter regulator
AFR, BFR, CFR series
P.1-3.15

### Air filter
AF, BF, CF series
P.1-3.19

### Regulator
AR, BR, CR series
P.1-3.23

### Lubricator
AL, BL, CL series
P.1-3.27

### Exhaust valve
AFB 150, 200 series
P.1-2.105

- HD OLED display and user-friendly menu interface.
- Realize remote control and program control.
- System components are simplified, efficient and cost-effective.

## ► Airline Equipment

### Electro-pneumatic regulator

CVTR 1000 ~ 3000 series

P.1-4.3

### Electronic vacuum regulator

CVAR-2900 series

P.1-4.18

**New**

### Mini electro-pneumatic regulator

CVAR-2900 series

P.1-4.18

**New**

### Compact electronic vacuum regulator

CMA ☐ series

P.1-4.31

**New**

### Compact Electro-pneumatic regulator

CMT ☐ series

P.1-4.25

## ▶ Airline Equipment

**New**

### Digital pressure and flow switch

FPF series

P.1-4.42

**New**

### Differential pressure type flow switch

FP series

P.1-4.49

**New**

### Differential pressure type flow switch/ Large flow

FPX series

P.1-4.56

### Thermal type flow switch

FCS, FCM, FCH series

P.1-4.63

### Thermal type display-split flow switch

FCSD, FCMD, FCHD series

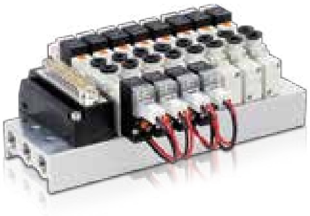
P.1-4.71

### Thermal type speed-control flow switch

FCSR, FCMR series

P.1-4.81

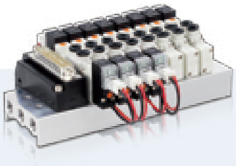
- The 5 Port valve, 3 Port valve, 2 Port valve, mechanical, and exhaust valves are options for various industries.
- With the manifold type and D-Sub connector in options for conveniently.



## ► 5 Port Solenoid Valves

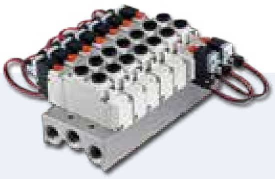
Remote control/
Base mounted solenoid valve
SRM 500 series
P.2-1.4

D-sub Connector/
Direct ported solenoid valve
SRVB 300, 500 series
P.2-1.8

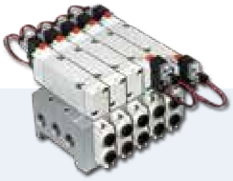


DIN rail cassette/
Body ported solenoid valve
SF 300, 500 series
P.2-1.13

Body ported solenoid valve
SR 300 ~ 900 series
P.2-1.40



Base mounted solenoid valve
SRB 300 ~ 900 series
P.2-1.77



Body ported solenoid valve
SM 5000 ~ 9000 series
P.2-1.97

## ► 5 Port Solenoid Valves

### One-touch fitting base mounted solenoid valve

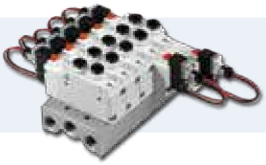
SMB 5000 ~ 9000 series

P.2-1.129

### Body ported solenoid valve

SRK 500, 700 series

P.2-1.145



### Flow control type base mounted solenoid valve

SZBC, SZB series

P.2-1.163

### Body ported solenoid valve

SK 500, 600, 800 series

P.2-1.181

### Body ported solenoid valve

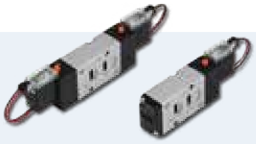
SV 500 ~ 900 series

P.2-1.199

### Wire connector type solenoid valve

SNK 600, 800 series

P.2-1.214



### Solenoid valve

SN 800 series

P.2-1.217

### Solenoid valve

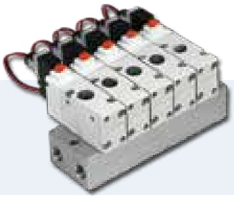
ISO 2/3/4 series

P.2-1.218

### 3/2 Solenoid valve

SRU 500, 700 series

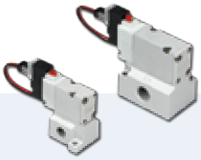
P.2-1.233



### 3/2 Base mounted solenoid valve

SRUB 500, 700 series

P.2-1.240



### 3/2 Body ported solenoid valve

SMU 5000, 7000 series

P.2-1.247

### 3/2 Base mounted solenoid valve

SMUB 5000, 7000 series

P.2-1.254

## ▶ 5 Port Solenoid Valves

## ▶ 3 Port Solenoid Valves

### 3/2 Body ported
solenoid valve

SKU 500 ~ 800 series

P.2-1.261

### 3/2 Direct operated
solenoid valve

SKB 500 series

P.2-1.271

### 3/2 Direct operated manifold
solenoid valve

SKB 300U series

P.2-1.277

### 3/2 Single unit
solenoid valve

SKV 507 series

P.2-1.283

### 3/2 Base mounted manifold
solenoid valve

SKV 507U series

P.2-1.287

### 3/2 Solenoid valve

SV 310 series

P.2-1.292

## ▶ 2 Port Solenoid Valves

### High frequency
solenoid valve

SWB 500 series

P.2-1.294

### 2/2 Direct-operated
solenoid valve

CXA, CXC, CXS series

P.2-2.2

### 2/2 Stainless body
solenoid valve

SBS-01, SBS-C6 series

P.2-2.5

### 2/2 Solenoid valve
SU-12, SU-22 series

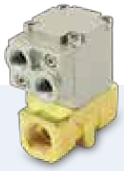
P.2-2.6

### 2/2 Solenoid valve
SFW-30, SFW-40 series

P.2-2.11

### 2/2 Cylinder valve
SUB-8 ~ SUB-20 series

P.2-2.13



## ▶ 2 Port Solenoid Valves

2/2 Solenoid valve
SUG-10 ~ SUG-50 series
P.2-2.21

Direct operated (General)

SUD2-6 ~ SUD2-10 series
P.2-2.23

Direct diaphragm
( High flow )
SUW2-10 ~ SUW2-50 series
P.2-2.24

Direct operated
(High temperature steam)
SUS-15 ~ SUS-50 series
P.2-2.25

Direct operated (General)

SAS-6A ~ SAS-10A series
P.2-2.26

Direct diaphragm type
(Able to bear the strong acid)
SDC-8 ~ SDC-15 series
P.2-2.28

## ▶ Air Operated Valve

Air operated valve

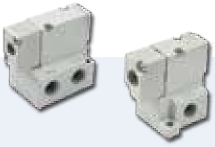
PM 3000 ~ 9000 series
P.2-3.1

Air operated valve
( Base mounting type with one-touch fitting )
PMB 3000 ~ 9000 series
P.2-3.25

Air operated valve

PMU 5000, 7000 series
P.2-3-39

Air operated valve
( Base mounting Type )
PMUB 5000, 7000 series
P.2-3.44



Air operated valve
PV 500 ~ 900 series
P.2-3-49

Air operated valve( "NAMUR" type )
PN 800 series
P.2-3-60

## ▶ Mechanical Valve

**Thread type hand valve**
MV-100 series
P.2-4.1

**Round-head hand valve**
MV-110 series
P.2-4.4

**Square type hand valve**
MV-130 series
P.2-4.7

## ▶ Exhaust Valve

**Mechanical valve**
MV-140 series
P.2-4.11

**Mechanical valve**
MV-150 series
P.2-4.16

**Mechanical valve**
MV-200 series
P.2-4.20

**Mechanical valve**
MV-230 series
P.2-4.24

**Mechanical valve**
MV-250 series
P.2-4.28

## ▶ Hand Valve

**Hand valve**
HVL 600 ~ 800 series
P.2-4.32

**Hand valve**
HVM 400 series
P.2-4.34

**Hand valve**
HVT 200 series
P.2-4.35

## ► Exhaust Valve

Quick exhaust valve
QE series
P.2-4.36

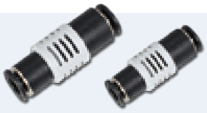
Quick exhaust valve
QEB 01 ~ 03 series
P.2-4.37

Quick exhaust valve
QEBC 01 ~ 03 series
P.2-4.39

Quick exhaust valve

QED 01 ~ 03 series
P.2-4.41

Quick exhaust valve
( Air Release )
QEH 4, QEH 6 series
P.2-4.43



Quick exhaust valve
( Center exhaust )
QEU 4, QEU 6 series
P.2-4.43

## ► Foot-Operated Valve

Quick exhaust valve
( With speed control )
QEUC 4, QEUC 6 series
P.2-4.43

Foot-operated valve

FVA 320, 420 series
P.2-4.45

- The manifold type, modular type, energy saving vacuum generator, vacuum filter and vacuum regulator are for various industries.
- There are vacuum generator with single unit or modular in options.
- The various vacuum pad size and types in options.

## ▶ Vacuum Equipment

### Vacuum ejector

EV 05 ~ 30 series

P.3-1.10

### Control valve type vacuum ejector

EVM 10 ~ 20 series

P.3-1.14

### Vacuum ejector

VAB, VAS series

P.3-1.18

### Vacuum ejector/ All-in-One

VABS 0704 ~ 1510 series

P.3-1.18

### Exhaust type vacuum ejector

VMB, VMD series

P.3-1.22

### Exhaust type vacuum ejector

VML, VMK series

P.3-1.22

### Central exhaust type vacuum ejector/ Union T

VMT 05 ~ 20 series

P.3-1.22

### Elbow type vacuum ejector

VMBU, VMDU series

P.3-1.29

### Filter type vacuum ejector

VK20B, S, T, ST series

P.3-1.83

### Large flow vacuum ejector

VK30T, ST series

P.3-1.93

## ▶ Vacuum Equipment

### Energy-saving vacuum ejector

VQ20B, S, T, ST series

P.3-1.100

**New**

### Module type vacuum ejector

VKM15 series

P.3-1.49

### Module type energy-saving vacuum ejector

VKMT series

P.3-1.64

### DIN Rail type vacuum ejector

VCK 05 ~ 30 series

P.3-1.77

**New**

### Compact vacuum ejector manifold

VSL series

P.3-1.39

### Integrated type vacuum ejector

VHS 10 ~ 20 series

P.3-1.32

### In-line air filter

VFD 01 ~ 04 series

P.3-1.113

### Vacuum filter

VFM 200 ~ 500 series

P.3-1.116

### Air suction filter with one-touch fitting

VFU 01 ~ 03 series

P.3-1.121

### Vacuum regulator

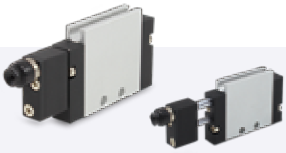
ERV 200 series

P.3-1.124

### Miniature vacuum cylinder

MVS 6, 10 series

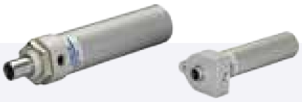
P.3-1.132



### Vacuum cylinder

DYC 25, 40 series

P.3-1.139

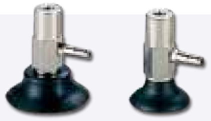


## ▶ Vacuum Pad

1-Stage vacuum pad
PAF 02 ~ 100 series
P.3-2.10

1-Stage vacuum pad/
with one-touch fitting
PAK 10 ~ 80 series
P.3-2.12

1-Stage vacuum pad/
Lateral-entry
PAT 02 ~ 200 series
P.3-2.13



1-Stage vacuum pad/
Vertical spring type
PAFS 02 ~ 50 series
P.3-2.15

1-Stage vacuum pad/
Lateral spring type
PATS 02 ~ 200 series
P.3-2.17

2-Stage vacuum pad
PBF 06 ~ 80 series
P.3-2.27

2-Stage vacuum pad/
with one-touch fitting
PBK 06 ~ 80 series
P.3-2.28

2-Stage vacuum pad/
Lateral-entry
PBT 06 ~ 80 series
P.3-2.29

2-Stage vacuum pad/
Vertical spring type
PBFS 06 ~ 50 series
P.3-2.30

2-Stage vacuum pad/
Lateral spring type
PBTS 06 ~ 80 series
P.3-2.31

3-Stage vacuum pad
PCF 05 ~ 60 series
P.3-2.41

3-Stage vacuum pad/
with one-touch fitting
PCK 10 ~ 60 series
P.3-2.42

3-Stage vacuum pad/
Lateral-entry
PCT 05 ~ 60 series
P.3-2.43

3-Stage vacuum pad/
Vertical spring type
PCFS 05 ~ 40 series
P.3-2.44

3-Stage vacuum pad/
Lateral spring type
PCTS 05 ~ 60 series
P.3-2.45

## ► Vacuum Pad

### Deep type vacuum pad
PD 10 ~ 50 series

P.3-2.51

### Bellow type vacuum pad
PAD 10 ~ 40 series

P.3-2.56

### Micro vacuum pad
PAM 0.7 ~ 1.5 series

P.3-2.61

### Film type vacuum pad
PAG F, FS, K, T, TS series

P.3-2.64

### Anti-slip flat type vacuum pad
PAO F, FS, K, T, TS series

P.3-2.71

### Oval vacuum pad
PAW F, FS, K, T, TS series

P.3-2.92

### Flat type vacuum pad
PAP F, FS, K, T, TS series

P.3-2.78

### Mark-free vacuum pad
PAQ F, FS, K, T, TS series

P.3-2.85

### Non-rotation vacuum pad
PAL, PBL, PCL series

P.3-2.101

### Vacuum pad with ball joint
PAR 05 ~ 60 series

P.3-2.109

### Non-contact gripper
PS 20 ~ 60 series

P.3-2.111

**New**

### Vacuum saving valve
VP 10 series

P.3-2.117

- There are various standard fitting, pressure gauge types, metal types, and speed controller function options for liquid and air-fluid working conditions.

## ▶ Standard Fitting

**Male straight**
SQC series
P.4-1.8

**Female connector**
SQG series
P.4-1.9

**Male elbow**
SQL series
P.4-1.10

**Long male elbow**
SQSL series
P.4-1.11

**Double branch Y**
SQM series
P.4-1.11

**Male branch tee**
SQT series
P.4-1.12

**Male run tee**
SQD series
P.4-1.13

**Branch Y**
SQU series
P.4-1.14

**Straight union**
SQH series
P.4-1.15

**Union elbow**
SQV series
P.4-1.15

## ► Standard Fitting

### Union tee
SQE series

P.4-1.16

### Union Y
SQY series

P.4-1.16

### Cross
SQX series

P.4-1.17

### Triple universal elbow
SQF series

P.4-1.17

### Triple universal male elbow
SQFD series

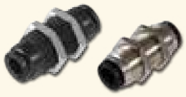
P.4-1.17

### Double union Y
SQW series

P.4-1.18

### Bulkhead union
SQMH series

P.4-1.18



### Rotary male elbow
SQZ series

P.4-1.19

### Rotary universal male elbow
SQZ(B)C series

P.4-1.20

### Rotary female universal elbow
SQP series

P.4-1.21

### Rotary universal femal elbow
SQP(B)C series

P.4-1.22

### Rotary branch male elbow
SQKZ series

P.4-1.23

### Rotary universal male elbow
SQ(B)CZ series

P.4-1.24

### Rotary female elbow
SQKP series

P.4-1.25

### Rotary universal femal elbow
SQ(B)CP series

P.4-1.26

### Branch male elbow
SQKX series

P.4-1.27

## ▶ Standard Fitting

### Branch union elbow
SQKU series

P.4-1.28

### Delta union
SQB series

P.4-1.28

### Bulkhead straight
SQCH series

P.4-1.29

### Bulkhead elbow
SQLH series

P.4-1.29

### Male straight
SQC3 series

P.4-1.32

### Female connector
SQG3 series

P.4-1.33

### Plug-in elbow
SQLJ3 series

P.4-1.33

### Male elbow
SQL3 series

P.4-1.34

### Long male elbow
SQSL3 series

P.4-1.35

### Bulkhead union
SQMH-C3 series

P.4-1.35

### Union elbow
SQV3 series

P.4-1.36

### Cross
SQX3 series

P.4-1.36

### Union tee
SQE3 series

P.4-1.37

### Union Y
SQY3 series

P.4-1.37

### Straight union
SQH3 series

P.4-1.38

### Triple universal elbow
SQF3 series

P.4-1.38

## ► Standard Fitting

Rotary male elbow
SQZ3 series
P.4-1.39

Mini male straight
MSQC series
P.4-1.40

Mini male elbow
MSQL series
P.4-1.40

Mini union tee
MSQE series
P.4-1.40

Mini male branch tee
MSQT series
P.4-1.41

Mini straight union
MSQH series
P.4-1.41

Mini bulkhead straight union
MSQR series
P.4-1.41

Mini male straight with sealant
MSQB series
P.4-1.42

45° Male elbow
MSQJ series
P.4-1.42

Plug/ Nipple
SPG / SPP / SPF
P.4-1.43

Plug-in reducer
SQHJ / SQLJ
P.4-1.45

## ► Self-seal Elbow

Self-seal straight male
SQRC series
P.4-1.48

Self-seal straight union
SQRH series
P.4-1.48

Self-seal elbow
SQRL series
P.4-1.49

Self-seal bulkhead union
SQRM series
P.4-1.50

## ► Pressure Gauge Fitting

Pressure gauge
SQCG series
P.4-1.51

## ▶ Pressure Gauge Fitting

### Pressure gauge fitting

SQMG / SQLG

P.4-1.52

### Branch tee pressure gauge fitting

SQEG series

P.4-1.52

## ▶ Standard Fitting

### Rotary elbow male

RQL series

P.4-1.53

### Male straight

CSQC series

P.4-1.58

## ▶ Standard Fitting

### Full copper fitting

Full copper fitting series

P.4-1.63

## ▶ Speed Controller

### Speed controller

SC series

P.4-2.4

### Speed controller

QSC series

P.4-2.6

### Speed controller - universal type

QSU series

P.4-2.10

### Speed controller - Large flow type

QSB series

P.4-2.13

### Speed controller - Large flow type

QSS series

P.4-2.16

### Speed controller - Mini type

QSM series

P.4-2.9

### Speed controller in-line

QSN series

P.4-2.19

### Speed Controller with metal body

QMC series

P.4-2.22

### Switching type in-line

QHV series

P.4-2.27

### Ball type switch in-line

QVA series

P.4-2.32

### Speed controller - Panel type

QST series

P.4-2.35

- There are vairous of pressure switch and stainless steel precision pressure switch for different working environment.
- PU tube and Nylon tube of red, blue, orange, black, transparent and transparent blue in options.

## ▶ Accessory

### PU tube

PU series

P.4-2.36

### Nylon tube

PN series

P.4-2.36

### Pressure switch

PS series

P.5-1.3

### Precision pressure seneor

PSS series

P.5-1.63

### Pressure switch

MCS-9D series

P.5-1.66

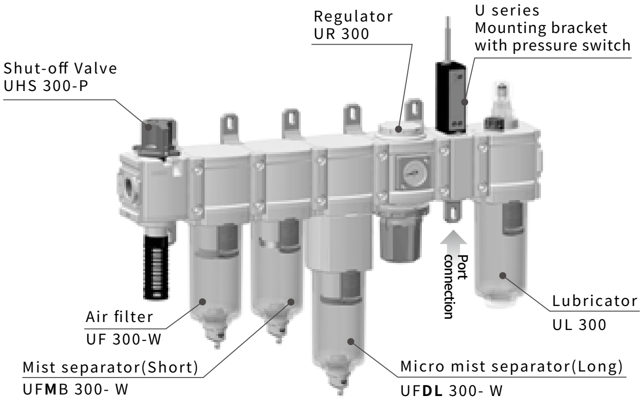
# MEMO

# Air Unit - Modular Series

## U series 1/4,3/8,1/2

**Feature**

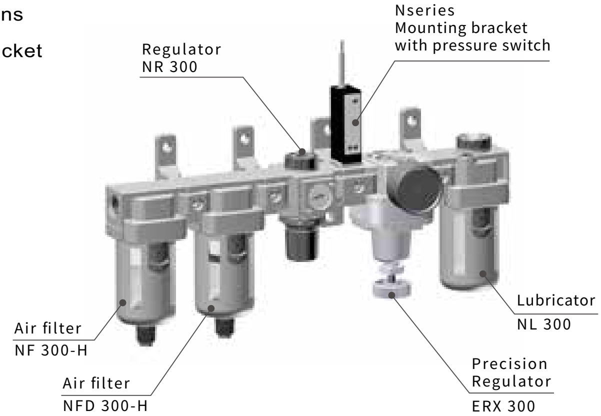
- Max. flow regulator increase 45%
- Less tubing & Saving space
- Varies combinations


Regulator
UR 300
U series
Mounting bracket
with pressure switch
Shut-off Valve
UHS 300-P
Port connection
Lubricator
UL 300
Air filter
UF 300-W
Mist separator(Short)
UFMB 300- W
Micro mist separator(Long)
UFDL 300- W

## N series M5,1/8,1/4,3/8,1/2,3/4,1

**Feature**

- With pressure gauge
- Metal cup option
- Varies combinations
- Easy to install bracket


Nseries
Mounting bracket
with pressure switch
Regulator
NR 300
Lubricator
NL 300
Air filter
NF 300-H
Air filter
NFD 300-H
Precision
Regulator
ERX 300

## A,B,C,P series 1/8,1/4,3/8,1/2,3/4

**Feature**

- Varies combinations
- Easy to install bracket

FR.L. Combinations
AFC

F.R.L. Combinations
AC

# Precision Regulator, Large-Sized Filter, Auto Drain Valve Series

CHELIC

## ER series Direct Operated Precision Regulator 1/8, 1/4, 3/8, 1/2

**Feature**

- Precise pressure setting
- Energy-saving, relieving air "0"
- High stability FS±1%
- Simple structure design, easy to operate
- Maximum flow rate increased by 1.5 times

* ERX 200
* ERX 300
* ERX 400

**Feature**

- Precise pressure setting
- High stability FS±1%
- Simple structure design, easy to operate

* ERP 200
* ERP 300

## U/N series Micro Mist Separator 1/4, 3/8 ,1/2, 3/4

**Feature**

- Nominal filtration rating 0.01μm
- Max. flow regulator 6000L/min
- Dust filter, oil mist separation
- Max. flow regulator 6000L/min
- Auto drain in option for small space or not easy to disassemble

* UFD B/L 200
* UFD B/L 300
* UFD B/L 400

**Feature**

- Nominal filtration rating 0.01μm
- Max. flow regulator 6000L/min
- Auto drain in option for small space or not easy to disassemble

* MFD 200
* MFD 300
* MFD 400

## DM series Large-sized Filter 1/4, 3/8, 1/2, 3/4, 1, 1½

**Feature**

- Moisture removal rate 99%
- Main filter: 3μm
- Lever 2 filter: 0.3μm
- Lever 1 filter: 0.01μm

* DM 200
* DM 300
* DM 400
* DM 800

## NDV Auto drain valve Series 1/4,3/8,1/2,3/4

**Feature**

- For end pipe use

* NDV 300
* NDV 500

# ⚠ Safety Notice/ F.R.L/ Caution For Application

- Please read this safety notice carefully, pay attention to safety item while using this product, in order to prevent injury to human body and damage of property.
- Pay attention to the individual caution for various model series ( read the cautions and safety notice in P. 2 ~ P.3 for common cautions and safety notice).

## Caution for design, selection

### ⚠ WARNING

- PC transparent cup of the filter, oil applicator and the see through oil dripping device of oil applicator are made of PC plastic material, no synthetic oil, organic solvent, chemical, cutting oil, volatile gas and above mentioned conditions is allowed, in order to avoid destruction of material and affect safety of application.
- If the selected plastic panel of the pressure meter for regulation valve is not suitable for spraying with organic solvent, please avoid possible panel damage of the pressure meter.

### ⚠ CAUTION

- Avoid the place with impact or rigorous vibration when designing the device; avoid to be mounted outdoor and the environment presence with chemical and corrosive air.

## Caution for assembling

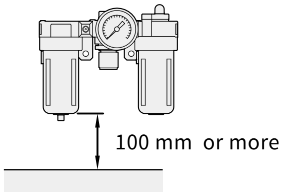
### ⚠ WARNING

- Pay attention to the direction of the air source while installing, never used in reversed air direction.
- Use spanner to tighten the pressure mater while installing, never tighten with your hand holding the casing of the pressure meter to avoid damage of the pressure meter.
- Follow the torque in table below while laying the pipe( tighten the connector), never exceed the range of application to avoid damage of product.

Torque chart for piping

| Size | Appropriate truing torque N · m ( kgf · cm ) |
|---|---|
| M5 | 1.5 ~ 2 (15 ~ 20) |
| Rc ( PT ) 1/8” | 7 ~ 9 (70 ~ 90) |
| Rc ( PT ) 1/4” | 12 ~ 14 (120 ~ 140) |
| Rc ( PT ) 3/8” | 22 ~ 24 (220 ~ 240) |
| Rc ( PT ) 1/2” | 28 ~ 30 (280 ~ 300) |
| Rc ( PT ) 3/4” | 28 ~ 30 (280 ~ 300) |
| Rc ( PT ) 1 ” | 36 ~ 38 (360 ~ 380) |

- Bottom of cup downward



(Figure A)

- Filter and Lubricator should be mounted with correct direction (Bottom of cup downward as illustrated in figure A) to ensure the function of the product while using
- Prevent debris and leak proof tape residue entering the pipe while piping, if the connector is locked by using anoxic glue, to avoid excessive amount and fluid glue from flowing in the body, which may cause jammed and poor movement.

## Caution for application

### ⚠ WARNING

- Don’ t remove the PC cup while running to avoid hazard; the press key of the PC cup should be locked in position and then air supply is allowed.
- To lubricate the lubricator while operation or running, shut off the air and then top up; air supply is allowed only after oiling and lock the oil plug.

① Manual draining devices which drain in clockwise direction (turn left), counterclockwise direction to lock (turn right) don’ t use spanner and pliers to hold to avoid damage.

② Semi-Auto drainer use only for differential pressure above 0.1 Mpa ( 1.0 kgf/cm$^2$ ).

③ Automatic float ball strainer use only for pressure above 0.15 Mpa ( 1.5 kgf/cm$^2$ ).

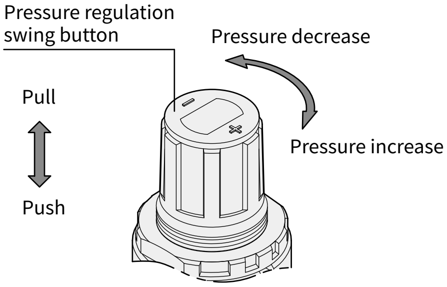
④ Care for the cleanliness of air and PC cup, avoiding clogged by debris and dirt cause poor function of the strainer and leakage.

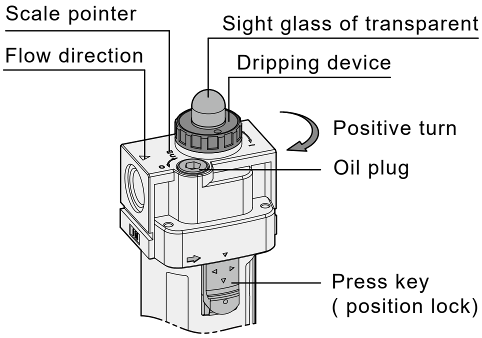
- Use only manual rotation the oil ring of the regulator and lubricator while operating, use no spanner, pliers tool to clamp, to prevent damage and affect safe operation.
- Lubricant of the oil applicator use IOS-VG32 lubricant only (and equivalent).

  ※ Oil other specification is tended to cause poor operation of the oil applicator and resulting in structure damage.
- Prevent backflow of residue at the end of the pipeline while stop operation, prevent the oil, water contain air in bleed pipe to flow back the device, cause blockage and damage.

## WARNING

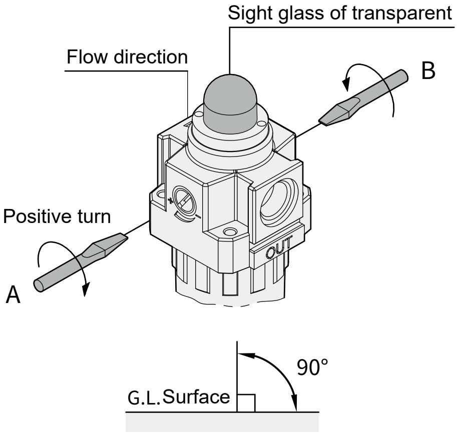
- The setting range of the secondary pressure of the pressure regulation valve use as 85% of primary pressure or below to achieve better pressure setting and regulation.
- The swing button of the pressure regulator must be pulled before turning, increase pressure while turning in clockwise direction and vise versa to decrease. Press in and secure the swing button after operation. After turning to max value ( either positive or reverse) (with no pressure variation anymore), don’ t turn by force or use tool to avoid damage.


Pressure regulation swing button
Pressure decrease
Pull
Push
Pressure increase


Scale pointer
Sight glass of transparent
Flow direction
Dripping device
Positive turn
Oil plug
Press key
( position lock)

## N100 series lubricator - Caution for application

- In figure, both A and B can use screw driver to adjust oil, (advise to adjust one side)
- When adjusting oil, screw driver use for clockwise, clockwise inside will increase oil on the contrary will decrease oil.
- Screw driver adjust oil up side down to appropriate. Don’ t turn again when the screw is on the bottom or top.
- Please adjust oil when air pressure pass through the lubricator and in “OUT” situation (Don’ t adjust oil when air flow stopping) Please stand lubricator when assembling it. Sight glass of transparent uprights (as figure) and vertical with ground.


Sight glass of transparent
Flow direction
B
Positive turn
A
OUT
90°
G.L.Surface

- Align the scale of the transparent dripping device of the lubricator to the pointer ( protrusion ) to regulate the oil fed amount, the feeding swing button allow one direction turning, operate in clockwise direction (positive), no counterclockwise direction (reverse) turning is allowed. Incorrect turning direction will damage the structure. “0” set point is minimum (oil stop), “9” is maximum (max oil); the max and min oil amount value shall match the air use in adjustment. Indirect flow and direct flow make significant difference in oil amount.
- The density of the element of filter is 5μm ~ 20μm, the pipeline should maintain dry air, prevent excessive debris cause blockage and insufficient flow.

## Caution for service and maintenance

### ⚠ DANGER

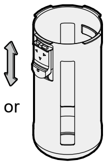
Confirm the air the line and power in turned off before servicing, prevent injury and damage while disassembly for maintenance.

### ⚠ WARNING

- The removal and installation of the element of the filter and oil applicator plug use hexagonal spanner; avoid to use toll in other maintenance, disassemble the internal part in unsuitable manner may cause poor performance of the product and affect safe operation.
- Replace the element of the filter is clogged or poor performance, avoid blockage and insufficient flow.
- The PC bowl of the filter and oil applicator suitable to wipe by cotton paper or wash with lure warm water and neutral household detergent, avoid to use chemical which cause damage.
- After service and maintenance, check for all of parts are tight and position properly, and confirm the matching are save, and no problem, and then start air supply.

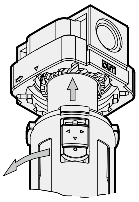
## The explanation for press key

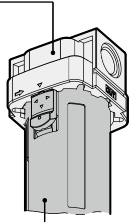
- **Bowl guard & Press key**



Press to push up or push down.

- **Assembly steps**





**Description for steps :**

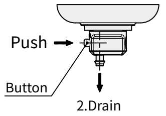
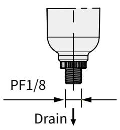
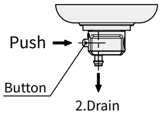
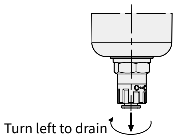
1. Thumb pressing ”◁ ▽ ▷” direction of the position, pulling to the press key positioning at the bottom of it and out of the aluminum body.

2. Rotate left or right to 45 degrees after pressure key out of the aluminum body. Pull down and remove the bowl guard smoothly.

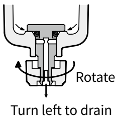
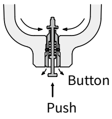
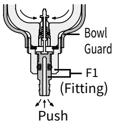
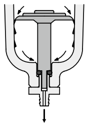
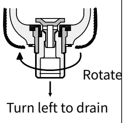
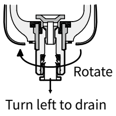
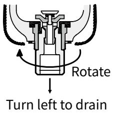
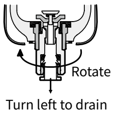
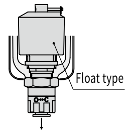
3. Reverse the bowl guard that it can be installed. (No need to pull down the press key, simply bowl guard pushed up into the aluminum body and rotational positioning.

## Operation and Function of the drain cock

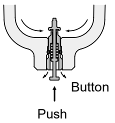
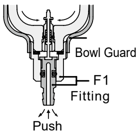
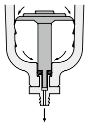
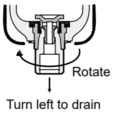
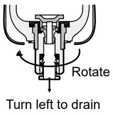
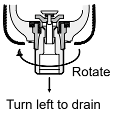
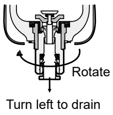
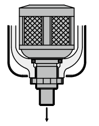
### U200, U300, U400 series

| U 200 series drain cock | | U 300, U 400 series drain cock | |
|---|---|---|---|
| – W | – A | – W | – A |
| Manual drain cock (Standard) | Auto drain without fitting (Option AD25) | Manual drain cock (Standard) | Auto drain with fitting (Option AD35/AD55) |
| Drain while pushing the button and close automatically when release. | Use float switch valve, rain automatically when water level over the float, close automatically after completely drain. | Drain while pushing the button and close automatically when release. | Use float switch valve, rain automatically when water level over the float, close automatically after completely drain. |
|  Push<br>Button<br>2.Drain |  |  Push<br>Button<br>2.Drain |  Turn left to drain |

### N100, N200, N300, N400, N450, N500 series

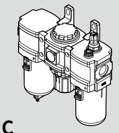
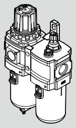
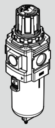
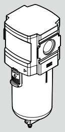
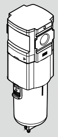
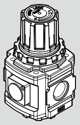
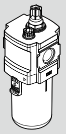
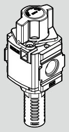
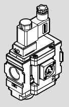
| N100 series | N200 series | | | N300, N400, N450, N500 series | | | | |
|---|---|---|---|---|---|---|---|---|
| – H | – H | – BG-H-F1 | – A | – H | – H-F1 | – S | – S-F2 | – A |
| Manual drain cock (Standard) | Manual drain cock (Standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Option) | Manual drain cock (Standard) | Manual drain cock (With fitting) (Option) | Semi-auto drain (Option) | Semi-auto drain (With fitting) (Option) | Auto drain ( AD35/AD55 ) |
| Drain while rotating fitting (left), close when turn right. | Drain while pushing the button and close automatically when release. | With addition protective bowl guard device and Fitting | Employs pressure differential for automatic drain, drain automatically when the air depletion and make up produce differential. | Drain while rotating fitting (left), close when turn right. | Drain while rotating fitting (left), close when turn right. | The valve open to drain automatically when pressure is lower than 0.5 kg/cm²; the valve close completely when pressure is more than 1 kg/cm² (allow manual drain as well). | | Use float switch valve, rain automatically when water level over the float, close automatically after completely drain. |
|  Rotate<br>Turn left to drain |  Button<br>Push |  Bowl Guard<br>F1<br>(Fitting)<br>Push |  |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

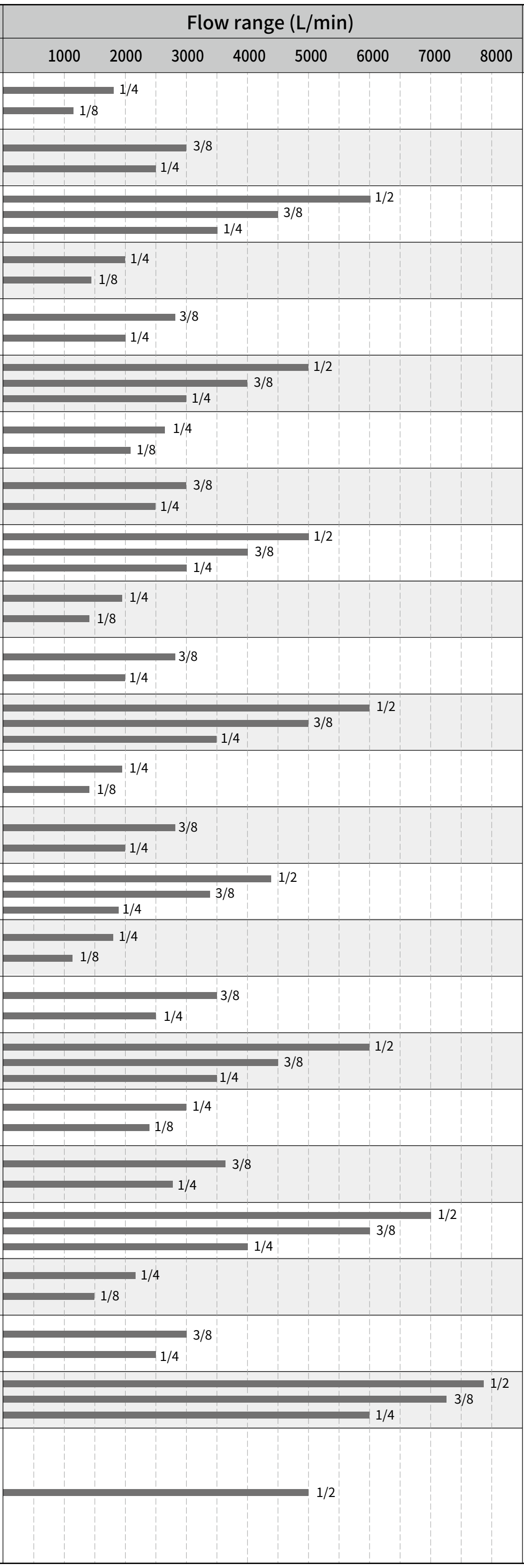
### A, B, C series

| A series drain | | | B, C series drain | | | | |
|---|---|---|---|---|---|---|---|
| -H | BG-H-F1 | -A | -H | -H-F1 | -S | -S-F2 | -A |
| Manual drain cock (Standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Option) | Manual drain cock (Standard) | Manual drain cock (With fitting) (Option) | Semi-auto drain (Option) | Semi-auto drain (With fitting) (Option) | Auto drain (Option AD-30) |
| Drain while pushing the button and close automatically when release. | With addition protective bowl guard device and Fitting. | Employs pressure differential for automatic drain, drain automatically when the air depletion and make up produce differential. | Drain while rotating fitting (left), close when turn right. | Drain while rotating fitting (left), close when turn right. | The valve open to drain automatically when pressure is lower than 0.5 kg/cm²; the valve close completely when pressure is more than 1 kg/cm² (allow manual drain as well). | | Use float switch valve, rain automatically when water level over the float, close automatically after completely drain. |
|  Button<br>Push |  Bowl Guard<br>F1<br>Fitting<br>Push |  |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

# Modularize Series-Multi-function unit

## U series index

| Series | Connection port | | | | | Flow range (L/min) | Supply pressure | Page |
|---|---|---|---|---|---|---|---|---|
| Image | Model | 1/8 | 1/4 | 3/8 | 1/2 | | | |
| <br>**UC**<br>F.R.L. COMBINATION | UC 200 | ● | ● | | | 1/4<br>1/8 | 7 kgf/cm$^2$ | P1-1.8 |
| | UC 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UC 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UFC**<br>FR.L. COMBINATION | UFC 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.11 |
| | UFC 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UFC 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UFR**<br>FILTER REGULATOR | UFR 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.14 |
| | UFR 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UFR 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UF**<br>AIR FILTER | UF 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.17 |
| | UF 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UF 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UFM**<br>MIST SEPARATOR | UFM 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.20 |
| | UFM 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UFM 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UR**<br>REGULATOR | UR 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.26 |
| | UR 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UR 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UL**<br>LUBRICATOR | UL 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.29 |
| | UL 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UL 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UHS**<br>SHUT-OFF VALVE | UHS 200 | ● | ● | | | 1/4<br>1/8 | | P1-1.34 |
| | UHS 300 | | ● | ● | | 3/8<br>1/4 | | |
| | UHS 400 | | ● | ● | ● | 1/2<br>3/8<br>1/4 | | |
| <br>**UV**<br>SOFT START-UP VALVE | UV 400 | | | | ● | 1/2 | | P1-1.38 |



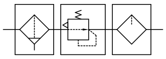
# UC series F.R.L. Combinations

## Product features

## Feature

- Filter, regulator and lubricator combination.
- Filter the air, setting also adjusting the output pressure and lubricate the air.
- Different combination structure, multiple air source treatment methods.

Symbol:



## Specification

| Item \ Model | | UC 200 | UC 300 | UC 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Filter grade | μm | 5 | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. service pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | ℃ | 5 ～ 60 | | |
| Recommended lubrication | | ISO VG32 | | |
| Min. dripping flow rate | L/min | 30 | 85 | 92 |
| Bowl capacity | cc | 25 | 40 | 80 |
| Lubricator capacity | cc | 30 | 55 | 100 |
| Weight | kg | 0.40 | 0.77 | 1.3 |
| Material | Body | Aluminum alloy die-casting | | |
| | Bowl | Relieving type | | |

## Code of Order **UC 400 – 03 – G – MG – W – P**

① ② ③ ④ ⑤ ⑥

| ① | Mark | Specification | Model | | |
|---|---|---|---|---|---|
| | | | UC 200 | UC 300 | UC 400 |
| ② Connection port | 01 | 1/8 | ● | | |
| | 02 | 1/4 | ● | ● | ● |
| | 03 | 3/8 | | ● | ● |
| | 04 | 1/2 | | | ● |
| ③ Thread type | None | RC | ● | ● | ● |
| | G | PF | ● | ● | ● |
| | N | NPT | ● | ● | ● |
| ④ Bowl material | None | PC cup | ● | ● | ● |
| | MG | Metal cup | ● | ● | ● |
| ⑤ Drain cock type | W | Manual drain cock | ● | ● | ● |
| | A | Auto drain | ● | ● | ● |
| ⑥ Pressure gauge | None | Square pressure gauge | ● | ● | ● |
| | P | PG-10A | ● | ● | ● |
| | E | PSN 41 Pressure swtich | ● | ● | ● |

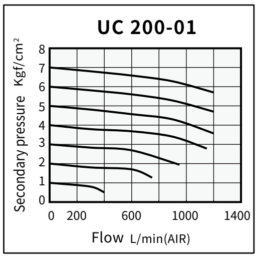
# UC series F.R.L. Combinations

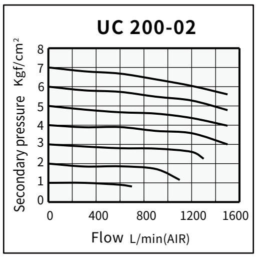
## Characteristics graph

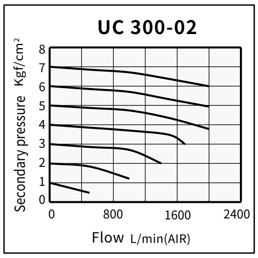
CHELIC

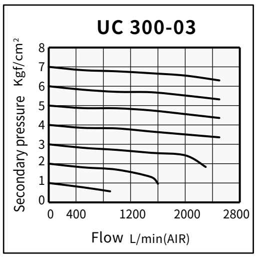
UC
UFC
UFR
UF
UFM
UR
UL
PN300D
UHS
UV

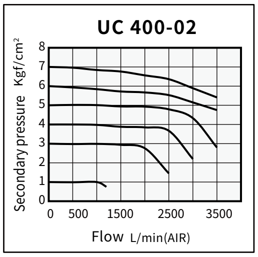
## Flow rate characteristic graph

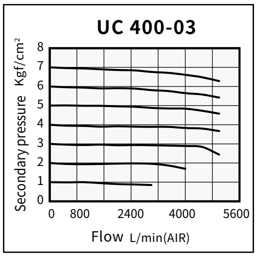


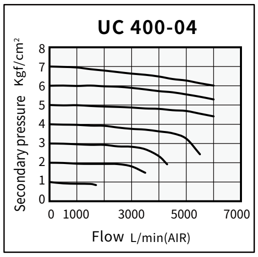




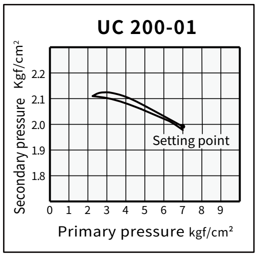


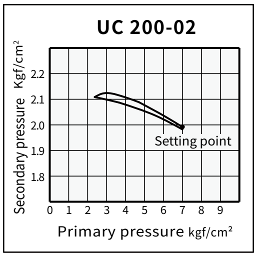


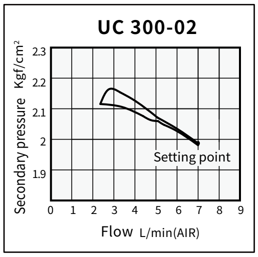


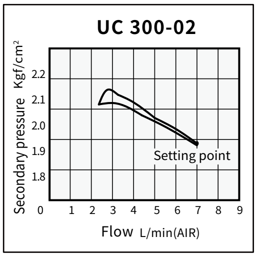


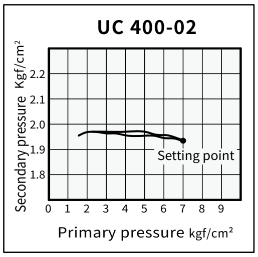
## Pressure characteristics graph

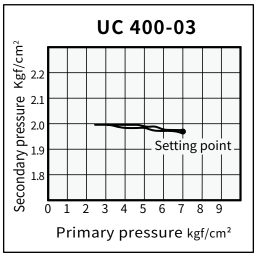


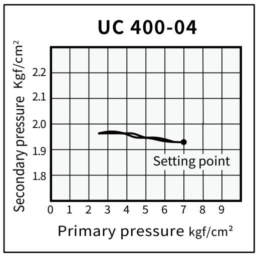








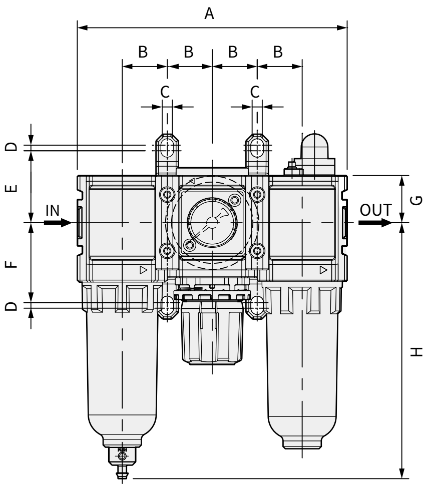


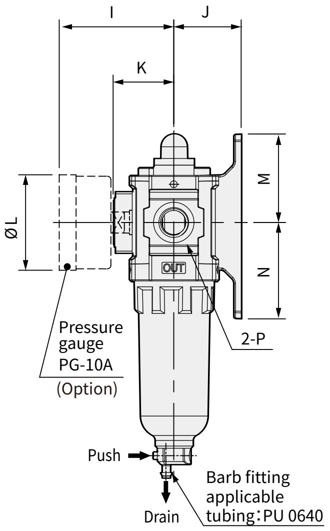


# UC series F.R.L. Combinations

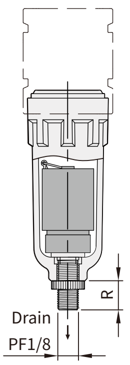
## Dimensions

### UC 200 - W Standard


A
B B B B
C C
D
E
F
D
IN
OUT
G
H

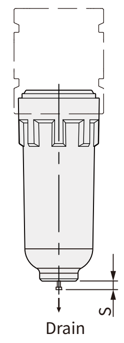

I J
K
ØL
M
N
Pressure gauge PG-10A (Option)
2-P
Push
Drain
Barb fitting applicable tubing：PU 0640

**Auto drain**


Drain
PF1/8
R

- A Auto drain without fitting (Option-AD-25)

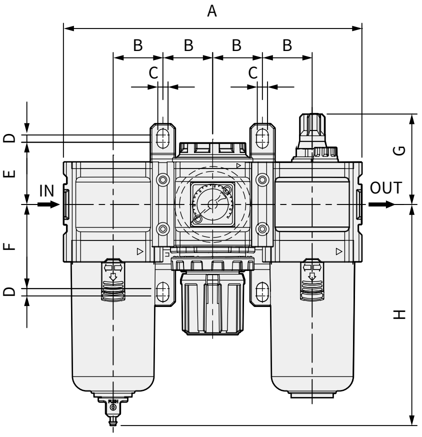
**Manual drain cock**

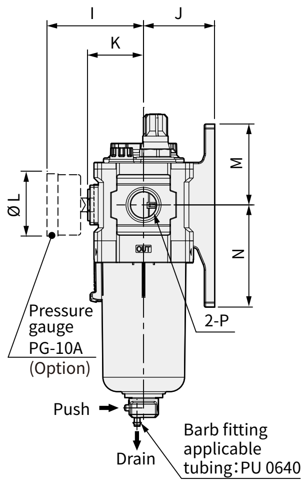


- MG Metal cup (Option)

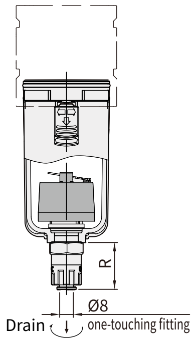
---

### UC 300 ~ 400 - W Standard


A
B B B B
C C
D
E
F
D
IN
OUT
G
H

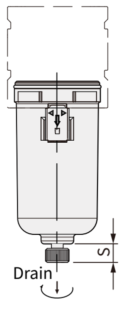

I J
K
ØL
M
N
Pressure gauge PG-10A (Option)
2-P
Push
Drain
Barb fitting applicable tubing：PU 0640

**Auto drain**


R
Ø8
Drain
one-touching fitting

- A Auto drain with fitting (Option)
(U300 Option-AD35)
(U400 Option-AD55)

**Manual drain cock**



- MG Metal cup (Option)

Unit:mm

| No. / Model | Size | | | | | | | | | | | | | Square pressure gauge | Pressure swtich | Auto drain | Manual drain cock | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | ØL | M | N | K | K | R | S | P |
| UC 200 | 120 | 20 | 4.5 | 2.5 | 32 | 35.5 | 39.5 | 113.8 | 51 | 30 | 27 | 39.4 | 42.9 | 26.7 | 40.2 | 13 | 3 | 1/8, 1/4 |
| UC 300 | 162 | 27 | 4.5 | 2.5 | 37 | 47 | 62.5 | 137.1 | 56 | 38.1 | 42.5 | 47 | 57 | 31 | 44.5 | 34.5 | 12.6 | 1/4, 3/8 |
| UC 400 | 204 | 34 | 7 | 5 | 42.5 | 57.5 | 61.8 | 151.1 | 66 | 48.5 | 42.5 | 55.3 | 69.8 | 38.3 | 51.8 | 34.5 | 12.6 | 1/4, 3/8, 1/2 |

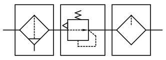
# UFC series FR.L. Combinations

## Product features

### Feature

- Filter regulator and lubricator combination.
- Filter the air also adjusting the output pressure and lubricate the air.
- Can supply oil-free air, air gun or other oil-free environment.

Symbol:



### Specification

| Item \ Model | | UFC 200 | UFC 300 | UFC 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Filter grade | μm | 5 | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. service pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | °C | 5 ～ 60 | | |
| Recommended lubrication | | ISO VG32 | | |
| Minimum dripping flow rate | L/min | 30 | 85 | 92 |
| Bowl capacity | cc | 25 | 40 | 80 |
| Lubricator capacity | cc | 30 | 55 | 100 |
| Weight | kg | 0.32 | 0.58 | 1.05 |
| Material | Body | Aluminum alloy die-casting | | |
| | Bowl | Relieving type | | |

### Code of Order **UFC 400 – 03 – G – MG – W – P**

1 2 3 4 5 6

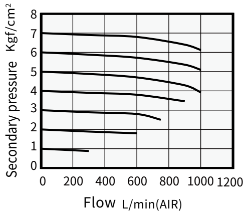
| | | Mark | Specification | Model | | |
|---|---|---|---|---|---|---|
| 1 | | | | UFC 200 | UFC 300 | UFC 400 |
| 2 | Connection port | 01 | 1/8 | ● | | |
| | | 02 | 1/4 | ● | ● | ● |
| | | 03 | 3/8 | | ● | ● |
| | | 04 | 1/2 | | | ● |
| 3 | Thread type | None | RC | ● | ● | ● |
| | | G | PF | ● | ● | ● |
| | | N | NPT | ● | ● | ● |
| 4 | Bowl material | None | PC cup | ● | ● | ● |
| | | MG | Metal cup | ● | ● | ● |
| 5 | Drain cock type | W | Manual drain cock | ● | ● | ● |
| | | A | Auto drain | ● | ● | ● |
| 6 | Pressure gauge | None | Square pressure gauge | ● | ● | ● |
| | | P | PG-10A | ● | ● | ● |
| | | E | PSN 41 Pressure swtich | ● | ● | ● |

# UFC series FR.L. Combinations

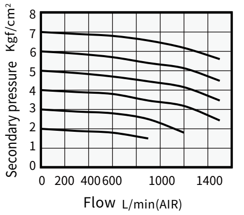
## Characteristics graph

### Flow rate characteristic graph

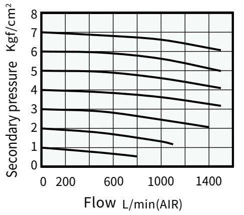
**UFC 200-01**



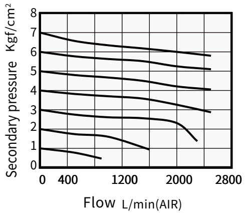
**UFC 200-02**



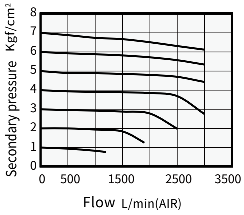
**UFC 300-02**



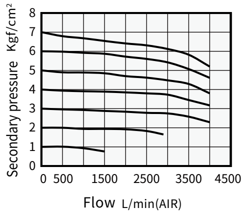
**UFC 300-03**



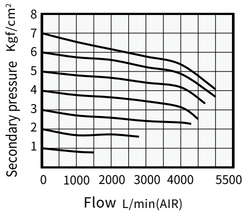
**UFC 400-02**



**UFC 400-03**

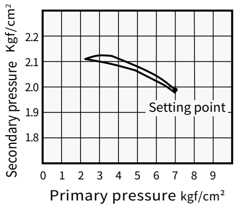


**UFC 400-04**

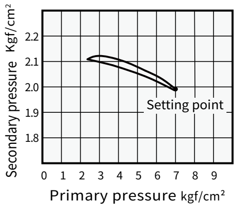


### Pressure characteristics graph

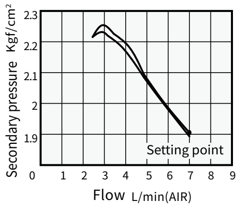
**UFC 200-01**



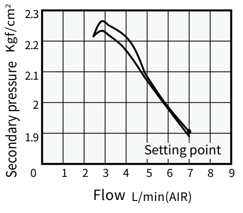
**UFC 200-02**



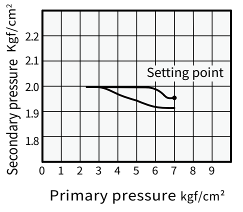
**UFC 300-02**



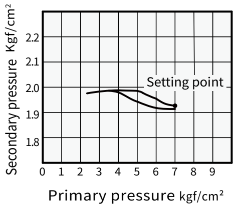
**UFC 300-03**



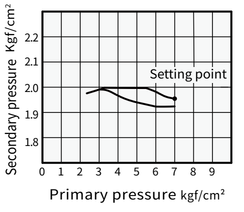
**UFC 400-02**



**UFC 400-03**



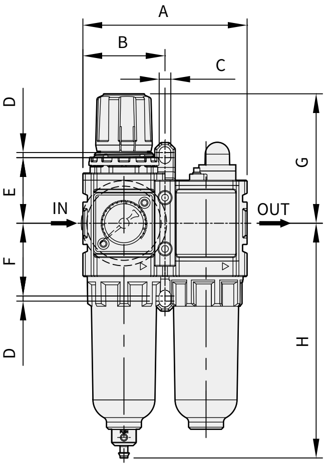
**UFC 400-04**

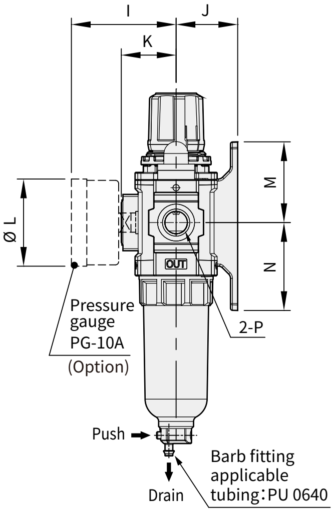


# UFC series FR.L. Combinations

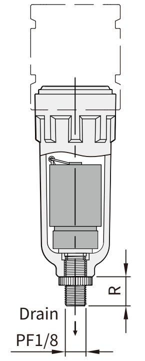
## Dimensions

### UFC 200 - W Standard


A
B
C
D
E
F
D
G
H
IN
OUT

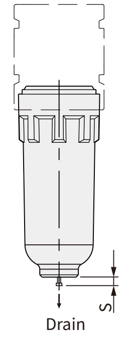

I
J
K
ØL
M
N
Pressure gauge PG-10A (Option)
2-P
Push
Drain
Barb fitting applicable tubing：PU 0640

**Auto drain**


R
Drain
PF1/8

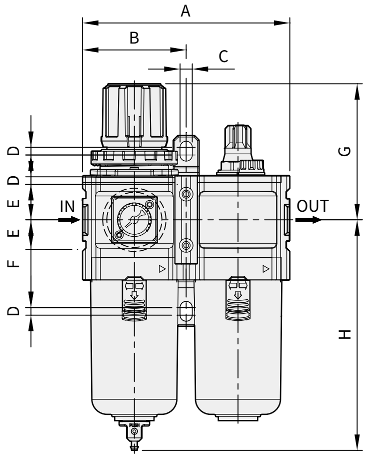
- A Auto drain without fitting (Option-AD-25)

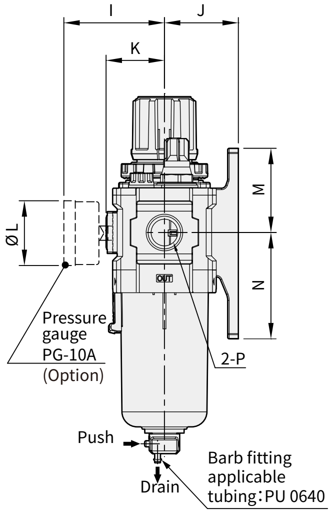
**Manual drain cock**



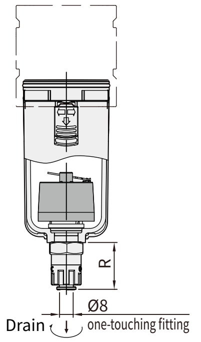
- MG Metal cup (Option)

### UFC 300 ~400 - W Standard


A
B
C
D
D
E
E
F
F
D
G
H
IN
OUT

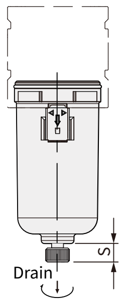

I
J
K
ØL
M
N
Pressure gauge PG-10A (Option)
2-P
Push
Drain
Barb fitting applicable tubing：PU 0640

**Auto drain**


R
Ø8
Drain
one-touching fitting

- A Auto drain with fitting (Option)
(U300 Option-AD35)
(U400 Option-AD55)

**Manual drain cock**



- MG Metal cup (Option)

Unit:mm

| No. / Model | Size | | | | | | | | | | | | | Square pressure gauge | Pressure swtich | Auto drain | Manual drain cock | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | ØL | M | N | K | K | R | S | P |
| UFC 200 | 80 | 40 | 4.5 | 2.5 | 32 | 35.5 | 66.1 | 114.5 | 51 | 30 | 27 | 39.4 | 42.9 | 26.7 | 40.2 | 13 | 3 | 1/8, 1/4 |
| UFC 300 | 108 | 54 | 4.5 | 5 | 37 | 47 | 77.6 | 137.1 | 56 | 38.1 | 42.5 | 47 | 57 | 31 | 44.5 | 34.5 | 12.6 | 1/4, 3/8 |
| UFC 400 | 136 | 68 | 7 | 5 | 42.5 | 57.5 | 89.2 | 151.1 | 66 | 48.5 | 42.5 | 55.3 | 69.7 | 38.3 | 51.8 | 34.5 | 12.6 | 1/4, 3/8, 1/2 |

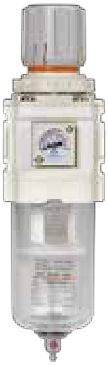
# UFR series Filter Regulator

## Product features

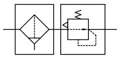
CHELIC.

## Feature

- Regulating and filtering functions.
- Modulization with U series.
- Auto drain in option for small space or not easy to disassemble.



Symbol:



## Specification

| Item | Model | UFR 200 | UFR 300 | UFR 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Filter grade | μm | 5 | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. service pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | ℃ | 5 ～ 60 | | |
| Bowl capacity | cc | 25 | 40 | 80 |
| Weight | kg | 0.18 | 0.77 | 1.3 |
| Material | Body | Aluminum alloy die-casting | | |
| | Bowl | Relieving type | | |

## Code of Order **UFR 400 – 03 – G – MG – W – P**

① ② ③ ④ ⑤ ⑥

| ① | Mark | Specification | Model | | |
|---|---|---|---|---|---|
| | | | UFR 200 | UFR 300 | UFR 400 |
| ② Connection port | 01 | 1/8 | ● | | |
| | 02 | 1/4 | ● | ● | ● |
| | 03 | 3/8 | | ● | ● |
| | 04 | 1/2 | | | ● |
| ③ Thread type | None | RC | ● | ● | ● |
| | G | PF | ● | ● | ● |
| | N | NPT | ● | ● | ● |
| ④ Bowl material | None | PC cup | ● | ● | ● |
| | MG | Metal cup | ● | ● | ● |
| ⑤ Drain cock type | W | Manual drain cock | ● | ● | ● |
| | A | Auto drain | ● | ● | ● |
| ⑥ Pressure gauge | None | Square pressure gauge | ● | ● | ● |
| | P | PG-10A | ● | ● | ● |
| | E | PSN 41 Pressure swtich | ● | ● | ● |

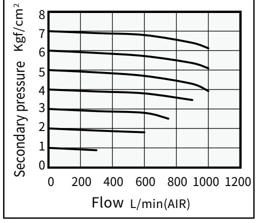
# UFR series Filter Regulator

## Characteristics graph

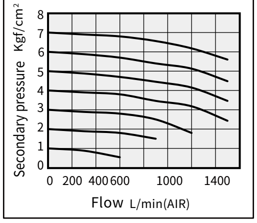
CHELIC

### Flow rate characteristic graph

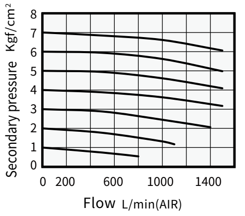
**UFR 200-01**



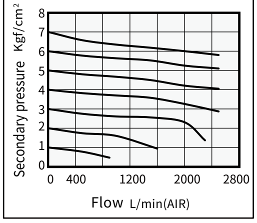
**UFR 200-02**



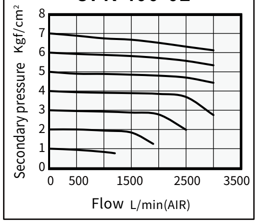
**UFR 300-02**



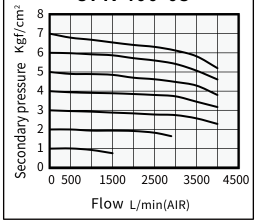
**UFR 300-03**



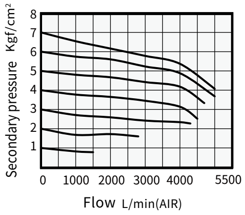
**UFR 400-02**



**UFR 400-03**

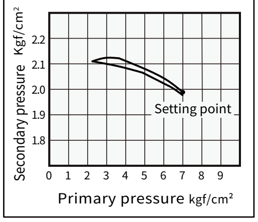


**UFR 400-04**

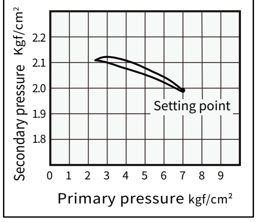


### Pressure characteristics graph

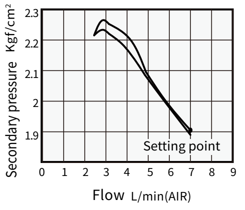
**UFR 200-01**



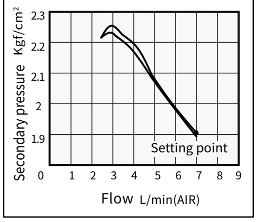
**UFR 200-02**



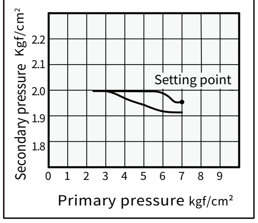
**UFR 300-02**



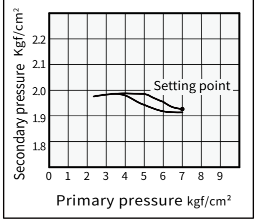
**UFR 300-03**



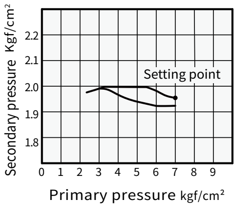
**UFR 400-02**



**UFR 400-03**



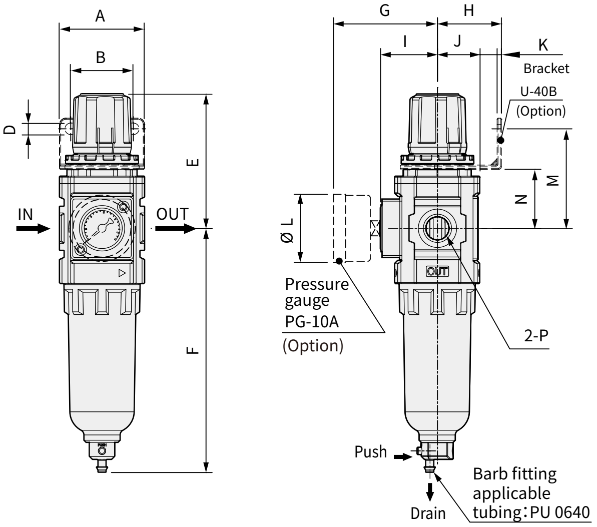
**UFR 400-04**



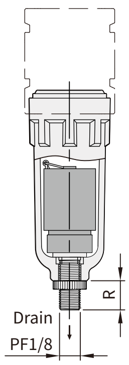
# UFR series Filter Regulator

## Dimensions

### UFR 200 - W Standard

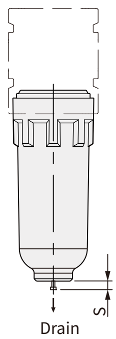

A
B
D
E
F
IN
OUT
G
H
I
J
K
Bracket
U-40B
(Option)
M
N
ØL
Pressure
gauge
PG-10A
(Option)
2-P
Push
Drain
Barb fitting
applicable
tubing：PU 0640

**Auto drain**


R
Drain
PF1/8

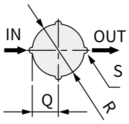
- A Auto drain without fitting (Option-AD-25)

**Manual drain cock**



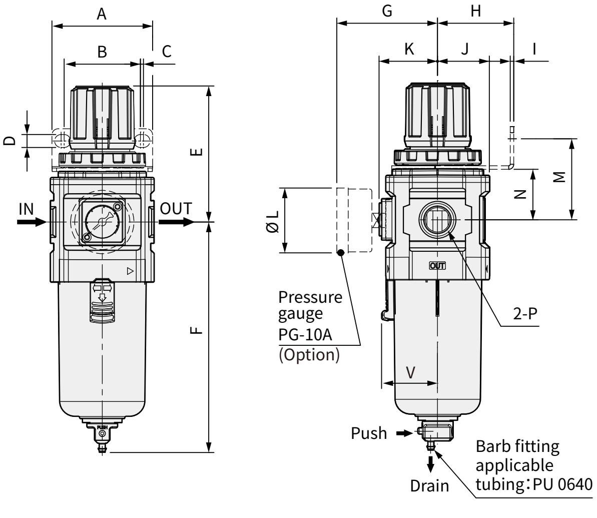
- MG Metal cup (Option)

**Panel mounting dimensions**

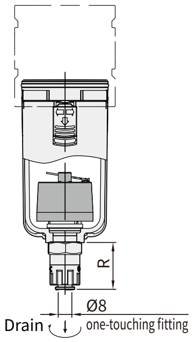


Note:
1. Only for manual drain cock
2. Vertical

### UFR 300 ~ 400 - W Standard

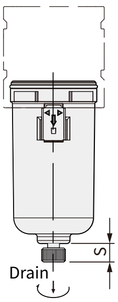

A
B
C
D
E
F
IN
OUT
G
H
K
J
I
M
N
ØL
Pressure
gauge
PG-10A
(Option)
2-P
V
Push
Drain
Barb fitting
applicable
tubing：PU 0640

**Auto drain**


R
Ø8
one-touching fitting
Drain

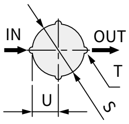
- A Auto drain with fitting (Option) (U300 Option-AD35) (U400 Option-AD55)

**Manual drain cock**



- MG Metal cup (Option)

**Panel mounting dimensions**



Unit:mm

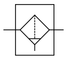
| No. / Model | Size | | | | | | | | | | | | | | Square pressure gauge | Pressure swtich | Panel mounting dimensions | | | Auto drain | Manual drain cock | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | ØL | M | N | V | K | K | U | ØS | ØT | R | S | P |
| UFR 200 | 39.9 | 29.4 | | 5.4 | 66.1 | 114.5 | 54.4 | 30 | 2 | 20 | 42.5 | 46.7 | 27.7 | | 26.7 | 40.2 | 14.2 | 28.8 | 1.8 | 13 | 3 | 1/8, 1/4 |
| UFR 300 | 54 | 29.5 | 6.5 | 6.5 | 77.6 | 137.1 | 58.7 | 44.1 | 2 | 26 | 42.5 | 47.4 | 30 | 30.4 | 31 | 44.5 | 18 | 36.5 | 4.3 | 34.5 | 12.6 | 1/4, 3/8 |
| UFR 400 | 66 | 50 | 2 | 8.5 | 89.2 | 151.1 | 66 | 50 | 2.3 | 34 | 42.5 | 53.1 | 33.1 | 36.7 | 38.3 | 51.8 | 22.5 | 45.5 | 6 | 34.5 | 12.6 | 1/4, 3/8, 1/2 |

# UF series Air Filter

## Product features

## Feature

- Filter purity about 5µm.
- Port connection size up to 1/2.
- Auto drain in option for small space or not easy to disassemble.

Symbol: 

## Specification

| Item \ Model | | UF 200 | UF 300 | UF 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Filter grade | µm | 5 | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. service pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | ℃ | 5 ～ 60 | | |
| Bowl capacity | cc | 25 | 40 | 80 |
| Weight | kg | 0.1 | 0.22 | 0.39 |
| Material | Body | Aluminum alloy die-casting | | |
| | Bowl | Relieving type | | |

## Code of Order **UF 400 – 03 – G – MG – W – C**

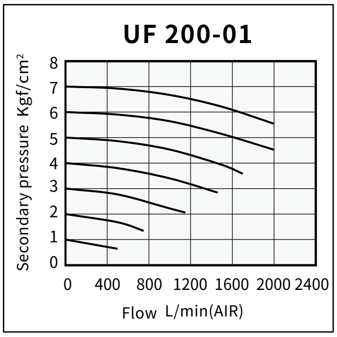
① ② ③ ④ ⑤ ⑥

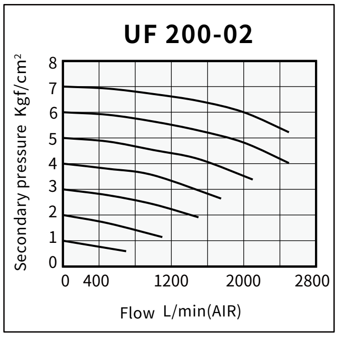
| | | Mark | Specification | Model | | |
|---|---|---|---|---|---|---|
| ① | | | | UF 200 | UF 300 | UF 400 |
| ② | Connection port | 01 | 1/8 | ● | | |
| | | 02 | 1/4 | ● | ● | ● |
| | | 03 | 3/8 | | ● | ● |
| | | 04 | 1/2 | | | ● |
| ③ | Thread type | None | RC | ● | ● | ● |
| | | G | PF | ● | ● | ● |
| | | N | NPT | ● | ● | ● |
| ④ | Bowl material | None | PC cup | ● | ● | ● |
| | | MG | Metal cup | ● | ● | ● |
| ⑤ | Drain cock type | W | Manual drain cock | ● | ● | ● |
| | | A | Auto drain | ● | ● | ● |
| ⑥ | Bracket | None | No bracket | ● | ● | ● |
| | | C | Bracket | ● | ● | ● |

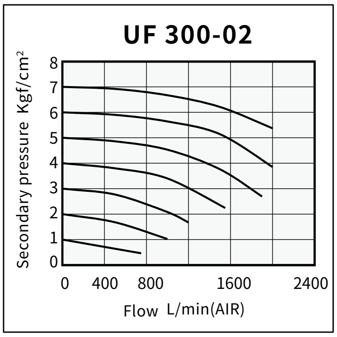
# UF series Air Filter

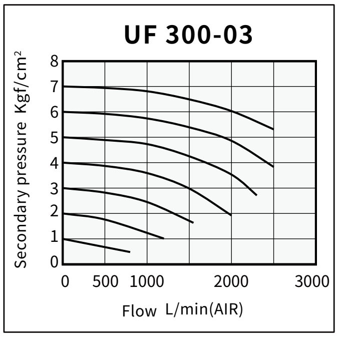
## Characteristic graph

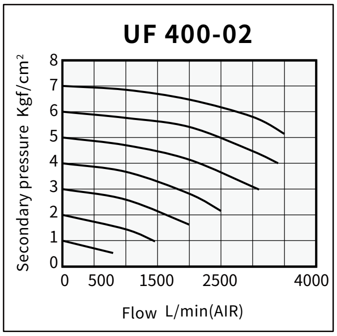
### Flow rate characteristic graph

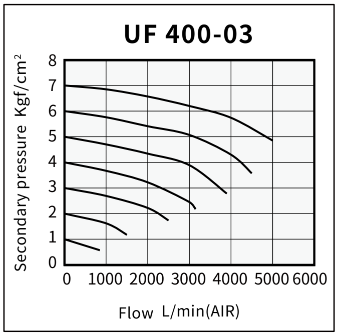

UF 200-01

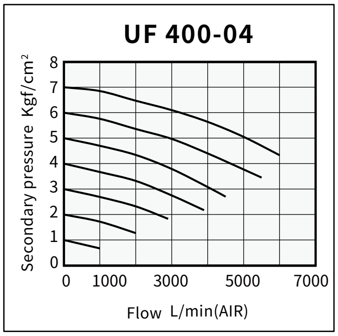

UF 200-02


UF 300-02


UF 300-03


UF 400-02

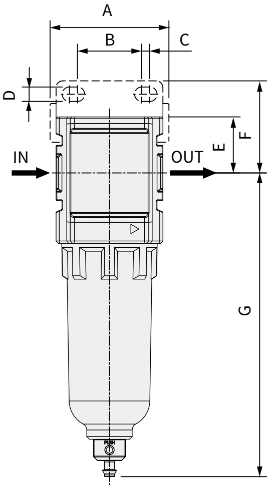

UF 400-03

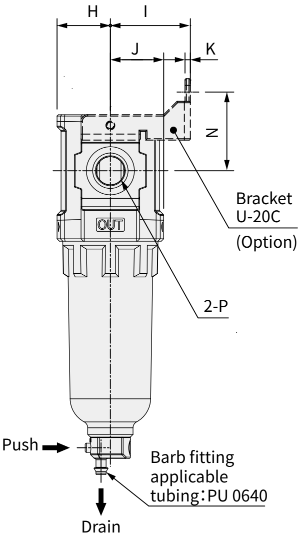

UF 400-04

# UF series Air Filter

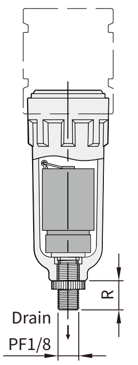
## Dimensions

### UF 200 - W Standard


A
B
C
D
E
F
G
IN
OUT

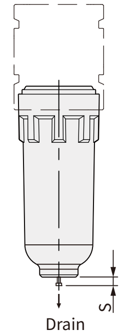

H
I
J
K
N
OUT
Bracket
U-20C
(Option)
2-P
Push
Barb fitting
applicable
tubing：PU 0640
Drain

**Auto drain**


R
Drain
PF1/8

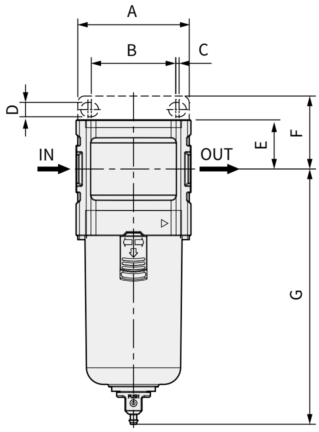
- A Auto drain without fitting (Option-AD-25)

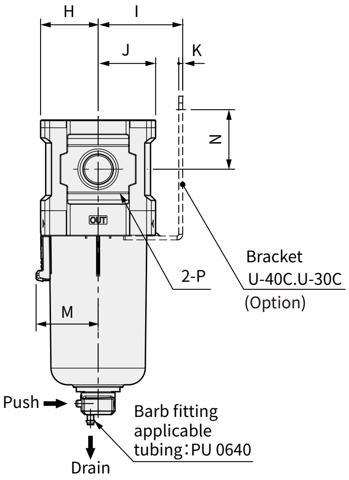
**Manual drain cock**



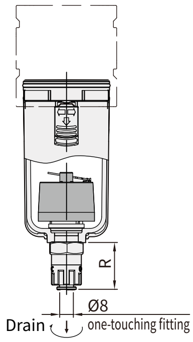
- MG Metal cup (Option)

### UF 300 ~ 400 - W Standard


A
B
C
D
E
F
G
IN
OUT

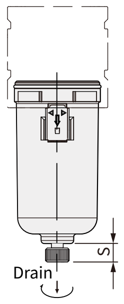

H
I
J
K
N
M
OUT
2-P
Bracket
U-40C.U-30C
(Option)
Push
Barb fitting
applicable
tubing：PU 0640
Drain

**Auto drain**


R
Ø8
Drain
one-touching fitting

- A Auto drain with fitting (Option)
(U300 Option-AD35)
(U400 Option-AD55)

**Manual drain cock**



- MG Metal cup (Option)

Unit:mm

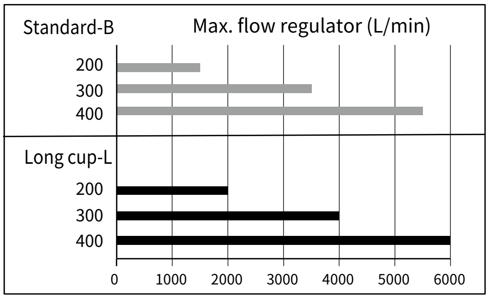
| No. / Model | Size | | | | | | | | | | | | | Auto drain | Manual drain cock | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | M | N | R | S | P |
| UF 200 | 44.5 | 24 | 3 | 5.4 | 21 | 34.5 | 113.8 | 20 | 30 | 20 | 2 | | 29.5 | 13 | 3 | 1/8, 1/4 |
| UF 300 | 54 | 29.5 | 6.5 | 6.5 | 25.1 | 39.1 | 137.1 | 27 | 41 | 27 | 2 | 30.4 | 32.5 | 34.5 | 12.6 | 1/4, 3/8 |
| UF 400 | 66 | 50 | 2 | 8.5 | 29.1 | 43.2 | 151.1 | 34 | 50 | 34 | 2.3 | 36.7 | 35.2 | 34.5 | 12.6 | 1/4, 3/8, 1/2 |

# UFM series Mist Separator

## Product features

**Nominal filtration rating 0.01 µm**

**Max. flow regulator 6000 L/min**



### Standard - B

**UFMB 200/ 300/ 400**

- Space saving
- Lightweight

### Long cup - L

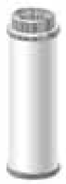
**UFML 200/ 300/ 400**

- Large filtration area
- Flow capacity increase 10%

## Element type

**UF M - Oil mist separator: 0.3µm-Silver**

- Dust filter, oil mist separation

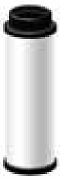


Long element

Short element

**UF D - Micro oil mist separator: 0.01µm-Black**

- Micro dust filter, oil mist separation



Long element

Short element

## Code of order

**Bowl type** → **Bowl material** → **Drain cock type** → **Bracket**

### Bowl type

B - Short
L - Long

### Bowl material

☐ - PC cup
MG - Metal cup

*Push bottom use stainless 304 for completely protected from the environment.

*Metal material use to prevent corrosion also extend servise life.

*Transparent bowl guard, easy to visible from 360°

### Drain cock type

W - Manual drain cock
A - Auto drain

*Auto drain use floating switch to drain.

### Bracket

C - Bracket

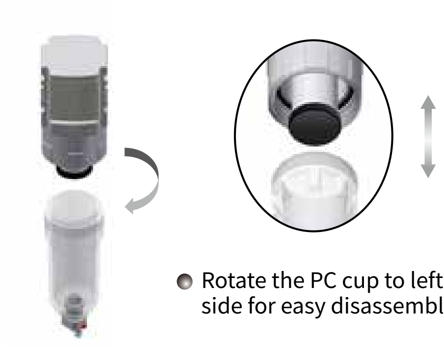
*Easy to install

# UFM series Mist Separator

## Product features

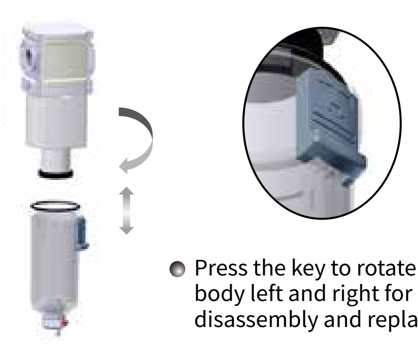
## During use and maintenance

### UFM 200



- Rotate the PC cup to left side for easy disassembly

### UFM 300/ 400



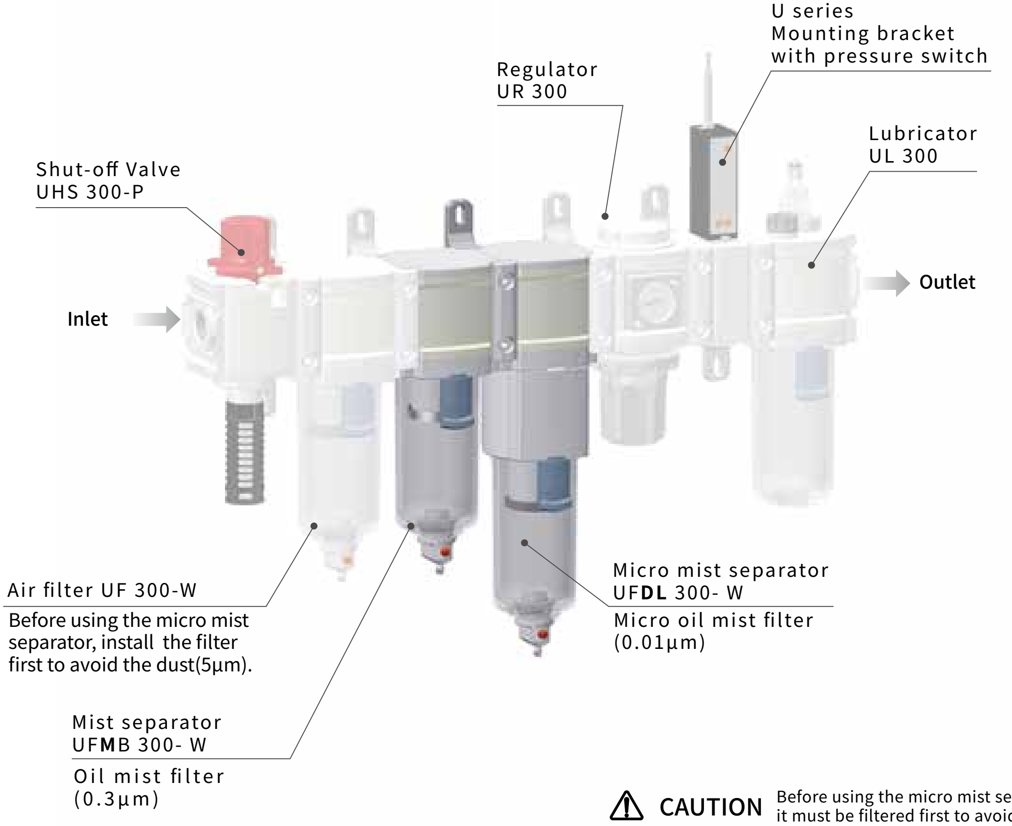
- Press the key to rotate the cup body left and right for easy disassembly and replacement

⚠ **CAUTION** Must be checked and assembled properly before the pipeline can be inflated.

⚠ **DANGEROUS** Confirm the pressure has been released before mounting or removing the bowl and bowl guard.

## Suggested replacement

### U series combination


U series
Mounting bracket
with pressure switch
Regulator
UR 300
Lubricator
UL 300
Shut-off Valve
UHS 300-P
Inlet
Outlet
Air filter UF 300-W
Micro mist separator
UFDL 300- W
Micro oil mist filter
(0.01μm)
Mist separator
UFMB 300- W
Oil mist filter
(0.3μm)

Before using the micro mist separator, install the filter first to avoid the dust(5μm).

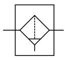
⚠ **CAUTION** Before using the micro mist separator, it must be filtered first to avoid the block.

# UFM series Mist Separator

## Product features

### Feature

- ● Oil mist filter: 0.3µm/ Micro oil mist filter: 0.01µm
- ● Remove oil and micro oil mist
- ● Auto drain in option for small space or not easy to disassemble
- ● Port connection size up to 1/2
- ● Long bowl option, large filtration area

Symbol: 

### Specification

| Item \ Model | | UFM/ UFD 200 | UFM/ UFD 300 | UFM/ UFD 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | air | | |
| Filter grade | µm | Oil mist separator: 0.3µm-Silver / Micro oil mist separator: 0.01µm | | |
| Pressure range | kgf/cm²(kPa) | 0.5~8.5 (50~850) | | |
| Max. operating pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | ℃ | 5 ～ 60 | | |
| Bowl capacity | cc | 25 | 40 | 80 |
| Long bowl capacity | cc | 32 | 68 | 108 |
| Material | Body | Aluminum alloy die-casting | | |
| | Bowl | Relieving type | | |
| Short bowl Weight | kg | 0.1 | 0.22 | 0.39 |
| Long bowl Weight | kg | 0.14 | 0.38 | 0.69 |

### Code of Order **UF M L 400 – 04 – G – MG – W – C**

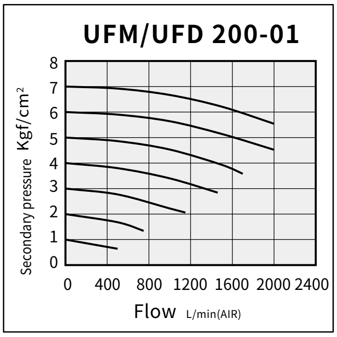
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

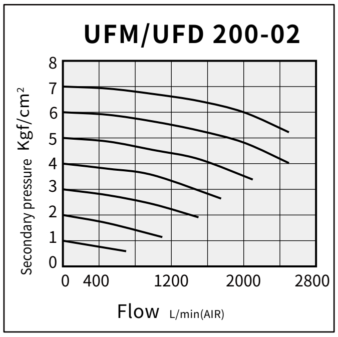
| | | Mark | Specification | Model | | |
|---|---|---|---|---|---|---|
| | | | | UFM/ UFD 200 | UFM/ UFD 300 | UFM/ UFD 400 |
| ① | Element type | M | Oil mist separator: 0.3µm-Silver | ● | | ● |
| | | D | Micro oil mist separator: 0.01µm | ● | ● | ● |
| ② | Bowl type | B | Short element | ● | ● | ● |
| | | L | Long element | ● | ● | ● |
| ③ | Body | 200 | U 200 series | ● | | |
| | | 300 | U 300 series | | ● | |
| | | 400 | U 400 series | | | ● |
| ④ | Connection port | 01 | 1/8 | ● | | |
| | | 02 | 1/4 | ● | ● | ● |
| | | 03 | 3/8 | | ● | ● |
| | | 04 | 1/2 | | | ● |
| ⑤ | Thread type | None | RC | ● | ● | ● |
| | | G | PF | ● | ● | ● |
| | | N | NPT | ● | ● | ● |
| ⑥ | Bowl material | None | PC cup | ● | ● | ● |
| | | MG | Metal cup | ● | ● | ● |
| ⑤ | Drain cock type | W | Manual drain cock | ● | ● | ● |
| | | A | Auto drain | ● | ● | ● |
| ⑧ | Bracket | None | None | ● | ● | ● |
| | | C | Bracket | ● | ● | ● |

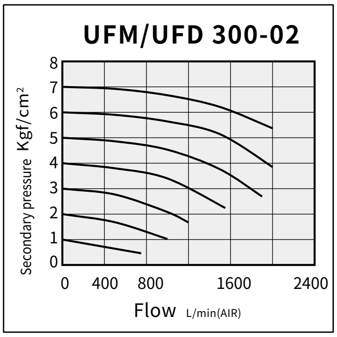
# UFM series Mist Separator

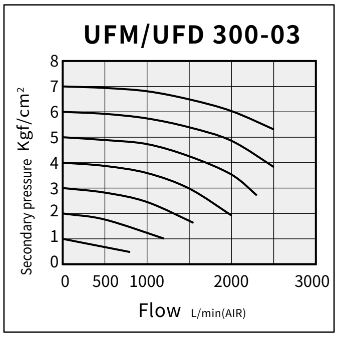
## Characteristic graph

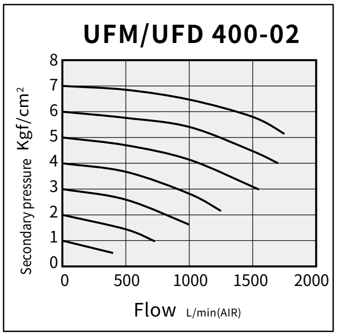
### Flow rate characteristic graph

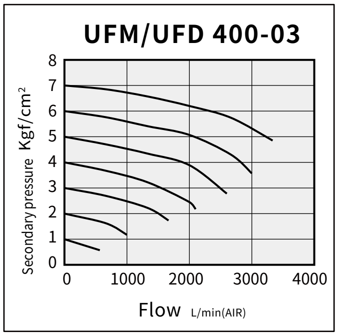

UFM/UFD 200-01

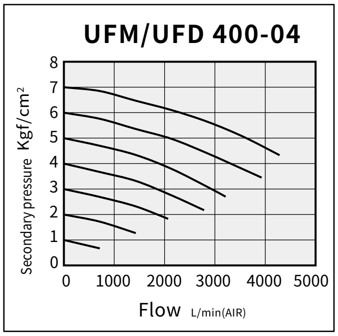

UFM/UFD 200-02


UFM/UFD 300-02


UFM/UFD 300-03


UFM/UFD 400-02

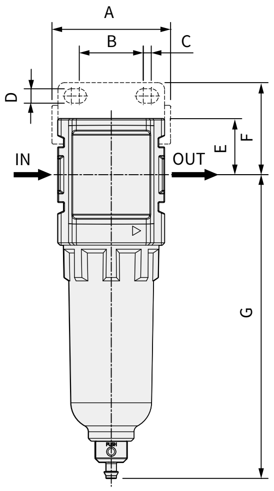

UFM/UFD 400-03

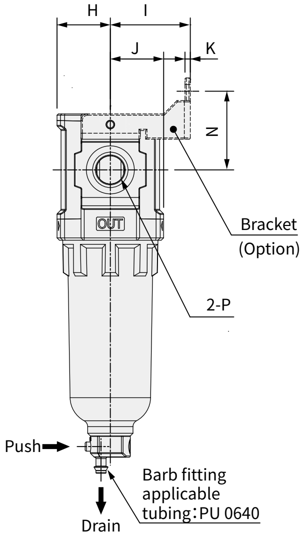

UFM/UFD 400-04

# UFM series Mist Separator

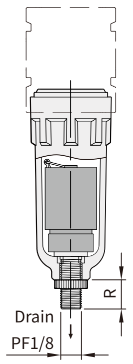
## Dimensions

### UFM B 200 - W Short


A
B
C
D
E
F
G
IN
OUT

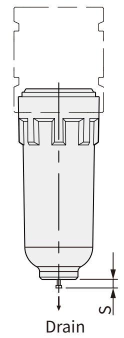

H
I
J
K
N
OUT
Bracket
(Option)
2-P
Push
Barb fitting
applicable
tubing：PU 0640
Drain

**Auto drain**


R
Drain
PF1/8

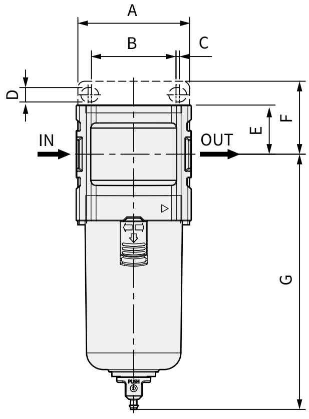
- A Auto drain without fitting (Option-AD-25)

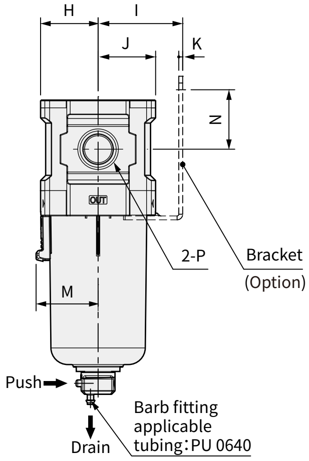
**Manual drain cock**



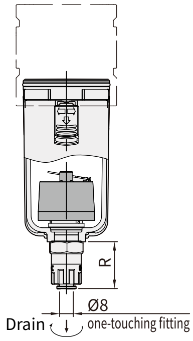
- MG Metal cup (Option)

### UFM B 300 - W Short
### UFM B 400 - W Short


A
B
C
D
E
F
G
IN
OUT

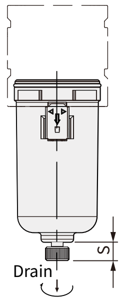

H
I
J
K
N
M
OUT
2-P
Bracket
(Option)
Push
Barb fitting
applicable
tubing：PU 0640
Drain

**Auto drain**


R
Ø8
one-touching fitting
Drain

- A Auto drain with fitting (Option)
  (U300 Option-AD35)
  (U400 Option-AD55)

**Manual drain cock**



- MG Metal cup (Option)

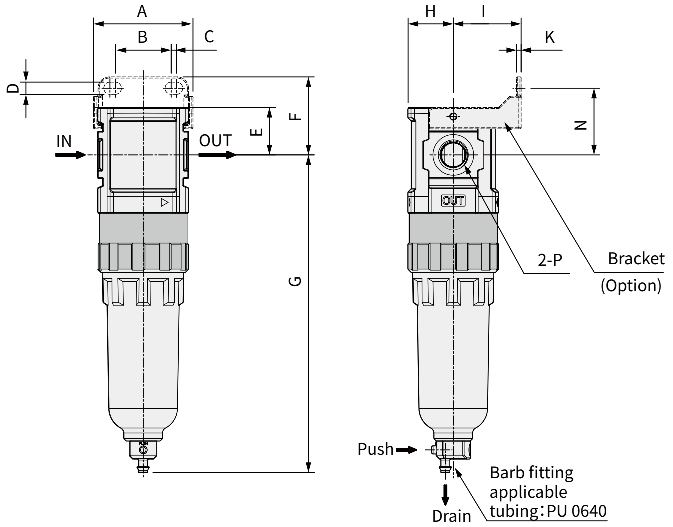
Unit:mm

| No. / Model | Size | | | | | | | | | | | | | Auto drain | Manual drain cock | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | M | N | R | S | P |
| UFMB 200 | 44.5 | 24 | 3 | 5.4 | 21 | 34.5 | 113.8 | 20 | 30 | 20 | 2 | | 29.5 | 13 | 3 | 1/8, 1/4 |
| UFMB 300 | 54 | 29.5 | 6.5 | 6.5 | 25.1 | 39.1 | 137.1 | 27 | 41 | 27 | 2 | 30.4 | 32.5 | 34.5 | 12.6 | 1/4, 3/8 |
| UFMB 400 | 66 | 50 | 2 | 8.5 | 29.1 | 43.2 | 151.1 | 34 | 50 | 34 | 2.3 | 36.7 | 35.2 | 34.5 | 12.6 | 1/4, 3/8, 1/2 |

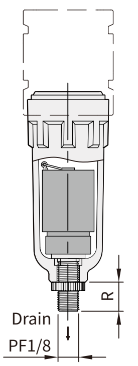
# UFM series Mist Separator

## Dimensions

### UFM L 200 - W Long

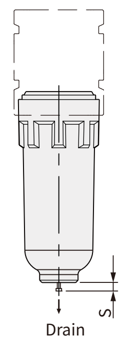

A
B
C
D
E
F
G
IN
OUT
H
I
K
N
OUT
2-P
Bracket
(Option)
Push
Drain
Barb fitting
applicable
tubing：PU 0640

**Auto drain**


R
Drain
PF1/8

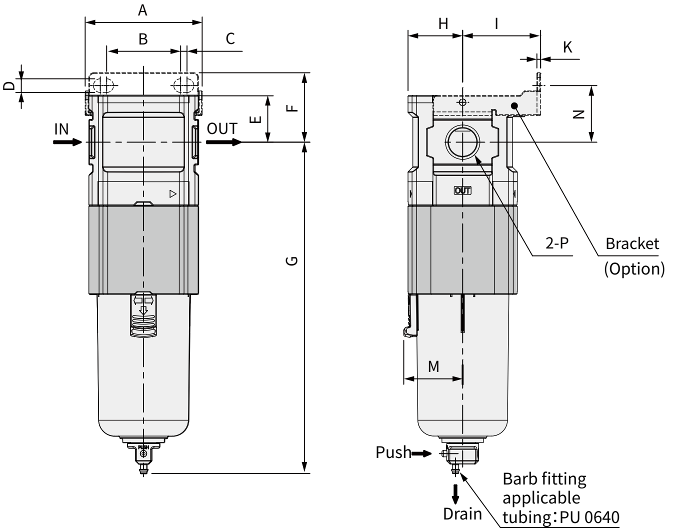
- A Auto drain without fitting (Option-AD-25)

**Manual drain cock**

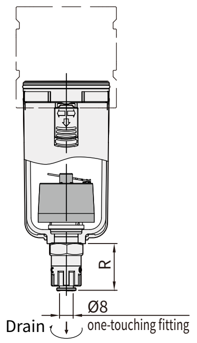


- MG Metal cup (Option)

### UFM L 300 - W Long
### UFM L 400 - W Long

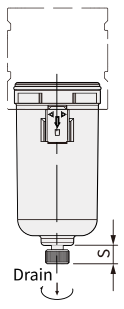

A
B
C
D
E
F
G
IN
OUT
H
I
K
N
M
OUT
2-P
Bracket
(Option)
Push
Drain
Barb fitting
applicable
tubing：PU 0640

**Auto drain**


R
Ø8
one-touching fitting
Drain

- A Auto drain with fitting (Option)
(U300 Option-AD35)
(U400 Option-AD55)

**Manual drain cock**



- MG Metal cup (Option)

Unit:mm

| No. / Model | Size | | | | | | | | | | | | Auto drain | Manual drain cock | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | A | B | C | D | E | F | G | H | I | K | M | N | R | S | P |
| UFML 200 | 44 | 24.7 | 2.4 | 5.4 | 21 | 34.5 | 139.8 | 20 | 30 | 2 | | 29.5 | 13 | 3 | 1/8, 1/4 |
| UFML 300 | 58.8 | 35.5 | 3.5 | 6.5 | 25.1 | 39.1 | 183.7 | 27 | 38.7 | 2.3 | 30.4 | 30.4 | 34.5 | 12.6 | 1/4, 3/8 |
| UFML 400 | 72.8 | 46 | 4 | 8.5 | 29.1 | 43.2 | 206.3 | 34 | 48.5 | 2.3 | 36.7 | 35.2 | 34.5 | 12.6 | 1/4, 3/8, 1/2 |

# UR series Regulator

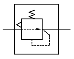
## Product features

### Feature

- ● Precise pressure setting and high stability.
- ● Port connection size up to 1/2.
- ● Modulization with U series.

### Specification

Symbol:



| Item | Model | UR 200 | UR 300 | UR 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Filter grade | μm | 5 | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 (50 ~ 850) | | |
| Max. service pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | ℃ | 5 ~ 60 | | |
| Weight | kg | 0.14 | 0.29 | 0.46 |
| Material | Body | Aluminum alloy die-casting | | |

### Code of Order **UR 400 – 04 – G – P**

① ② ③ ④

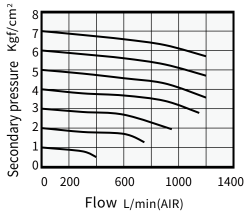
| | | Mark | Specification | Model | | |
|---|---|---|---|---|---|---|
| ① | | | | UR 200 | UR 300 | UR 400 |
| ② | Connection port | 01 | 1/8 | ● | | |
| | | 02 | 1/4 | ● | ● | ● |
| | | 03 | 3/8 | | ● | ● |
| | | 04 | 1/2 | | | ● |
| ③ | Thread type | None | RC | ● | ● | ● |
| | | G | PF | ● | ● | ● |
| | | N | NPT | ● | ● | ● |
| ④ | Pressure gauge | None | Square pressure gauge | ● | ● | ● |
| | | P | PG-10A | ● | ● | ● |
| | | E | PSN 41 Pressure swtich | ● | ● | ● |

# UR series Regulator

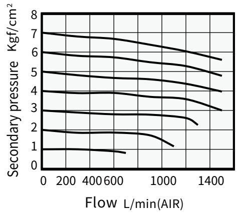
## Characteristics graph

### Flow rate characteristic graph

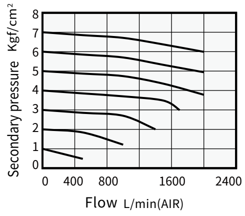
**UR 200-01**



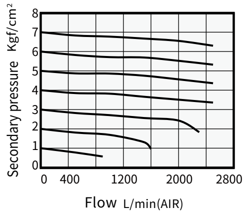
**UR 200-02**



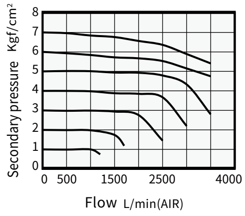
**UR 300-02**



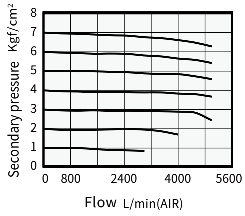
**UR 300-03**



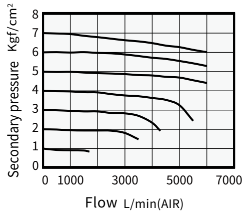
**UR 400-02**



**UR 400-03**

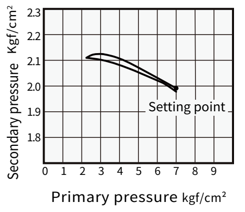


**UR 400-04**

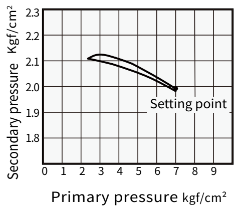


### Pressure characteristics graph

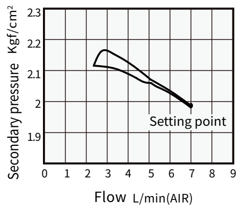
**UR 200-01**



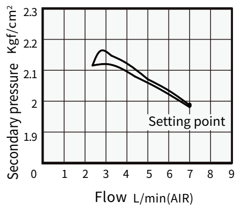
**UR 200-02**



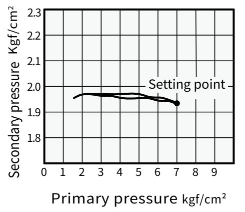
**UR 300-02**



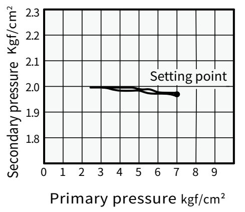
**UR 300-03**



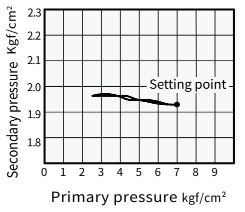
**UR 400-02**



**UR 400-03**



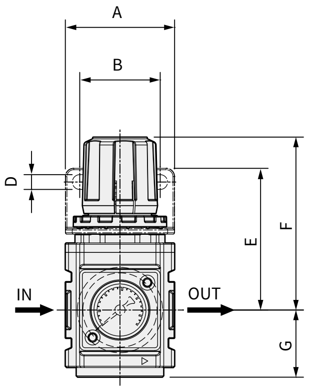
**UR 400-04**

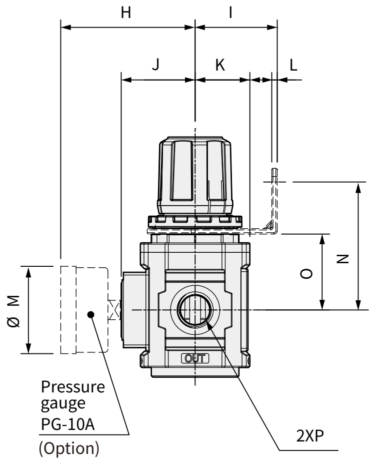


# UR series Regulator

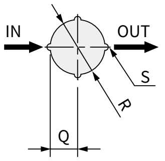
## Dimensions

### UR 200

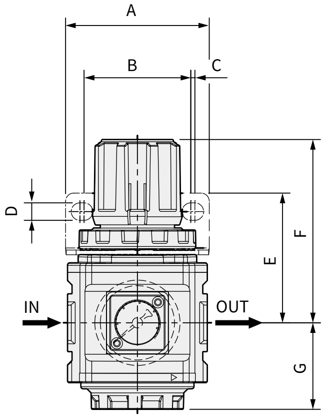

A
B
D
E
F
G
IN
OUT

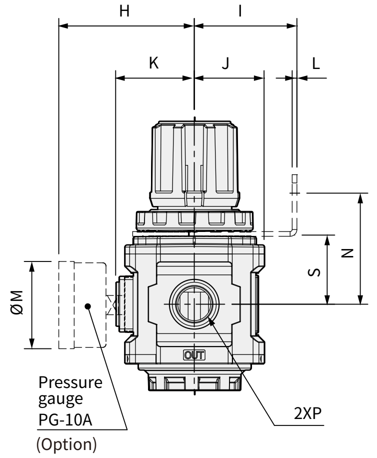

H
I
J
K
L
O
N
Ø M
Pressure gauge PG-10A
(Option)
2XP

Panel mounting dimensions

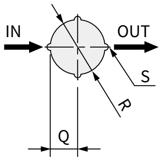


### UR 300 ~ 400


A
B
C
D
E
F
G
IN
OUT


H
I
K
J
L
N
S
ØM
Pressure gauge PG-10A
(Option)
2XP

Panel mounting dimensions



Unit:mm

| No. / Model | Size | | | | | | | | | | | | | | Square pressure gauge | Pressure swtich | Panel mounting dimensions | | | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | L | ØM | N | O | K | K | Q | ØR | ØS | P |
| UR 200 | 39.9 | 29.4 | | 5.4 | 51.7 | 66.1 | 24.5 | 54.4 | 30 | 20 | 2 | 42.5 | 46.7 | 27.7 | 26.7 | 40.2 | 14.2 | 28.8 | 1.8 | 1/8, 1/4 |
| UR 300 | 54 | 29.4 | 5.5 | 6.5 | 52.1 | 77.6 | 33.8 | 58.7 | 41.1 | 27 | 2 | 42.5 | 47.4 | 30 | 31 | 44.5 | 18 | 36.5 | 4.3 | 1/4, 3/8 |
| UR 400 | 70 | 50 | 1 | 8.5 | 63.1 | 89.2 | 42.1 | 66 | 50 | 34 | 2.3 | 42.5 | 54.1 | 33.7 | 38.3 | 51.8 | 22.5 | 45.5 | 6 | 1/4, 3/8, 1/2 |

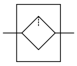
# UL series Lubricator

## Product features

## Feature

- Provide lubricating oil for lubricator in the air pressure line.
- Lubrication function can be adjustable.
- Modulization with U series.

Symbol:



## Specification

| Item \ Model | | UL 200 | UL 300 | UL 400 |
|---|---|---|---|---|
| Port size Rc | | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Pressure range kgf/cm²(kPa) | | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. service pressure kgf/cm²(kPa) | | 10 (1000) | | |
| Ambient and fluid temperature ℃ | | 5 ～ 60 | | |
| Recommended lubrication | | ISO VG32 | | |
| Minimum dripping flow rate L/min | | 30 | 85 | 92 |
| Lubricator capacity cc | | 30 | 55 | 100 |
| Weight kg | | 0.11 | 0.23 | 0.37 |
| Material | Body | Aluminum alloy die-casting | | |
| | Bowl | Relieving type | | |

## Code of Order **UL 400 – 03 – G – MG – C**

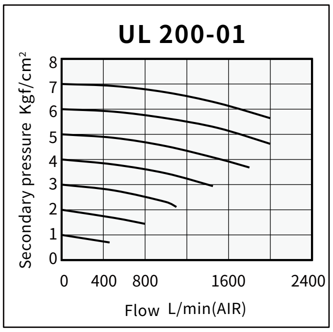
① ② ③ ④ ⑤

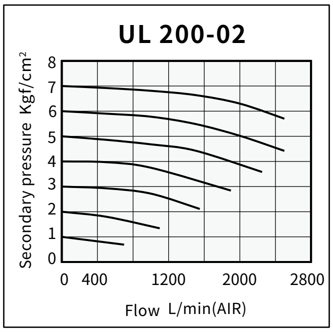
| | | Mark | Specification | Model | | |
|---|---|---|---|---|---|---|
| ① | | | | UL 200 | UL 300 | UL 400 |
| ② | Connection port | 01 | 1/8 | ● | | |
| | | 02 | 1/4 | ● | ● | ● |
| | | 03 | 3/8 | | ● | ● |
| | | 04 | 1/2 | | | ● |
| ③ | Thread type | None | RC | ● | ● | ● |
| | | G | PF | ● | ● | ● |
| | | N | NPT | ● | ● | ● |
| ④ | Bowl material | None | PC cup | ● | ● | ● |
| | | MG | Metal cup | ● | ● | ● |
| ⑤ | Bracket | None | No bracket | ● | ● | ● |
| | | C | Bracket | ● | ● | ● |

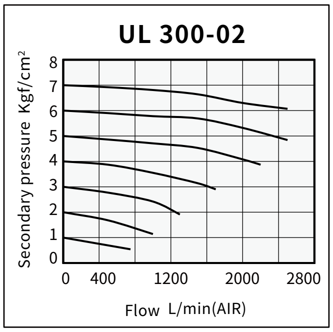
# UL series Lubricator

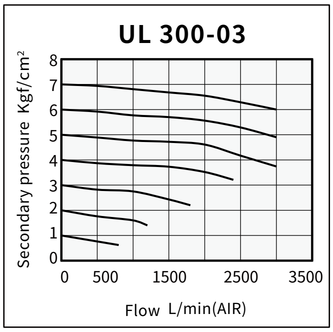
## Characteristic graph

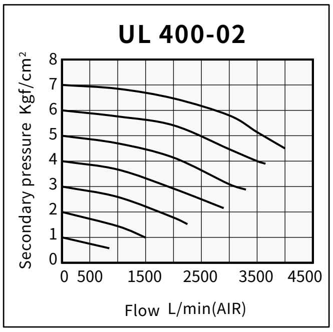
### Flow rate characteristic graph

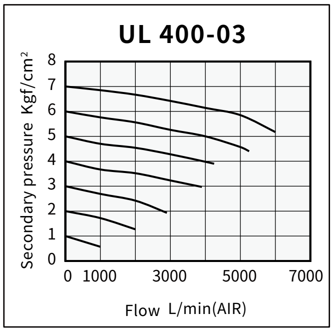

**UL 200-01**

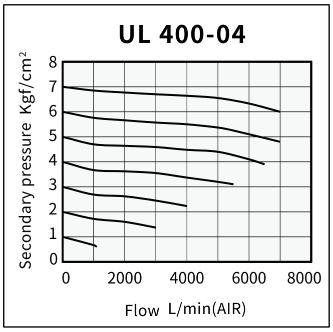

**UL 200-02**


**UL 300-02**


**UL 300-03**


**UL 400-02**

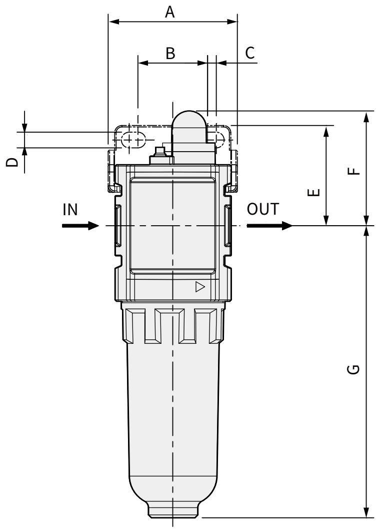

**UL 400-03**

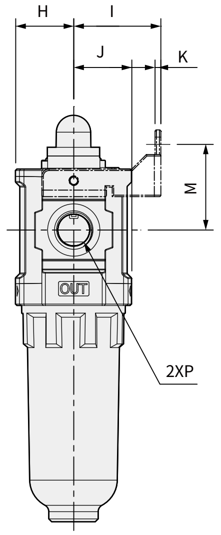

**UL 400-04**

# UL series Lubricator

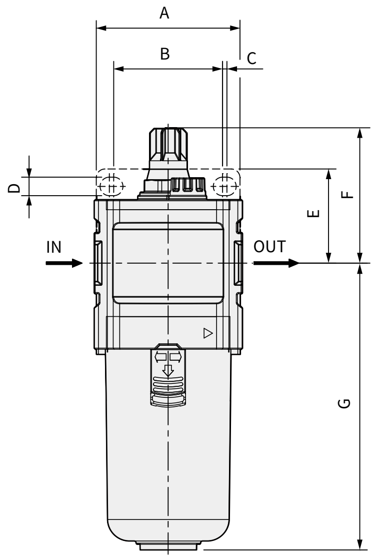
## Dimensions

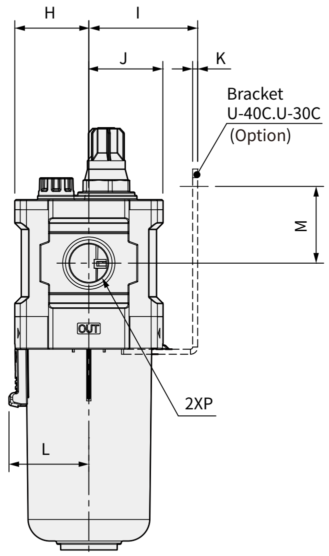
### UL 200


A
B
C
D
E
F
G
IN
OUT


H
I
J
K
M
OUT
2XP

### UL 300 ~ 400


A
B
C
D
E
F
G
IN
OUT

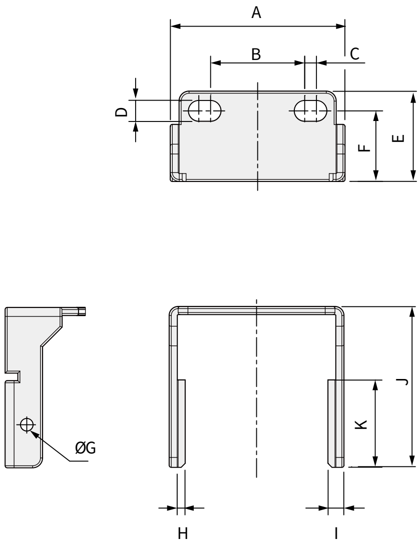

H
I
J
K
Bracket
U-40C.U-30C
(Option)
M
OUT
2XP
L

Unit:mm

| No. / Model | Size | | | | | | | | | | | | | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | P |
| UL 200 | 44.5 | 24 | 3 | 5.4 | 34.5 | 39.5 | 87.5 | 20 | 30 | 20 | 2 | | 29.5 | 1/8, 1/4 |
| UL 300 | 54 | 42.5 | | 6.5 | 38.7 | 62.2 | 122 | 27 | 41 | 27 | 2 | 30.4 | 32.1 | 1/4, 3/8 |
| UL 400 | 66 | 50 | 2 | 8.5 | 43.2 | 61.8 | 131.6 | 34 | 50 | 34 | 2.3 | 36.7 | 35.2 | 1/4, 3/8, 1/2 |

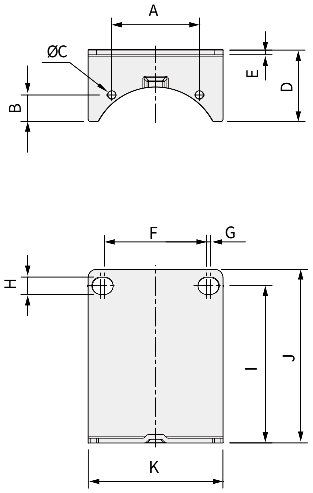
## U 20C Type

Applicable to UF 200, UL 200



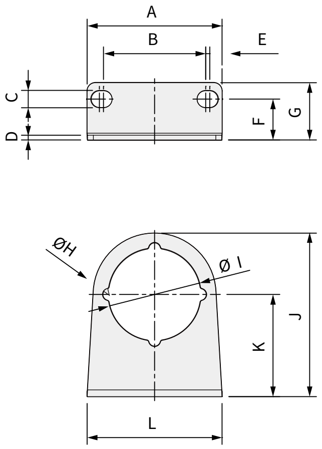
## U 30C.U 40C Type

Applicable to UF 300, UL 300, UF 400, UL 400



## U 20B.U 30B.U40B Type

Applicable to UFR 200, UFR 300, UFR 400
UR 200, UR 300, UR 400



Unit:mm

| No. / Model | Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L |
| U 20B | 39.9 | 24.6 | 5.4 | 2 | 2.4 | 19 | 24 | 1.8 | 28.8 | 47.5 | 30 | 40 |
| U 30B | 54 | 29.4 | 6.5 | 2 | 6.5 | 17.4 | 24 | 4.3 | 36.5 | 66 | 41 | 54 |
| U 40B | 66 | 50 | 8.5 | 2.3 | 1 | 20 | 28 | 6 | 45.5 | 78.5 | 48.5 | 66 |
| U 20C | 44.5 | 24 | 3 | 5.4 | 23 | 18 | 3.3 | 2 | 4 | 41 | 22.25 | |
| U 30C | 33 | 27 | 4.2 | 26.7 | 2 | 29.5 | 6.5 | 6.5 | 66.15 | 72.8 | 54 | |
| U 40C | 43 | 13 | 4.2 | 33.5 | 2.3 | 50 | 1 | 8.5 | 77 | 85 | 66 | |

# Air Unit

## Product features

### Feature

- Seperate air source.
- With pressure sensor to display the pressure value.
- Modulization with U series.

Assembly example

### Specification

| Item \ Model | PN 300D-U20 | PN 300D-U30 |
|---|---|---|
| Applicable model | U200 series | U300, U400 series |
| Port size Rc | 1/4 | 1/2 |
| Fluid | Air | |
| Pressure range MPa | 0~1(Positive pressure) | |
| Ambient and fluid temperature °C | ±2% F.S.or less (0~50°C in operating temperature) | |
| Pressure switch | PSN-30 | |
| Weight kg | 0.107 | 0.196 |

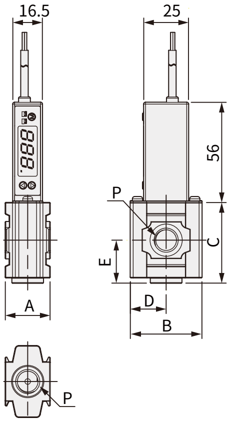
Note: with pressure switch PSN-30

### Code of Order **PN 300D – U20 – 02 – 01**

① ② ③

| | | Mark | Specification | Model | |
|---|---|---|---|---|---|
| ① | | | | U20 | U30 |
| ② | Connection port | 02 | 1/4 | ● | |
| | | 04 | 1/2 | | ● |
| ③ | Output | 01 | 2 NPN Output & 1 Analog Output | ● | ● |
| | | 02 | 2 NPNOutput | ● | ● |
| | | 03 | 2 PNP Output & 1 Analog Output | ● | ● |
| | | 04 | 2 PNP Output | ● | ● |

### PN-U20, PN-U30 External dimensions



Unit:mm

| No. \ Model | Size A | B | C | D | E | Female thread P |
|---|---|---|---|---|---|---|
| PN-300D-U20 | 25 | 40 | 45 | 24 | 29.1 | 1/4 |
| PN-300D-U30 | 34 | 50 | 54.2 | 29.1 | 25.1 | 1/2 |

# UHS series Shut-off Valve (OSHA)

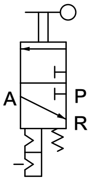
## Product features

**CHELIC**

### Feature

- Comply with OSHA specifications.
- With lock hole, display window, visualization of air supply and exhaust status to avoid wrong actions when use double action press down to open air supply.
- Modulization with U series.

Symbol:



### Specification

| Item | Model | UHS 200 | UHS 300 | UHS 400 |
|---|---|---|---|---|
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 |
| Fluid | | Air | | |
| Pressure range | kgf/cm$^2$(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. service pressure | kgf/cm$^2$(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | ℃ | 5 ～ 60 | | |
| Rotation angle | ° | 90 | | |
| Number of position ports | | 5/2 | | |
| Weight | kg | 0.11 | 0.15 | 0.32 |
| Material | Body | Aluminum alloy die-casting | | |

### Code of Order **UHS 400 – 03 – G – P – C**

① ② ③ ④ ⑤

| | | Mark | Specification | Model | | |
|---|---|---|---|---|---|---|
| ① | | | | UHS 200 | UHS 300 | UHS 400 |
| ② | Connection port | 01 | 1/8 | ● | | |
| | | 02 | 1/4 | ● | ● | ● |
| | | 03 | 3/8 | | ● | ● |
| | | 04 | 1/2 | | | ● |
| ③ | Thread type | None | RC | ● | ● | ● |
| | | G | PF | ● | ● | ● |
| | | N | NPT | ● | ● | ● |
| ④ | Silencer | None | Without silencer | ● | ● | ● |
| | | P | Silencer | ● | ● | ● |
| ⑤ | Bracket | None | No bracket | ● | ● | ● |
| | | C | Bracket | ● | ● | ● |

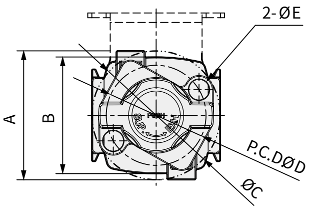
**OSHA (Occupational Safety and Health Administration)**

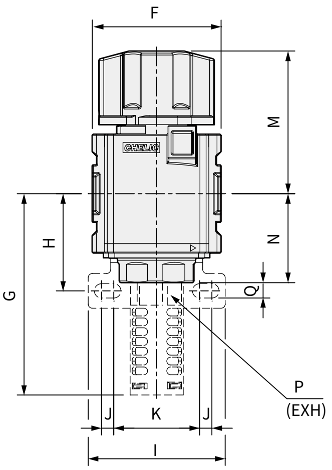
1. If a third party inadvertently operates the valve during such operation and compressed air is applied, the cylinder, etc., could move suddenly and injure personnel.
   This standard states that, "All valves used for such purposes shall have a key or a structure which can be locked with a key."
2. When servicing or maintaining machinery, the air source shall be closed with a shut-off valve (lockout valve), and residual pressure shall be discharged.

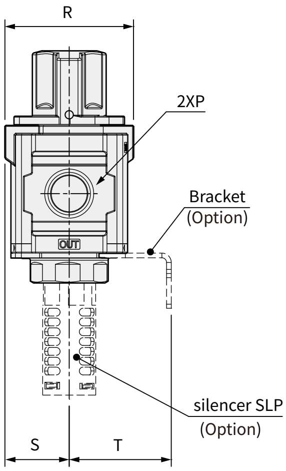
# UHS series Shut-off Valve (OSHA)

## Dimensions/ Installation

### UHS 200 ~ 400


2-ØE
A
B
P.C.DØD
ØC
PUSH
SUP
EXH


F
M
N
H
G
Q
CHELIC
P
(EXH)
J
K
J
I


R
2XP
Bracket
(Option)
OUT
silencer SLP
(Option)
S
T

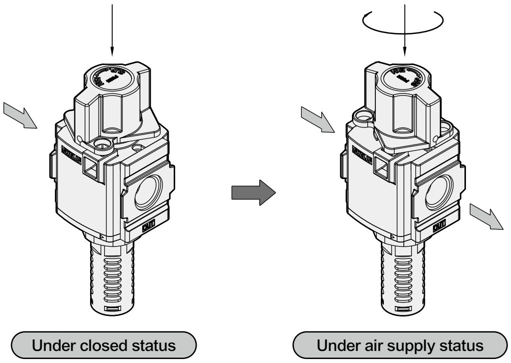
Unit:mm

| No. / Model | Size | | | | | | | | | | | | | | | | | Female thread |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | M | N | Q | R | S | T | P |
| UHS 200 | 42.9 | 40 | 45 | 35 | 6 | 45 | 59.8 | 34 | 50 | 2.4 | 35.2 | 53 | 35 | 5.4 | 42.9 | 21.5 | 30 | 1/8, 1/4 |
| UHS 300 | | 46 | 45 | 35 | 6 | 50 | 67.4 | 38.1 | 54 | 6.5 | 29 | 53.7 | 40.4 | 6.5 | 46 | 23 | 41 | 1/4, 3/8 |
| UHS 400 | 63 | 57 | 62.9 | 48.9 | 10 | 63 | 98.6 | 47.6 | 67 | 6 | 42 | 69.9 | 43.6 | 7 | 63 | 31.5 | 50 | 1/4, 3/8, 1/2 |

### ◆ Two operation expression

1.Press down the handle

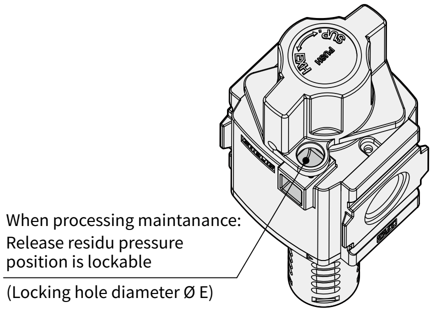
2.Turn the handle in 90°


CHELIC
OUT
PUSH
SUP
EXH

Under closed status

Under air supply status

### ◆ Locking expression


PUSH
SUP
EXH
CHELIC

When processing maintanance:
Release residu pressure
position is lockable

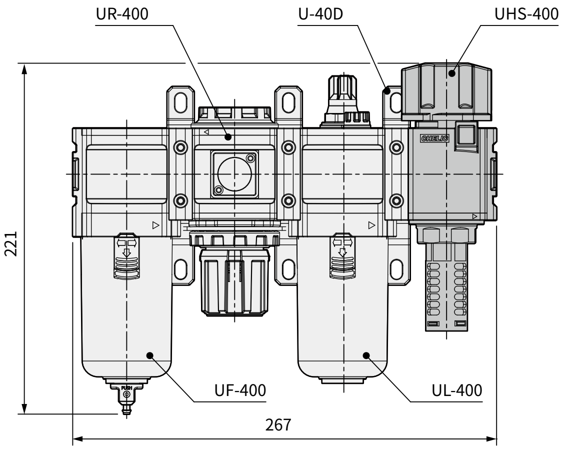
(Locking hole diameter Ø E)

# UHS series Shut-off Valve (OSHA)

## Assembly example/ Accessory

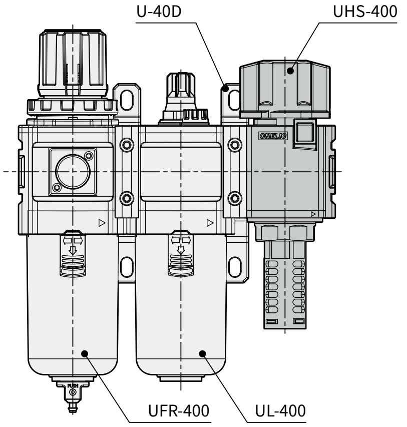
### UC 400 + UHS 400

Assembly example


UR-400
U-40D
UHS-400
221
UF-400
UL-400
267

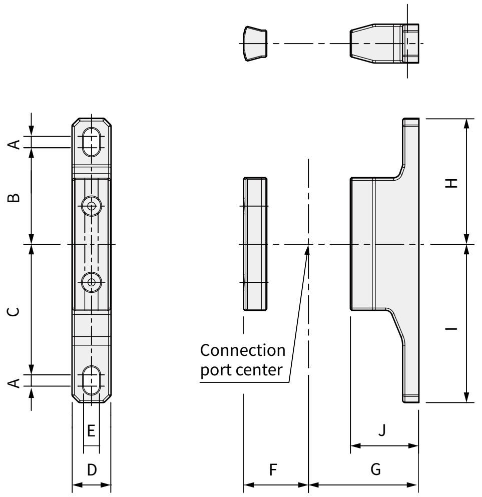
### UFC 400 + UHS 400

Assembly example


U-40D
UHS-400
UFR-400
UL-400

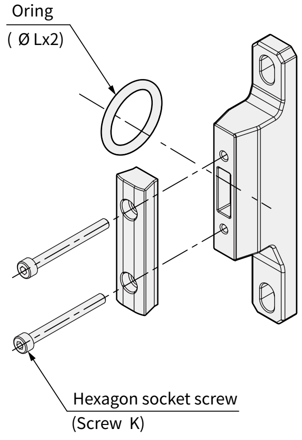
### U 20D.U 30D.U 40D type

Applicable to U200, U300, U400 series


A
B
C
A
E
D
Connection port center
F
G
J
H
I

### U-D Modularize type

Assembly diagram

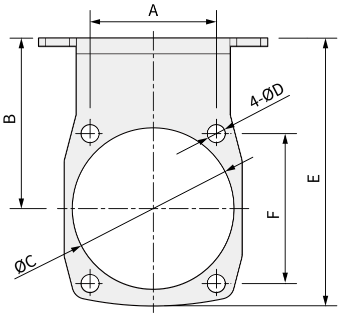

Oring
( Ø Lx2)
Hexagon socket screw
(Screw K)

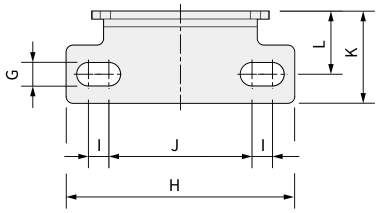
Unit:mm

| No. / Model | Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L |
| U 20D | 2.5 | 32 | 35.5 | 10 | 4.5 | 18 | 30 | 39.4 | 42.9 | 19 | M3x0.5Px33L | 15.8x1.3 |
| U 30D | 5 | 37 | 47 | 14 | 4.5 | 26.5 | 38 | 47 | 57 | 19.5 | M4x0.7Px50L | 20.8x2 |
| U 40D | 5 | 42.5 | 57.5 | 17 | 7 | 28.5 | 48.5 | 55.3 | 69.8 | 30 | M4x0.7Px50L | 20.8x2 |

## UHS-20C.UHS-30C.UHS-40C Type

Applicable to UHS 200, UHS 300, UHS 400





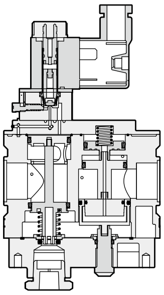
Unit:mm

| No.<br>Model | Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L |
| UHS 20C | 27.2 | 30 | 23.3 | 3 | 50 | 28.4 | 5.4 | 50 | 2.4 | 35.2 | 18 | 13 |
| UHS 30C | 29 | 41 | 32.3 | 5 | 64 | 34.4 | 6.5 | 54 | 6.5 | 29 | 19 | 13 |
| UHS 40C | 37 | 50 | 47.5 | 5.4 | 78.5 | 44 | 7 | 67 | 6 | 42 | 27 | 18.5 |

# UV series Soft Start-up Valve

## Product features

### Internal structure



### Specification

| Item | Model | UV400 |
|---|---|---|
| **Fluid** | | Air |
| **Port size** | 1(P)・2(A) Rc/G/NPT | 1/2 |
| | 3(R) | 1/4 |
| **Pressure range** | kgf/cm²(kPa) | 2~10 (200~1000) |
| **Withstand pressure** | kgf/cm²(kPa) | 15 (1500) *Note |
| **Ambient and fluid temperature** | ℃ | 0~50 |
| **Weight** | kg | 0.80 |

*Note：To prevent frozen, please use dry air while in low temperature.

### Coil specification

| Electrical entry | | | Grommet | DIN Terminal |
|---|---|---|---|---|
| **Rated coil voltage** V | DC | | 24,12 | |
| | AC | 50/60Hz | 110,220 | |
| **Allowable voltage fluctuation** | DC | 12V | Rated voltage±10% | |
| | | 24V | Rated voltage±10% | |
| | AC | 110V | Rated voltage±10% | |
| | | 220V | Rated voltage±10% | |
| **Power consumption** W | DC | | 3 | 3 |
| **Apparent power** VA | AC | 110V | 16 (50Hz),15 (60Hz) | 10 (50Hz/60Hz) |
| | | 220V | 16 (50Hz),15 (60Hz) | 11 (50Hz/60Hz) |
| **Indicator light** | | | LED | |

### Code of Order

UV – 400 – 04 – N – 1 – W – L – P – B – C

UV: Soft Start-up

Model

400 Series

Port size

| Model | Code | Port size 1/2 |
|---|---|---|
| 400 | 04 | ● |

Thread type

| | |
|---|---|
| None | Rc |
| N | NPT |
| G | G |

Voltage

| | |
|---|---|
| 1 | DC12V |
| 2 | DC24V |
| 3 | AC110V |
| 4 | AC220V |

Electrical entry

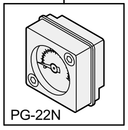
| | |
|---|---|
| W | Grommet |
| K | DIN terminal |

With indicator light

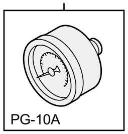
| | |
|---|---|
| L | With indicator light |

(For : K type DIN terminal)

Pressure gauge


PG-22N

■ None : standard
Square pressure gauge
(Thin mountng type)


PG-10A

P : Pressure gauge (Option)

Silencer

| | |
|---|---|
| None | Without silencer |
| B | SLB02 (Embedded) |

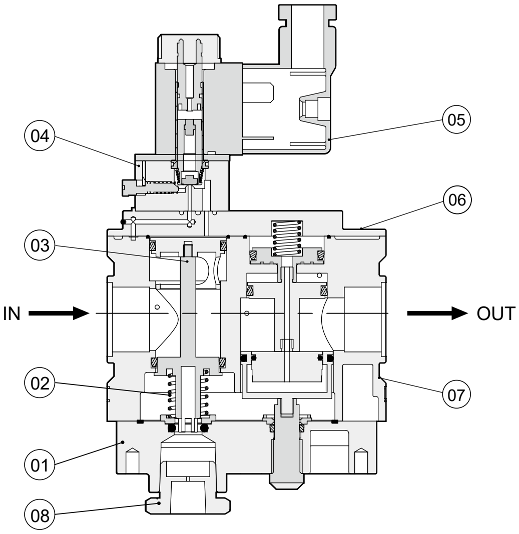
Bracket

None : no bracket
C : bracket

# UV series Soft Start-up Valve

## Product features

### Internal structure

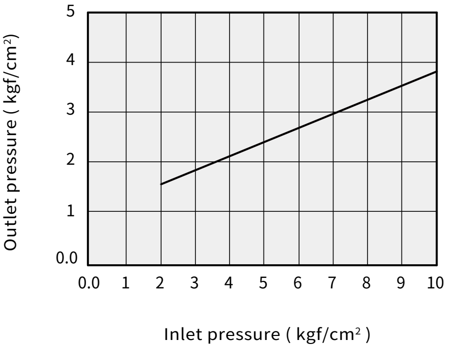


### Components and Material list

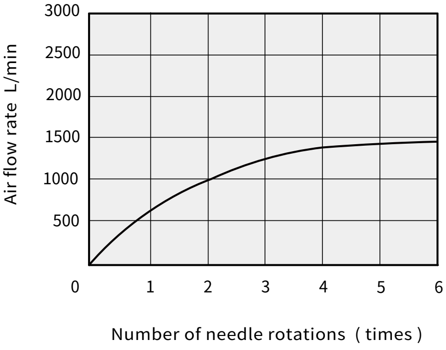
| No. | Item | Material |
|---|---|---|
| **01** | Bottom cover | Aluminum alloy |
| **02** | "R" hole spring | Stainless steel |
| **03** | "P" hole spring | Copper |
| **04** | Holder | Aluminum alloy |
| **05** | Pilot valve assembly | — |
| **06** | Top cover | Aluminum alloy |
| **07** | Body | Aluminum alloy |
| **08** | Slow transfer | Aluminum alloy |

## Flow characteristics

### Pressure for switching from low speed air supply to rapid air supply.



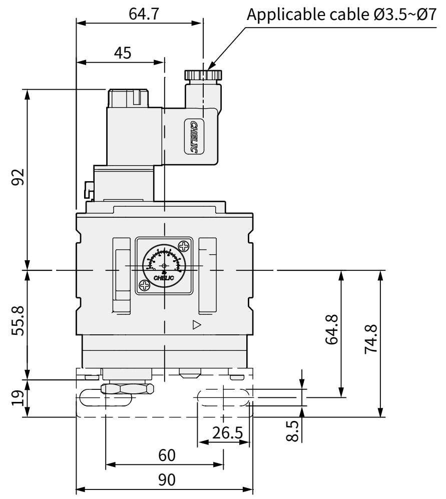
### Needle flow characteristics at low speed air supply.



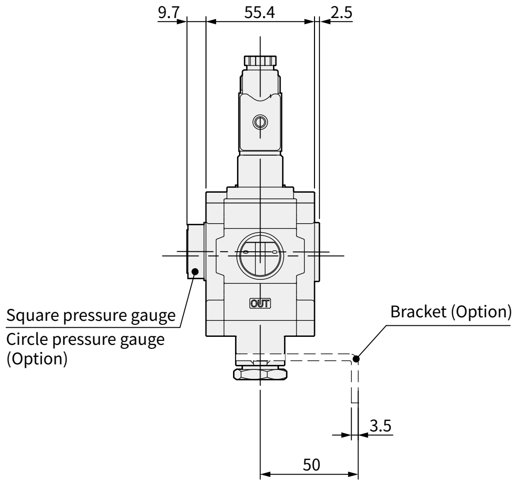
# UV series Soft Start-up Valve

## Dimensions

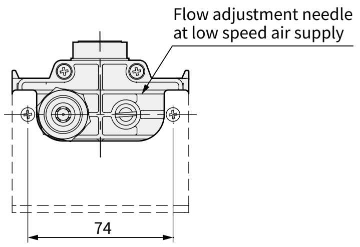
## UV 400



64.7
Applicable cable Ø3.5~Ø7
45
92
55.8
19
64.8
74.8
8.5
26.5
60
90



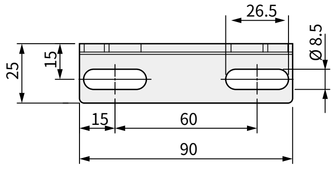
9.7
55.4
2.5
Square pressure gauge
Circle pressure gauge
(Option)
Bracket (Option)
OUT
3.5
50



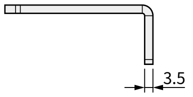
Flow adjustment needle
at low speed air supply
74

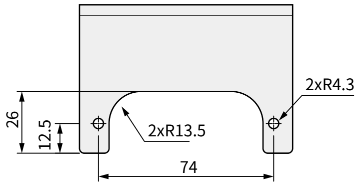
## UV - C Type Bracket

Applicable to UV 400



26.5
Ø8.5
25
15
15
60
90





2xR4.3
26
12.5
2xR13.5
74

# UV series Soft Start-up Valve

## Product precautions

⚠ **CAUTION** For using the product in safe condition, be sure to read this before handling the products.

- Applying the product to the machine, do make sure the safety performance while mechanism design, air pressure, control circuit and working with electrical-pneumatic system.
- To use our product safely, it is important to chose and understand the units, usage, operation, and to process proper maintainance.
- To make sure product perform in safe usage, please do follow the cautions and warnings and make sure the machine equipment with right setting and proper process.

### Caution in design

⚠ **WARNING**

1. Actuator operation
   - When using solenoid valve or actuator in the outlet side of this product, do make sure appropriate actuator operations.
2. Holding pressure
   - Be aware of that the product is not for holding pressure.
3. Not suitable for use as an emergency shut-off valve etc
   - The valves listed in this catalogue are not designed for safety applications such as an emergency shut-off valve.
4. Ventilation
   - The product is applied in specific vessel, please do make sure air exhaust from vessel will not cause dangerous.

### Selection

⚠ **WARNING**

1. Confirm the specifications
   - The products presented in this catalogue are designed only for use in compressed air systems.
2. Operation of closed centre solenoid valves
   - Even if this product is used for closed centre solenoid valves or actuator with a load factor of 50% or more, lurching (quick extension) cannot be prevented.
3. Using a regulator in the outlet side
   - When mounting a regulator in the outlet side (A port side), use a relief regulator. With a standard regulator, the outlet side pressure may not be released when this valve is exhausted.
4. Operation of solenoid valves in the outlet side
   - To operate solenoid valves mounted on this product’ s outlet side (A port side), first confirm that the outlet side pressure (PA) has increased to become equal to the inlet side's pressure (PP).
5. Operation
   - The residual pressure release function of this product is for emergency use only.

## Install

### ⚠ WARNING

1. If air leakage increases or equipment does not operate properly, stop operation

   - After mounting or maintenance, etc., connect the compressed air and power supplies, and perform appropriate function and leakage tests to confirm that the unit is mounted properly.

2. Operation manual

   - Mount and operate the product after reading the manual carefully and understanding its contents. Also, keep the manual in a place where it can be referred to as necessary.

3. Painting and coating

   - Warnings or specifications printed or labelled on a product should not be erased, removed or covered up.

4. Maintenance space

   - Allow sufficient space for maintenance and inspection.

## Adjustment

### ⚠ CAUTION

1.To perform the initial speed adjustment of the outlet side actuator, supply air from this valve' s inlet side and turn ON the pilot valve. Then, rotate the needle counterclockwise from the fully closed position.

## Air supply

### ⚠ WARNING

1. Use clean air

   - Do not use compressed air that contains chemicals, synthetic oils that include organic solvents, salt, corrosive gases, etc.

### ⚠ CAUTION

1. Install an air filter

   - Install an air filter upstream near the valve. Select an air filter with a filtration size of 5µm or smaller.

2. Install an aftercooler, air dryer, or water separator before valve.

   - Compressed air that contains a large amount of drainage or water can cause a malfunction of pneumatic equipment such as valves and other pneumatic units.

## Operating Environment

### ⚠ WARNING

1. Do not use in an atmosphere where corrosive gases, chemicals, sea water, water, or water vapour is present. Do not use in cases where there is direct contact with any of the above.
2. Do not use in an explosive environment.
3. Do not use in a place subject to heavy vibration or impact.
4. The valve should not be exposed to prolonged sunlight. Use a protective cover if necessary.
5. Remove any sources of excessive heat.
6. In locations where there is contact with water, oil, weld spatter, etc., take suitable protective measures.
7. In a dusty environment or when valve switching noise is intrusive, install a silencer in the R port to prevent dust from entering, and to reduce noise.

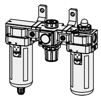
## Maintenance

### ⚠ WARNING

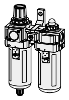
1. Removal of equipment and supply/exhaust of compressed air
   - When components are removed, first confirm that measures are in place to prevent workpieces from dropping, run-away equipment, etc. Then, cut off the supply pressure and electric power, and exhaust all compressed air from the system using the residual pressure release function.
2. Low frequency operation
   - Valves should be switched at least once every 30 days to prevent a malfunction. (Use caution regarding the air supply.)
3. Manual override operation
   - When the manual override is operated, connected equipment will be actuated. Confirm the safety before operating.

# MEMO

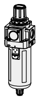
# Air Unit — Airline equipment series



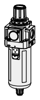
NC series F.R.L. Combinations -------- Modular series (M5 ~ 1) --------- P.1-2.2



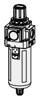
NFC series FR.L. Combinations -------- Modular series (M5 ~ 1) --------- P.1-2.14



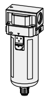
NFR series Filter regulator ----------- Modular series (M5 ~ 1) --------- P.1-2.29



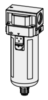
MFR series Mist separator regulator ------ Modular series (1/8" ~ 1) --------- P.1-2.35



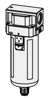
MFRD series Micro mist separator regulator -- Modular series (1/8" ~ 1) --------- P.1-2.41



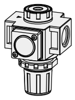
NF series Air filter ---------------- Modular series (M5 ~ 1) --------- P.1-2.47



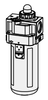
MF series Mist separator ----------- Modular series (1/8,1/4,3/8,1/2,3/4,1) -- P.1-2.53



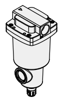
MFD series Micro mist separator -------- Modular series (1/8,1/4,3/8,1/2,3/4,1) -- P.1-2.59



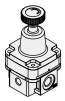
NR series Regulater --------------- Modular series (M5 ~ 1) --------- P.1-2.65



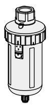
NL series Lubricator --------------- Modular series (M5 ~ 1) --------- P.1-2.77



DM series Large-sized filter ---------- 1/4, 3/8,1/2,3/4,1,1½ ---------- P.1-2.90

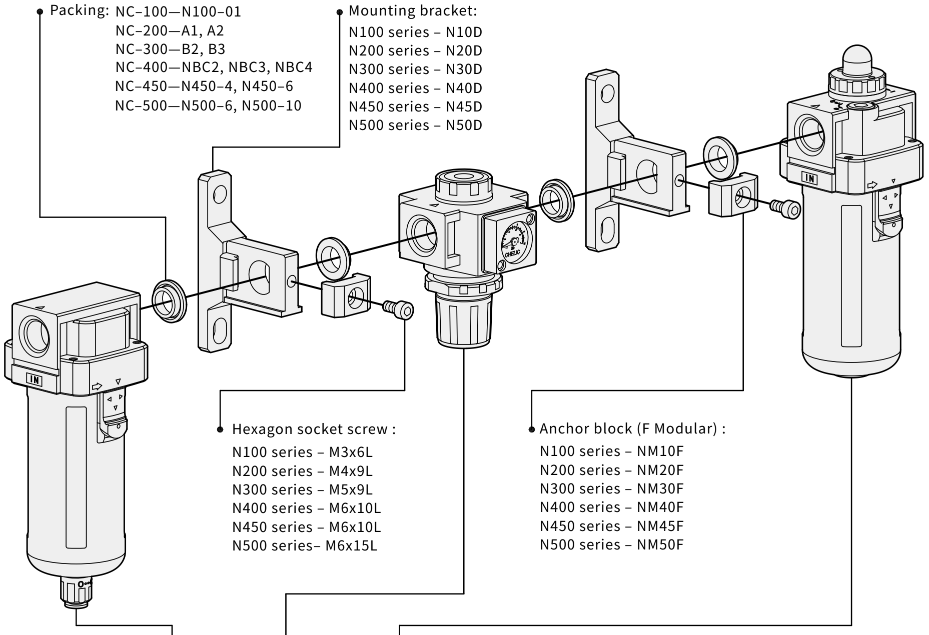


ERX series Precision regulator ----------- 1/4, 3/8,1/2,3/4,1,1½ ---------- P.1-2.96
ERP series Precision direct-operated regulator --- 200 -------------------- P.1-2.102



NDV series Auto drain valve----------- Modular series (1/4,3/8,1/2,3/4) ----- P.1-2.106

NC
NFC
PSN-10 30,41
NFR
MFR
MFRD
NF
MF
MFD
NR
ARX
NPR
NL
N
DM
ERX
ERP
PG/AFB NDV/AD



Packing:
NC–100—N100–01
NC–200—A1, A2
NC–300—B2, B3
NC–400—NBC2, NBC3, NBC4
NC–450—N450–4, N450–6
NC–500—N500–6, N500–10

Mounting bracket:
N100 series – N10D
N200 series – N20D
N300 series – N30D
N400 series – N40D
N450 series – N45D
N500 series – N50D

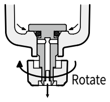
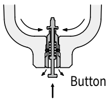
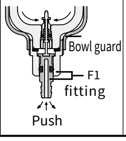
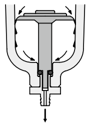
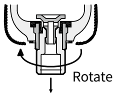
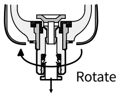
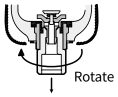
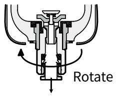
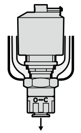
Hexagon socket screw :
N100 series – M3x6L
N200 series – M4x9L
N300 series – M5x9L
N400 series – M6x10L
N450 series – M6x10L
N500 series– M6x15L

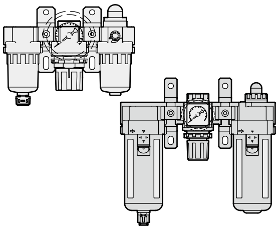
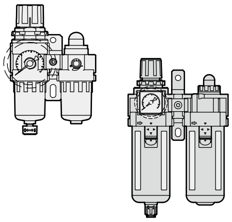
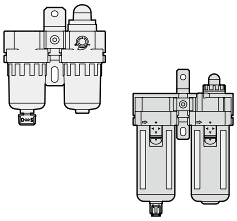
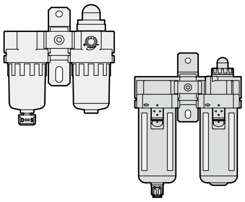
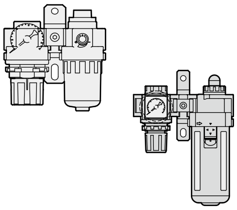
Anchor block (F Modular) :
N100 series – NM10F
N200 series – NM20F
N300 series – NM30F
N400 series – NM40F
N450 series – NM45F
N500 series – NM50F

| Model | Port size | Filter | Regulator | Lubricator | Flow volume NL / min |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | 500 |  | 1000 |  | 1500 |  | 2000 |  | 2500 |  | 3000 |  | 4000 |  |
| NC-100 | M5 | NF-100 | NR-100 | NL-100 | ▨ | ▨ |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Rc 1/8 |  |  |  | ▨ | ▨ |  |  |  |  |  |  |  |  |  |  |  |  |
| NC-200 | Rc 1/8 | NF-200 | NR-200 | NL-200 | ▨ | ▨ | ▨ |  |  |  |  |  |  |  |  |  |  |  |
|  | Rc 1/4 |  |  |  | ▨ | ▨ | ▨ |  |  |  |  |  |  |  |  |  |  |  |
| NC-300 | Rc 1/4 | NF-300 | NR-300 | NL-300 | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |  |  |  |  |  |  |
|  | Rc 3/8 |  |  |  | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |  |  |  |  |  |  |
| NC-400 | Rc 1/4 | NF-400 | NR-400 | NL-400 | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |  |  |
|  | Rc 3/8 |  |  |  | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |  |  |
|  | Rc 1/2 |  |  |  | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |  |  |
| NC-450 | Rc 1/2 | NF-450 | NR-450 | NL-450 | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |
|  | Rc 3/4 |  |  |  | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |  |  |  |
| NC-500 | Rc 3/4 | NF-500 | NR-500 | NL-500 | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |
|  | Rc 1 |  |  |  | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |

Primary pressure: 7 kgf/cm$^2$, Secondary pressure: 5 kgf/cm$^2$.

## Operating the drain cock

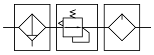
| N100 series | N200 series |  |  | N300, N400, N450, N500 series |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| – H | – H | – BG-H-F1 | – A | – H | – H-F1 | – S | – S-F2 | – A |
| Manual drain cock (standard) | Manual drain cock (standard) | Manual drain cock (with bowl guard, fitting) | Auto drain (option) | Manual drain cock (standard) | Manual drain cock (with fitting) (option) | Semi-auto drain (option) | Semi-auto drain (with fitting) (option) | Auto drain (option) |
| Drain while rotating fitting (left), close when turn Right | Drain while pushing the button and close Automatically when release | With addition protective bowl guard device and fitting | Employs pressure differential for automatic drain, drain automatically when the air depletion and make up produce differential.<br>(Differential pressure should be above 1 Kg) | Drain while rotating fitting (left), close when turn Right | Drain while rotating fitting (left), close when turn Right | The valve open to drain automatically when pressure is lower than 0.5 kgf/cm$^2$; the valve close Completely when pressure is more than 1 kg/cm$^2$ (allow manual drain as well) |  | Use float witch valve, drain automatically when water Level over the float, close automatically after completely drain. |
|  Turn left to drain |  Push |  Push |  |  Turn left to drain |  Turn left to drain |  Turn left to drain |  Turn left to drain |  |

| Combination type | Model | Port size | Main components | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Filter | Regulator | Filter regulator | Lubricator | Bracket (option) | |
| F+R+L ( Filter + Regulator + Lubricator )  | NC-100 | M5<br>1/8 | NF-100 | NR-100 | | NL-100 | N-10D | |
| | NC-200 | 1/8<br>1/4 | NF-200 | NR-200 | | NL-200 | N-20D | |
| | NC-300 | 1/4<br>3/8 | NF-300 | NR-300 | | NL-300 | N-30D | |
| | NC-400 | 1/4<br>3/8<br>1/2 | NF-400 | NR-400 | | NL-400 | N-40D | |
| | NC-450 | 1/2<br>3/4 | NF-450 | NR-450 | | NL-450 | N-45D | |
| | NC-500 | 3/4<br>1 | NF-500 | NR-500 | | NL-500 | N-50D | |
| FR+L(Filter Regulator + Lubricator)  | NFC-100 | M5<br>1/8 | | | NFR-100 | NL-100 | N-10D | |
| | NFC-200 | 1/8<br>1/4 | | | NFR-200 | NL-200 | N-20D | |
| | NFC-300 | 1/4<br>3/8 | | | NFR-300 | NL-300 | N-30D | |
| | NFC-400 | 1/4<br>3/8<br>1/2 | | | NFR-400 | NL-400 | N-40D | |
| | NFC-450 | 1/2<br>3/4 | | | NFR-450 | NL-450 | N-45D | |
| | NFC-500 | 3/4<br>1 | | | NFR-500 | NL-500 | N-50D | |
| F+L ( Filter + Lubricator )  | NFL-100 | M5<br>1/8 | NF-100 | | | NL-100 | N-10D | |
| | NFL-200 | 1/8<br>1/4 | NF-200 | | | NL-200 | N-20D | |
| | NFL-300 | 1/4<br>3/8 | NF-300 | | | NL-300 | N-30D | |
| | NFL-400 | 1/4<br>3/8<br>1/2 | NF-400 | | | NL-400 | N-40D | |
| | NFL-450 | 1/2<br>3/4 | NF-450 | | | NL-450 | N-45D | |
| | NFL-500 | 3/4<br>1 | NF-500 | | | NL-500 | N-50D | |
| F+DT+L ( Filter + DT Bracket + Lubricator )  | NFTL-100 | M5<br>1/8 | NF-100 | | | NL-100 | | N-10DT |
| | NFTL-200 | 1/8<br>1/4 | NF-200 | | | NL-200 | | N-20DT |
| | NFTL-300 | 1/4<br>3/8 | NF-300 | | | NL-300 | | N-30DT |
| | NFTL-400 | 1/4<br>3/8<br>1/2 | NF-400 | | | NL-400 | | N-40DT |
| | NFTL-450 | 1/2<br>3/4 | NF-450 | | | NL-450 | | N-45DT |
| | NFTL-500 | 3/4<br>1 | NF-500 | | | NL-500 | | N-50DT |
| R+L ( Regulator + Lubricator )  | NRL-100 | M5<br>1/8 | | NR-100 | | NL-100 | N-10D | |
| | NRL-200 | 1/8<br>1/4 | | NR-200 | | NL-200 | N-20D | |
| | NRL-300 | 1/4<br>3/8 | | NR-300 | | NL-300 | N-30D | |
| | NRL-400 | 1/4<br>3/8<br>1/2 | | NR-400 | | NL-400 | N-40D | |
| | NRL-450 | 1/2<br>3/4 | | NR-450 | | NL-450 | N-45D | |
| | NRL-500 | 3/4<br>1 | | NR-500 | | NL-500 | N-50D | |

# NC series F.R.L. Combinations

## Product features

Symbol:



## Specification

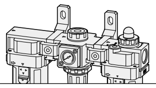
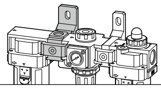
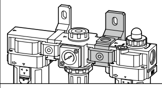
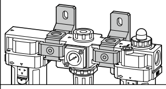
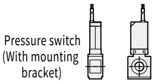
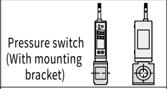
| Item / Model | | NC-100 | NC-200 | NC-300 | NC-400 | NC-450 | NC-500 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size | Rc | M5, 1/8 | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | | 5 µm | | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | | |
| Bowl capacity | cc | 5 | 15 | 30 | 60 | 100 | 100 |
| Lubricator capacity | cc | 9 | 25 | 50 | 90 | 160 | 160 |
| Recommended lubrication | | First class Recommended lubricants (IOS-VG32 lubricant only and equivalent). | | | | | |
| Weight | kg | 0.19 | 0.46 | 0.98 | 1.42 | 2.20 | 3.54 |
| Material | Main body | Aluminum die cast | | | | | |
| | Bowl | Polycarbonate/Aluminum bowl | | | | | |
| Equipment | Filter | NF-100 | NF-200 | NF-300 | NF-400 | NF-450 | NF-500 |
| | Regulator | NR-100 | NR-200 | NR-300 | NR-400 | NR-450 | NR-500 |
| | Lubricator | NL-100 | NL-200 | NL-300 | NL-400 | NL-450 | NL-500 |
| Protection device | | | | | | | |

## Pressure gauge & Pressure switch ⑥

| | Pressure gauge | | | Pressure switch (option and additional) | |
|---|---|---|---|---|---|
| Order Code | PG5 | PG10 | PG22 | NC- ☐ - 41 - 02 | NC- ☐ -41 - 04 |
| Model | PG-05 | PG-10 | PG-22N | PSN-41-02 | PSN-41-04 |
| NC-100 | ● (Standard) | — | — | — | — |
| NC-200 | — | ● (option) | ● (Standard) | ● | ● |
| NC-300 | — | ● (option) | ● (Standard) | ● | ● |
| NC-400 | — | ● (option) | ● (Standard) | ● | ● |
| NC-450 | — | ● (option) | ● (Standard) | ● | ● |
| NC-500 | — | ● (option) | ● (Standard) | ● | ● |

⑥

## Combination structure ⑦

| Figure |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| Order Code | None(Standard) | -TA(option) | -TB(option) | -TM(option) | PN-100D(option) | PN-300D(option) |
| NC-100 | ● | ● | ● | ● | — | — |
| NC-200 | ● | ● | ● | ● | ● | — |
| NC-300 | ● | ● | ● | ● | ● | ● |
| NC-400 | ● | ● | ● | ● | ● | ● |
| NC-450 | ● | ● | ● | ● | ● | ● |
| NC-500 | ● | ● | ● | ● | ● | ● |

⑦

Note: 1. (Standard) : Standard accessory ; (option) : Accessory option.
2. Pressure switch PN100, PN300 and PSN-41 specification, please refer to detail specification in P.1-2.23 ~ P.1-2.28

# NC series F.R.L. Combinations

## Code of order

**CHELIC**

### Code of order

**NC - 300** — **03** — **G** — **BG - A** — **F1** — **PG 10** — **TA**

Model ① | Port size ② | Thread type ③ | Bowl type ④ | Fitting ⑤ | Pressure gauge ⑥ | Combination structure ⑦

| Model | Port size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Code | M5 | 01 | 02 | 03 | 04 | 06 | 10 |
| | Port size | M5 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1” |
| NC - 100 | Port connection | ● | ● | | | | | |
| NC - 200 | | | ● | ● | | | | |
| NC - 300 | | | | ● | ● | | | |
| NC - 400 | | | | ● | ● | ● | | |
| NC - 450 | | | | | | ● | ● | |
| NC - 500 | | | | | | | ● | ● |

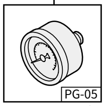
| Thread type | | | |
|---|---|---|---|
| none | | G | N |
| M5 | RC | G | NPT |
| ● | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | |
| | ● | ● | |

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC (Short bowl) | — |
| PC (Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

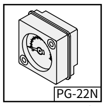
※Please see the below table in detail.

| Fitting | |
|---|---|
| none | -F1 |
| Manual drain cock | — |
| | option |
| | option |
| | option |
| | option |
| | option |

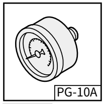
※Please see the below table in detail.



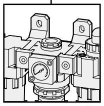
■ None : Standard
Circle pressure gauge
※For N100 series



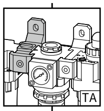
■ None : Standard
(Square pressure gauge)
(Thin mountng type)

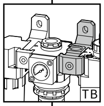


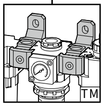
PG-10A :
Pressure gauge (option)
※N200,N300,N400,N450, N500 series (option)



■ None : Standard







### Bowl and Drain cock type ◄ ④

### With fitting - F1 ◄ ⑤

### NC-100~200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| NC-100 | ● (standard) | — | — | — | — | — | — |
| NC-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### NC-100~200 type - With fitting - F1 - ⑤

| NC-100/200 | — | ● (standard) | ● (option) | ● (standard) | ● (standard) | ● (standard) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

### NC-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| NC-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| NC-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NC-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NC-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### NC-300~500 type - With fitting - F1 - ⑤

| NC-300~500<br>Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

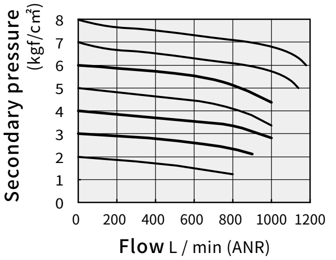
Note : 1. NC200 series are outside fitting, others are inside fitting; please refer to P.1-1.06 auto drain construction.
2. NC200/300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

# NC series F.R.L. Combinations

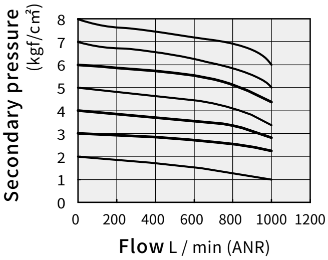
## Characteristics graph

### Flow rate characteristic graph

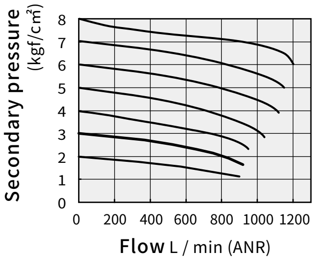
**NC-100**



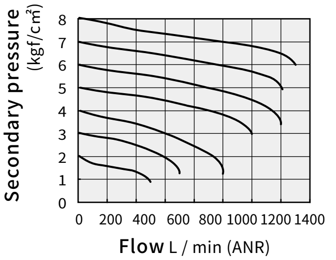
**NC-200**



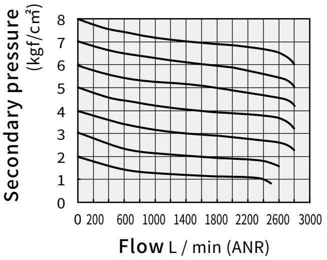
**NC-300**



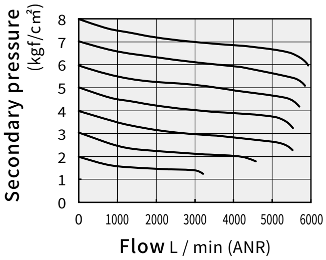
**NC-400**



**NC-450**



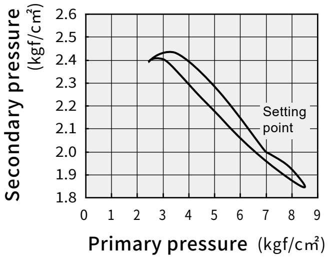
**NC-500**



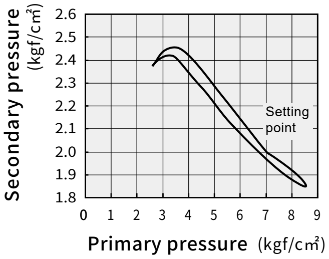
Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

### Pressure characteristics graph

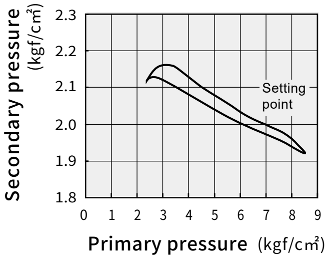
**NC-100**



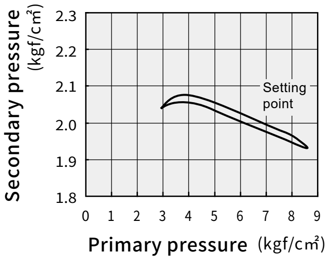
**NC-200**



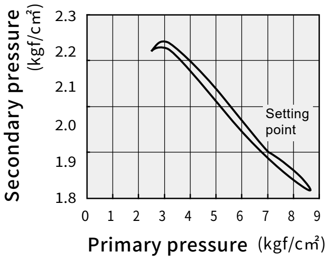
**NC-300**



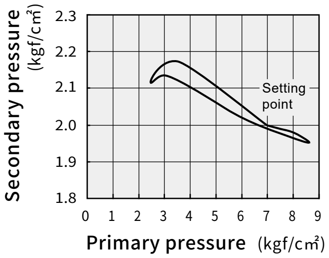
**NC-400**



**NC-450**



**NC-500**

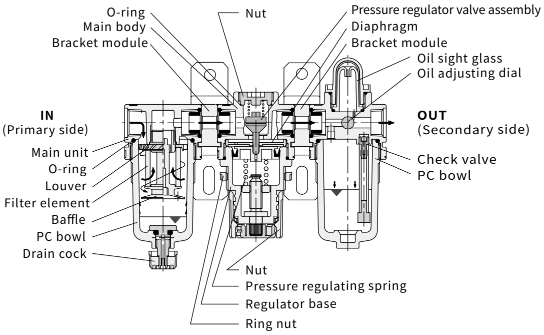


# NC series F.R.L. Combinations

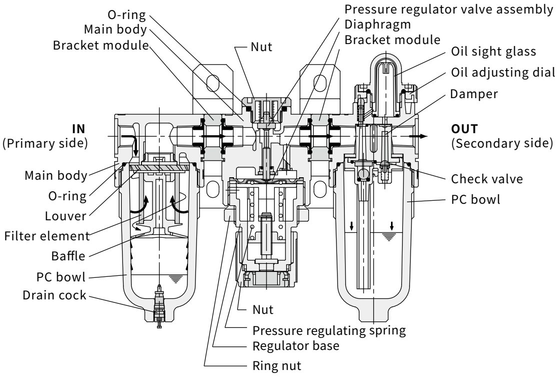
## Product features

## Internal structure

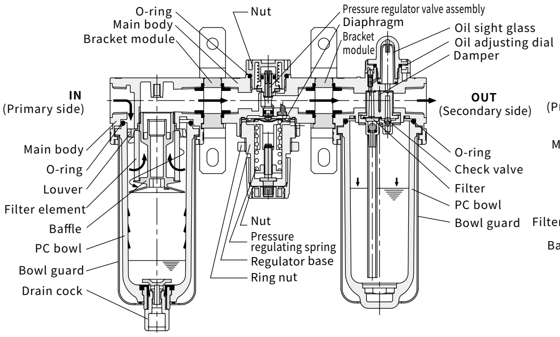
### NC-100


O-ring
Main body
Bracket module
Nut
Pressure regulator valve assembly
Diaphragm
Bracket module
Oil sight glass
Oil adjusting dial
IN
(Primary side)
OUT
(Secondary side)
Main unit
O-ring
Louver
Filter element
Baffle
PC bowl
Drain cock
Check valve
PC bowl
Nut
Pressure regulating spring
Regulator base
Ring nut

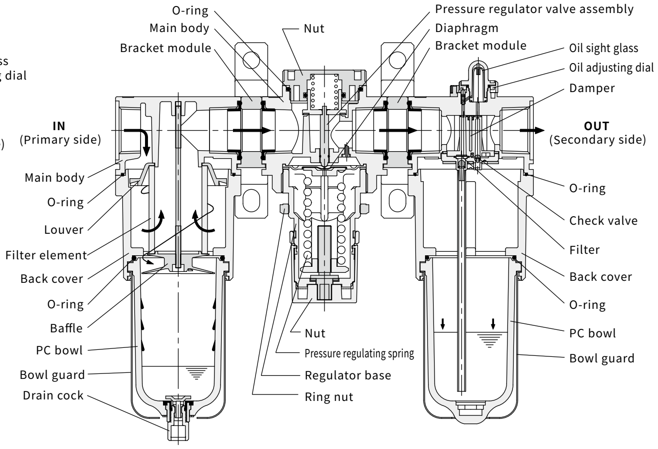
### NC-200


O-ring
Main body
Bracket module
Nut
Pressure regulator valve assembly
Diaphragm
Bracket module
Oil sight glass
Oil adjusting dial
Damper
IN
(Primary side)
OUT
(Secondary side)
Main body
O-ring
Louver
Filter element
Baffle
PC bowl
Drain cock
Check valve
PC bowl
Nut
Pressure regulating spring
Regulator base
Ring nut

### NC-300, 400, 450

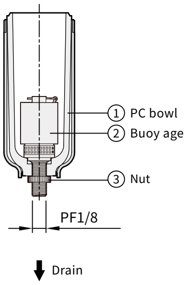

O-ring
Main body
Bracket module
Nut
Pressure regulator valve assembly
Diaphragm
Bracket module
Oil sight glass
Oil adjusting dial
Damper
IN
(Primary side)
OUT
(Secondary side)
Main body
O-ring
Louver
Filter element
Baffle
PC bowl
Bowl guard
Drain cock
O-ring
Check valve
Filter
PC bowl
Bowl guard
Nut
Pressure
regulating spring
Regulator base
Ring nut

### NC-500

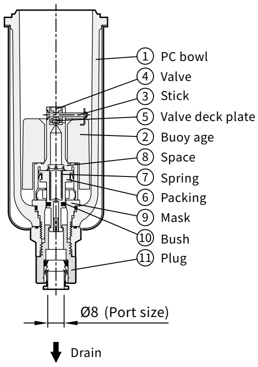

O-ring
Main body
Bracket module
Nut
Pressure regulator valve assembly
Diaphragm
Bracket module
Oil sight glass
Oil adjusting dial
Damper
IN
(Primary side)
OUT
(Secondary side)
Main body
O-ring
Louver
Filter element
Back cover
O-ring
Baffle
PC bowl
Bowl guard
Drain cock
O-ring
Check valve
Filter
Back cover
O-ring
PC bowl
Bowl guard
Nut
Pressure regulating spring
Regulator base
Ring nut

## Auto drain structure theory

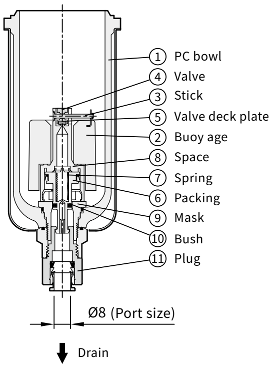
- Suitable for: N200
  Model: AD-25


① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

- Suitable for: N300
  Model: AD-35


① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

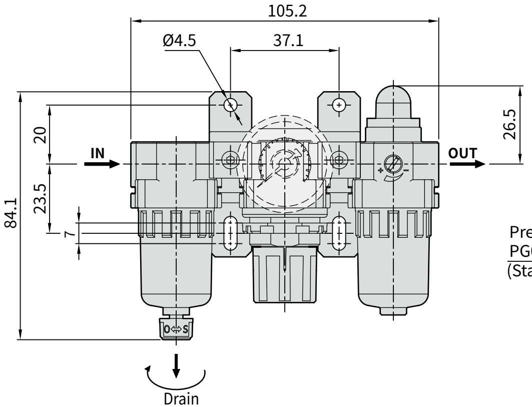
- Suitable for: N400, N450, N500
  Model: AD-55

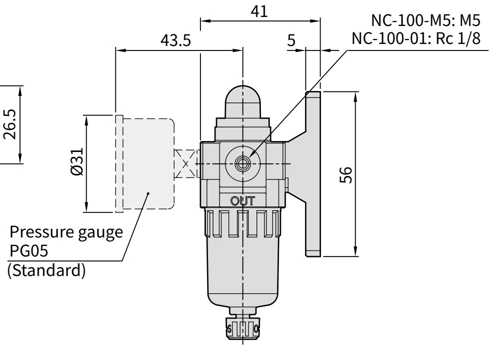

① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

# NC series F.R.L. Combinations

## Dimensions

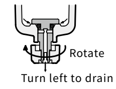
### NC - 100 - ☐ Standard


105.2
Ø4.5
37.1
20
IN
OUT
26.5
84.1
23.5
7
Drain

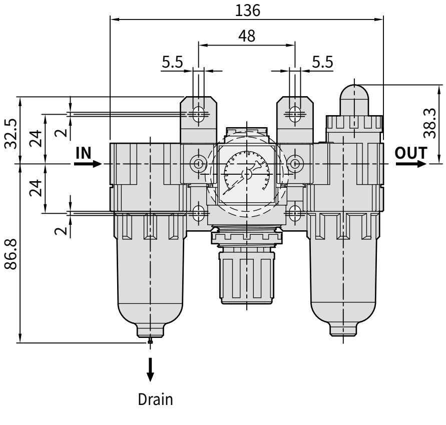

41
43.5
5
NC-100-M5: M5
NC-100-01: Rc 1/8
Ø31
56
OUT
Pressure gauge
PG05
(Standard)

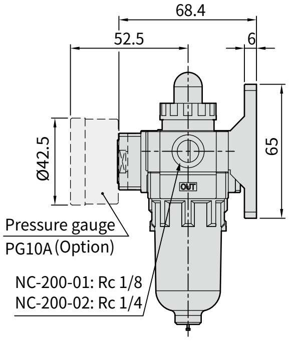
**- H**

Manual drain cock


Rotate
Turn left to drain

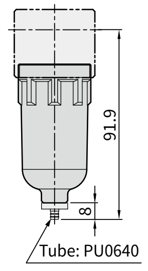
### NC - 200 - ☐ - H


136
48
5.5
5.5
32.5
24
2
IN
OUT
38.3
24
2
86.8
Drain

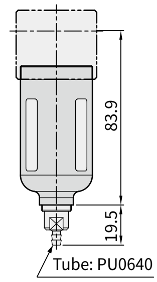

68.4
52.5
6
Ø42.5
65
OUT
Pressure gauge
PG10A (Option)
NC-200-01: Rc 1/8
NC-200-02: Rc 1/4

## Manual drain cock-Standard

● - A


91.9
8
Tube: PU0640

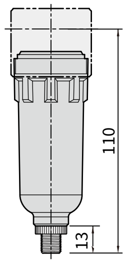
● - BG-H - F1


83.9
19.5
Tube: PU0640

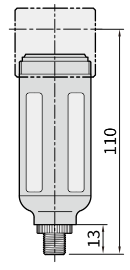
— BG PC bowl with bowl guard (Option)

## Auto drain-Long cup

● - LG - A

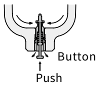
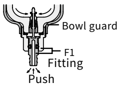
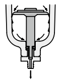
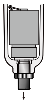
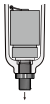


● - LBG - A



— LG Long cup (Option)

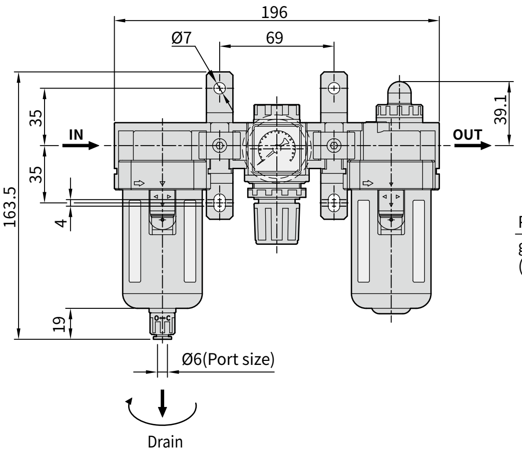
— LBG PC bowl with bowl guard (Option)

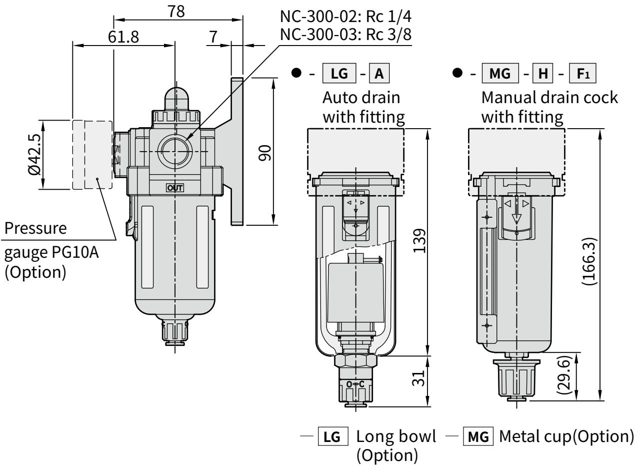
| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

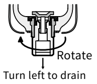
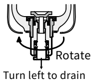
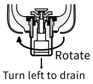
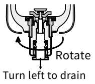
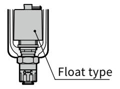
# NC series F.R.L. Combinations

## Dimensions

### NC - 300 - ☐ - H Standard


196
Ø7
69
35
35
163.5
4
19
39.1
IN
OUT
Ø6(Port size)
Drain


78
61.8
7
NC-300-02: Rc 1/4
NC-300-03: Rc 3/8
Ø42.5
90
OUT
Pressure gauge PG10A (Option)
● - LG - A
Auto drain with fitting
● - MG - H - F1
Manual drain cock with fitting
139
31
(166.3)
(29.6)
LG Long bowl (Option)
MG Metal cup(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note : Above auto drainer is AD-35。

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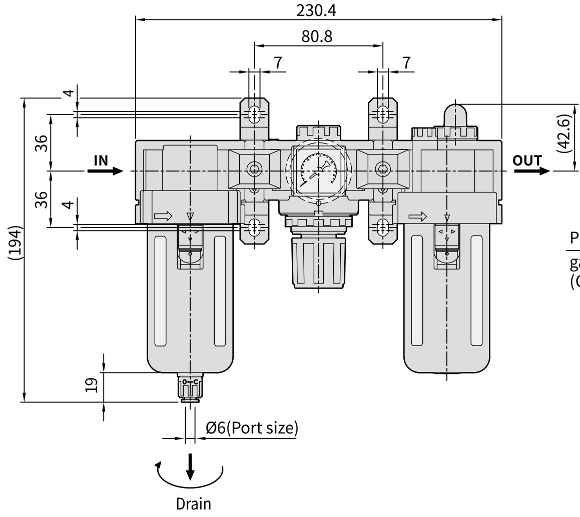
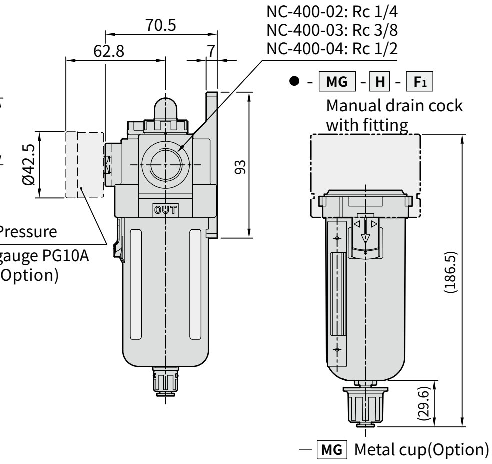
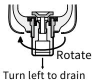
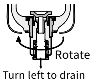
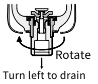
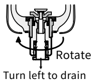
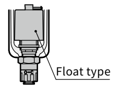
### NC - 400 - ☐ - H Standard


230.4
80.8
7
7
4
36
36
4
(194)
19
(42.6)
IN
OUT
Ø6(Port size)
Drain

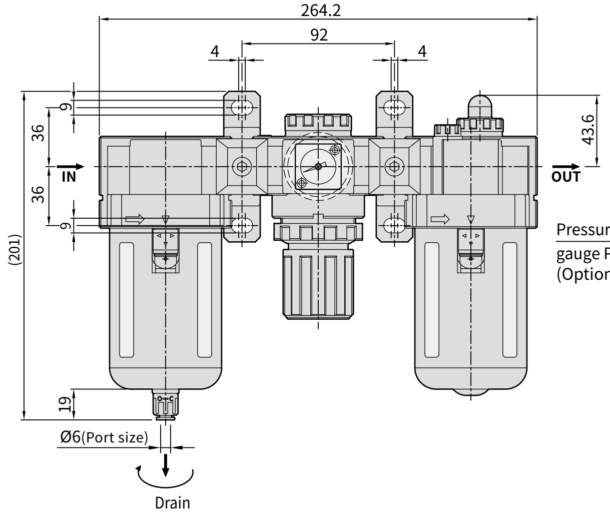

70.5
62.8
7
NC-400-02: Rc 1/4
NC-400-03: Rc 3/8
NC-400-04: Rc 1/2
Ø42.5
93
OUT
Pressure gauge PG10A (Option)
● - MG - H - F1
Manual drain cock with fitting
(186.5)
(29.6)
MG Metal cup(Option)

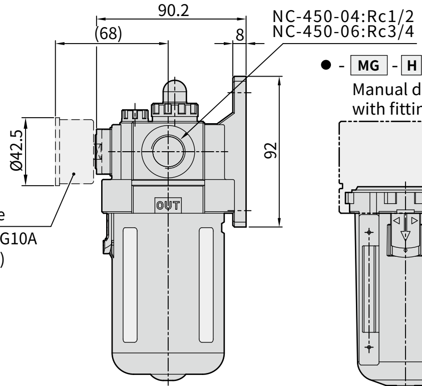
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

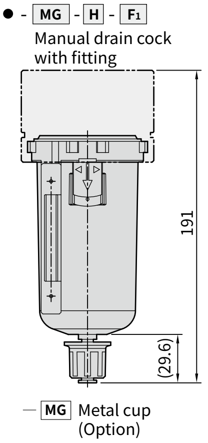
# NC series F.R.L. Combinations

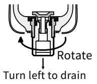
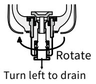
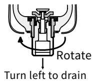
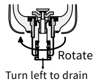
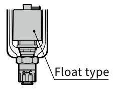
## Dimensions

### NC - 450 - ☐ - H Standard

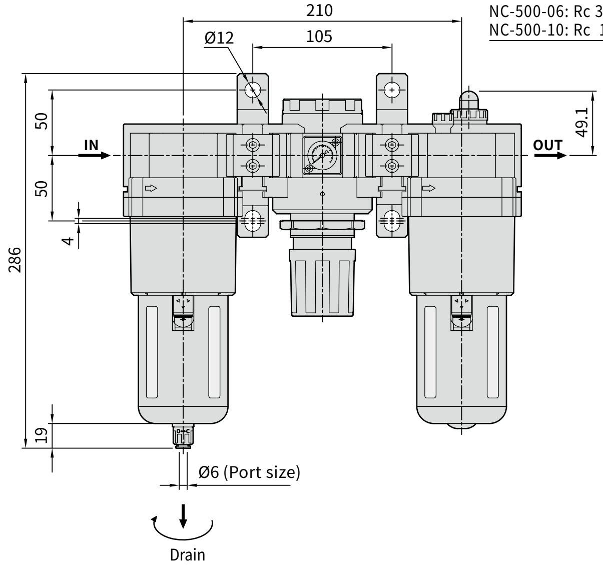

264.2
92
4
4
43.6
9
36
IN
36
9
OUT
(201)
19
Ø6(Port size)
Drain

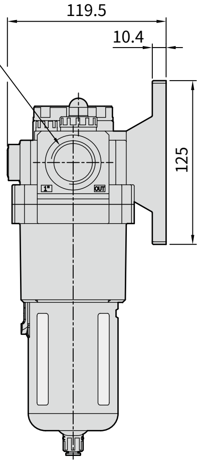

90.2
(68)
8
NC-450-04:Rc1/2
NC-450-06:Rc3/4
Ø42.5
92
OUT
Pressure
gauge PG10A
(Option)

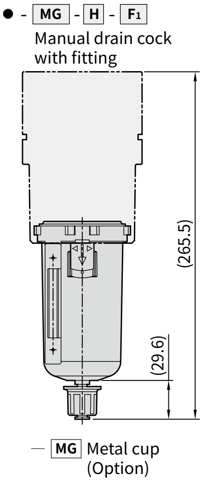

● - MG - H - F1
Manual drain cock
with fitting
191
(29.6)
MG Metal cup
(Option)

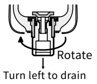
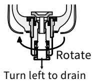
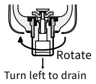
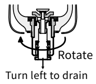
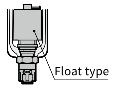
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain<br>(Standard) | Manual drain cock<br>with fitting(Option) | Semi-Auto drain<br>(Option) | Semi-Auto drain<br>with fitting(Option) | Auto drain<br>(Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

### NC - 500 - ☐ - H Standard


210
Ø12
105
49.1
50
IN
OUT
50
4
286
19
Ø6 (Port size)
Drain


NC-500-06: Rc 3/4
NC-500-10: Rc 1
119.5
10.4
125


● - MG - H - F1
Manual drain cock
with fitting
(265.5)
(29.6)
MG Metal cup
(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain<br>(Standard) | Manual drain cock<br>with fitting(Option) | Semi-Auto drain<br>(Option) | Semi-Auto drain<br>with fitting(Option) | Auto drain<br>(Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

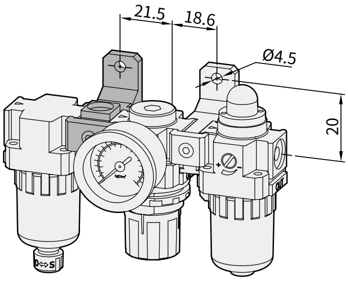
Note : Above auto drainer is AD-55。

# NC series F.R.L. Combinations

## Mounting bracket

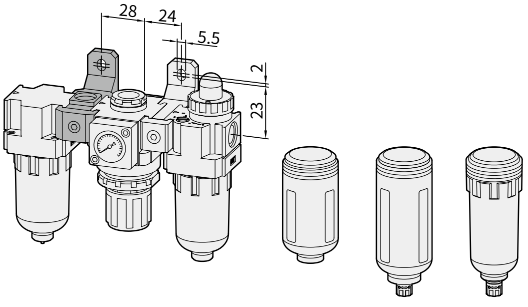
### NC - 100 - TA - H

Suitable for air gun operating


21.5
18.6
Ø4.5
20

### NC - 200 - TA - H

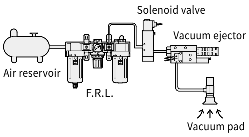
Suitable for air gun operating

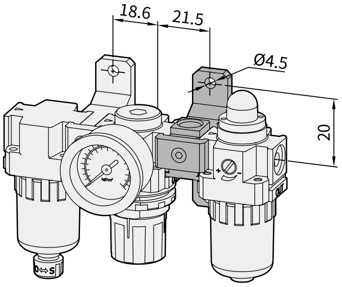


— BG Short bowl (with guard)
— LBG Long bowl (with guard)
— LMG (Metal bowl)

### NC - 100 - TB - H

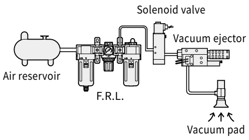
Suitable for vacuum operating space

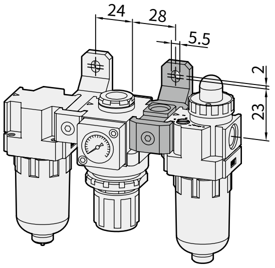

Solenoid valve
Vacuum ejector
Air reservoir
F.R.L.
Vacuum pad

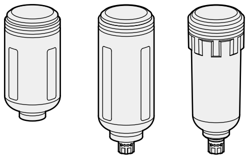

18.6
21.5
Ø4.5
20

### NC - 200 - TB - H

Suitable for vacuum operating space


Solenoid valve
Vacuum ejector
Air reservoir
F.R.L.
Vacuum pad

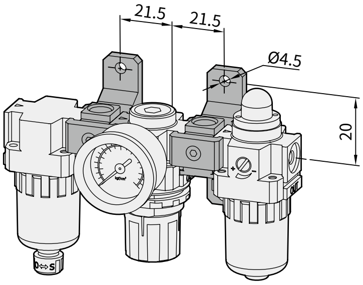




— BG Short bowl (with guard)
— LBG Long bowl (with guard)
— LMG (Metal bowl)

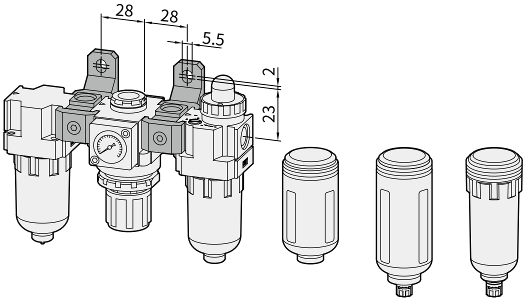
### NC - 100 - TM - H

Suitable for air gun + vacuum operating


21.5
21.5
Ø4.5
20

### NC - 200 - TM - H

Suitable for air gun + vacuum operating



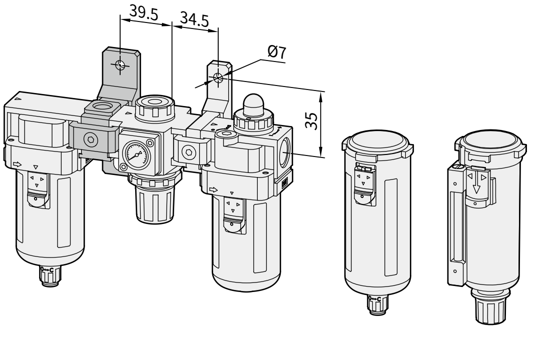
— BG Short bowl (with guard)
— LBG Long bowl (with guard)
— LMG (Metal bowl)

# NC series F.R.L. Combinations

## Mounting bracket

### NC - 300 - TA - H

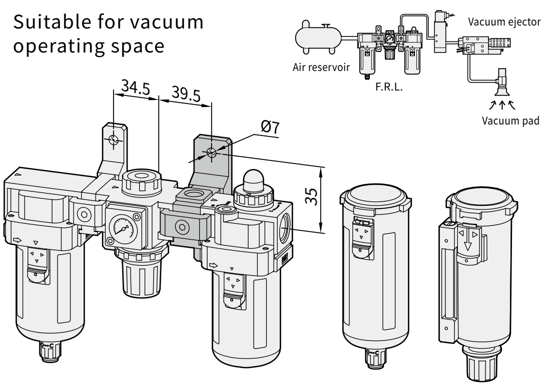
Suitable for air gun operating


39.5
34.5
Ø7
35

— LG (With long bowl) — MG (With Metal bowl)

### NC - 300 - TB - H

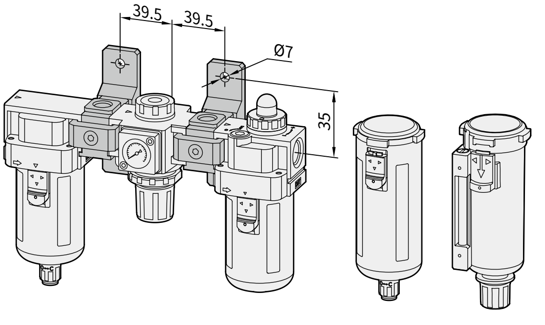
Suitable for vacuum operating space


Solenoid valve
Vacuum ejector
Air reservoir
F.R.L.
Vacuum pad
34.5
39.5
Ø7
35

— LG (With long bowl) — MG (With Metal bowl)

### NC - 300 - TM - H

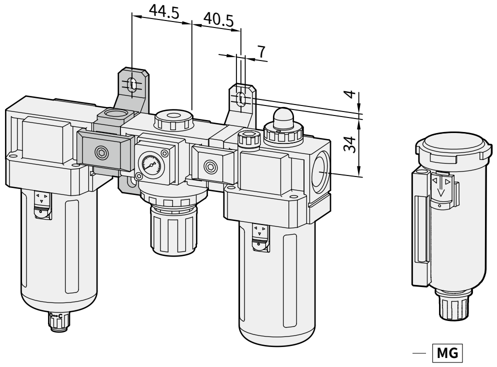
Suitable for air gun + vacuum operating


39.5
39.5
Ø7
35

— LG (With long bowl) — MG (With Metal bowl)

### NC - 400 - TA - H

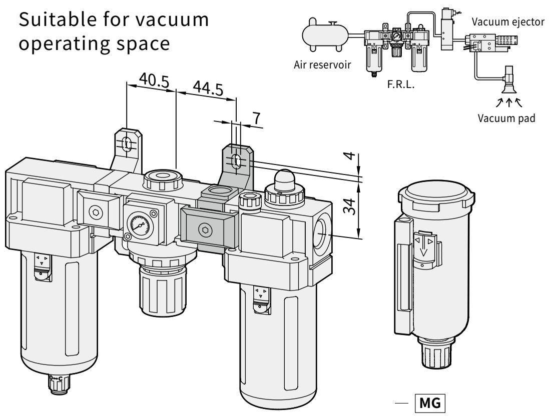
Suitable for air gun operating


44.5
40.5
7
4
34

— MG (With Metal bowl)

### NC - 400 - TB - H

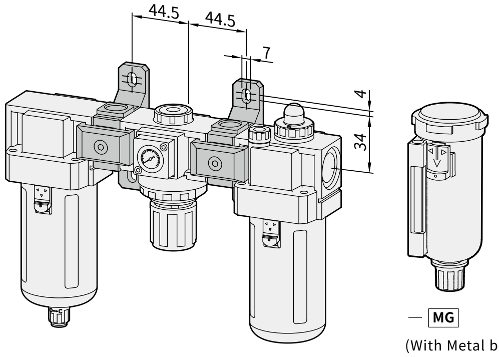
Suitable for vacuum operating space


Solenoid valve
Vacuum ejector
Air reservoir
F.R.L.
Vacuum pad
40.5
44.5
7
4
34

— MG (With Metal bowl)

### NC - 400 - TM - H

Suitable for air gun + vacuum operating


44.5
44.5
7
4
34

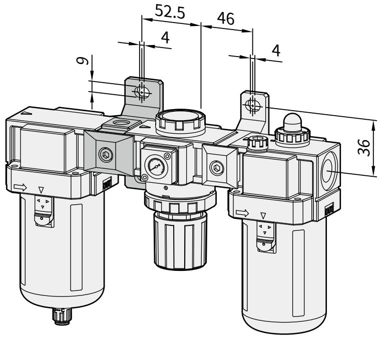
— MG (With Metal bowl)

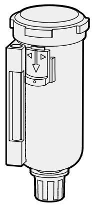
# NC series F.R.L. Combinations

## Mounting bracket

### ▶ NC - 450 - TA - H

Suitable for air gun operating

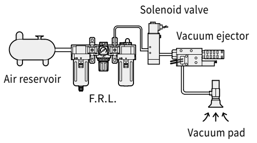

52.5
46
4
4
9
36

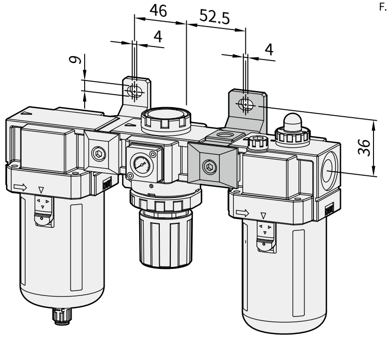


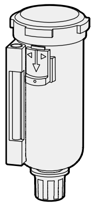
— MG
(With Metal bowl)

### ▶ NC - 450 - TB - H

Suitable for vacuum operating space


Solenoid valve
Vacuum ejector
Air reservoir
F.R.L.
Vacuum pad

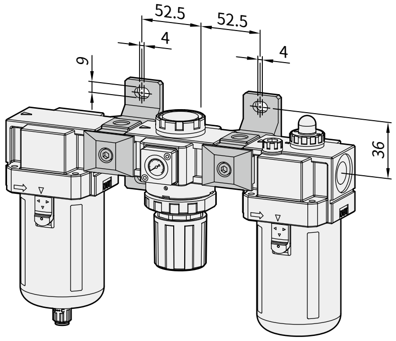

46
52.5
4
4
9
36

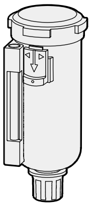


— MG
(With Metal bowl)

### ▶ NC - 450 - TM - H

Suitable for air gun + vacuum operating

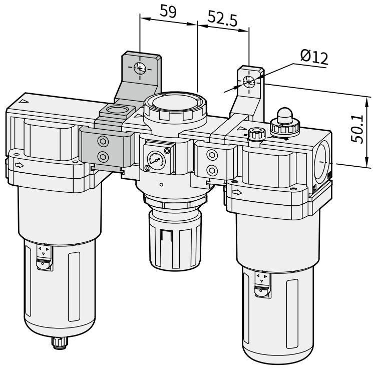

52.5
52.5
4
4
9
36

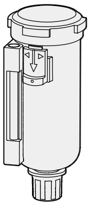


— MG
(With Metal bowl)

### ▶ NC - 500 - TA - H

Suitable for air gun operating

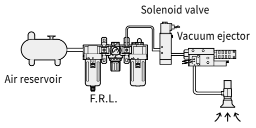

59
52.5
Ø12
50.1

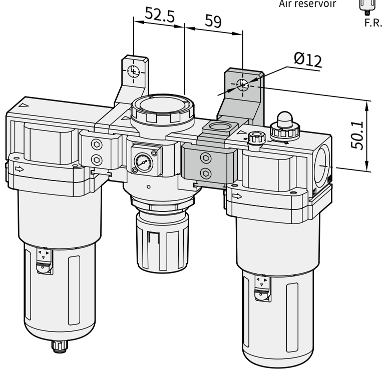


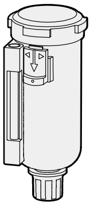
— MG
(With Metal bowl)

### ▶ NC - 500 - TB - H

Suitable for vacuum operating space


Solenoid valve
Vacuum ejector
Air reservoir
F.R.L.
Vacuum pad

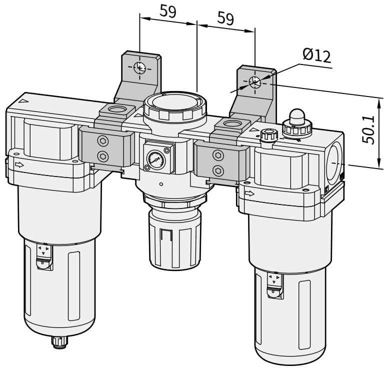

52.5
59
Ø12
50.1

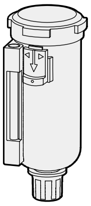


— MG
(With Metal bowl)

### ▶ NC - 500 - TM - H

Suitable for air gun + vacuum operating

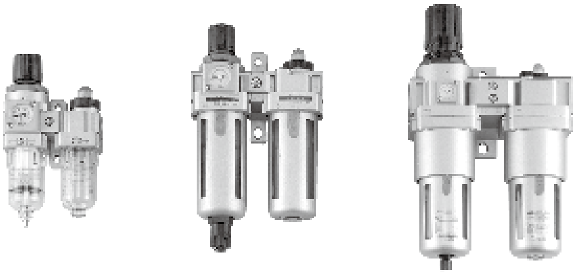

59
59
Ø12
50.1



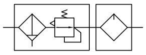
— MG
(With Metal bowl)

# NFC series FR.L. Combinations

## Product features



Symbol:



## Specification

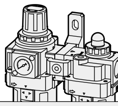
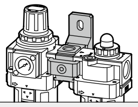
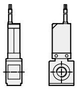
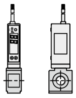
| Item \ Model | | NFC-100 | NFC-200 | NFC-300 | NFC-400 | NFC-450 | NFC-500 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size | M5/Rc/G/NPT | M5, 1/8 | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | μm | 5 | | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | | |
| Bowl capacity | cc | 5 | 15 | 30 | 60 | 100 | 100 |
| Lubricator capacity | cc | 9 | 25 | 50 | 90 | 160 | 160 |
| Recommended lubrication | | First class Recommended lubricants (IOS-VG32) lubricant or equivalent | | | | | |
| Weight | kg | 0.16 | 0.37 | 0.79 | 1.17 | 2.20 | 2.54 |
| Material | Main body | Aluminum die cast | | | | | |
| | Bowl | Polycarbonate/ Aluminu bowl | | | | | |
| Equipment | Filter regulator | NFR-100 | NFR-200 | NFR-300 | NFR-400 | NFR-450 | NFR-500 |
| | Lubricator | NL-100 | NL-200 | NL-300 | NL-400 | NL-450 | NL-500 |
| Shell protection parts | | | | | | | |

## Pressure gauge & Pressure switch ⑥

| | Pressure gauge | | | Pressure switch (option and additional) | |
|---|---|---|---|---|---|
| Order Code | PG5 | PG10 | PG22 | NFC-☐-41- 02 | NFC-☐- 41- 04 |
| Model No. | PG-05 | PG-10 | PG-22N | PSN-41-02 | PSN-41-04 |
| NFC-100 | ● (Standard) | — | — | — | — |
| NFC-200 | — | ● (Option) | ● (Standard) | ● | ● |
| NFC-300 | — | ● (Option) | ● (Standard) | ● | ● |
| NFC-400 | — | ● (Option) | ● (Standard) | ● | ● |
| NFC-450 | — | ● (Option) | ● (Standard) | ● | ● |
| NFC-500 | — | ● (Option) | ● (Standard) | ● | ● |

⑥

## Combination structure ⑦

| Model |  |  |  With pressure switch (include bracket) |  With pressure switch (include bracket) |
|---|---|---|---|---|
| Order Code | None (Standard) | -TA (Option) | PN-100T (Option) | PN-300T (Option) |
| NFC-100 | ● | ● | — | — |
| NFC-200 | ● | ● | ● | — |
| NFC-300 | ● | ● | ● | ● |
| NFC-400 | ● | ● | ● | ● |
| NFC-450 | ● | ● | ● | ● |
| NFC-500 | ● | ● | ● | ● |

⑦

Note : 1. Standard: Standard accessory ; (option) : Accessory option
2. Pressure switch PN-100, PN-300 and PSN-41 specification, please refer to detail specification in P.1-2.23 ~ P.1-2.28

# NFC series FR.L. Combinations

## Code of order

### Code of order

NFC - 300 — 03 — G — BG - A — F1 — PG 10 — TA

Model ① | Port size ② | Thread type ③ | Bowl type ④ | Fitting ⑤ | Pressure gauge ⑥ | Combination structure ⑦

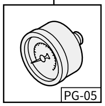
| Model | Port size | | | | | | | | Type | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Code | M5 | 01 | 02 | 03 | 04 | 06 | 10 | None | | G | N |
| | Size | M5 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | M5 | RC | G | NPT |
| NFC - 100 | Port connection | ● | ● | | | | | | ● | ● | ● | ● |
| NFC - 200 | | | ● | ● | | | | | | ● | ● | ● |
| NFC - 300 | | | | ● | ● | | | | | ● | ● | ● |
| NFC - 400 | | | | ● | ● | ● | | | | ● | ● | ● |
| NFC - 450 | | | | | | ● | ● | | | ● | ● | |
| NFC - 500 | | | | | | | ● | ● | | ● | ● | |

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC (Short bowl) | — |
| PC (Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

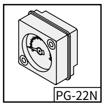
※ Please see the below table in detail.

| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | — |
| | option |
| | option |
| | option |
| | option |
| | option |

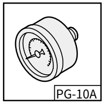
※ Please see the below table in detail.



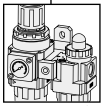
■ None: (Standard)
Circle pressure gauge
※ For N100 series



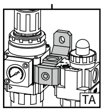
■ None: (standard)
(Square pressure gauge)
(Thin mountng type)



PG-10A : Pressure gauge (option)
※ N200,N300,N400,
N450,N500 series (option)



■ None: Standard



### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

### NFC-100~200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| NFC-100 | ● (standard) | — | — | — | — | — | — |
| NFC-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### NFC-100~200 type - With Fitting - F1 - ⑤

| NFC-100/200 | — | ● (standard) | ● (option) | ● (standard) | ● (standard) | ● (standard) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

### NFC-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| NFC-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| NFC-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NFC-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NFC-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### NFC-300~500 type - With Fitting - F1 - ⑤

| NFC-300~500 Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

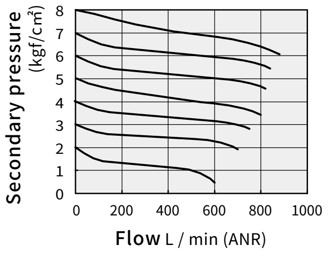
Note : 1. NFC200 series are outside fitting , others are inside fitting ; please refer to P.1-1.06 auto drain construction.
2. NFC300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

# NFC series FR.L. Combinations

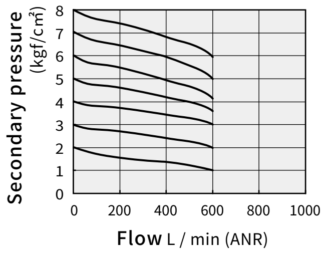
## Characteristics graph

### Flow rate characteristic graph

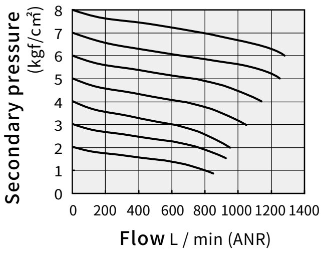
**NFC-100**



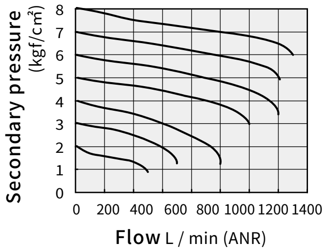
**NFC-200**



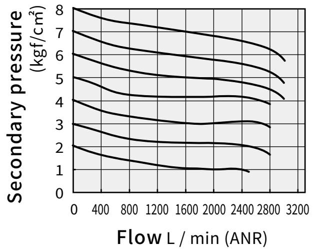
**NFC-300**



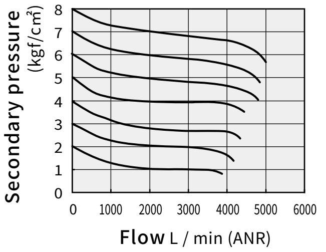
**NFC-400**



**NFC-450**



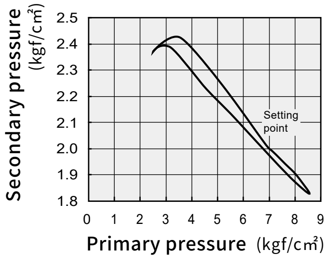
**NFC-500**



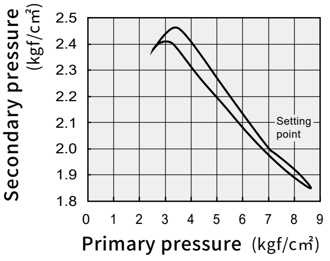
Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

### Pressure characteristics graph

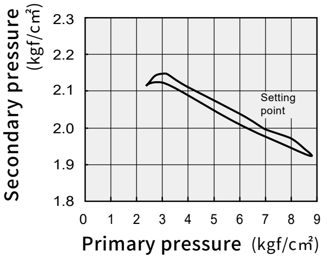
**NFC-100**



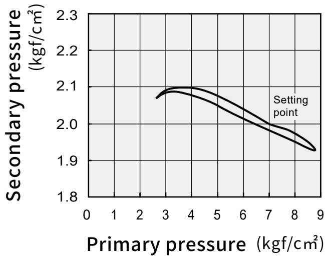
**NFC-200**



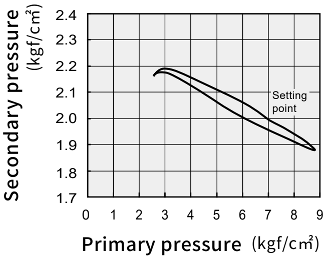
**NFC-300**



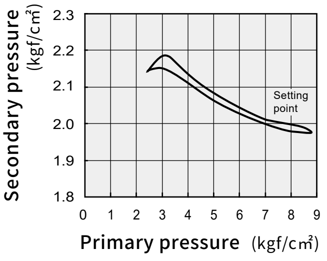
**NFC-400**



**NFC-450**



**NFC-500**

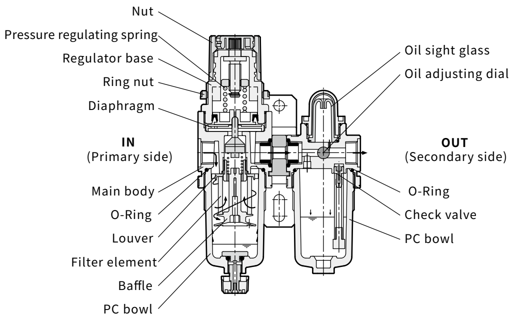


# NFC series FR.L. Combinations

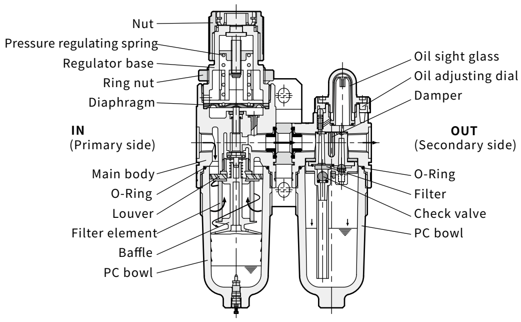
## Product features

## Internal structure

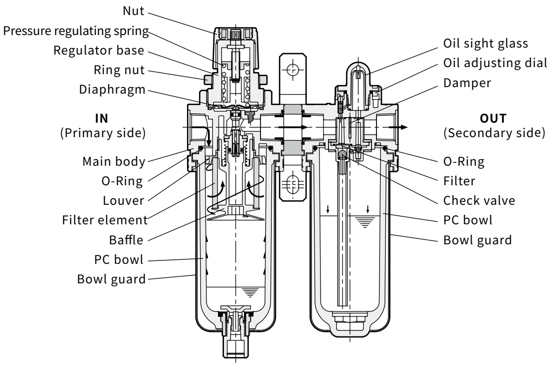
**NFC-100**


Nut
Pressure regulating spring
Regulator base
Ring nut
Diaphragm
IN
(Primary side)
Main body
O-Ring
Louver
Filter element
Baffle
PC bowl
Oil sight glass
Oil adjusting dial
OUT
(Secondary side)
O-Ring
Check valve
PC bowl

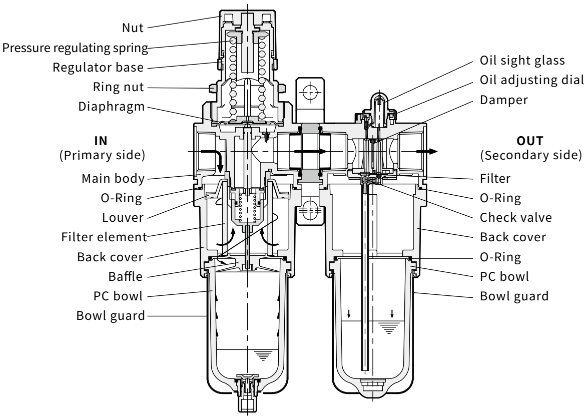
**NFC-200**


Nut
Pressure regulating spring
Regulator base
Ring nut
Diaphragm
IN
(Primary side)
Main body
O-Ring
Louver
Filter element
Baffle
PC bowl
Oil sight glass
Oil adjusting dial
Damper
OUT
(Secondary side)
O-Ring
Filter
Check valve
PC bowl

**NFC-300, 400, 450**

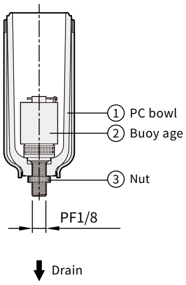

Nut
Pressure regulating spring
Regulator base
Ring nut
Diaphragm
IN
(Primary side)
Main body
O-Ring
Louver
Filter element
Baffle
PC bowl
Bowl guard
Oil sight glass
Oil adjusting dial
Damper
OUT
(Secondary side)
O-Ring
Filter
Check valve
PC bowl
Bowl guard

**NFC-500**

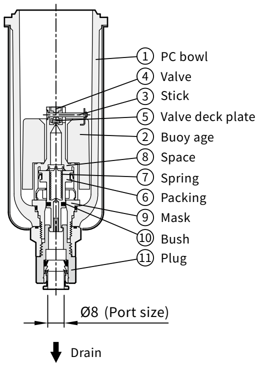

Nut
Pressure regulating spring
Regulator base
Ring nut
Diaphragm
IN
(Primary side)
Main body
O-Ring
Louver
Filter element
Back cover
Baffle
PC bowl
Bowl guard
Oil sight glass
Oil adjusting dial
Damper
OUT
(Secondary side)
Filter
O-Ring
Check valve
Back cover
O-Ring
PC bowl
Bowl guard

## Auto drain structure theory

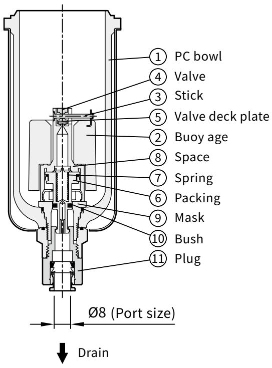
- Suitable for: N200
  Model: AD-25


① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

- Suitable for: N300
  Model: AD-35


① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

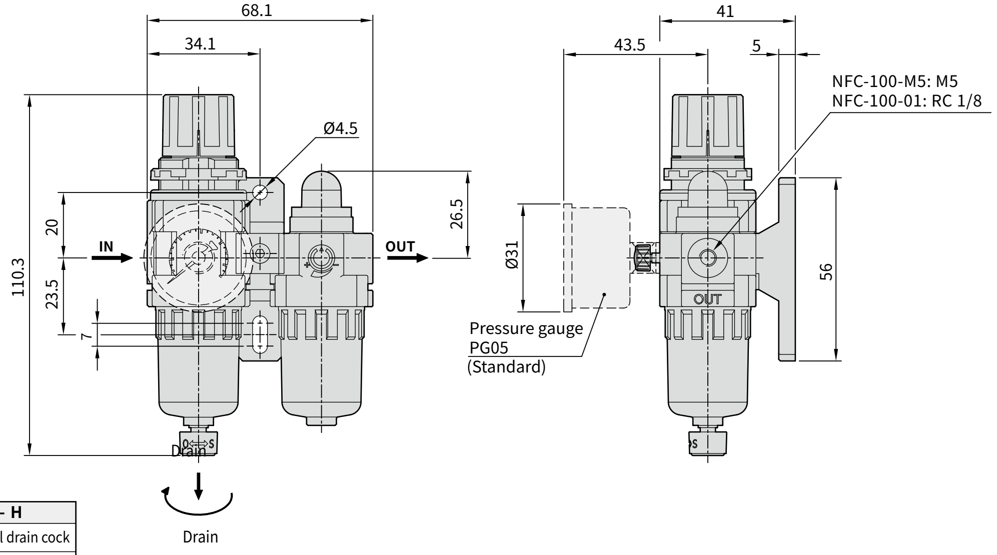
- Suitable for: N400, N450, N500
  Model: AD-55

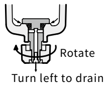

① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

# NFC series FR.L. Combinations

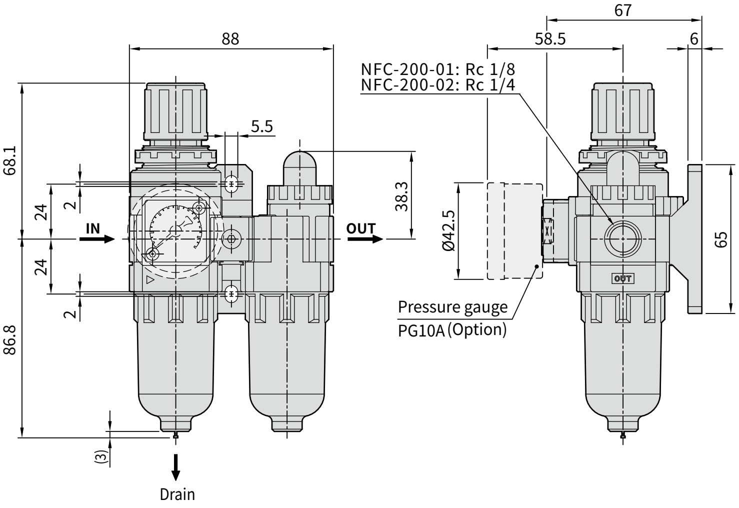
## Dimensions

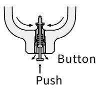
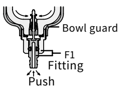
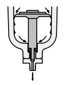
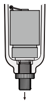
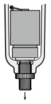
### NFC - 100 - ☐ Standard


68.1
34.1
Ø4.5
20
23.5
110.3
7
IN
OUT
26.5
Drain
Drain
41
43.5
5
NFC-100-M5: M5
NFC-100-01: RC 1/8
Ø31
56
OUT
Pressure gauge
PG05
(Standard)

| - H |
|---|
| Manual drain cock |
| <br>Rotate<br>Turn left to drain |

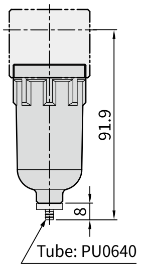
### NFC - 200 - ☐ - H


88
5.5
68.1
24
2
24
2
86.8
(3)
IN
OUT
38.3
Drain
67
58.5
6
NFC-200-01: Rc 1/8
NFC-200-02: Rc 1/4
Ø42.5
65
OUT
Pressure gauge
PG10A (Option)

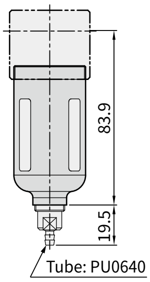
| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
| <br>Button<br>Push | <br>Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

### Manual drain cock-Standard

● - A


91.9
8
Tube: PU0640

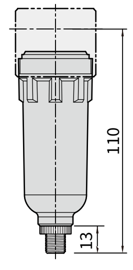
● - BG-H - F1


83.9
19.5
Tube: PU0640

— BG PC bowl with bowl guard (Option)

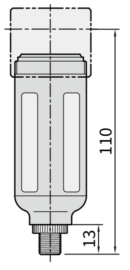
### Auto drain-Long cup

● - LG - A



— LG Long cup (Option)

● - LBG - A



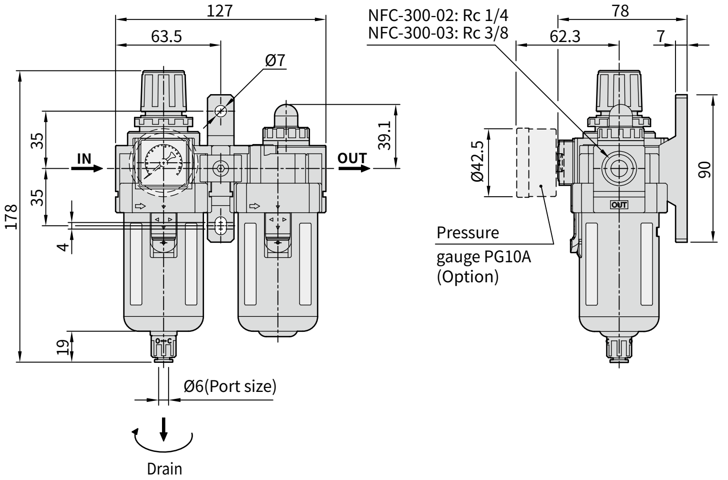
— LBG PC bowl with bowl guard (Option)

# NFC series FR.L. Combinations

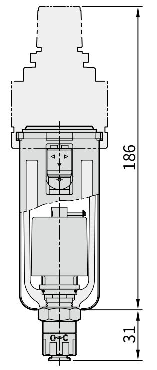
## Dimensions

NC
NFC
PSN-10 30,41
NFR
MFR
MFRD
NF
MF
MFD
NR
ARX
NPR
NL
N
DM
ERX
ERP
PG/AFB NDV/AD

### ● NFC - 300 - ☐ - H Standard

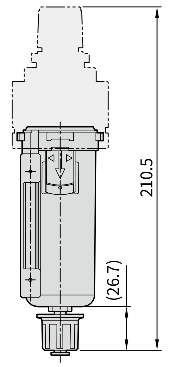

127
63.5
Ø7
35
35
IN
OUT
39.1
178
4
19
Ø6(Port size)
Drain
NFC-300-02: Rc 1/4
NFC-300-03: Rc 3/8
78
62.3
7
Ø42.5
90
OUT
Pressure gauge PG10A (Option)

● - LG - A
Auto drain with fitting

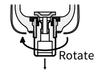
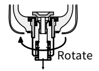
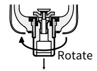
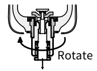
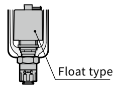


— LG Long bowl (Option)

● - MG - H - F1
Manual drain cock with fitting

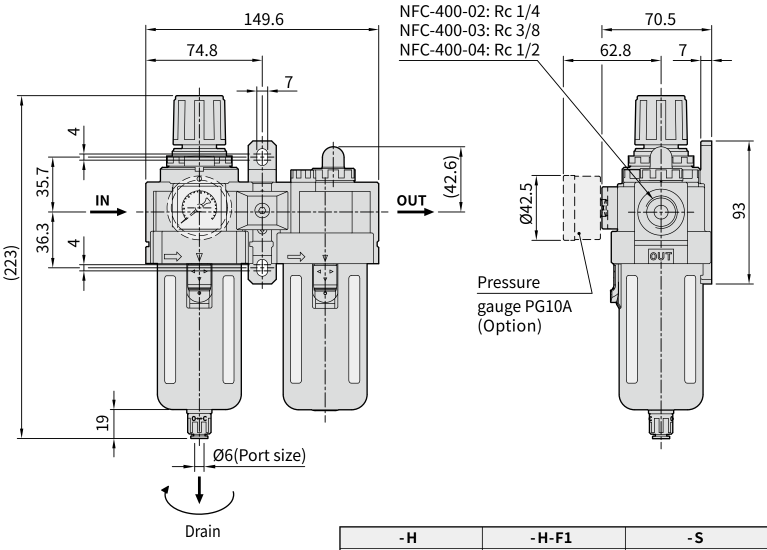


— MG Metal cup(Option)

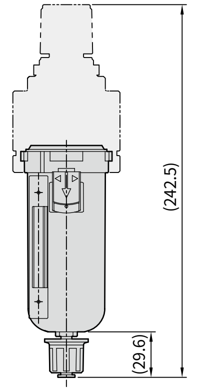
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note : Above auto drainer is AD-35。

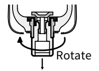
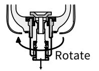
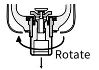
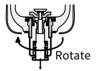
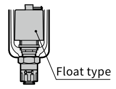
### ● NFC - 400 - ☐ - H Standard


149.6
74.8
7
4
35.7
36.3
4
(223)
IN
OUT
(42.6)
19
Ø6(Port size)
Drain
NFC-400-02: Rc 1/4
NFC-400-03: Rc 3/8
NFC-400-04: Rc 1/2
70.5
62.8
7
Ø42.5
93
OUT
Pressure gauge PG10A (Option)

● - MG - H - F1
Manual drain cock with fitting



— MG Metal cup(Option)

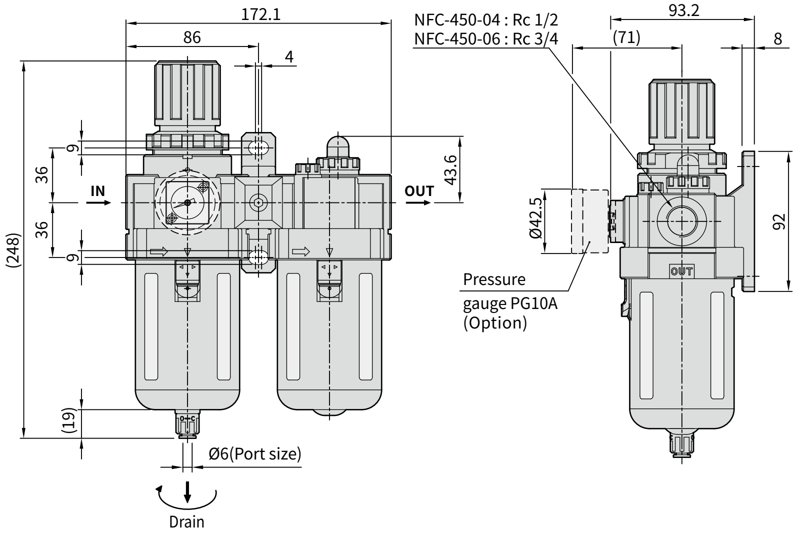
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note : Above auto drainer is AD-55。

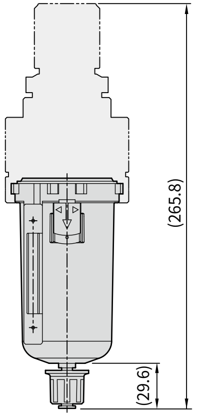
# NFC series FR.L. Combinations

## Dimensions

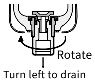
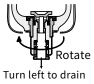
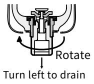
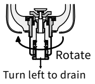
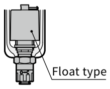
### NFC - 450 - ☐ - H Standard


172.1
86
4
9
36
36
9
(248)
IN
OUT
43.6
(19)
Ø6(Port size)
Drain
NFC-450-04 : Rc 1/2
NFC-450-06 : Rc 3/4
93.2
(71)
8
Ø42.5
92
OUT
Pressure gauge PG10A (Option)

● - MG - H - F1
Manual drain cock with fitting

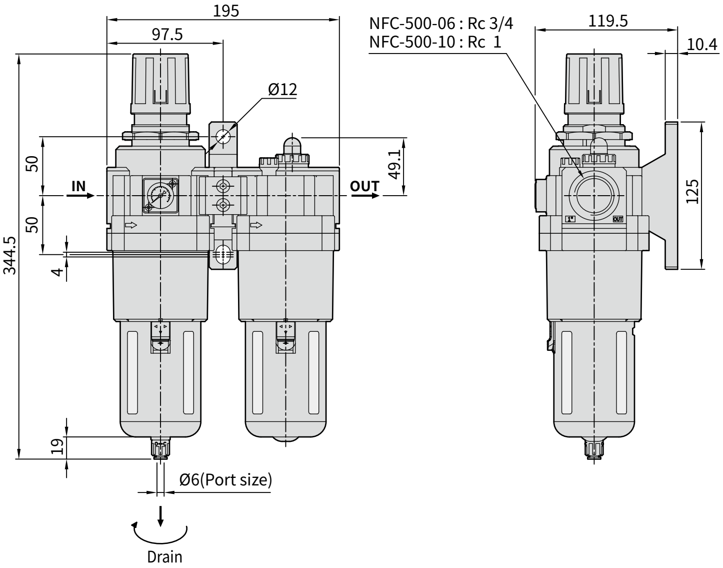


— MG Metal cup(Option)

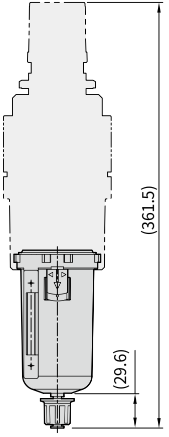
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain<br>(Standard) | Manual drain cock<br>with fitting(Option) | Semi-Auto drain<br>(Option) | Semi-Auto drain<br>with fitting(Option) | Auto drain<br>(Option AD-55) |
|   Rotate Turn left to drain |   Rotate Turn left to drain |   Rotate Turn left to drain |   Rotate Turn left to drain |  |

Note : Above auto drainer is AD-55。

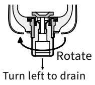
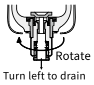
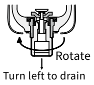
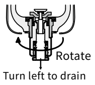
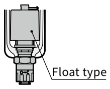
### NFC - 500 - ☐ - H Standard


195
97.5
Ø12
50
50
4
344.5
IN
OUT
49.1
19
Ø6(Port size)
Drain
NFC-500-06 : Rc 3/4
NFC-500-10 : Rc 1
119.5
10.4
125

● - MG - H - F1
Manual drain cock with fitting



— MG Metal cup(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain<br>(Standard) | Manual drain cock<br>with fitting(Option) | Semi-Auto drain<br>(Option) | Semi-Auto drain<br>with fitting(Option) | Auto drain<br>(Option AD-55) |
|   Rotate Turn left to drain |   Rotate Turn left to drain |   Rotate Turn left to drain |   Rotate Turn left to drain |  |

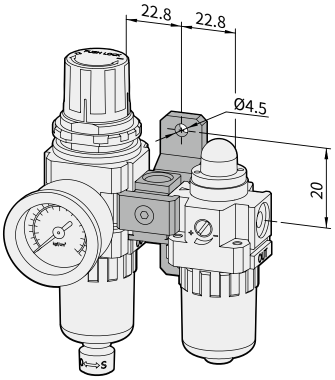
Note : Above auto drainer is AD-55。

# NFC series FR.L. Combinations

## Mounting bracket

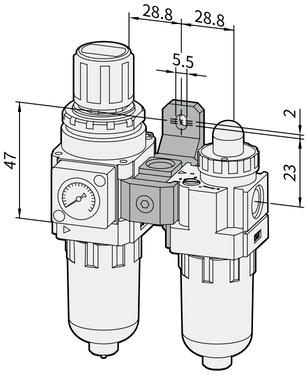
### NFC - 100 - TA - H

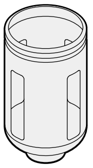
Suitable for air gun operating


22.8
22.8
Ø4.5
20

### NFC - 200 - TA - H

Suitable for air gun operating


28.8
28.8
5.5
2
47
23

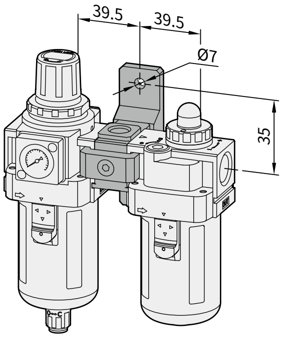


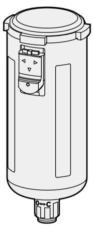
— **BG**

(with bowl guard)

### NFC - 300 - TA - H

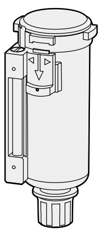
Suitable for air gun operating


39.5
39.5
Ø7
35



— **LG**

(Long bowl)

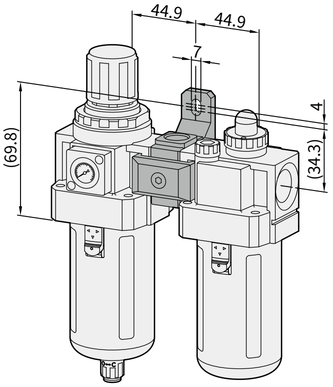


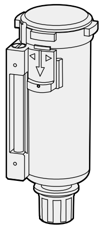
— **MG**

(Metal bowl)

### NFC - 400 - TA - H

Suitable for air gun operating


44.9
44.9
7
4
(69.8)
(34.3)



— **MG**

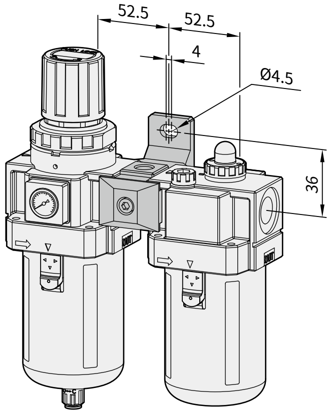
(Metal bowl)

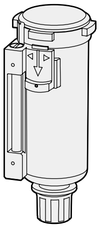
# NFC series FR.L. Combinations

## Mounting bracket

**NFC - 450 - TA - H**

Suitable for air gun operating

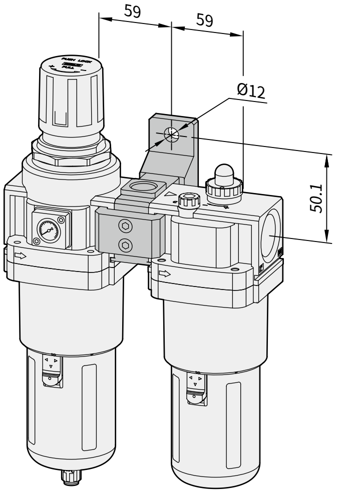

52.5
52.5
4
Ø4.5
36

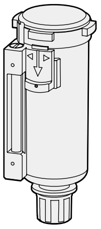


— **MG**
(Metal bowl)

**NFC - 500 - TA - H**

Suitable for air gun operating


59
59
Ø12
50.1



— **MG**
(Metal bowl)

# Air unit

## F.R.L modular - Pressure switch PSN - 10D (Spacer included)

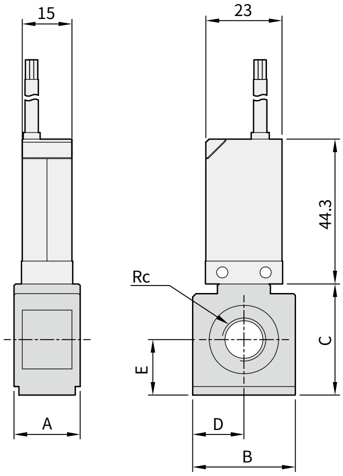
### PN-100D

### Installation

### Specification

| Item \ Model | PN-100D-20 | PN-100D-30 | PN-100D-40 | PN-100D-45 | PN-100D-50 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Pressure range kgf/cm² | 0~10 (Positive pressure) | | | | |
| Temperature characteristic | ±3% F.S. (Surrounding temperature: 25±3°C) | | | | |
| Power supply voltage | 12 to 24VDC ±10%, Ripple (P-P) 10% or less | | | | |
| Applicable model | N200 series | N300 series | N400 series | N450 series | N500 series |
| Pressure switch | PSN-10 | | | | |

### External dimensions



### Code of order

**PN – 100D** – 30 – 02 – 01

- Spacer and PSN 10 included

**Model**

| Mark | Series |
|---|---|
| 20 | N200 |
| 30 | N300 |
| 40 | N400 |
| 45 | N450 |
| 50 | N500 |

**Port size**

| Mark | 01 | 02 | 03 | 04 | 06 | 10 |
|---|---|---|---|---|---|---|
| Size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| Port size | ● | ● | | | | |
| | | ● | ● | | | |
| | | ● | ● | ● | | |
| | | | | ● | ● | |
| | | | | | ● | ● |

**Output type**

01: NPN output
02: PNP output
03: 2 NPN output

| Model | Port size | Rc | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| N200 | 01 | 1/8 | 16 | 28 | 30 | 14 | 11 |
| | 02 | 1/4 | | | | | |
| N300 | 02 | 1/4 | 20 | 31 | 36 | 15.5 | 19 |
| | 03 | 3/8 | | | | | |
| N400 | 02 | 1/4 | 24 | 34 | 45.5 | 17 | 23.5 |
| | 03 | 3/8 | | | | | |
| | 04 | 1/2 | | | | | |
| N450 | 04 | 1/2 | 28 | 44 | 39 | 22 | 17.5 |
| | 06 | 3/4 | | | | | |
| N500 | 06 | 3/4 | 32 | 54 | 58.2 | 27 | 33.2 |
| | 10 | 1 | | | | | |

# Air unit

## F.R.L modular - Pressure switch with display PSN - 30D (Spacer included)

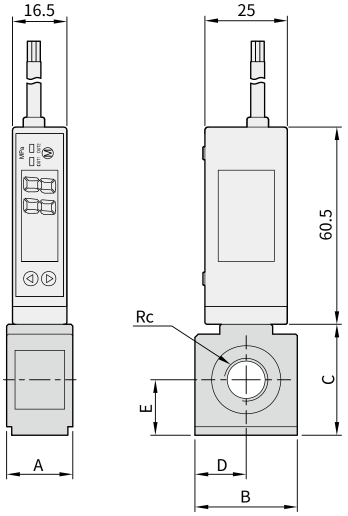
### PN-300D

### Installation

## Specification

| Item / Model | PN-300D-20 | PN-300D-30 | PN-300D-40 | PN-300D-45 | PN-300D-50 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Pressure range kgf/cm² | 0~10 (Positive pressure) | | | | |
| Temperature characteristic | ±2% F.S. (Surrounding temperature: 0 ~ 50°C) | | | | |
| Power supply voltage | 12 to 24VDC ±10%, Ripple (P-P) 10% or less | | | | |
| Applicable model | N200 series | N300 series | N400 series | N450 series | N500 series |
| Pressure switch | PSN-30 | | | | |

## External dimensions



## Code of order

**PN – 300D** — **30** — **02** — **01**

- Spacer and PSN 30 included

**Model**

| Mark | Series |
|---|---|
| 20 | N200 |
| 30 | N300 |
| 40 | N400 |
| 45 | N450 |
| 50 | N500 |

**Port size**

| Mark | 01 | 02 | 03 | 04 | 06 | 10 |
|---|---|---|---|---|---|---|
| Size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| Port size | ● | ● | | | | |
| | | ● | ● | | | |
| | | ● | ● | ● | | |
| | | | | ● | ● | |
| | | | | | ● | ● |

**Output type**

01: 2 NPN output &
1 Analog output
02: 2 NPN output
03: 2 PNP output &
1 Analog output
04: 2 PNP output

| Model | | Port size Rc | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| N200 | 01 | 1/8 | 16 | 28 | 30 | 14 | 11 |
| | 02 | 1/4 | | | | | |
| N300 | 02 | 1/4 | 20 | 31 | 36 | 15.5 | 19 |
| | 03 | 3/8 | | | | | |
| N400 | 02 | 1/4 | 24 | 34 | 45.5 | 17 | 23.5 |
| | 03 | 3/8 | | | | | |
| | 04 | 1/2 | | | | | |
| N450 | 04 | 1/2 | 28 | 44 | 39 | 22 | 17.5 |
| | 06 | 3/4 | | | | | |
| N500 | 06 | 3/4 | 32 | 54 | 58.2 | 27 | 33.2 |
| | 10 | 1 | | | | | |

# Air unit

## F.R.L modular - Pressure switch PSN - 10T (Spacer and bracket included)

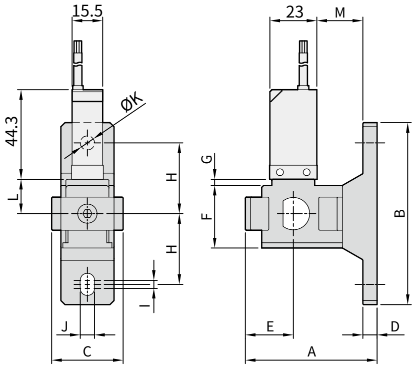
### PN-100T

### Installation

## Specification

| Item \ Model | PN-100T-20 | PN-100T-30 | PN-100T-40 | PN-100T-45 | PN-100T-50 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Pressure range kgf/cm² | 0~10 (Positive pressure) | | | | |
| Temperature characteristic | ±3% F.S. (Surrounding temperature: 25±3°C) | | | | |
| Power supply voltage | 12 to 24VDC ±10%, Ripple (P-P) 10% or less | | | | |
| Applicable model | N200 series | N300 series | N400 series | N450 series | N500 series |
| Pressure switch | PSN-10 | | | | |

## External dimensions



| Model | | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N200 | 01<br>02 | 55 | 65 | 26 | 6 | 21 | 21 | 3 | 24 | 2 | 5.5 | — | 13 | 16.5 |
| N300 | 02<br>03 | 64.5 | 90 | 28 | 7 | 23.5 | 31 | 3 | 35 | 4 | 7 | 7 | 17 | 22.5 |
| N400 | 02<br>03<br>04 | 57.6 | 93 | 42 | 7 | 25.1 | 39.5 | 3.2 | 36 | 4 | 7 | 7 | 23 | 14 |
| N450 | 04<br>06 | 57.6 | 93 | 42 | 7 | 25.1 | 39.5 | 3.2 | 36 | 4 | 7 | 7 | 23 | 14 |
| N500 | 06<br>10 | 109.5 | 125 | 53 | 10.4 | 39.5 | 50.5 | 4 | 50 | 4 | 12 | 12 | 28 | 48.1 |

## Code of order

**PN – 100T** – **30** – **02** – **01**

PN – 100T
- Spacer and PSN 10 included

**Model**

| Mark | Series |
|---|---|
| 20 | N200 |
| 30 | N300 |
| 40 | N400 |
| 45 | N450 |
| 50 | N500 |

**Port size**

| Mark | 01 | 02 | 03 | 04 | 06 | 10 |
|---|---|---|---|---|---|---|
| Size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| Port size | ● | ● | | | | |
| | | ● | ● | | | |
| | | ● | ● | ● | | |
| | | | | ● | ● | |
| | | | | | ● | ● |

**Output type**

01: NPN output
02: PNP output
03: 2NPN output

# Air unit

## F.R.L modular - Pressure switch with display PSN - 30T (Spacer and bracket included)

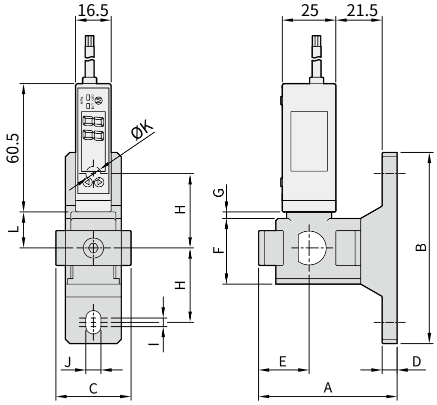
### PN-300T

### Installation

## Specification

| Item / Model | PN-300T-20 | PN-300T-30 | PN-300T-40 | PN-300T-45 | PN-300T-50 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Pressure range kgf/cm² | 0~10 (Positive pressure) | | | | |
| Temperature characteristic | ±2% F.S. (Surrounding temperature: 0 ~ 50°C) | | | | |
| Power supply voltage | 12 to 24VDC ±10%, Ripple (P-P) 10% or less | | | | |
| Applicable model | N200 series | N300 series | N400 series | N450 series | N500 series |
| Pressure switch | PSN-30 | | | | |

## External dimensions



## Code of order

**PN – 300T** — **30** — **02** — **01**

- Spacer and PSN 30 included

**Model**

| Mark | Series |
|---|---|
| 20 | N200 |
| 30 | N300 |
| 40 | N400 |
| 45 | N450 |
| 50 | N500 |

**Port size**

| Mark | 01 | 02 | 03 | 04 | 06 | 10 |
|---|---|---|---|---|---|---|
| Size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| Port size | ● | ● | | | | |
| | | ● | ● | | | |
| | | ● | ● | ● | | |
| | | | | ● | ● | |
| | | | | | ● | ● |

**Output type**

01: 2 NPN output & 1 Analog output
02: 2 NPN output
03: 2 PNP output & 1 Analog output
04: 2 PNP output

| Model | | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N200 | 01<br>02 | 64.5 | 90 | 28 | 7 | 23.5 | 31 | 3 | 35 | 4 | 7 | 7 | 17 | 21.5 |
| N300 | 02<br>03 | 64.5 | 90 | 28 | 7 | 23.5 | 31 | 3 | 35 | 4 | 7 | 7 | 17 | 21.5 |
| N400 | 02<br>03<br>04 | 57.6 | 93 | 42 | 7 | 25.1 | 39.5 | 3.2 | 36 | 4 | 7 | 7 | 23 | 13 |
| N450 | 04<br>06 | 57.6 | 93 | 42 | 7 | 25.1 | 39.5 | 3.2 | 36 | 4 | 7 | 7 | 23 | 13 |
| N500 | 06<br>10 | 109.5 | 125 | 53 | 10.4 | 39.5 | 50.5 | 4 | 50 | 4 | 12 | 12 | 28 | 47.1 |

# PSN-41 series - Pressure switch

## Product features

CHELIC

.000
500
FILTER REGULATOR
NFR-400-02

.000
500
FILTER REGULATOR
400-02

## Specification

| Item \ Model | | PSN - 41 (Positive) |
|---|---|---|
| Rated Pressure Range | | 0 ~ 1 MPa |
| Set Pressure Range | | - 0.100 ~ 1.000 MPa |
| Withstand Pressure | | 1.5 MPa |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas |
| Set pressure resolution | kPa | — |
| | MPa | 0.001 |
| | kgf / cm² | 0.01 |
| | bar | 0.01 |
| | psi | 0.1 |
| Power supply voltage | | 12 to 24 VDC ±10%, ( Ripple (P-P) ±10% or less ) |
| Current consumption | | ≤ 40 mA (With no load) |
| Switch Output | | NPN open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 30 V DC<br>Residual voltage: ≤ 1.5 V or less<br>(with load current of 125mA) |
| | | PNP open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 30 V DC<br>Residual voltage: ≤ 1.5 V or less<br>(with load current of 125mA) |
| Repeatability | | ≤ ± 0.2 % F.S. ± 1 digit |
| Hysteresis | Hysteresis mode | Adjustable |
| | Window comparator mode | |
| Response time | | 0.05s, 0.25s, 0.5s, 1s, 2s, 3s selectable |
| Output short circuit protection | | Yes |
| Display | | 3 ½ digital, LCD display (Red/ Green)(Sampling rate: 5 times / sec.) |
| Indicator accuracy | | ≤ ± 2 % F.S. ± 1 ( Ambient temperature: 25 ± 3 °C ) |
| Switch on Indicator | | Red(1 Red) OUT1 |
| Environ-mental Resistance | Enclosure | IP 40 |
| | Ambient temp. range | Operating: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) |
| | Ambient humidity range | Operating & Storage: 35 ~ 85 % RH (No condensation) |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) |
| | Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | ±2.5% F.S. of detected pressure ( 25 °C ) at temp. (Range of 0 ~ 50 °C) |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) |
| Weight (With M8 4PIN male connector) | | Approx. 30 g |

# PSN-41 series - Pressure switch

## Product features

### Code of Order

**PS N - 41** – **022** –

Model

**N:** Positive
( - 0.100 ~ 1.000 MPa )

Output

**022:** 2 NPN output
**042:** 2 PNP output

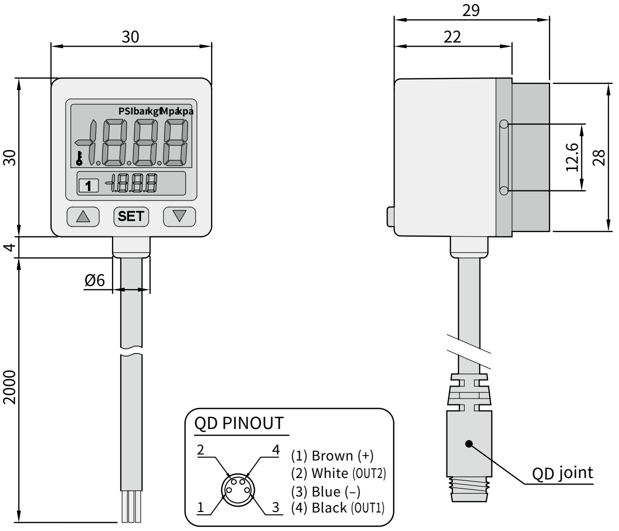
Cable type

**None:**
Cable length is 2M
**QD:** M8, 4 PIN
Male connector

Suitable series

| Model | Model series |
|---|---|
| NC | N200, N300, N400, N450, N500 |
| NFC | |
| NFR | |
| NR | |

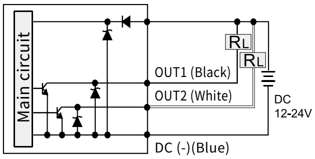
### External dimensions



30
30
4
2000
Ø6
PSI bar kgf Mpa kpa
-1.8.8.8
1 -1.8.8.8
SET
29
22
12.6
28
QD joint
QD PINOUT
2
4
1
3
(1) Brown (+)
(2) White (OUT2)
(3) Blue (−)
(4) Black (OUT1)

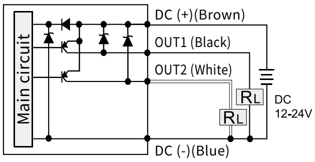
### Circuit wiring diagrams

PSN - 41 - 022
2 NPN output



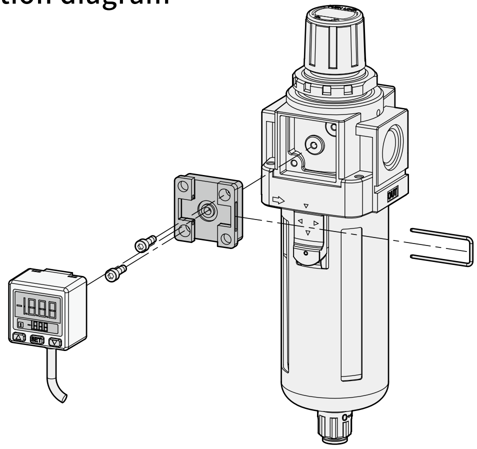
Main circuit
RL
RL
OUT1 (Black)
OUT2 (White)
DC
12-24V
DC (-)(Blue)

PSN - 41 - 042
2 PNP output

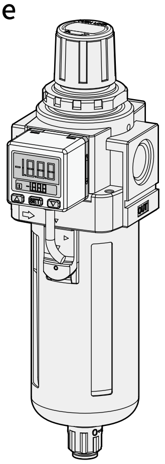


Main circuit
DC (+)(Brown)
OUT1 (Black)
OUT2 (White)
RL
RL
DC
12-24V
DC (-)(Blue)

### Installation diagram



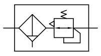
### Complete



# NFR series Filter Regulator

## Product features/ Characteristics graph

Symbol:

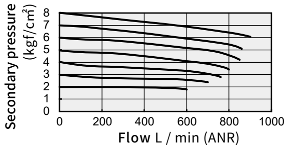


## Specification

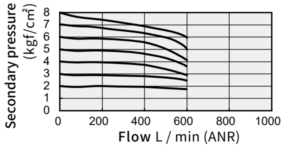
| Item | Model | NFR-100 | NFR-200 | NFR-300 | NFR-400 | NFR-450 | NFR-500 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size | M5/Rc/G/NPT | M5, 1/8 | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | μm | 5 | | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | | |
| Bowl capacity | cc | 5 | 15 | 30 | 60 | 100 | 100 |
| Weight | kg | 0.18 | 0.21 | 0.34 | 0.45 | 0.95 | 1.15 |
| Material | Main body | Aluminum die cast | | | | | |
| | Bowl | Relieving type | | | | | |

## Flow rate characteristic graph

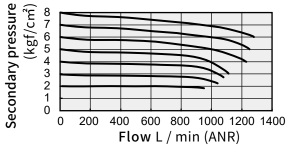
**NFR-100**



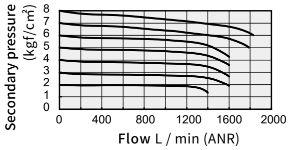
**NFR-200**



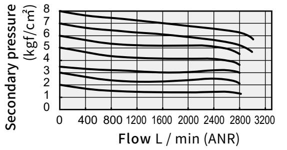
**NFR-300**



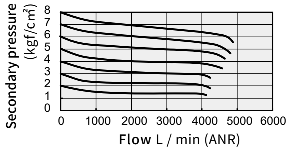
**NFR-400**



**NFR-450**



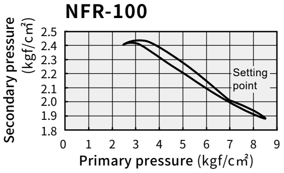
**NFR-500**



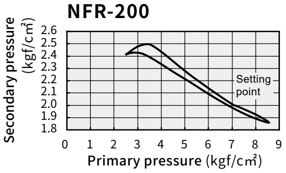
Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

## Pressure characteristics graph

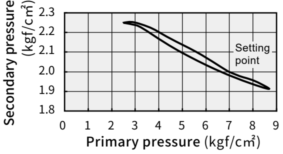
**NFR-100**



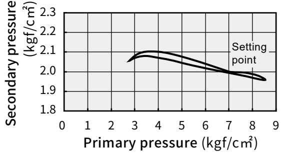
**NFR-200**



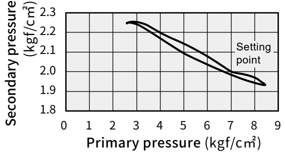
**NFR-300**



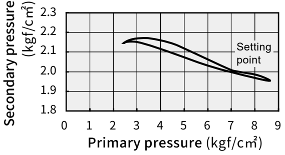
**NFR-400**



**NFR-450**



**NFR-500**



# NFR series Filter Regulator

## Code of order

### Code of order

| NFR - 300 | 03 | G | BG - A | F1 | PG 10 | |
|---|---|---|---|---|---|---|
| Model ① | Port size ② | Thread type③ | Bowl type ④ | Fitting ⑤ | Pressure gauge⑥ | Bracket |

**Model** / **Port size**

| Model | Code | M5 | 01 | 02 | 03 | 04 | 06 | 10 |
|---|---|---|---|---|---|---|---|---|
| | Port size | M5 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| NFR - 100 | Port connection | ● | ● | | | | | |
| NFR - 200 | | | ● | ● | | | | |
| NFR - 300 | | | | ● | ● | | | |
| NFR - 400 | | | | ● | ● | ● | | |
| NFR - 450 | | | | | | ● | ● | |
| NFR - 500 | | | | | | | ● | ● |

**Thread type**

| None | | G | N |
|---|---|---|---|
| M5 | RC | G | NPT |
| ● | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | |
| | ● | ● | |

**Bowl type**

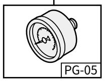
| None | Other bowl type |
|---|---|
| PC(Short bowl) | — |
| PC(Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

※ Please see the below table in detail.

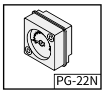
**Fitting**

| None | -F1 |
|---|---|
| Manual drain cock | — |
| | option |
| | option |
| | option |
| | option |
| | option |

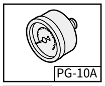
※ Please see the below table in detail.



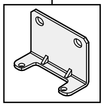
■ None : (Standard)
Circle pressure gauge
※ For N100 series



■ None : (standard)
(Square pressure gauge)
(Thin mountng type)



PG-10A :Pressure gauge (option)
※ N200,N300,N400, N450,N500 series (option)



■ none :With bracket (standard)

### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

### NFR-100~200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| NFR-100 | ● (standard) | — | — | — | — | — | — |
| NFR-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### NFR-100~200 type - With Fitting - F1 - ⑤

| NFR-100/200 | — | ● (standard) | ● (option) | ● (standard) | ● (standard) | ● (standard) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

### NFR-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| NFR-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| NFR-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NFR-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NFR-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### NFR-300~500 type - With Fitting - F1 - ⑤

| NFR-300~500<br>Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

Note : 1. NFR200 series are outside fitting , others are inside fitting ; please refer to P.1-1.06 auto drain construction.
2. NFR300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

### Pressure gauge - ⑥

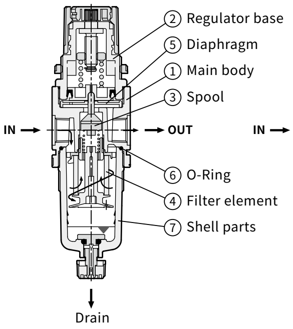
| Pressure gauge | | NFR-100 | NFR-200 | NFR-300 | NFR-400 | NFR-450 | NFR-500 |
|---|---|---|---|---|---|---|---|
| Model | Order code | | | | | | |
| PG-05 | P5 | ● (standard) | — | — | — | — | — |
| PG-10 | P10 | — | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |
| PG-22N | P22 | — | ● (standard) | ● (standard) | ● (standard) | ● (standard) | ● (standard) |

# NFR series Filter Regulator

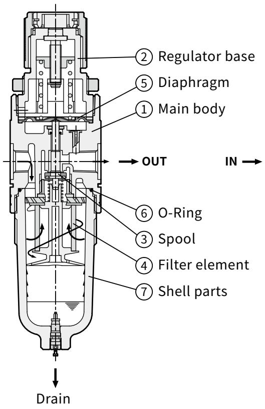
## Product features

## Internal structure

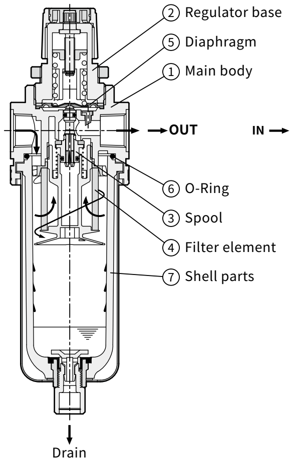
**NFR-100**


② Regulator base
⑤ Diaphragm
① Main body
③ Spool
IN
OUT
⑥ O-Ring
④ Filter element
⑦ Shell parts
Drain

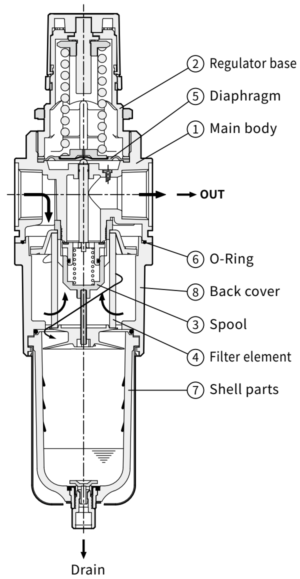
**NFR-200**


IN
② Regulator base
⑤ Diaphragm
① Main body
OUT
⑥ O-Ring
③ Spool
④ Filter element
⑦ Shell parts
Drain

**NFR-300, 400, 450**


IN
② Regulator base
⑤ Diaphragm
① Main body
OUT
⑥ O-Ring
③ Spool
④ Filter element
⑦ Shell parts
Drain

**NFR-500**


IN
② Regulator base
⑤ Diaphragm
① Main body
OUT
⑥ O-Ring
⑧ Back cover
③ Spool
④ Filter element
⑦ Shell parts
Drain

### Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | NFR100, NFR200, NFR300, NFR400, NFR450 | NFR500 | |
| 1 | Main body | Aluminum alloy | | |
| 8 | Back cover | — | Aluminum alloy | |

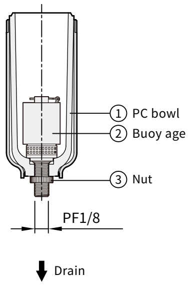
### Replacement parts

| Number | Accessory | Material | | | | | | Note |
|---|---|---|---|---|---|---|---|---|
| | | NFR100 | NFR200 | NFR300 | NFR400 | NFR450 | NFR500 | |
| 2 | Base | Aldehyde resin | | | | | Aluminum alloy | |
| 3 | Spool | Copper+NBR | | | | | | |
| 4 | Filter element | EA30 | | | | | | |
| 5 | Diaphragm | POM | Stainless still +NBR | | | | | |
| 6 | O-ring | NBR | | | | | | |
| 7 | Shell parts | PC | PC | PC+SS41 | | | | |

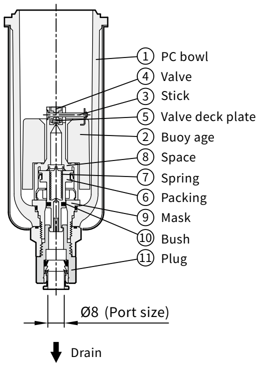
Note: NFR200 are included bowl guard. (Material : Aluminum alloy)
The shell parts in NFR300-NFR500 is included bowl guard ( Material : SS41)

## Auto drain structure theory

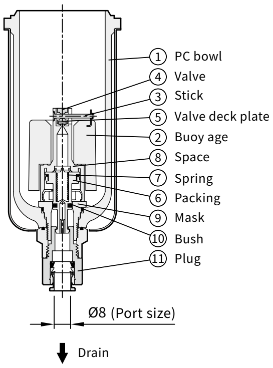
- Suitable for: N200
  Model: AD-25


① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

- Suitable for: N300
  Model: AD-35


① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

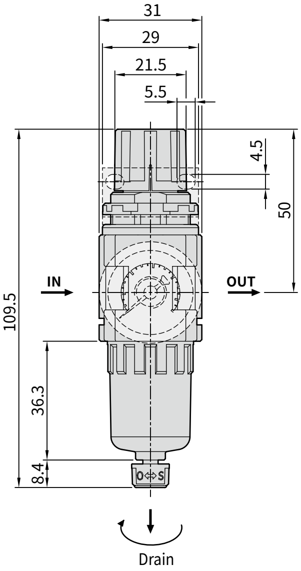
- Suitable for: N400, N450, N500
  Model: AD-55

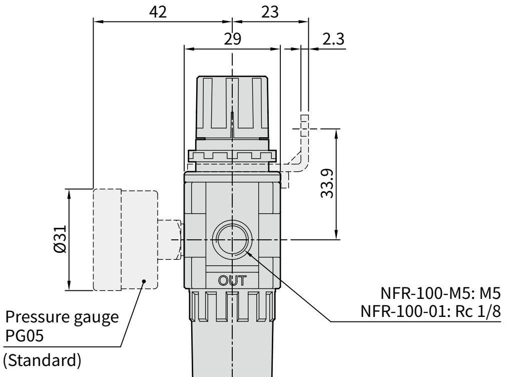

① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

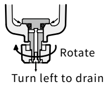
# NFR series Filter Regulator

## Dimensions

### ● NFR - 100 - ☐ Standard

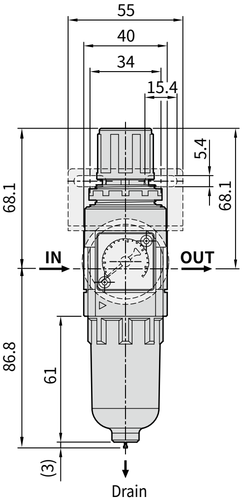

31
29
21.5
5.5
4.5
50
109.5
IN
OUT
36.3
8.4
Drain

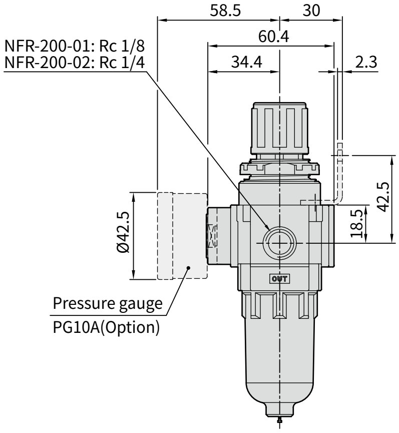

42
23
29
2.3
33.9
Ø31
OUT
NFR-100-M5: M5
NFR-100-01: Rc 1/8
Pressure gauge
PG05
(Standard)

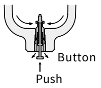
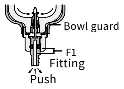
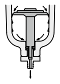
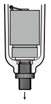
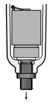
| - H |
|---|
| Manual drain cock |
|  |

Rotate
Turn left to drain

### ● NFR - 200 - ☐ - H


55
40
34
15.4
5.4
68.1
68.1
IN
OUT
86.8
61
(3)
Drain

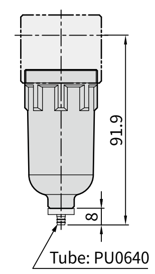

58.5
30
60.4
34.4
2.3
NFR-200-01: Rc 1/8
NFR-200-02: Rc 1/4
Ø42.5
18.5
42.5
OUT
Pressure gauge
PG10A(Option)

| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|  |  |  |  |  |

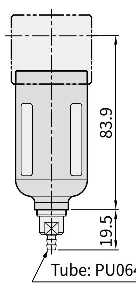
Button
Push
Bowl guard
F1
Fitting
Push

### Manual drain cock-Standard

● - A


91.9
8
Tube: PU0640

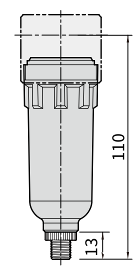
● - BG-H - F1


83.9
19.5
Tube: PU0640

— BG PC bowl with bowl guard (Option)

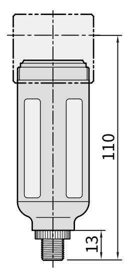
### Auto drain-Long cup

● - LG - A



— LG Long cup (Option)

● - LBG - A

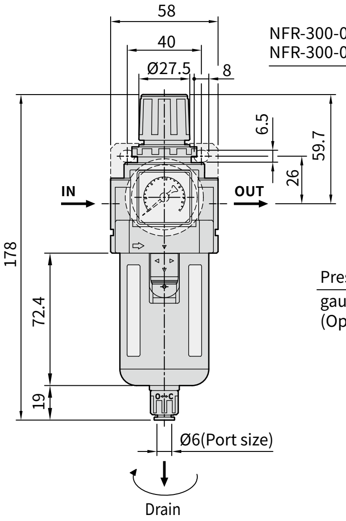


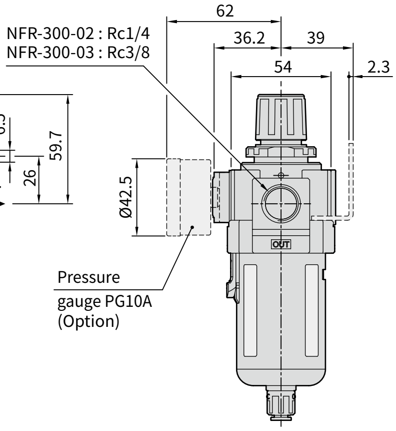
— LBG PC bowl with bowl guard (Option)

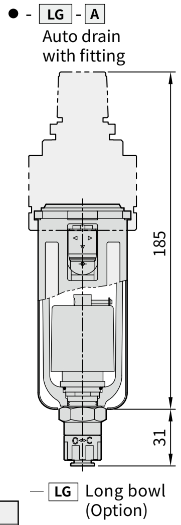
# NFR series Filter Regulator

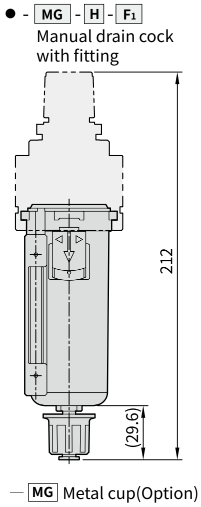
## Dimensions

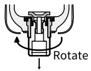
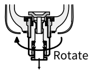
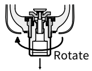
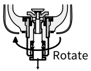
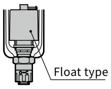
### NFR - 300 - □ - H Standard


58
40
Ø27.5
8
6.5
59.7
26
IN
OUT
178
72.4
19
Ø6(Port size)
Drain


62
36.2
39
54
2.3
NFR-300-02 : Rc1/4
NFR-300-03 : Rc3/8
Ø42.5
OUT
Pressure gauge PG10A (Option)

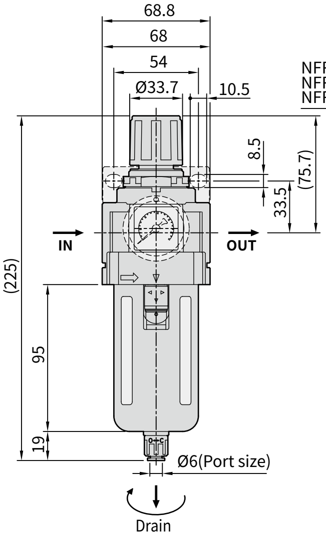

● - LG - A
Auto drain with fitting
185
31
LG Long bowl (Option)

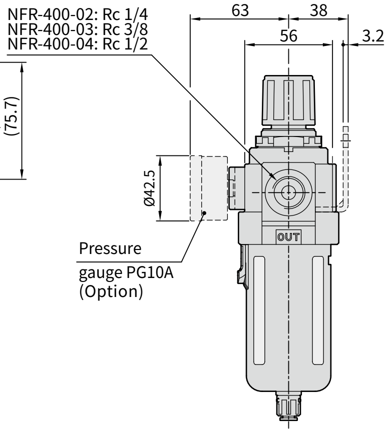

● - MG - H - F1
Manual drain cock with fitting
212
(29.6)
MG Metal cup(Option)

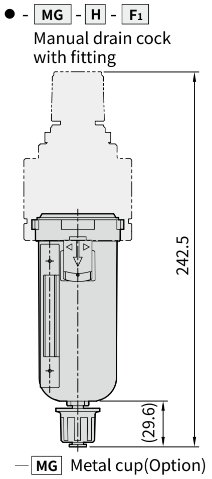
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

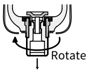
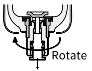
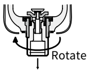
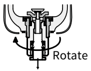
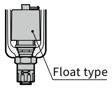
Note: Above auto drainer is AD-35.

### NFR - 400 - □ - H Standard


68.8
68
54
Ø33.7
10.5
8.5
(75.7)
33.5
IN
OUT
(225)
95
19
Ø6(Port size)
Drain


NFR-400-02: Rc 1/4
NFR-400-03: Rc 3/8
NFR-400-04: Rc 1/2
63
38
56
3.2
Ø42.5
OUT
Pressure gauge PG10A (Option)


● - MG - H - F1
Manual drain cock with fitting
242.5
(29.6)
MG Metal cup(Option)

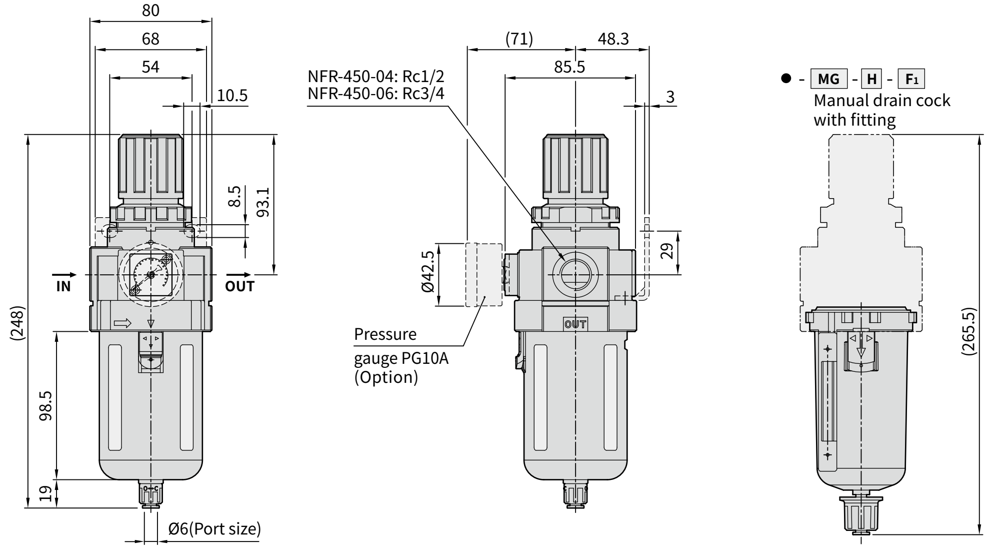
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

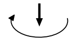
Note: Above auto drainer is AD-55.

# NFR series Filter Regulator

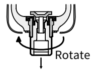
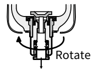
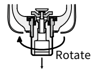
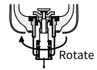
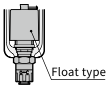
## Dimensions

### NFR - 450 - ☐ - H Standard


80
68
54
10.5
8.5
93.1
IN
OUT
(248)
98.5
19
Ø6(Port size)
NFR-450-04: Rc1/2
NFR-450-06: Rc3/4
(71)
48.3
85.5
3
29
Ø42.5
Pressure gauge PG10A (Option)
OUT
● - MG - H - F1
Manual drain cock with fitting
(265.5)



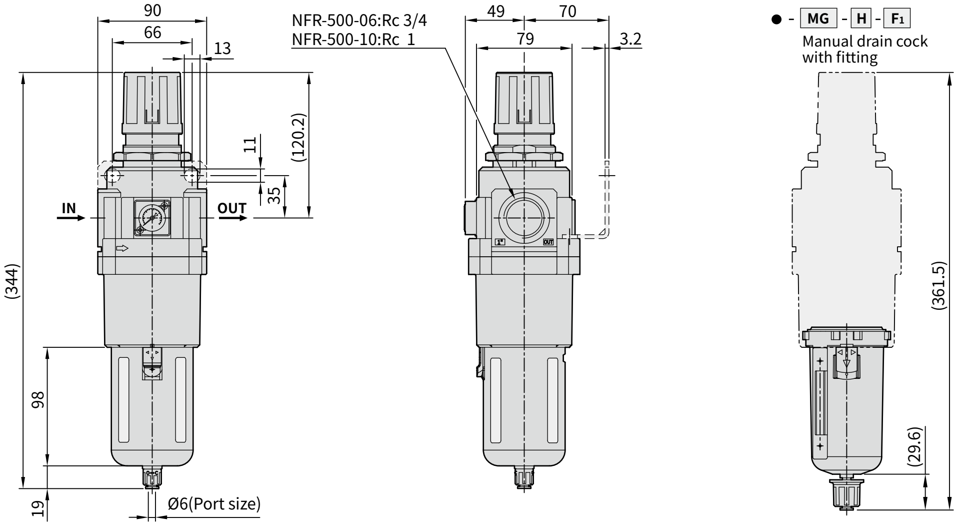
Drain

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

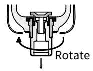
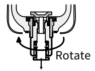
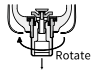
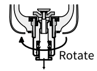
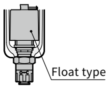
— MG Metal cup(Option)

Note: Above auto drainer is AD-55.

### NFR - 500 - ☐ - H Standard


90
66
13
11
(120.2)
35
IN
OUT
(344)
98
19
Ø6(Port size)
NFR-500-06:Rc 3/4
NFR-500-10:Rc 1
49
70
79
3.2
● - MG - H - F1
Manual drain cock with fitting
(361.5)
(29.6)

Drain

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

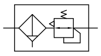
— MG Metal cup(Option)

Note: Above auto drainer is AD-55.

# MFR series Mist Separator Regulator

## Product features/ Characteristics graph

Symbol:

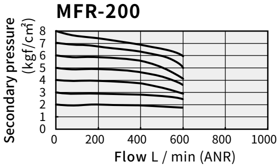


## Specification

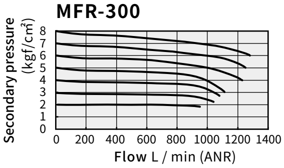
| Item | Model | MFR-200 | MFR-300 | MFR-400 | MFR-450 | MFR-500 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size | Rc/G/NPT | 1/8 , 1/4 | 1/4 , 3/8 | 1/4,3/8,1/2 | 1/2 , 3/4 | 3/4,1 |
| Filter grade | μm | 0.3 | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | |
| Bowl capacity | cc | 15 | 30 | 60 | 100 | 100 |
| Weight | kg | 0.21 | 0.34 | 0.45 | 0.95 | 1.15 |
| Material | Main body | Aluminum die cast | | | | |
| | Bowl | Relieving type | | | | |

## Flow rate characteristic graph

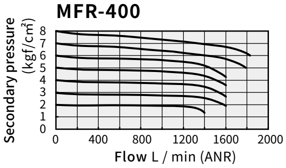
**MFR-200**



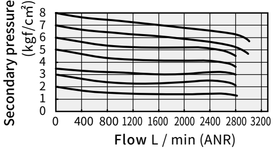
**MFR-300**



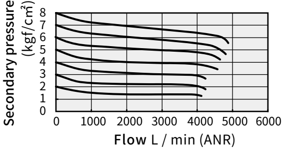
**MFR-400**



**MFR-450**



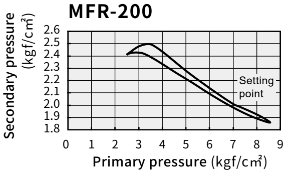
**MFR-500**



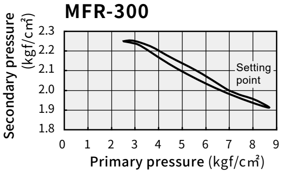
Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

## Pressure characteristics graph

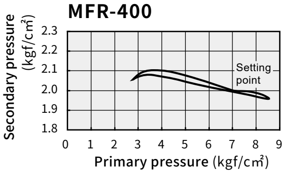
**MFR-200**



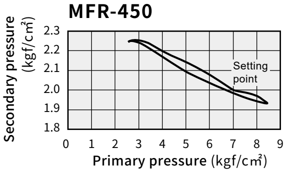
**MFR-300**



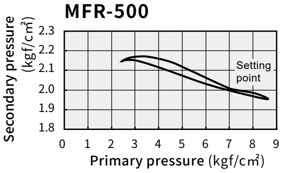
**MFR-400**



**MFR-450**



**MFR-500**



# MFR series Mist Separator Regulator

## Code of order

### Code of order

MFR-300 — 03 — G — BG-A — F1 — PG 10 —

| Model ① | Port size ② | Thread type ③ | Bowl type ④ | Fitting ⑤ | Pressure gauge ⑥ | Bracket |
|---|---|---|---|---|---|---|

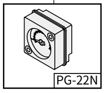
| Model | Port size | | | | | | | Thread type | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mark | 01 | 02 | 03 | 04 | 06 | 10 | None | G | N |
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | RC | G | NPT |
| MFR - 200 | Port connection | ● | ● | | | | | ● | ● | ● |
| MFR - 300 | | | ● | ● | | | | ● | ● | ● |
| MFR - 400 | | | ● | ● | ● | | | ● | ● | ● |
| MFR - 450 | | | | | ● | ● | | ● | ● | |
| MFR - 500 | | | | | | ● | ● | ● | ● | |

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

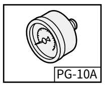
※ Please see the below table in detail.

| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |
| | option |
| | option |

※ Please see the below table in detail.

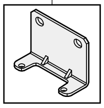


■ None : (standard)
(Square pressure gauge)
(Thin mountng type)



PG-10A : Pressure gauge (option)

※ MFR200 ~ MFR500 series (option)



■ None : With bracket (standard)

### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

### MFR-200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| MFR-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### MFR-200 type - With Fitting - F1 - ⑤

| MFR-200 | — | ● (standard) | ● (option) | ● (standard) | ● (standard) | ● (standard) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

### MFR-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| MFR-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| MFR-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MFR-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MFR-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### MFR-300~500 type - With Fitting - F1 - ⑤

| MFR-300~500<br>Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

Note : 1. MFR200 series are outside fitting , others are inside fitting ; please refer to P.1-1.06 auto drain construction.
2. MFR300 series are standard manual type. (-H Short bowl type)
3. (standard) : Standard accessory ; (option) : Optional accessory.

### Pressure gauge - ⑥

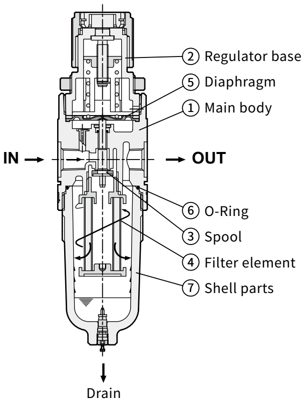
| Pressure gauge | | MFR-200 | MFR-300 | MFR-400 | MFR-450 | MFR-500 |
|---|---|---|---|---|---|---|
| Model | Order code | | | | | |
| PG-10 | P10 | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |
| PG-22N | P22 | ● (standard) | ● (standard) | ● (standard) | ● (standard) | ● (standard) |

# MFR series Mist Separator Regulator

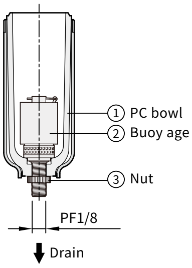
## Product features

## Internal structure

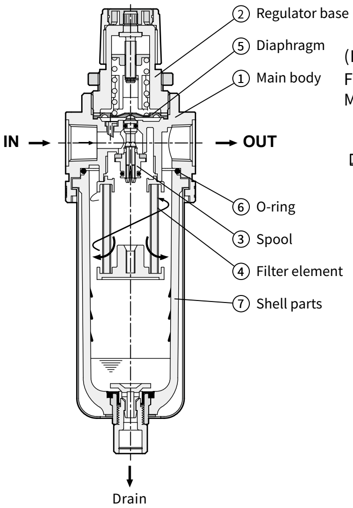
### MFR200


② Regulator base
⑤ Diaphragm
① Main body
IN
OUT
⑥ O-Ring
③ Spool
④ Filter element
⑦ Shell parts
Drain

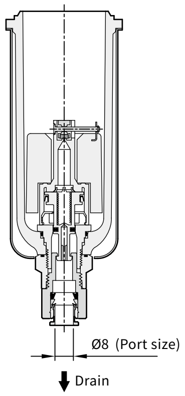
(Long bowl)
Float auto drainer (N.C)
Model: AD-25


① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

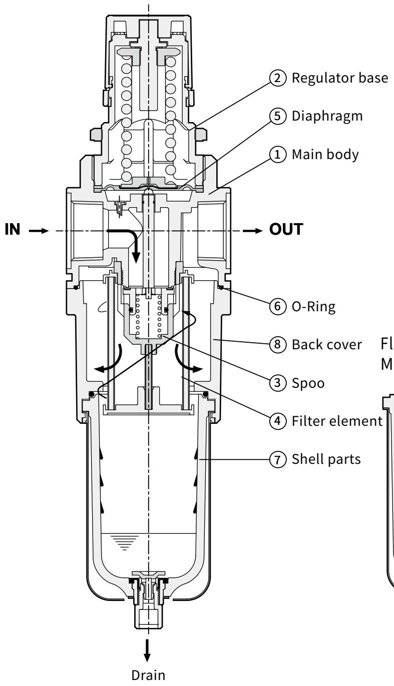
### MFR300, MFR400, MFR450


② Regulator base
⑤ Diaphragm
① Main body
IN
OUT
⑥ O-ring
③ Spool
④ Filter element
⑦ Shell parts
Drain

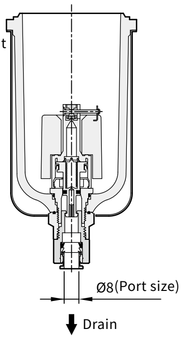
(Long bowl)
Float auto drainer(N.C)
Model: AD-55
AD-35(MFR300)


Ø8 (Port size)
Drain

### MFR500


② Regulator base
⑤ Diaphragm
① Main body
IN
OUT
⑥ O-Ring
⑧ Back cover
③ Spoo
④ Filter element
⑦ Shell parts
Drain

Float auto drainer (N.C)
Model: AD-55


Ø8(Port size)
Drain

## Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | MFR100, MFR200, MFR300, MFR400, MFR450 | MFR500 | |
| 1 | Main body | Aluminum alloy | | |
| 8 | Back cover | | Aluminum alloy | |

## Replacement parts

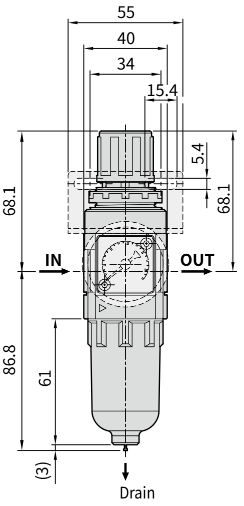
| Number | Accessory | Material | | | | | | Note |
|---|---|---|---|---|---|---|---|---|
| | | MFR100 | MFR200 | MFR300 | MFR400 | MFR450 | MFR500 | |
| 2 | Base | Aldehyde resin | | | | | Aluminum alloy | |
| 3 | Spool | Copper+NBR | | | | | | |
| 4 | Filter element | EA30 | | | | | | |
| 5 | Diaphragm | POM | Stainless still +NBR | | | | | |
| 6 | O-ring | NBR | | | | | | |
| 7 | Shell parts | PC | PC | PC+SS41 | | | | |

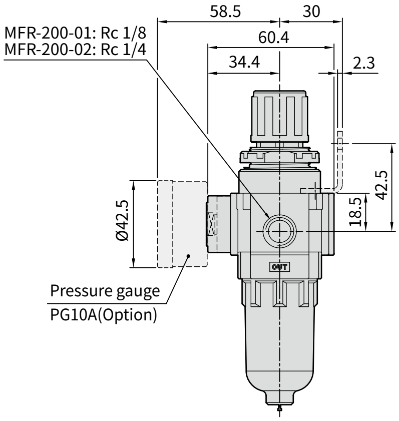
Note: The shell parts in MFR300-MFR500 is included Bowl guard ( Material : SS41)
MFR200 are included bowl guard. ( Material : Aluminum alloy )

# MFR series Mist Separator Regulator

## Dimensions

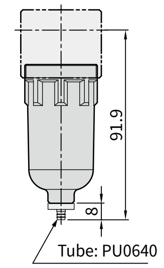
### MFR - 200 - ☐ - H


55
40
34
15.4
5.4
68.1
68.1
IN
OUT
86.8
61
(3)
Drain

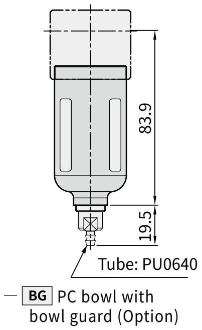

58.5
30
60.4
34.4
2.3
MFR-200-01: Rc 1/8
MFR-200-02: Rc 1/4
Ø42.5
42.5
18.5
OUT
Pressure gauge
PG10A(Option)

### Manual drain cock-Standard

● - A

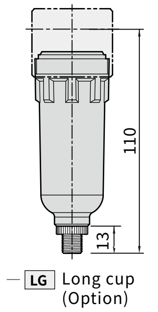

91.9
8
Tube: PU0640

● - BG-H - F1

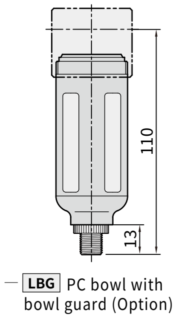

83.9
19.5
Tube: PU0640
BG PC bowl with bowl guard (Option)

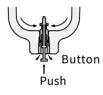
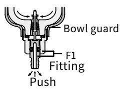
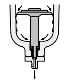
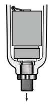
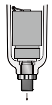
### Auto drain-Long cup

● - LG - A

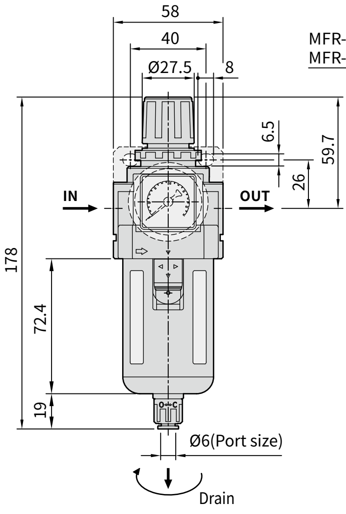

110
13
LG Long cup (Option)

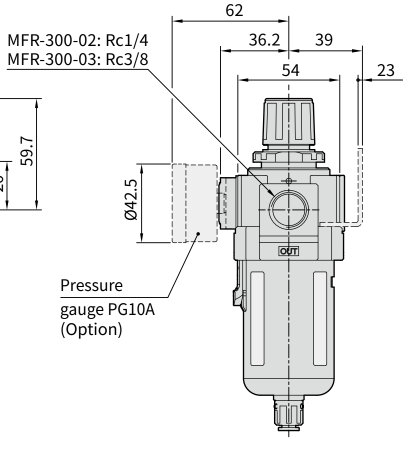
● - LBG - A


110
13
LBG PC bowl with bowl guard (Option)

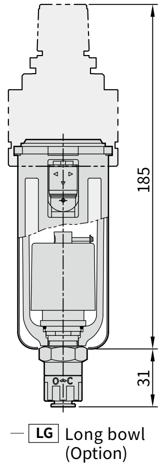
| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

### MFR - 300 - ☐ - H Standard

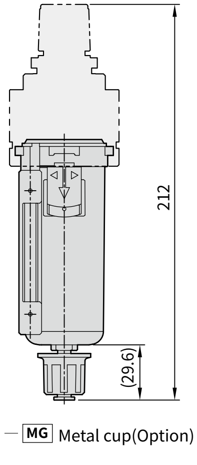

58
40
Ø27.5
8
6.5
59.7
26
IN
OUT
178
72.4
19
Ø6(Port size)
Drain

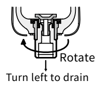
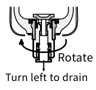
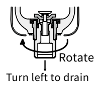
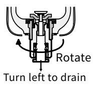
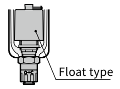

62
36.2
39
54
23
MFR-300-02: Rc1/4
MFR-300-03: Rc3/8
Ø42.5
OUT
Pressure gauge PG10A (Option)

● - LG - A
Auto drain
with fitting


185
31
LG Long bowl (Option)

● - MG - H - F1
Manual drain cock
with fitting


212
(29.6)
MG Metal cup(Option)

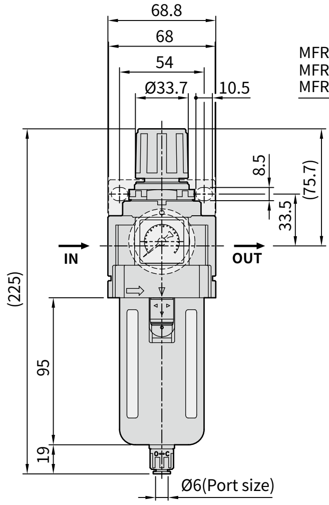
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |  |

Note: Above auto drainer is AD-35.

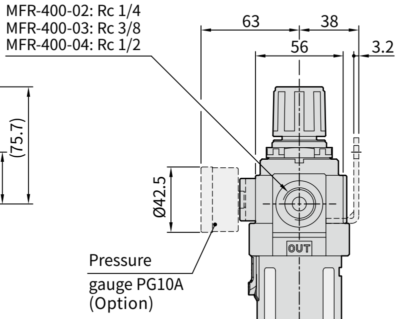
# MFR series Mist Separator Regulator

## Dimensions

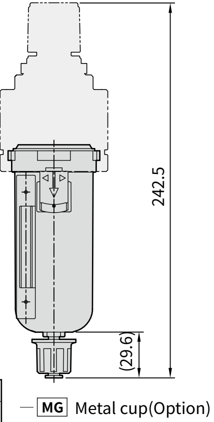
### MFR - 400 - □ - H Standard

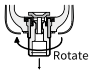
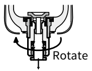
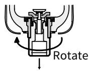
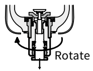
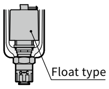

68.8
68
54
Ø33.7
10.5
8.5
(75.7)
33.5
IN
OUT
(225)
95
19
Ø6(Port size)

Drain


MFR-400-02: Rc 1/4
MFR-400-03: Rc 3/8
MFR-400-04: Rc 1/2
63
38
56
3.2
Ø42.5
OUT
Pressure gauge PG10A (Option)

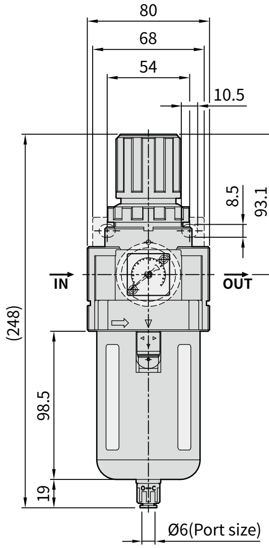
● - MG - H - F1
Manual drain cock with fitting


242.5
(29.6)
MG Metal cup(Option)

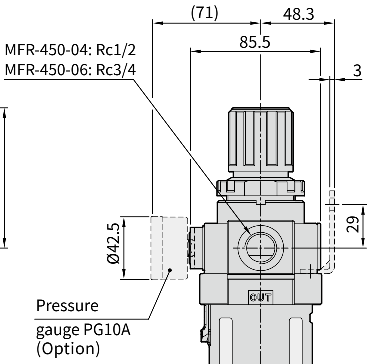
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Turn left to drain |  Turn left to drain |  Turn left to drain |  Turn left to drain |  |

Note: Above auto drainer is AD-55.

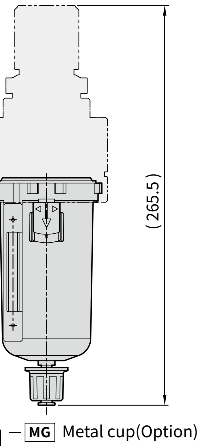
### MFR - 450 - □ - H Standard

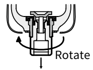
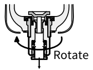
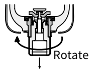
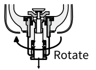
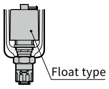

80
68
54
10.5
8.5
93.1
IN
OUT
(248)
98.5
19
Ø6(Port size)

Drain


MFR-450-04: Rc1/2
MFR-450-06: Rc3/4
(71)
48.3
85.5
3
29
Ø42.5
OUT
Pressure gauge PG10A (Option)

● - MG - H - F1
Manual drain cock with fitting


(265.5)
MG Metal cup(Option)

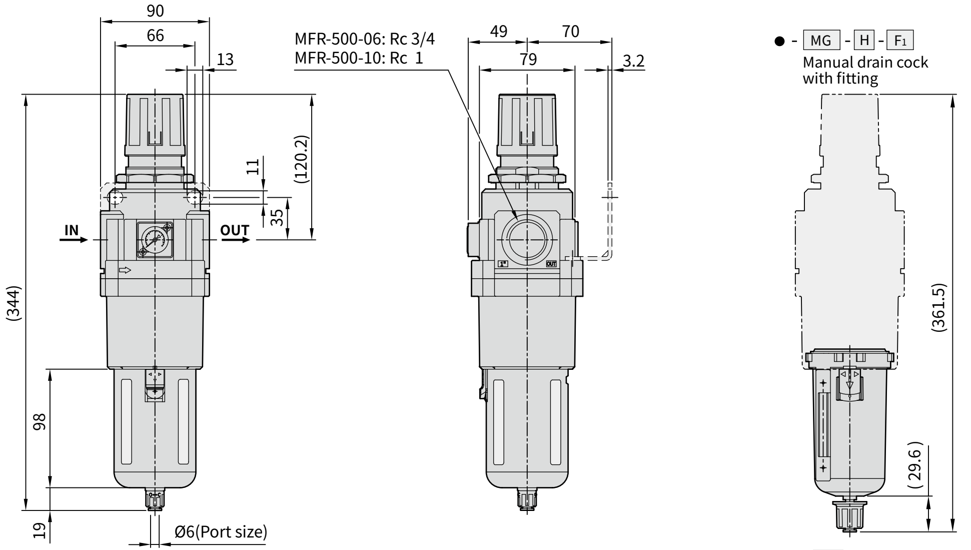
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Turn left to drain |  Turn left to drain |  Turn left to drain |  Turn left to drain |  |

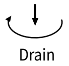
Note: Above auto drainer is AD-55.

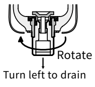
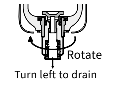
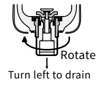
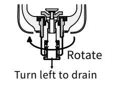
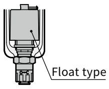
# MFR series Mist Separator Regulator

## Dimensions

### MFR - 500 - ☐ - H Standard


90
66
13
11
(120.2)
35
IN
OUT
(344)
98
19
Ø6(Port size)
MFR-500-06: Rc 3/4
MFR-500-10: Rc 1
49
70
79
3.2
● - MG - H - F1
Manual drain cock
with fitting
(361.5)
(29.6)
MG Metal cup(Option)



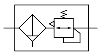
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note: Above auto drainer is AD-55.

# MFRD series Micro Mist Separator Regulator

## Product features/ Characteristics graph

Symbol:

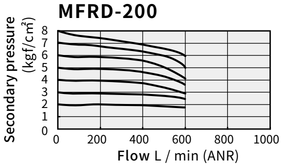


## Specification

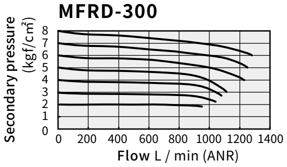
| Item \ Model | | MFRD-200 | MFRD-300 | MFRD-400 | MFRD-450 | MFRD-500 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | | 0.01 µm | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | |
| Bowl capacity | cc | 15 | 30 | 60 | 100 | 100 |
| Weight | kg | 0.21 | 0.34 | 0.45 | 0.95 | 1.15 |
| Material | Main body | Aluminum die cast | | | | |
| | Bowl | Relieving type | | | | |

## Flow rate characteristic graph

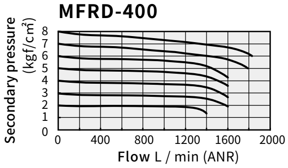
**MFRD-200**



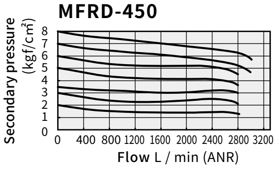
**MFRD-300**



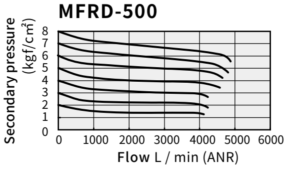
**MFRD-400**



**MFRD-450**



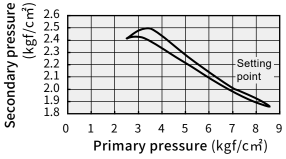
**MFRD-500**



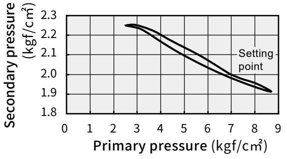
Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

## Pressure characteristics graph

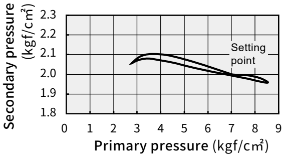
**MFRD-200**



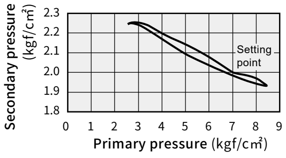
**MFRD-300**



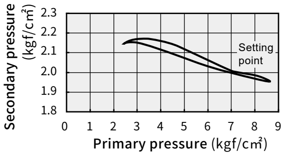
**MFRD-400**



**MFRD-450**



**MFRD-500**



# MFRD series Micro Mist Separator Regulator

## Code of order

### Code of order

**MFRD-300** — **03** — **G** — **BG-A** — **F1** — **PG 10** —

Model ① — Port size ② — Thread type ③ — Bowl type ④ — Fitting ⑤ — Pressure gauge ⑥ — Bracket

| Model | Port size | | | | | | |
|---|---|---|---|---|---|---|---|
| | Mark | 01 | 02 | 03 | 04 | 06 | 10 |
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| MFRD - 200 | Port connection | ● | ● | | | | |
| MFRD - 300 | | | ● | ● | | | |
| MFRD - 400 | | | ● | ● | ● | | |
| MFRD - 450 | | | | | ● | ● | |
| MFRD - 500 | | | | | | ● | ● |

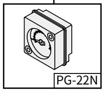
| Model | Thread type | | |
|---|---|---|---|
| | None | G | N |
| | RC | G | NPT |
| MFRD - 200 | ● | ● | ● |
| MFRD - 300 | ● | ● | ● |
| MFRD - 400 | ● | ● | ● |
| MFRD - 450 | ● | ● | |
| MFRD - 500 | ● | ● | |

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

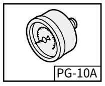
※ Please see the below table in detail.

| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |
| | option |
| | option |

※ Please see the below table in detail.

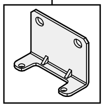


■ None : (standard)
(Square pressure gauge)
(Thin mountng type)



PG-10A : Pressure gauge (option)

※ MFRD200 ~ MFRD500 series (option)



■ None: With bracket (standard)

### Bowl and Drain cock type ◀ ④

### With Fitting - F1 ◀ ⑤

### MFRD-200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| MFRD-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### MFRD-200 type - With Fitting - F1 - ⑤

| MFRD-200 | — | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (option) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

### MFRD-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| MFRD-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| MFRD-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MFRD-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MFRD-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### MFRD-300~500 type - With Fitting - F1 - ⑤

| MFRD-300~500 Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

Note : 1. MFRD200 series are outside fitting , others are inside fitting; please refer to P.1-1.06 auto drain construction.
2. MFRD300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

### Pressure gauge - ⑥

| Pressure gauge | | MFRD-200 | MFRD-300 | MFRD-400 | MFRD-450 | MFRD-500 |
|---|---|---|---|---|---|---|
| Model | Order code | | | | | |
| PG-10 | P10 | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |
| PG-22N | P22 | ● (standard) | ● (standard) | ● (standard) | ● (standard) | ● (standard) |

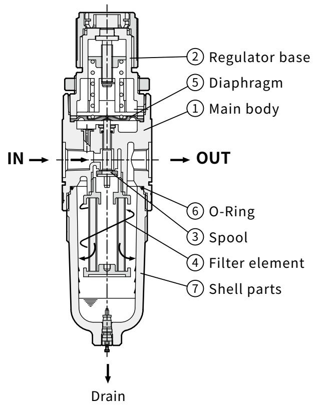
# MFRD series Micro Mist Separator Regulator

## Product features

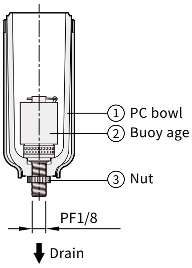
CHELIC

### Internal structure

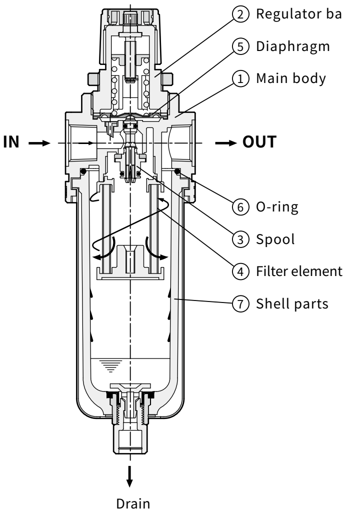
**MFRD200**


② Regulator base
⑤ Diaphragm
① Main body
IN
OUT
⑥ O-Ring
③ Spool
④ Filter element
⑦ Shell parts
Drain

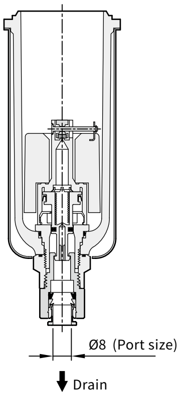
(Long bowl)
Float auto drainer (N.C)
Model: AD-25


① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

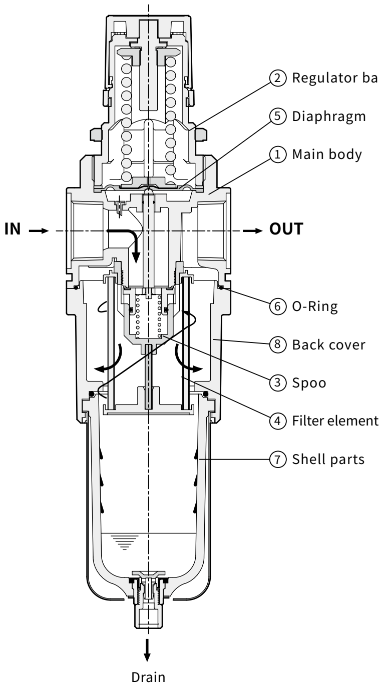
**MFRD300, MFRD400, MFRD450**


② Regulator base
⑤ Diaphragm
① Main body
IN
OUT
⑥ O-ring
③ Spool
④ Filter element
⑦ Shell parts
Drain

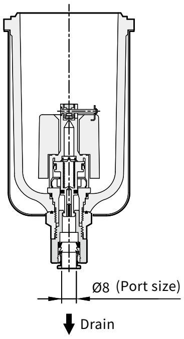
(Long bowl)
Float auto drainer (N.C)
Model: AD-55
AD-35(MFRD300)


Ø8 (Port size)
Drain

**MFRD500**


② Regulator base
⑤ Diaphragm
① Main body
IN
OUT
⑥ O-Ring
⑧ Back cover
③ Spoo
④ Filter element
⑦ Shell parts
Drain

Float auto drainer (N.C)
Model: AD-55


Ø8 (Port size)
Drain

### Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | MFRD200, MFRD300, MFRD400, MFRD450 | MFRD500 | |
| 1 | Main unit | Aluminum alloy | | |
| 5 | Back cover | — | Aluminum alloy | |

### Replacement parts

| Number | Accessory | Material | | | | | Note |
|---|---|---|---|---|---|---|---|
| | | MFRD200 | MFRD300 | MFRD400 | MFRD450 | MFRD500 | |
| 2 | Filter element | Sponge + EA30 | | | | | |
| 3 | O-ring | NBR | | | | | |
| 4 | Shell parts | PC | PC+SS41 | | | | |

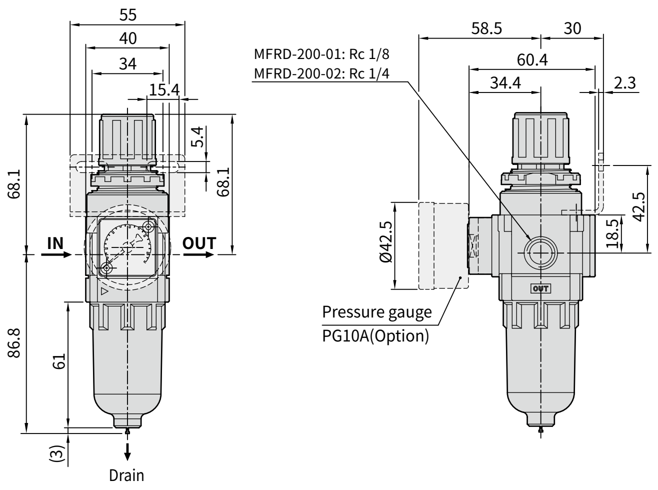
Note : MFRD200 are included bowl guard. (Material : Aluminum alloy)
The shell parts in MFRD300-MFRD500 is included Bowl guard ( Material : SS41)

# MFRD series Micro Mist Separator Regulator

## Dimensions

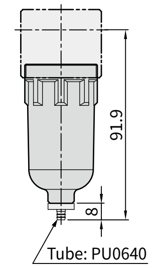
CHELIC

### MFRD - 200 - ☐ - H

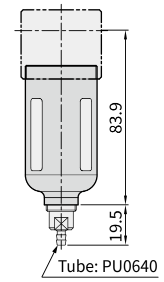

55
40
34
15.4
5.4
68.1
68.1
IN
OUT
86.8
61
(3)
Drain
MFRD-200-01: Rc 1/8
MFRD-200-02: Rc 1/4
58.5
30
60.4
34.4
2.3
Ø42.5
42.5
18.5
OUT
Pressure gauge
PG10A(Option)

### Manual drain cock-Standard

● - A


91.9
8
Tube: PU0640

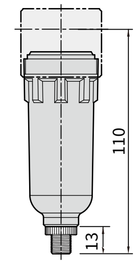
● - BG-H - F1


83.9
19.5
Tube: PU0640

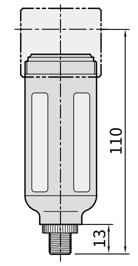
— BG PC bowl with bowl guard (Option)

### Auto drain-Long cup

● - LG - A

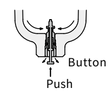
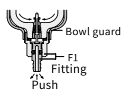
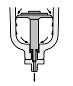
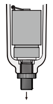
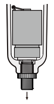


● - LBG - A

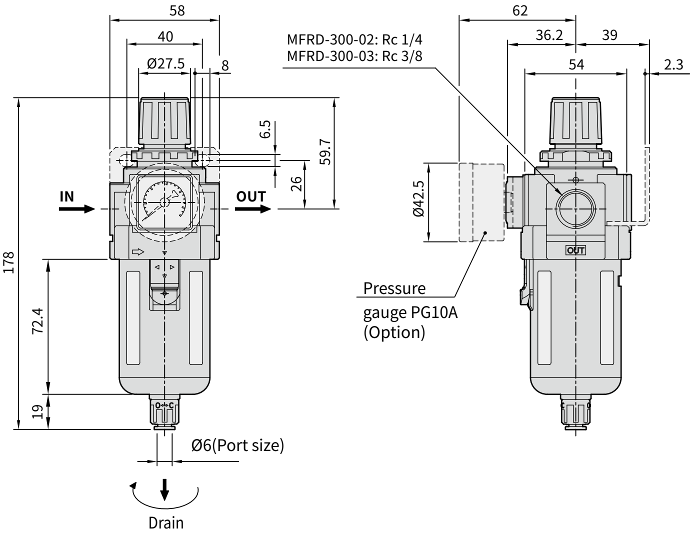


— LG Long cup (Option)

— LBG PC bowl with bowl guard (Option)

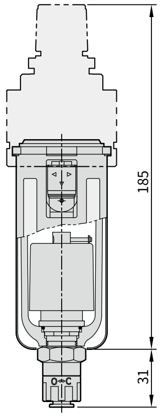
| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

### MFRD - 300 - ☐ - H Standard


58
40
Ø27.5
8
6.5
59.7
26
IN
OUT
178
72.4
19
Ø6(Port size)
Drain
MFRD-300-02: Rc 1/4
MFRD-300-03: Rc 3/8
62
36.2
39
54
2.3
Ø42.5
OUT
Pressure
gauge PG10A
(Option)

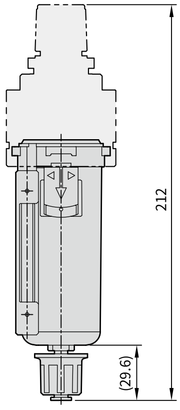
● - BG - A

Auto drain with fitting



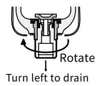
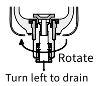
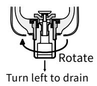
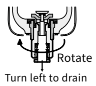
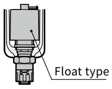
● - MG - H - F1

Manual drain cock with fitting



— LG Long bowl (Option)

— MG Metal cup(Option)

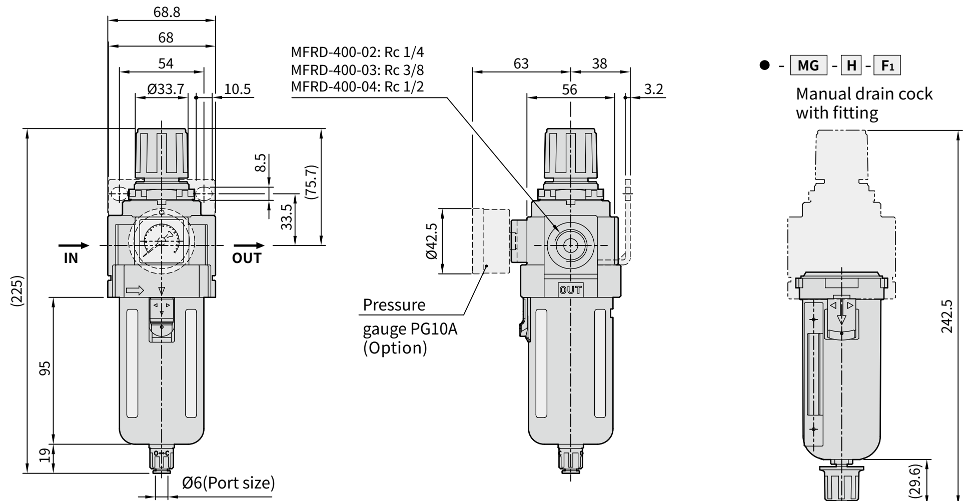
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |  |

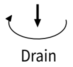
Note: Above auto drainer is AD-35.

# MFRD series Micro Mist Separator Regulator

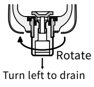
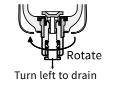
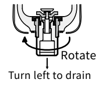
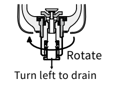
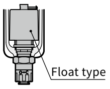
## Dimensions

### ▶ MFRD - 400 - ☐ - H Standard


68.8
68
54
Ø33.7
10.5
8.5
33.5
(75.7)
IN
OUT
(225)
95
19
Ø6(Port size)
MFRD-400-02: Rc 1/4
MFRD-400-03: Rc 3/8
MFRD-400-04: Rc 1/2
63
38
56
3.2
Ø42.5
OUT
Pressure gauge PG10A (Option)
● - MG - H - F1
Manual drain cock with fitting
242.5
(29.6)

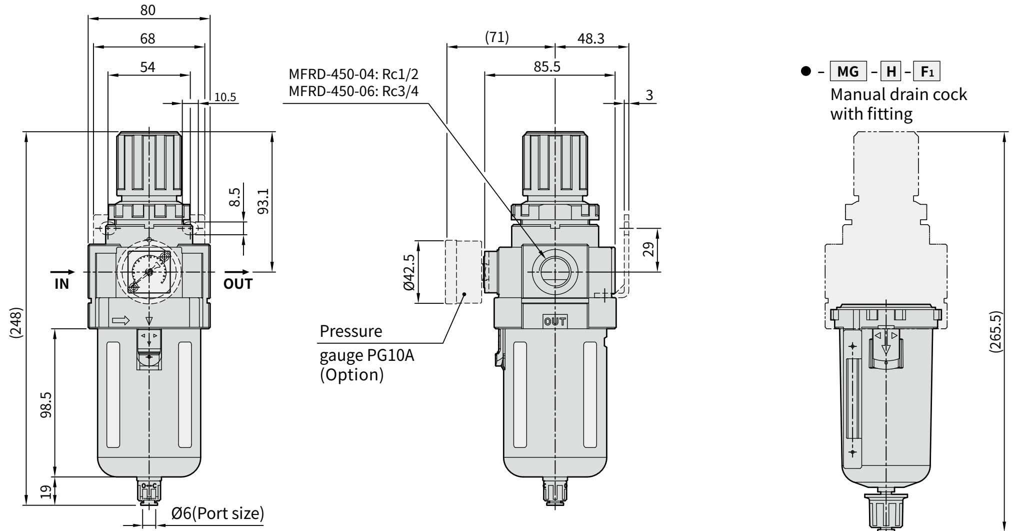


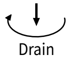
MG Metal cup(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

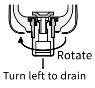
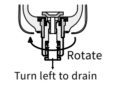
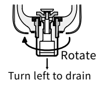
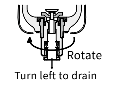
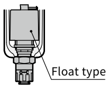
Note: Above auto drainer is AD-55.

### ▶ MFRD - 450 - ☐ - H Standard


80
68
54
10.5
8.5
93.1
IN
OUT
(248)
98.5
19
Ø6(Port size)
MFRD-450-04: Rc1/2
MFRD-450-06: Rc3/4
(71)
48.3
85.5
3
29
Ø42.5
OUT
Pressure gauge PG10A (Option)
● - MG - H - F1
Manual drain cock with fitting
(265.5)



MG Metal cup(Option)

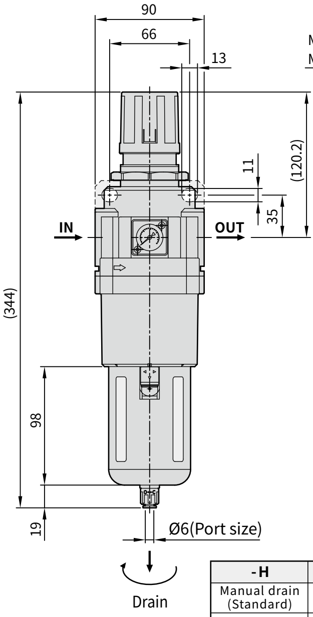
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

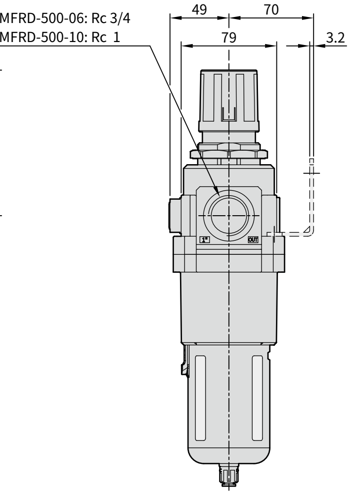
Note: Above auto drainer is AD-55.

# MFRD series Micro Mist Separator Regulator

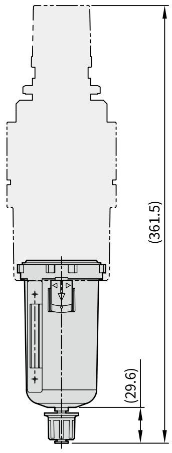
## Dimensions

### MFRD - 500 - ☐ - H Standard

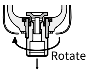
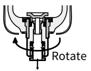
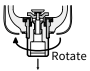
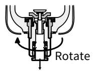
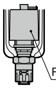

90
66
13
11
(120.2)
35
IN
OUT
(344)
98
19
Ø6(Port size)
Drain


MFRD-500-06: Rc 3/4
MFRD-500-10: Rc 1
49
70
79
3.2

● - MG - H - F1
Manual drain cock
with fitting



— MG Metal cup(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain<br>(Standard) | Manual drain cock<br>with fitting(Option) | Semi-Auto drain<br>(Option) | Semi-Auto drain<br>with fitting(Option) | Auto drain<br>(Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

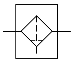
Note: Above auto drainer is AD-55.

# NF series Air Filter

## Product features/ Characteristics graph

CHELIC

Symbol:

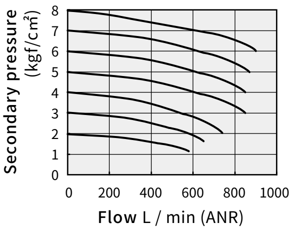


## Specification

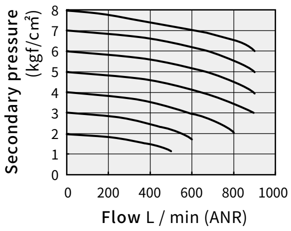
| Item \ Model | | NF-100 | NF-200 | NF-300 | NF-400 | NF-450 | NF-500 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size | Rc | M5, 1/8 | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | | 5µm | | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | | |
| Bowl capacity | cc | 5 | 15 | 30 | 60 | 100 | 100 |
| Weight | kg | 0.18 | 0.21 | 0.34 | 0.45 | 0.85 | 1.15 |
| Material | Main body | Aluminum die cast | | | | | |
| | Bowl | Relieving type | | | | | |

## Flow rate characteristic graph

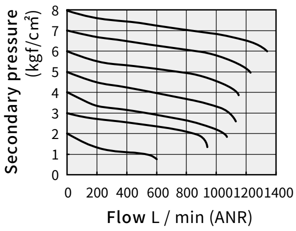
NF-100



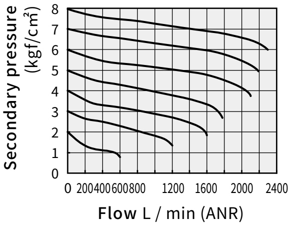
NF-200



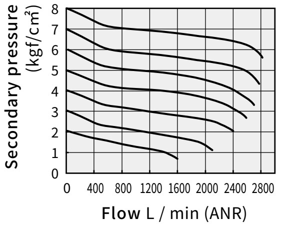
NF-300



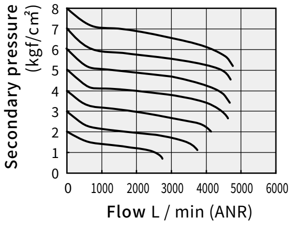
NF-400



NF-450



NF-500



Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

# NF series Air Filter

## Code of order

## Code of order

**NF - 300** – **03** – **G** – **BG - A** – **F1** – **C**

| Model ① | Port size ② | Thread type ③ | Bowl type ④ | Fitting ⑤ | Bracket |
|---|---|---|---|---|---|

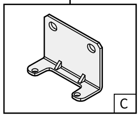
| Model | Port size |  |  |  |  |  |  |  | Thread type |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Mark | M5 | 01 | 02 | 03 | 04 | 06 | 10 | None |  | G | N |
|  | Port size | M5 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | M5 | RC | G | NPT |
| NF - 100 | Port connection | ● | ● |  |  |  |  |  | ● | ● | ● | ● |
| NF - 200 |  |  | ● | ● |  |  |  |  |  | ● | ● | ● |
| NF - 300 |  |  |  | ● | ● |  |  |  |  | ● | ● | ● |
| NF - 400 |  |  |  | ● | ● | ● |  |  |  | ● | ● | ● |
| NF - 450 |  |  |  |  |  | ● | ● |  |  | ● | ● |  |
| NF - 500 |  |  |  |  |  |  | ● | ● |  | ● | ● |  |

| Bowl type |  |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | — |
| PC(Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

※ Please see the below table in detail.

| Fitting |  |
|---|---|
| None | -F1 |
| Manual drain cock | — |
|  | option |
|  | option |
|  | option |
|  | option |
|  | option |

※ Please see the below table in detail.



■ None: Without bracket

C: With bracket (option)

### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

---

### NF-100~200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) |  | Bowl guard (Short bowl) |  | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| NF-100 | ● (standard) | — | — | — | — | — | — |
| NF-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### NF-100~200 type - With Fitting - F1 - ⑤

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| NF-100/200 | — | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (option) | — |
| Description |  | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) |  |

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### NF-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) |  |  | Bowl guard (Long bowl) |  | Metal (Long bowl) |  |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| NF-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| NF-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NF-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| NF-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### NF-300~500 type - With Fitting - F1 - ⑤

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| NF-300~500 Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |

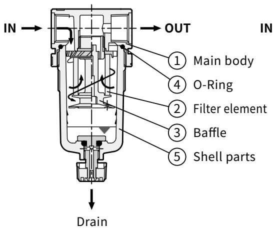
Note : 1. NF200 series are outside fitting , others are inside fitting ; please refer to P.1-1.06 auto drain construction.
2. NF300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

# NF series Air Filter

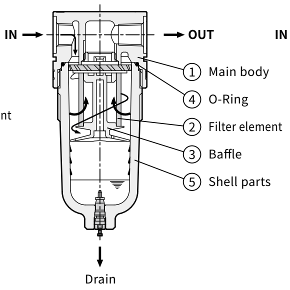
## Product features

## Internal structure

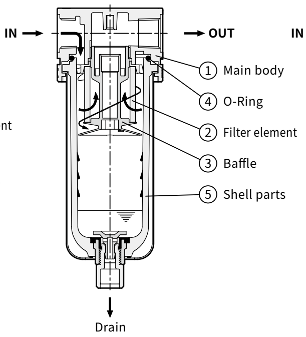
**NF-100**


IN
OUT
① Main body
④ O-Ring
② Filter element
③ Baffle
⑤ Shell parts
Drain

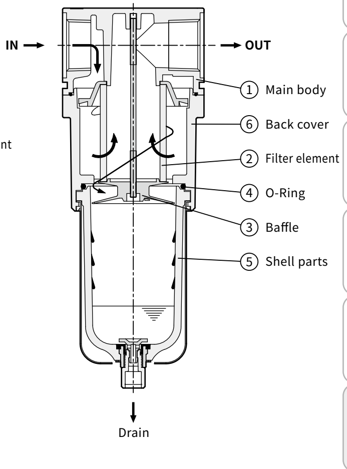
**NF-200**


IN
OUT
① Main body
④ O-Ring
② Filter element
③ Baffle
⑤ Shell parts
Drain

**NF-300, NF400, NF450**


IN
OUT
① Main body
④ O-Ring
② Filter element
③ Baffle
⑤ Shell parts
Drain

**NF-500**


IN
OUT
① Main body
⑥ Back cover
② Filter element
④ O-Ring
③ Baffle
⑤ Shell parts
Drain

### Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | NF100 · NF200 · NF300 · NF400 · NF450 | NF500 | |
| 1 | Main body | Aluminum alloy | | |
| 6 | Back cover | — | Aluminum ailloy | |

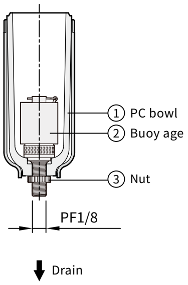
### Replacement parts

| Number | Accessory | Material | | | | | | Note |
|---|---|---|---|---|---|---|---|---|
| | | NF100 | NF200 | NF300 | NF400 | NF450 | NF500 | |
| 2 | Filter element | EA30 | | | | | | |
| 3 | Baffle | POM | | | | | | |
| 4 | O-ring | NBR | | | | | | |
| 5 | Shell parts | PC | PC | PC + SS41 | | | | |

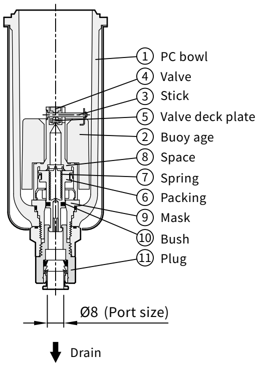
Note : NF200 are included bowl guard. (Material: Aluminum alloy)
The shell parts in NF300-NF500 is included Bowl guard ( Material: SS41)

## Auto drain structure theory

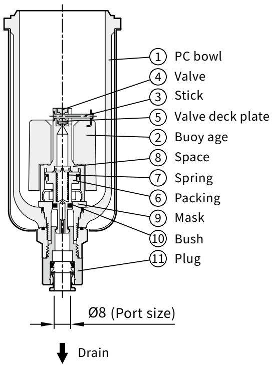
- Suitable for: N200
  Model: AD-25


① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

- Suitable for: N300
  Model: AD-35


① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

- Suitable for: N400, N450, N500
  Model: AD-55

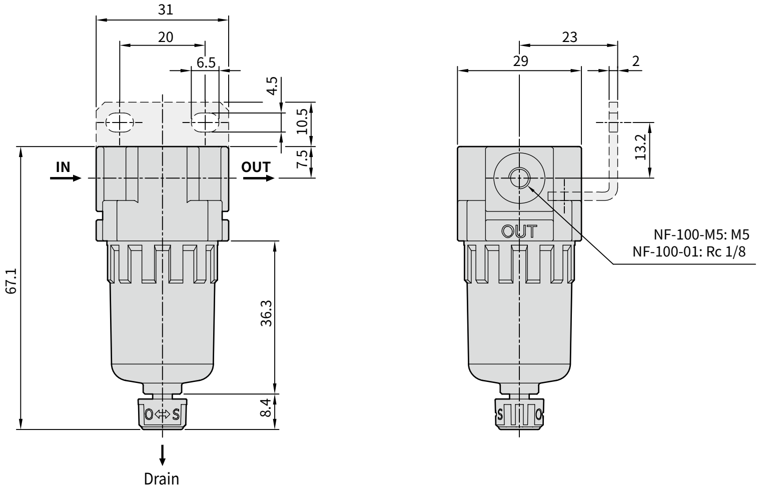

① PC bowl
④ Valve
③ Stick
⑤ Valve deck plate
② Buoy age
⑧ Space
⑦ Spring
⑥ Packing
⑨ Mask
⑩ Bush
⑪ Plug
Ø8 (Port size)
Drain

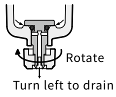
# NF series Air Filter

## Dimensions

**CHELIC**

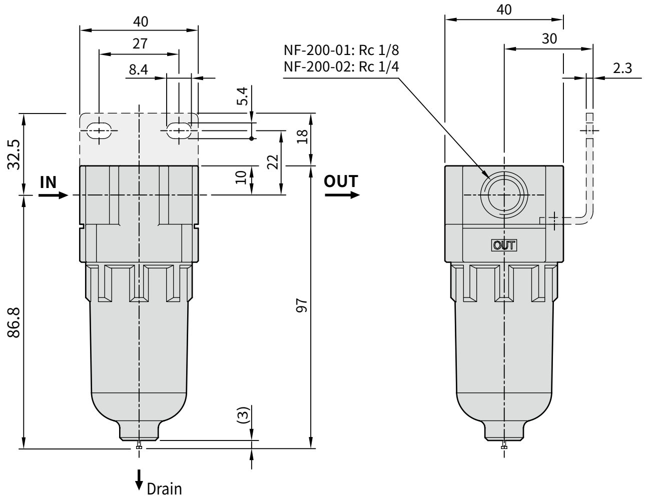
### NF - 100 - ☐ - H Standard

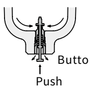
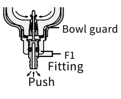
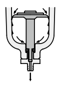
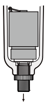
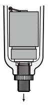

31
20
6.5
4.5
10.5
7.5
IN
OUT
67.1
36.3
8.4
O⇔S
Drain
23
29
2
13.2
OUT
NF-100-M5: M5
NF-100-01: Rc 1/8

| - H |
|---|
| Manual drain cock |
|  Rotate<br>Turn left to drain |

---

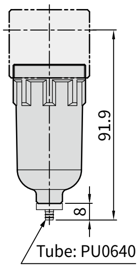
### NF - 200 - ☐ - H


40
27
8.4
5.4
32.5
18
22
10
IN
OUT
86.8
97
(3)
Drain
40
30
2.3
NF-200-01: Rc 1/8
NF-200-02: Rc 1/4
OUT

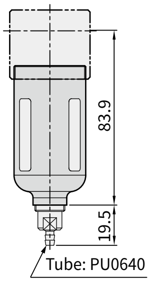
| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|  Button<br>Push |  Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

## Manual drain cock-Standard

● - A


91.9
8
Tube: PU0640

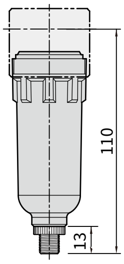
● - BG-H - F1


83.9
19.5
Tube: PU0640

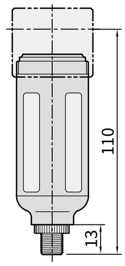
— BG PC bowl with bowl guard (Option)

## Auto drain-Long cup

● - LG - A



● - LBG - A



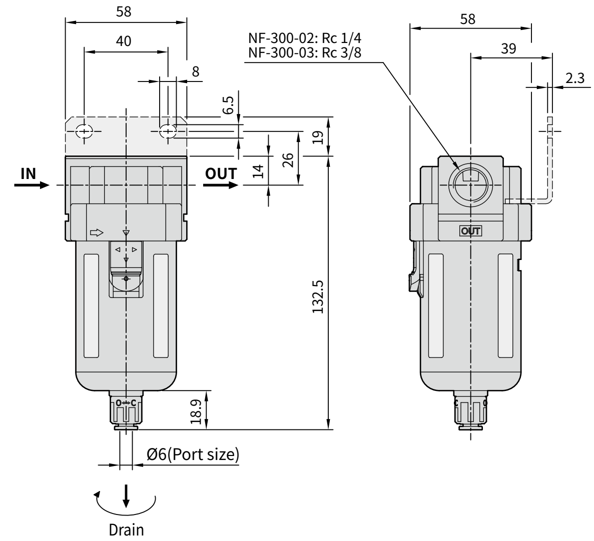
— LG Long cup (Option)

— LBG PC bowl with bowl guard (Option)

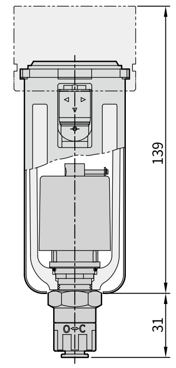
# NF series Air Filter

## Dimensions

### NF - 300 - ☐ - H Standard

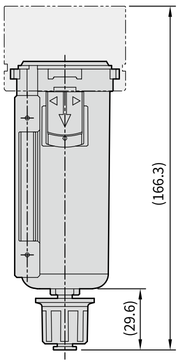

58
40
8
6.5
19
26
14
IN
OUT
132.5
18.9
Ø6(Port size)
Drain
NF-300-02: Rc 1/4
NF-300-03: Rc 3/8
58
39
2.3
OUT

● - LG - A
Auto drain
with fitting

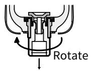
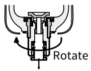
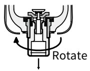
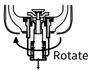
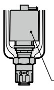


— LG Long bowl (Option)

● - MG - H - F1
Manual drain cock
with fitting

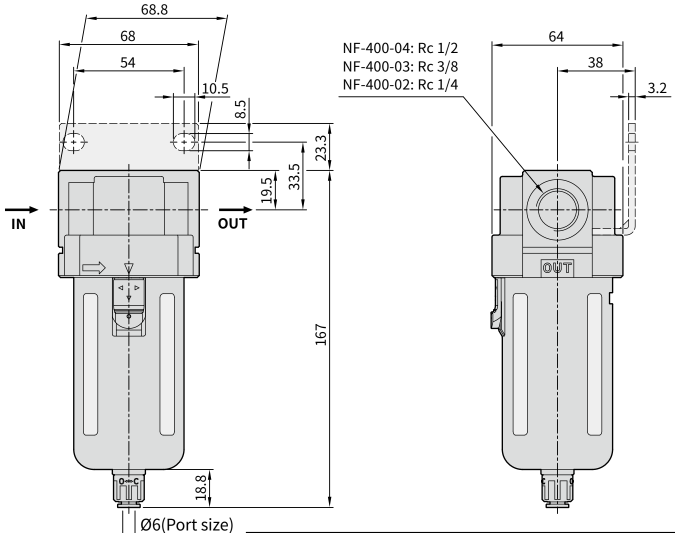


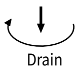
— MG Metal cup(Option)

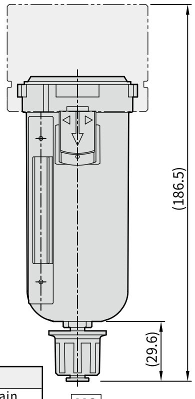
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note: Above auto drainer is AD-35.

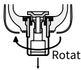
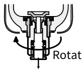
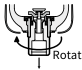
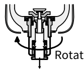
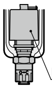
### NF - 400 - ☐ - H Standard


68.8
68
54
10.5
8.5
23.3
33.5
19.5
IN
OUT
167
18.8
NF-400-04: Rc 1/2
NF-400-03: Rc 3/8
NF-400-02: Rc 1/4
64
38
3.2
OUT


Ø6(Port size)
Drain



— MG Metal cup(Option)

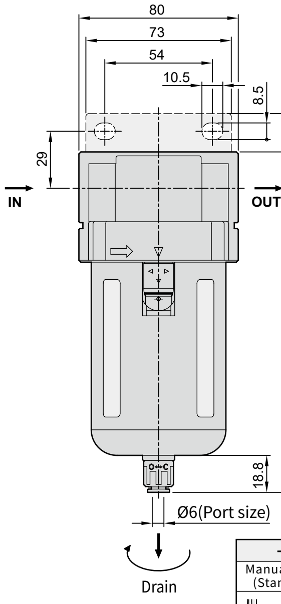
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

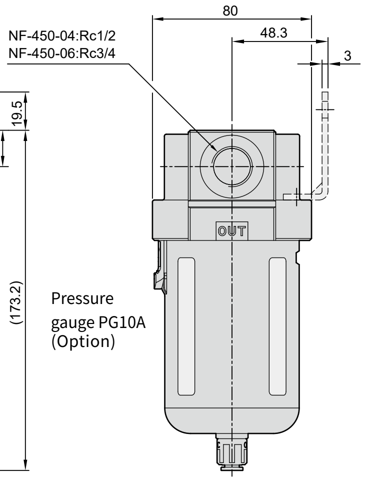
Note: Above auto drainer is AD-55.

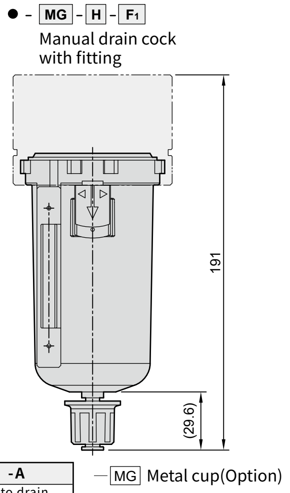
# NF series Air Filter

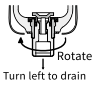
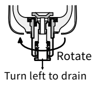
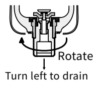
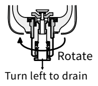
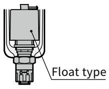
## Dimensions

### NF - 450 - ☐ - H Standard


80
73
54
10.5
8.5
19.5
29
18.5
IN
OUT
(173.2)
18.8
Ø6(Port size)
Drain

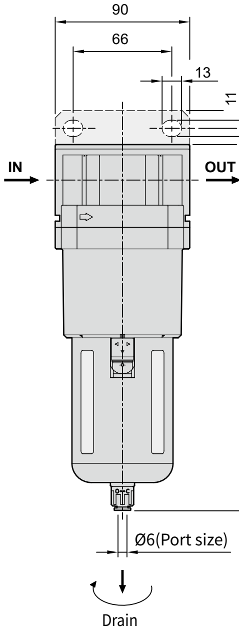

NF-450-04:Rc1/2
NF-450-06:Rc3/4
80
48.3
3
OUT
Pressure gauge PG10A (Option)

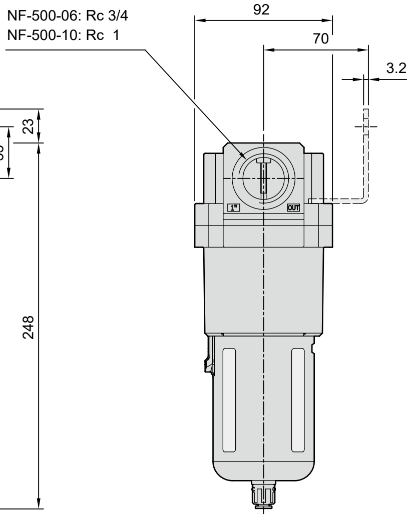

● - MG - H - F1
Manual drain cock with fitting
191
(29.6)
MG Metal cup(Option)

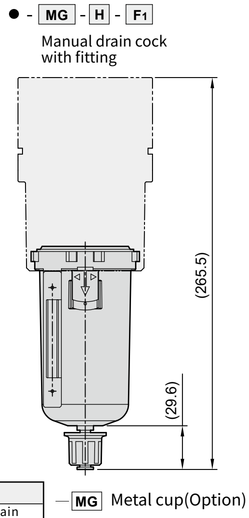
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

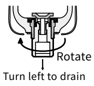
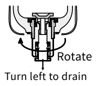
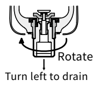
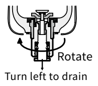
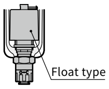
Note: Above auto drainer is AD-55.

### NF - 500 - ☐ - H Standard


90
66
13
11
23
24
35
IN
OUT
248
Ø6(Port size)
Drain


NF-500-06: Rc 3/4
NF-500-10: Rc 1
92
70
3.2
OUT


● - MG - H - F1
Manual drain cock with fitting
(265.5)
(29.6)
MG Metal cup(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

Note: Above auto drainer is AD-55.

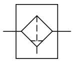
# MF series Mist Separator

## Product features/ Characteristics graph

**CHELIC.**

NC
NFC
PSN-10 30,41
NFR
MFR
MFRD
NF
MF
MFD
NR
ARX
NPR
NL
N
DM
ERX
ERP
PG/AFB NDV/AD

Symbol:

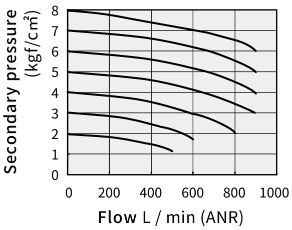


### Specification

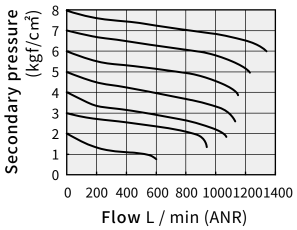
| Item | Model | MF-200 | MF-300 | MF-400 | MF-450 | MF-500 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size | Rc | 1/4, 1/8 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | | 0.3 µm | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | |
| Bowl capacity | cc | 9 | 60 | 60 | 100 | 100 |
| Weight | kg | 0.18 | 0.34 | 0.45 | 0.85 | 1.15 |
| Material | Main body | Aluminum die cast | | | | |
| | Bowl | Relieving type | | | | |

### Flow rate characteristic graph

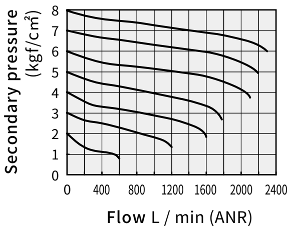
**MF-200**



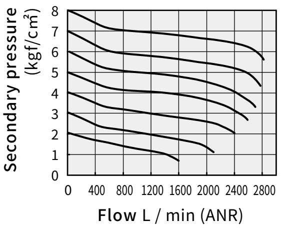
**MF-300**



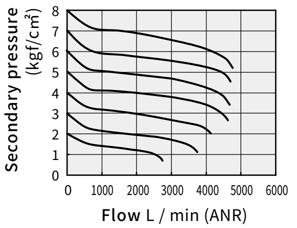
**MF-400**



**MF-450**



**MF-500**



Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

### Code of order

| MF - 300 | 03 | G | BG - A | F1 | C |
|---|---|---|---|---|---|
| Model ① | Port size ② | Thread type ③ | Bowl type ④ | Fitting ⑤ | Bracket |

| Model | Port size | | | | | | |
|---|---|---|---|---|---|---|---|
| | Code | 01 | 02 | 03 | 04 | 06 | 10 |
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| MF - 200 | Port connection | ● | ● | | | | |
| MF - 300 | | | ● | ● | | | |
| MF - 400 | | | ● | ● | ● | | |
| MF - 450 | | | | | ● | ● | |
| MF - 500 | | | | | | ● | ● |

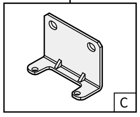
| Thread type | | |
|---|---|---|
| None | G | N |
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |
| ● | ● | |

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

※ Please see the below table in detail.

| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |
| | option |
| | option |

※ Please see the below table in detail.



■ None : Without bracket

C : With bracket (option)

### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

---

### MF-200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| MF-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### MF-200 type - With Fitting - F1 ⑤

| MF-200 | — | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (option) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

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### MF-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| MF-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| MF-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MF-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MF-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### MF-300~500 type - With Fitting - F1 - ⑤

| MF-300~500 Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (standard) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

Note : 1. MF200 series are outside fitting , others are inside fitting ; please refer to P.1-1.06 auto drain construction.
2. MF300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

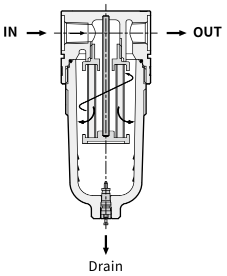
# MF series Mist Separator

## Product features

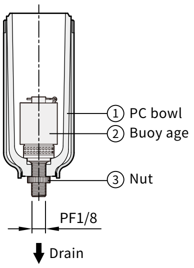
## Internal structure

### MF200

(Short bowl)

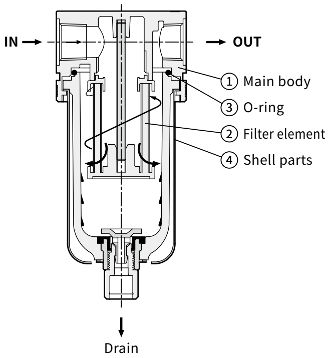

IN
OUT
Drain

(Long bowl)
Float auto drainer (N.C)
Model: AD-25

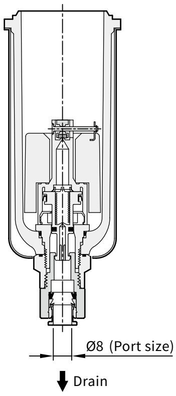

① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

### MF300

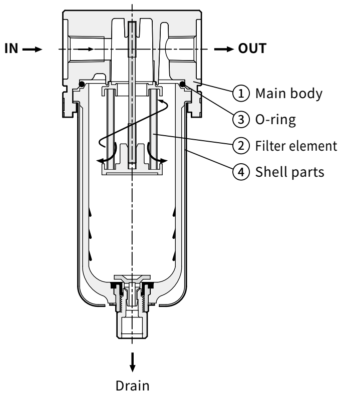
(Short bowl)


IN
OUT
① Main body
③ O-ring
② Filter element
④ Shell parts
Drain

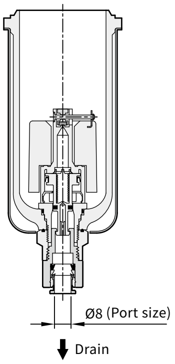
(Long bowl)
Float auto drainer (N.C)
Model: AD-50


Ø8 (Port size)
Drain

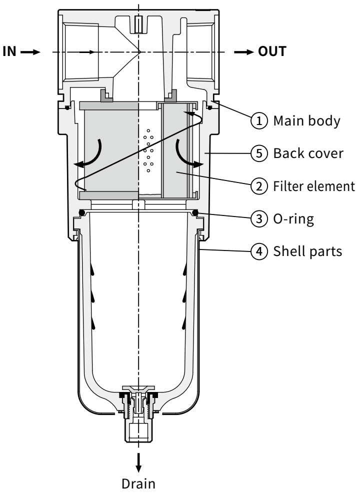
### MF400, MF450


IN
OUT
① Main body
③ O-ring
② Filter element
④ Shell parts
Drain

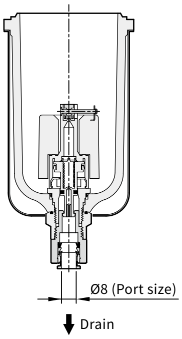
Float auto drainer (N.C)
Model: AD-55


Ø8 (Port size)
Drain

### MF500


IN
OUT
① Main body
⑤ Back cover
② Filter element
③ O-ring
④ Shell parts
Drain

Float auto drainer (N.C)
Model: AD-55


Ø8 (Port size)
Drain

### Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | MF200, MF300, MF400, MF450 | MF500 | |
| 1 | Main body | Aluminum alloy | | |
| 5 | Back cover | — | Aluminum alloy | |

### Replacement parts

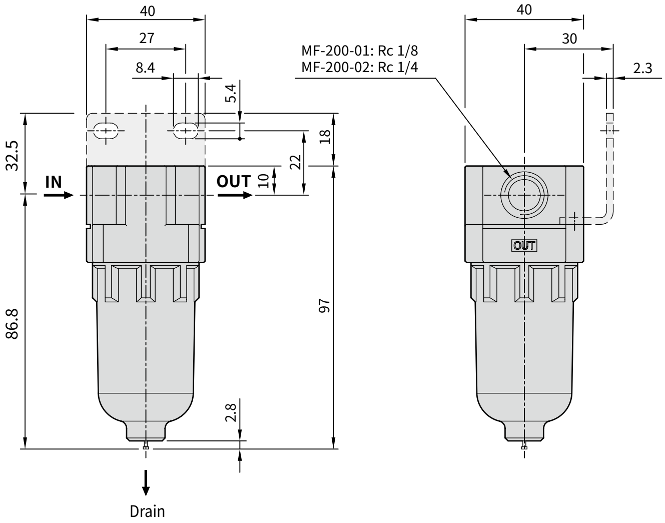
| Number | Accessory | Material | | | | | Note |
|---|---|---|---|---|---|---|---|
| | | MF200 | MF300 | MF400 | MF450 | MF500 | |
| 2 | Filter element | Sponge + EA30 | | | | | |
| 3 | O-ring | NBR | | | | | |
| 4 | Shell parts | PC | PC+SS41 | | | | |

Note : MF200 are included bowl guard. (Material : Aluminum alloy)
The shell parts in MF300-MF500 is included Bowl guard ( Material : SS41)

# MF series Mist Separator

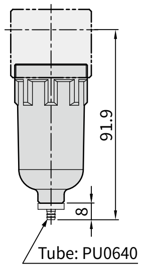
## Dimensions

### MF - 200 - [ ] - H

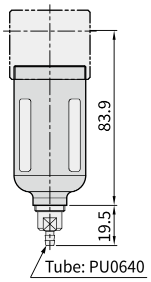

40
27
8.4
5.4
18
22
10
32.5
IN
OUT
86.8
97
2.8
Drain
40
30
2.3
MF-200-01: Rc 1/8
MF-200-02: Rc 1/4
OUT

### Manual drain cock-Standard

● - A


91.9
8
Tube: PU0640

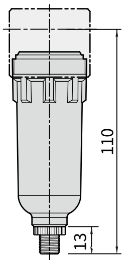
● - BG-H - F1


83.9
19.5
Tube: PU0640

— BG PC bowl with bowl guard (Option)

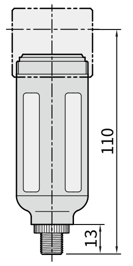
### Auto drain-Long cup

● - LG - A

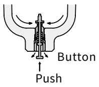
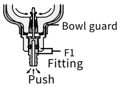
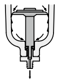
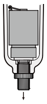
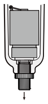


— LG Long cup (Option)

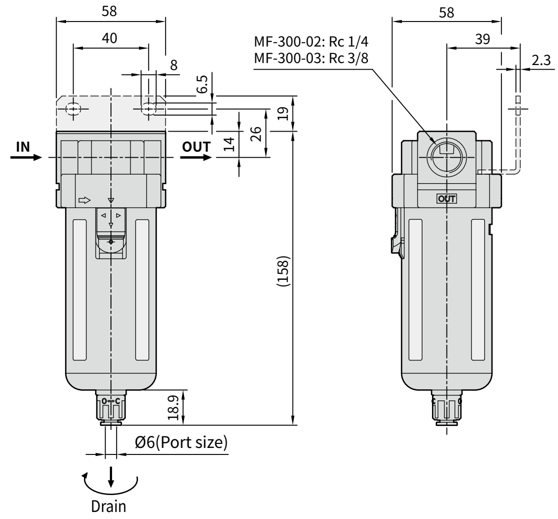
● - LBG - A



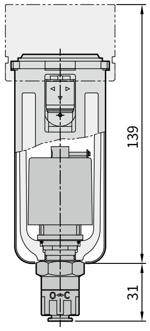
— LBG PC bowl with bowl guard (Option)

| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|  Button<br>Push |  Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

### MF - 300 - [ ] - H Standard

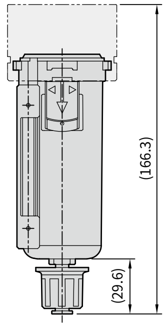

58
40
8
6.5
19
26
14
IN
OUT
(158)
18.9
Ø6(Port size)
Drain
58
39
2.3
MF-300-02: Rc 1/4
MF-300-03: Rc 3/8
OUT

● - LG - A
Auto drain
with fitting

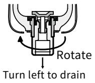
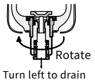
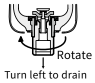
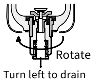
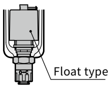


— LG Long bowl (Option)

● - MG - H - F1
Manual drain cock
with fitting



— MG Metal cup(Option)

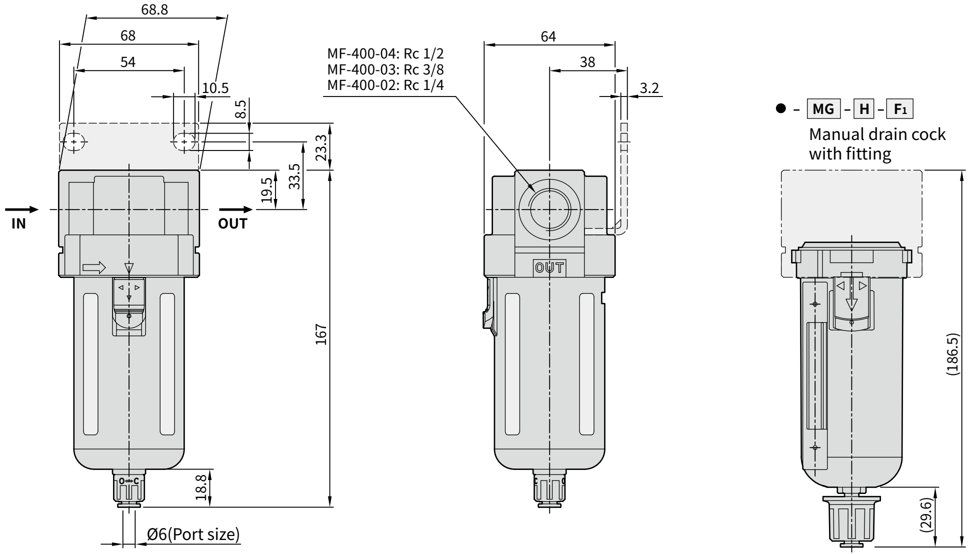
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

Note: Above auto drainer is AD-35.

# MF series Mist Separator

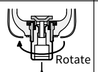
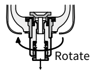
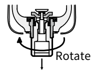
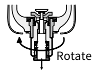
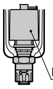
## Dimensions

### MF - 400 - ☐ - H Standard


68.8
68
54
10.5
8.5
23.3
33.5
19.5
IN
OUT
167
18.8
Ø6(Port size)
64
38
3.2
OUT
● - MG - H - F1
Manual drain cock
with fitting
(186.5)
(29.6)

MF-400-04: Rc 1/2
MF-400-03: Rc 3/8
MF-400-02: Rc 1/4

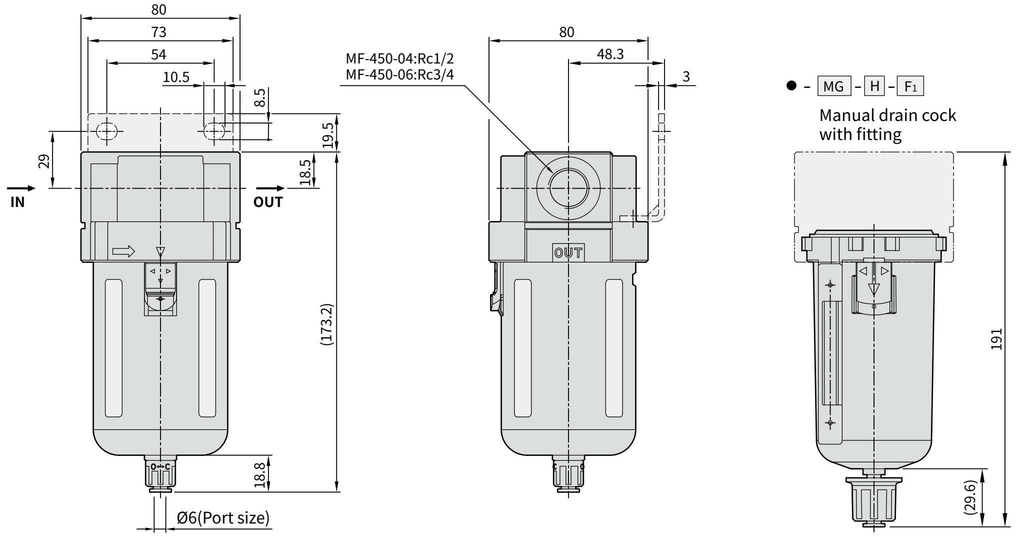
Drain

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

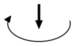
MG Metal cup(Option)

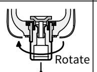
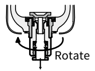
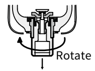
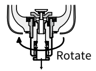
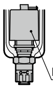
Note: Above auto drainer is AD-55.

### MF - 450 - ☐ - H Standard


80
73
54
10.5
8.5
19.5
29
18.5
IN
OUT
(173.2)
18.8
Ø6(Port size)
80
48.3
3
OUT
● - MG - H - F1
Manual drain cock
with fitting
191
(29.6)

MF-450-04:Rc1/2
MF-450-06:Rc3/4


Drain

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
| <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Rotate<br>Turn left to drain | <br>Float type |

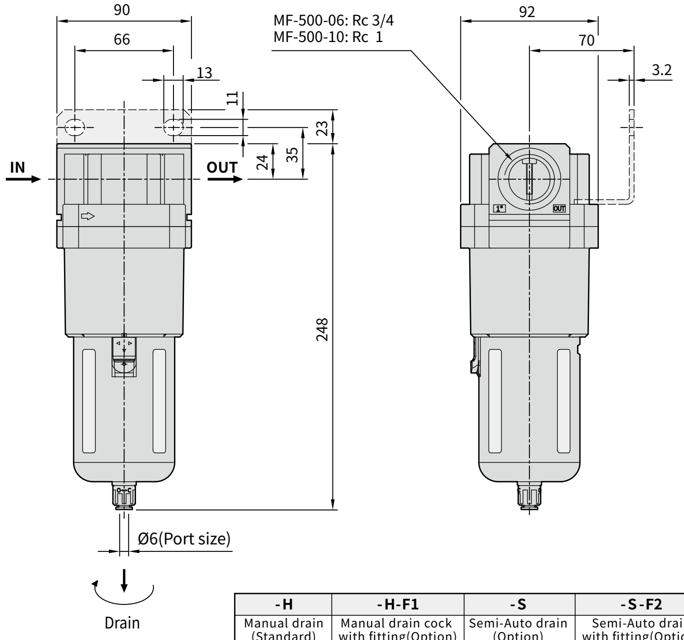
MG Metal cup(Option)

Note: Above auto drainer is AD-55.

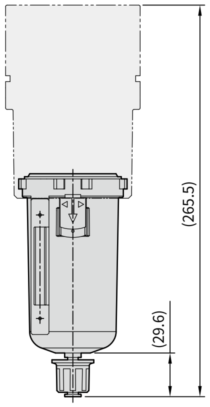
# MF series Mist Separator

## Dimensions

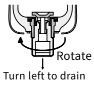
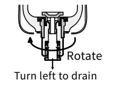
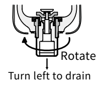
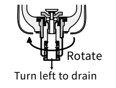
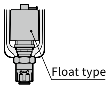
**MF - 500 - ☐ - H Standard**


90
66
13
11
23
24
35
IN
OUT
248
Ø6(Port size)
Drain
MF-500-06: Rc 3/4
MF-500-10: Rc 1
92
70
3.2

● - MG - H - F1
Manual drain cock with fitting



— MG Metal cup(Option)

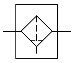
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note: Above auto drainer is AD-55.

# MFD series Micro Mist Separator

## Product features/ Characteristics graph

Symbol:

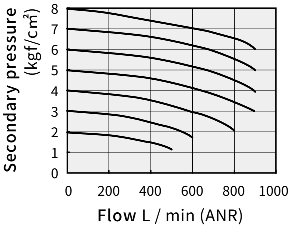


## Specification

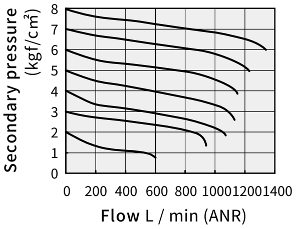
| Item \ Model | | MFD-200 | MFD-300 | MFD-400 | MFD-450 | MFD-500 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size | Rc | M5, 1/8 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | | 0.01 µm | | | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | |
| Bowl capacity | cc | 15 | 30 | 60 | 100 | 100 |
| Weight | kg | 0.18 | 0.34 | 0.45 | 0.85 | 1.15 |
| Material | Main body | Aluminum die cast | | | | |
| | Bowl | Relieving type | | | | |

## Flow rate characteristic graph

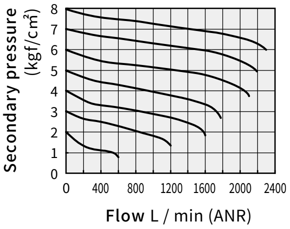
**MFD-200**



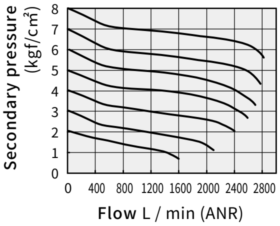
**MFD-300**



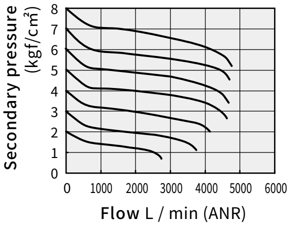
**MFD-400**



**MFD-450**



**MFD-500**



Note : The flow rate dropping might be caused by working environment with dirt and objects; filter element is suggested to replace from time to time.

# MFD series Micro Mist Separator

## Code of order

### Code of order

**MFD - 300** – **03** – **G** – **BG - A** – **F1** – **C**

Model ① – Port size ② – Thread type ③ – Bowl type ④ – Fitting ⑤ – Bracket

| Model | Port size: Mark | 01 | 02 | 03 | 04 | 06 | 10 |
|---|---|---|---|---|---|---|---|
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| MFD - 200 | Port connection | ● | ● | | | | |
| MFD - 300 | | | ● | ● | | | |
| MFD - 400 | | | ● | ● | ● | | |
| MFD - 450 | | | | | ● | ● | |
| MFD - 500 | | | | | | ● | ● |

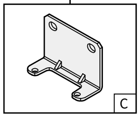
| Thread type | None | G | N |
|---|---|---|---|
| | RC | G | NPT |
| MFD - 200 | ● | ● | ● |
| MFD - 300 | ● | ● | ● |
| MFD - 400 | ● | ● | ● |
| MFD - 450 | ● | ● | |
| MFD - 500 | ● | ● | |

| Bowl type: None | Other bowl type |
|---|---|
| PC(Short bowl) | option |
| Bowl guard (Short bowl) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |
| Bowl guard (Standard) | option |

※ Please see the below table in detail.

| Fitting: None | -F1 |
|---|---|
| Manual drain cock | option |
| | option |
| | option |
| | option |
| | option |

※ Please see the below table in detail.



■ None : Without bracket

C : With bracket (option)

### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

---

### MFD-200 type - Bowl and Drain cock type - ④

| Bowl type | PC (Short bowl) | | Bowl guard (Short bowl) | | PC (Long bowl) | Bowl guard (Long bowl) | Metal (Long bowl) |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure | Auto drain | Auto drain | Auto drain |
| Model | -H | -A | -BG-H | -BG-A | -LG-A | -LBG-A | -LMG-H |
| MFD-200 | ● (standard) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

### MFD-200 type - With Fitting - F1 - ⑤

| MFD-200 | — | ● (standard) | ● (option) | ● (standard) | ● (standard) | ● (standard) | — |
|---|---|---|---|---|---|---|---|
| Description | | Note.1 (Fitting outside) | Note.1 (Fitting outside) | Note.1 (Fitting outside) | (PF1/8 Male thread) | (PF1/8 Male thread) | |

---

### MFD-300~500 type - Bowl and Drain cock type - ④

| Bowl type | Bowl guard (Standard) | | | Bowl guard (Long bowl) | | Metal (Long bowl) | |
|---|---|---|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Auto drain | Manual drain cock | Auto drain | Manual drain cock | Auto drain |
| Model | -H | -S | -A | -LG-H | -LG-A | -MG-H | -MG-A |
| MFD-300 | ● (standard short) | ● (option) | — | ● (option) | ● (option) | ● (option) | ● (option) |
| MFD-400 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MFD-450 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |
| MFD-500 | ● (standard) | ● (option) | ● (option) | — | — | ● (option) | ● (option) |

### MFD-300~500 type - With Fitting - F1 - ⑤

| MFD-300~500<br>Note | ● (option) | ● (option) | ● (standard) | ● (option) | ● (option) | ● (option) | ● (standard) |
|---|---|---|---|---|---|---|---|

Note : 1. MFD200 series are outside fitting , others are inside fitting ; please refer to P.1-1.06 auto drain construction.
2. MFD300 series are standard manual type. (-H Short bowl type)
3. (standard): Standard accessory; (option): Optional accessory.

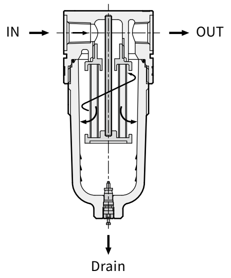
# MFD series Micro Mist Separator

## Product features

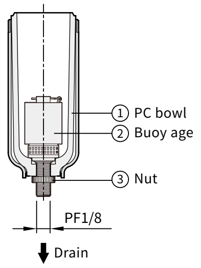
## Internal structure

### MFD200

(Short bowl)

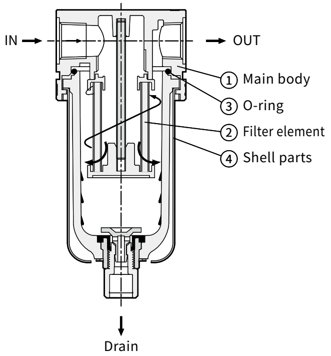

IN
OUT
Drain

(Long bowl)
Float auto drainer (N.C)
Model: AD-25

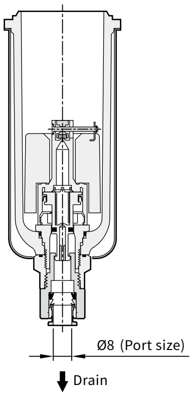

① PC bowl
② Buoy age
③ Nut
PF1/8
Drain

### MFD300

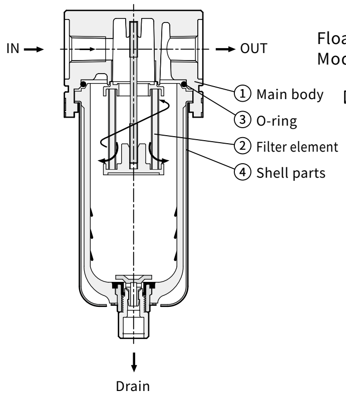
(Short bowl)


IN
OUT
① Main body
③ O-ring
② Filter element
④ Shell parts
Drain

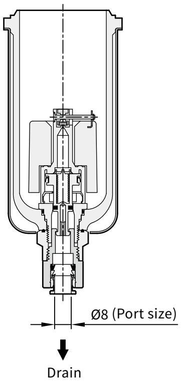
(Long bowl)
Float auto drainer (N.C)
Model:AD-35


Ø8 (Port size)
Drain

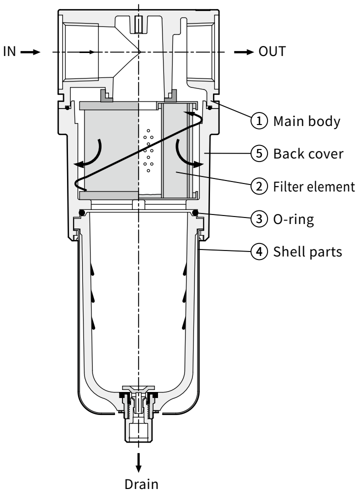
### MFD400, MFD450


IN
OUT
① Main body
③ O-ring
② Filter element
④ Shell parts
Drain

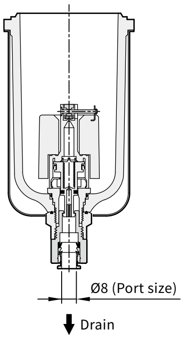
Float auto drainer (N.C)
Model: AD-55


Ø8 (Port size)
Drain

### MFD500


IN
OUT
① Main body
⑤ Back cover
② Filter element
③ O-ring
④ Shell parts
Drain

Float auto drainer (N.C)
Model: AD-55


Ø8 (Port size)
Drain

## Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | MFD200 · MFD300 · MFD400 · MFD450 | MFD500 | |
| 1 | Main body | Aluminum alloy | | |
| 5 | Back cover | — | Aluminum alloy | |

## Replacement parts

| Number | Accessory | Material | | | | | Note |
|---|---|---|---|---|---|---|---|
| | | MFD200 | MFD300 | MFD400 | MFD450 | MFD500 | |
| 2 | Filter element | Sponge + EA30 | | | | | |
| 3 | O-ring | NBR | | | | | |
| 4 | Shell parts | PC | PC+SS41 | | | | |

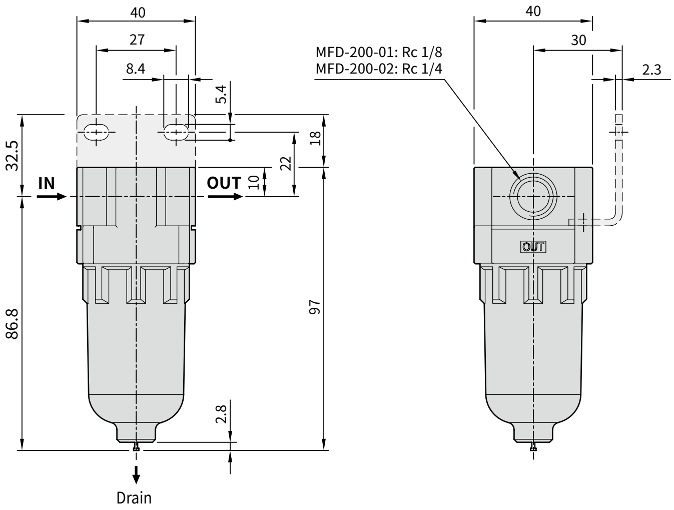
Note : MFD200 are included bowl guard. (Material : Aluminum alloy)
The shell parts in MFD300-MFD500 is included Bowl guard ( Material : SS41)

# MFD series Micro Mist Separator

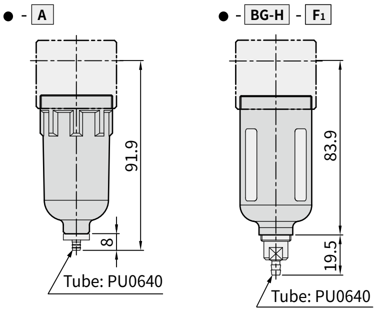
## Dimensions

**CHELIC**

### MFD - 200 - ☐ - H

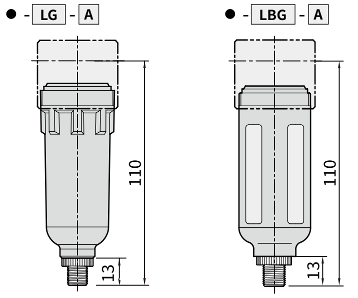

40
27
8.4
5.4
32.5
18
22
IN
OUT
10
86.8
97
2.8
Drain
40
30
2.3
MFD-200-01: Rc 1/8
MFD-200-02: Rc 1/4
OUT

### Manual drain cock-Standard


● - A
● - BG-H - F1
91.9
8
Tube: PU0640
83.9
19.5
Tube: PU0640

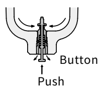
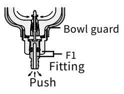
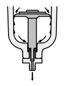
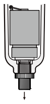
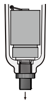
— **BG** PC bowl with bowl guard (Option)

### Auto drain-Long cup

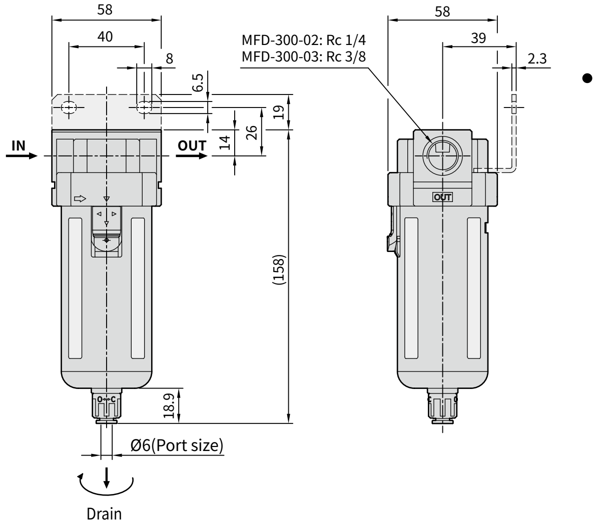

● - LG - A
● - LBG - A
110
13
110
13

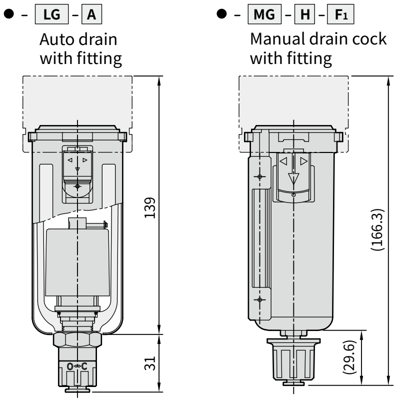
— **LG** Long cup (Option)

— **LBG** PC bowl with bowl guard (Option)

| - H | - BG-H- F1 | - A | - LG - A | - LBG - A |
|---|---|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) | Auto drain (AD-25) | Auto drain (AD-25) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |  |  |

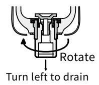
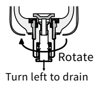
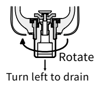
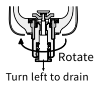
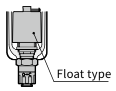
### MFD - 300 - ☐ - H Standard


58
40
8
6.5
19
26
14
IN
OUT
(158)
18.9
Ø6(Port size)
Drain
58
39
2.3
MFD-300-02: Rc 1/4
MFD-300-03: Rc 3/8
OUT


● - LG - A
Auto drain with fitting
● - MG - H - F1
Manual drain cock with fitting
139
31
(166.3)
(29.6)

— **LG** Long bowl (Option)

— **MG** Metal cup(Option)

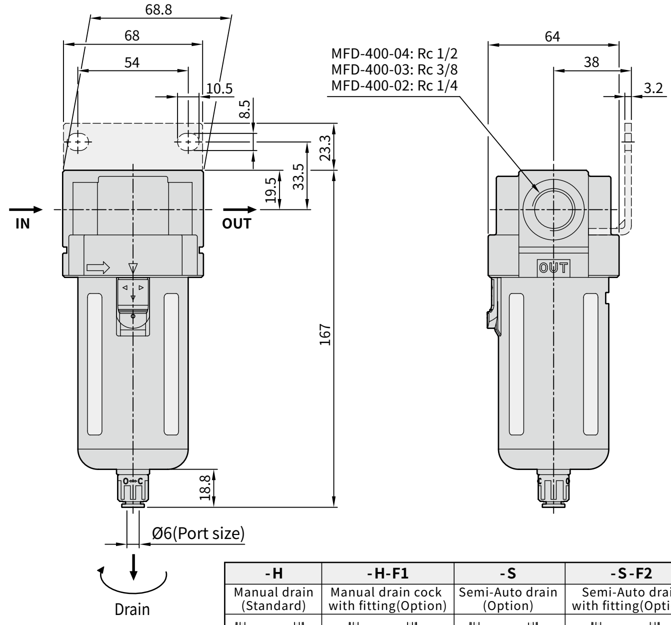
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |  |

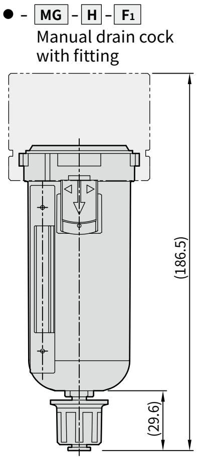
Note: Above auto drainer is AD-35.

# MFD series Micro Mist Separator

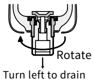
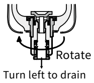
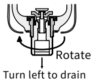
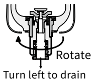
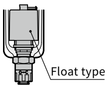
## Dimensions

### MFD - 400 - ☐ - H Standard


68.8
68
54
10.5
8.5
23.3
33.5
19.5
IN
OUT
167
18.8
Ø6(Port size)
Drain
MFD-400-04: Rc 1/2
MFD-400-03: Rc 3/8
MFD-400-02: Rc 1/4
64
38
3.2
OUT

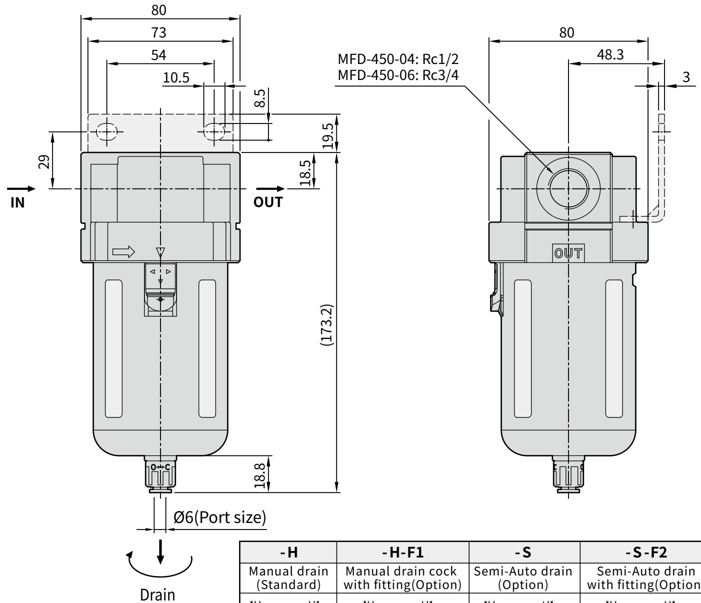

● - MG - H - F1
Manual drain cock
with fitting
(186.5)
(29.6)

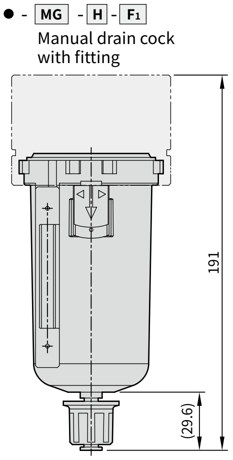
MG Metal cup(Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

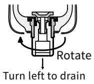
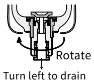
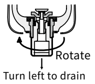
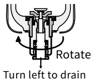
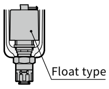
Note: Above auto drainer is AD-55.

### MFD - 450 - ☐ - H Standard


80
73
54
10.5
8.5
19.5
29
18.5
IN
OUT
(173.2)
18.8
Ø6(Port size)
Drain
MFD-450-04: Rc1/2
MFD-450-06: Rc3/4
80
48.3
3
OUT


● - MG - H - F1
Manual drain cock
with fitting
191
(29.6)

MG Metal cup(Option)

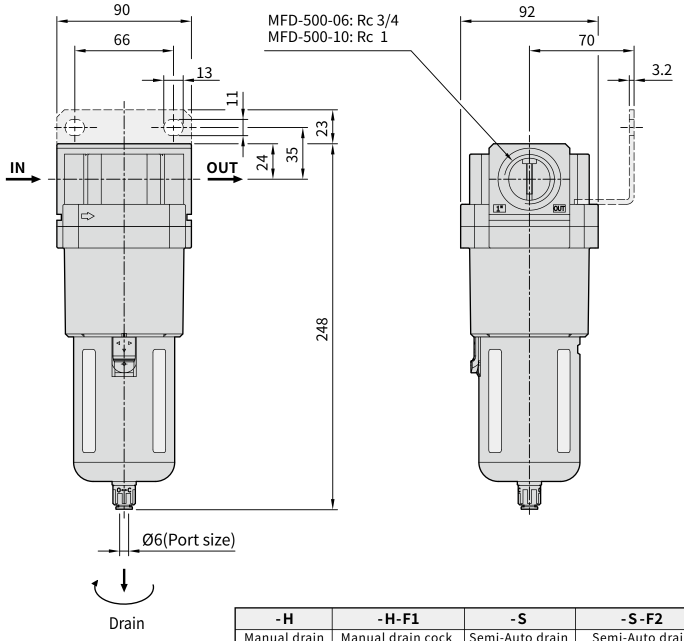
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

Note: Above auto drainer is AD-55.

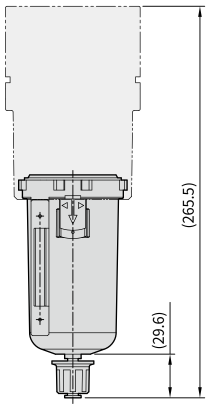
# MFD series Micro Mist Separator

## Dimensions

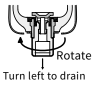
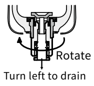
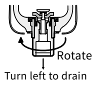
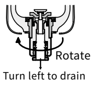
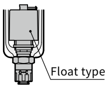
### MFD - 500 - ☐ - H Standard


90
66
13
11
23
24
35
IN
OUT
248
Ø6(Port size)
Drain
MFD-500-06: Rc 3/4
MFD-500-10: Rc 1
92
70
3.2
1"
OUT

● - MG - H - F1
Manual drain cock with fitting



MG Metal cup(Option)

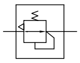
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

Note: Above auto drainer is AD-55.

# NR series Regulator

## Product features/ Characteristics graph

Symbol:

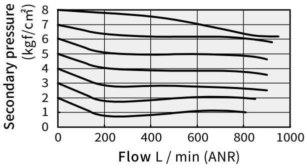


## Specification

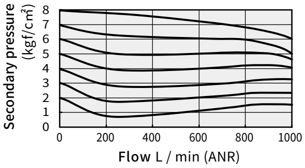
| Item / Model | | NR-100 | NR-200 | NR-300 | NR-400 | NR-450 | NR-500 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size | Rc | M5, 1/8 | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2 , 3/4 | 3/4, 1 |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | | |
| Weight | kg | 0.18 | 0.21 | 0.34 | 0.45 | 0.85 | 1.15 |
| Main body material | | Aluminum die cast | | | | | |

## Flow rate characteristic graph

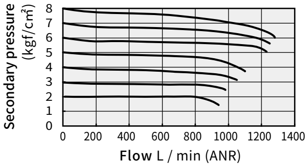
**NR-100**



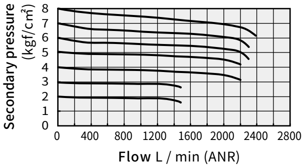
**NR-200**



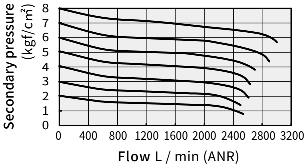
**NR-300**



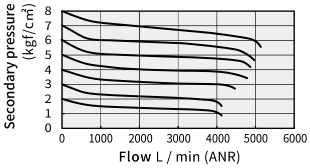
**NR-400**



**NR-450**

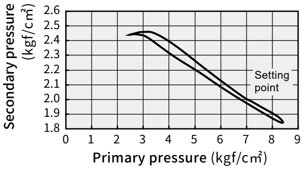


**NR-500**

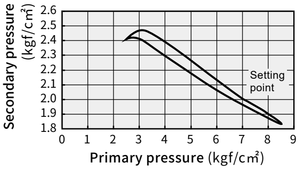


## Pressure characteristics graph

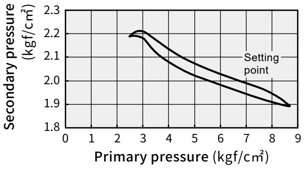
**NR-100**



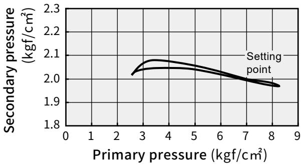
**NR-200**



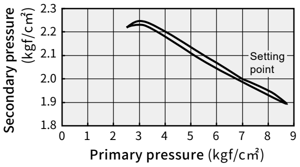
**NR-300**



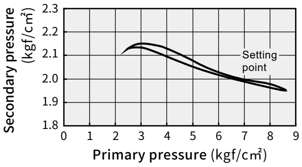
**NR-400**



**NR-450**



**NR-500**



# NR series Regulator

## Code of order

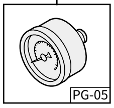
### Code of order

**NR - 300** — **03** — **G** — **PG 10** — **L2** —

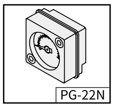
| Model ① | Port size ② | Thread type ③ | Pressure gauge ④ | Most adjustable pressure ⑤ | Bracket ⑥ |
|---|---|---|---|---|---|

| Model | Port size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Mark | M5 | 01 | 02 | 03 | 04 | 06 | 10 |
| | Port size | M5 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| NR - 100 | Port connection | ● | ● | | | | | |
| NR - 200 | | | ● | ● | | | | |
| NR - 300 | | | | ● | ● | | | |
| NR - 400 | | | | ● | ● | ● | | |
| NR - 450 | | | | | | ● | ● | |
| NR - 500 | | | | | | | ● | ● |

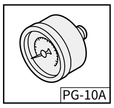
| Thread type | | | |
|---|---|---|---|
| None | | G | N |
| M5 | RC | G | NPT |
| ● | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | |
| | ● | ● | |


PG-05

■ None : (Standard)
Circle pressure gauge
※ For N100 series


PG-22N

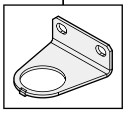
■ None : (standard)
(Square pressure gauge)
(Thin mountng type)


PG-10A

PG-10A :
Pressure gauge
(option)
※ N200, N300, N400,
N450, N500 series
(option)

| None | standard 8.5 kg/cm² |
|---|---|
| L1 | 1 kg/cm² |
| L2 | 2 kg/cm² |
| L4 | 4 kg/cm² |

※ For NR200 series
(option)



■ None :
With bracket
(standard)

### Pressure gauge - ④

| Pressure gauge | | NR-100 | NR-200 | NR-300 | NR-400 | NR-450 | NR-500 |
|---|---|---|---|---|---|---|---|
| Model | Order code | | | | | | |
| PG-05 | P5 | ● (standard) | — | — | — | — | — |
| PG-10 | P10 | — | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |
| PG-22N | P22 | — | ● | ● | ● | ● | ● |

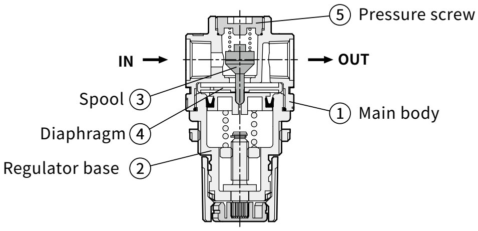
Note: (standard): Standard accessory; (option): Optional accessory

# NR series Regulator

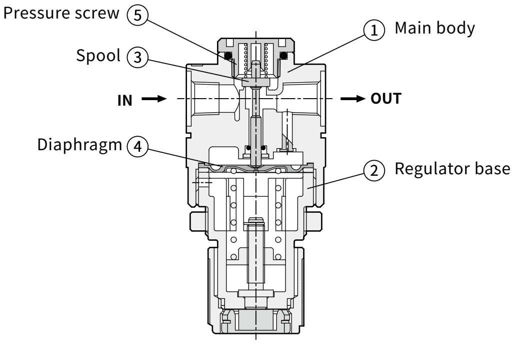
## Product features

## Internal structure

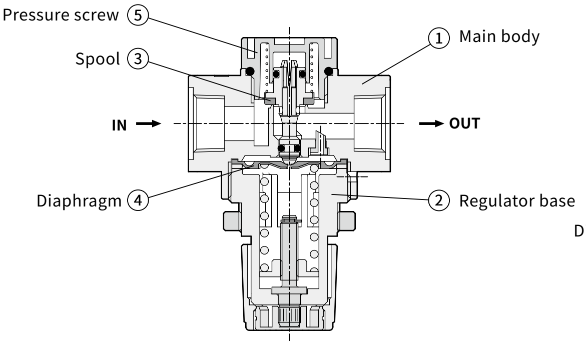
**NR-100**


⑤ Pressure screw
IN
OUT
Spool ③
Diaphragm ④
Regulator base ②
① Main body

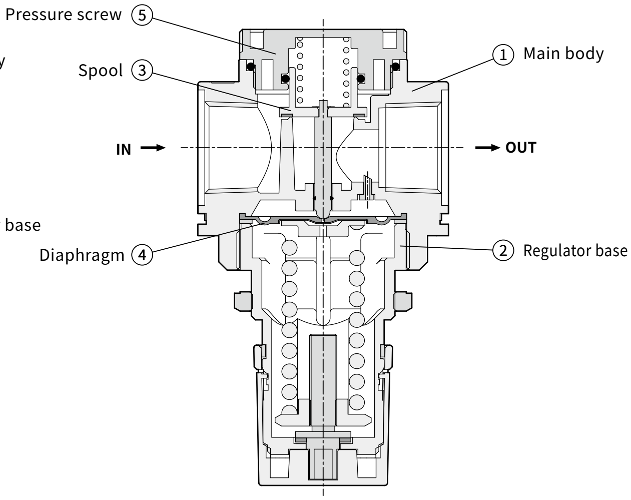
**NR-200**


Pressure screw ⑤
Spool ③
① Main body
IN
OUT
Diaphragm ④
② Regulator base

**NR-300, 400, 450**


Pressure screw ⑤
Spool ③
① Main body
IN
OUT
Diaphragm ④
② Regulator base

**NR-500**


Pressure screw ⑤
Spool ③
① Main body
IN
OUT
Diaphragm ④
② Regulator base

### Component

| Number | Accessory | Material | | Note |
|---|---|---|---|---|
| | | NR100, NR200, NR300, NR400, NR450 | NR500 | |
| 1 | Main body | Aluminum alloy | | |
| 2 | Regulator base | Aldehyde resin | Aluminum alloy | |

### Replacement parts

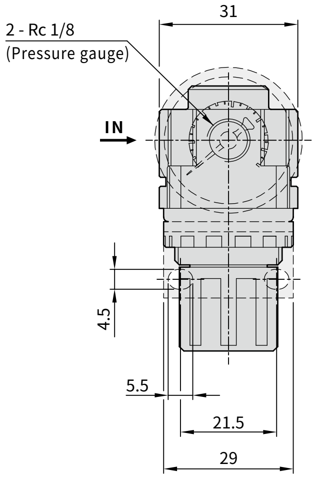
| Number | Accessory | Material | | | | | | Note |
|---|---|---|---|---|---|---|---|---|
| | | NR100 | NR200 | NR300 | NR400 | NR450 | NR500 | |
| 3 | Spool | Copper + NBR | | | | | | |
| 4 | Diaphragm | POM | Stainless steel + NBR | | | | | |
| 5 | Pressure screw | POM | | | | | Aluminum alloy | |

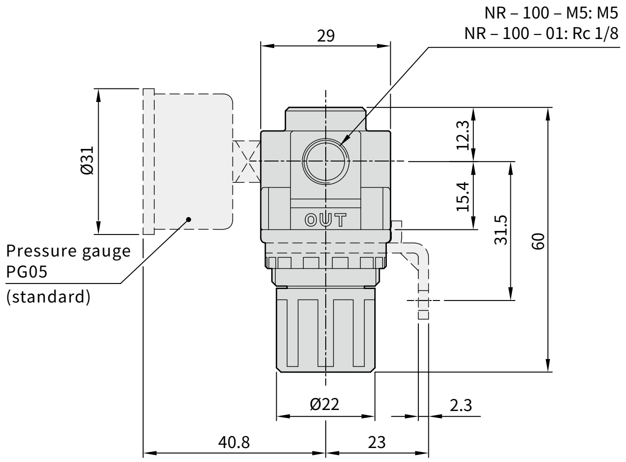
Note : NR 100 is piston type. And consist of piston and washer.

# NR series Regulator

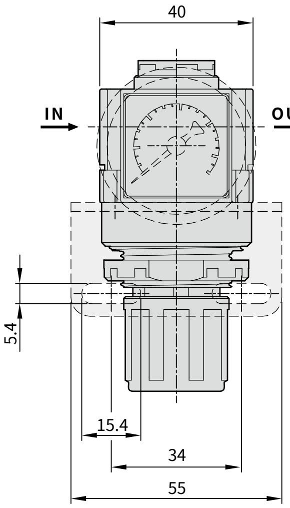
## Dimensions

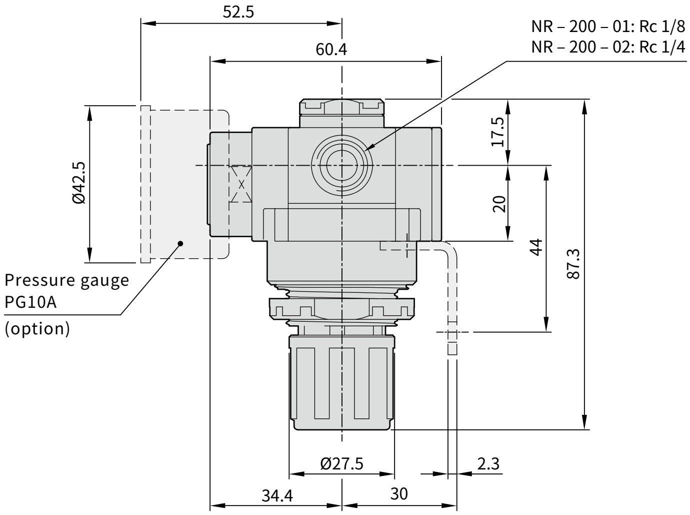
### NR - 100 Standard


31
2 - Rc 1/8
(Pressure gauge)
IN
OUT
4.5
5.5
21.5
29


NR – 100 – M5: M5
NR – 100 – 01: Rc 1/8
29
Ø31
OUT
12.3
15.4
31.5
60
Pressure gauge
PG05
(standard)
Ø22
2.3
40.8
23

### NR - 200 Standard

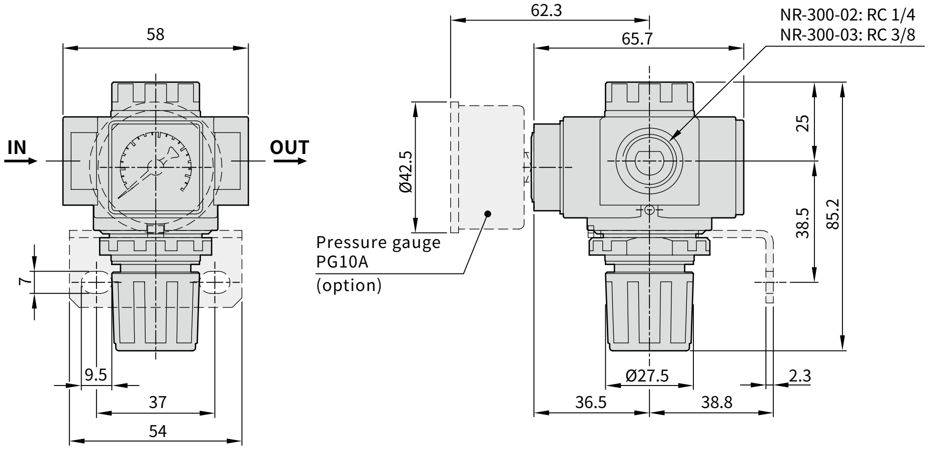

40
IN
OUT
5.4
15.4
34
55


52.5
60.4
NR – 200 – 01: Rc 1/8
NR – 200 – 02: Rc 1/4
Ø42.5
17.5
20
44
87.3
Pressure gauge
PG10A
(option)
Ø27.5
2.3
34.4
30

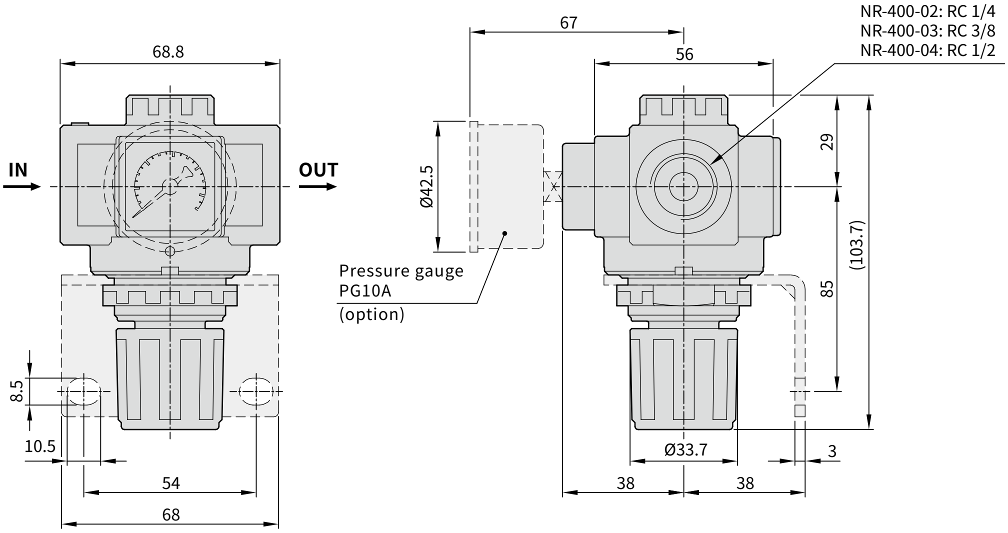
# NR series Regulator

## Dimensions

### NR - 300 Standard


58
IN
OUT
7
9.5
37
54
62.3
65.7
NR-300-02: RC 1/4
NR-300-03: RC 3/8
Ø42.5
Pressure gauge
PG10A
(option)
25
38.5
85.2
Ø27.5
2.3
36.5
38.8

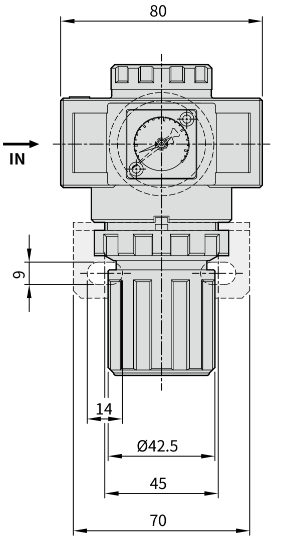
### NR - 400 Standard

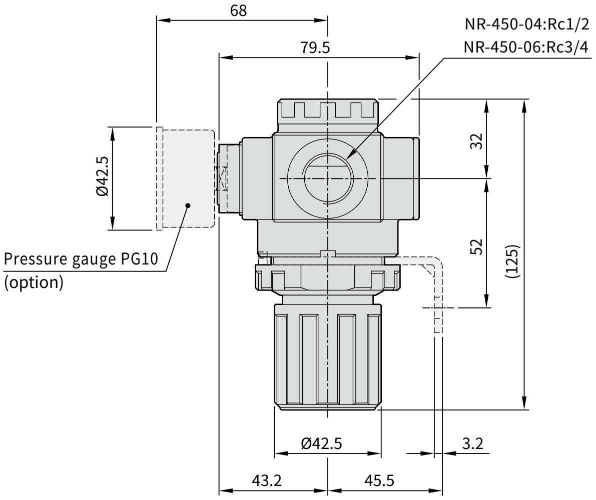

68.8
IN
OUT
8.5
10.5
54
68
67
56
NR-400-02: RC 1/4
NR-400-03: RC 3/8
NR-400-04: RC 1/2
Ø42.5
Pressure gauge
PG10A
(option)
29
85
(103.7)
Ø33.7
3
38
38

# NR series Regulator

## Dimensions

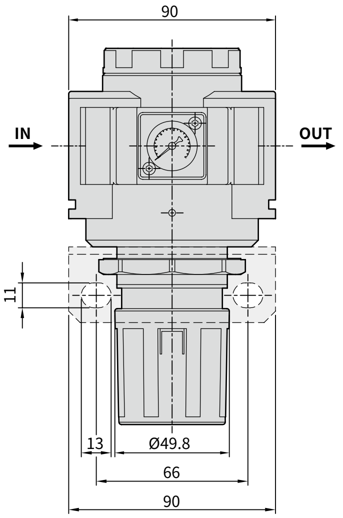
### NR - 450 Standard

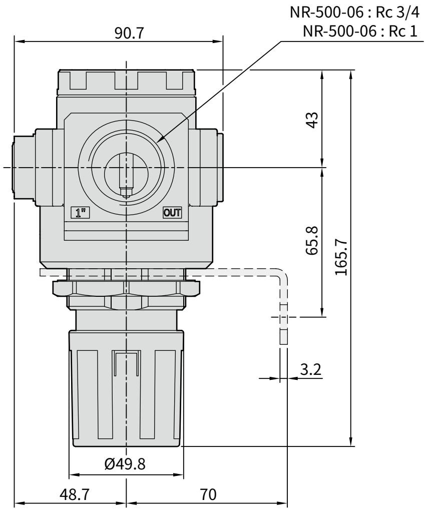

80
IN
OUT
9
14
Ø42.5
45
70


68
79.5
NR-450-04:Rc1/2
NR-450-06:Rc3/4
Ø42.5
Pressure gauge PG10
(option)
32
52
(125)
Ø42.5
3.2
43.2
45.5

---

### NR - 500 Standard


90
IN
OUT
11
13
Ø49.8
66
90


NR-500-06 : Rc 3/4
NR-500-06 : Rc 1
90.7
1"
OUT
43
65.8
165.7
3.2
Ø49.8
48.7
70

- Small volume, big flow and multi-function regulator.

### Specification

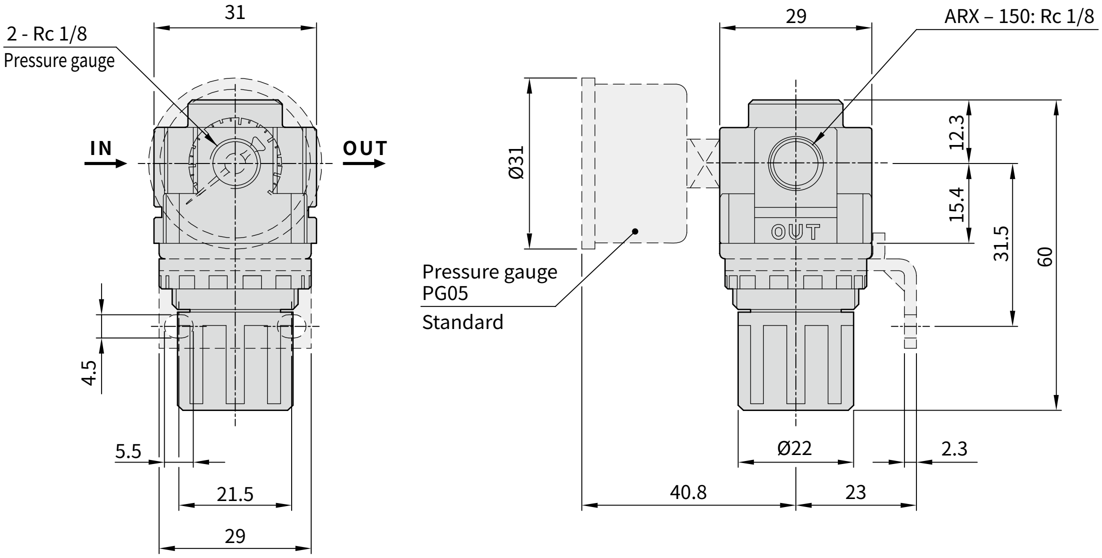
| Item \ Model (mm) | | ARX-150 |
|---|---|---|
| Fluid | | Air |
| Port Size | Rc | 1/8 |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 (50 ~ 850) |
| Max pressure | kgf/cm²(kPa) | 9.5 (950) |
| Ambient and fluid temperature | ℃ | 5 ~ 60 |
| Weight | kg | 1.3 |
| Main body material | | Aluminum die-casted |

### Code of order

**ARX** – **150** –

| Model | Port size | Adjustable pressure |
|---|---|---|
| ARX :<br>Standard regulator | 150 - 1/8 | None :<br>8.5kgf/cm$^2$ Standard type |

## ARX-150 Standard regulator

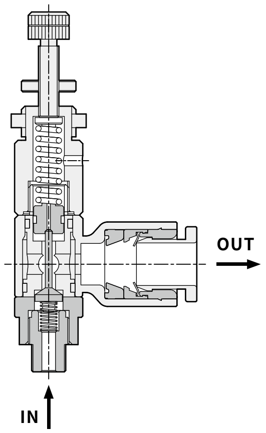


31
2 - Rc 1/8
Pressure gauge
IN
OUT
4.5
5.5
21.5
29
29
ARX – 150: Rc 1/8
Ø31
12.3
15.4
31.5
60
OUT
Pressure gauge
PG05
Standard
Ø22
2.3
40.8
23

# NPR 100 series - Miniature Regulator

## Product features/ Code of order

### Internal structure



### Specification

| Item | Model | NPR - 100 |
|---|---|---|
| Fluid | | Air |
| Port size | IN | M5 |
| | OUT | Ø6, Ø4 |
| Pressure range | kgf/cm²(kPa) | 1 ~ 7 ( 100 ~ 700 ) |
| Max. operating pressure | kgf/cm²(kPa) | 8 ( 800 ) |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Weight | kg | 0.019 |
| Material | Main body (Inlet/Control) | Copper alloy lathe |
| | Main body (Outlet) | Nylon fiber |

### Code of order

**NPR** — **100** — **M5** — **06** — **U**

NPR series
Mini regulator

**Model**

100 series

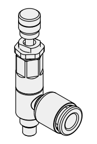
**Port size**

| Mark | Thread |
|---|---|
| M5 | M5X0.8 |

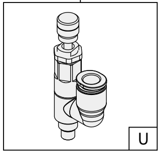
**Exhaust port**

| Mark | Port size |
|---|---|
| 04 | Ø4 |
| 06 | Ø6 |

**Main body type**



■ None: Standard



U

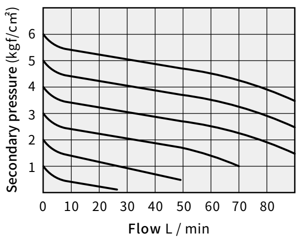
NC
NFC
PSN-10 30,41
NFR
MFR
MFRD
NF
MF
MFD
NR
ARX
NPR
NL
N
DM
ERX
ERP
PG/AFB NDV/AD

# NPR 100 series - Miniature Regulator

## Product features

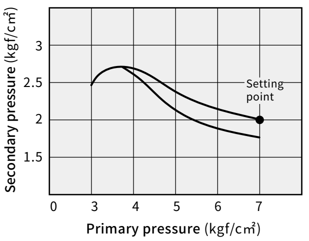
### Flow rate characteristic graph

NPR-100

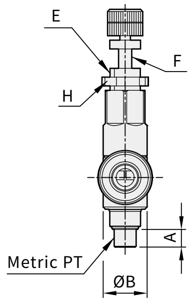


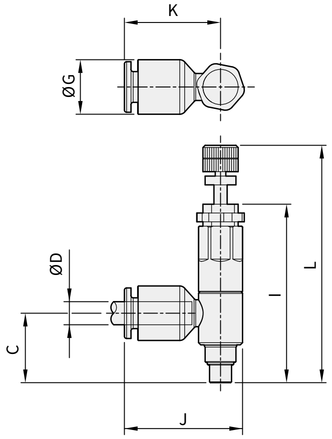
### Pressure characteristics graph

NPR-100



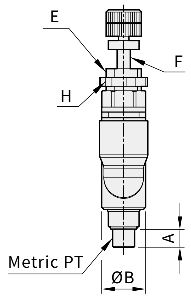
### NPR-100 series

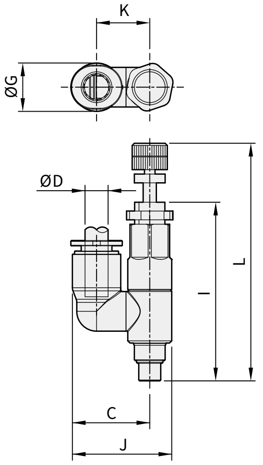




| Port size ØD | Thread PT | Model | A | ØB | C | E | F | ØG | I | L | | J | K | Cross H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | max | min | | | | |
| **Ø4** | M5 | NPR-100-M5-04 | 4 | 10 | 15.8 | M8x1.25p | M3x0.35p | 10.5 | 40 | 54 | 48 | 24.9 | 19.9 | 10 | 19 |
| **Ø6** | M5 | NPR-100-M5-06 | 4 | 10 | 15.8 | M8x1.25p | M3x0.35p | 12.4 | 40 | 54 | 48 | 26.8 | 21.8 | 10 | 19 |

### NPR-100- U series



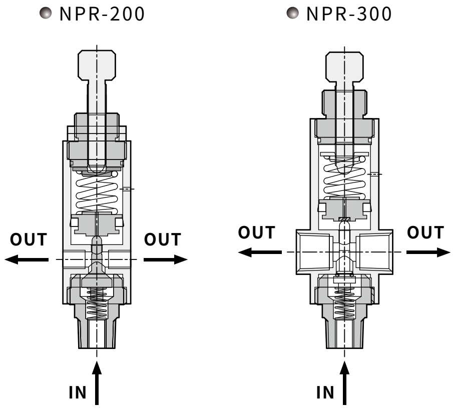


| Port size ØD | Thread PT | Model | A | ØB | C | E | F | ØG | I | L | | J | K | Cross H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | max | min | | | | |
| **Ø4** | M5 | NPR-100-M5-04 | 4 | 10 | 15.4 | M8x1.25p | M3x0.35p | 9 | 40 | 54 | 48 | 20.4 | 10.9 | 10 | 18 |
| **Ø6** | M5 | NPR-100-M5-06 | 4 | 10 | 17.6 | M8x1.25p | M3x0.35p | 11 | 40 | 54 | 48 | 22.6 | 12.1 | 10 | 18 |

# NPR 200/ 300 series - Miniature Regulator

## Product features/ Code of order

### Internal structure


NPR-200
NPR-300

### Specification

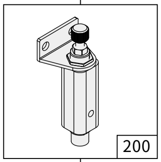
| Item | | NPR - 200 | NPR - 300 |
|---|---|---|---|
| Fluid | | Air | |
| Port size | IN | Rc 1/8 (M5 Female thread) | |
| | OUT | M5 | Rc 1/8 |
| Pressure range kgf/cm²(kPa) | | 2~ 7 ( 200 ~ 700 ) | |
| Max. operating pressure kgf/cm²(kPa) | | 8 ( 800 ) | |
| Ambient and fluid temperature ℃ | | 5 ~ 60 | |
| Weight kg | | 0.06 | 0.07 |
| Material | Body | Aluminum alloy | |
| | P port fitting | Copper Alloy | |

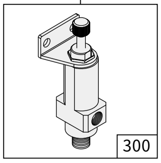
### Code of order

**NPR** — **200** — **M5** — **PG01** — **C**

NPR series
Mini regulator

**Model**

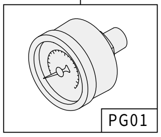

200


300

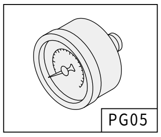
**Port size**

| Thread type | | | |
|---|---|---|---|
| Mark | Inlet | Outlet | Model |
| M5 | Rc1/8 | M5 | 200 |
| 01 | Rc1/8 | Rc1/8 | 300 |

**Pressure gauge**

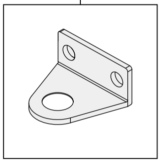

PG01

■None:
Without pressure gauge
PG01: Pressure gauge
NPR 200 (Option)


PG05

PG05: Pressure gauge
NPR 300 (Option)

**Bracket**



■None: Without bracket
C: Bracket (Option)

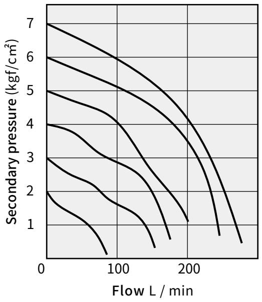
# NPR 200/ 300 series - Miniature Regulator

## Product features

CHELIC

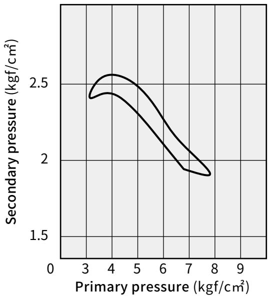
### Flow rate characteristic graph

NPR-200/ NPR-300

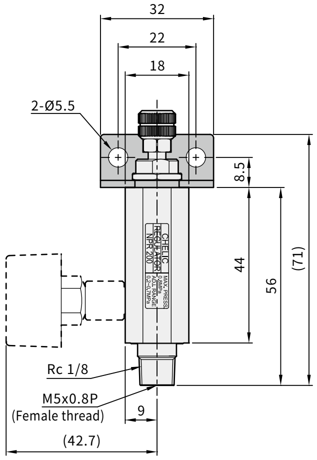


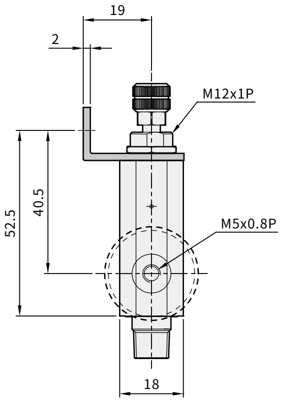
### Pressure characteristics graph

NPR-200/ NPR-300

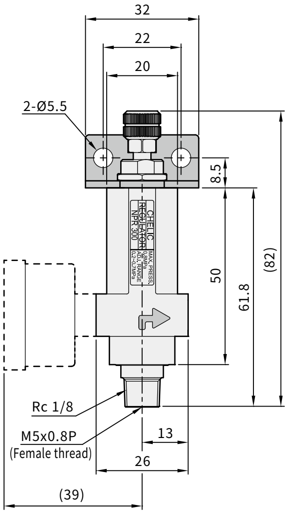


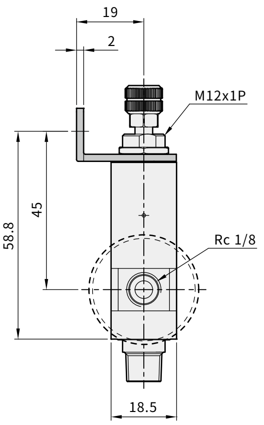
### NPR - 200 - PG01A - C


32
22
18
2-Ø5.5
8.5
44
56
(71)
Rc 1/8
M5x0.8P
(Female thread)
9
(42.7)


19
2
M12x1P
52.5
40.5
M5x0.8P
18

### NPR - 300 - PG05A - C

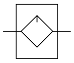

32
22
20
2-Ø5.5
8.5
50
61.8
(82)
Rc 1/8
M5x0.8P
(Female thread)
13
26
(39)


19
2
M12x1P
58.8
45
Rc 1/8
18.5

# NL series Lubricator

## Product features/ Characteristics graph

Symbol:

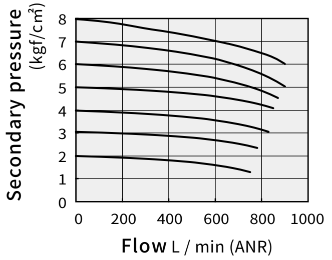


## Specification

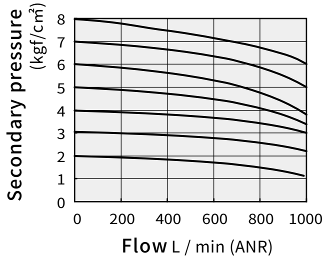
| Item | Model | NL-100 | NL-200 | NL-300 | NL-400 | NL-450 | NL-500 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size | Rc | M5, 1/8 | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. service pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | | | | |
| Temperature | ℃ | 5 ~ 60 | | | | | |
| Lubricator capacity | cc | 9 | 25 | 50 | 60 | 100 | 100 |
| Recommended lubrication | | First class or lubricant (IOS-VG32 lubricant only (and equivalent)) | | | | | |
| Weight | kg | 0.18 | 0.21 | 0.34 | 0.45 | 1.00 | 1.15 |
| Material | Main body | Aluminum die cast | | | | | |
| | Bowl | Relieving type | | | | | |

## Flow rate characteristic graph

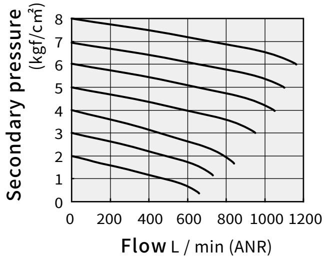
**NL-100**



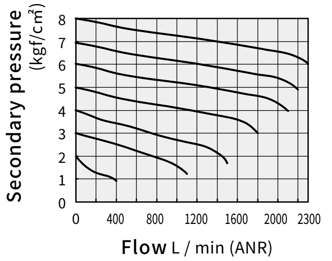
**NL-200**



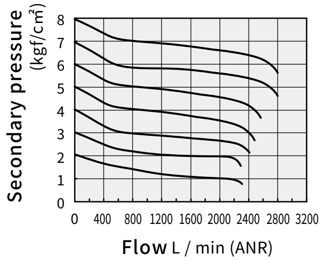
**NL-300**



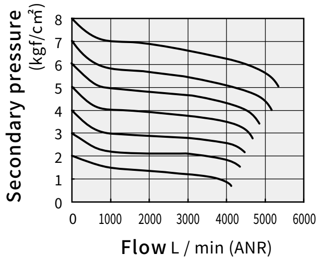
**NL-400**



**NL-450**



**NL-500**



# NL series Lubricator

## Code of order

### Code of order

NL - 300 — 03 — G — BG — C

Model ① | Port size ② | Thread type ③ | Bowl type ④ | Bracket ⑤

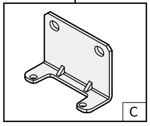
| Model |
|---|
| NL - 100 |
| NL - 200 |
| NL - 300 |
| NL - 400 |
| NL - 450 |
| NL - 500 |

| Model | Port size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Mark | M5 | 01 | 02 | 03 | 04 | 06 | 10 |
| | Port size | M5 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 |
| NL - 100 | Port connection | ● | ● | | | | | |
| NL - 200 | | | ● | ● | | | | |
| NL - 300 | | | | ● | ● | | | |
| NL - 400 | | | | ● | ● | ● | | |
| NL - 450 | | | | | | ● | ● | |
| NL - 500 | | | | | | | ● | ● |

| Model | Thread type | | | |
|---|---|---|---|---|
| | None | | G | N |
| | M5 | RC | G | NPT |
| NL - 100 | ● | ● | ● | ● |
| NL - 200 | | ● | ● | ● |
| NL - 300 | | ● | ● | ● |
| NL - 400 | | ● | ● | ● |
| NL - 450 | | ● | ● | |
| NL - 500 | | ● | ● | |

| Model | Bowl type | |
|---|---|---|
| | None | Other bowl type |
| NL - 100 | PC (Short bowl) | — |
| NL - 200 | PC (Short bowl) | Option |
| NL - 300 | Bowl guard (Short bowl) | Option |
| NL - 400 | Bowl guard (Standard) | Option |
| NL - 450 | Bowl guard (Standard) | Option |
| NL - 500 | Bowl guard (Standard) | Option |

※ Please see the below table in detail.



■ None: Without bracket

C: With bracket (Option)

### Bowl type ◄ ④

| Bowl type \ Model | NL - 100 | NL - 200 | NL - 300 | NL - 400 | NL - 450 | NL - 500 |
|---|---|---|---|---|---|---|
| PC (standard) | ● | ● | ● | ● | ● | ● |
| Bowl guard (standard) | — | ● (option) | ● | ● | ● | ● |
| PC (Long bowl) | — | ● (option) | ● (option) | — | — | — |
| Bowl guard (Long bowl) | — | ● (option) | ● (option) | — | — | — |
| Metal (Long bowl) | — | ● (option) | ● (option) | ● (option) | ● (option) | ● (option) |

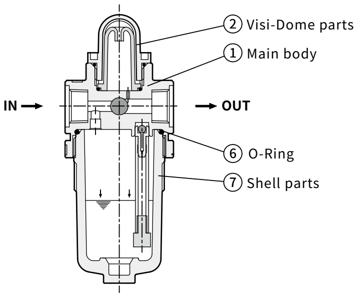
Note: (standard): Standard accessory; (option): Optional accessory.

# NL series Lubricator

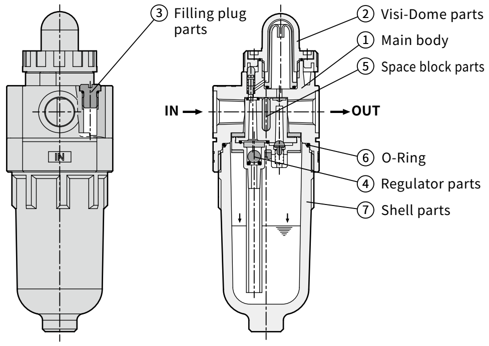
## Product features

### Internal structure

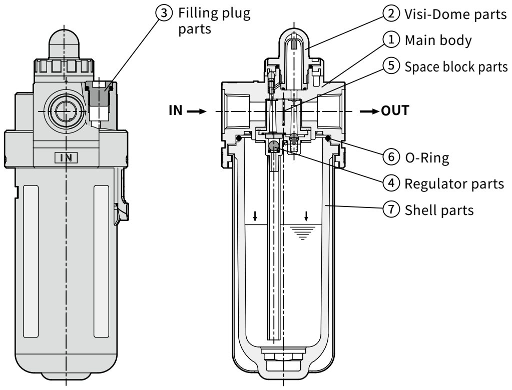
**NL-100**


② Visi-Dome parts
① Main body
IN
OUT
⑥ O-Ring
⑦ Shell parts

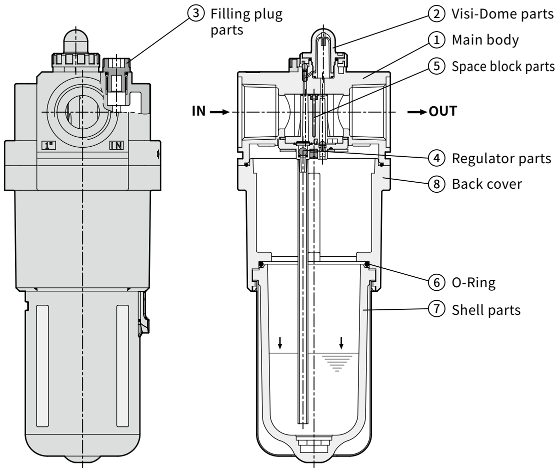
**NL-200**


③ Filling plug parts
IN
② Visi-Dome parts
① Main body
⑤ Space block parts
IN
OUT
⑥ O-Ring
④ Regulator parts
⑦ Shell parts

**NL-300, 400, 450**


③ Filling plug parts
IN
② Visi-Dome parts
① Main body
⑤ Space block parts
IN
OUT
⑥ O-Ring
④ Regulator parts
⑦ Shell parts

**NL-500**


③ Filling plug parts
1*
IN
② Visi-Dome parts
① Main body
⑤ Space block parts
IN
OUT
④ Regulator parts
⑧ Back cover
⑥ O-Ring
⑦ Shell parts

### Component

| Number | Parts name | Material | | Note |
|---|---|---|---|---|
| | | NL100, NL200, NL300, NL400, NL450 | NL500 | |
| 1 | Main body | Aluminum alloy | | |
| 8 | Back cover | — | Aluminum alloy | |

### Replacement parts

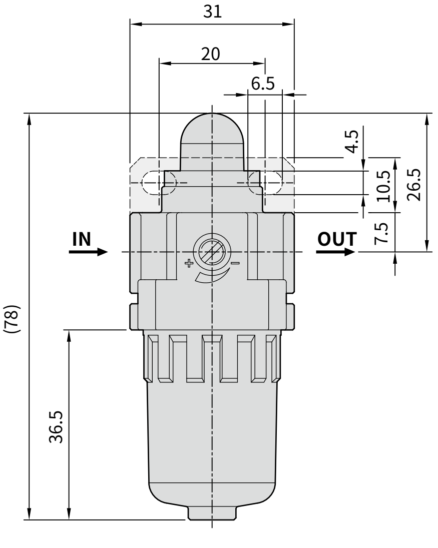
| Number | Parts name | Material | | | | | | Note |
|---|---|---|---|---|---|---|---|---|
| | | NL100 | NL200 | NL300 | NL400 | NL450 | NL500 | |
| 2 | Visi-Dome parts | PC | | | | | | |
| 3 | Filling plug parts | — | Copper | | POM | | | |
| 4 | Regulator parts | POM | | | | | | |
| 5 | Space block parts | POM | | | | | | |
| 6 | O-Ring | NBR | | | | | | |
| 7 | Shell parts | PC | PC | PC+SS41 | | | | |

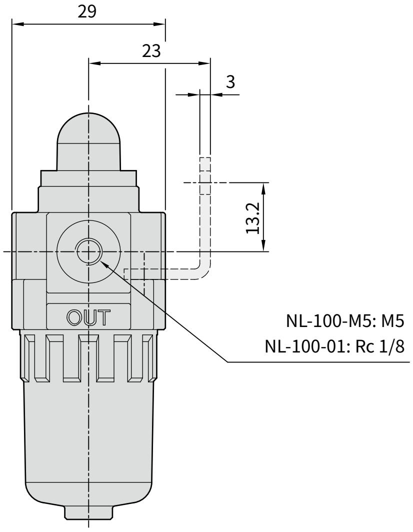
Note : NL200 are included bowl guard ( Material: Aluminum alloy)
The shell parts of NL300~NL500 are included bowl guard ( Material: SS41).

# NL series Lubricator

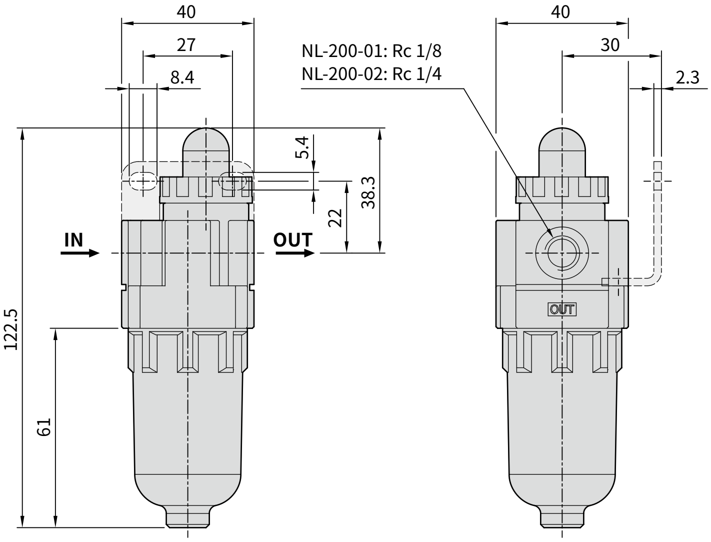
## Dimensions

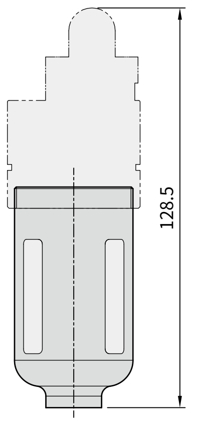
### NL - 100 - ☐ Standard


31
20
6.5
4.5
10.5
26.5
7.5
IN
OUT
(78)
36.5


29
23
3
13.2
OUT
NL-100-M5: M5
NL-100-01: Rc 1/8

### NL - 200 - ☐ Standard


40
27
8.4
5.4
38.3
22
IN
OUT
122.5
61
NL-200-01: Rc 1/8
NL-200-02: Rc 1/4
40
30
2.3
OUT

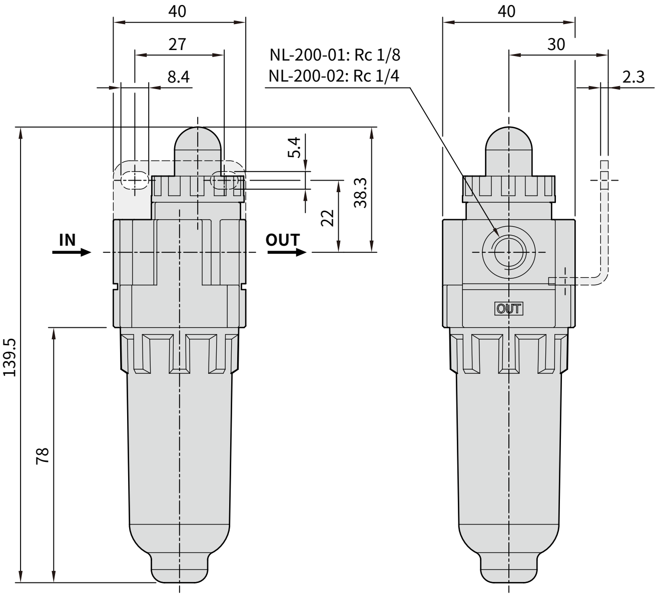


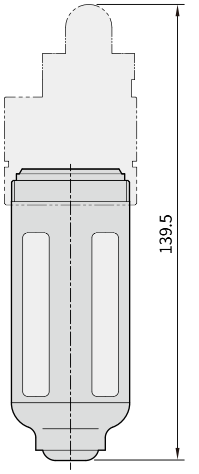
BG PC cup with Metal cup guard (Option)

# NL series Lubricator

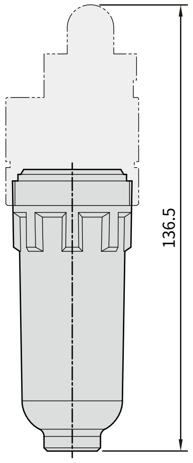
## Dimensions

### NL - 200 - ☐ - LG Long bowl


40
27
8.4
NL-200-01: Rc 1/8
NL-200-02: Rc 1/4
5.4
38.3
22
IN
OUT
139.5
78
40
30
2.3
OUT

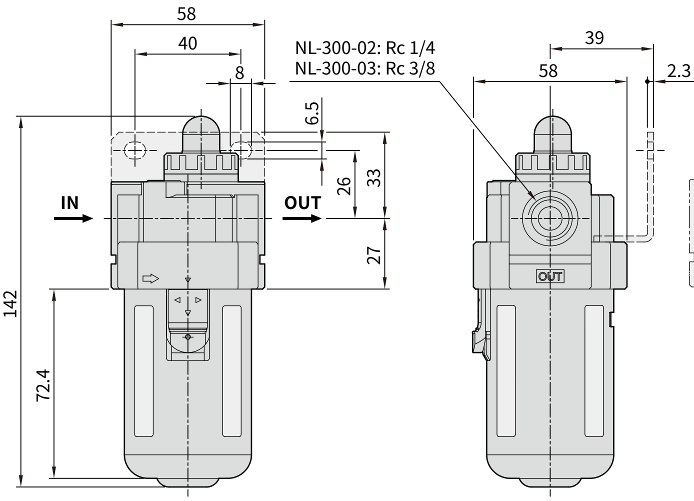


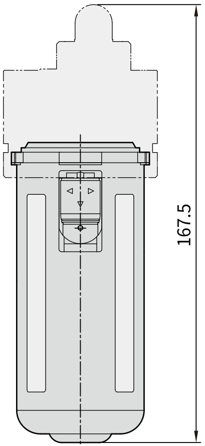
LBG Long cup with guard (Option)



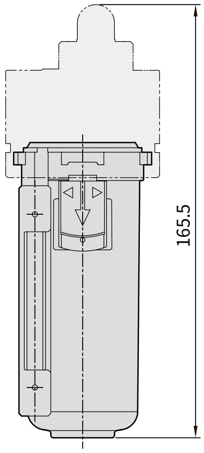
LMG Long metal cup (option)

### NL - 300 - ☐ Standard


58
40
8
NL-300-02: Rc 1/4
NL-300-03: Rc 3/8
6.5
33
26
27
IN
OUT
142
72.4
39
58
2.3
OUT



LG Long cup (Option)

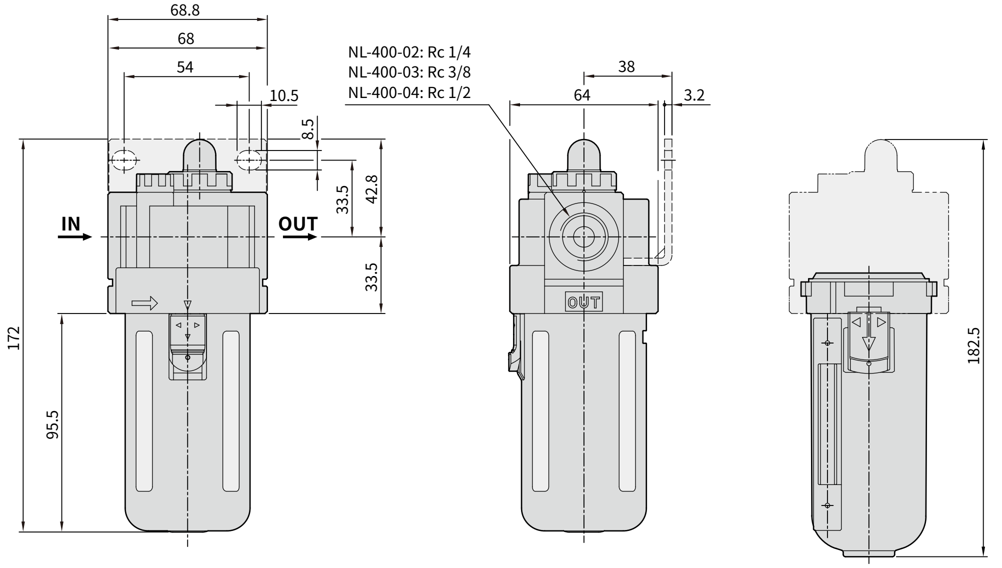


MG Metal cup(Option)

# NL series Lubricator

## Dimensions

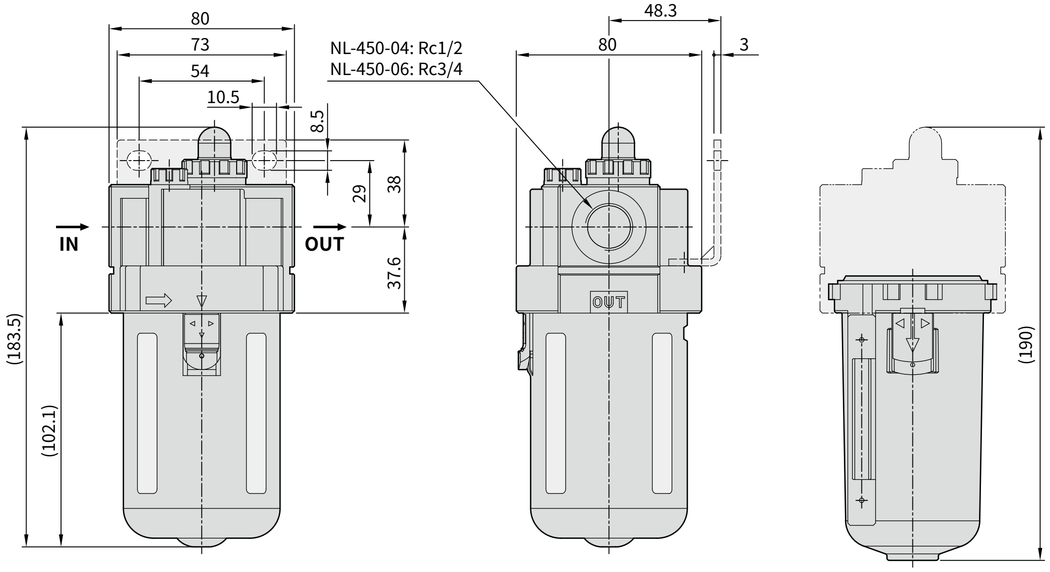
### NL - 400 - ☐ Standard


68.8
68
54
10.5
8.5
33.5
42.8
33.5
172
95.5
IN
OUT
NL-400-02: Rc 1/4
NL-400-03: Rc 3/8
NL-400-04: Rc 1/2
38
64
3.2
OUT
182.5

**MG** Metal cup(Option)

---

### NL - 450 - ☐ Standard

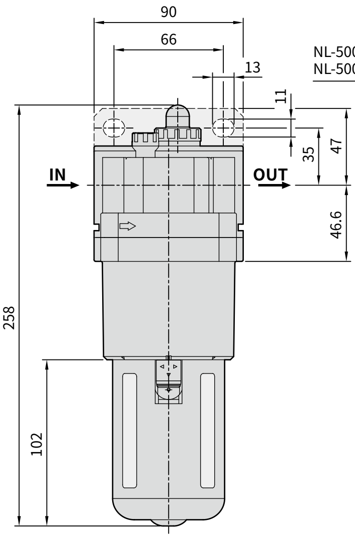

80
73
54
10.5
8.5
29
38
37.6
(183.5)
(102.1)
IN
OUT
NL-450-04: Rc1/2
NL-450-06: Rc3/4
48.3
80
3
OUT
(190)

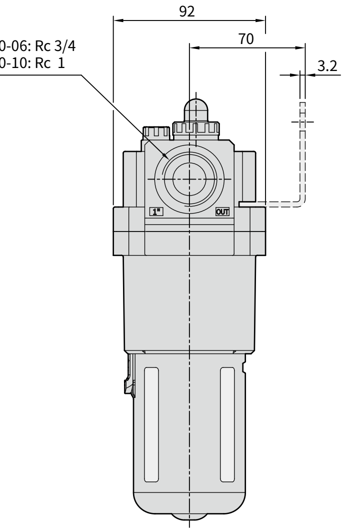
**MG** Metal cup(Option)

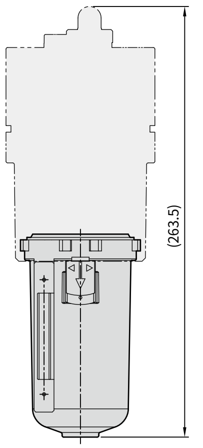
# NL series Lubricator

## Dimensions

**NL - 500 - ☐ Standard**


90
66
13
11
35
47
46.6
IN
OUT
258
102

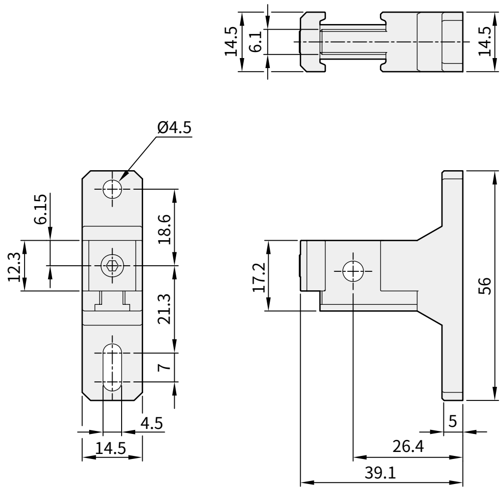

NL-500-06: Rc 3/4
NL-500-10: Rc 1
92
70
3.2
1"
OUT



MG Metal cup(Option)

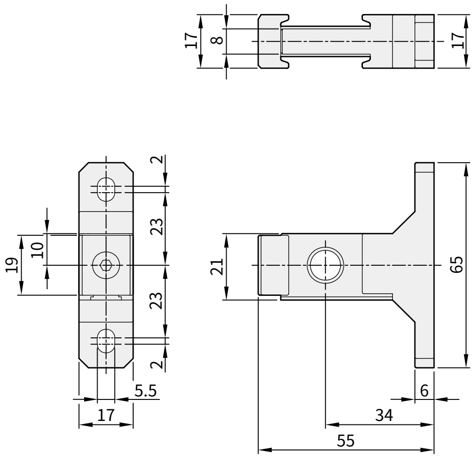
## N-10D

Suitable for N100 series


14.5
6.1
14.5
Ø4.5
6.15
12.3
18.6
21.3
7
4.5
14.5
17.2
56
5
26.4
39.1

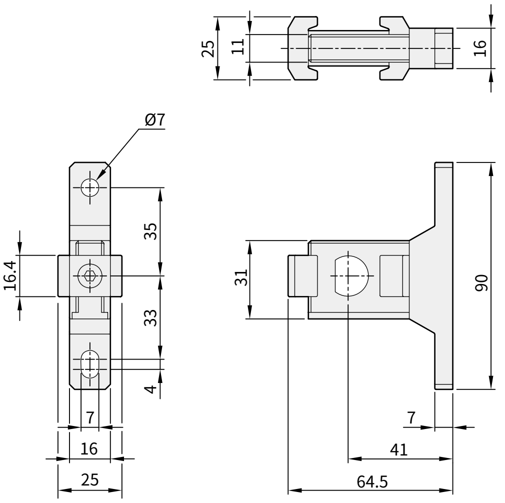
## N-20D

Suitable for N200 series


17
8
17
2
19
10
23
23
2
5.5
17
21
65
6
34
55

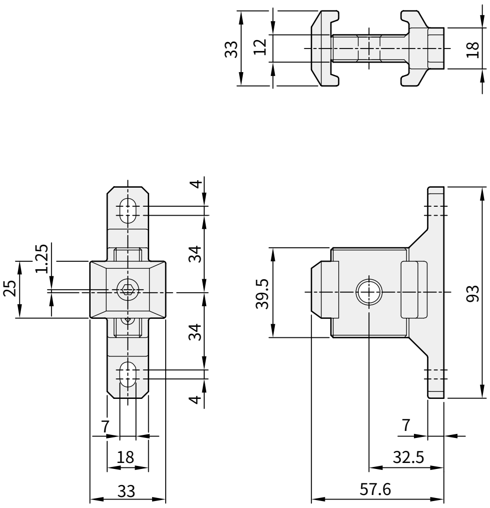
## N-30D

Suitable for N300 series


25
11
16
Ø7
16.4
35
33
4
7
16
25
31
90
7
41
64.5

## N-40D

Suitable for N400 series


33
12
18
4
1.25
25
34
34
4
7
18
33
39.5
93
7
32.5
57.6

# Air unit

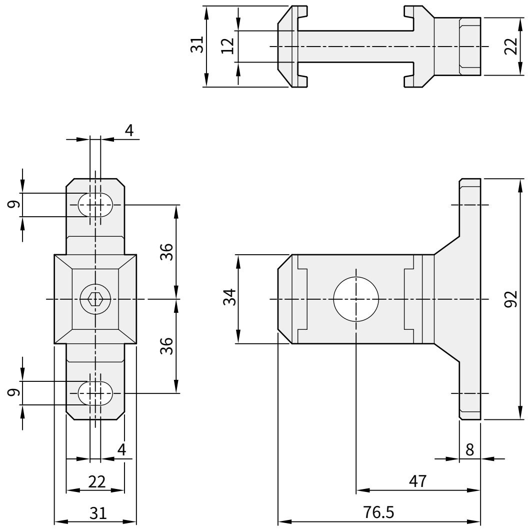
## Dimensions - Spacer

CHELIC

NC
NFC
PSN-10 30,41
NFR
MFR
MFRD
NF
MF
MFD
NR
ARX
NPR
NL
N
DM
ERX
ERP
PG/AFB NDV/AD

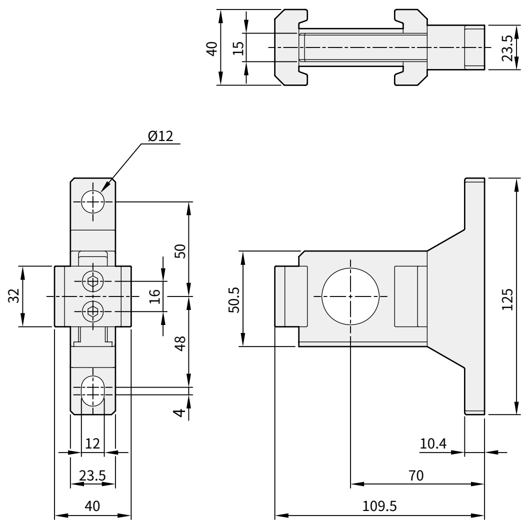
### N-45D

Suitable for N450 series


31
12
22
4
9
36
36
9
34
92
4
8
22
47
31
76.5

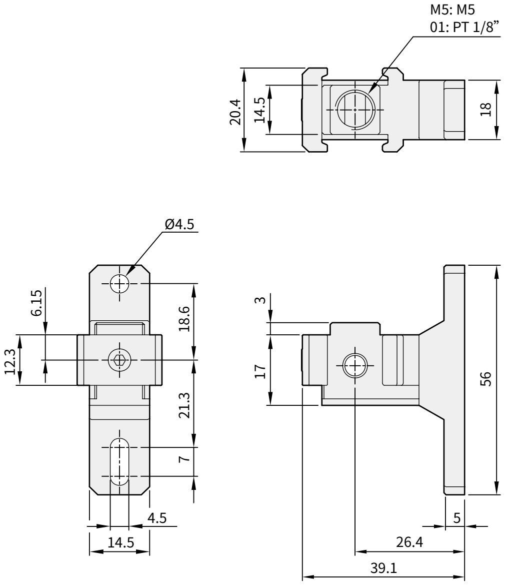
### N-50D

Suitable for N500 series


40
15
23.5
Ø12
50
32
16
48
4
50.5
125
12
10.4
23.5
70
40
109.5

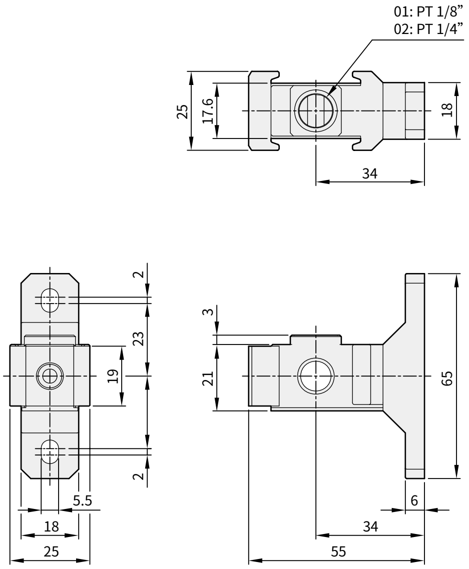
### N-10DT

Suitable for N100 series


M5: M5
01: PT 1/8"
20.4
14.5
18
Ø4.5
6.15
18.6
12.3
21.3
7
3
17
56
4.5
14.5
5
26.4
39.1

### N-20DT

Suitable for N200 series

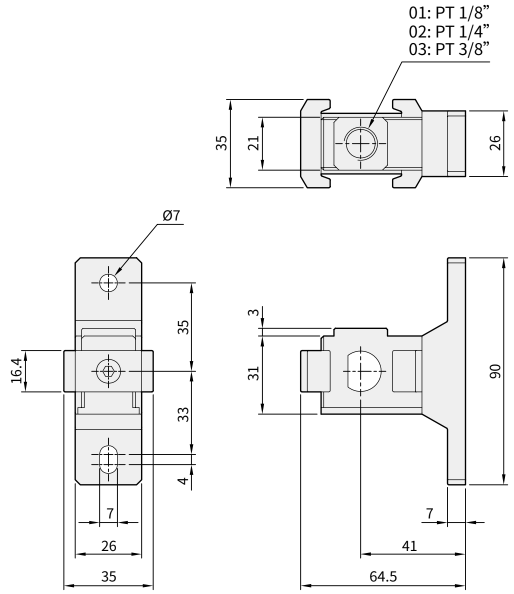

01: PT 1/8"
02: PT 1/4"
25
17.6
18
34
2
23
19
2
3
21
65
5.5
18
25
6
34
55

# Air unit

## Dimensions - Spacer

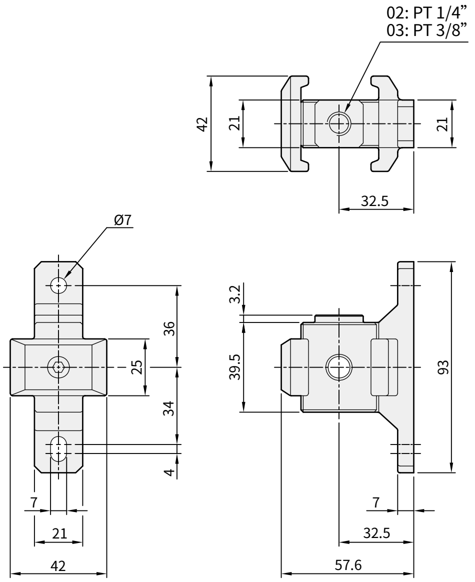
### N-30DT

Suitable for N300 series


01: PT 1/8”
02: PT 1/4”
03: PT 3/8”
35
21
26
Ø7
16.4
35
33
4
7
26
35
3
31
90
7
41
64.5

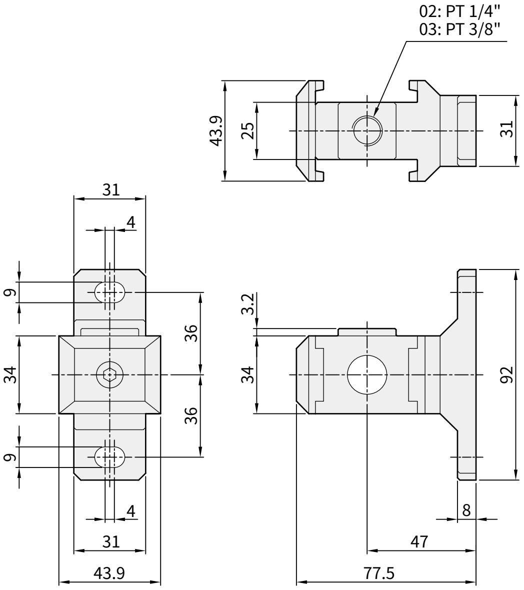
### N-40DT

Suitable for N400 series


02: PT 1/4”
03: PT 3/8”
42
21
21
32.5
Ø7
36
25
34
4
7
21
42
3.2
39.5
93
7
32.5
57.6

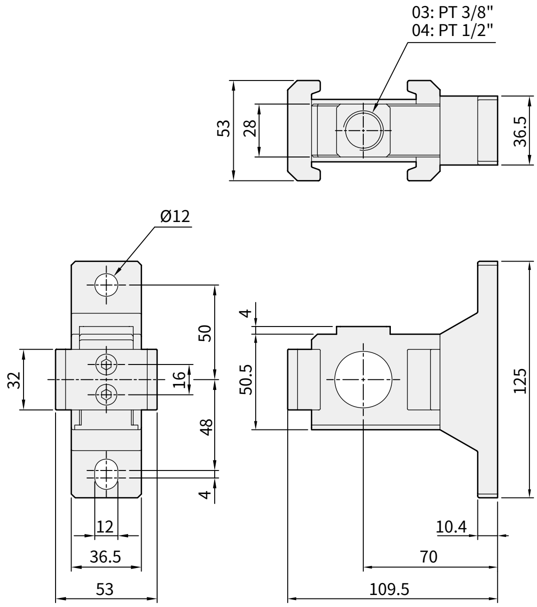
### N-45DT

Suitable for N450 series


02: PT 1/4"
03: PT 3/8"
43.9
25
31
31
4
9
34
9
36
36
4
31
43.9
3.2
34
92
8
47
77.5

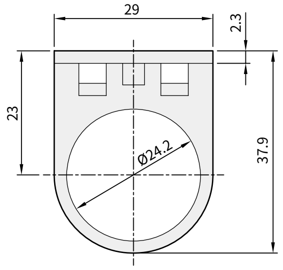
### N-50DT

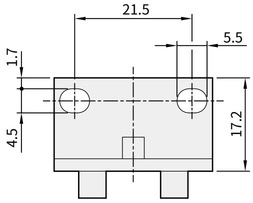
Suitable for N500 series


03: PT 3/8"
04: PT 1/2"
53
28
36.5
Ø12
32
50
16
48
4
12
36.5
53
4
50.5
125
10.4
70
109.5

## N-10B

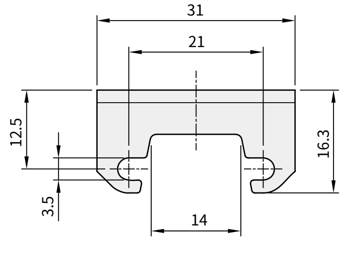
Suitable for NR100, NFR100 series

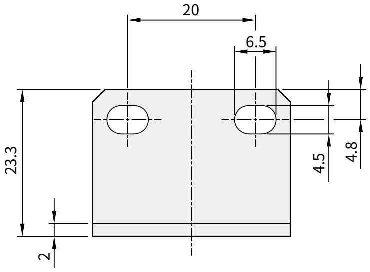

29
2.3
23
Ø24.2
37.9


21.5
5.5
1.7
4.5
17.2

## N-10C

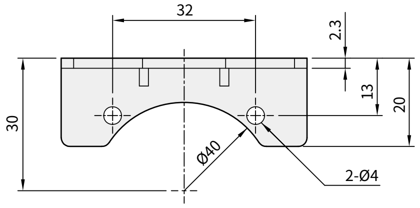
Suitable for NF100, NL100 series

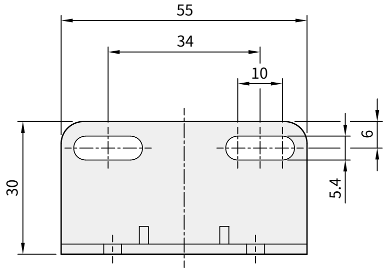

31
21
12.5
3.5
14
16.3


20
6.5
23.3
2
4.5
4.8

## N-20B

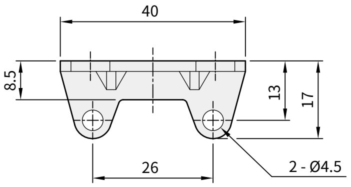
Suitable for NR200, NFR200 series

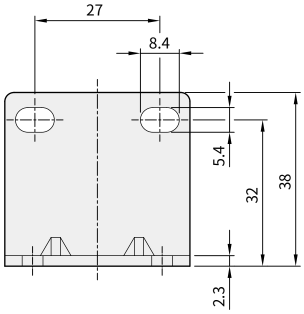

32
2.3
30
13
20
Ø40
2-Ø4


55
34
10
30
6
5.4

## N-20C

Suitable for NF200, NL200 series


40
8.5
13
17
26
2 - Ø4.5


27
8.4
5.4
32
38
2.3

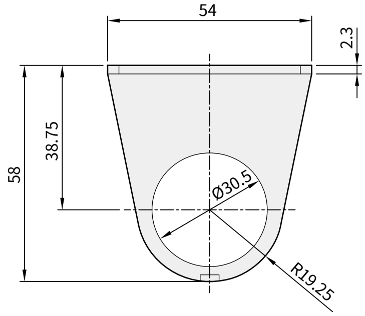
NC
NFC
PSN-10 30,41
NFR
MFR
MFRD
NF
MF
MFD
NR
ARX
NPR
NL
N
DM
ERX
ERP
PG/AFB NDV/AD

# Air unit

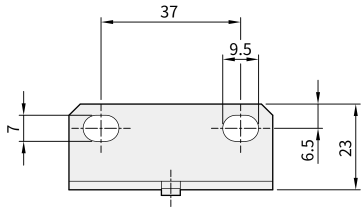
## Dimensions - L type Bracket

### N-30B

Suitable for NR300 series

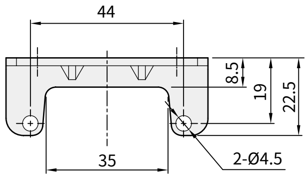


54
2.3
58
38.75
Ø30.5
R19.25

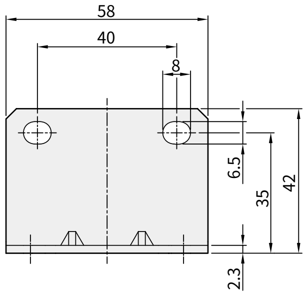


### N-30C

Suitable for NF300, NL300, NFR300 series



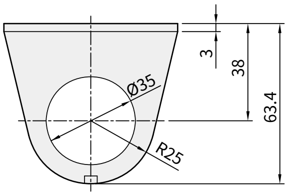
44
8.5
19
22.5
35
2-Ø4.5



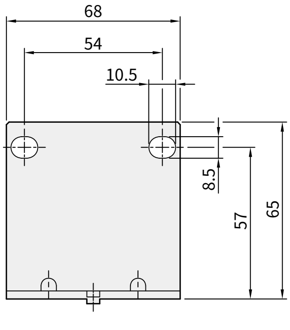
58
40
8
6.5
35
42
2.3

### N-40B

Suitable for NR400 series



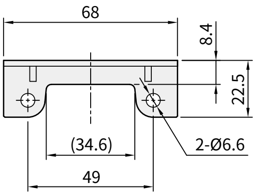
3
38
63.4
Ø35
R25



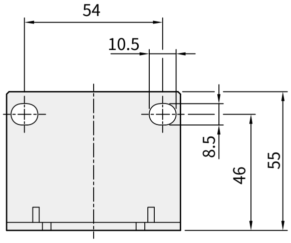
68
54
10.5
8.5
57
65

### N-40C

Suitable for NF400, NL400, NFR400 series



68
8.4
22.5
(34.6)
2-Ø6.6
49



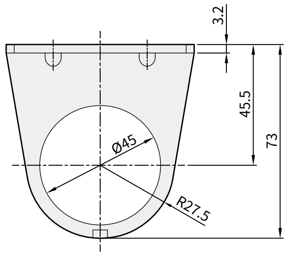
54
10.5
8.5
46
55

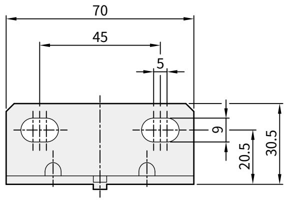
# Air unit

## Dimensions - L type Bracket

### N-45B

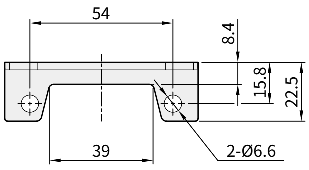
Suitable for NR450 series (Share with M-60B)

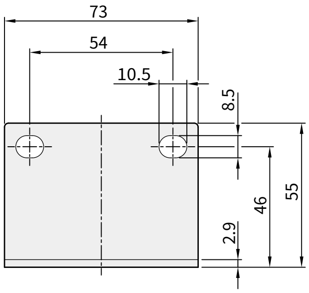

3.2
45.5
73
Ø45
R27.5


70
45
5
9
20.5
30.5

### N-45C

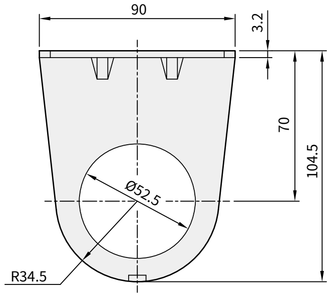
Suitable for NF450, NL450, NFR450 series

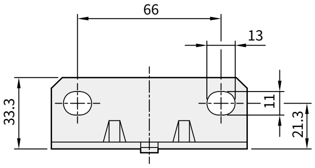

54
8.4
15.8
22.5
39
2-Ø6.6


73
54
10.5
8.5
55
46
2.9

### N-50B

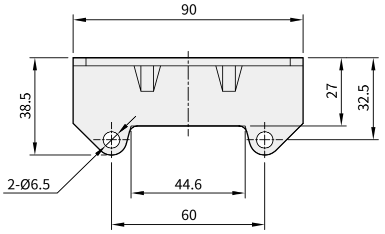
Suitable for NR500 series

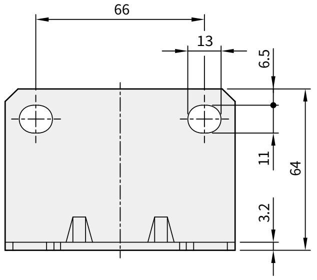

90
3.2
70
104.5
Ø52.5
R34.5


66
13
33.3
11
21.3

### N-50C

Suitable for NF500, NL500, NFR500 series

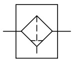

90
38.5
27
32.5
2-Ø6.5
44.6
60


66
13
6.5
11
64
3.2

# DM series - Large-sized filter

## Product features

Symbol:



## Specification

| Item / Model | DM □ - 200 | | DM □ - 300 | | | DM □ - 500 | | | DM □ - 800 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluid | Air | | | | | | | | | |
| Port size Rc | 1/4 | 3/8 | 3/8 | 1/2 | 3/4 | 1/2 | 3/4 | 1 | 1 | 1 1/2 |
| Max. flow L/min(ANR) | 1600 | 1600 | 1600 | 2500 | 3000 | 2500 | 3500 | 6000 | 8000 | 12000 |
| Pressure range kgf/cm²(kPa) | 2~10 ( 200~1000 ) | | | | | | | | | |
| Max. service pressure kgf/cm²(kPa) | 15 ( 1500 ) | | | | | | | | | |
| Ambient and fluid temperature °C | 5~60 | | | | | | | | | |
| Weight kg | 0.84 | | 0.84 | | | 1.62 | | | 4.3 | |

## Code of order

**DM** – **W** – **300** – **06** – **G** – **A** – **PG 10S** –

**Model ①**

Large - sized filter

**Filter type ②**

- W : Water drop removal ratio 99%
- F : Main line filter 3μm
- M : Secondary filter 0.3 μm
- D : First filter 0.01 μm

**Body size ③** / **Port size ④** / **Thread type ⑤**

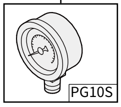
| Body size | Port size Code 02 | 03 | 04 | 06 | 10 | 12 | Thread type None | G | N |
|---|---|---|---|---|---|---|---|---|---|
| | Port size 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1½ | Rc | G | NPT |
| 200 | ● | ● | | | | | ● | ● | ● |
| 300 | | ● | ● | ● | | | ● | ● | ● |
| 500 | | | ● | ● | ● | | ● | ● | |
| 800 | | | | | ● | ● | ● | ● | |

Port connection

**Drain cock type**

A : Auto drain

**Pressure gauge ⑥**

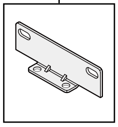


■ None : Without pressure gauge

PG10S : With pressure gauge (2 pcs per set)

※ DM200: PG10S
※ DM300: PG10S
※ DM500: PG10S
※ DM800: PG20S

**Bracket ⑦**



■ None : Without bracket (standard)

C : With bracket (option)

## Pressure gauge - ⑥

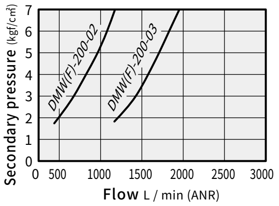
| Pressure gauge Model | Order code | DM □ - 200 | DM □ - 300 | DM □ - 500 | DM □ - 800 |
|---|---|---|---|---|---|
| PG-10S | P10S | ● (option) | ● (option) | ● (option) | — |
| PG-20S | P20S | — | — | — | ● (option) |

# DM series - Large-sized filter

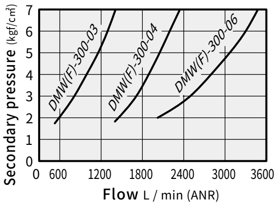
## Product features

### Flow rate characteristic graph

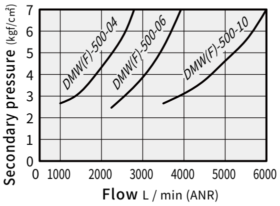
**DMW(F)-200-A**



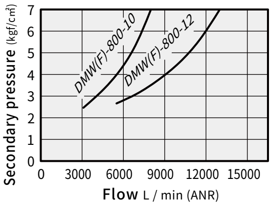
**DMW(F)-300-A**



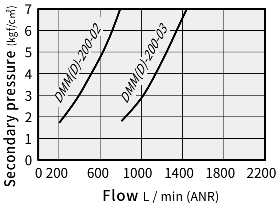
**DMW(F)-500-A**



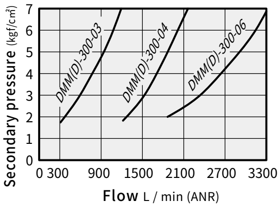
**DMW(F)-800-A**



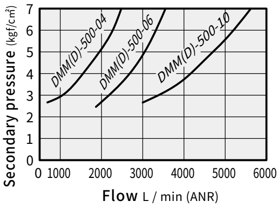
**DMM(D)-200-A**



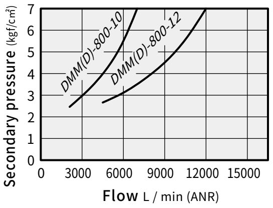
**DMM(D)-300-A**



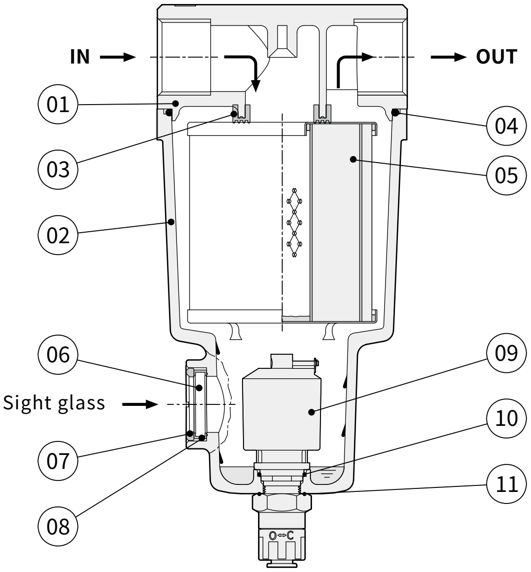
**DMM(D)-500-A**



**DMM(D)-800-A**



### Internal structure



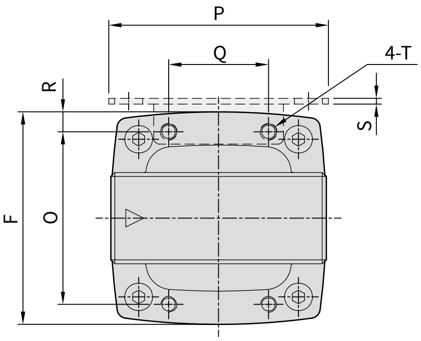
### Components and material list

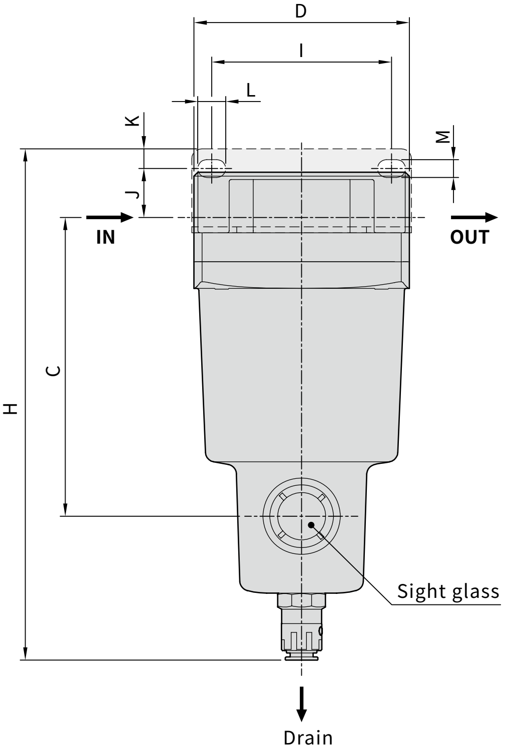
| No. | Item | Material | Quantity | No. | Item | Material | Quantity |
|---|---|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 1 | 07 | Fixed ring | Iron | 1 |
| 02 | Plastic Bowl | Aluminum alloy | 1 | 08 | Ring | NBR | 1 |
| 03 | Packing | NBR | 1 | 09 | Auto drain | AD-55 | 1 |
| 04 | O-Ring | NBR | 1 | 10 | O-Ring | NBR | 1 |
| 05 | Filter element |  | 1 | 11 | O-Ring | NBR | 1 |
| 06 | Sight glass | Tempered glass | 1 |  |  |  |  |

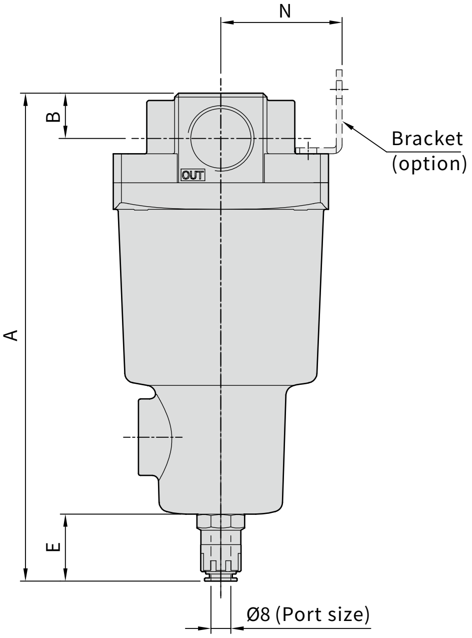
# DM series - Large-sized filter

## Dimensions

DM - ☐




D
I
L
K
M
J
IN
OUT
H
C
Sight glass
Drain

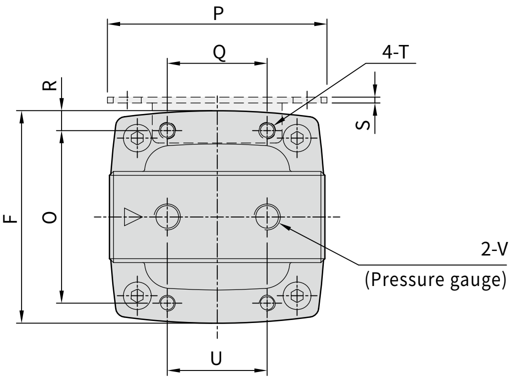

N
B
OUT
Bracket
(option)
A
E
Ø8 (Port size)

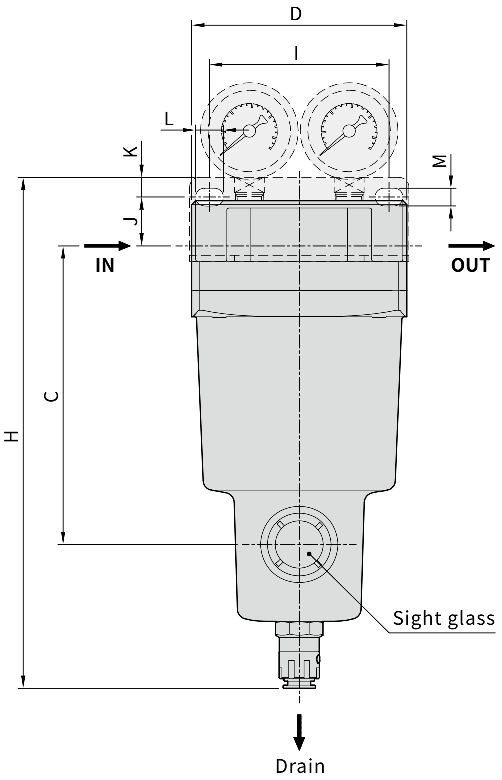
| Item / Model | Port size | A | B | C | D | E | F | Bracket related dimensions | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | H | I | J | K | L | M | N | O | P | Q | R | S | T |
| DM200 | 1/4, 3/8 | 172 | 14 | 113 | 76 | 34 | 76 | 190 | 66 | 24 | 8 | 10 | 6 | 40 | 66 | 80 | 28 | 5 | 2 | M6x1.0P |
| DM300 | 3/8, 1/2, 3/4 | 221 | 17 | 133 | 90 | 34 | 90 | 231 | 80 | 19 | 8 | 14 | 7 | 50 | 80 | 100 | 34 | 5 | 2.3 | M6x1.0P |
| DM500 | 1/2, 3/4, 1 | 248 | 23 | 152 | 108 | 34 | 108 | 260 | 90 | 25 | 10 | 14 | 9 | 55 | 88 | 110 | 50 | 10 | 3 | M8x1.25P |
| DM800 | 1, 1½ | 354 | 32 | 241 | 160 | 34 | 160 | 378 | 150 | 40 | 15 | 20 | 11 | 85 | 136 | 180 | 76 | 12 | 4.5 | M10x1.5P |

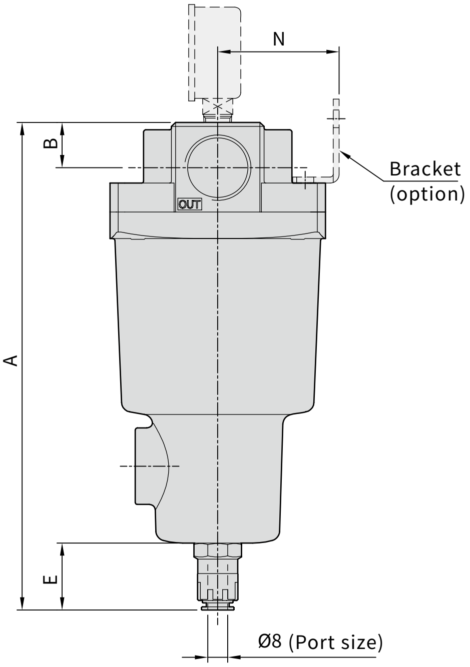
# DM series - Large-sized filter

## Dimensions

DM - ☐ - PG - ☐


P
Q
4-T
R
S
F
O
2-V
(Pressure gauge)
U

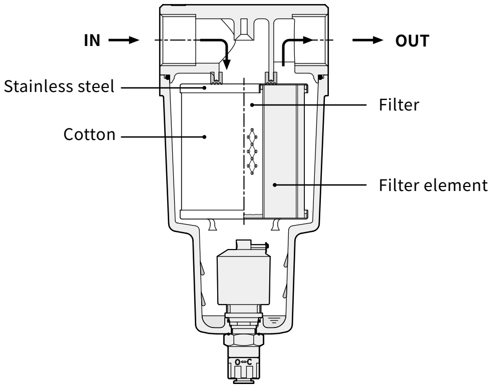

D
I
L
K
M
J
IN
OUT
H
C
Sight glass
Drain

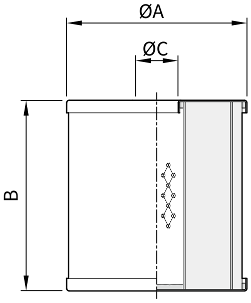

N
B
OUT
Bracket
(option)
A
E
Ø8 (Port size)

| Item / Model | Port size | A | B | C | D | E | F | Bracket related dimensions | | | | | | | | | | | | | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | H | I | J | K | L | M | N | O | P | Q | R | S | T | | |
| DM200 | 1/4, 3/8 | 172 | 14 | 113 | 76 | 34 | 76 | 190 | 66 | 24 | 8 | 10 | 6 | 40 | 66 | 80 | 28 | 5 | 2 | M6x1.0p | 45 | Rc 1/8 |
| DM300 | 3/8, 1/2, 3/4 | 221 | 17 | 133 | 90 | 34 | 90 | 231 | 80 | 19 | 8 | 14 | 7 | 50 | 80 | 100 | 34 | 5 | 2.3 | M6x1.0p | 45 | Rc 1/8 |
| DM500 | 1/2, 3/4, 1 | 248 | 23 | 152 | 108 | 34 | 108 | 260 | 90 | 25 | 10 | 14 | 9 | 55 | 88 | 110 | 50 | 10 | 3 | M8x1.25p | 50 | Rc 1/8 |
| DM800 | 1, 1½ | 354 | 32 | 241 | 160 | 34 | 160 | 378 | 150 | 40 | 15 | 20 | 11 | 85 | 136 | 180 | 76 | 12 | 4.5 | M10x1.5p | 70 | Rc 1/4 |

## DM ☐ – 200series　Large size filter
300series
500series
800series

### Filter element





## Specification

| Model | Filter grade |
|---|---|
| DM ☐ – 200 | W : Water drop removal ratio 99% |
| DM ☐ – 300 | F : Filtration efficiency 3µm |
| DM ☐ – 500 | M : Filtration efficiency 0.3 µm |
| DM ☐ – 800 | D : Filtration efficiency 0.01 µm |

## Dimension

| Mark<br>Model | A | B | C |
|---|---|---|---|
| DM ☐ – 200 | 54 | 51 | 13 |
| DM ☐ – 300 | 70 | 77 | 16.7 |
| DM ☐ – 500 | 82 | 88 | 20 |
| DM ☐ – 800 | 110 | 152.5 | 38 |

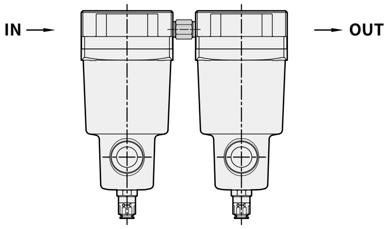
## Filter grade expression

Large size filter is divided into three specifications(DM-200, DM-300, DM-500, DM-800),for the flow.
There are four types for filter grade, ”W” use for water drop removal ratio 99%;
“ F ” use for filtration efficiency (for example: the first tube after air reservoir).
“ M ” use for filtration efficiency, and it can also use in facilities which air quality over 0.3µm.
“ D ” use for good air quality when using accurate facilities, and it accompany with
“ M ” type filter and filter to 0.3 µm for using.

# ⚠ Safety notice/ Large size filter/ Caution for application

## Example for using large size filter

DMW—500 + DMF—500



DMW — 500 DMF — 500
99% water removal rate Filtration efficiency 3μm

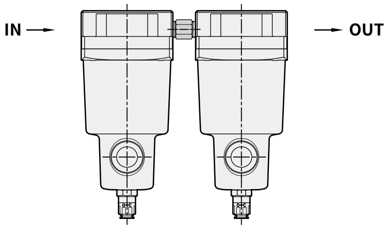
- Expression :

DMW Mist Separator connect DMF filter of main piping line. The general operation is to be between the end of pressure resource from the air reservoir to split piping line. Removing oil made from air compressor and remove impurity inside the air reservoir. Making the particle rate of impurity in air under 3μm.

※ Suggestion for environment : General piping line and the parts of air pressure without water.

---

DMW—500 + DMM—500



DMW — 500 DMM — 500
99% water removal rate Filtration efficiency 0.3μm

- Expression :

DMW Mist Separator connect DMF secondary filter. The general operation to be between second bypass line of the main piping line to the pneumatic equipment of the maximum flow. Removing oil and impurity to avoid particle rate of line system too high to jam and increase product life span.

※ Suggestion for environment : The piping line in front of the pneumatic equipment ; for example: the pneumatic tools.

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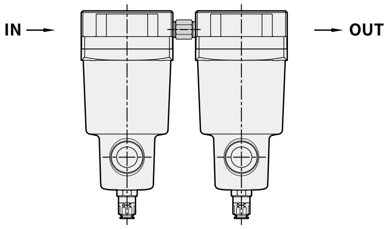
DMF—500 + DMD—500



DMF — 500 DMD — 500
Filtration efficiency 3μm Filtration efficiency 0.01μm

- Expression :

The first main line filter 3μm of DMF connect the first filter0.01μm of DMD. Using in a place where request high air quality. For example, spray painting and sandblasting and etc. that have to reach removing impurity of air and some water of air to provide dried air.

※ Suggestion for environment : Spray painting , sandblasting , the pneumatic tools and so on.

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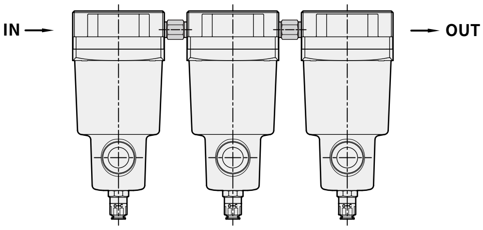
DMW—500 + DMM—500 + DMD—500



DMW — 500 DMM — 500 DMD — 500
99% water removal rate Filtration efficiency 0.3μm Filtration efficiency 0.01μm

- Expression :

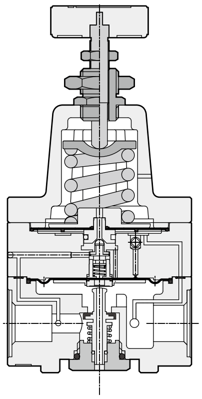
DMW mist filter + DMM secondary filter+ DMD first filter is a complete set of removing oil , water, and impurity. To filter the air via three different functions to secondary environment and equipment.For example: using fitting between DMW and DMD to connect some parts which need 0.3μm equipment and other equipment can use 0.01μm.Increasing filter element life and owning stable air impurity rate by filter

※ Suggestion for environment : Small-Quantity spray painting , sandblasting and so on.

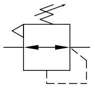
# ERX series - Precision Regulator (Energy Saving-No Overflow)

## Product features/ Code of order

### Internal structure



Symbol:



### Specification

| Item / Model | | ERX-200 | ERX-300 | ERX-400 |
|---|---|---|---|---|
| Fluid | | Air | | |
| Max. supply pressure | kgf/cm² (kPa) | 10 (1,000) | | |
| Min. supply pressure | kgf/cm² (kPa) | Setting pressure +0.05 (50) | | Setting pressure +1.0 (100) |
| Pressure range | kgf/cm² (kPa) | ERX-200: 0.1~8.2 (10~800) | ERX-300: 0.1~8.2 (10~800) | ERX-400: 0.1~8.2 (10~800) |
| | | ERX-200-L4: 0.1~4.2 (10~400) | ERX-300-L4: 0.1~4.2 (10~400) | ERX-400-L4: 0.1~4.2 (10~400) |
| | | ERX-200-L2: 0.1~2.2 (10~200) | ERX-300-L2: 0.1~2.2 (10~200) | ERX-400-L2: 0.1~2.2 (10~200) |
| Repeatability | | F.S. ±1% within | | |
| Air consumption | L/min(ANR) | 0 | | |
| Port size | Rc | 1/8 | 1/4 | 1/4, 3/8, 1/2 |
| Pressure gauge port size | Rc | 1/8 ( 2 sides ) | | |
| Ambient and fluid temperature | °C | 5 ~ 60°C | | |
| Weight | kg | 0.21 | 0.41 | 0.51 |

### Code of order

ERX – 300 – 02 – G – PG10A – L4 –

**ERX**

ERX series
Precision regulator
( Energy Saving )

**Model**

200 - 200 series
300 - 300 series
400 - 400 series

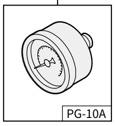
**Port size**

| Mark | Port size | Model 200 | Model 300 | Model 400 |
|---|---|---|---|---|
| 01 | 1/8 | ● | — | — |
| 02 | 1/4 | — | ● | ● |
| 03 | 3/8 | — | — | ● |
| 04 | 1/2 | — | — | ● |

**Thread type**

| | |
|---|---|
| None | Rc |
| G | G |
| N | NPT |

**Pressure gauge**

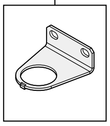


PG-10A : Pressure gauge (option)

**Pressure range**

| Mark | Max. supply pressure (kgf/cm²) | Model 200 | Model 300 | Model 400 |
|---|---|---|---|---|
| None | 8 | ● | ● | ● |
| L4 | 4 | ● | ● | ● |
| L2 | 2 | ● | ● | ● |

**Bracket**



■ None : With bracket (standard)

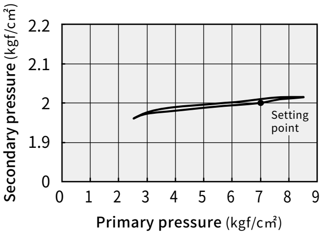
# ERX series - Precision Regulator (Energy Saving-No Overflow)

## Characteristics graph

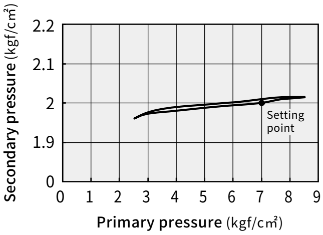
**CHELIC**

### Pressure characteristics graph

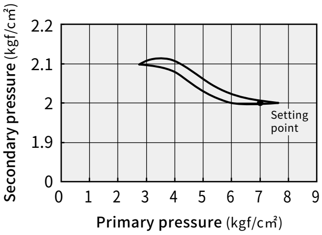
**ERX-200**



**ERX-300**



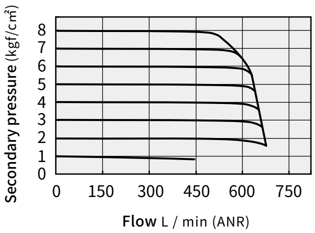
**ERX-400**



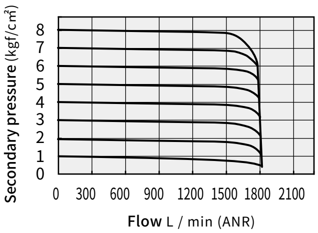
Flow L / min (ANR)

### Flow rate characteristic graph

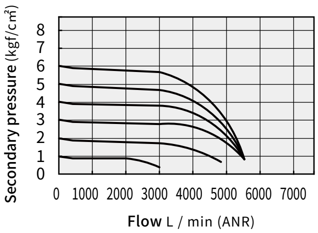
**ERX-200**



**ERX-300**

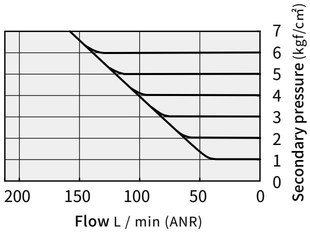


**ERX-400**

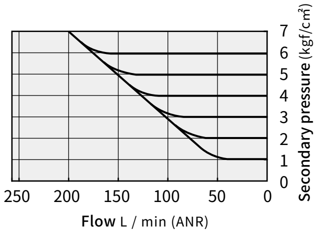


### Relief characteristics graph

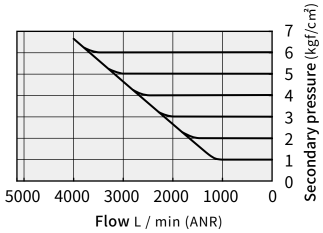
**ERX-200**



**ERX-300**



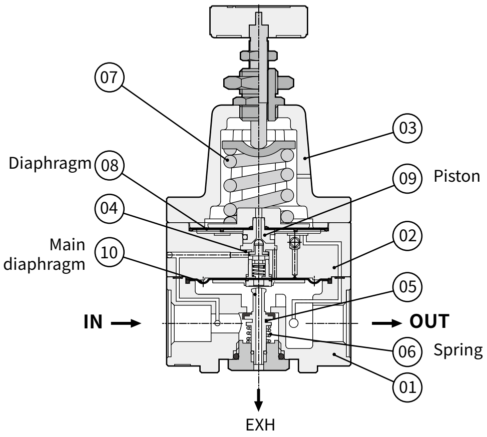
**ERX-400**



# ERX series - Precision Regulator (Energy Saving-No Overflow)

## Product features

### Components and Material list



### Working principle

When the setting knob is turned, the nozzle is opened by the rod allowing the supply air that flows in from the upstream side to pass through the fix throttle. It then acts on Main diaphragm as nozzle back pressure, the main valve is pushed down by the generated force, and the supply pressure flows out to the downstream side. The air pressure that flows in acts on main diaphragm. While opposing that force generated by main diaphragm it also acts on diaphragm, opposing the compression force of the setting spring and becomes that set pressure. If the set pressure rises too high, diaphragm is pushed up, the interval between the rod and the piston widens, the nozzle back pressure drop, the balance of main diaphragm and diaphragm is broken, the main valve closes, the exhaust valve opens and the excess pressure from the downstream side is discharge to the atmosphere. In this way fine pressure variations are detected by the nozzle/rod and piston type pilot mechanism, and precise pressure adjustment is performed.

### Components and material list

| No. | Item | Material | Quantity | No. | Item | Material | Quantity |
|---|---|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 1 | 06 | Spring | Stainless steel | 1 |
| 02 | Base | Aluminum alloy | 1 | 07 | Main spring | Piano string | 1 |
| 03 | Top cover | Aluminum alloy | 1 | 08 | Diaphragm | NBR | 1 |
| 04 | Shaft | Copper(With rubber) | 1 | 09 | Piston | Stainless steel | 1 |
| 05 | Tube | Copper(With rubber) | 1 | 10 | Main diaphragm | NBR | 1 |

## ⚠ Specific Product Precautions

### Air Supply

**⚠ WARNING**

① If the drain removal from air filter and mist is missed, drain will be flown out to the outlet side and may resultin a malfunction of the pneumatic equipment.

② Operating with auto drain filter is suggested to keep the qualities of pressure air.

**⚠ CAUTION**

① If the supply pressure line contain drain or particulate, etc., the fixed throttle can become clogged leading to malfunction, and therefore, in addition to Chelic' s NF or MF series mist separator.

② Never use a lubricator on the supply side of the regulator, as this will positively cause the fixed throttle to become clogged and result in a malfunction. If lubricator is required for terminal devices, connect a lubricator on the output side of the regulator.

### Operation

**⚠ CAUTION**

① Never operate a precision regulator out of the range of its specifications or it could cause failure.(Refer to specifications.)

② Make sure not to clog up the bleed hole when a precision regulator is mounted. Air releasing is normal to make the pressure balance inside.

③ Mounting a directional switching valve(solenoid vavle, mechanical valve) on the supply side could cause unbalance pressure and wear and tear on the nozzle/flapper section.; therefore, do not use directional switching valve.

④ It is a necessary consumption to released air from the bleed hole (the hole on the bottom of the body) based on the construction of the precision regulator and is no an abnormality.

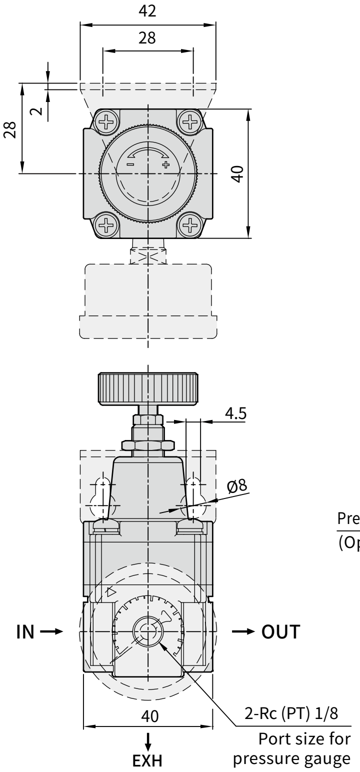
⑤ After pressure adjustment, make sure to tighten the lock nut to avoid unstable pressure.

# ERX series - Precision Regulator (Energy Saving-No Overflow)

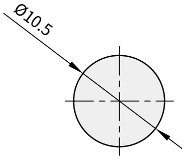
## Dimensions

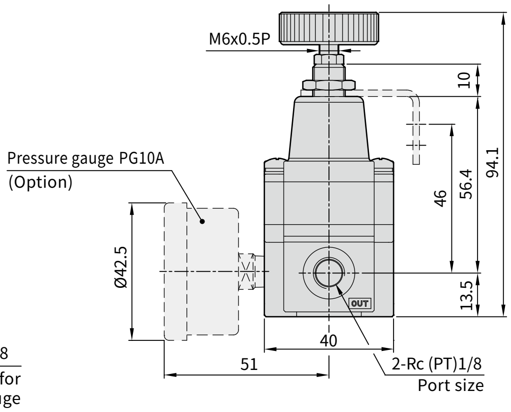
CHELIC

### ERX - 200

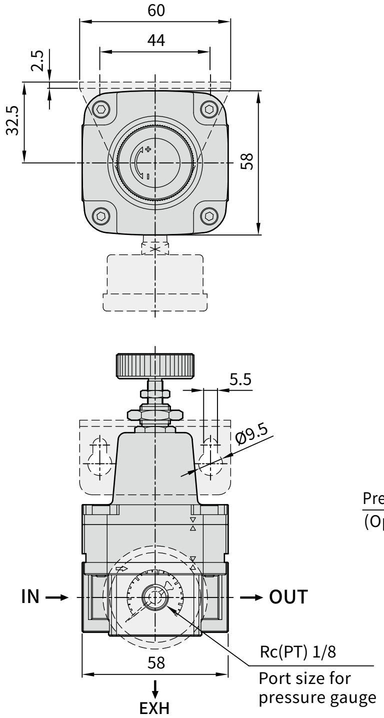

42
28
2
28
40
4.5
Ø8
IN
OUT
40
EXH
2-Rc (PT) 1/8
Port size for pressure gauge

### Panel mounting dimensions

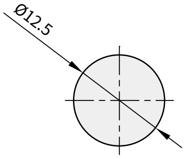


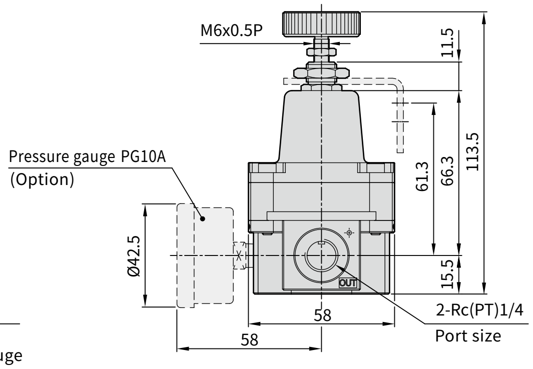

M6x0.5P
Pressure gauge PG10A
(Option)
Ø42.5
10
46
56.4
94.1
13.5
OUT
40
51
2-Rc (PT)1/8
Port size

### ERX - 300


60
44
2.5
32.5
58
5.5
Ø9.5
IN
OUT
58
EXH
Rc(PT) 1/8
Port size for pressure gauge

### Panel mounting dimensions

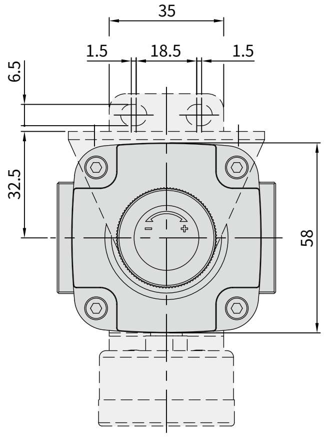


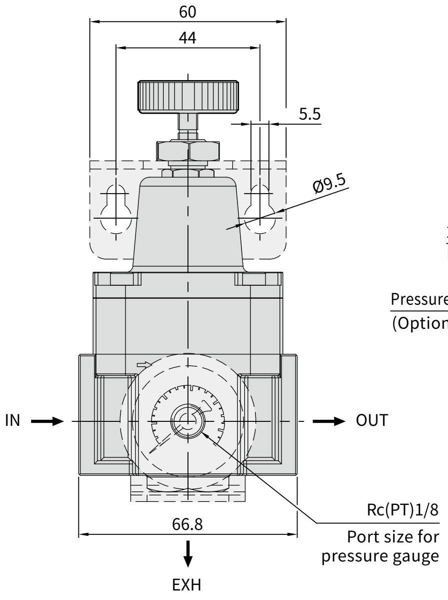

M6x0.5P
Pressure gauge PG10A
(Option)
Ø42.5
11.5
61.3
66.3
113.5
15.5
OUT
58
58
2-Rc(PT)1/4
Port size

# ERX series - Precision Regulator (Energy Saving-No Overflow)

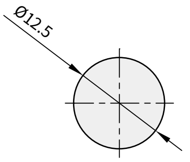
## Dimensions

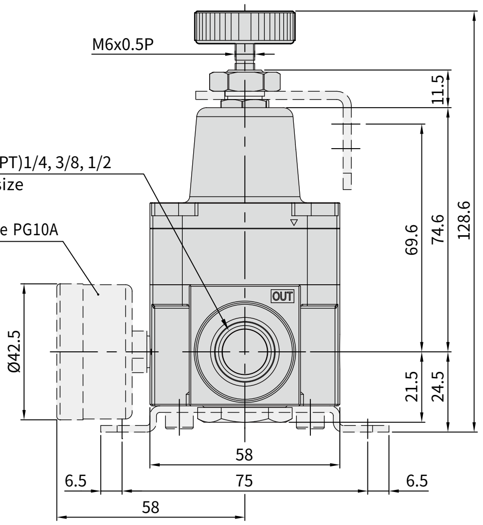
### ERX-400


35
1.5
18.5
1.5
6.5
32.5
58


60
44
5.5
Ø9.5
IN
OUT
66.8
EXH
Rc(PT)1/8
Port size for
pressure gauge

### Panel mounting dimensions




M6x0.5P
2-Rc (PT)1/4, 3/8, 1/2
Port size
Pressure gauge PG10A
(Option)
OUT
Ø42.5
11.5
69.6
74.6
128.6
21.5
24.5
58
6.5
75
6.5
58

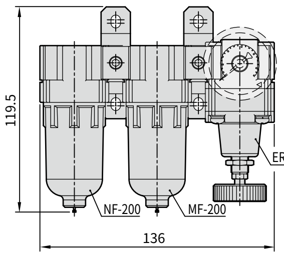
# ERX series - Precision Regulator (Energy Saving-No Overflow)

## Instructions

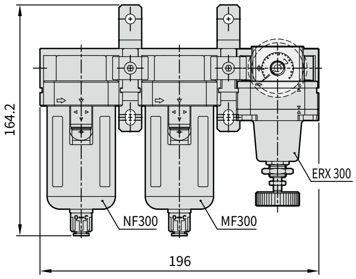
CHELIC

### Combination example

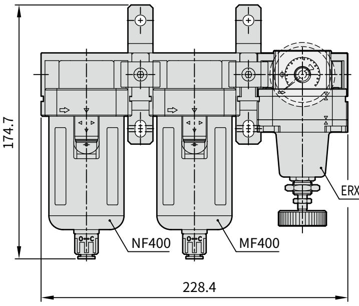
ERX-200


119.5
ERX 200
NF-200
MF-200
136

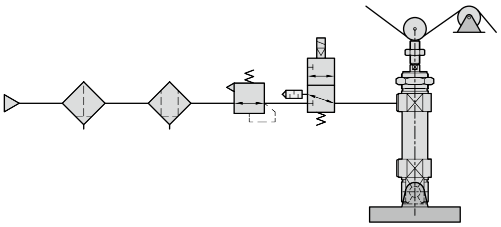
ERX-300


164.2
ERX 300
NF300
MF300
196

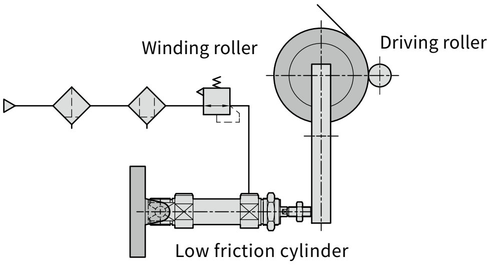
ERX-400


174.7
ERX 400
NF400
MF400
228.4

### Tension control

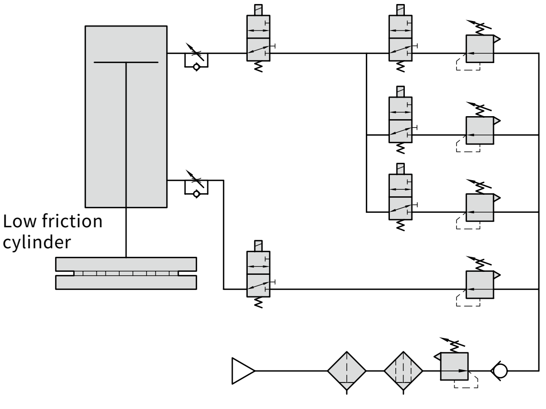


### Contact pressure control

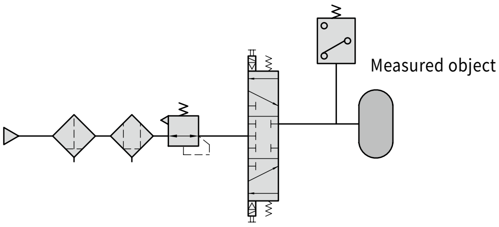

Winding roller
Driving roller
Low friction cylinder

- Adapts to the cylinder’s piston displacement, maintaining a certain pressure.

### Multistage control of pressing force for workpiece (Grinder)


Low friction cylinder

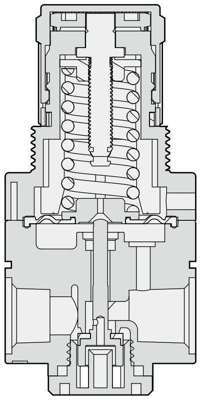
### Leakage test circuit


Measured object

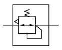
# ERP series - Direct operated precision regulator

## Product features

### Internal structure



Symbol:



### Specification

| Item / Model | | ERP-200 | ERP-300 |
|---|---|---|---|
| Fluid | | Air | |
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 |
| Pressure range | 2kgf/cm² | 0.05 ~ 2 | |
| | 4kgf/cm² | 0.05 ~ 4 | |
| | 6kgf/cm² | 0.08 ~ 6 | |
| Air consumption | 2kgf/cm² | 0.6L/min(ANR) or less | |
| | 4kgf/cm² | 1L/min(ANR) or less | |
| | 6kgf/cm² | 1.6L/min(ANR) or less | |
| Max. supply pressure | kgf/cm²(kPa) | 7 (700) | |
| Min. supply pressure | kgf/cm²(kPa) | Pressure setting +0.5 (50) | |
| Ambient and fluid temperature | ℃ | -5 ~ 60 | |
| Weight | kg | 0.2 | 0.25 |
| Body material | | Aluminum alloy die-casting | |

### Code of order

**ERP** — **200** — **01** — **G** — **PG-22N** — **L2** —

**Model**

ERP series:
Direct operated
precision regulator

**Model**

| |
|---|
| 200 - 200 series |
| 300 - 300 series |

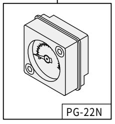
**Port size**

| Mark | Port size | Body size | |
|---|---|---|---|
| | | 200 | 300 |
| 01 | 1/8" | ● | – |
| 02 | 1/4" | ● | ● |
| 03 | 3/8" | – | ● |

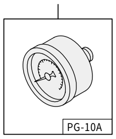
**Thread type**

| | |
|---|---|
| None | RC |
| G | G |
| N | NPT |

**Pressure gauge**



■None : Standard
Square gauge
(Thin and positioned type)

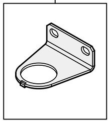


PG-10A : Pressure gauge (Option)

**Max. pressure adjustment**

| | |
|---|---|
| None | Standard: 6kgf/cm² |
| L2 | 2kgf/cm² |
| L4 | 4kgf/cm² |

**Bracket**

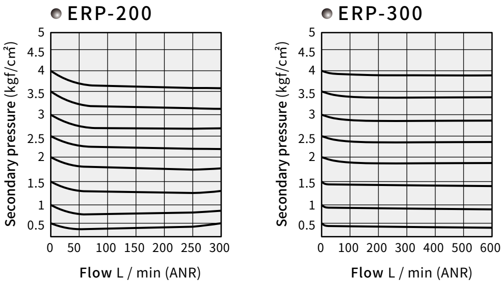


None :
Bracket included

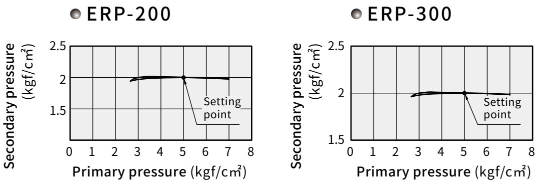
# ERP series - Direct operated precision regulator

## Product features

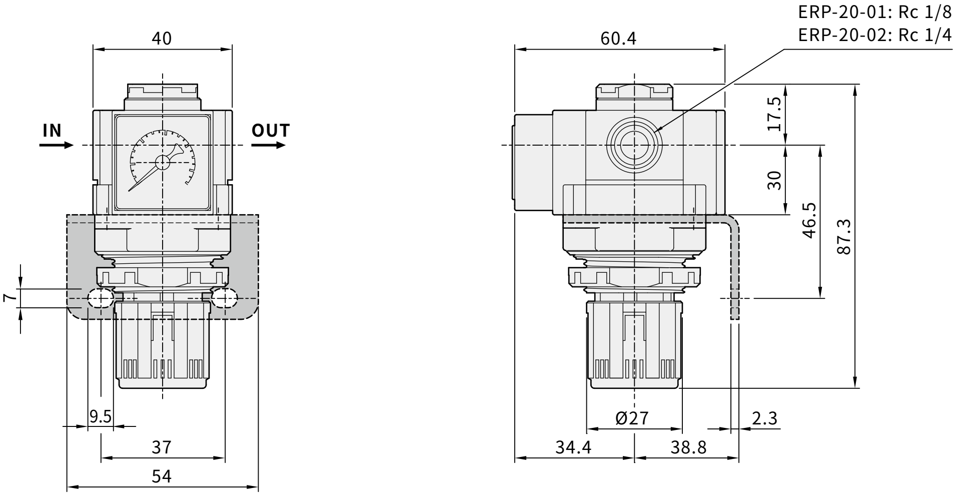
### Flow rate characteristic graph



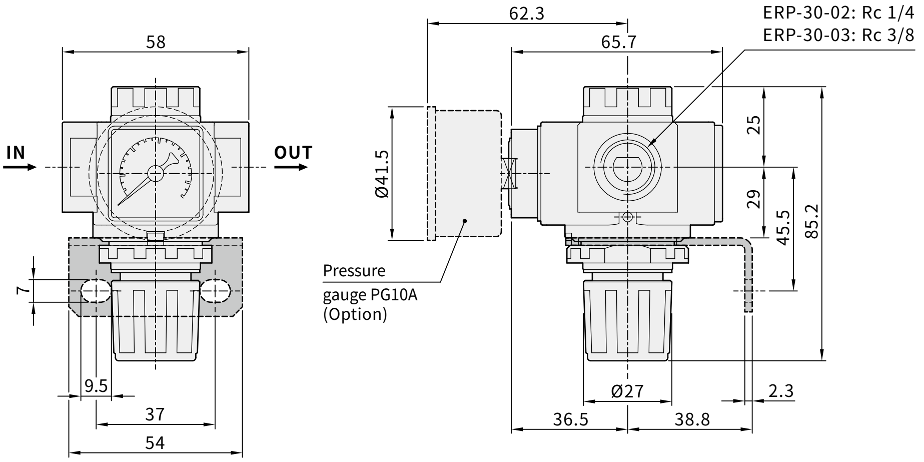
### Pressure characteristics graph



### ERP - 200 Standard


40
IN
OUT
7
9.5
37
54
60.4
ERP-20-01: Rc 1/8
ERP-20-02: Rc 1/4
17.5
30
46.5
87.3
Ø27
2.3
34.4
38.8

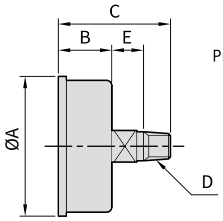
### ERP - 300 Standard


58
IN
OUT
7
9.5
37
54
62.3
65.7
ERP-30-02: Rc 1/4
ERP-30-03: Rc 3/8
Ø41.5
Pressure gauge PG10A (Option)
25
29
45.5
85.2
Ø27
2.3
36.5
38.8

# PG series - Pressure Gauge

## Product features

### PG - ☐ Center back type



### Code of order

**PG** **10** **S** **B** **L4**

Pressure gauge

Model :
05 : 1 1/4" Pressure gauge
10 : 1 1/2" Pressure gauge
20 : 2" Pressure gauge

☐ : Center back type
S : Bottom type

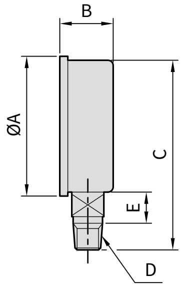
Pressure gauge material
☐ None
Plastic cover
B : Glass cover
(Option)

Max. service pressure
L1: 1 kgf / cm$^2$
L2: 2 kgf / cm$^2$
L4: 4 kgf / cm$^2$
☐ None: 10 kgf / cm$^2$
(standard)

### Dimension

| Model \ Code | A | B | C | D | Remark | E |
|---|---|---|---|---|---|---|
| PG - 05 -☐ | 33 | 20 | 34 | 1/8" | L1 = 1 kgf / cm$^2$ , L2 = 2 kgf / cm$^2$ , L4 = 4 kgf / cm$^2$ | 6 |
| PG - 10 -☐ | 42 | 23 | 38 | 1/8" | | 4.5 |
| PG - 20 -☐ | 52.5 | 26 | 45.7 | 1/4" | | 7.4 |

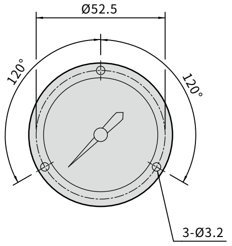
### PG - 20 S Bottom type

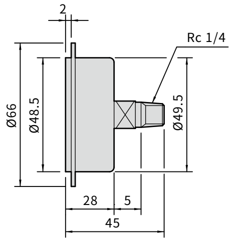


### Dimension

| Model \ Code | A | B | C | D | E |
|---|---|---|---|---|---|
| PG-10-S | 41.5 | 26 | 56.7 | 1/8" | 5.5 |
| PG-20-S | 52.5 | 26.1 | 71.4 | 1/4" | 6.3 |

### PG - 20 F Flange type


Ø52.5
120°
120°
3-Ø3.2

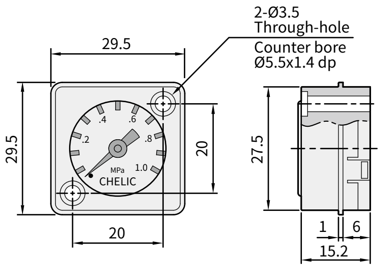

2
Rc 1/4
Ø66
Ø48.5
Ø49.5
28
5
45

### PG - 22 N Square pressure gauge

### Specification

| Item \ Model | PG-22N |
|---|---|
| Fluid | Compressed air |
| Fluid temperature °C | 5 ~ 60 |
| Ambient temperature °C | 5 ~ 60 |
| Indication precision | ± 4% (5~35°C Ambient temperature) |
| Shape | Square |
| Material | PBT Resin |
| Operating pressure MPa | 0 ~ 1.0 |
| Weight g | 11 |

### Dimension


2-Ø3.5
Through-hole
Counter bore
Ø5.5x1.4 dp
29.5
29.5
20
20
27.5
1
6
15.2
.2
.4
.6
.8
1.0
MPa
CHELIC

### Code of order

**PG** – **22** **N**

Pressure gauge

Code

Type :
N : Square pressure gauge

# AFB series - Exhaust valve

## Product features/ Code of order

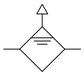
### Code of order

**AFB** – **150**

Model — Exhaust valve

Port size:
150 - 1/8
200 - 1/4

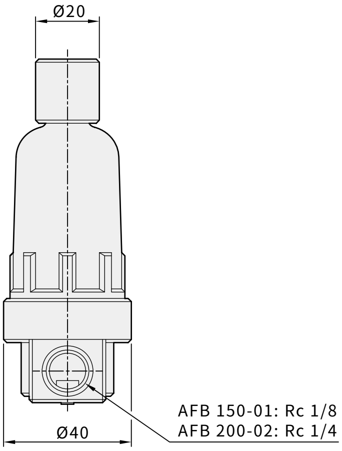
Exhaust valve
Symbol :

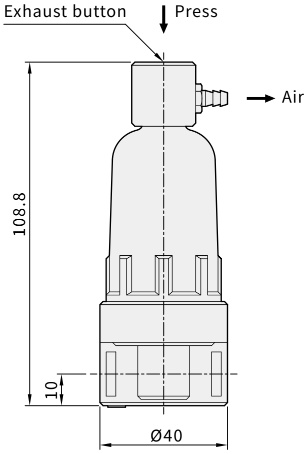


### Specification

| Item / Model | | AFB-150 | AFB-200 |
|---|---|---|---|
| Fluid | | Air | |
| Port size Rc | | 1/8 | 1/4 |
| Proof pressure kgf/cm² (kPa) | | 9.2 (920) | |
| Ambient and fluid temperature °C | | 5~60°C | |
| Recommended lubrication | | First class lubricant ( ISO - VG32 ) or equivalent | |
| Weight kg | | 0.1 | 0.2 |
| Material | Body | Aluminum die-casted | |
| | Bowl | Relieving type | |

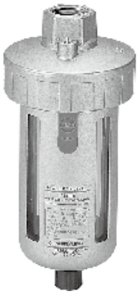
### AFB - ☐ Standard


Ø20
Ø40
AFB 150-01: Rc 1/8
AFB 200-02: Rc 1/4


Exhaust button
Press
Air
108.8
10
Ø40

# NDV series - Auto Drain Valve

## Product features/ Code of order



## Specification

| Item / Model | | NDV-300-02 | NDV-300-03 | NDV-300-04 | NDV-500-04 | NDV-500-06 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port Size Rc | | 1/4 | 3/8 | 1/2 | 1/2 | 3/4 |
| Max. service pressure kgf/cm² (kPa) | | 9.2 (920) | | | | |
| Range of service temperature °C | | 5 ~ 60 | | | | |
| Weight kg | | 0.3 | | | 0.63 | |
| Material | Body | Aluminum die-casted | | | | |
| | Bowl | Relieving type | | | | |

## Code of order

**NDV** – **300** – **03** – **A**

NDV series
Auto Drain Valve

**Model**

300 – 300 series
500 – 500 series

**Port size**

| Mark | Port size | Model | |
|---|---|---|---|
| | | 300 | 500 |
| 02 | 1/4 | ● | – |
| 03 | 3/8 | ● | – |
| 04 | 1/2 | ● | ● |
| 06 | 3/4 | – | ● |

**Drain Valve type**

H : Manual drain (standard)

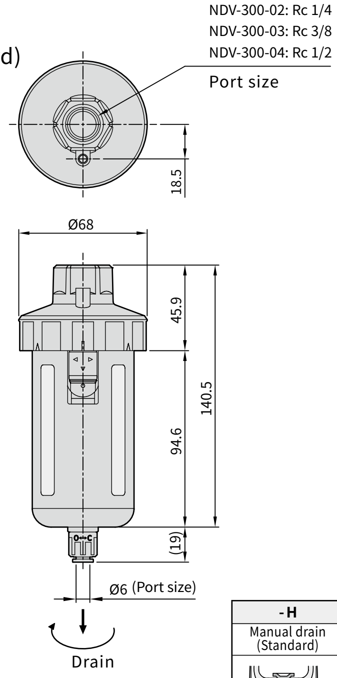
A : Auto drain (option)

# NDV series - Auto Drain Valve

## Dimensions

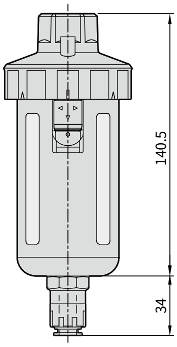
### NDV - 300 - H

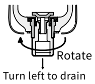
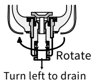
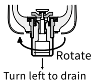
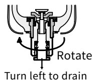
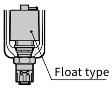
- Manual drain (Standard)


NDV-300-02: Rc 1/4
NDV-300-03: Rc 3/8
NDV-300-04: Rc 1/2
Port size
18.5
Ø68
45.9
140.5
94.6
(19)
Ø6 (Port size)
Drain

### NDV - 300 - A

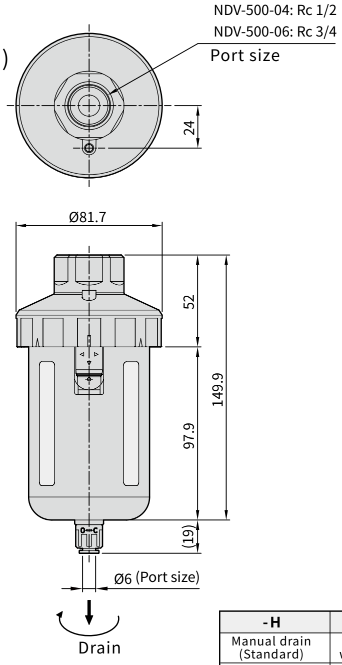
- Auto drain (option)



| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-35) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

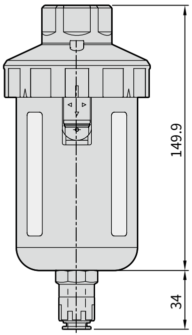
### NDV - 500 - H

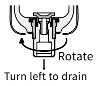
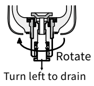
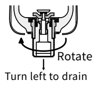
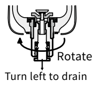
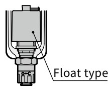
- Manual drain (Standard)


NDV-500-04: Rc 1/2
NDV-500-06: Rc 3/4
Port size
24
Ø81.7
52
149.9
97.9
(19)
Ø6 (Port size)
Drain

### NDV - 500 - A

- Auto drain (option)



| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-55) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Float type |

# AD series - Auto drain

## Product features

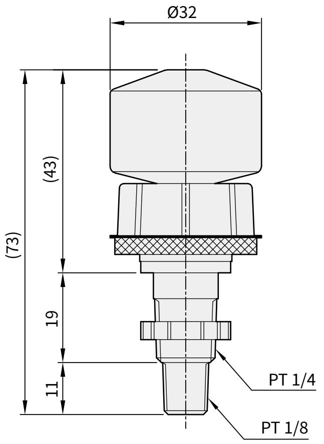
### Code of order

**AD** – **20**

Auto drain

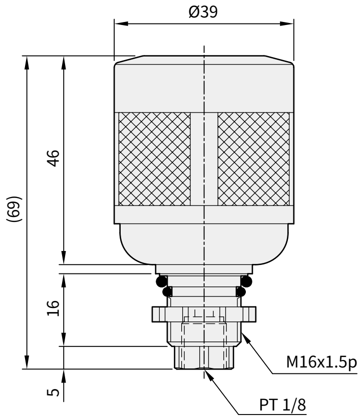
Model
20 series
25 series
30 series
40 series
50 series

### AD-20 series


Ø32
(73)
(43)
19
11
PT 1/4
PT 1/8

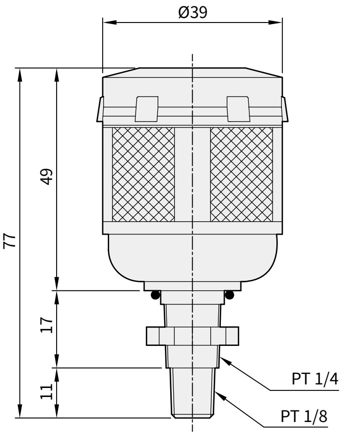
### AD 30 series

Suitable for B, C series


Ø39
(69)
46
16
5
M16x1.5p
PT 1/8

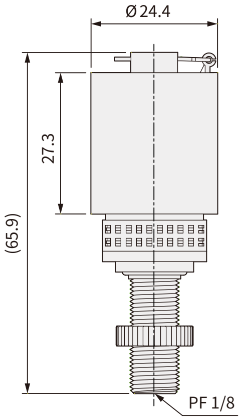
### AD 40 series

Suitable for B, C series


Ø39
77
49
17
11
PT 1/4
PT 1/8

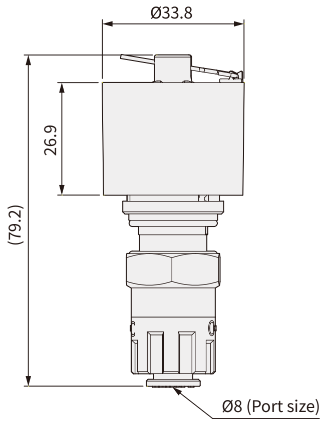
### AD 25 series

Suitable for N200, U200 series


Ø24.4
27.3
(65.9)
PF 1/8

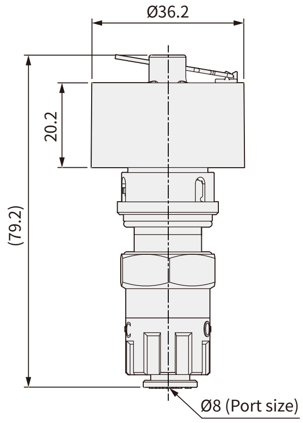
### AD 35 series

Suitable for N300, U300 series

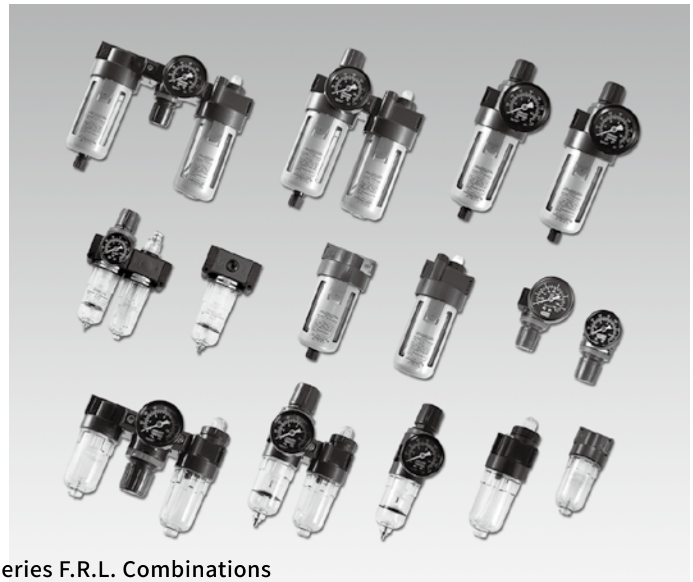

Ø33.8
26.9
(79.2)
Ø8 (Port size)

### AD 55 series

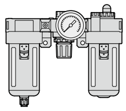
Suitable for N400~N500, DM, U400 series


Ø36.2
20.2
(79.2)
Ø8 (Port size)

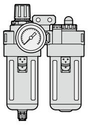
# Air Unit - Modular Series



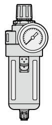
NC series F.R.L. Combinations



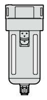
AC/ BC/ CC series F.R.L. Combinations ---- Modular series (1/8 ~ 3/4) ----- P.1-3.4



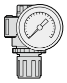
AFC/ BFC/ CFC series FR.L. Combinations -- Modular series (1/8 ~ 3/4) ----- P.1-3.10



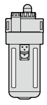
AFR/ BFR/ CFR seriesFilter regulator ------ Modular series (1/8 ~ 3/4) ----- P.1-3.15



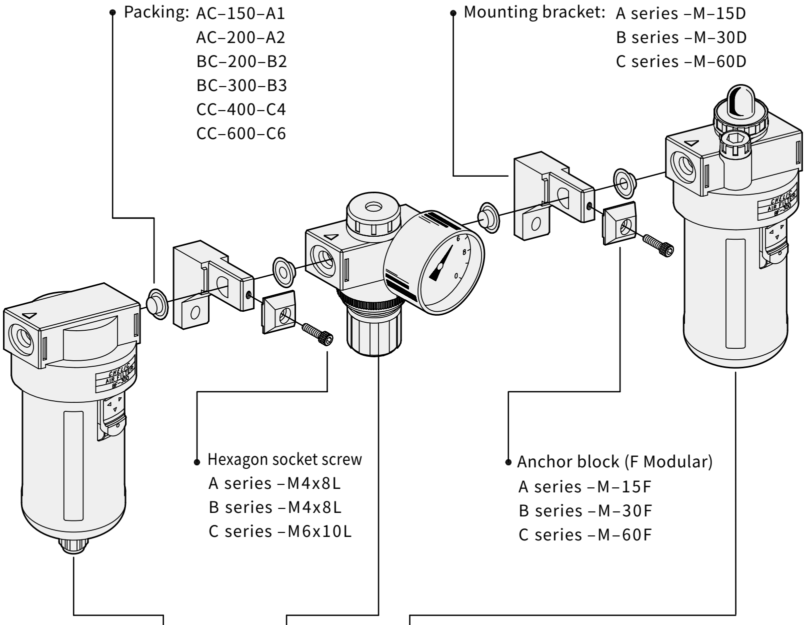
AF/ BF/ CF series Air filter --------------- Modular series (1/8 ~ 3/4) ----- P.1-3.19



AR/ BR/ CR seriesAir regulator ----------- Modular series (1/8 ~ 3/4) ----- P.1-3.23



AL/ BL/ CL seriesAir lubricator ----------- Modular series (1/8 ~ 3/4) ----- P.1-3.27

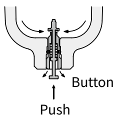
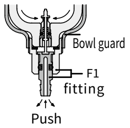
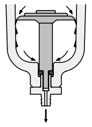
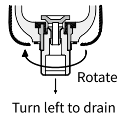
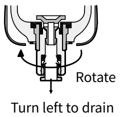
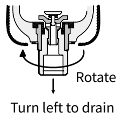
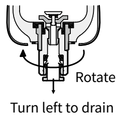
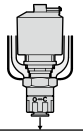

Packing: AC–150–A1
AC–200–A2
BC–200–B2
BC–300–B3
CC–400–C4
CC–600–C6
Mounting bracket: A series –M–15D
B series –M–30D
C series –M–60D
Hexagon socket screw
A series –M4x8L
B series –M4x8L
C series –M6x10L
Anchor block (F Modular)
A series –M–15F
B series –M–30F
C series –M–60F

## Air flow chart

| Model | Port size | Filter | Regulator | Lubricator | Flow rate NL/min | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 500 | | 1000 | | 1500 | | 2000 | | 2500 | | 3000 | |
| AC150 | Rc 1/8 | AF150 | AR150 | AL150 | ▨ | ▨ | | | | | | | | | | |
| AC200 | Rc 1/4 | AF200 | AR200 | AL200 | ▨ | ▨ | | | | | | | | | | |
| BC200 | Rc 1/4 | BF200 | BR200 | BL200 | ▨ | ▨ | ▨ | | | | | | | | | |
| BC300 | Rc 3/8 | BF300 | BR300 | BL300 | ▨ | ▨ | ▨ | ▨ | ▨ | | | | | | | |
| CC400 | Rc 1/2 | CF400 | CR400 | CL400 | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | |
| CC600 | Rc 3/4 | CF600 | CR600 | CL600 | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |

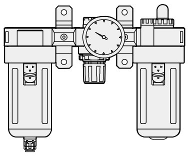
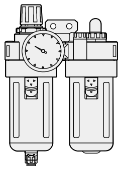
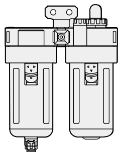
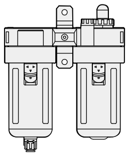
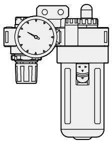
Primary Pressure: 7 kgf/cm², Secondary pressure: 5 kgf/cm².

## Operating the drain cock

| A series | | | B, C series | | | | |
|---|---|---|---|---|---|---|---|
| – H | – BG-H-F1 | – A | – H | – H-F1 | – S | – S-F2 | – A |
| Manual drain cock (standard) | Manual drain cock (with bowl guard, fitting) | Auto drain (option) | Manual drain cock (standard) | Manual drain cock (with fitting) (option) | Semi-auto drain (option) | Semi-auto drain (with fitting) (option) | Auto drain (option) |
| Drain while pushing the button and close Automatically when release | With addition protective bowl guard device and fitting | Employs pressure differential for automatic drain, drain automatically when the air depletion and make up produce differential.<br>(Differential pressure should be above 1 Kg) | Drain while rotating fitting (left), close when turn Right | Drain while rotating fitting (left), close when turn Right | The valve open to drain automatically when pressure is lower than 0.5 kgf/cm² ; the valve close Completely when pressure is more than 1 kg/cm² (allow manual drain as well) | | Use float witch valve, drain automatically when water Level over the float, close automatically after completely drain. |
|  Button<br>Push |  Bowl guard<br>F1<br>fitting<br>Push |  |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

# Air Unit

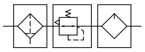
## Modular Series

| Combination type | Model | Port size | Main components | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Filter | Regulator | Lubricator | Filter regulator | Bracket (option) | |
| F+R+L ( Filter + Regulator + Lubricator )<br> | AC–150 | 1/8 | AF–150 | AR–150 | AL–150 | | M–15D | |
| | AC–200 | 1/4 | AF–200 | AR–200 | AL–200 | | M–15D | |
| | BC–200 | 1/4 | BF–200 | BR–200 | BL–200 | | M–30D | |
| | BC–300 | 3/8 | BF–300 | BR–300 | BL–300 | | M–30D | |
| | CC–400 | 1/2 | CF–400 | CR–400 | CL–400 | | M–60D | |
| | CC–600 | 3/4 | CF–600 | CR–600 | CL–600 | | M–60D | |
| FR+L(Filter Regulator + Lubricator)<br> | AFC–150 | 1/8 | | | AL–150 | AFR–150 | M–15E | |
| | AFC–200 | 1/4 | | | AL–200 | AFR–200 | M–15E | |
| | BFC–200 | 1/4 | | | BL–200 | BFR–200 | M–30E | |
| | BFC–300 | 3/8 | | | BL–300 | BFR–300 | M–30E | |
| | CFC–400 | 1/2 | | | CL–400 | CFR–400 | M–60E | |
| | CFC–600 | 3/4 | | | CL–600 | CFR–600 | M–60E | |
| F+L ( Filter + Lubricator )<br> | AFL–150 | 1/8 | AF–150 | | AL–150 | | M–15E | |
| | AFL–200 | 1/4 | AF–200 | | AL–200 | | M–15E | |
| | BFL–200 | 1/4 | BF–200 | | BL–200 | | M–30E | |
| | BFL–300 | 3/8 | BF–300 | | BL–300 | | M–30E | |
| | CFL–400 | 1/2 | CF–400 | | CL–400 | | M–60E | |
| | CFL–600 | 3/4 | CF–600 | | CL–600 | | M–60E | |
| F+DT+L ( Filter + DT Bracket + Lubricator )<br> | AFTL–150 | 1/8 | AF–150 | | AL–150 | | | M–15DT |
| | AFTL–200 | 1/4 | AF–200 | | AL–200 | | | M–15DT |
| | BFTL–200 | 1/4 | BF–200 | | BL–200 | | | M–30DT |
| | BFTL–300 | 3/8 | BF–300 | | BL–300 | | | M–30DT |
| | CFTL–400 | 1/2 | CF–400 | | CL–400 | | | M–60DT |
| | CFTL–600 | 3/4 | CF–600 | | CL–600 | | | M–60DT |
| R+L ( Regulator + Lubricator )<br> | ARL–150 | 1/8 | | AR–150 | AL–150 | | M–15E | |
| | ARL–200 | 1/4 | | AR–200 | AL–200 | | M–15E | |
| | BRL–200 | 1/4 | | BR–200 | BL–200 | | M–30E | |
| | BRL–300 | 3/8 | | BR–300 | BL–300 | | M–30E | |
| | CRL–400 | 1/2 | | CR–400 | CL–400 | | M–60E | |
| | CRL–600 | 3/4 | | CR–600 | CL–600 | | M–60E | |

# AC/ BC/ CC series F.R.L. Combinations

## Product features

Symbol:



## Specification

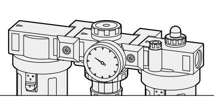
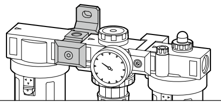
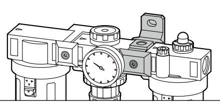
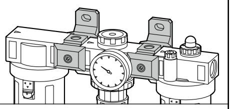
| Item | | Unit | AC-150 | AC-200 | BC-200 | BC-300 | CC-400 | CC-600 |
|---|---|---|---|---|---|---|---|---|
| Fluid | | | Air | | | | | |
| Port Size | | Rc | 1/8 | 1/4 | 1/4 | 3/8 | 1/2 | 3/4 |
| Filter grade | | | 5µm | | | | | |
| Pressure range | | Kgf/cm² (kpa) | 0.5~8.5 (50~850) | | | | | |
| Max. pressure | | Kgf/cm² (kpa) | 9.5 (950) | | | | | |
| Ambient and fluid temperature | | °C | 5~60 | | | | | |
| Bowl capacity | | cc | 15 | | 60 | | 100 | |
| Lubricator capacity | | cc | 25 | | 90 | | 160 | |
| Recommended lubrication | | | Lubricant class 1 ( ISO-VG32 ) or equivalent | | | | | |
| Weight | | Kg | 0.7 | | 1.3 | | 1.5 | |
| Material | Body | | Aluminum die-casted | | | | | |
| | Bowl | | Relieving type/ Aluminum bowl guard | | | | | |
| Equipment | Filter | | AF-150 | AF-200 | BF-200 | BF-300 | CF-400 | CF-600 |
| | Regulator | | AR-150 | AR-200 | BR-200 | BR-300 | CR-400 | CR-600 |
| | Lubricator | | AL-150 | AL-200 | BL-200 | BL-300 | CL-400 | CL-600 |

## Pressure gauge ⑥

| Pressure gauge | | Model | | | | | |
|---|---|---|---|---|---|---|---|
| Code | Model | AC-150 | AC-200 | BC-200 | BC-300 | CC-400 | CC-600 |
| PG10A | PG-10A | ● (option) | ● (option) | — | — | — | — |
| PG20A | PG-20A | — | — | ● (option) | ● (option) | ● (option) | ● (option) |

⑥

## Accessory ⑧

| Indication |  |  |  |  |
|---|---|---|---|---|
| Model | None (standard) | -TA (option) | -TB (option) | -TM (option) |
| AC-150 | ● | ● | ● | ● |
| AC-200 | ● | ● | ● | ● |
| BC-200 | ● | ● | ● | ● |
| BC-300 | ● | ● | ● | ● |
| CC-400 | ● | ● | ● | ● |
| CC-600 | ● | ● | ● | ● |

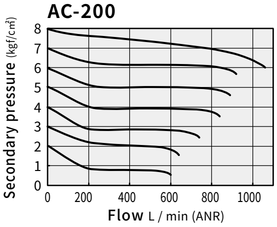
⑧

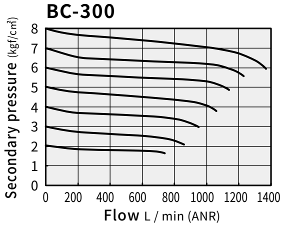
Note 1: (standard): Standard type; (option): Optional accessory.

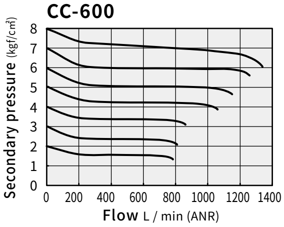
# AC/ BC/ CC series F.R.L. Combinations

## Product features/ Code of order

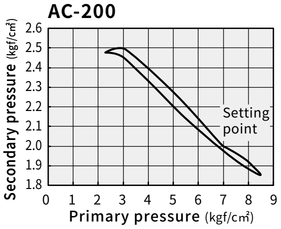
### Flow rate characteristic graph

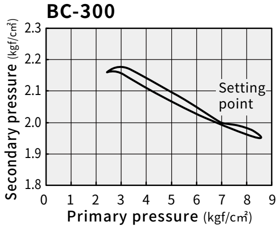

AC-200

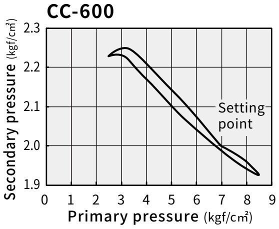

BC-300


CC-600

### Pressure characteristics graph


AC-200


BC-300


CC-600

### Code of order

**AC** – **200** – **G** – **BG - A** – **F1** – **PG 10A** – **L2** – **TA**

**Model ①**

| Model |
|---|
| AC |
| BC |
| CC |

※ F. R. L. Combination series
AC: Mini type series
BC: Medium type series
CC: Large type series

**Port size ②**

| | Mark | 150 | 200 | 300 | 400 | 600 |
|---|---|---|---|---|---|---|
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
| Port connection | AC | ● | ● | | | |
| | BC | | ● | ● | | |
| | CC | | | | ● | ● |

**Thread type ③**

| None | G | N |
|---|---|---|
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |

**Bowl ④**

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard (standard) | option |
| Bowl guard (standard) | option |

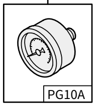
※ Please see the below table in detail.

**Fitting ⑤**

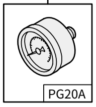
| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |

※ Please see the below table in detail.

**Pressure gauge ⑥**



PG-10A
Pressure gauge (option)
※ For A series



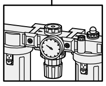
PG-20A
Pressure gauge (option)
※ For B, C series

**Max. adjustable pressure ⑦**

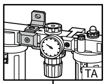
| | |
|---|---|
| None | standard 8.5 kg/cm² |
| L1 | 1 kg/cm² (AC Series) |
| L2 | 2 kg/cm² (AC Series) |
| L4 | 4 kg/cm² (AC,BC Series) |

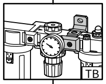
※ For A , B series

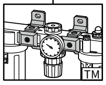
**Mounting ⑧**



■ None : standard







### Bowl and Drain cock type ◀ ④

### With Fitting - F1 ◀ ⑤

### A series ④

| Bowl type | PC bowl | | Bowl guard | |
|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure |
| Model | None | -A | -BG-H | -BG-A |
| AC-150 | ●(standard) | ●(option) | ●(option) | ●(option) |
| AC-200 | ●(standard) | ●(option) | ●(option) | ●(option) |

### B, C series ④

| Bowl type | Bowl guard | | |
|---|---|---|---|
| Drain cock type | Manual drain cock | Semi-Automatic | Auto drain |
| Model | -H | -S | -A |
| BC-200 | ●(standard) | ●(option) | ●(option) |
| BC-300 | ●(standard) | ●(option) | ●(option) |
| CC-400 | ●(standard) | ●(option) | ●(option) |
| CC-600 | ●(standard) | ●(option) | ●(option) |

### A series ⑤

| A series<br>Note | — | ●(standard) | ●(option) | ●(standard) |
|---|---|---|---|---|
| | | Note1 (Outside fitting) | Note1 (Outside fitting) | Note1 (Outside fitting) |

### B,C series ⑤

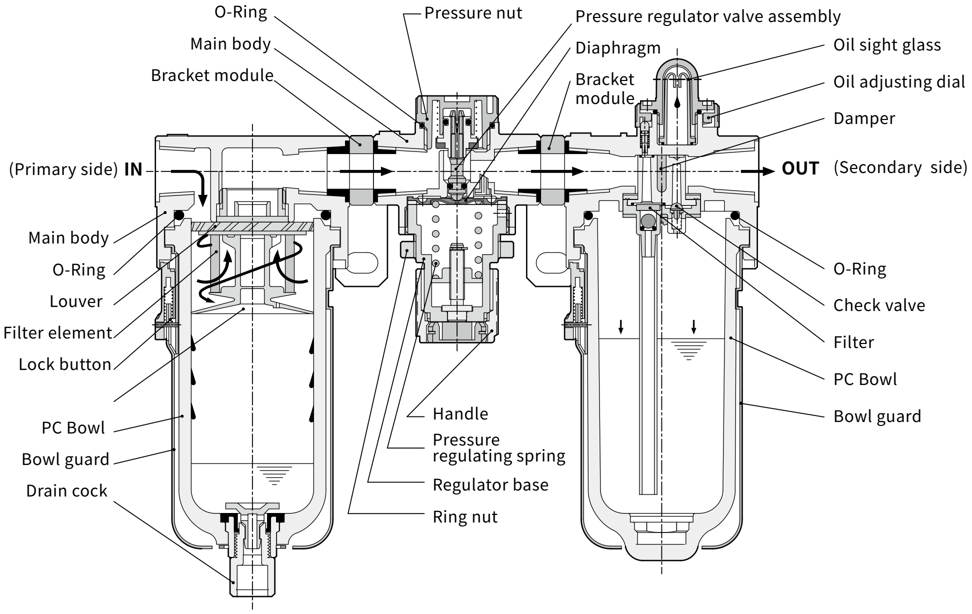
| B, C series<br>Note | ●(option) | ●(option) | ●(option) |
|---|---|---|---|

Note: 1. A series are outside fitting, others are inside fitting; please refer to P.1-1.06 auto drain construction.
2. (standard): Standard accessory; (option): Optional accessory.

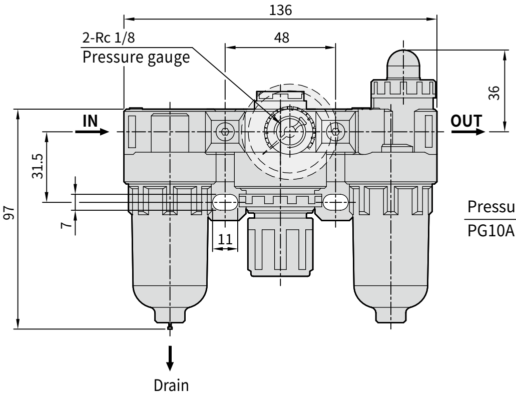
# AC/ BC/ CC series F.R.L. Combinations

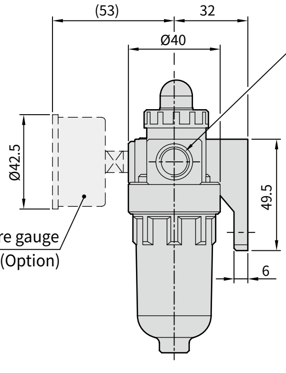
## Product features

### Internal construction


O-Ring
Main body
Bracket module
Pressure nut
Pressure regulator valve assembly
Diaphragm
Bracket module
Oil sight glass
Oil adjusting dial
Damper
(Primary side) IN
OUT (Secondary side)
Main body
O-Ring
Louver
Filter element
Lock button
PC Bowl
Bowl guard
Drain cock
Handle
Pressure regulating spring
Regulator base
Ring nut
O-Ring
Check valve
Filter
PC Bowl
Bowl guard

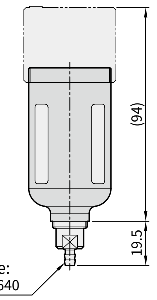
### AC - 150 Standard


136
48
2-Rc 1/8
Pressure gauge
IN
OUT
36
31.5
97
7
11
Drain


(53)
32
Ø40
Ø42.5
49.5
6
AC-150 : Rc 1/8
AC-200 : Rc 1/4
Pressure gauge
PG10A (Option)

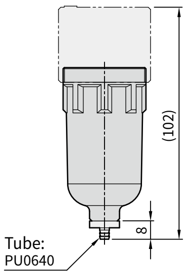
● - BG-H - F1

Manual drain cock

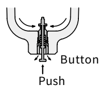
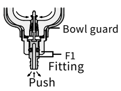
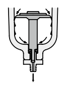

(94)
19.5
Tube:
PU0640

● - A

Auto drain


(102)
8
Tube:
PU0640

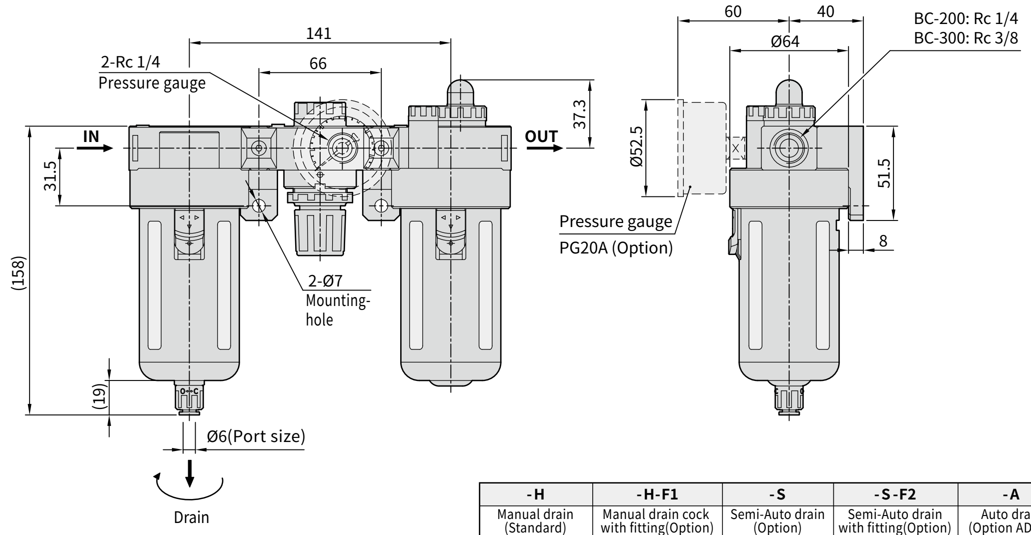
— BG PC bowl with metal bowl guard(Option)

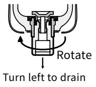
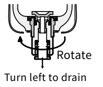
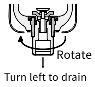
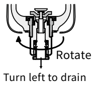
| - H | - BG-H- F1 | - A |
|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |

# AC/ BC/ CC series F.R.L. Combinations

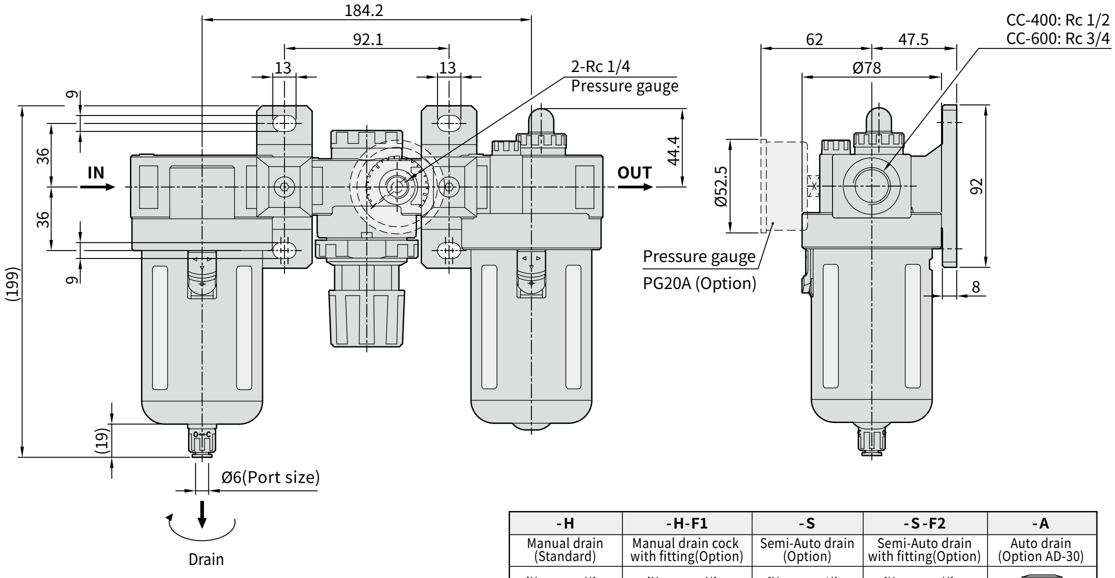
## Dimensions

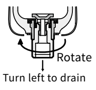
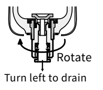
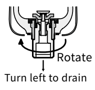
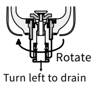
### BC - 200 - H Standard


141
66
2-Rc 1/4
Pressure gauge
37.3
IN
OUT
31.5
(158)
2-Ø7
Mounting-
hole
(19)
Ø6(Port size)
Drain
60
40
Ø64
BC-200: Rc 1/4
BC-300: Rc 3/8
Ø52.5
51.5
8
Pressure gauge
PG20A (Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain | |

### CC - 400 - H Standard


184.2
92.1
13
13
2-Rc 1/4
Pressure gauge
9
36
36
9
(199)
IN
OUT
44.4
(19)
Ø6(Port size)
Drain
62
47.5
Ø78
CC-400: Rc 1/2
CC-600: Rc 3/4
Ø52.5
92
8
Pressure gauge
PG20A (Option)

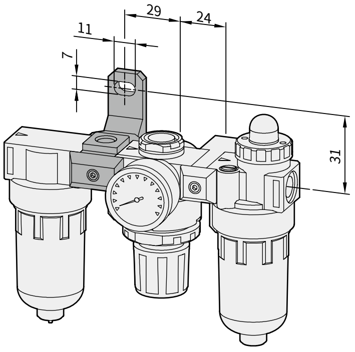
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain | |

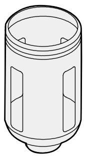
# AC/ BC/ CC series F.R.L. Combinations

## Mounting bracket

### AC - 150 - TA - H

Suitable for air gun operating



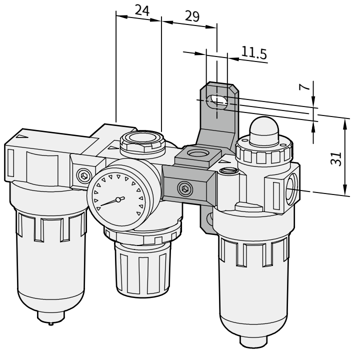


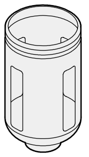
BG

(With metals bowl)

### AC - 150 - TB - H

Suitable for vacuum operating space


24
29
11.5
7
31

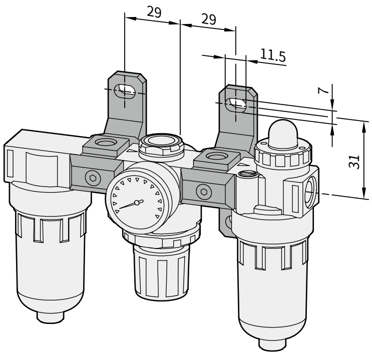


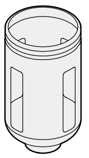
BG

(With metals bowl)

### AC - 150 - TM - H

Suitable for air gun + vacuum operating


29
29
11.5
7
31

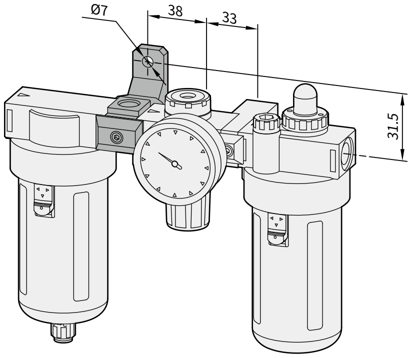


BG

(With metals bowl)

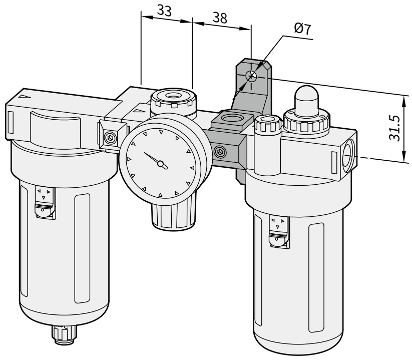
### BC - 200 - TA - H

Suitable for air gun operating



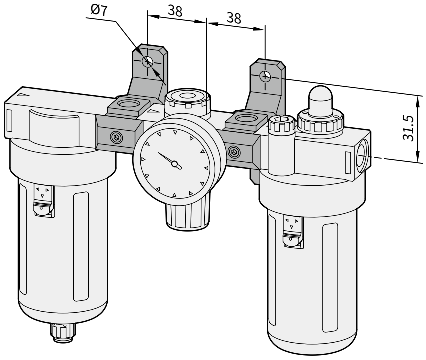
### BC - 200 - TB - H

Suitable for vacuum operating space



### BC - 200 - TM - H

Suitable for air gun + vacuum operating

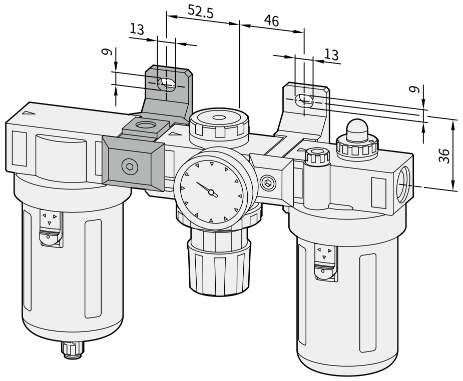


# AC/ BC/ CC series F.R.L. Combinations

## Mounting bracket

### CC - 400 - TA - H

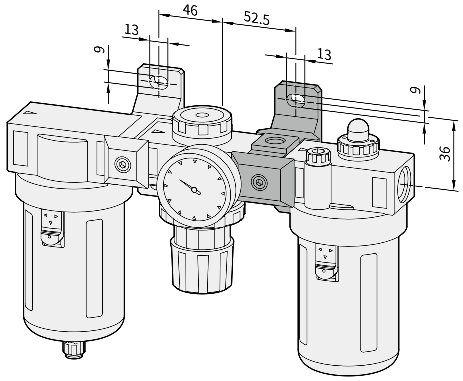
Suitable for air gun operating


52.5
46
13
9
13
9
36

---

### CC - 400 - TB - H

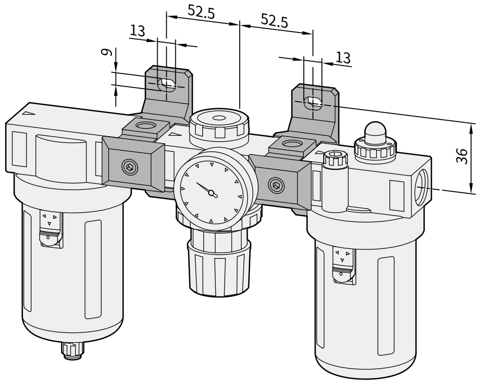
Suitable for vacuum operating space


46
52.5
13
9
13
9
36

---

### CC - 400 - TM - H

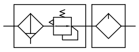
Suitable for air gun + vacuum operating


52.5
52.5
13
9
13
36

# AFC/ BFC/ CFC series FR.L. Combinations

## Product features

Symbol:



## Specification

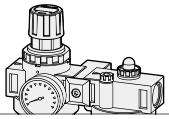
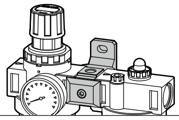
| Item | Model | AFC-150 | AFC-200 | BFC-200 | BFC-300 | CFC-400 | CFC-600 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port Size Rc | | 1/8 | 1/4 | 1/4 | 3/8 | 1/2 | 3/4 |
| Filter grade | | 5µm | | | | | |
| Pressure range Kgf/cm² (kPa) | | 0.5 ~ 8.5 ( 50 ~ 850 ) | | | | | |
| Max. pressure Kgf/cm² (kPa) | | 9.5( 950 ) | | | | | |
| Ambient and fluid temperature °C | | 5 ~ 60 | | | | | |
| Bowl capacity cc | | 15 | | 60 | | 100 | |
| Lubricator capacity cc | | 25 | | 90 | | 160 | |
| Recommended lubrication | | Lubricant class 1 ( ISO - VG32 ) or equivalent | | | | | |
| Weight Kg | | 0.7 | | 1.3 | | 1.5 | |
| Material | Body | Aluminum die-casted | | | | | |
| | Bowl | Relieving type/ Aluminum bowl guard | | | | | |
| Equipment | Air filter regulator | AFR-150 | AFR-200 | BFR-200 | BFR-300 | CFR-400 | CFR-600 |
| | Lubricator | AL-150 | AL-200 | BL-200 | BL-300 | CL-400 | CL-600 |

## Pressure gauge ⑥

| Pressure gauge | | Model | | | | | |
|---|---|---|---|---|---|---|---|
| Code | Model | AFC-150 | AFC-200 | BFC-200 | BFC-300 | CFC-400 | CFC-600 |
| PG10A | PG-10A | ● (option) | ● (option) | — | — | — | — |
| PG20A | PG-20A | — | — | ● (option) | ● (option) | ● (option) | ● (option) |

⑥

## Accessory ⑧

| Indication |  |  |
|---|---|---|
| Model | None (standard)) | -TA ((option) |
| AFC-150 | ● | ● |
| AFC-200 | ● | ● |
| BFC-200 | ● | ● |
| BFC-300 | ● | ● |
| CFC-400 | ● | ● |
| CFC-600 | ● | ● |

⑧

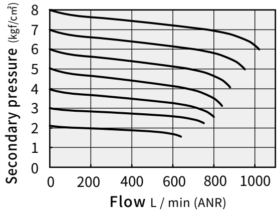
Note 1: (standard): Standard type; (option): Optional accessory.

# AFC/ BFC/ CFC series FR.L. Combinations

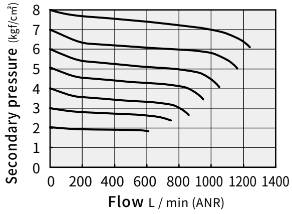
## Product features/ Code of order

### Flow rate characteristic graph

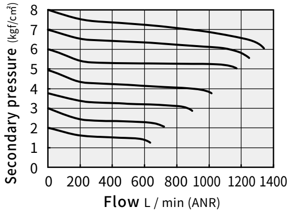
**AFC-200**



**BFC-300**

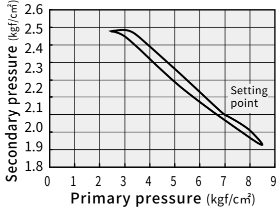


**CFC-600**

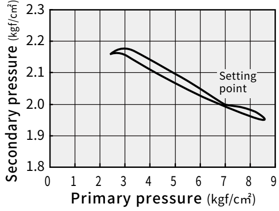


### Pressure characteristics graph

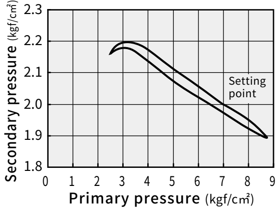
**AFC-200**



**BFC-300**



**CFC-600**



### Code of order

**AFC** – **200** – **G** – **BG - A** – **F1** – **PG 10A** – **L2** – **TA**

**Model ①**

| Model |
|---|
| AFC |
| BFC |
| CFC |

※ FR. L. Combination series
AFC: Mini size
BFC: Medium size
CFC: Large size

**Port size ②**

| | Mark | 150 | 200 | 300 | 400 | 600 |
|---|---|---|---|---|---|---|
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
| Port connection | AFC | ● | ● | | | |
| | BFC | | ● | ● | | |
| | CFC | | | | ● | ● |

**Thread type ③**

| None | G | N |
|---|---|---|
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |

**Bowl ④**

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard (standard) | option |
| Bowl guard (standard) | option |

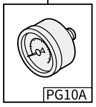
※ Please see the below table in detail.

**Fitting ⑤**

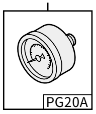
| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |

※ Please see the below table in detail.

**Pressure gauge ⑥**



PG-10A : Pressure gauge (option)
※ For A series



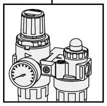
PG-20A : Pressure gauge (option)
※ For B, C series

**Max. adjustable pressure ⑦**

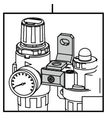
| None | standard 8.5 kg/cm² |
|---|---|
| L1 | 1 kg/cm² (AC Series) |
| L2 | 2 kg/cm² (AC Series) |
| L4 | 4 kg/cm² (AC,BC Series) |

※ For A , B series

**Mounting ⑧**



■ None : standard



### Bowl and Drain cock type ◀ ④

### With Fitting - F1 ◀ ⑤

### A series ④

| Bowl type | PC bowl | | Bowl guard | |
|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure |
| Model | None | -A | -BG-H | -BG-A |
| AFC-150 | ●(standard) | ●(option) | ●(option) | ●(option) |
| AFC-200 | ●(standard) | ●(option) | ●(option) | ●(option) |

### B, C series ④

| Bowl type | Bowl guard | | |
|---|---|---|---|
| Drain cock type | Manual drain cock | Semi-Automatic | Auto drain |
| Model | -H | -S | -A |
| BFC-200 | ●(standard) | ●(option) | ●(option) |
| BFC-300 | ●(standard) | ●(option) | ●(option) |
| CFC-400 | ●(standard) | ●(option) | ●(option) |
| CFC-600 | ●(standard) | ●(option) | ●(option) |

### A series ⑤

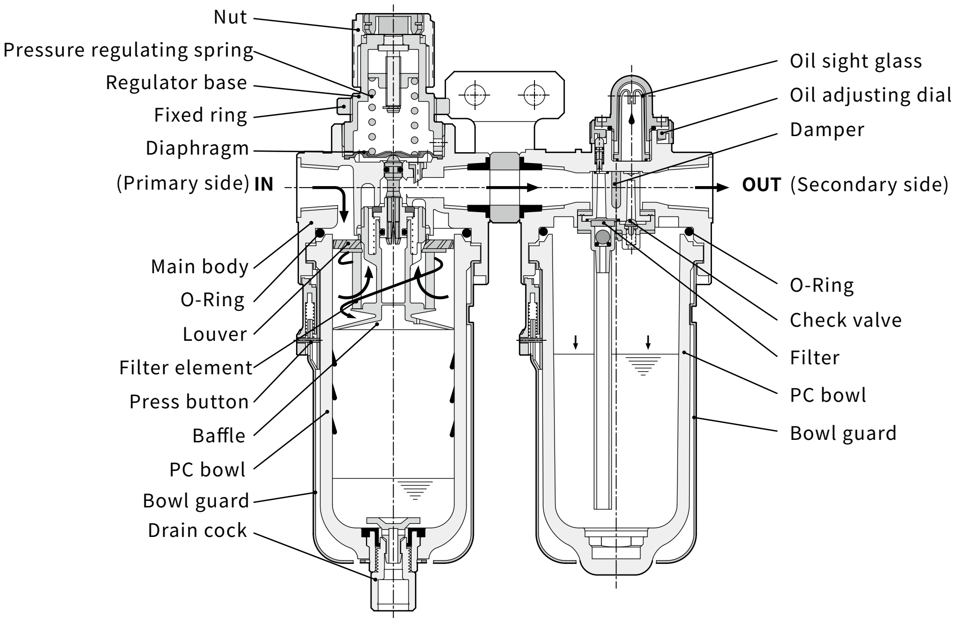
| A series<br>Note | — | ●(standard) | ●(option) | ●(standard) |
|---|---|---|---|---|
| | | Note1 (Outside fitting) | Note1 (Outside fitting) | Note1 (Outside fitting) |

### B, C series ⑤

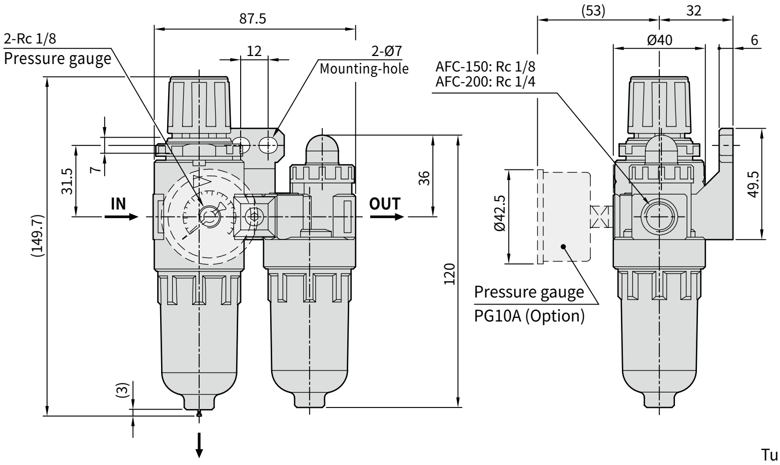
| B,C series<br>Note | ●(option) | ●(option) | ●(option) |
|---|---|---|---|

Note: 1. A series are outside fitting, others are inside fitting; please refer to P.1-1.06 auto drain construction.
2. (standard): Standard accessory; (option): Optional accessory.

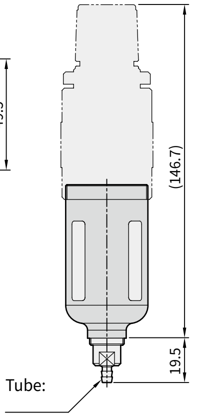
## Internal construction


Nut
Pressure regulating spring
Regulator base
Fixed ring
Diaphragm
(Primary side) IN
Main body
O-Ring
Louver
Filter element
Press button
Baffle
PC bowl
Bowl guard
Drain cock
Oil sight glass
Oil adjusting dial
Damper
OUT (Secondary side)
O-Ring
Check valve
Filter
PC bowl
Bowl guard

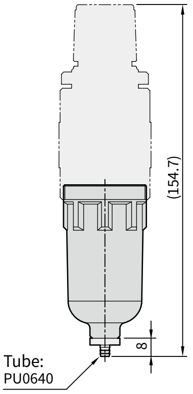
## AFC - 150 Standard

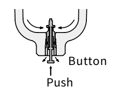
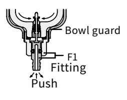
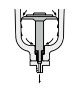

87.5
12
2-Rc 1/8
Pressure gauge
2-Ø7
Mounting-hole
7
31.5
IN
OUT
36
(149.7)
120
(3)
(53)
32
Ø40
6
AFC-150: Rc 1/8
AFC-200: Rc 1/4
Ø42.5
49.5
Pressure gauge
PG10A (Option)

● - BG-H - F1
Manual drain cock


(146.7)
19.5
Tube:

● - A
Auto drain


(154.7)
8
Tube:
PU0640

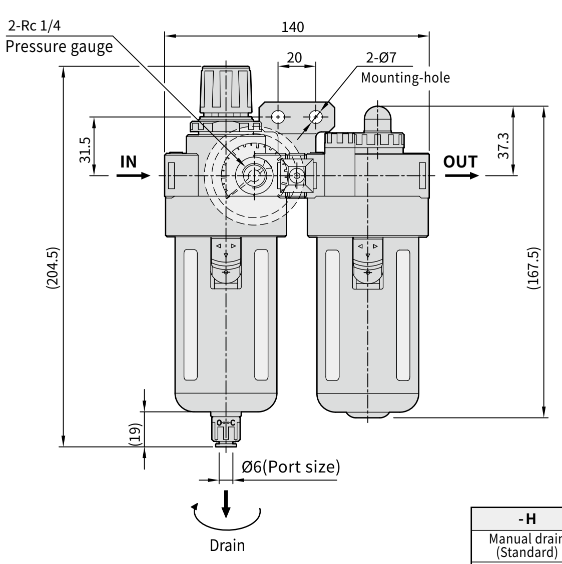
| - H | - BG-H- F1 | - A |
|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) |
|  Button<br>Push |  Bowl guard<br>F1<br>Fitting<br>Push |  |

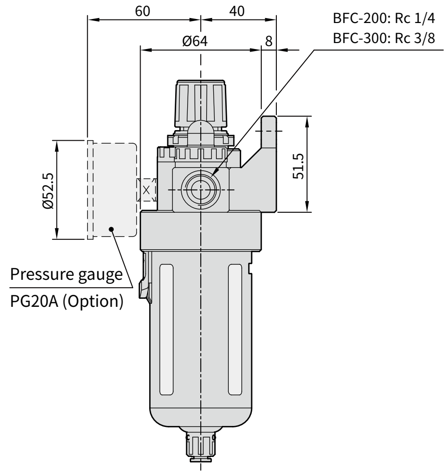
— BG PC bowl with bowl guard (Option)

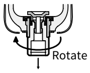
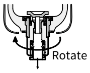
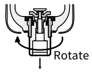
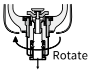
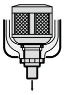
# AFC/ BFC/ CFC series FR.L. Combinations

## Dimensions

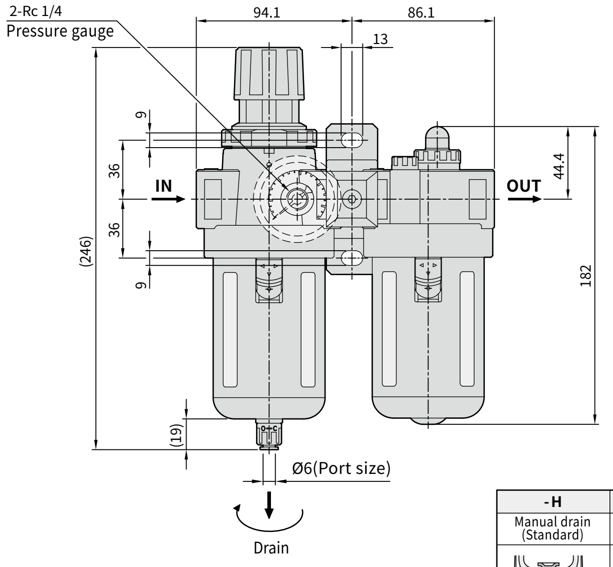
### BFC - 200 - H Standard

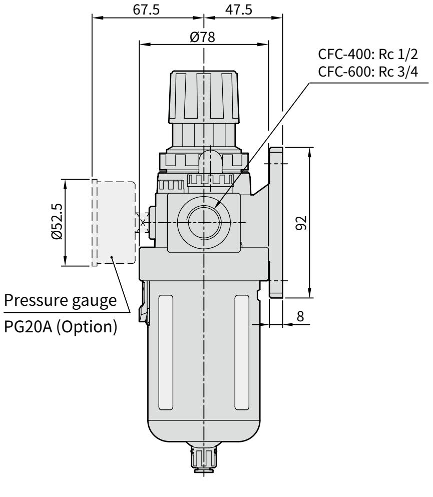

2-Rc 1/4
Pressure gauge
140
20
2-Ø7
Mounting-hole
31.5
IN
OUT
37.3
(204.5)
(167.5)
(19)
Ø6(Port size)
Drain

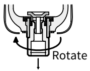
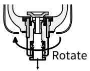
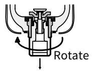
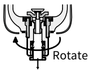
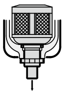

60
40
Ø64
8
BFC-200: Rc 1/4
BFC-300: Rc 3/8
Ø52.5
51.5
Pressure gauge
PG20A (Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

### CFC - 400 - H Standard


2-Rc 1/4
Pressure gauge
94.1
86.1
13
9
36
IN
OUT
44.4
36
9
(246)
182
(19)
Ø6(Port size)
Drain


67.5
47.5
Ø78
CFC-400: Rc 1/2
CFC-600: Rc 3/4
Ø52.5
92
8
Pressure gauge
PG20A (Option)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

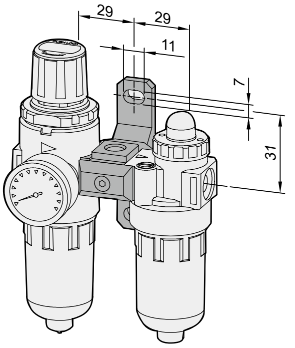
AC
BC
CC
AFC
BFC
CFC
☐FR
☐F
☐R
☐L
A/B/C

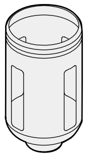
# AFC/ BFC/ CFC series FR.L. Combinations

## Mounting bracket

**AFC - 150 - TA - H**

Suitable for air gun operating





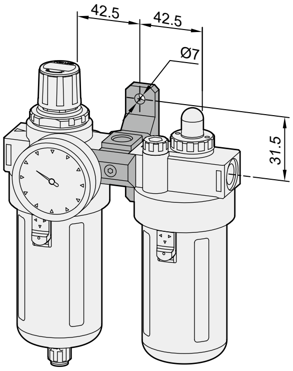
— **BG**

(With metals bowl)

---

**BFC - 200 - TA - H**

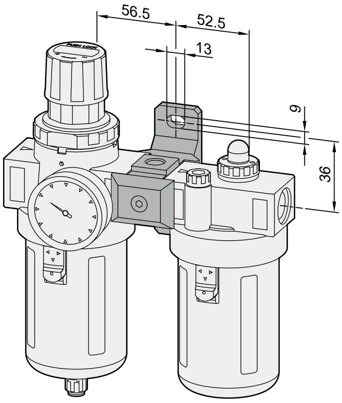
Suitable for vacuum operating space


42.5
42.5
Ø7
31.5

---

**CFC - 400 - TA - H**

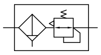
Suitable for air gun operating


56.5
52.5
13
9
36

# AFR/ BFR/ CFR series Filter Regulator

## Product features

Symbol:

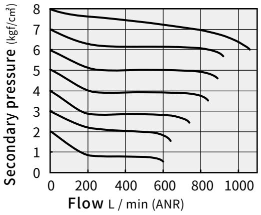


### Specification

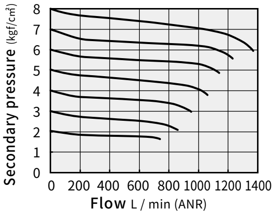
| Item \ Model | | AFR-150 (200) | BFR-200 (300) | CFR-400 (600) |
|---|---|---|---|---|
| Fluid | | Air | | |
| Port Size | Rc | 1/8, ( 1/4 ) | 1/4, ( 3/8 ) | 1/2 , ( 3/4 ) |
| Filter grade | | 5 μm | | |
| Pressure range | kgf/cm²(kPa) | 0.5~8.5 (50~850) | | |
| Max. pressure | kgf/cm²(kPa) | 9.5 (950) | | |
| Ambient and fluid temperature | ℃ | 5~60 | | |
| Bowl capacity | cc | 15 | 60 | 100 |
| Weight | kg | 0.26 | 0.46 | 1.15 |
| Material | Body | Aluminum die-casted | | |
| | Bowl | Relieving type | | |

### Flow rate characteristic graph

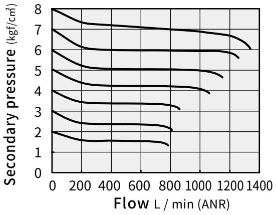
**AFR-200**



**BFR-300**

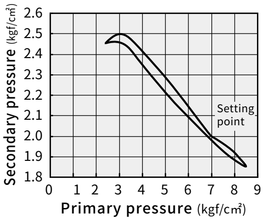


**CFR-600**

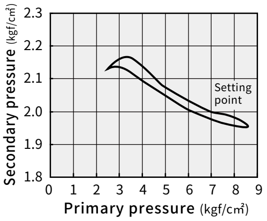


### Pressure characteristics graph

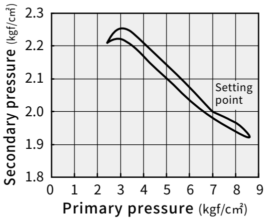
**AFR-200**



**BFR-300**



**CFR-600**



AC
BC
CC
AFC
BFC
CFC
☐ FR
☐ F
☐ R
☐ L
A/B/C

# AFR/ BFR/ CFR series Filter Regulator

## Code of order

CHELIC

### Code of order

**AFR** – **200** – **G** – **BG - A** – **F1** – **PG 10A** – **L2** –

**Model ①**

| Model |
|---|
| AFR |
| BFR |
| CFR |

※ Filter regulator series
AFR : Mini size
BFR : Medium size
CFR: Large size

**Port size ②**

| | Mark | 150 | 200 | 300 | 400 | 600 |
|---|---|---|---|---|---|---|
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
| Port connection | AFR | ● | ● | | | |
| | BFR | | ● | ● | | |
| | CFR | | | | ● | ● |

**Thread type ③**

| None | G | N |
|---|---|---|
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |

**Bowl ④**

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard (standard) | option |
| Bowl guard (standard) | option |

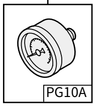
※ Please see the below table in detail.

**Fitting ⑤**

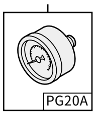
| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |

※ Please see the below table in detail.

**Pressure gauge ⑥**



PG-10A
Pressure gauge (option)
※ For A series



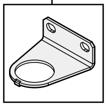
PG-20A
Pressure gauge (option)
※ For B, C series

**Max. adjustable pressure ⑦**

| None | standard 8.5 kg/cm² |
|---|---|
| L1 | 1 kg/cm² (AC Series) |
| L2 | 2 kg/cm² (AC Series) |
| L4 | 4 kg/cm² (AC,BC Series) |

※ For A , B series

**Bracket ⑧**



■None : With Bracket (Standard)

### Bowl and Drain cock type ◄ ④

### With Fitting - F1 ◄ ⑤

---

### A series ④

| Bowl type | PC bowl | | Bowl guard | |
|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure |
| Model | None | -A | -BG-H | -BG-A |
| AFR-150 | ●(standard) | ●(option) | ●(option) | ●(option) |
| AFR-200 | ●(standard) | ●(option) | ●(option) | ●(option) |

### B, C series ④

| Bowl type | Bowl guard | | |
|---|---|---|---|
| Drain cock type | Manual drain cock | Semi-Automatic | Auto drain |
| Model | -H | -S | -A |
| BFR-200 | ●(standard) | ●(option) | ●(option) |
| BFR-300 | ●(standard) | ●(option) | ●(option) |
| CFR-400 | ●(standard) | ●(option) | ●(option) |
| CFR-600 | ●(standard) | ●(option) | ●(option) |

### A series ⑤

| | | | | |
|---|---|---|---|---|
| A series Note | — | ●(standard) | ●(option) | ●(standard) |
| | | Note1 (Outside fitting) | Note1 (Outside fitting) | Note1 (Outside fitting) |

### B, C series ⑤

| | | | |
|---|---|---|---|
| B, C series Note | ●(option) | ●(option) | ●(option) |

Note: 1. A series are outside fitting, others are inside fitting; please refer to P.1-1.06 auto drain construction.
2. (standard): Standard accessory; (option): Optional accessory.

---

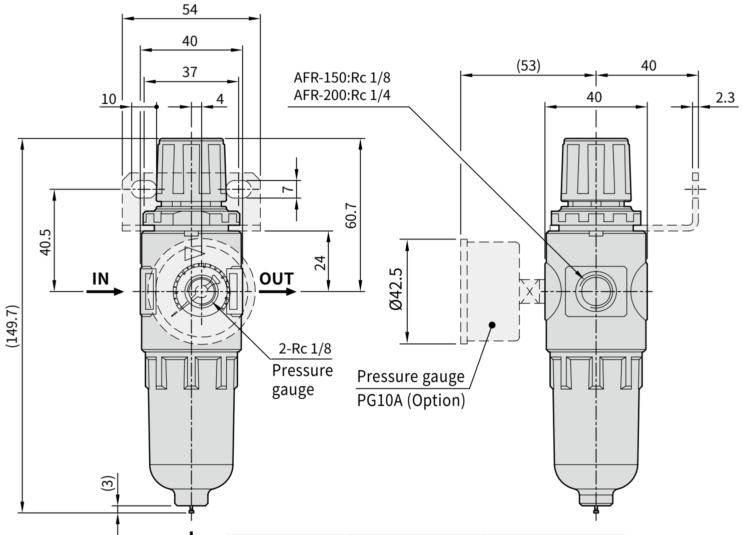
### Pressure gauge ⑥

| Pressure gauge | | Model | | | | | |
|---|---|---|---|---|---|---|---|
| Code | Model | AFR-150 | AFR-200 | BFR-200 | BFR-300 | CFR-400 | CFR-600 |
| PG10A | PG-10A | ●(option) | ●(option) | — | — | — | — |
| PG20A | PG-20A | — | — | ●(option) | ●(option) | ●(option) | ●(option) |

# AFR/ BFR/ CFR series Filter Regulator

## Dimensions

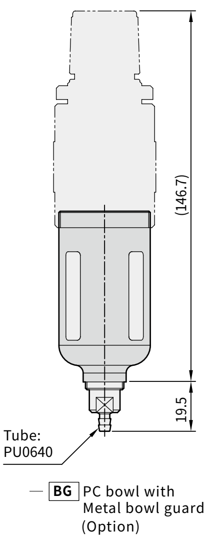
### AFR - 150 Standard


54
40
37
10
4
7
60.7
40.5
24
IN
OUT
(149.7)
2-Rc 1/8
Pressure gauge
(3)
(53)
40
40
2.3
AFR-150:Rc 1/8
AFR-200:Rc 1/4
Ø42.5
Pressure gauge
PG10A (Option)

Drain

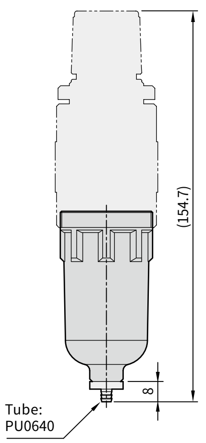
● - BG-H - F1

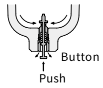
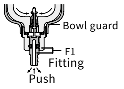
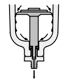
Manual drain cock


(146.7)
19.5
Tube:
PU0640
BG PC bowl with
Metal bowl guard
(Option)

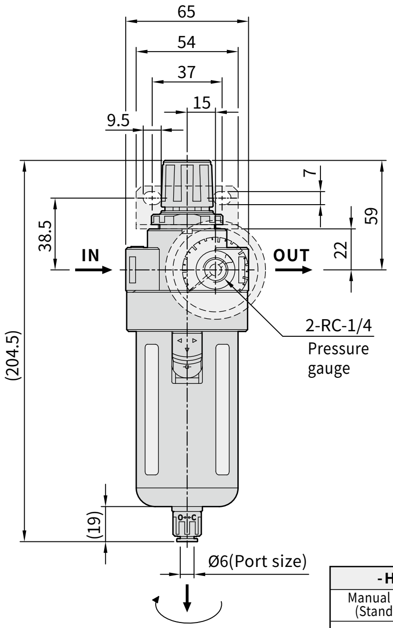
● - A

Auto drain

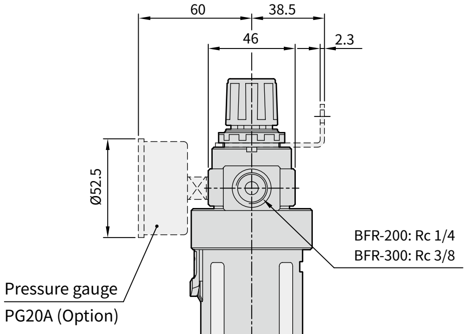

(154.7)
8
Tube:
PU0640

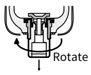
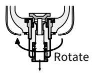
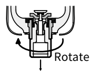
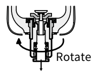
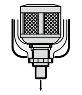
| - H | - BG-H- F1 | - A |
|---|---|---|
| Manual drain cock<br>(standard) | Manual drain cock<br>(With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |

### BFR - 200 Standard


65
54
37
15
9.5
7
59
38.5
22
IN
OUT
(204.5)
(19)
Ø6(Port size)
2-RC-1/4
Pressure gauge

Drain

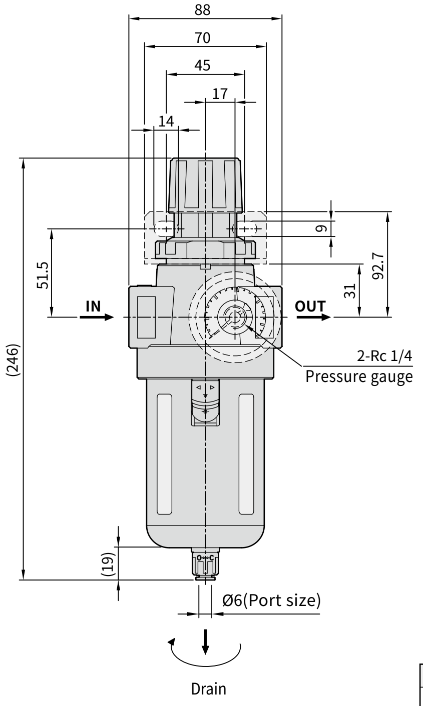

60
38.5
46
2.3
Ø52.5
Pressure gauge
PG20A (Option)
BFR-200: Rc 1/4
BFR-300: Rc 3/8

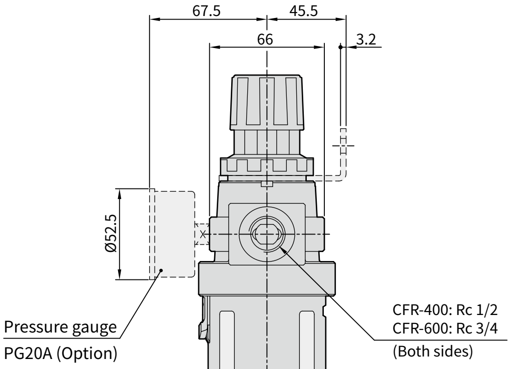
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain<br>(Standard) | Manual drain cock<br>with fitting(Option) | Semi-Auto drain<br>(Option) | Semi-Auto drain<br>with fitting(Option) | Auto drain<br>(Option AD-30) |
|  <br>Turn left to drain |  <br>Turn left to drain |  <br>Turn left to drain |  <br>Turn left to drain |  |

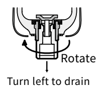
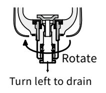
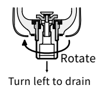
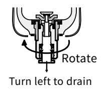
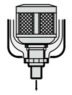
# AFR/ BFR/ CFR series Filter Regulator

## Dimensions

### CFR - 400 - H Standard


88
70
45
17
14
9
92.7
51.5
31
IN
OUT
(246)
(19)
2-Rc 1/4
Pressure gauge
Ø6(Port size)
Drain

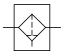

67.5
45.5
66
3.2
Ø52.5
Pressure gauge
PG20A (Option)
CFR-400: Rc 1/2
CFR-600: Rc 3/4
(Both sides)

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|   Rotate Turn left to drain |   Rotate Turn left to drain |   Rotate Turn left to drain |   Rotate Turn left to drain |  |

# AF/ BF/ CF series Air Filter

## Product features

Symbol:

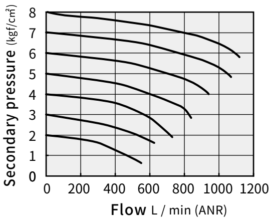


## Specification

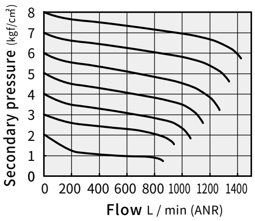
| Item \ Model | | AF-150 (200) | BF-200 (300) | CF-400 (600) |
|---|---|---|---|---|
| Fluid | | Air | | |
| Port Size | Rc | 1/8, ( 1/4 ) | 1/4, ( 3/8 ) | 1/2 , ( 3/4 ) |
| Filter grade | | 5 µm | | |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 ( 50 ~ 850 ) | | |
| Max. pressure | kgf/cm²(kPa) | 9.5 ( 950 ) | | |
| Ambient and fluid temperature | ℃ | 5 ~ 60 | | |
| Bowl capacity | cc | 15 | 60 | 100 |
| Weight | kg | 0.26 | 0.46 | 1.15 |
| Material | Body | Aluminum die-casted | | |
| | Bowl | Relieving type | | |

## Flow rate characteristic graph

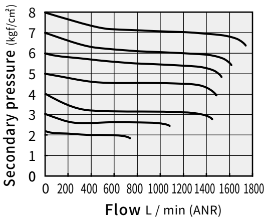
**AF-200**



**BF-300**



**CF-600**



AC
BC
CC
AFC
BFC
CFC
☐FR
☐F
☐R
☐L
A/B/C

# AF/ BF/ CF series Air Filter

## Code of order

### Code of order

AF – 200 – G – BG - A – F1 – C

**Model ①**

| Model |
|---|
| AF |
| BF |
| CF |

※FILTER series
AF : Mini size
BF : Medium size
CF: Large size

**Port size ②**

| Mark | | 150 | 200 | 300 | 400 | 600 |
|---|---|---|---|---|---|---|
| Port size | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
| Port connection | AF | ● | ● | | | |
| | BF | | ● | ● | | |
| | CF | | | | ● | ● |

**Thread type ③**

| None | G | N |
|---|---|---|
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |

**Bowl ④**

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard<br>(standard) | option |
| Bowl guard<br>(standard) | option |

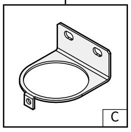
※ Please see the below table in detail.

**Fitting ⑤**

| Fitting | |
|---|---|
| None | -F1 |
| Manual drain cock | option |
| | option |
| | option |

※ Please see the below table in detail.

**Bracket**



■ None : Without bracket
C: With bracket (option)

### Bowl and Drain cock type ◀ ④

### With Fitting - F1 ◀ ⑤

---

### A series ④

| Bowl type | PC bowl | | Bowl guard | |
|---|---|---|---|---|
| Drain cock type | Manual drain cock | Differential pressure | Manual drain cock | Differential pressure |
| Model | None | -A | -BG-H | -BG-A |
| AF-150 | ●(standard) | ●(option) | ●(option) | ●(option) |
| AF-200 | ●(standard) | ●(option) | ●(option) | ●(option) |

### B, C series ④

| Bowl type | Bowl guard | | |
|---|---|---|---|
| Drain cock type | Manual drain cock | Semi-Automatic | Auto drain |
| Model | -H | -S | -A |
| BF-200 | ●(standard) | ●(option) | ●(option) |
| BF-300 | ●(standard) | ●(option) | ●(option) |
| CF-400 | ●(standard) | ●(option) | ●(option) |
| CF-600 | ●(standard) | ●(option) | ●(option) |

### A series ⑤

| A series<br>Note | — | ●(standard) | ●(option) | ●(standard) |
|---|---|---|---|---|
| | | Note1<br>(Outside fitting) | Note1<br>(Outside fitting) | Note1<br>(Outside fitting) |

### B, C series ⑤

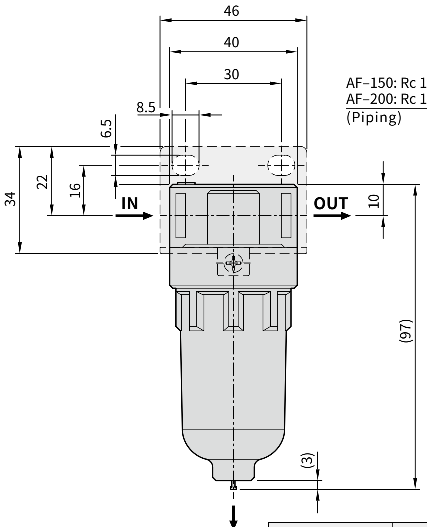
| B, C series<br>Note | ●(option) | ●(option) | ●(option) |
|---|---|---|---|

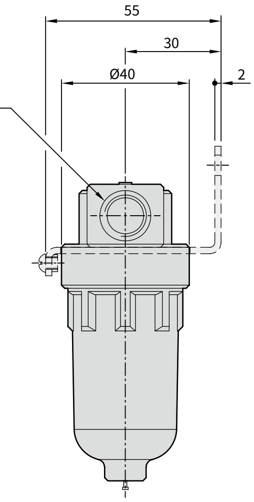
Note: 1. A series are outside fitting, others are inside fitting; please refer to P.1-1.06 auto drain construction.
2. (standard): Standard accessory; (option): Optional accessory.

# AF/ BF/ CF series Air Filter

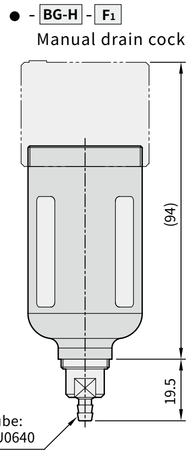
## Dimensions

### AF - 150 Standard

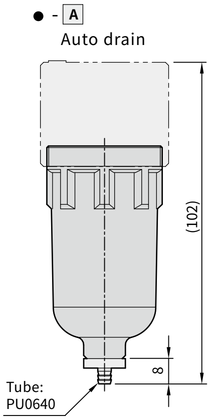

46
40
30
8.5
6.5
34
22
16
IN
OUT
10
(97)
(3)
Drain

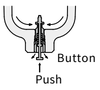
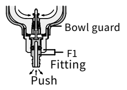
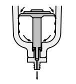

55
30
Ø40
2
AF–150: Rc 1/8
AF–200: Rc 1/4
(Piping)

● - BG-H - F1
Manual drain cock


(94)
19.5
Tube:
PU0640

● - A
Auto drain

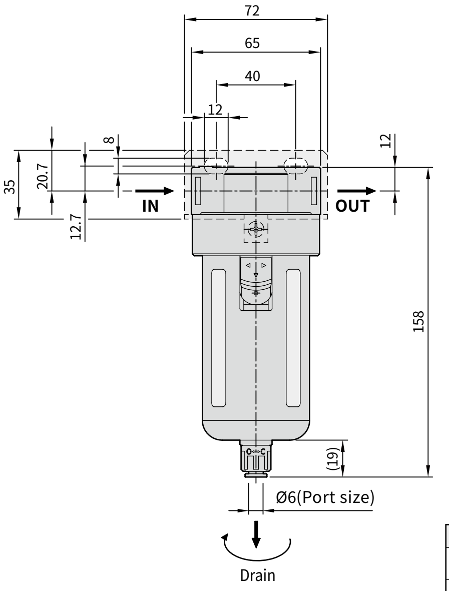

(102)
8
Tube:
PU0640

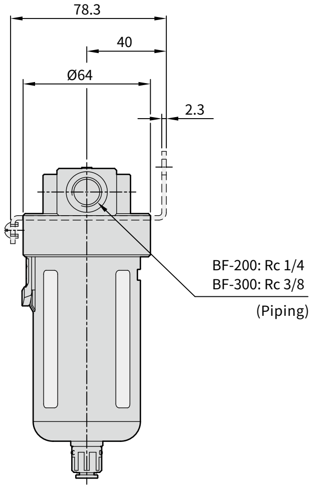
| - H | - BG-H- F1 | - A |
|---|---|---|
| Manual drain cock (standard) | Manual drain cock (With bowl guard, Fitting) | Auto drain (Differential pressure should be above1kg) |
|   Button<br>Push |   Bowl guard<br>F1<br>Fitting<br>Push |  |

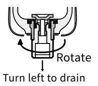
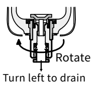
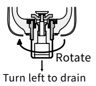
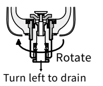
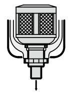
— BG PC bowl with Metal bowl guard (Option)

---

### BL - 200 - H Standard


72
65
40
12
8
35
20.7
12.7
IN
OUT
12
158
(19)
Ø6(Port size)
Drain

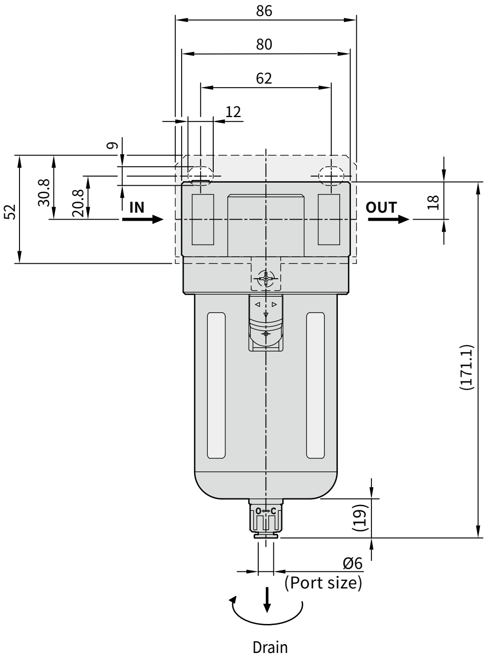

78.3
40
Ø64
2.3
BF-200: Rc 1/4
BF-300: Rc 3/8
(Piping)

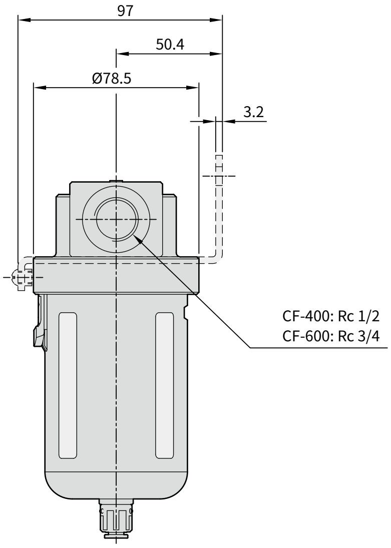
| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |   Rotate<br>Turn left to drain |  |

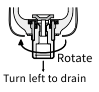
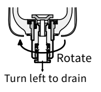
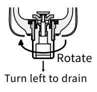
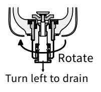
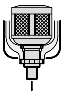
# AF/ BF/ CF series Air Filter

## Dimensions

### CF - 400 - H Standard


86
80
62
12
9
30.8
20.8
52
IN
OUT
18
(171.1)
(19)
Ø6
(Port size)
Drain

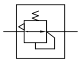

97
50.4
Ø78.5
3.2
CF-400: Rc 1/2
CF-600: Rc 3/4

| -H | -H-F1 | -S | -S-F2 | -A |
|---|---|---|---|---|
| Manual drain (Standard) | Manual drain cock with fitting(Option) | Semi-Auto drain (Option) | Semi-Auto drain with fitting(Option) | Auto drain (Option AD-30) |
|  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  Rotate<br>Turn left to drain |  |

# AR/ BR/ CR series Regulator

## Product features

Symbol:

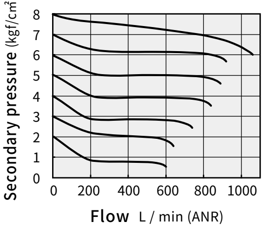


## Specification

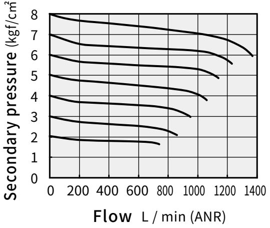
| Item \ Model | AR-150 (200) | BR-200 (300) | CR-400 (600) |
|---|---|---|---|
| Fluid | Air | | |
| Port Size Rc | 1/8, (1/4) | 1/4, (3/8) | 1/2, (3/4) |
| Pressure range kgf/cm²(kPa) | 0.5 ~ 8.5 (50 ~ 850) | | |
| Max. pressure kgf/cm²(kPa) | 9.5 (950) | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | |
| Weight kg | 0.20 | 0.23 | 0.32 |
| Material | Aluminum die-casted | | |

## Flow rate characteristic graph

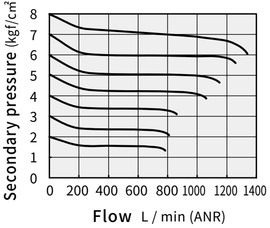
**AR-200**



**BR-300**

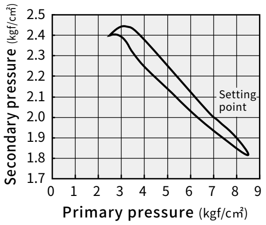


**CR-600**

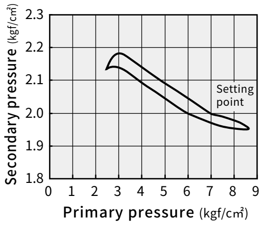


## Pressure characteristics graph

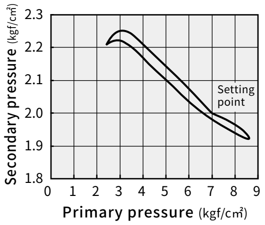
**AR-200**



**BR-300**



**CR-600**



AC
BC
CC
AFC
BFC
CFC
☐FR
☐F
☐R
☐L
A/B/C

# AR/ BR/ CR series Regulator

## Code of order

### Code of order

AR – 200 – G – PG 10A – L2 –

**Model ①**

| Model |
|---|
| AR |
| BR |
| CR |

※ REGULATOR series
AR : Mini size
BR : Medium size
CR: Large size

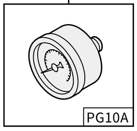
**Port size ②**

| | Mark | 150 | 200 | 300 | 400 | 600 |
|---|---|---|---|---|---|---|
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
| Port connection | AR | ● | ● | | | |
| | BR | | ● | ● | | |
| | CR | | | | ● | ● |

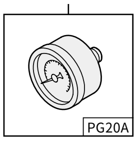
**Thread type ③**

| None | G | N |
|---|---|---|
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |

**Pressure gauge ④**



PG-10A : Pressure gauge (option)
※ For A series



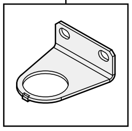
PG-20A : Pressure gauge (option)
※ For B,C series

**Max. adjustable pressure ⑤**

| | |
|---|---|
| None | standard<br>8.5 kg/cm² |
| L1 | 1 kg/cm²<br>(AC Series) |
| L2 | 2 kg/cm²<br>(AC Series) |
| L4 | 4 kg/cm²<br>(AC,BC Series) |

※ For A , B series

**Bracket ⑥**



■ None : With Bracket (Standard)

### Pressure gauge ④

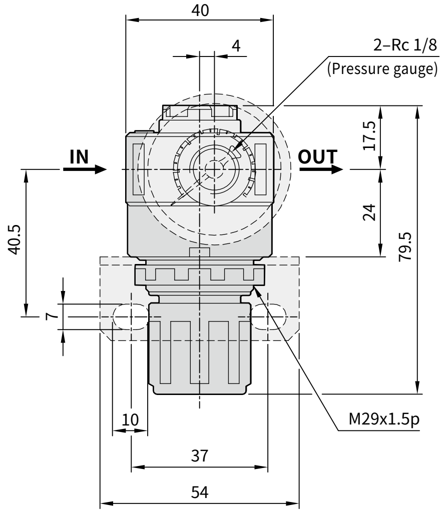
| Pressure gauge | | Model | | | | | |
|---|---|---|---|---|---|---|---|
| Code | Model | AR-150 | AR-200 | BR-200 | BR-300 | CR-400 | CR-600 |
| PG10A | PG-10A | ●(option) | ●(option) | — | — | — | — |
| PG20A | PG-20A | — | — | ●(option) | ●(option) | ●(option) | ●(option) |

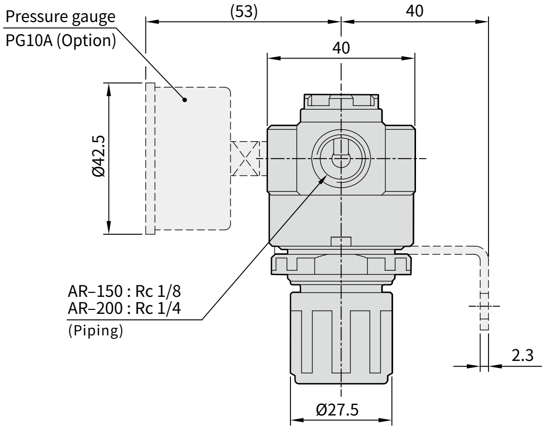
Note: (standard): Standard accessory; (option): Optional accessory.

# AR/ BR/ CR series Regulator

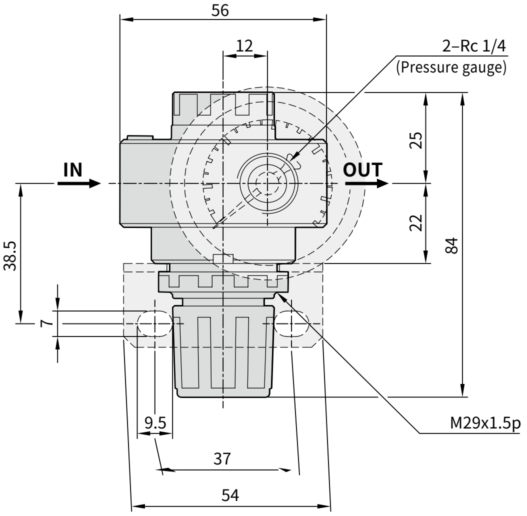
## Dimensions

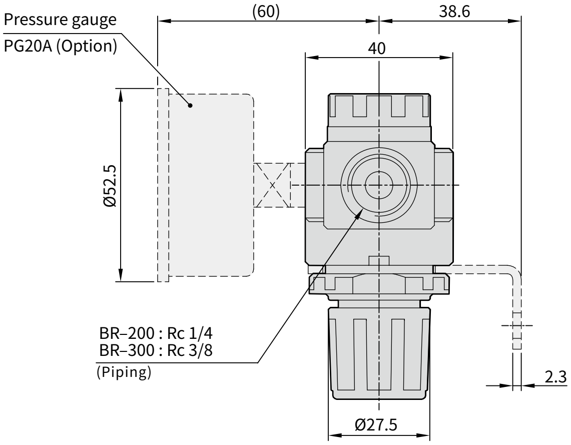
### AR - 150


40
4
2–Rc 1/8
(Pressure gauge)
IN
OUT
17.5
24
79.5
40.5
7
10
37
54
M29x1.5p


Pressure gauge
PG10A (Option)
(53)
40
40
Ø42.5
AR–150 : Rc 1/8
AR–200 : Rc 1/4
(Piping)
2.3
Ø27.5

### BR - 200

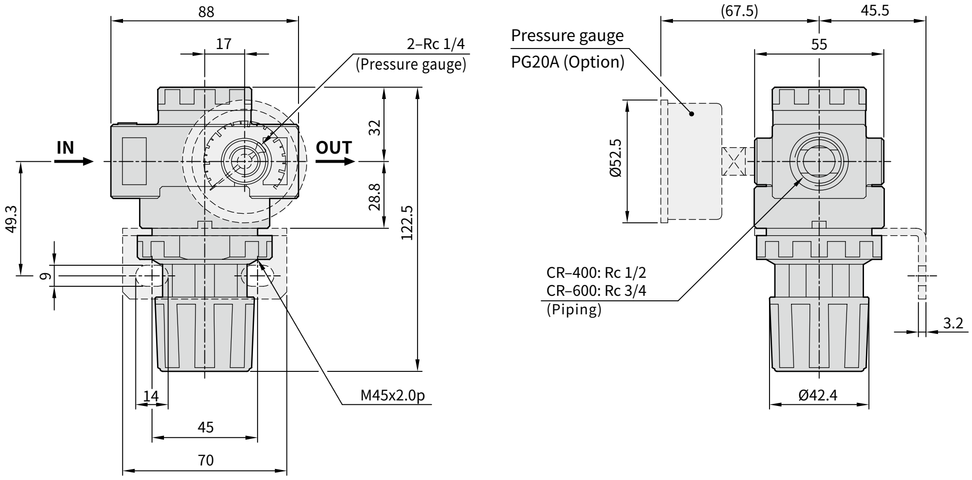

56
12
2–Rc 1/4
(Pressure gauge)
IN
OUT
25
22
84
38.5
7
9.5
37
54
M29x1.5p


Pressure gauge
PG20A (Option)
(60)
38.6
40
Ø52.5
BR-200 : Rc 1/4
BR-300 : Rc 3/8
(Piping)
2.3
Ø27.5

# AR/ BR/ CR series Regulator

## Dimensions

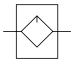
CR - 400


88
17
2–Rc 1/4
(Pressure gauge)
IN
OUT
32
28.8
122.5
49.3
9
14
45
70
M45x2.0p
(67.5)
45.5
55
Pressure gauge
PG20A (Option)
Ø52.5
CR–400: Rc 1/2
CR–600: Rc 3/4
(Piping)
3.2
Ø42.4

# AL/ BL/ CL series Lubricator

## Product features

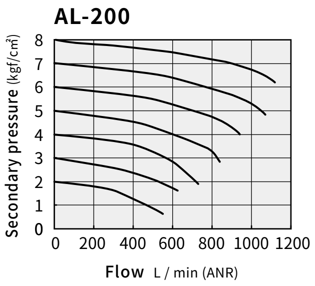
Symbol:

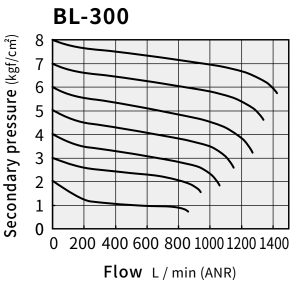


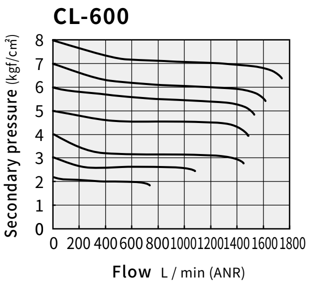
## Specification

| Item | Model | AL-150 (200) | BL-200 (300) | CL-400 (600) |
|---|---|---|---|---|
| Fluid | | Air | | |
| Port Size | Rc | 1/8, (1/4) | 1/4, (3/8) | 1/2, (3/4) |
| Pressure range | kgf/cm²(kPa) | 0.5 ~ 8.5 (50~850) | | |
| Max. pressure | kgf/cm²(kPa) | 9.5 (950) | | |
| Ambient and fluid temperature | ℃ | 5 ~ 60 | | |
| Lubricator capacity | cc | 25 | 90 | 160 |
| Recommended lubrication | | Lubricant class 1 ( ISO - VG32 ) or equivalent | | |
| Weight | kg | 0.17 | 0.36 | 0.42 |
| Material | Body | Aluminum die-casted | | |
| | Bowl | Relieving type | | |

## Flow rate characteristic graph







# AL/ BL/ CL series Lubricator

## Code of order

CHELIC

### Code of order

**AL** – **200** – **G** – **BG** – **C**

Model ① / Port size ② / Thread type ③ / Bowl type ④ / Bracket ⑤

| Model |
|---|
| AL |
| BL |
| CL |

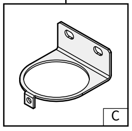
※LUBRICATOR series
AL: Mini size
BL: Medium size
CL: Large size

| | Mark | 150 | 200 | 300 | 400 | 600 |
|---|---|---|---|---|---|---|
| | Port size | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
| Port connection | AL | ● | ● | | | |
| | BL | | ● | ● | | |
| | CL | | | | ● | ● |

| None | G | N |
|---|---|---|
| RC | G | NPT |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | |

| Bowl type | |
|---|---|
| None | Other bowl type |
| PC(Short bowl) | option |
| Bowl guard<br>(standard) | option |
| Bowl guard<br>(standard) | option |

※ Please see the below table in detail.



■ None: Without bracket
C: With bracket (option)

### Bowl and Drain cock type ④

### A series ④

| Bowl type | PC bowl | Bowl guard |
|---|---|---|
| Model | None | -BG |
| AL-150 | ●(standard) | ●(option) |
| AL-200 | ●(standard) | ●(option) |

### B, C series ④

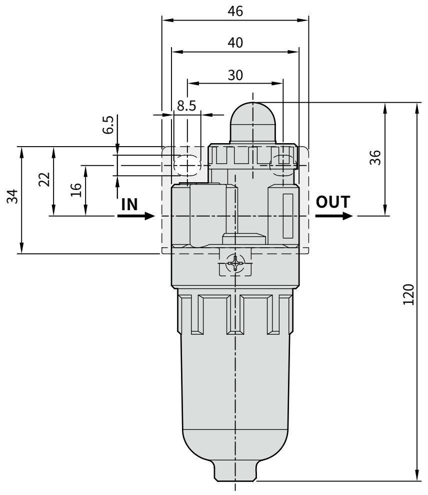
| Bowl type | Bowl guard |
|---|---|
| Model | None |
| BL-200 | ● (standard) |
| BL-300 | ● (standard) |
| CL-400 | ● (standard) |
| CL-600 | ● (standard) |

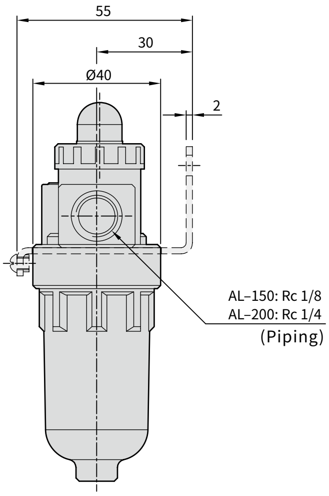
Note: (standard): Standard accessory; (option): Optional accessory.

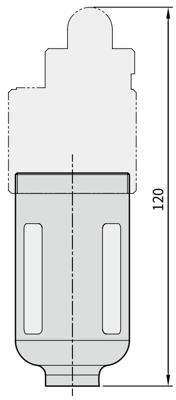
# AL/ BL/ CL series Lubricator

## Dimensions

### AL - 150

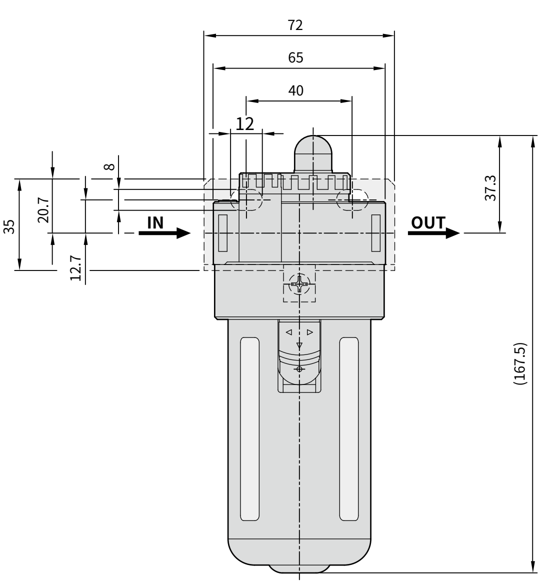

46
40
30
8.5
6.5
22
16
34
36
IN
OUT
120

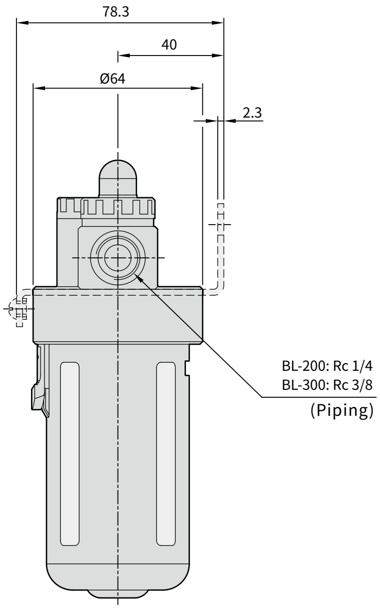

55
30
Ø40
2
1.5
AL–150: Rc 1/8
AL–200: Rc 1/4
(Piping)



**BG** PC bowl with
metal bowl guard(Option)

### BL - 200


72
65
40
12
8
35
20.7
12.7
IN
OUT
37.3
(167.5)


78.3
40
Ø64
2.3
BL-200: Rc 1/4
BL-300: Rc 3/8
(Piping)

AC
BC
CC

AFC
BFC
CFC

☐FR

☐F

☐R

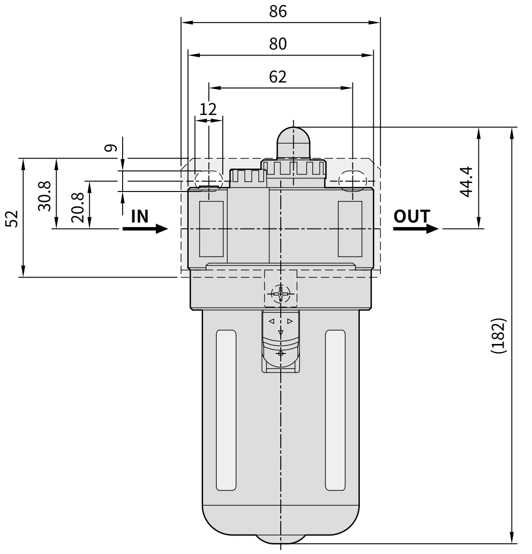
☐L

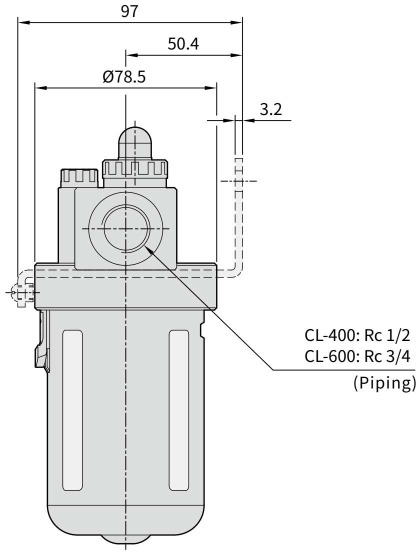
A/B/C

# AL/ BL/ CL series Lubricator

## Dimensions

▶ CL - 400


86
80
62
12
9
52
30.8
20.8
IN
OUT
44.4
(182)


97
50.4
Ø78.5
3.2

CL-400: Rc 1/2
CL-600: Rc 3/4
(Piping)

# Air unit

## Mounting bracket series

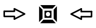
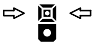
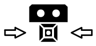
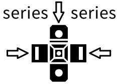
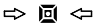
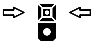
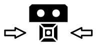
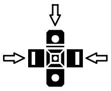
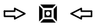
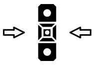
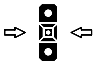
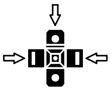
## Code of order

M – 30 – E

Body size
15-A series
30-B series
60-C series

Modular
F-F Modular
D-D Modular
E-E Modular
DT-DT Modular

## Modular type

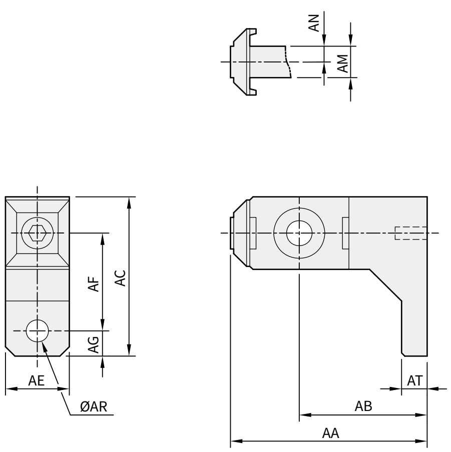
| Modular type<br>Body Size | F Modular | D Modular | E Modular | DT Modular |
|---|---|---|---|---|
| -15<br>For<br>A Series | Multi series Multi series<br><br>M-15F | Multi series Multi series<br><br>M-15D | Multi series Multi series<br><br>M-15E | Multi series Multi series<br><br>M-15DT |
| -30<br>For<br>B Series | <br>M-30F | <br>M-30D | <br>M-30E | <br>M-30DT |
| -60<br>For<br>C Series | <br>M-60F | <br>M-60D | <br>M-60D | <br>M-60DT |

| Model | | Bracket type | Remark |
|---|---|---|---|
| Filter | AF–150 | M–15C | option |
| | AF–200 | | |
| | BF–200 | M–30C | |
| | BF–300 | | |
| | CF–400 | M–60C | |
| | CF–600 | | |
| Regulator | AR–150 | M–30B | standard |
| | AR–200 | | |
| | BR–200 | | |
| | BR–300 | | |
| | CR–400 | M–60B | |
| | CR–600 | | |
| Lubricator | AL–150 | M–15C | option |
| | AL–200 | | |
| | BL–200 | M–30C | |
| | BL–300 | | |
| | CL–400 | M–60C | |
| | CL–600 | | |
| Filter regulator | AFR–150 | M–15B | standard |
| | AFR–200 | | |
| | BFR–200 | M–30B | |
| | BFR–300 | | |
| | CFR–400 | M–60B | |
| | CFR–600 | | |
| Drip leg drain | BDV–200 | M–30C | option |
| | BDV–300 | | |
| | CDV–400 | M–60C | |
| | CDV–600 | | |
| F.R.L<br>Combination | AC–150 | M–15D | standard |
| | AC–200 | | |
| | BC–200 | M–30D | |
| | BC–300 | | |
| | CC–400 | M–60D | |
| | CC–600 | | |

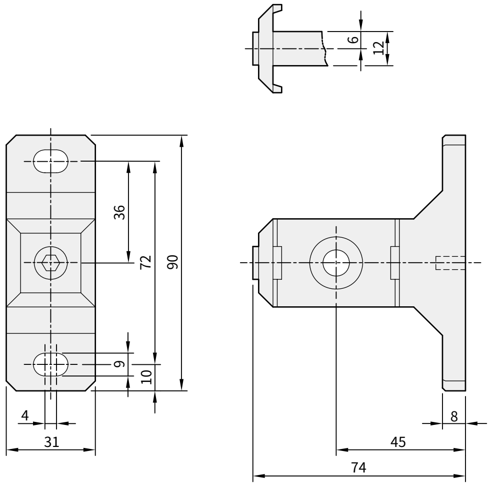
| Model | | Bracket type | Remark |
|---|---|---|---|
| FR.L<br>Combination | AFC–150 | M–15E | standard |
| | AFC–200 | | |
| | BFC–200 | M–30E | |
| | BFC–300 | | |
| | CFC–400 | M–60D | |
| | CFC–600 | | |
| FR/DT/L<br>Combination | AFDTC–150 | M–15DT | |
| | AFDTC–200 | | |
| | BFDTC–200 | M–30DT | |
| | BFDTC–300 | | |
| | CFDTC–400 | M–60DT | |
| | CFDTC–600 | | |
| FL.<br>Filter/Lubricator<br>Combination | AFL–150 | M–15E | |
| | AFL–200 | | |
| | BFL–200 | M–30E | |
| | BFL–300 | | |
| | CFL–400 | M–60D | |
| | CFL–600 | | |
| F/DT/L<br>Combination | AFDTL–150 | M–15DT | |
| | AFDTL–200 | | |
| | BFDTL–200 | M–30DT | |
| | BFDTL–300 | | |
| | CFDTL–400 | M–60DT | |
| | CFDTL–600 | | |
| RL<br>Regulator<br>Lubricator | ARL–150 | M–15E | |
| | ARL–200 | | |
| | BRL–200 | M–30E | |
| | BRL–300 | | |
| | CRL–400 | M–60D | |
| | CRL–600 | | |
| R/DT/L<br>Combination | ARDTL–150 | M–15DT | |
| | ARDTL–200 | | |
| | BRDTL–200 | M–30DT | |
| | BRDTL–300 | | |
| | CRDTL–400 | M–60DT | |
| | CRDTL–600 | | |

AC
BC
CC
AFC
BFC
CFC
☐FR
☐F
☐R
☐L
A/B/C

## M-15D, 30D Modularize type

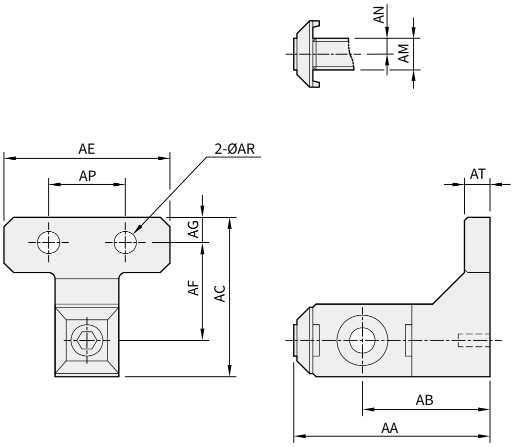

AN
AM
AF
AC
AG
AE
ØAR
AT
AB
AA

## M-60D Modularize type


6
12
36
72
90
9
10
4
31
8
45
74

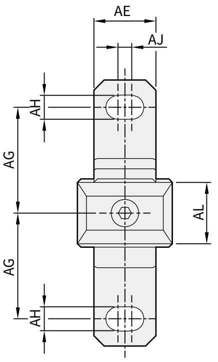
| Model \ Size | AA | AB | AC | AE | AF | AG | AM | AN | AR | AT |
|---|---|---|---|---|---|---|---|---|---|---|
| **M-15D** | 50.5 | 32 | 49 | 17.5 | 31 | 8 | 8 | 4 | Ø7 | 6 |
| **M-30D** | 61.5 | 40 | 49 | 20 | 31 | 8 | 10 | 5 | Ø7 | 8 |

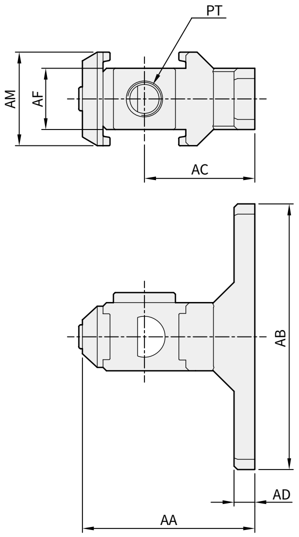
## M-15E, 30E Modularize type


AN
AM
AE
2-ØAR
AP
AG
AF
AC
AT
AB
AA

| Model \ Size | AA | AB | AC | AE | AF | AG | AM | AN | AP | AR | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **M-15E** | 49.5 | 32 | 49 | 26 | 31.5 | 7.5 | 8 | 4 | 12 | Ø7 | 6 |
| **M-30E** | 60.3 | 40 | 51 | 39.8 | 31 | 8 | 10 | 5 | 20 | Ø7 | 8.2 |

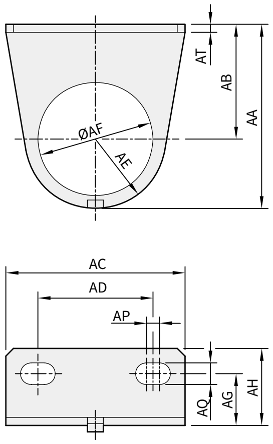
## M-15DT, M-30DT, M-60DT Modularize type


AE
AJ
AH
AG
AL
AG
AH


PT
AM
AF
AC
AB
AD
AA

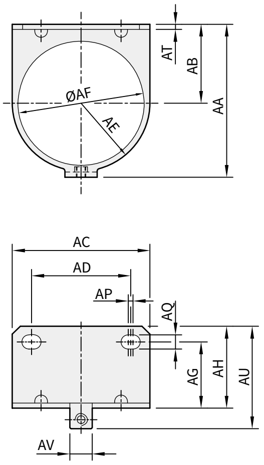
| Model \ Size | PT | AA | AB | AC | AD | AE | AF | AG | AH | AJ | AL | AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M-15DT | PT 1/8” | 51 | 78 | 32 | 6 | 18 | 18 | 31 | 7 | 4 | 18 | 27.5 |
| | PT 1/4” | | | | | | | | | | | |
| M-30DT | PT 1/8” | 61 | 79 | 40 | 8 | 20 | 20 | 31.5 | 7 | – | 22 | 30 |
| | PT 1/4” | | | | | | | | | | | |
| M-60DT | PT 1/4” | 77.5 | 92 | 47 | 8 | 31 | 25 | 36 | 9 | 4 | 34 | 43.9 |
| | PT 3/8” | | | | | | | | | | | |

## M-30B, M-60B Modularize type


AT
AB
AA
ØAF
AE
AC
AD
AP
AQ
AG
AH

| Model \ Size | AA | AB | AC | AD | AE | AF | AG | AH | AP | AQ | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M-30B | 58 | 38.75 | 54 | 39.5 | R19.2 | Ø30.5 | 16.5 | 23 | 2.5 | 7 | 2.3 |
| M-60B | 73 | 45.5 | 70 | 45 | R27.5 | Ø45 | 20.5 | 30.5 | 5 | 9 | 3.2 |

## M-15C, M-30C, M-60C Modularize type


AT
AB
AA
ØAF
AE
AC
AD
AP
AQ
AG
AH
AU
AV

| Model \ Size | AA | AB | AC | AD | AE | AF | AG | AH | AP | AQ | AT | AV | AU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M-15C | 55 | 30 | 46 | 30 | R23 | Ø40.5 | 28 | 34 | 2 | 6.5 | 2 | 10 | 41 |
| M-30C | 78.3 | 40 | 72 | 40 | R36 | Ø64.5 | 27 | 35 | 4 | 8 | 2.3 | 12 | 47 |
| M-60C | 97 | 50.4 | 86 | 62 | R43 | Ø78.7 | 42 | 52 | 3 | 9 | 3.2 | 14 | 65 |

# Trouble shooting

## Air filter and Pressure reduction valve failure and remedy

### (1) Air filter

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Not work | Without air supply. | Check if there is air supply in the piping line before the air inlet. | Check if the piping line of air supply is disconnected or the valve of air supply does not be opened. |
| | Filter blocked up by lube oil contamination. | Filter has not used for long time and solidified because of the accumulated lube oil contamination. | Disassemble filter and clear it with soap water or change filter. |
| Insufficient pressure | Filter blocked up by lube oil contamination. | Check filter | Disassemble filter and clear it with soap water or change filter. |
| Manual drain failed | Drain hole on the bottom of the plastic bowl blocked up. | Check drain hole. | Stop air supplying to remove the pressure in plastic bowl. Then fully open drain rotator and shoot compressed air into plastic bowl from drain hole with air gun (1~2 kgf/cm²). Then disassemble plastic bowl and clean it. |
| | Drain broken. | Check drain hole. | Fully close drain and then if drain keeps leaking, drain has to be disassembled to fix. |
| | No pressure. | Check if there is air supply or not. | Keep the pressure in the bowl at 1~2 kgf/cm² and then open drain. |
| Auto drain failed | Auto drain failed. | Check air supply and ball. | Disassemble plastic bowl and clean auto drain by rinsing out blocks from drain hole with water. Then assemble the plastic bowl back. |
| | Fail to stop draining. | Check air supply and ball. | Disassemble plastic bowl and shock it for several times to home guide pin. If it does not work, try to clean auto drain by last way. |

### (2) Pressure reduction valve

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Unstable air flow after adjustment | Too small secondary pressure piping. | Enlarge the pipe diameter and try. | Enlarge piping or the size of machine used intermediate. |
| | Too small primary pressure piping or block by dust. | Measure primary side pressure. Disassemble and check. | Enlarge orifice of piping or joints , remove dust. |
| | Low pressure source. | Measure primary side pressure. Disassemble and check. | Increase pressure source. |
| Not sensitive pressure drop | Damaged diaphragm (or broken piston oil seal). | Large amount of air leak from air supply port. | Disassemble and repair. |
| Not smooth secondary flow | Foreign object in valve seat or O-ring damage. | Large amount of air leak from air supply port. | Disassemble and repair. |
| Reducer valve fail to open | Broken regulating spring poor air supply valve. | Feel slight when turning the regulating spring. | Disassemble and repair. |
| Always air leak from supply port | Poor air supply valve. | Block the secondary side port and block the air supply port to confirm. | Disassemble and repair. |
| | Damaged diaphragm (or broken piston oil seal). | Block the secondary side port and block the air supply port to confirm. | Disassemble and repair. |
| Leak and can not be adjusted | Incorrect assembly directions. | Check if primary side pressure is assembled on “IN” direction in the body. | Interchange assembly on the inlet and outlet |

# Trouble shooting

## Lubricator and Mist separator failure and remedy

### (3) Lubricator

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Lubricant in plastic bowl not decrease | Adjuster not work well | While air is being supplying, fix the adjuster and check the drip in the oil sight glass. | Correct the adjuster. |
| | Less flow of air | Check consumption of air | Choose suitable lubricator |
| | Too large size of lubricator | Check the flow of air and the way of lubrication | Choose suitable lubricator |
| | Too sticky lubricant | | Choose suitable lubricant |
| Too much consumption of air | Adjuster not work well | Large amount of air leak from air supply port. | Correct the adjuster. |
| Lubricant not be sent to machine | Too low position of lubricator | Check the exhaust of oil mist from outlet by hand. | 1.Remove lubricator close to machine.<br>2.Set up lubricator at higher position.<br>3.Choose micro mist lubricator.<br>4.Set up another lubricator. |

### (4) MIST SEPARATOR

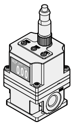
| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Insufficient flow | Without air supply. | Check if there is air supply in the piping line before the air inlet. | Check if the piping line of air supply is disconnected or the valve of air supply does not be opened. |
| | Filter blocked up by lube oil contamination. | Filter has not used for long time and solidified because of the accumulated lube oil contamination. | Disassemble filter and clear it with soap water or change filter. |
| Filter not well | Filter blocked up by lube oil contamination. | Check filter | Disassemble filter and clear it with soap water or change filter. |
| Manual drain failed | Drain hole on the bottom of the plastic bowl blocked up. | Check drain hole. | Stop air supplying to remove the pressure in plastic bowl.<br>Then fully open drain rotator and shoot compressed air into plastic bowl from drain hole with air gun (1~2 kgf/cm$^2$).<br>Then disassemble plastic bowl and clean it. |
| | Drain broken. | Check drain hole. | Fully close drain and then if drain keeps leaking, drain has to be disassembled to fix. |
| | No pressure. | Check if there is air supply or not. | Keep the pressure in the bowl at 1~2 kgf/cm$^2$ and then open drain. |
| Auto drain failed | Auto drain failed. | Check air supply and ball. | Disassemble plastic bowl and clean auto drain by rinsing out blocks from drain hole with water. Then assemble the plastic bowl back. |
| | Fail to stop draining. | Check air supply and ball. | Disassemble plastic bowl and shock it for several times to home guide pin. If it does not work, try to clean auto drain by last way. |
| Clear sight glass | Too much lube oil contamination. | Too much lubricant accumulated in the pipe. | Disassemble bowl to clean up with water and then clean up with non-volatile solvent, such as alcohol. |

# MEMO

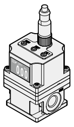
# Directional control

Vacuum Electro-Pneumatic Regulator\ Elector-Pneumatic Regulator\ Numeric display flow switch

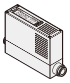
CHELIC



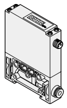
**CVTR** series Electro-Pneumatic Regulator ------ **1/8, 1/4, 3/8, 1/2** ----- **P.1-4.3**



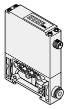
**CVAR** series Electronic Vacuum Regulator ------ **1/4, 3/8** ---------- **P.1-4.18**



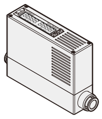
**CVFR** series Mini electro-pneumatic regulator ---- **Ø8, 1/4,** ---------- **P.1-4.25**



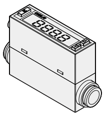
**CMT** ☐ series Compact Electro-Pneumatic Regulator --------------- **P.1-4.30**



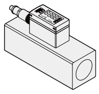
**CMA** ☐ series Compact Electronic Vacuum Regulator -------------- **P.1-4.35**



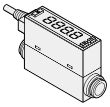
**FPF** series Digital Pressure and Flow Switch ------ **Ø4, Ø6, Ø8, PT1/2** --- **P.1-4.42**



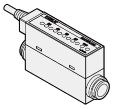
**FP** series Differential Pressure Type Flow Switch --- **Ø4, Ø6, Ø8, PT1/2** --- **P.1-4.49**



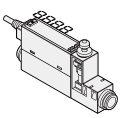
**FPX** series Differential Pressure Type Flow Switch/Large Flow -- **PT1** --- **P.1-4.56**



**FC** series Thermal Type Flow Switch ----------- **Ø4, Ø6, Ø8, PT1/2** --- **P.1-4.63**



**FC-D** series Thermal Type Display-split Flow Switch **Ø4, Ø6, Ø8, Rc1/2** --- **P.1-4.71**



**FC-R** series Thermal Type Speed-control Flow Switch **Ø4, Ø6, Ø8** -------- **P.1-4.81**

# Directional control/ Product Precautions

**CHELIC**

For your safe use of this product, be sure to read before using the product Precautions.

- When designing and assembling equipment using our products, it is necessary to ensure the safety of the equipment, such as mechanical structure, air pressure, control circuits and electrical systems, and fulfill the obligation of safe use of the equipment.
- To use our products safely, please be aware of that the product' s selection, usage, operation and regulation are important.
- In order to ensure the safety of the device, please strictly comply with the warnings and cautions.
- Furthermore, please check the device safety before assembly and operation.

**WARNING** | This product is designed and manufactured as a device and component for general industrial machinery,Therefore, the operator must have the appropriate expertise and experience.

## 1. Please use this product within the specifications of the product.

- This product can not be used outside the original specifications. In addition, this product must not be modified and reprocessed.Meanwhile, the scope of the present product is used as a device and a general industrial components. Therefore, it is not suitablefor outdoor use and under the following conditions and in the environment :

1. When using this product, it will directly contact with atomic energy, railway, aviation, ships, vehicles, medical equipment, foodand beverage, entertainment equipment, emergency circuit breaking circuit. Stamping machinery, brake circuits, safety devices,etc., need to consider and ensure its safety purposes.
2. Used in the impact on people and property, especially in the use of safety requirements.

(If the use of special circumstances, please consult the company. However, please develop a safety precaution to avoid danger inthe event of a malfunction)

## 2. Please confirm the safety of all the systems related to this product before mechanical assembly, inspection and maintenance of theequipment, etc.

- Please confirm the safety of all the systems related to this product before mechanical assembly, inspection and maintenance of the equipment, etc.
- Even if the machine stops, there will still be high pressure, high temperature and charged situation, be sure to take note.
- When inspecting or refurbishing the machine, be sure to cut off the energy sources such as the air source, the water source and the power of the corresponding equipment, and eliminate the compressed air in the system. Pay attention to water leakage or powerleakage.
- When using air compressor machinery and equipment for start-up or restart, take precautions such as preventing flight and ensure the safety of the system before proceeding.
- In the use of this product, the product failure may lead to major accidents in the use, be sure to set the self-protection components.

Be sure to follow the warnings and cautions noted in the datasheet to prevent accidents.

| | |
|---|---|
| ⚠ DANGER | Indicates a dangerous situation that could result in death or serious injury if performed incorrectly. |
| ⚠ WARNING | Indicates a dangerous situation that could result in death or serious injury if performed incorrectly. |
| ⚠ CAUTION | Indicates that, in the event of an incorrect operation, there is a risk of minor injuries or property damage. |

* Even matters in the Caution can have significant consequences depending on the circumstances. Are an important part of theabove, be sure to follow the implementation.

## Disclaimers

The Company does not take all responsibility for the following matters:

1. The Company is not responsible for any loss of production, loss of profits, personal injury, delay in costs and any incidental,consequential damages, costs and damages arising out of the use or failure of the product.
2. Due to natural disasters, non-the product caused by fire, the third party or the customer caused by fault or negligence caused by the loss.
3. When using this product on your company's machines, your company's machines may have avoided the loss of functionality and construction that is generally expected in the industry.
4. Losses caused by actions other than those specified in our catalog or the instruction manual, as well as installation, installation, adjustment, maintenance, etc.
5. Product's malfunction losses caused by disapproved remodel, software or inappropriate assembly.

# CVTR series Electro-Pneumatic Regulator

## Product Features

**CHELIC**

## Feature

- ● The valve body shares one single electronic control module
- ● With HD screen
- ● Full-screen textual menu settings
- ● High interoperability in general specifications
- ● Comply with ISO6358 standard

## Specification

| Item | Model | | | |
|---|---|---|---|---|
| | | CVTR101□Note: 4 | CVTR105□Note: 4 | CVTR109□Note: 4 |
| | | CVTR201□ | CVTR205□ | CVTR209□ |
| | | CVTR301□ | CVTR305□ | CVTR309□ |
| Fluid | | Air | | |
| Min. pressure | bar | Set pressure+1 | | |
| Max. pressure | bar | 2 | 9.5 | |
| Pressure range setting Note: 5 | bar | 0.09 ~ 1 | 0.09 ~ 5 | 0.09 ~ 9 |
| Maximum supply flow | L/min | 101 type: 70(0.5 bar) | 105 type: 150(4 bar) | 109 type: 220(7 bar) |
| | | 201 type: 300(0.5 bar) | 205 type: 1000(4bar) | 209 type: 1500(7 bar) |
| | | 301type: 1500(0.5 bar) | 305 type: 3000(4bar) | 309 type: 4000(7 bar) |
| Power | Voltage | DC24V±10% | | |
| | Current consumption | Power supply voltage DC24V type:0.12A or less | | |
| Input signal | Current type Note: 2 | 4~20mA | | |
| | Voltage type | DC0~5V、DC0~10V | | |
| Input impedance | Current type | 250Ω or less | | |
| | Voltage type | about 75.75kΩ | | |
| Output signal (Display output) Note: 1 | Analog output | DC0.5~4.5V/DC1~5V(Load impedance: 20kΩ)<br>DC4~20mA(Load impedance: 0.3kΩ) | | |
| | Switch output | NPN open collector output：Max. 30V, 80mA<br>PNP open collector output：Max. 80mA | | |
| Linearity | | ±1.5%F.S. or less | | |
| Hysteresis | | 0.5%F.S. or less | | |
| Repeatability | | ±1%F.S. or less | | |
| Sensitivity | | 0.2%F.S. or less | | |
| Temperature characteristics | | ±0.2%F.S./℃ or less | | |
| Output pressure indication Note: 3 | Accuracy | ±2%F.S.±1digit or less | | |
| | Minimum unit | MPa: 0.001, kgf/cm²:0.01 Note: 2 , bar: 0.01, psi:0.1, kPa:1 | | |
| Operating temperature range | | 0~50℃( No condensation or freezing ) | | |
| Enclosure | | IP65 | | |
| Weight | CVTR10□□ | 250g | | |
| | CVTR20□□ | 360g | | |
| | CVTR30□□ | 645g | | |

Note:
1. To set pressure range zeroing: the max. and target pressure output can be adjusted from min. unit(EX: 0.01~5bar)。
2. 0.01 bar is the min. unit for the type of 9 bar.
3. The characteristics above are only for static condition. The pressure will be changed when the air is consumed at output side.
4. CVTR1000 series is grease-free (valve part).
5. It's an uncontrollable area when pressure below 0.09bar within precise range of zero point. (Chart 1)

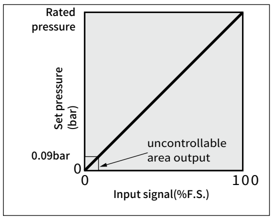


Chart 1: Output and input relationship diagram

# CVTR series Electro-Pneumatic Regulator

## Code of order/ Product Features

### Code of order

**CVTR** **20** **5** **2** - **1** **1** **2** **N** - **O** - **B** **S**

CVTR series Electronic regulator

**Model**

| | |
|---|---|
| 10 | 1000 |
| 20 | 2000 |
| 30 | 3000 |

**Pressure range**

| | |
|---|---|
| 1 | 1 bar |
| 5 | 5 bar |
| 9 | 9 bar |

■ Please contact CHELIC for customized 1 bar type

**Port size**

| Model | Code | Port size | | | |
|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 |
| 1000 | 1 | ● | - | - | - |
| | 2 | - | ● | - | - |
| 2000 | 2 | - | ● | - | - |
| | 3 | - | - | ● | - |
| 3000 | 2 | - | ● | - | - |
| | 3 | - | - | ● | - |
| | 4 | - | - | - | ● |

**Voltage**

| | |
|---|---|
| 1 | DC24V |

**Input signal**

| | |
|---|---|
| 1 | Current type DC4~20mA |
| 2 | Voltage type DC0~5V |
| 3 | Voltage type DC0~10V |

**Output signal**

| | |
|---|---|
| 1 | NPN output |
| 2 | PNP output |
| 3 | Analogue DC0.5~4.5V |
| 4 | Analogue DC4~20mA |
| 5 | Analogue DC1~5V |

**Thread type**

| | |
|---|---|
| None | Rc |
| N | NPT |
| G | PF |

**Output type**

| | |
|---|---|
| O | N.O. |
| C | N.C. |

O Normally open:
Power off under supply pressure, maintain secondary pressure.
(Not long-term maintenance)

C Normally closed (customized):
Power off under supply pressure, the secondary pressure is exhausted by outlet hole.
(Please contact CHELIC for correct code )

**Bracket**

| | |
|---|---|
| None | No |
| B | Flat bracket |
| L | L type bracket |

**Cable connector**

| | |
|---|---|
| None | No |
| S | Straight type 1.5m |
| H | Angle type 1.5m |

■ S Cable code: 850616010060
H Cable code: 850616010061

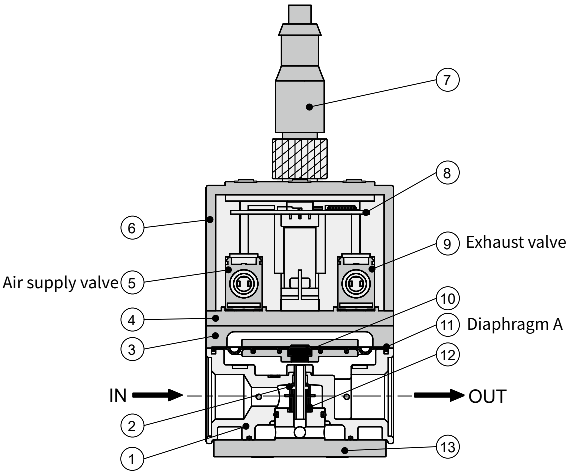
### Working principle

When the input signal amplified, the air supply solenoid valve turns ON and the exhaust solenoid valve turns OFF. Supplied pressure acts on diaphragm A in pilot chamber through air supply valve and open air supply valve which interacting with diaphragms. As a result, the supplied air pressure transfers to output pressure, and passes pressure detector to control circuit.

The correction happens here until input pressure and output signal set in proportion.

### Internal structure

► CVTR 1000



### Components and Material list

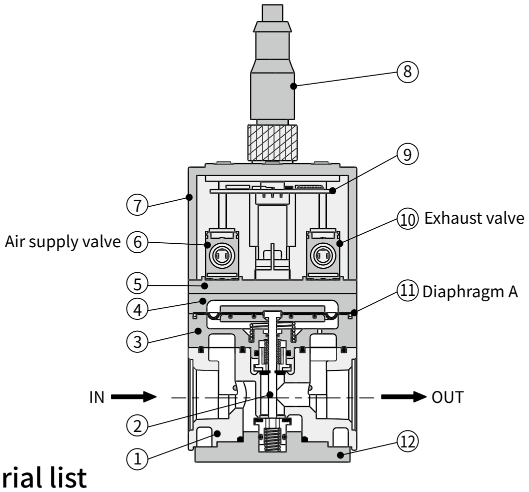
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 08 | Display panel | OLED |
| 02 | Valve assembly | Stainless steel | 09 | Exhaust valve | — |
| 03 | Valve guide body | Aluminum alloy | 10 | Diaphragm assembly | Rubber |
| 04 | Valve guide cover | Aluminum alloy | 11 | Diaphragm | Rubber |
| 05 | Air supply valve | — | 12 | Bumper | Rubber |
| 06 | Cover | Plastic | 13 | Base | Aluminum alloy |
| 07 | Cable connector | PVC | | | |

# CVTR series Electro-Pneumatic Regulator

## Product Features

## Internal structure

► CVTR 2000


⑧
⑨
⑦
Air supply valve ⑥
⑩ Exhaust valve
⑤
⑪ Diaphragm A
④
③
IN
OUT
②
①
⑫

## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 07 | Cover | Plastic |
| 02 | Valve assembly | Stainless steel | 08 | Cable connector | PVC |
| 03 | Valve guide body | Aluminum alloy | 09 | Display panel | OLED |
| 04 | Valve guide cover | Aluminum alloy | 10 | Exhaust valve | — |
| 05 | Valve guide | Aluminum alloy | 11 | Diaphragm | Rubber |
| 06 | Air supply valve | — | 12 | Base | Aluminum alloy |

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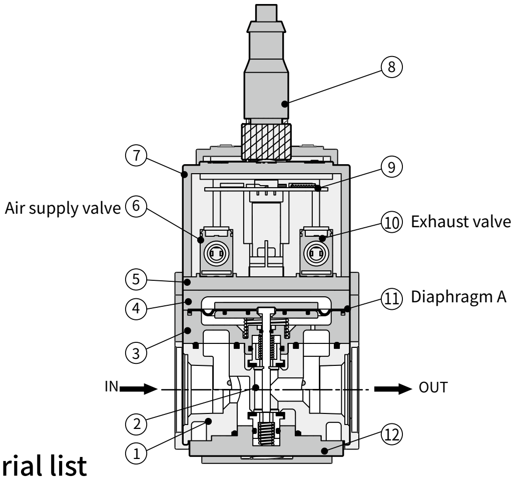
## Internal structure

► CVTR 3000


⑧
⑦
⑨
Air supply valve ⑥
⑩ Exhaust valve
⑤
⑪ Diaphragm A
④
③
IN
OUT
②
⑫
①

## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 07 | Cover | Plastic |
| 02 | Valve assembly | Stainless steel | 08 | Cable connector | PVC |
| 03 | Valve guide body | Aluminum alloy | 09 | Display panel | OLED |
| 04 | Valve guide cover | Aluminum alloy | 10 | Exhaust valve | — |
| 05 | Valve guide | Aluminum alloy | 11 | Diaphragm | Rubber |
| 06 | Air supply valve | — | 12 | Base | Aluminum alloy |

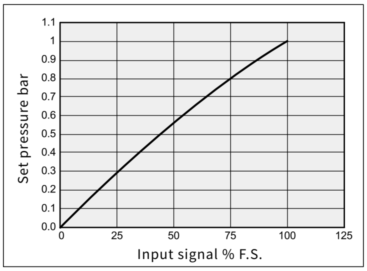
# CVTR series Electro-Pneumatic Regulator

## Characteristics graph

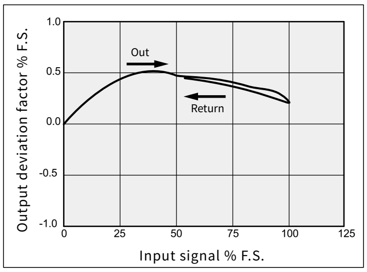
**CHELIC**

## CVTR101☐ series

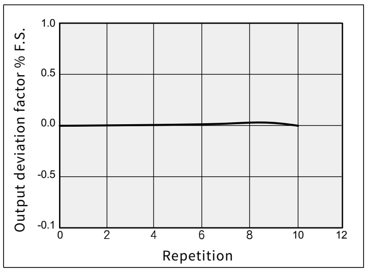
### Linearity



### Hysteresis

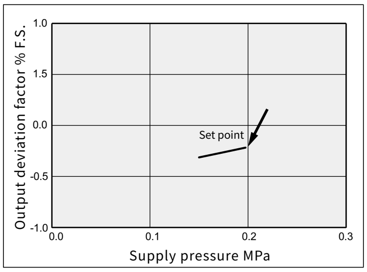


### Repeatability



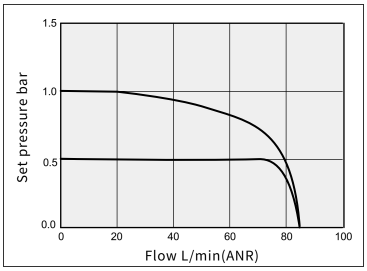
### Pressure characteristics

Set pressure: 0.5 bar



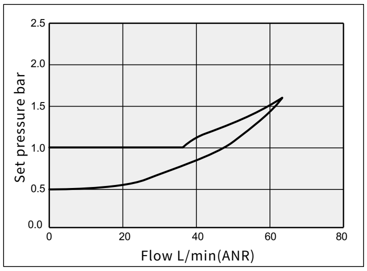
### Flow rate characteristics

Supply pressure: 2 bar



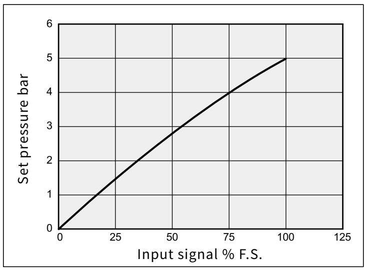
### Relief flow characteristics

Supply pressure: 2 bar

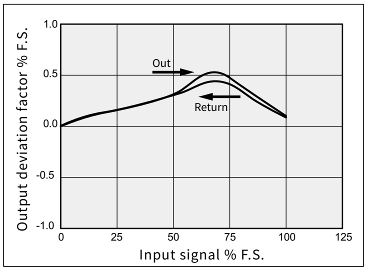


## CVTR105☐ series

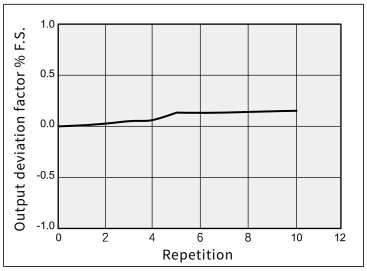
### Linearity



### Hysteresis

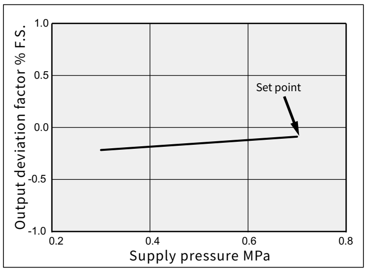


### Repeatability



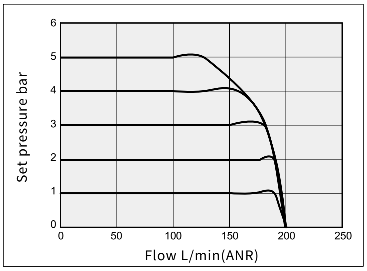
### Pressure characteristics

Set pressure: 2 bar



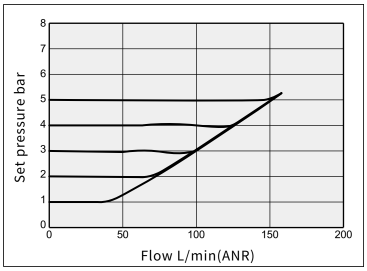
### Flow rate characteristics

Supply pressure: 7 bar



### Relief flow characteristics

Supply pressure: 7 bar

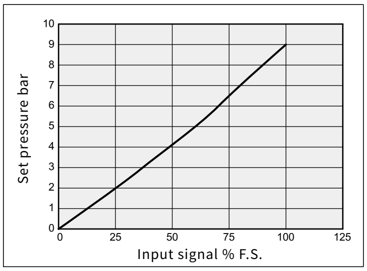


# CVTR series Electro-Pneumatic Regulator

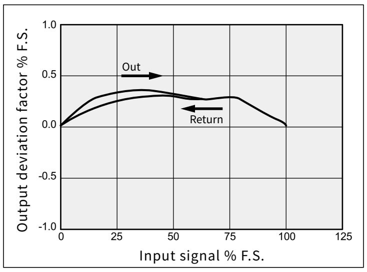
## Characteristics graph/ Dimensions

## CVTR109□ series

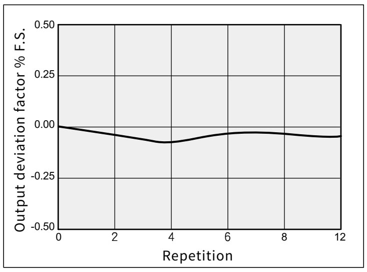
### Linearity



### Hysteresis

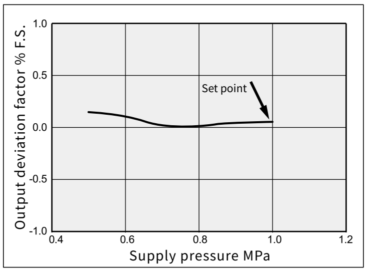


### Repeatability



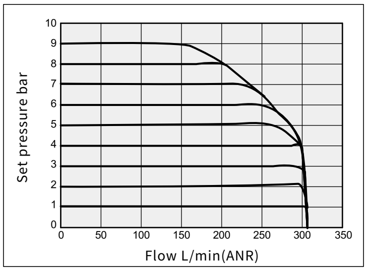
### Pressure characteristics

Set pressure: 4 bar



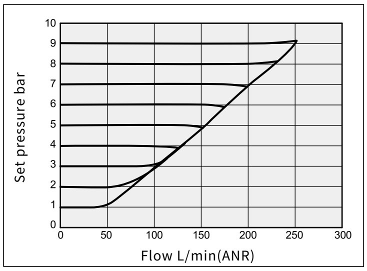
### Flow rate characteristics

Supply pressure:
10 bar

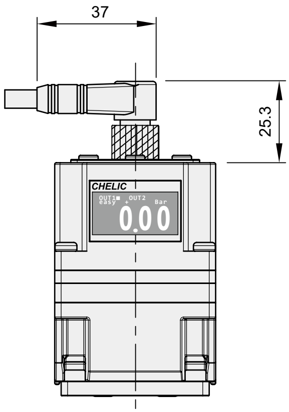


### Relief flow characteristics

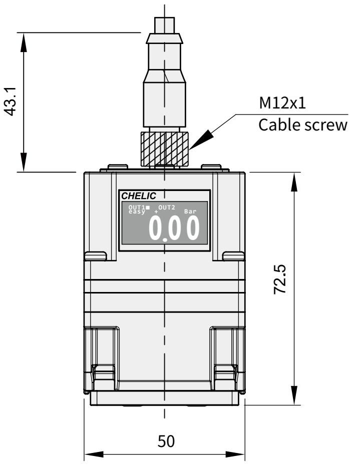
Supply pressure:
10 bar

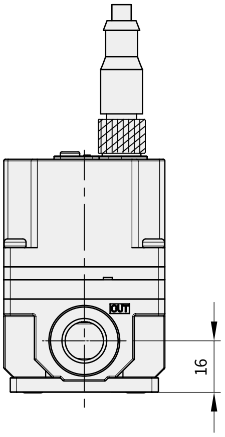


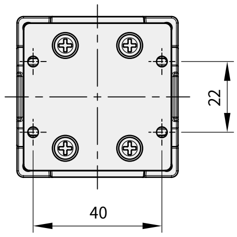
## CVTR10□□ Dimensions


37
25.3
CHELIC
OUT1 OUT2
easy +
Bar
0.00

Right angle connector

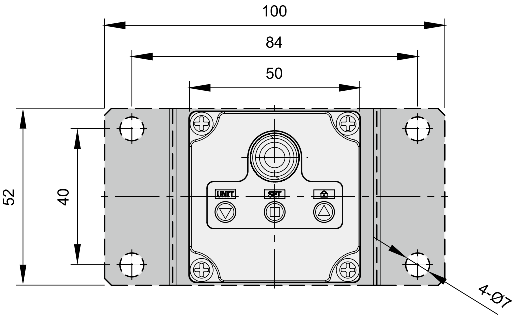

43.1
M12x1
Cable screw
CHELIC
OUT1 OUT2
easy +
Bar
0.00
72.5
50

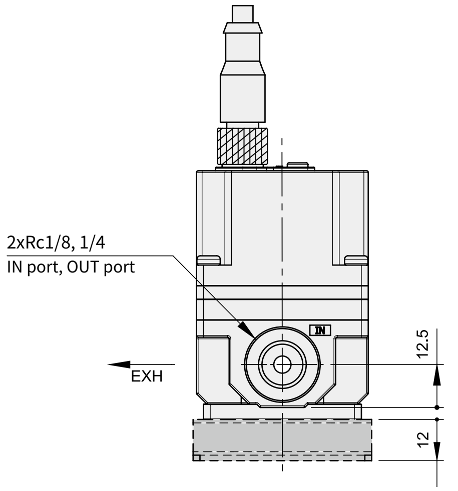


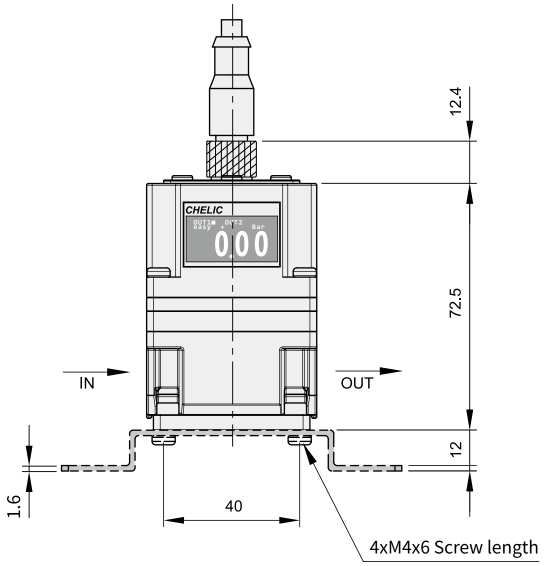


## CVTR10□□ Bracket

### Flat bracket- B

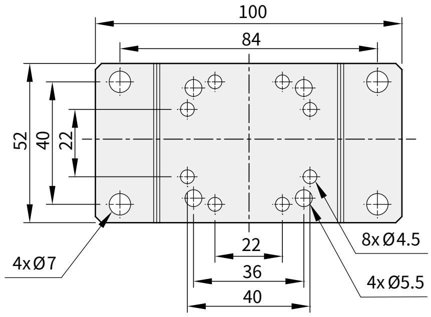

100
84
50
52
40
UNIT
SET
4-Ø7

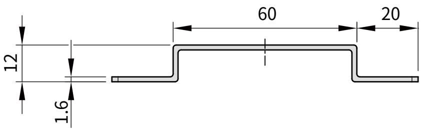

2xRc1/8, 1/4
IN port, OUT port
IN
EXH
12.5
12


CHELIC
OUT1 OUT2
easy Bar
0.00
12.4
72.5
IN
OUT
12
1.6
40
4xM4x6 Screw length

---

### Flat bracket- B Dimensions


100
84
52
40
22
8xØ4.5
4xØ7
22
36
40
4xØ5.5

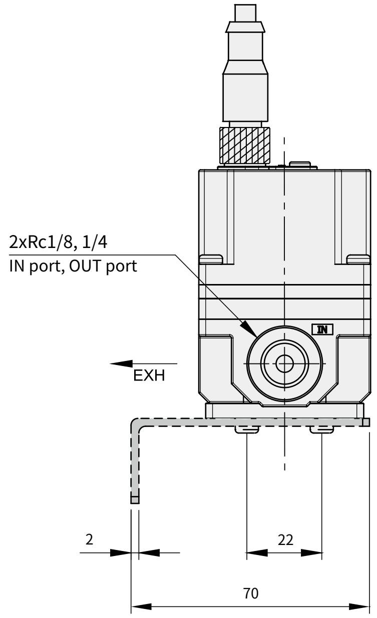


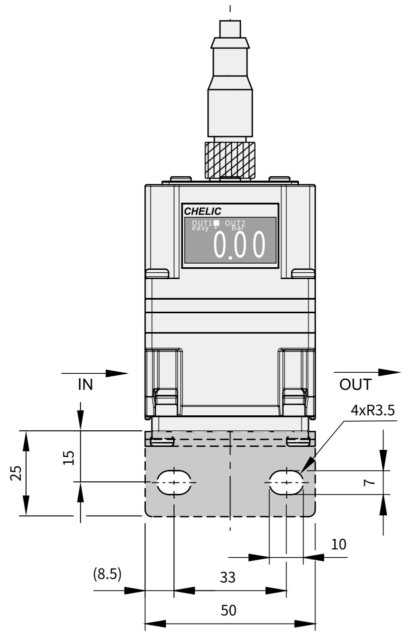
# CVTR series Electro-Pneumatic Regulator

## Dimensions

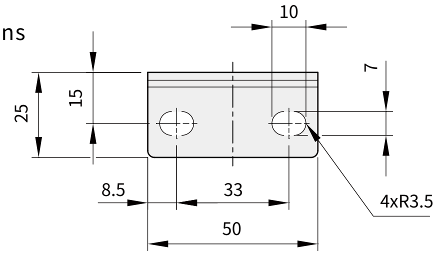
### CVTR10□□ Bracket

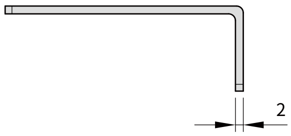
- L type bracket- L

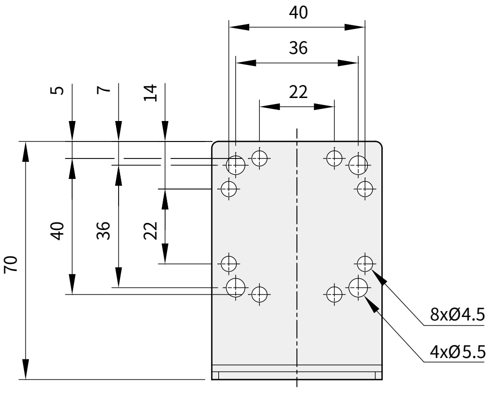

2xRc1/8, 1/4
IN port, OUT port
IN
EXH
2
22
70


CHELIC
OUT1 OUT2
easy Bar
0.00
IN
OUT
4xR3.5
25
15
7
10
(8.5)
33
50

- L type bracket- L Dimensions


10
7
25
15
8.5
33
4xR3.5
50



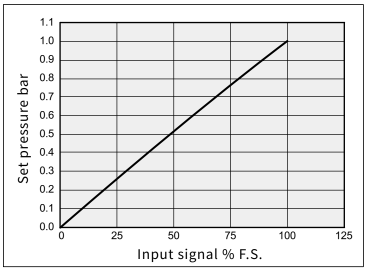

40
36
22
5
7
14
70
40
36
22
8xØ4.5
4xØ5.5

# CVTR series Electro-Pneumatic Regulator

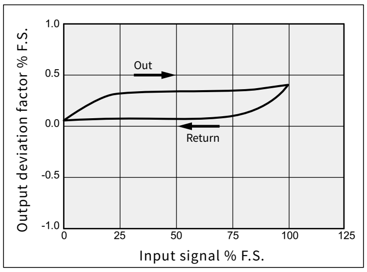
## Characteristics graph

## CVTR201□ series

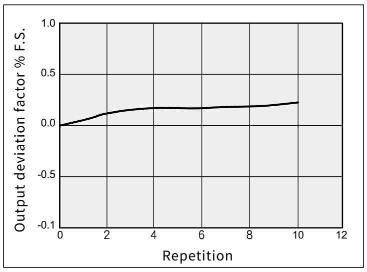
### Linearity



### Hysteresis

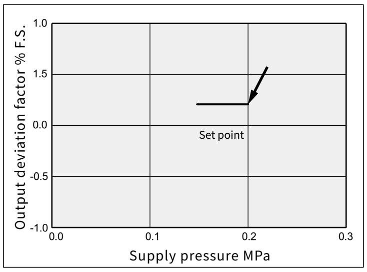


### Repeatability



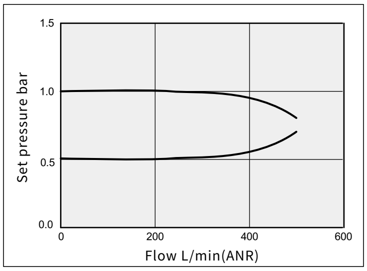
### Pressure characteristics

Set pressure: 0.5 bar



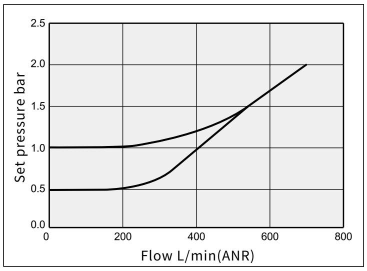
### Flow rate characteristics

Supply pressure:
2 bar



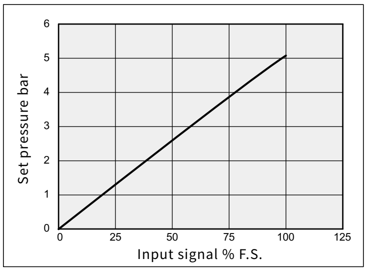
### Relief flow characteristics

Supply pressure:
2 bar

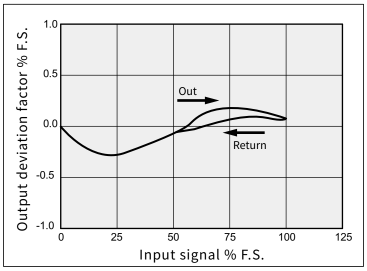


## CVTR205□ series

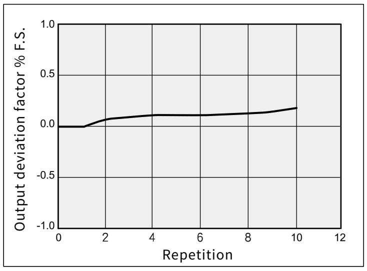
### Linearity



### Hysteresis

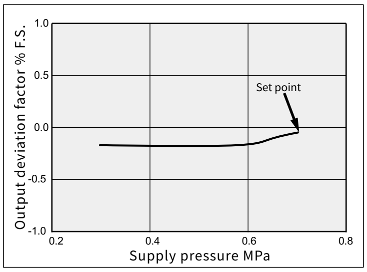


### Repeatability



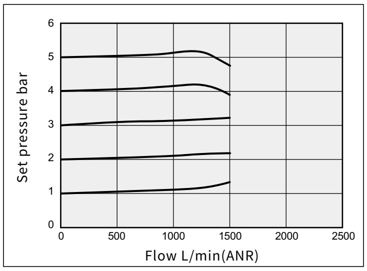
### Pressure characteristics

Set pressure: 2 bar



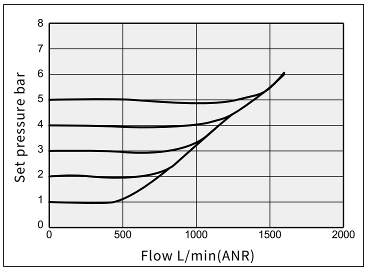
### Flow rate characteristics

Supply pressure:
7 bar



### Relief flow characteristics

Supply pressure:
7 bar

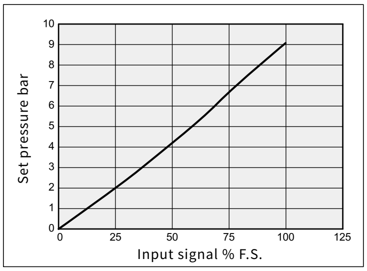


# CVTR series Electro-Pneumatic Regulator

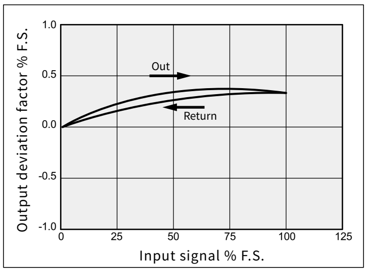
## Characteristics graph/ Dimensions

### CVTR209□ series

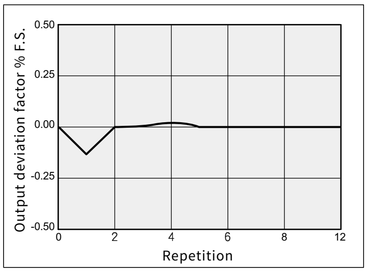
Linearity



Hysteresis

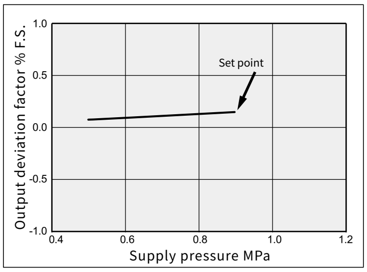


Repeatability



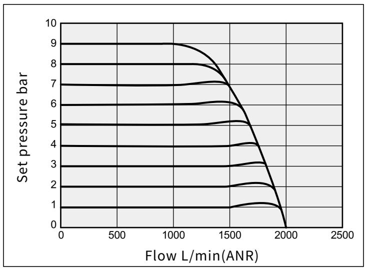
Pressure characteristics

Set pressure: 4 bar



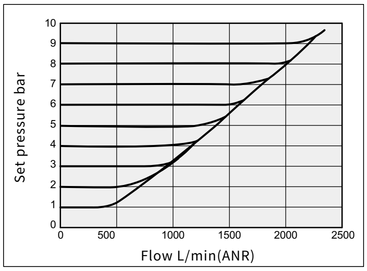
Flow rate characteristics

Supply pressure:
10 bar

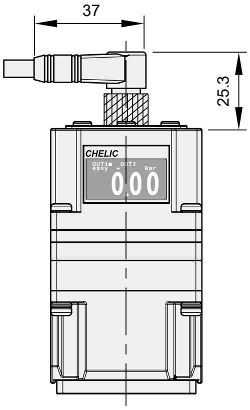


Relief flow characteristics

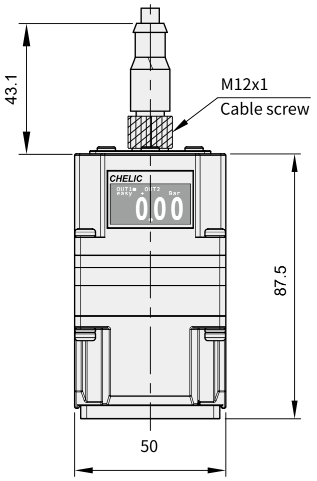
Supply pressure:
10 bar

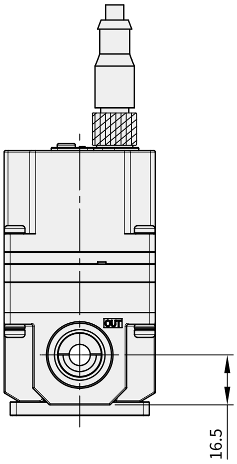


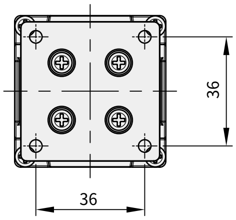
### CVTR20□□ Dimensions


37
25.3
CHELIC
0.00

Right angle connector

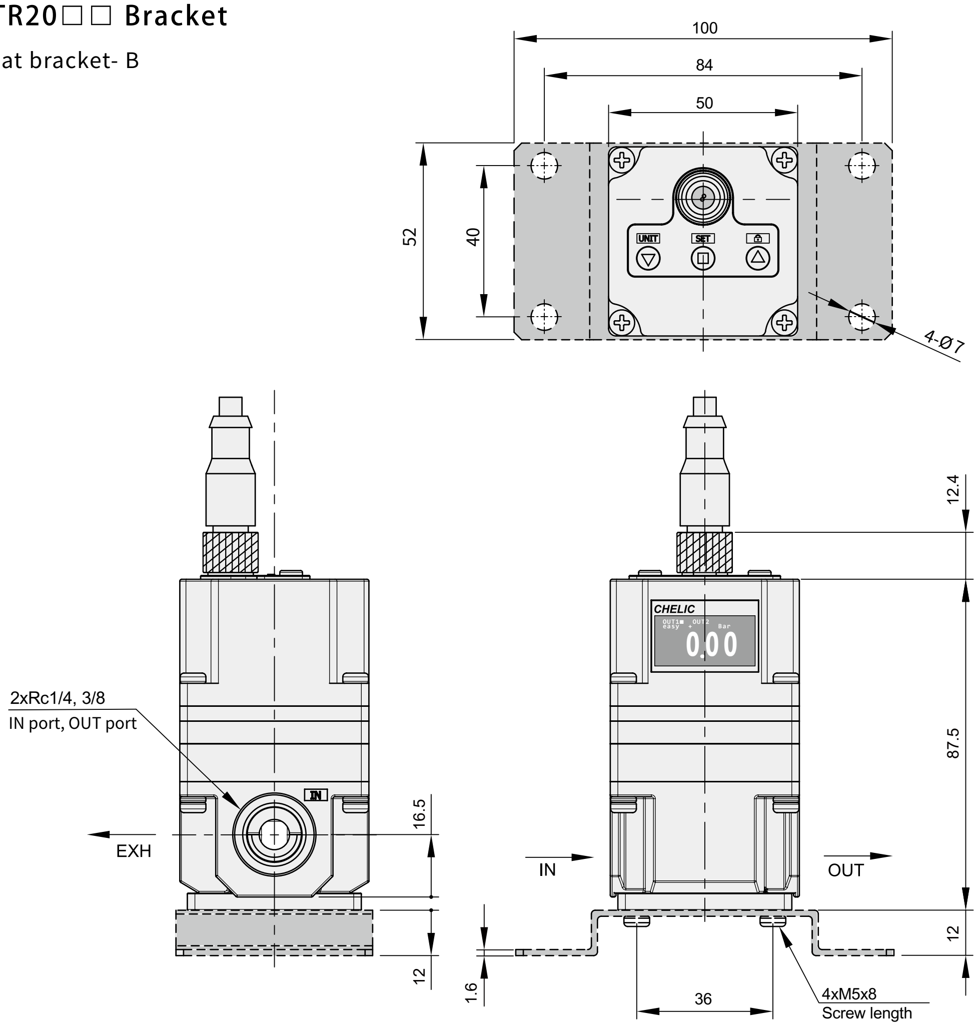

43.1
M12x1
Cable screw
CHELIC
0.00
87.5
50



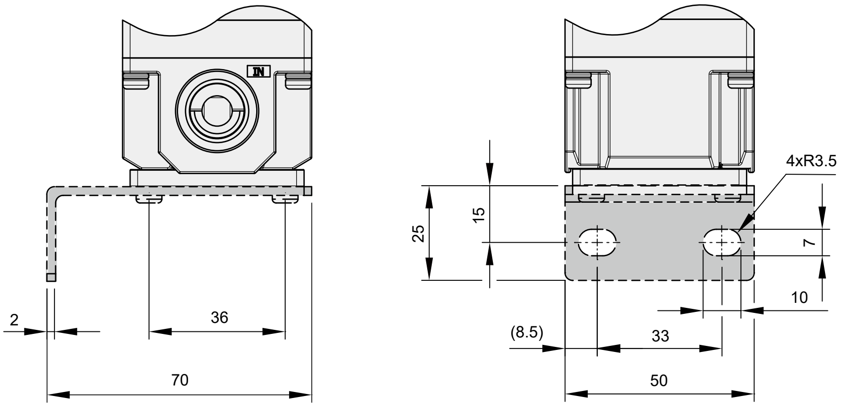


## CVTR20□□ Bracket

**Flat bracket- B**


100
84
50
52
40
UNIT
SET
4-Ø7
2xRc1/4, 3/8
IN port, OUT port
IN
EXH
16.5
12
1.6
CHELIC
OUT1 OUT2
easy
Bar
0.00
12.4
87.5
IN
OUT
12
36
4xM5x8
Screw length

**L type bracket- L**

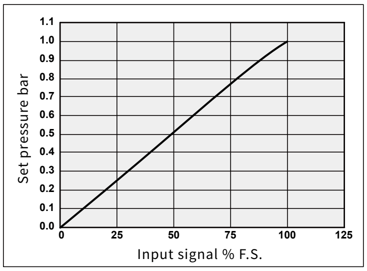

IN
2
36
70
25
15
4xR3.5
7
10
(8.5)
33
50

# CVTR series Electro-Pneumatic Regulator

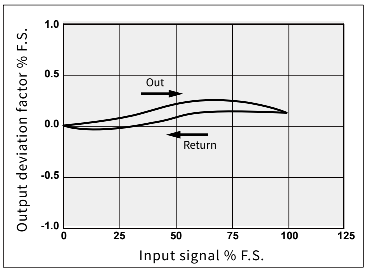
## Characteristics graph

### CVTR301□ series

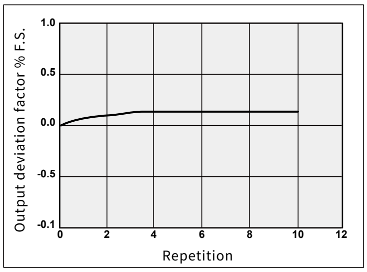
#### Linearity



#### Hysteresis

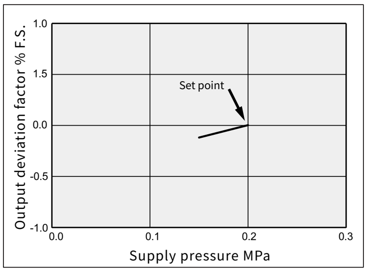


#### Repeatability



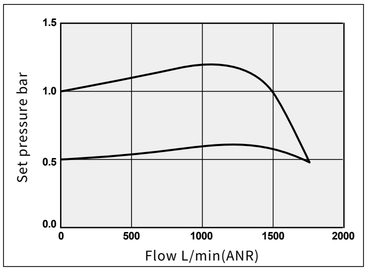
#### Pressure characteristics

Set pressure: 0.5 bar



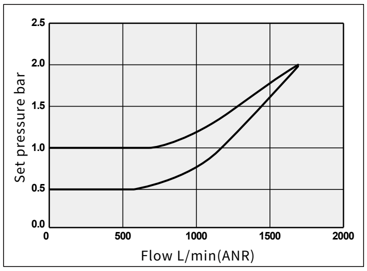
#### Flow rate characteristics

Supply pressure:
2 bar



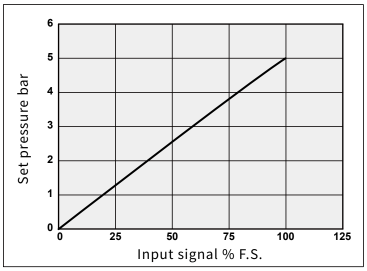
#### Relief flow characteristics

Supply pressure:
2 bar

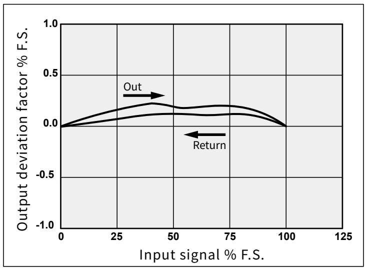


### CVTR305□ series

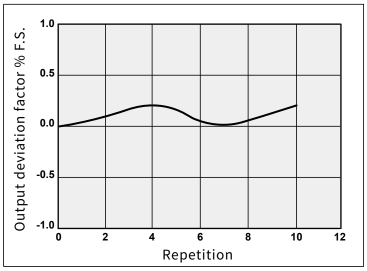
#### Linearity



#### Hysteresis

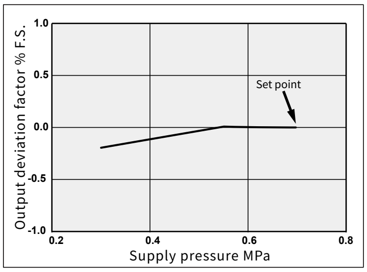


#### Repeatability



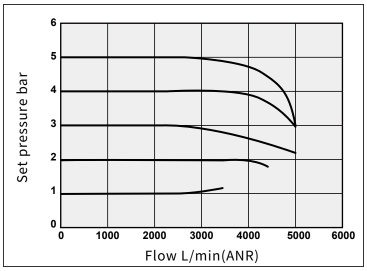
#### Pressure characteristics

Set pressure: 2 bar



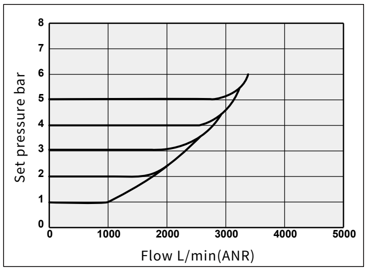
#### Flow rate characteristics

Supply pressure:
7 bar



#### Relief flow characteristics

Supply pressure:
7 bar



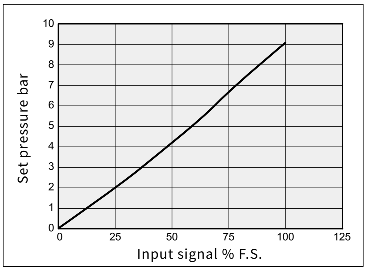
# CVTR series Electro-Pneumatic Regulator

## Characteristics graph/ Dimensions

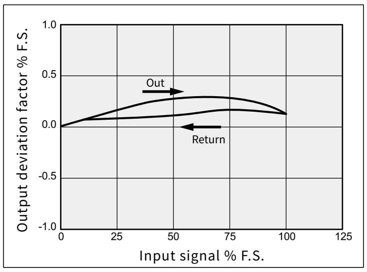
CHELIC

## ◐ CVTR309☐ series

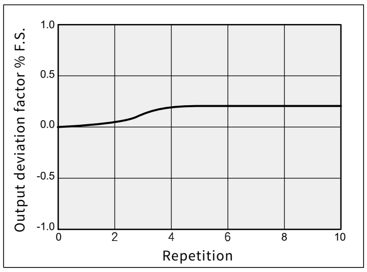
Linearity



Hysteresis

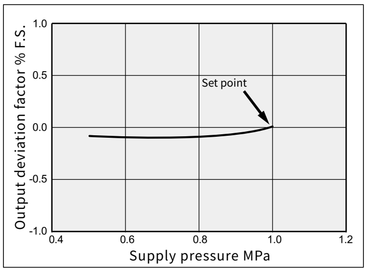


Repeatability



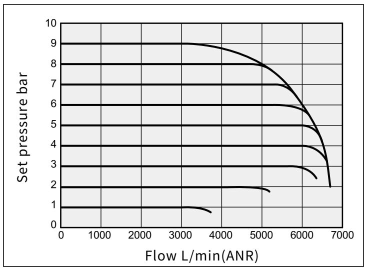
Pressure characteristics

Set pressure: 4 bar



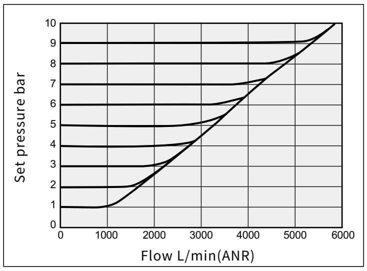
Flow rate characteristics

Supply pressure: 10 bar

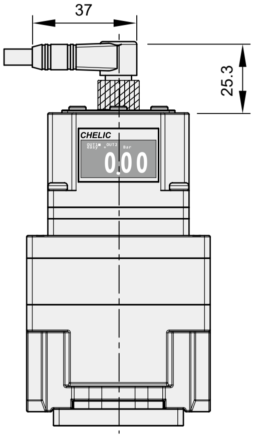


Relief flow characteristics

Supply pressure: 10 bar

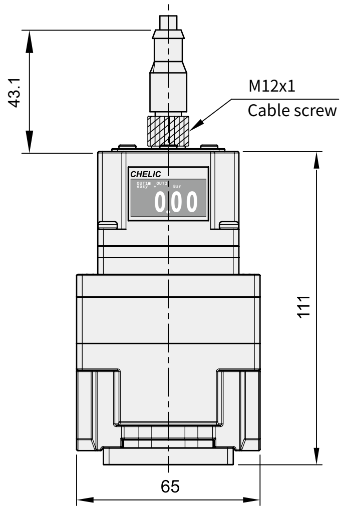


## ◐ CVTR30☐☐ Dimensions

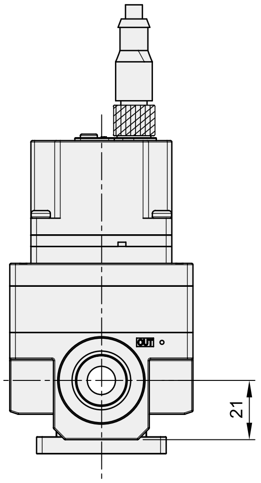


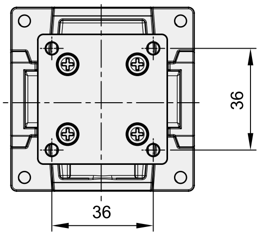
37
25.3
CHELIC
0.00

Right angle connector



43.1
M12x1
Cable screw
CHELIC
0.00
111
65



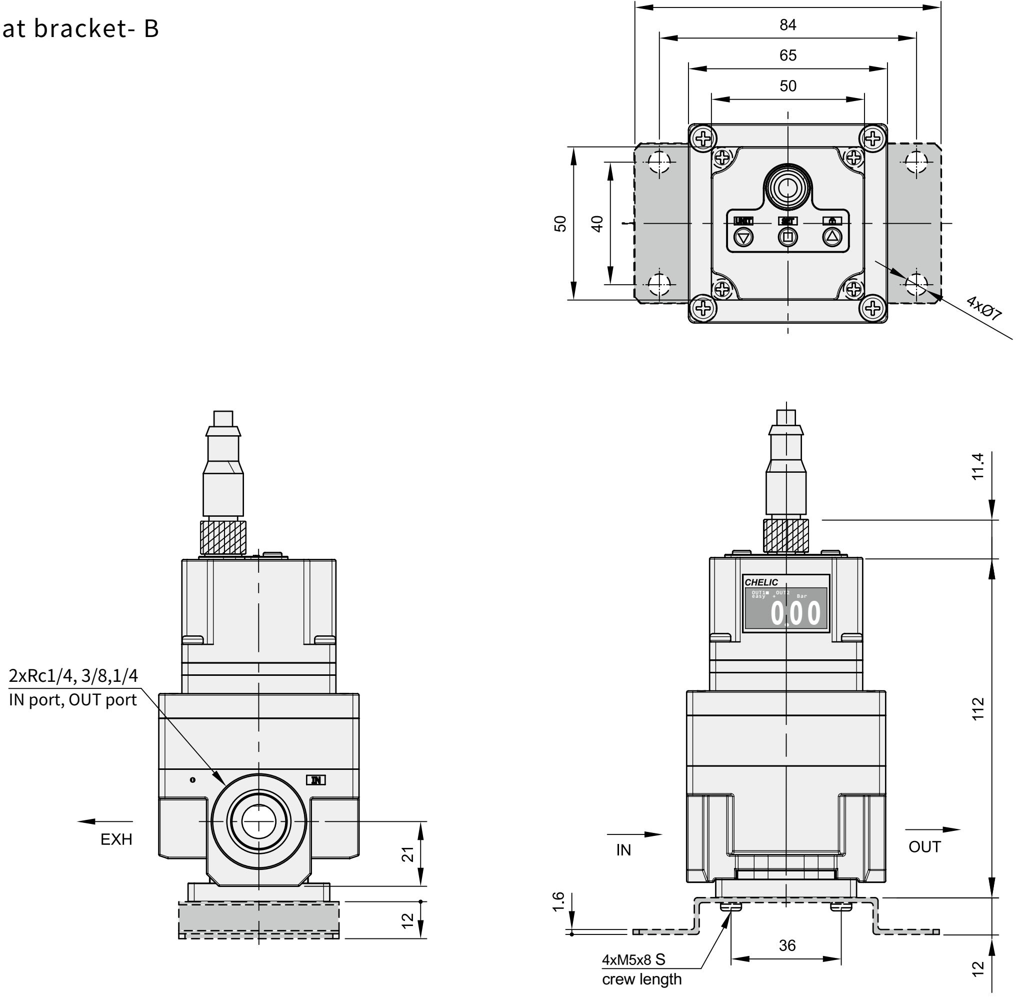


# CVTR series Electro-Pneumatic Regulator

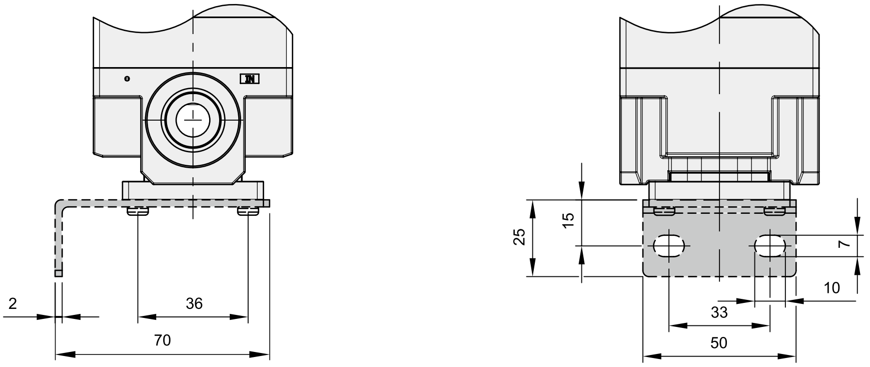
## Dimensions

### CVTR30□□ Bracket

- Flat bracket- B


100
84
65
50
50
40
4xØ7
11.4
CHELIC
0.00
112
2xRc1/4, 3/8,1/4
IN port, OUT port
IN
EXH
21
12
IN
OUT
1.6
36
4xM5x8 S
crew length
12

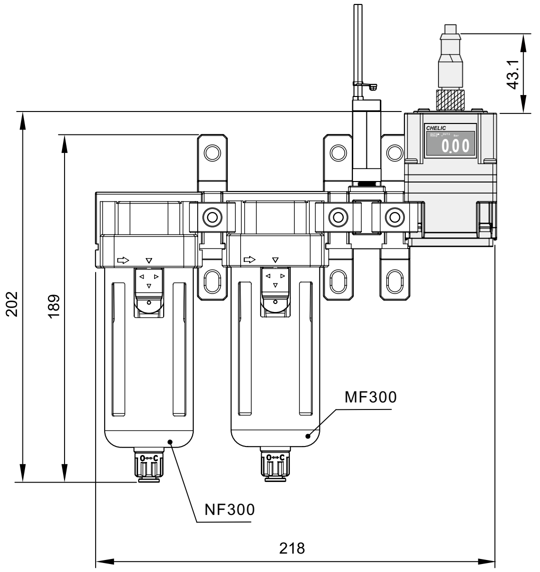
- L type bracket- L


IN
2
36
70
25
15
7
10
33
50

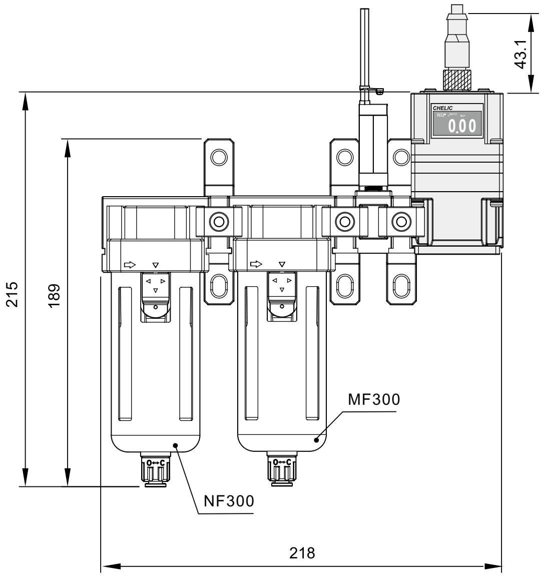
# CVTR series Electro-Pneumatic Regulator

## Dimensions(NF+MF)

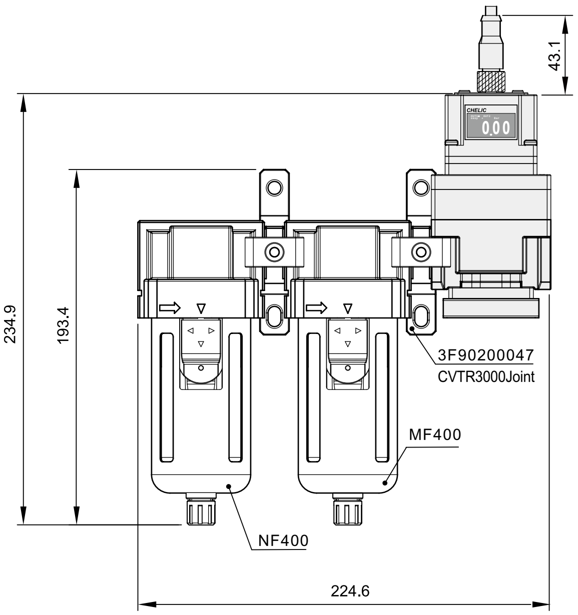
### CVTR1000 and filter combined size chart (NF+MF)


43.1
202
189
MF300
NF300
218

### CVTR2000 and filter combined size chart (NF+MF)


43.1
215
189
MF300
NF300
218

### CVTR3000 and filter combined size chart (NF+MF)

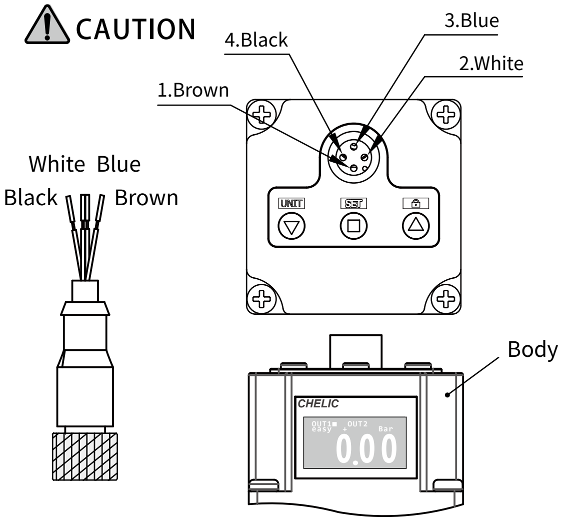

43.1
234.9
193.4
3F90200047
CVTR3000Joint
MF400
NF400
224.6

# General Cautions for CVTR series

## Specific Product Precautions

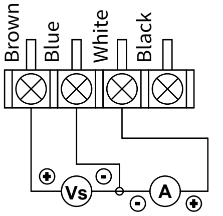
## Wiring

### ⚠ CAUTION



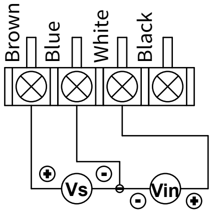
| Terminal No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Wire color | Brown | White | Blue | Black |
| Wiring | Power | Signal | COM | Monitor |

▼ **Electric current wiring**



Vs：Power supply
DC24V±10%
A：Input signal DC4~20mA

▼ **Voltage wiring**



Vs：Power supply
DC24V±10%
Vin : Input signal DC0~5V
DC0~10V

## Air supply

### ⚠ CAUTION

1. Install air filter near this product on the supply side. Select a filtration degree of 8 um or less
2. Compressed air containing large amounts of drainage can cause malfunction of this product and other pneumatic equipment. As a countermeasure install an aftercooler, air dryer or Drain Catch, etc.
3. If large amounts of carbon dust are generated by the compressor, it can accumulate inside this product and cause malfunction.

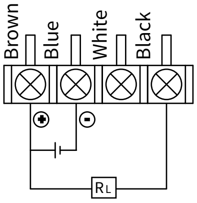
## Operating

### ⚠ CAUTION

1. Malfunction will be caused when the oil feeder connects on the supply side (IN) of the body. Please make the oil feeder link to output side (OUT) when oil is required by the end product.
2. When the power is off under pressurization, the pressure around output side (OUT) can be ensured. To stay at exhaust condition, please set the pressure lower, cut the power and exhaust remaining air via throttle.
3. When the sudden power cut occurs, the pressure around output side (OUT) can keep at the same level. Please be reminded that pressure will keep dropping until to the same level as atmosphere pressure when the pressure is open to the atmosphere.
4. If the pressure around input side cuts by power off, the solenoid valve will keep operating with sounds. Doing so will damage solenoid valve' s life; therefore, please always cut the pressure and also switch the power off.
5. Do not dismantle by yourself which may cause malfunction since all products were all set as specification before shipment.
6. The pressure might be changed due to air consumption at output side (OUT).
   The characteristic happens only in stillness mode.
7. For detailed instructions on the use of this product, please refer to the attached manual.
8. The brightness decline of the OLED screen is normal, not affect the functions of the product.

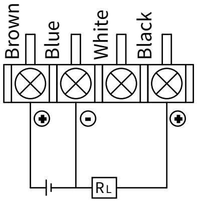
### ▶ Monitor output wiring

● NPN output



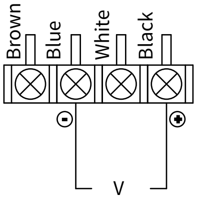
NPN output

● PNP output



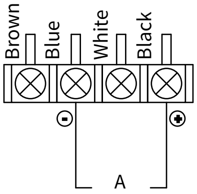
PNP output

● Analog output
DC0.5 ~ 4.5V



Monitor output voltage

● Analog output
DC4~20mA



Monitor output current

# CVAR series Electronic Vacuum Regulator

## Product Features

## Feature

- ● HD OLED display and user-friendly menu interface
- ● Adjusted continuously for air pressure
- ● Simplified system components, effectively reducing labor costs
- ● Realize remote control and program control
- ● Applicable fluid: air, nitrogen, argon, carbon dioxide

## Specification

| Item \ Model | | | CVAR2900 Note: 4 |
|---|---|---|---|
| Min. pressure Note: 1 | | kPa | Set pressure -13.3kPa |
| Max. pressure | | kPa | -101kPa |
| Pressure range setting | | kPa | -1.3 ~ -80kPa |
| Maximum supply flow | | L/min | 80(-30kPa) |
| Power | Voltage | | DC24V±10% |
| | Current consumption Note:2 | | Power supply voltage DC24V: 0.12Aor less |
| Input signal | Current type | | 4~20mA |
| | Voltage type | | DC0~5V, DC0~10V |
| Input impedance | Current type | | 0.25kΩor less Note:2 |
| | Voltage type | | about 75.75kΩ |
| Output signal (Display output) Note: 3 | Analog output | | DC1~5V(Load impedance: 20kΩ)<br>DC4~20mA(Load impedance: 0.3kΩ) |
| | Switch output | | NPN open collector output：Max. 30V, 80mA<br>PNP open collector output：Max. 30V, 80mA |
| Linearity | | | ±1%F.S.or less |
| Hysteresis | | | 0.5%F.S.or less |
| Repeatability | | | ±0.5%F.S.or less |
| Sensitivity | | | 0.2%F.S.or less |
| Temperature characteristics | | | 0.2%F.S./°Cor less |
| Output pressure indication | Accuracy | | ±2%F.S.±1digit or less |
| | Minimum unit | | MPa: 0.001, kgf/cm2: 0.01, bar: 0.01, psi: 0.1, kPa: 1 |
| Operating temperature range | | | 0 ~ 50°(No condensation) |
| Enclosure | | | IP65 |
| Weight | CVAR2900 | | 360g |

Note: 1. The minimum supplied vacuum pressure is the set pressure value to 13.3kPa
2. The circuit overcurrent data not included, input voltage is in
3. Analogue output and switch output is option. Switch output has NPN and PNP in option for users.
4. It's an uncontrollable area when pressure 0~-2.5kPa within precise range of zero point.

## Code of order

CVAR 29 0 2 - 1 1 2 N - B S

CVAR: CVAR series Electronic vacuum regulator

**Model**

| | |
|---|---|
| 29 | 2900 |

**Pressure range**

| | |
|---|---|
| 0 | -1.3~-80kPa |

**Port size**

| Model | Code | Port size | |
|---|---|---|---|
| | | 1/4 | 3/8 |
| 2900 | 2 | ● | - |
| | 3 | - | ● |

**Voltage**

| | |
|---|---|
| 1 | DC24V |

**Input signal**

| | |
|---|---|
| 1 | Current type DC4~20mA |
| 2 | Voltage type DC0~5V |
| 3 | Voltage type DC0~10V |

**Output signal**

| | |
|---|---|
| 1 | NPN output |
| 2 | PNP output |
| 3 | Analogue DC0.5~4.5V |
| 4 | Analogue DC4~20mA |

**Thread type**

| | |
|---|---|
| None | Rc |
| N | NPT |
| G | PF |

**Bracket**

| | |
|---|---|
| None | No |
| B | Flat bracket |
| L | L type bracket |

**Cable connector**

| | |
|---|---|
| None | No |
| S | Straight type 1.5m |
| H | Angle type 1.5m |

■ S Cable code: 850616010060
H Cable code: 850616010061

# CVAR series Electronic Vacuum Regulator

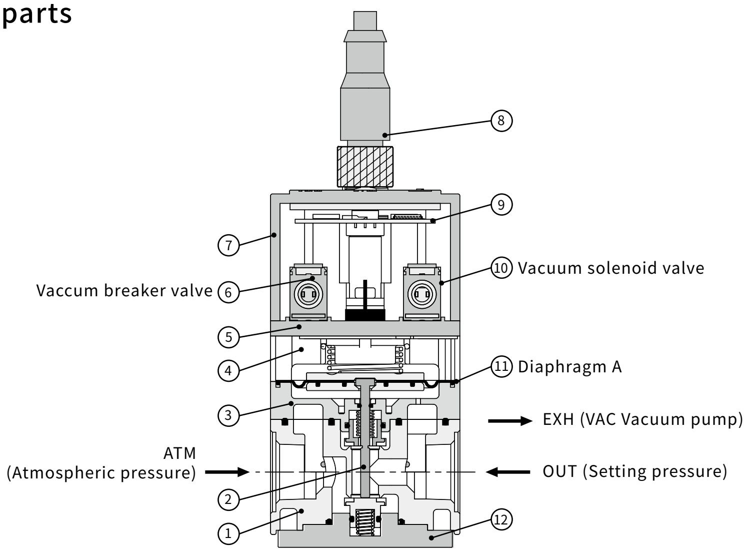
## Product Features

## Working principle

When the input signal rises, the air supply solenoid valve q turns ON, and the exhaust solenoid valve turns OFF. Therefore, supply pressure passes through the air supply solenoid valve and is applied to the pilot chambere. The pressure in the pilot chambere increases and operates on the upper surface of the diaphragm A.As a result, the air supply valve linked to the diaphragm opens, and a portion of the supply pressure becomes output pressure.This output pressure feeds back to the control circuit via the pressure sensor. Here, a correct operation functions until the output pressure is proportional to the input signal, making it possible to always obtain output pressure proportional to the input signal.

The correction happens here until vacuum pressure and input pressure consisting to proportional condition, therefore, the correction will have input signal and proportional vacuum pressure.

## Component parts

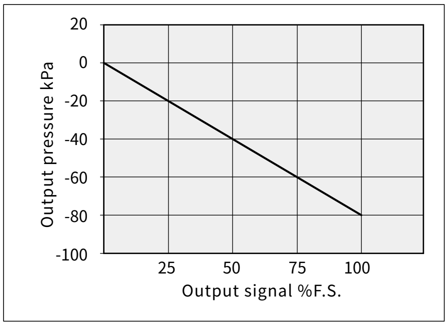


## Components and Material list

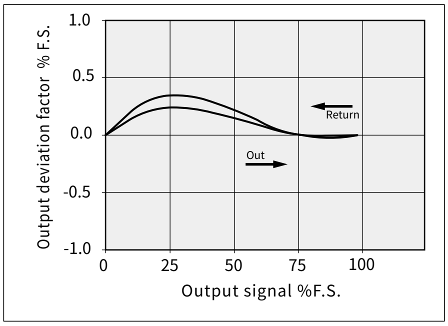
| No. | Item | Material |
|---|---|---|
| 01 | Body | Aluminum alloy |
| 02 | Valve assembly | Stainless steel |
| 03 | Valve guide cover | Aluminum alloy |
| 04 | Valve guide cover | Aluminum alloy |
| 05 | Valve guide | Aluminum alloy |
| 06 | Air supply valve | — |
| 07 | Cover | Plastic |
| 08 | Cable connector | PVC |
| 09 | Display panel | — |
| 10 | Exhaust valve | — |
| 11 | Diaphragmr | Rubber |
| 12 | Base | Aluminum alloy |

## CVAR2900 series

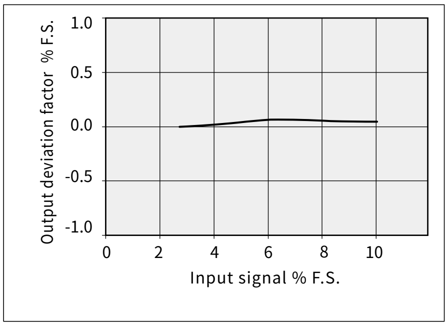
### Linearity



### Hysteresis

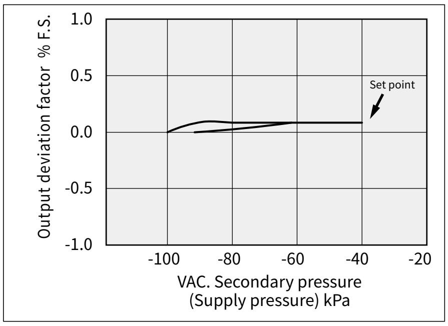


### Repeatability



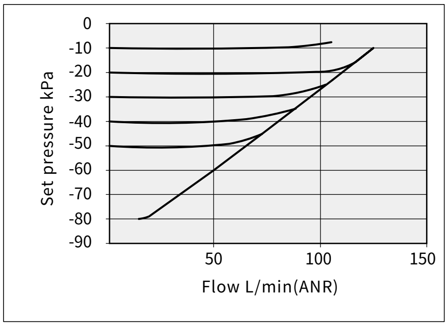
### Pressure characteristics

Set pressure: -20kPa



### Flow rate characteristics

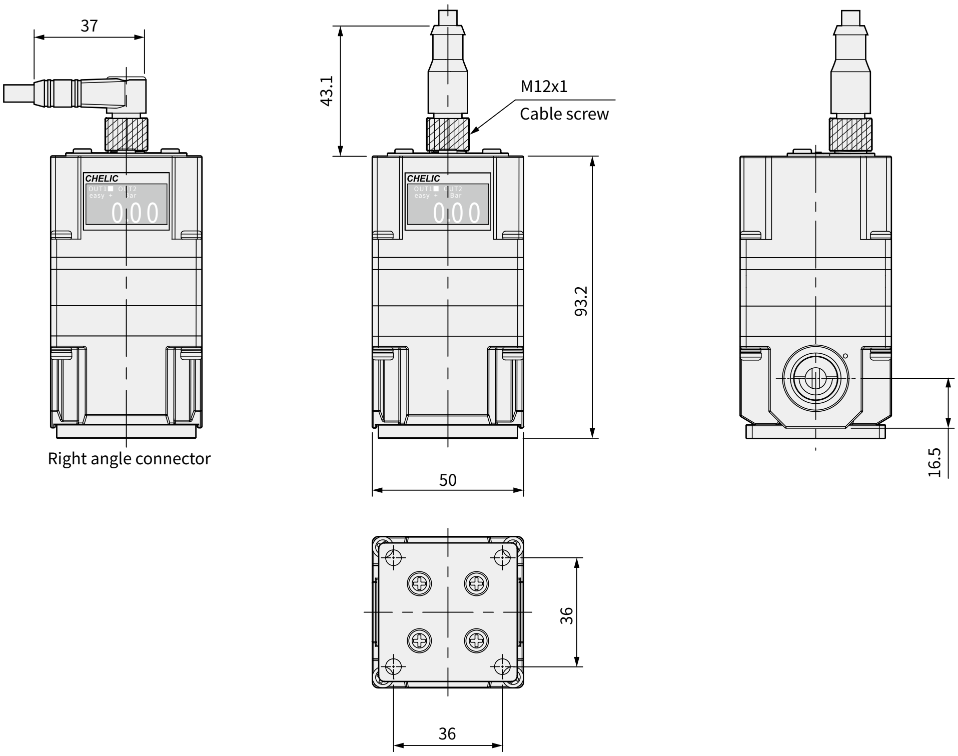
Supply vacuum pressure: -100 kPa



# CVAR series Electronic Vacuum Regulator

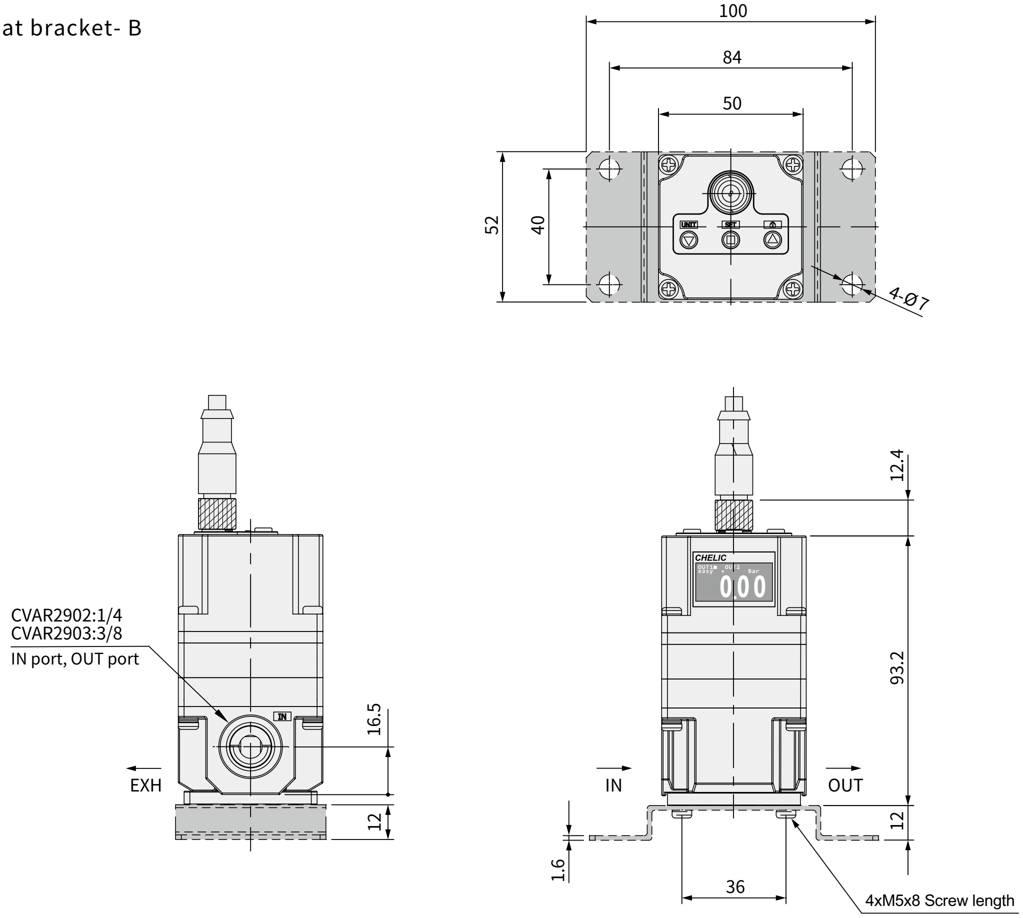
## Dimensions

### CVAR2900

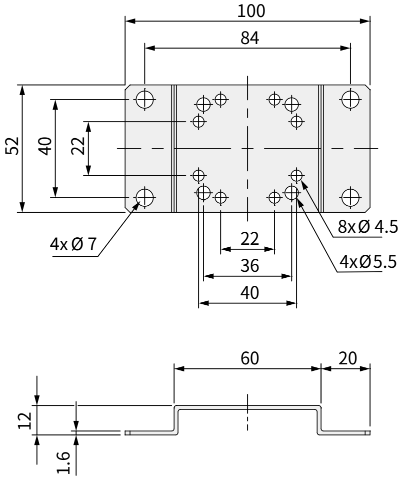

37
CHELIC
Right angle connector
43.1
M12x1
Cable screw
93.2
50
16.5
36
36

## CVAR2900 Bracket

### Flat bracket- B


100
84
50
52
40
UNIT
SET
4-Ø7
CVAR2902:1/4
CVAR2903:3/8
IN port, OUT port
IN
16.5
EXH
12
CHELIC
000
12.4
93.2
IN
OUT
12
1.6
36
4xM5x8 Screw length

### Flat bracket- B Dimensions

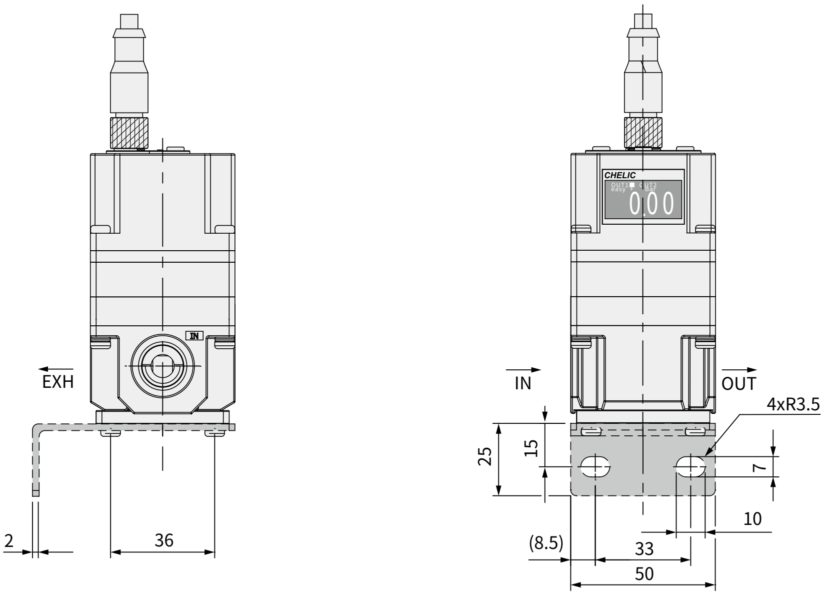

100
84
52
40
22
4xØ 7
8xØ 4.5
4xØ5.5
22
36
40
60
20
12
1.6

# CVAR series Electronic Vacuum Regulator

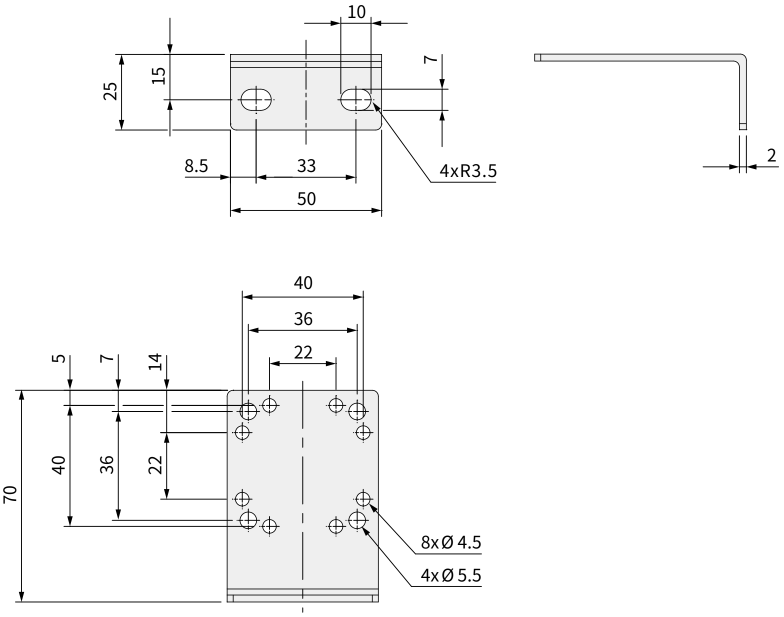
## Dimensions

### CVAR2900 Bracket

**L type bracket- L**


IN
EXH
2
36
CHELIC
0.00
IN
OUT
4xR3.5
25
15
7
10
(8.5)
33
50

**L type bracket- L Dimensions**

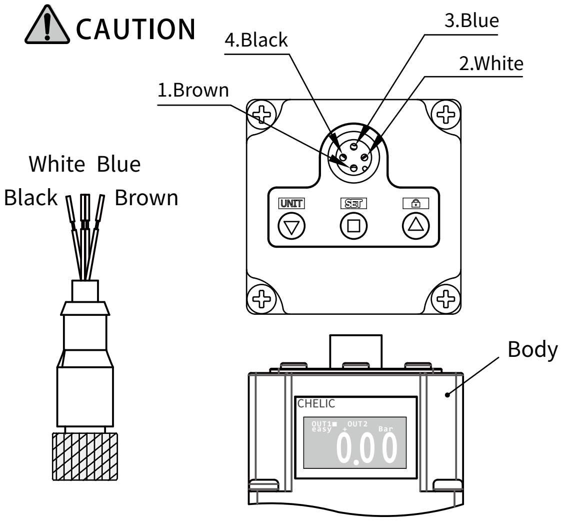

10
25
15
7
8.5
33
4xR3.5
50
2
40
36
22
5
7
14
70
40
36
22
8xØ 4.5
4xØ 5.5

# General Cautions for CVAR series

## Specific Product Precautions

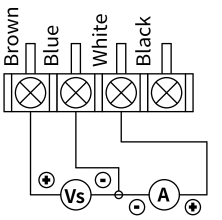
## Wiring

### ⚠CAUTION


4.Black
3.Blue
2.White
1.Brown
White Blue
Black Brown
UNIT
SET
Body
CHELIC
OUT1 OUT2
easy
Bar
0.00

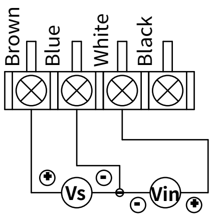
| Terminal No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Wire color** | Brown | White | Blue | Black |
| **Wiring** | Power | Signal | COM | Monitor |

▼ Electric current wiring


Brown
Blue
White
Black
Vs
A

Vs：Power supply
DC24V±10%
A：Input signal DC4~20mA

▼ Voltage wiring


Brown
Blue
White
Black
Vs
Vin

Vs：Power supply
DC24V±10%
Vin : Input signal DC0~5V
DC0~10V

## Air supply

### ⚠CAUTION

1. Install air filter near this product on the supply side. Select a filtration degree of 8 um or less
2. Compressed air containing large amounts of drainage can cause malfunction of this product and other pneumatic equipment. As a countermeasure install an aftercooler, air dryer or Drain Catch, etc.
3. If large amounts of carbon dust are generated by the compressor, it can accumulate inside this product and cause malfunction.

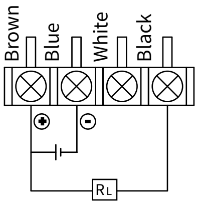
## Operating

### ⚠CAUTION

1. Malfunction will be caused when the oil feeder connects on the supply side (IN) of the body. Please make the oil feeder link to output side (OUT) when oil is required by the end product.
2. When the power is off under pressurization, the pressure around output side (OUT) can be ensured. To stay at exhaust condition, please set the pressure lower, cut the power and exhaust remaining air via throttle.
3. When the sudden power cut occurs, the pressure around output side (OUT) can keep at the same level. Please be reminded that pressure will keep dropping until to the same level as atmosphere pressure when the pressure is open to the atmosphere.
4. If the pressure around input side cuts by power off, the solenoid valve will keep operating with sounds. Doing so will damage solenoid valve' s life; therefore, please always cut the pressure and also switch the power off.
5. Do not dismantle by yourself which may cause malfunction since all products were all set as specification before shipment.
6. The pressure might be changed due to air consumption at output side (OUT).
   The characteristic happens only in stillness mode.
7. For detailed instructions on the use of this product, please refer to the attached manual.
8. The brightness decline of the OLED screen is normal, not affect the functions of the product.

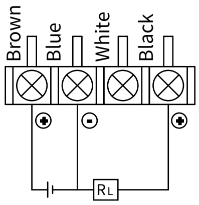
### Monitor output wiring

● NPN output


Brown
Blue
White
Black
RL

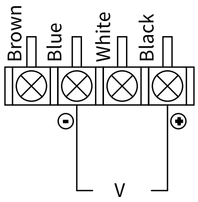
NPN output

● PNP output


Brown
Blue
White
Black
RL

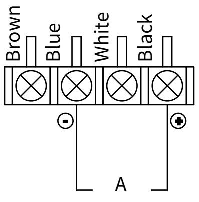
PNP output

● Analog output
DC1 ~ 5V


Brown
Blue
White
Black
V

Monitor output voltage

● Analog output
DC4~20mA


Brown
Blue
White
Black
A

Monitor output current

# CVFR series Mini electro-pneumatic regulator

## Product features

### Feature

- High repeatability at ±3 %F.S., linearity at ±1 %F.S.
- 0.5-second response speed to control the fast flow rate precisely.
- High durability in high force pressure.
- A dual-color display.
- Mini and thin for a narrow space equipment.

### Specification

| Item \ Model | | | CVFR | |
|---|---|---|---|---|
| **Flow rate** | | | 50 | 100 |
| **Port size** | | | Ø8, PT1/4 | |
| Measure fluid | | | Air, nitrogen Note 2 | |
| Flow unit Note: 1 | Display | | 2 color LCD | |
| | Displayable range | L/min | 0~50 | 0~100 |
| | Min. display unit | L/min | 0.1 | |
| Accumulated pulse flow function | Displayable range | L | 999999.9 | |
| | Min. display unit | L | 0.1 | |
| Power Type | Voltage | | DC24V(±10%) | |
| Current consumption | | | 250mA or less Note 5 | |
| Response time | | | 50ms or less | |
| **Controlled** Note 3 | Operating range | | 3~100%F.S. | |
| | Response time | | Set within ±5%F.S. within 1 second | |
| | Linearity | | within ±3%F.S. | |
| | Repeatability | | within ±1%F.S. | |
| | **Pressure characteristics** | | within ±5%F.S. | |
| | Temperature characteristics | | within ±2%F.S/°C (15~35°C , 25°C base) | |
| Environment | Min. operating pressure | MPa | 0.1 | |
| | Max. operating pressure | MPa | 0.7 | |
| | Proof pressure | MPa | 1.0 | |
| | Ambient of fluid temperature and humidity | | 0~50°C、90%RH or less | |
| | Operating temperature range | | 0~50°C (No condensation) | |
| **Input signal** | **Analog voltage** | | 0~5V DC(10kΩ) / 0~10VDC(6.7kΩ) Switchable | |
| | **Current voltage** | | 4~20mADC(250Ω) | |
| **Output signal** Note 4 | VN | | Voltage output: 1~5V (Load Impedance: 50kΩ)<br>Error output NPN open collector output (load 50mA or less, voltage drop 2.4V or less) | |
| | VP | | Voltage output: 1~5V (Load Impedance: 50kΩ)<br>Error output PNP open collector output (load 50mA or less, voltage drop 2.4V or less) | |
| | NN | | Switch output NPN open collector output (load 50mA or less, voltage drop 2.4V or less)<br>Error output NPN open collector output (load 50mA or less, voltage drop 2.4V or less) | |
| | PP | | Switch output PNP open collector output (load 50mA or less, voltage drop 2.4V or less)<br>Error output PNP open collector output (load 50mA or less, voltage drop 2.4V or less) | |
| Wiring | | | Cable Connector X 5 Core (QD) | |
| Enclosure | | | IP40 | |
| Circuit protection Note: 6 | | | Reverse power connect protection, Output reverse connection protection | |
| Weight | | g | 160 | |

Note: 1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 ° C or colder),and oil mist filter (maximum oil concentration: 0.1 mg/m$^3$) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 ° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.

# CVFR series Mini electro-pneumatic regulator

## Code of order

**CVFR - 101 - C08 - 1 - VN - B - S**

① ② ③ ④ ⑤ ⑥

①

| Type | Mark | Flow(L/min) |
|---|---|---|
| CVFR | 500 | 50 |
| | 101 | 100 |

②

| Mark | Port Size | CVFR | |
|---|---|---|---|
| | | 500 | 101 |
| C08 | Ø8 | ● | ● |
| P02 | PT1/4 | ● | ● |

③

| Mark | Input signal |
|---|---|
| 1 Note: 1 | Analog voltage 0-5V<br>Analog voltage 0-10V |
| 2 | Analog current 4-20mA |

- 1. Voltage output (V) Two voltages can be selected from the menu (standard setting is 0-10V)

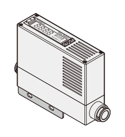
④

| Mark | Output signal |
|---|---|
| VN | Analog 0.5~4.5V, Error (NPN) |
| VP | Analog 0.5~4.5V, Error (PNP) |
| NN | Switch (NPN), Error (NPN) |
| PP | Switch (PNP), Error (PNP) |

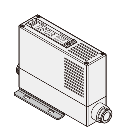
⑤

| Mark | CVFR |
|---|---|
| None | No bracket |
| B | Flat bracket |
| L | L type bracket |

● Image

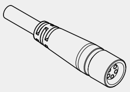
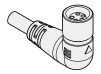


Flat bracket



L type bracket

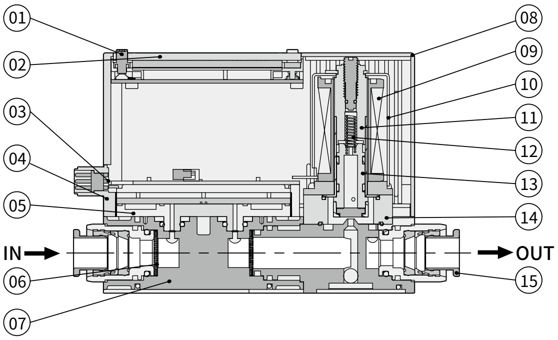
⑥

| Mark | Cable Connector | Image |
|---|---|---|
| None | Without cable | — |
| S | Straight type 2m |  |
| H | Angle type 2m |  |

# CVFR series Mini electro-pneumatic regulator

## Product features, Dimensions

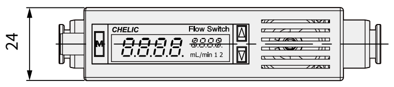
### Internal structure

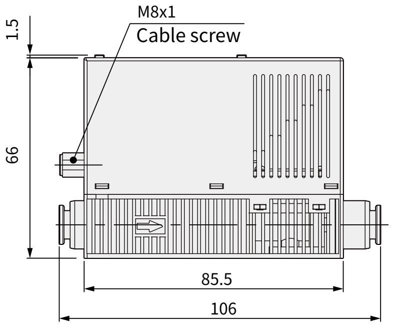

01
02
03
04
05
IN
06
07
08
09
10
11
12
13
14
OUT
15

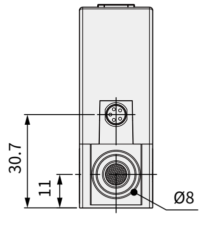
### Components and material list

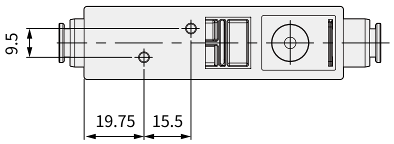
| No. | Item | Material |
|---|---|---|
| 01 | Bottom | Silicone |
| 02 | Acrylic display frame | Acrylic |
| 03 | QD transfer circuit board | PCB |
| 04 | Cover of sensor module | ABS |
| 05 | Flow sensor module | PCB |
| 06 | Fairing board | Stainless steel |
| 07 | Main body | PBT |
| 08 | Cover | PBT |
| 09 | Electromagnetic coil | - |
| 10 | Coil Housing | SPCE |
| 11 | Coil insert bushing | SUS |
| 12 | Spring | SUS |
| 13 | Spring bushing | SUS |
| 14 | Valve guide | PBT |
| 15 | Fitting assembly | Brass |

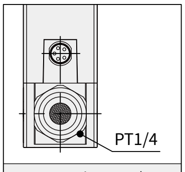
### Dimensions


24
CHELIC
Flow Switch
M
8.8.8.8.
8.8.8.8.
mL/min 1 2


1.5
M8x1
Cable screw
66
85.5
106







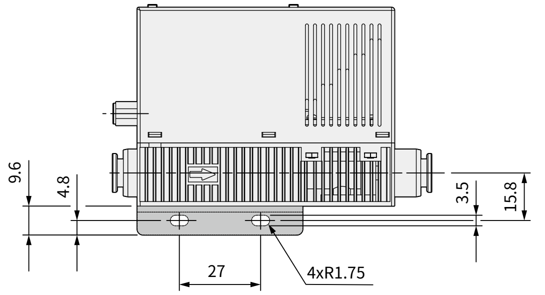
Port size PT1/4

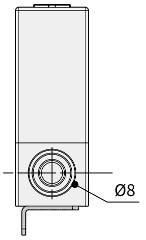
# CVFR series Mini electro-pneumatic regulator

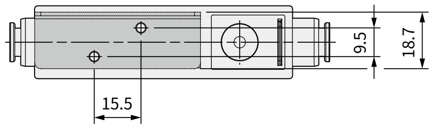
## Dimensions

## CVFR Bracket (option)

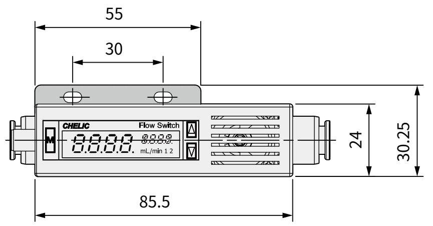
### Flat bracket-B

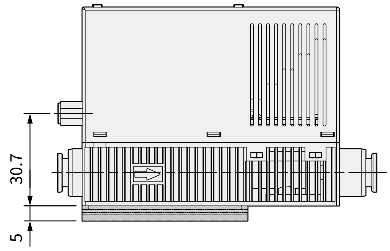

9.6
4.8
3.5
15.8
27
4xR1.75

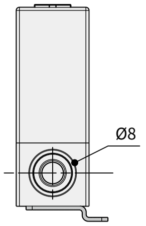


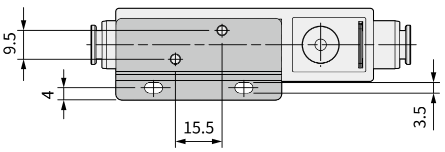


### L type bracket-L


55
30
CHELIC
Flow Switch
M
8.8.8.8.
8.8.8.8.
mL/min 1 2
24
30.25
85.5



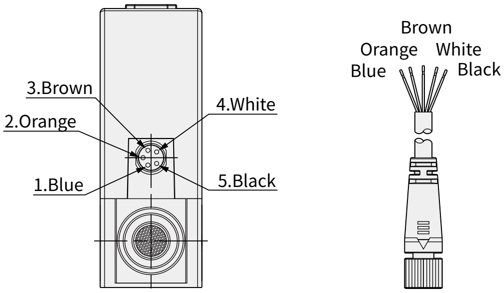




# CVFR series Mini electro-pneumatic regulator

## Wire connector

### Switch output (Mark: NN、PP)

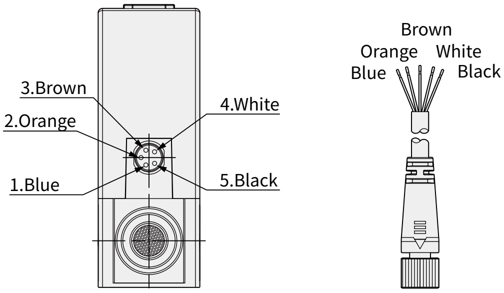

3.Brown
2.Orange
1.Blue
4.White
5.Black
Brown
Orange
White
Blue
Black

| PIN | Color | Specification |
|---|---|---|
| 1 | Blue | Power － (GND) |
| 2 | Orange | Voltage input: 0-5V/0-10V (Switchable)<br>Current input: 4-20mA |
| 3 | Brown | Power ＋ ( 24V ) |
| 4 | White | CH1(Switch output: max50mA) |
| 5 | Black | CH2(Error output: max50mA) |

※The cable connector also has a angle type with connector is downward lead (OUT).

※The cable connector cannot be rotated. It will cause damaged if it rotated hard.

### Analog output (Mark: VN、VP)


3.Brown
2.Orange
1.Blue
4.White
5.Black
Brown
Orange
White
Blue
Black

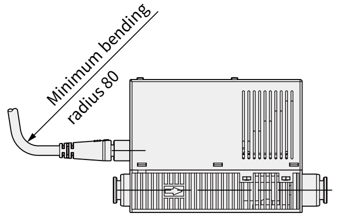
| PIN | Color | Specification |
|---|---|---|
| 1 | Blue | Power － (GND) |
| 2 | Orange | Voltage input: 0-5V/0-10V (Switchable)<br>Current input: 4-20mA |
| 3 | Brown | Power ＋ ( 24V ) |
| 4 | White | Voltage output: 1-5V |
| 5 | Black | CH2(Error output: max50mA) |

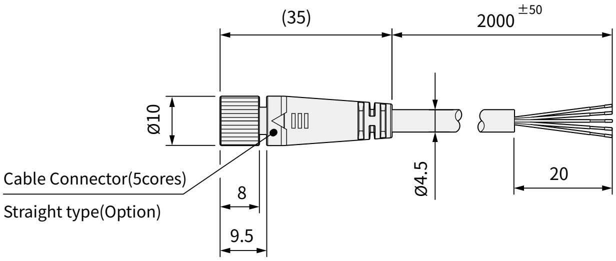
※The cable connector also has a angle type with connector is downward lead (OUT).

※The cable connector cannot be rotated. It will cause damaged if it rotated hard.

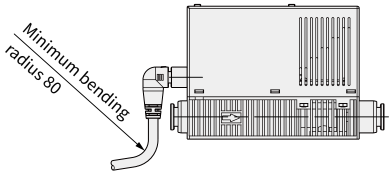
### Fitting size graph (option)

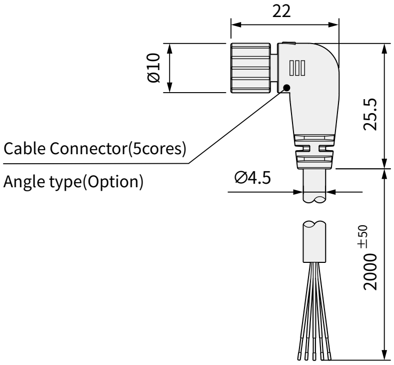
#### Straight type -S


Minimum bending
radius 80


(35)
2000 ±50
Ø10
Ø4.5
20
8
9.5
Cable Connector(5cores)
Straight type(Option)

#### Angle type -H


Minimum bending
radius 80


22
Ø10
25.5
Ø4.5
2000 ±50
Cable Connector(5cores)
Angle type(Option)

# CMT series Compact Electro-Pneumatic Regulator

## Product features

CHELIC

## Feature

- High-speed response time (0.2sec when no load), fast action, high precision and precise control.
- Compact design only 15mm thickness, light weight manifold can save space.
- System components are simplified, effectively reducing labor costs.
- Use network communication to achieve remote control for the trend of future automation.

## Specification

| Item \ Model | | | CMTA501 | CMTA505 | CMTA509 |
|---|---|---|---|---|---|
| | | | CMTB501 | CMTB505 | CMTB509 |
| Fluid | | | Air | | |
| Min. pressure | | | Set pressure 100 kPa | | |
| Max. pressure | | kPa | 200 | 1000 | |
| Pressure range setting | | kPa | 5~100 | 5~500 | 5~900 |
| Power | Voltage | | DC24V±10% | | |
| | Current consumption | | Power supply voltage DC24V type:0.12A or less | | |
| Input signal | Current type | | DC4~20mA | | |
| | Voltage type | | DC0~5V, DC0~10V | | |
| Input impedance | Current type | | about 240Ω | | |
| | Voltage type | | about 100kΩ | | |
| Output signal (Display output) | Analog output | | DC 1~5V (Load impedance: 1KΩ or above)<br>Output accuracy within ±6% (F.S.) | | |
| | Current type | | DC4~20mA | | |
| Linearity | | | ±1% or less (F.S.) | | |
| Hysteresis | | | ±1% or less (F.S.) | | |
| Repeatability | | | ±0.5% or less (F.S.) | | |
| Sensitivity | | | 0.2% or less (F.S.) | | |
| Temperature characteristics | | | Within ±3%F.S.(The secondary atmospheric release) | | |
| Output pressure indication | Accuracy | | within ±5%F.S. | | |
| | Minimum unit | | ±0.2%F.S../ ° C or less (15~35, base 25) | | |
| Operating temperature range | | ° c | 0 ~ 50° (No condensation) | | |
| Weight Note: 1 | | g | 88(Without option) | | |

Note：1. Unit weight
Total weight for manifold ≦ number of manifoldx88+102 (End plate weight)+DIN rail bracket weight.
2. To set pressure range to zeroing: the max. and target pressure output can be adjusted from min. unit.
3. The characteristics above are only for static condition. The pressure will be changed when the air is consumed at output side.
4. Please refer to P.1-4.40 for CMT precautions.

# CMT series Compact Electro-Pneumatic Regulator

## Model selection order

### Sequence 1 Flow range selection

**Model specification selection**

Please refer to the following table as the basis for model selection

| Model | Single unit | Manifold type |
|---|---|---|

### Sequence 2 Pressure range selection

Please refer to the table below to select the pressure range, pay attention to the maximum supply pressure and the set pressure range.

| Min. pressure | Set pressure 100 kPa | | |
|---|---|---|---|
| Max. pressure | 200kPa | 1000kPa | |
| Set pressure range | 5~100kPa | 5~500kPa | 5~900kPa |

### Sequence 3 Power supply voltage

| Power supply | Voltage | DC24V±10% |
|---|---|---|
| | Current consumption | 0.12A or below |

※This product is limited to DC24V only, please use the correct voltage to avoid the damaged.

### Sequence 4 Input signal selection

With voltage type and current type, please confirm the input signal and select the corresponding input type to prevent the product from being unable to start or damage

| Input signal | Current type | DC4~20mA(Input impedance: about240Ω) |
|---|---|---|
| | Voltage type | DC0~5V(Input impedance: about100kΩ) |
| | | DC0~10V(Input impedance: about100kΩ) |

### Sequence 5 Output signal selection

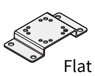
Output signal function

Monitor the pressure changes

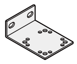
Analog voltage — Analog voltage type for short distance.

Current voltage — Current voltage type for long distance.

### Sequence 6 Accessory options

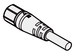

Flat bracket

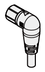
Easy to lock on flat surface


L type bracket

Easy to lock on vertical surface

### Sequence 7 Cable connector


Straight type


Angle type

Suitable for restricted space

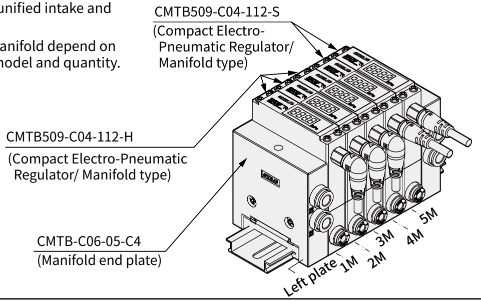
**Ordering Expression**

1.CMTB509-C04-112-H.........3pcs(1M, 2M, 3M)
+
2.CMTB509-C04-112-S.........2pcs(4M, 5M)
+
3.CMTB-C06-05-C4........1set

*Merge from the left plate first then place in order.

*Manifold type should be same pressure ranges due to the unified intake and exhaust.

*Lateral plate for manifold depend on the the manifold model and quantity.


CMTB509-C04-112-S
(Compact Electro-Pneumatic Regulator/ Manifold type)
CMTB509-C04-112-H
(Compact Electro-Pneumatic Regulator/ Manifold type)
CMTB-C06-05-C4
(Manifold end plate)
Left plate
1M
2M
3M
4M
5M

# CMT series Compact Electro-Pneumatic Regulator

## Code of order

### Code of order - CMTA/ CMTB

**CMT A 50 9 - C04 - 1 1 2 - □ - S**

① ② ③ ④ ⑤ ⑥ ⑦

①

| Mark | Type |
|---|---|
| A | Single unit |
| B | Manifold type |

②

| Mark | Pressure Range |
|---|---|
| 1 | 100kPa |
| 5 | 500kPa |
| 9 | 900kPa |

※Please contact CHELIC for customized type 100kPa

③

| Mark | Power Supply Voltage |
|---|---|
| 1 | DC24V |

④

| Mark | Display Output |
|---|---|
| 1 | Current type<br>DC4~20mA |
| 2 | Voltage type<br>DC0~5V |
| 3 | Voltage type<br>DC0~10V |

⑤

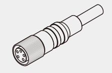
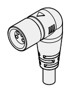
| Mark | Display Output |
|---|---|
| 1 | Analog DC1~5V |
| 2 | Analog DC4~20mA |

⑥

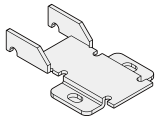
| Mark | Type |
|---|---|
| None | No bracket |
| B | Bracket |

Note: A single unit use only

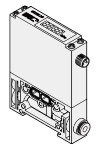
⑦

| Mark | Cable Connector | Image |
|---|---|---|
| None | Without cable | — |
| S | Straight type 2m |  |
| H | Angle type 2m |  |

● Image



B-Bracket



Single unit

---

### Code of order - CMTB Side end plate

**CMTB - C06 - 07 C4**

⑧ ⑨ ⑩

⑧

| Mark | Model |
|---|---|
| B | Side end plate |

⑨

| Mark | Manifold no. |
|---|---|
| 01 | 1 M |
| 02 | 2 M |
| ⋮ | ⋮ |
| 10 | 10 M |

⑩

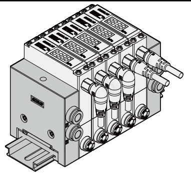
| Mark | Bracket |
|---|---|
| None | No bracket |
| C3 | Rail bracket |
| C4 | Rail bracket<br>(Including rail) |

Note1: Please refer to -DIN rail length reference table
Note2: CMTB manifold type use only

● DIN rail length reference table

| Manifold Quantity | Length |
|---|---|
| 1~2 M | 107.1mm |
| 3~4 M | 142.8mm |
| 5~6 M | 178.5mm |
| 7~8 M | 214.2mm |
| 9~10 M | 249.9mm |

● Image

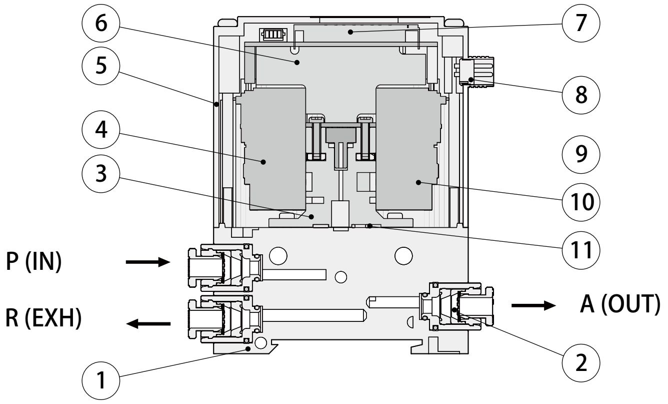


Manifold type

# CMT series Compact Electro-Pneumatic Regulator

## Product Features

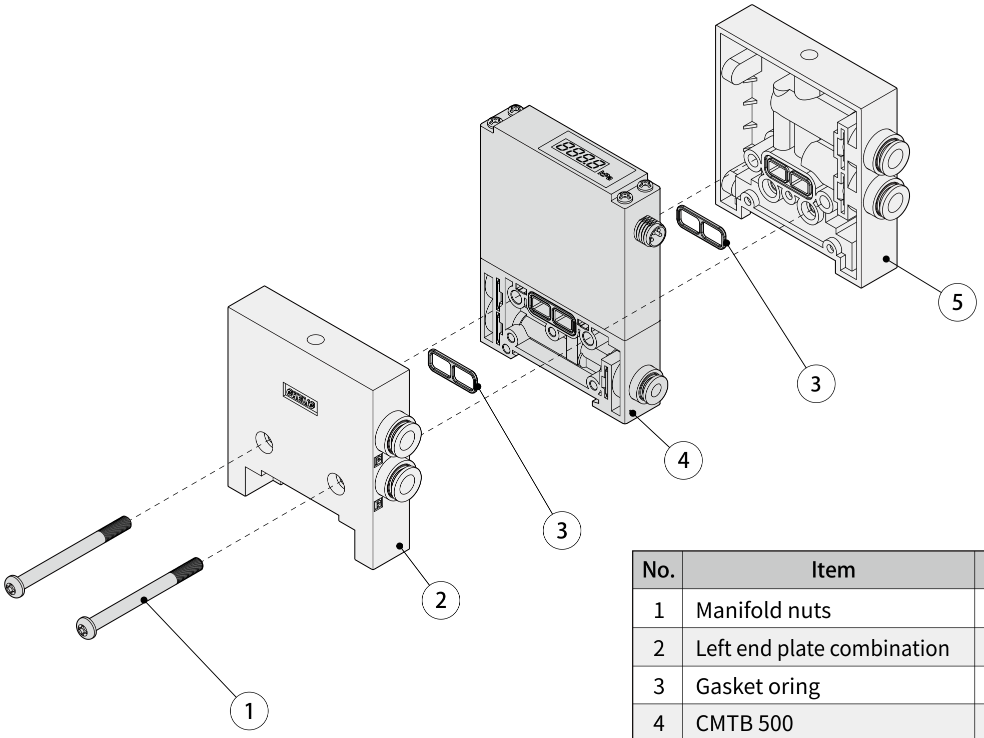
### Internal structure



### Components and Material list

| No. | Item | Material |
|---|---|---|
| 1 | Body/ Single unit | Plastic |
| 2 | Fitting assembly | — |
| 3 | Upper valve block | Plastic |
| 4 | Air supply valve | — |
| 5 | Cover | Plastic |
| 6 | Main circuit board | PCB |
| 7 | Display screen | LCD |
| 8 | 4-core fitting assembly | — |
| 9 | Sensing circuit board | PCB |
| 10 | Exhaust solenoid valve | — |
| 11 | Gasket oring | Rubber |

### CMTB Components and material list

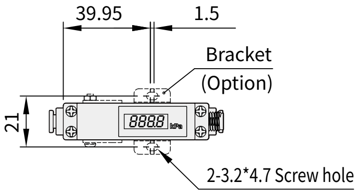


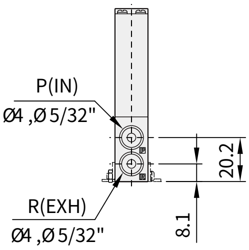
| No. | Item | Material |
|---|---|---|
| 1 | Manifold nuts | Nickel-plated iron |
| 2 | Left end plate combination | — |
| 3 | Gasket oring | Plastic |
| 4 | CMTB 500 | — |
| 5 | Right end plate combination | — |

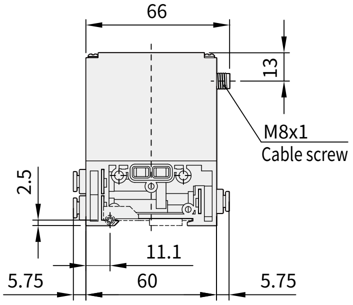
# CMT series Compact Electro-Pneumatic Regulator

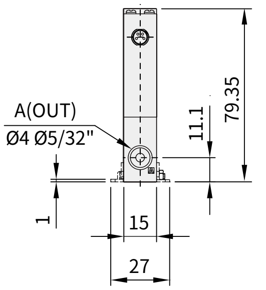
## Dimensions

### CMTA50 ☐ - C04

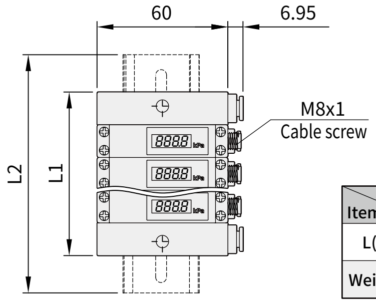

39.95
1.5
Bracket
(Option)
21
8888 kPa
2-3.2*4.7 Screw hole


P(IN)
Ø4 ,Ø5/32"
R(EXH)
Ø4 ,Ø5/32"
20.2
8.1

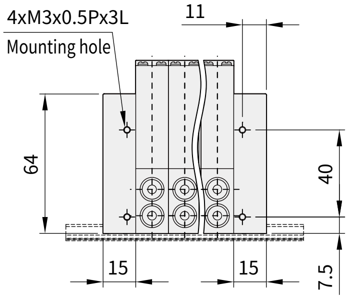

66
13
M8x1
Cable screw
2.5
11.1
5.75
60
5.75

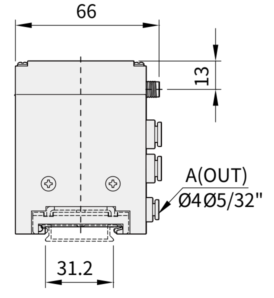

A(OUT)
Ø4 Ø5/32"
11.1
79.35
1
15
27

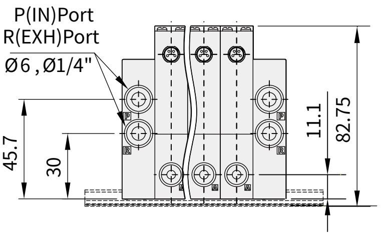
### CMTB50 ☐ - C04 + CMTB C06- 03 - C4


60
6.95
M8x1
Cable screw
L2
L1
8888 kPa
8888 kPa
8888 kPa

| Item \ M | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| L(mm) | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| Weight (g) | 14 | | 19 | | 24 | | 29 | | 34 | |


4xM3x0.5Px3L
Mounting hole
11
64
40
15
15
7.5


66
13
A(OUT)
Ø4Ø5/32"
31.2


P(IN)Port
R(EXH)Port
Ø6 ,Ø1/4"
45.7
30
11.1
82.75

# CMA series Compact Electronic Vacuum Regulator

## Product features

CVTR
CVAR
CVFR
CMT□
CMA□
FPF
FP
FPX
FC
FC-D
FC-R

### Feature

- High-speed response time (0.2sec when no load), fast action, high precision and precise control.
- Compact design only 15mm thickness, light weight manifold can save space.
- System components are simplified, effectively reducing labor costs.
- Use network communication to achieve remote control for the trend of future automation.

### Specification

| Item \ Model | | CMAA500 | CMAB500 |
|---|---|---|---|
| Fluid | | Air | |
| Min. pressure | | Set pressure -1kPa | |
| Max. pressure kPa | | -101 | |
| Pressure range setting kPa | | -1~-100 | |
| Response time | | 50ms or less | |
| Power | Voltage | DC24V±10%，DC12~15V | |
| | Current consumption | Power supply voltage DC24V type:0.12A or less<br>Power supply voltage DC12~15V type :0.18A or less | |
| Input signal | Current type | DC4~20mA | |
| | Voltage type | DC0~5V, DC0~10V | |
| Input impedance | Current type | about 240Ω | |
| | Voltage type | about 100kΩ | |
| Output signal (Display output) | Analog output | DC 1~5V (Load impedance:1KΩ or above)<br>Output accuracy within ±6% (F.S.) | |
| | Current type | DC4~20mA | |
| Linearity | | ±1% or less (F.S.) | |
| Hysteresis | | 1% or less (F.S.) | |
| Repeatability | | ±1% or less (F.S.) | |
| Sensitivity | | 0.2% or less (F.S.) | |
| Temperature characteristics | | within ±3%F.S.(The secondary atmospheric release) | |
| Output pressure indication | Accuracy | within ±5%F.S. | |
| | Minimum unit | kPa:1 | |
| Operating temperature range °c | | 0~50° (No condensation) | |
| Weight Note: 1 g | | 88 | |

Note：1. Unit weight
Total weight for manifold ≦ number of manifoldx88+102 (End plate weight)+DIN rail bracket weight.
2. To set pressure range to zeroing: the max. and target pressure output can be adjusted from min. unit.
3. The characteristics above are only for static condition. The pressure will be changed when the air is consumed at output side.
4. Please refer to P.1-4.40 for CMA precautions.

# CMA series Compact Electronic Vacuum Regulator

## Model selection order

CHELIC

## Sequence 1 Flow range selection

### Model specification selection

Please refer to the following table as the basis for model selection

| Model | Single unit | Manifold type |
|---|---|---|

## Sequence 2 Pressure range selection

Please refer to the table below to select the pressure range, pay attention to the maximum supply pressure and the set pressure range.

| | |
|---|---|
| Min. pressure | Set pressure-1kPa |
| Max. pressure | -101kPa |
| Set pressure range | -1~-100kPa |

## Sequence 3 Power supply voltage

| | | |
|---|---|---|
| Power supply | Voltage | DC24V±10% |
| | Current consumption | 0.12A or below |

※This product is limited to DC24V only, please use the correct voltage to avoid the damaged.

## Sequence 4 Input signal selection

With voltage type and current type, please confirm the input signal and select the corresponding input type to prevent the product from being unable to start or damage

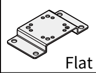
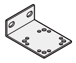
| | | |
|---|---|---|
| Input signal | Current type | DC4~20mA(Input impedance: about240Ω) |
| | Voltage type | DC0~5V(Input impedance: about100kΩ) |
| | | DC0~10V(Input impedance: about100kΩ) |

## Sequence 5 Output signal selection

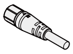
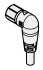
Output signal function — Monitor the pressure changes

- Analog voltage: Analog voltage type for short distance.
- Current voltage: Current voltage type for long distance.

## Sequence 6 Accessory options

| | |
|---|---|
|  Flat bracket | Easy to lock on flat surface |
|  L type bracket | Easy to lock on vertical surface |

## Sequence 7 Cable connector

| | |
|---|---|
|  Straight type | |
|  Angle type | Suitable for restricted space |

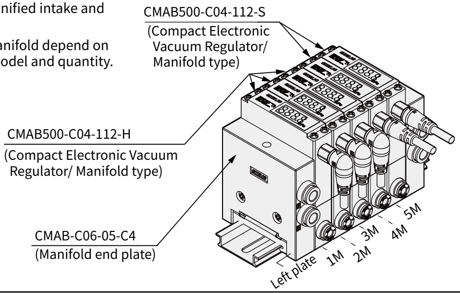
**Ordering Expression**

1.CMAB500-C04-112-H.........3pcs(1M, 2M, 3M)
+
2.CMAB500-C04-112-S.........2pcs(4M, 5M)
+
3.CMAB-C06-05-C4........1set

*Merge from the left plate first then place in order.

*Manifold type should be same pressure ranges due to the unified intake and exhaust.

*Lateral plate for manifold depend on the the manifold model and quantity.


CMAB500-C04-112-S
(Compact Electronic Vacuum Regulator/ Manifold type)
CMAB500-C04-112-H
(Compact Electronic Vacuum Regulator/ Manifold type)
CMAB-C06-05-C4
(Manifold end plate)
Left plate
1M
2M
3M
4M
5M

# CMA series Compact Electronic Vacuum Regulator

## Code of order

### Code of order-CMAA/ CMAB

**CMA A 50 0 - C04 - 1 1 2 - □ - S**

① ② ③④⑤ ⑥ ⑦

①

| Mark | Type |
|---|---|
| A | Single unit |
| B | Manifold type |

②

| Mark | Pressure Range |
|---|---|
| 0 | -1~-100kPa |

③

| Mark | Power Supply voltage |
|---|---|
| 1 | DC24V |

④

| Mark | Display Output |
|---|---|
| 1 | Current type DC4~20mA |
| 2 | Voltage type DC0~5V |
| 3 | Voltage type DC0~10V |

⑤

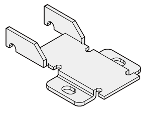
| Mark | Display Output |
|---|---|
| 1 | Analog DC1~5V |
| 2 | Analog DC4~20mA |

⑥

| Mark | Bracket |
|---|---|
| None | No bracket |
| B | Bracket |

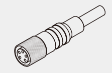
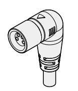
Note: A single unit use only

● Image

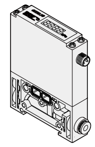


B- Bracket

⑦

| Mark | Cable Connector | Image |
|---|---|---|
| None | Without cable | — |
| S | Straight type 2m |  |
| H | Angle type 2m |  |

● Image



Single unit

### Code of order-CMAB Side end plate

**CMAB - C06 - 07 C4**

⑧ ⑨ ⑩

⑧

| Mark | Type |
|---|---|
| B | Manifold side end plate |

⑨

| Mark | Manifold no. |
|---|---|
| 01 | 1M |
| 02 | 2M |
| ⋮ | ⋮ |
| 10 | 10M |

⑩

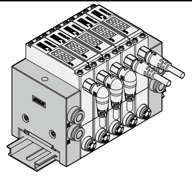
| Mark | Bracket |
|---|---|
| None | No bracket |
| C3 | Rail bracket |
| C4 | Rail bracket (Including rail) |

Note1: Please refer to -DIN rail length reference table
Note2: CMTB manifold type use only

● DIN rail length reference table

| Manifold Quantity | Length |
|---|---|
| 1~2M | 107.1mm |
| 3~4M | 142.8mm |
| 5~6M | 178.5mm |
| 7~8M | 214.2mm |
| 9~10M | 249.9mm |

● Image



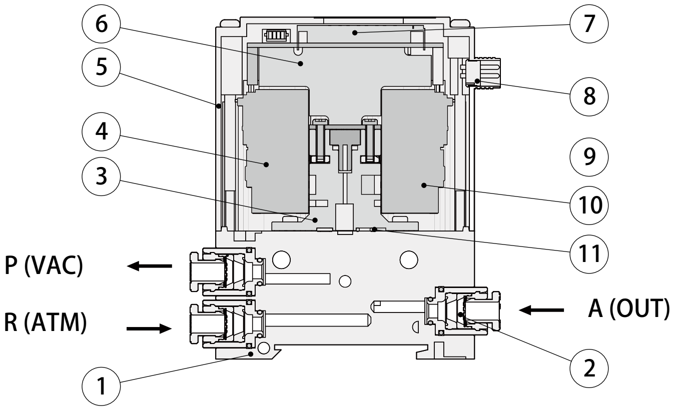
Manifold type

# CMA series Compact Electronic Vacuum Regulator

## Product features

CHELIC

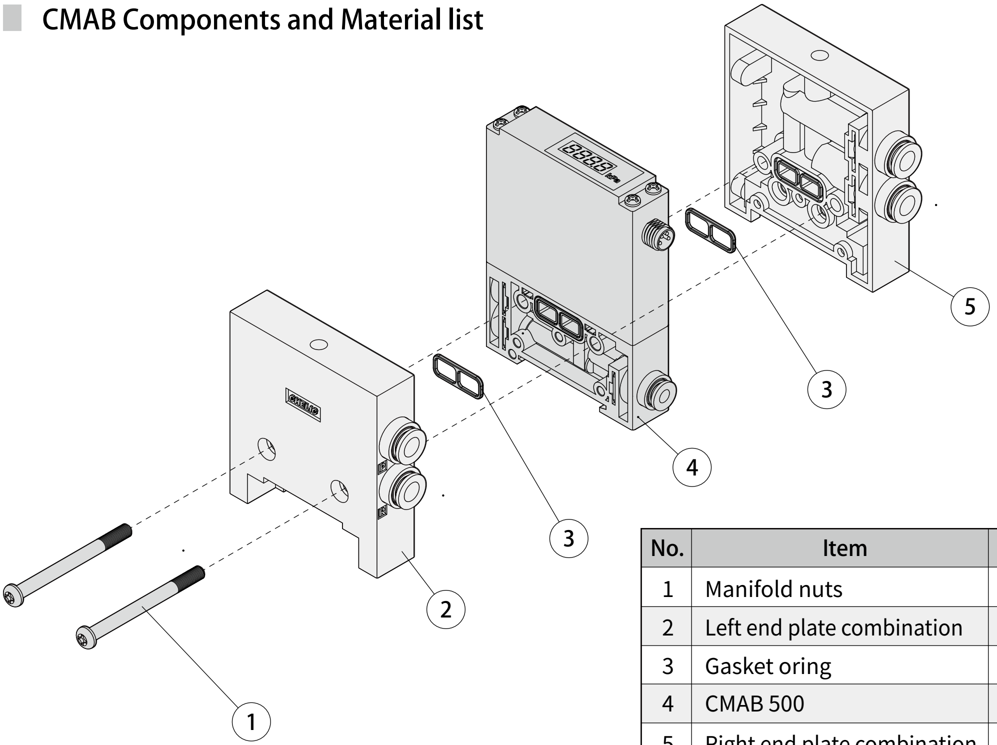
### Internal structure



### Components and Material list

| No. | Item | Material |
|---|---|---|
| 1 | Body/ Single unit | Plastic |
| 2 | Fitting assembly | — |
| 3 | Upper valve block | Plastic |
| 4 | Air supply valve | — |
| 5 | Cover | Plastic |
| 6 | Main circuit board | PCB |
| 7 | Display screen | LCD |
| 8 | 4-core fitting assembly | — |
| 9 | Sensing circuit board | PCB |
| 10 | Exhaust solenoid valve | — |
| 11 | Gasket oring | Rubber |

### CMAB Components and Material list



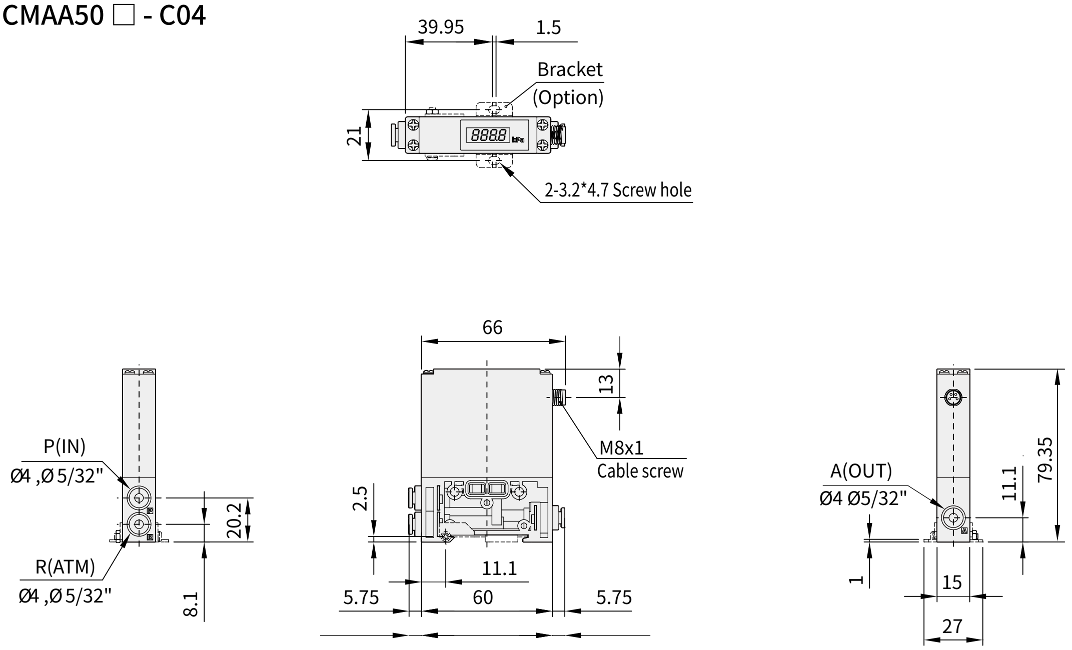
| No. | Item | Material |
|---|---|---|
| 1 | Manifold nuts | Nickel-plated iron |
| 2 | Left end plate combination | — |
| 3 | Gasket oring | Plastic |
| 4 | CMAB 500 | — |
| 5 | Right end plate combination | — |

# CMA series Compact Electronic Vacuum Regulator

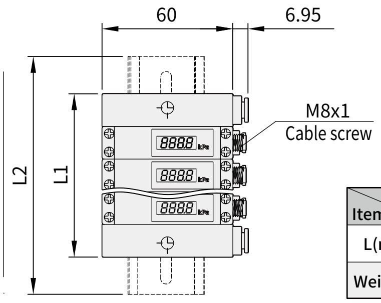
## Dimensions

CHELIC

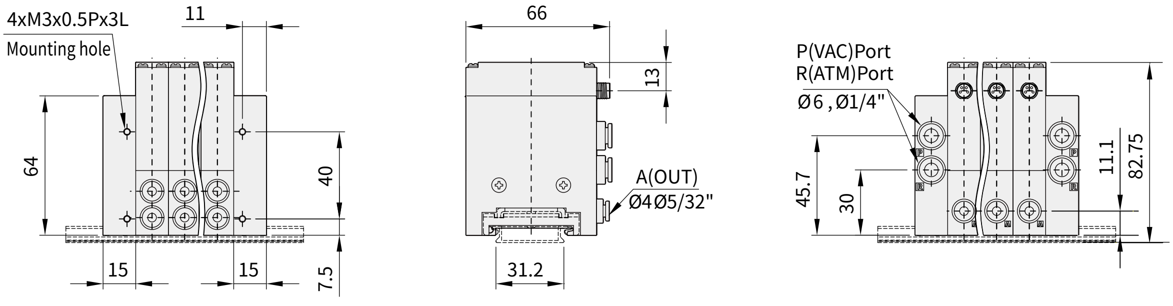
### CMAA50 □ - C04


39.95
1.5
Bracket
(Option)
21
8888 kPa
2-3.2*4.7 Screw hole
P(IN)
Ø4 ,Ø5/32"
R(ATM)
Ø4 ,Ø5/32"
20.2
8.1
66
13
M8x1
Cable screw
2.5
11.1
5.75
60
5.75
A(OUT)
Ø4 Ø5/32"
11.1
79.35
1
15
27

### CMAB50 □ - C04 + CMAB C06-03-C4


60
6.95
M8x1
Cable screw
L2
L1
8888 kPa

| M<br>Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| L(mm) | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| Weight (g) | 14 | | 19 | | 24 | | 29 | | 34 | |


4xM3x0.5Px3L
Mounting hole
11
64
40
15
15
7.5
66
13
A(OUT)
Ø4Ø5/32"
31.2
P(VAC)Port
R(ATM)Port
Ø6 ,Ø1/4"
45.7
30
11.1
82.75

# ⚠ General Cautions for CMT/CMA series

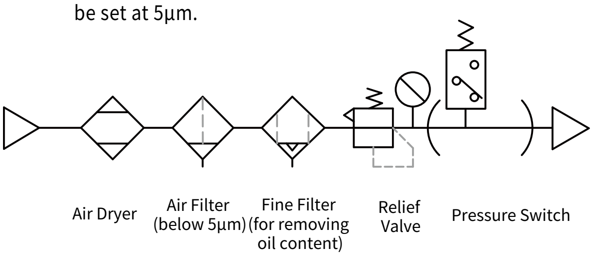
## Air source

### ⚠ WARNING

- Do not charge the gas except for the compressive air, and be sure to use the non-corrosive clean gas.

### ⚠ CAUTION

- The Dryer, Air Filter and Fine Filter should be installed at the supply side of this product, and the filtering accuracy should be set at 5μm.



- The compressive air containing massive amount of condensate will cause the defective action to this product or other type of pneumatic component. Therefore, the product should be provided with Rear Cooler, Air Dryer and Condensate Collector, etc.
- If excessive carbon powder is produced by the Air Compressor, it may attach to the internal side of the product as to cause the defective action in the long run.

## Operating Instructions

### ⚠ CAUTION

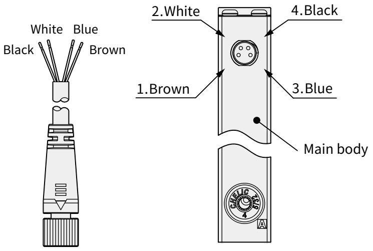
- Defective action may occur when connecting the Supply Side (P) of this product to the Oil Feeder. For this reason, do not attempt to install the Oil Feeder at this side. As for the application where oil should be supplied to the end product, please connect the Output Side (A) of the product to the Oil Feeder.
- When disconnecting the power during the pressurizing process, the set pressure will be remained for Output Side (A). The Output Side (A) will hold its pressure for a short period of time, but the user cannot expect that the machine will maintain such kind of pressure exhaustion status continuously. To maintain at exhaustion status, relief the pressure till to lower level and then disconnect the power in order to discharge residual pressure through the Residual Pressure Relief Valve.
- If the power is disconnected due to the power outage when this product is under controlled status, the Output Side (A) will maintain its pressure for a short while. When the Output Side (A) is opened for use, the pressure will be discharged continuously until it is equivalent to the atmospheric pressure. Therefore, it should be closely watched during the operation process.
- If disconnecting the pressure fed to the Supply Side (P) when this product is under energizing condition, the internal Solenoid Valve will keep operating and the action sound thus produced is a normal phenomenon; however, it may shorten the service life of the Solenoid Valve. For this reason, it is required to disconnect the power supplied to this product if the pressure feeding is to be stopped.
- To prevent from the false action that may be caused by electric noise, it is required to take the following actions:
  1. The AC power line should be fitted with a filter in in order to remove the noise.
  2. The motor or the power line that will produce stronger electric field must be separated from this product and the wires according to the installation method that will not be affected by external interference such as the noise or the electrostatic.
  3. The inductive load (Solenoid Valve and relays, etc.) must be provided with over-voltage prevention device.
- For detailed description regarding the use of this product, please refer to the Operation Instructions provided along with the product.
- Water or the dust will invade into the product when using it in an environment where water or dust may get engaged with the product.
- Be sure to check the location required for the enclosed operation such as the BOX. It is required to install the ventilation fan because this product may get heated due to its operating conditions, and it should be used in an environment provided with effective ventilation. When connecting the power, be sure to confirm the action status of the Solenoid Valve; however, the presence of action noise is an abnormal sign.

# ⚠ General Cautions for CMT/CMA series

## Wiring

### ⚠ CAUTION

- When inserting the cable into the socket of the main body, be sure to use the DC power provided with sufficient capacity and less fluctuation and the cables should be wired according to the figure provided below. Damage may occur if the cables are incorrectly arranged.
- When not using the monitoring output, be sure to prevent the monitoring output wire (black) from touching the cables marked in different colors as it may lead to false action.

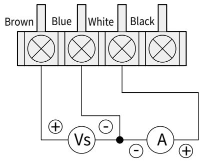

White
Blue
Black
Brown
2.White
4.Black
1.Brown
3.Blue
Main body

| Terminal No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Lead Wire Color | Brown | White | Blue | Black |
| Cable | Power | Signal | COM | Monitoring |

※ Vertical-type cable plug is also available. The plug of vertical-type cable should be guided downward (OUT). Do not attempt to turn the plug. If turning the plug with too much force, it may damage the plug connecting section.

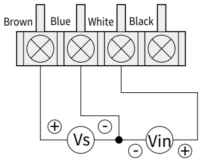
## Monitoring output wiring diagram

- Current-type wiring


Brown
Blue
White
Black
⊕
Vs
⊖
A
⊖
⊕

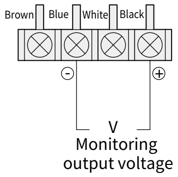
VS: Power supply DC24V±10% power
A: Output signal DC4~20mA

- Voltage-type wiring

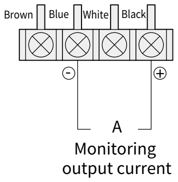

Brown
Blue
White
Black
⊕
Vs
⊖
Vin
⊖
⊕

VS: Power supply DC24V±10% power
Vin: Input signal DC0~5V
DC0~10V

- Analog output DC1~5V


Brown
Blue
White
Black
⊖
⊕
V
Monitoring
output voltage

- Analog output DC4~20mA


Brown
Blue
White
Black
⊖
⊕
A
Monitoring
output current

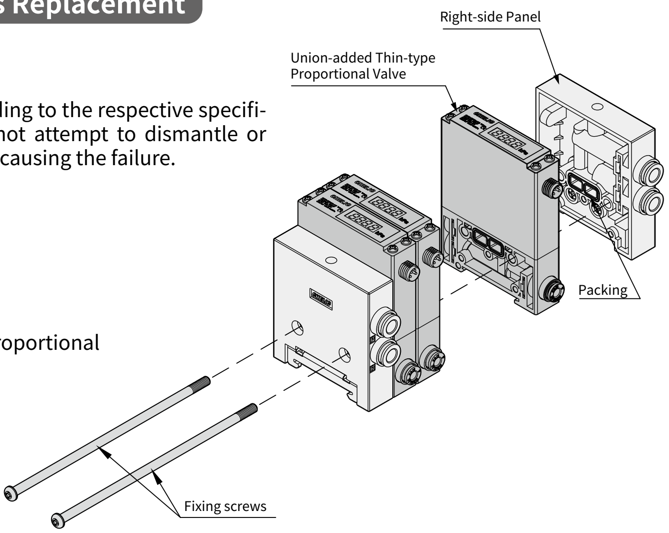
## Parts Replacement

### ⚠ WARNING

- This product has been properly adjusted according to the respective specifications when delivered from the factory. Do not attempt to dismantle or remove any parts, as it may become the reason causing the failure.

## Parts replacement instructions

- Description of union connection
  1. Loosen two pieces of fixing screws.
  2. Dismantle the right-side panel.
  3. Install the Thin-type Electrically Controlled Proportional Valve that should be added.
  4. Fasten the fixing screws.


Right-side Panel
Union-added Thin-type Proportional Valve
Packing
Fixing screws

# FPF series Digital Pressure and Flow Switch

## Product features/ Code of order

## Feature

- Dual-color display, visualization on pressures and flow rate outputs.
- Built-in dual switch signal outputs and dual analog signal outputs.
- A good space saving choice for the compact equipment.

## Specification

| Item | | Model | FPF | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Flow rate** | | | 10 | 20 | 50 | 100 | 200 | 500 | 1000 |
| **Port size** | | | Ø4、Ø6 | | Ø6、Ø8 | Ø8 | | PT1/2 | |
| Measure fluid | | | Air Note 2 | | | | | | |
| Flow unit Note 1 | Display | | 3 color LCD | | | | | | |
| | Displayable range L/min | | 0~10 | 0~20 | 0~50 | 0~100 | 0~200 | 0~500 | 0~1000 |
| | Min. display unit L/min | | 0.01 | 0.1 | | | 1 | | |
| **Pressure indication** | **Rated pressure range** kPa | | 0~800 | | | | | | |
| | **Display range** kPa | | 0~1000 | | | | | | |
| | **Show minimum unit** | **bar** | 0.01 | | | | | | |
| | | **kPa** | 1 | | | | | | |
| | | **psi** | 0.1 | | | | | | |
| **Cumulative flow** | Displayable range L | | 99999.99 | 999999.9 | | | 9999999 | | |
| | Min. display unit L | | 0.01 | 0.1 | | | 1 | | |
| Power Type | Voltage | | DC24V(±10%) | | | | | | |
| Current consumption | | | 50mA or below | | | | | | |
| Response time | | | Pressure switch = 50 ms or below ; Flow switch = 100 ms or below Note 5 | | | | | | |
| Environment | Min. operating pressure MPa | | 0.1 | | | | | | |
| | Max. operating pressure MPa | | 0.7 | | | | | | |
| | Proof pressure MPa | | 1.0 | | | | | | |
| | Ambient of fluid temperature and humidity | | 0~50°C、90%RH or below | | | | | | |
| | Operating temperature range | | 0~50°C (No condensation) | | | | | | |
| Accuracy Note 3 | Flow sensing | Operating range | 3~100%F.S. | | | | | | |
| | | Linearity | within ±3%F.S.(The secondary atmospheric release) | | | | | | |
| | | Pressure characteristics | within ±5%F.S. | | | | | | |
| | | Temperature characteristics | within ±0.2%F.S/°C (15~35°C、25°C base) | | | | | | |
| | | Repeatability | within±1%F.S. | | | | | | |
| | Pressure sensing | Operating range | 0~100%F.S. | | | | | | |
| | | Linearity | within ±1%F.S.(The secondary atmospheric release) | | | | | | |
| | | Temperature characteristics | within ±2%F.S. | | | | | | |
| | | Repeatability | within ±0.2%F.S. | | | | | | |
| **Output type** | Analog output | | Flow, Pressure: Voltage output: 1~5V, Load Impedance: 50kΩ Note 4 | | | | | | |
| | Switch output | | 2NPN / 2PNP open collector output (Max. loading current: 50mA; Power supply voltage: DC24V) | | | | | | |
| Wiring | | | Cable Connector X 6 Core (QD) | | | | | | |
| Enclosure | | | IP40 | | | | | | |
| Circuit protection Note 6 | | | Reverse power connect protection, Output reverse connection protection | | | | | | |
| Weight g | | | 62.2 | | | | | 141.61 | |

Note: 1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 ° C or colder),and oil mist filter (maximum oil concentration: 0.1 $mg/m^3$) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 ° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
7. Please refer to P.1-4.88 for FPF precautions.

# FPF series Digital Pressure and Flow Switch

## Model selection

## Sequence 1 Flow range selection

### Flow reference table

| Flow | Measuring flow range | F.S. flow deviation |
|---|---|---|
| 10L | 0.3L~10L | ±0.3L |
| 20L | 0.6L~20L | ±0.6L |
| 50L | 1.5L~50L | ±1.5L |
| 100L | 3L~100L | ±3L |
| 200L | 6L~200L | ±6L |
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |

1. F.S. flow deviation (allowable error ±3%)
   ex: 10L (1000mL) flowmeter 1000mL*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
2. Before selecting a flow meter, you need to determine the flow range you used.
   ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
3. Pay attention to the Min. flow range for the flowmeter
   ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
4. If the rate is higher than F.S. 3%, the flowmeter will display H.
   ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

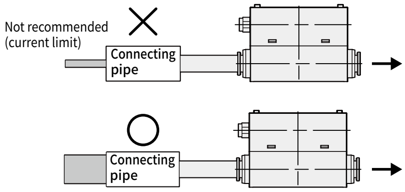
## Sequence 2 Port size selection

- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.
  (EX: 500 type connection caliber only Ø6 and Ø8 specifications can be used directly)
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

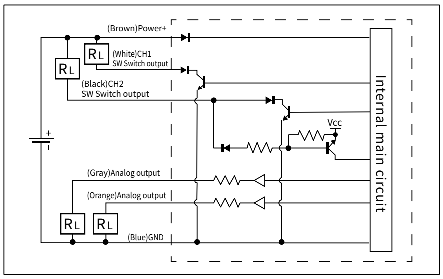
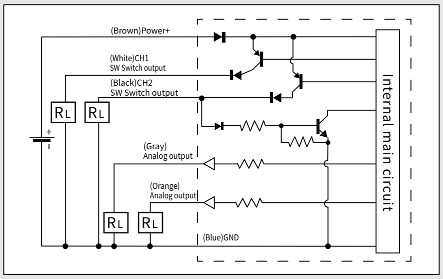
## Sequence 3 Analog output and switch output selection

- The output signal has voltage and current options, please confirm the output signal and choose.

| | | |
|---|---|---|
| Output signal | Voltage type | DC1-5V |
| | Current type | DC4-20mA |
| Output impedance | Voltage type | 50kΩ |
| | Current type | 300Ω |


Not recommended
(current limit)
×
Connecting pipe
○
Connecting pipe

- Confirm the switch signal NPN or PNP type.

| | NPN | PNP |
|---|---|---|
| Switch output |  |  |

(Brown)Power+
RL
(White)CH1
SW Switch output
(Black)CH2
SW Switch output
Vcc
(Gray)Analog output
(Orange)Analog output
(Blue)GND
Internal main circuit

(Brown)Power+
(White)CH1
SW Switch output
(Black)CH2
SW Switch output
RL
(Gray)
Analog output
(Orange)
Analog output
(Blue)GND
Internal main circuit

# FPF series Digital Pressure and Flow Switch

## Code of order

## Code of order **FP F - 100 - C06 - V - N - B - S**

① ② ③ ④ ⑤ ⑥ ⑦

①

| Mark | Type |
|---|---|
| F | Pressure flow switch |

②

| Type | Mark | Flow(L/min) |
|---|---|---|
| FPF | 100 | 10 |
| | 200 | 20 |
| | 500 | 50 |
| | 101 | 100 |
| | 201 | 200 |
| | 501 | 500 |
| | 102 | 1000 |

③

| Mark | Port Size | FPF | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 100 | 200 | 500 | 101 | 201 | 501 | 102 |
| C04 | Ø4 | ● | ● | - | - | - | - | - |
| C06 | Ø6 | ● | ● | ● | - | - | - | - |
| C08 | Ø8 | - | - | ● | ● | ● | - | - |
| P04 | PT1/2 | - | - | - | - | - | ● | ● |

④

| Mark | Display Output |
|---|---|
| V | Voltage type 1-5V |

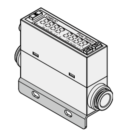
⑤

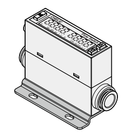
| Mark | Switch Output |
|---|---|
| N | NPN Output |
| P | PNP Output |

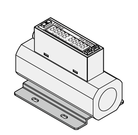
⑥

| Mark | Bracket | FPF | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 100 | 200 | 500 | 101 | 201 | 501 | 102 |
| None | No bracket | | | | | | | |
| B | Flat bracket | ● | ● | ● | ● | ● | - | - |
| L | L type bracket | ● | ● | ● | ● | ● | ● | ● |

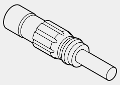
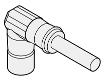
● Image


FPF S/M Flat bracket


FPF S/M L type bracket


FPF H L type bracket

⑦

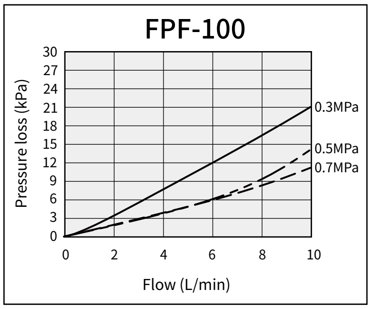
| Mark | Cable Connector | Image |
|---|---|---|
| None | Without cable | — |
| S | Straight type 2m |  |
| H | Angle type 2m |  |

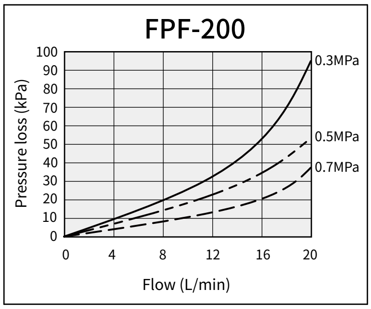
# FPF series Digital Pressure and Flow Switch

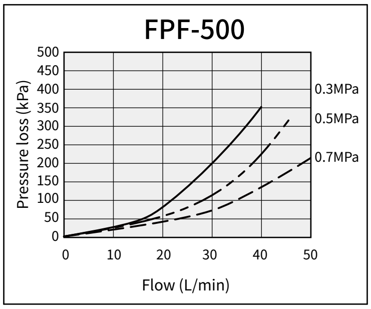
## Characteristics graph

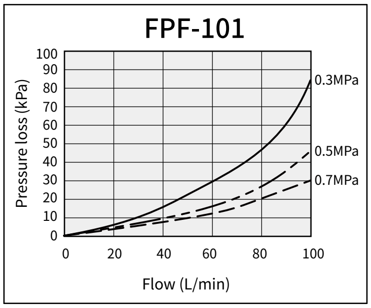
CHELIC

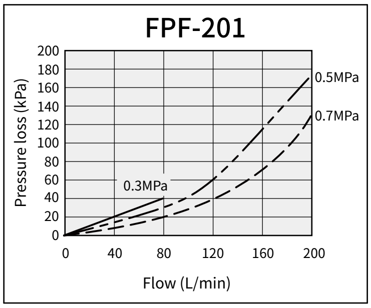
### Pressure loss characteristics

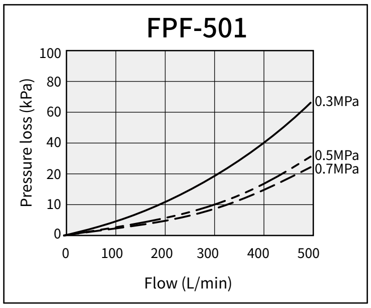


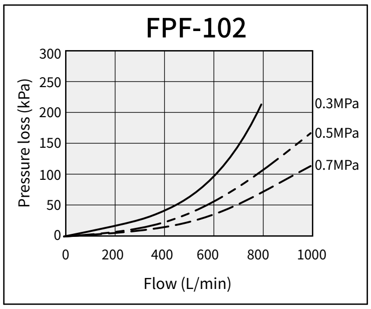




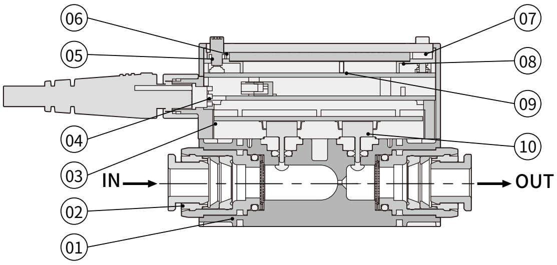








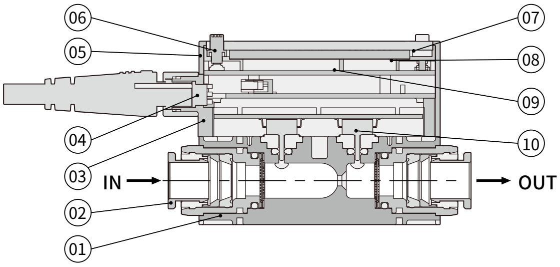
## FPF(10L, 20L)



## Components and material list

| No. | Item | Material |
|---|---|---|
| 01 | Main body | Nylon fiber |
| 02 | Fitting assembly | Brass |
| 03 | Cover of sensor module | Nylon |
| 04 | QD transfer circuit board | PCB |
| 05 | Cover | ABS resin |
| 06 | Bottom | Silicone |
| 07 | Acrylic display frame | Acrylic |
| 08 | LCD | LCD |
| 09 | LCD support bracket | Polycarbonate |
| 10 | Flow sensor module | PCB |

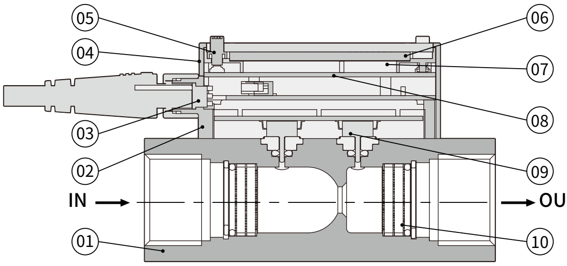
## FPF(50L, 100L, 200L)



## Components and material list

| No. | Item | Material |
|---|---|---|
| 01 | Main body | Nylon fiber |
| 02 | Fitting assembly | Brass |
| 03 | Cover of sensor module | Nylon |
| 04 | QD transfer circuit board | PCB |
| 05 | Cover | ABS resin |
| 06 | Bottom | Silicone |
| 07 | Acrylic display frame | Acrylic |
| 08 | LCD | LCD |
| 09 | LCD support bracket | Polycarbonate |
| 10 | Flow sensor module | PCB |

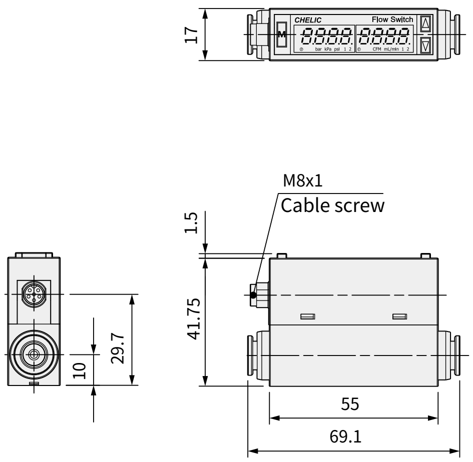
## FPF(500L, 1000L)



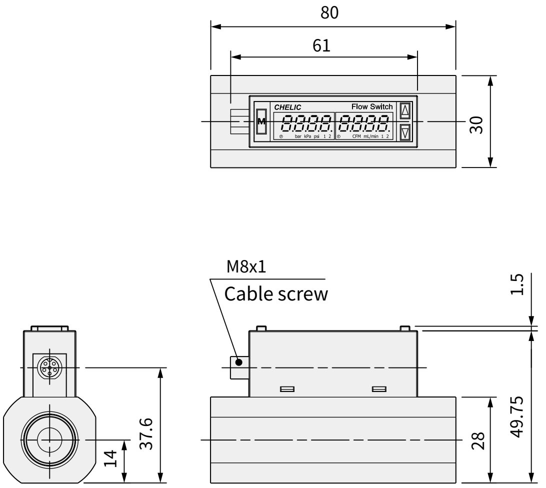
## Components and material list

| No. | Item | Material |
|---|---|---|
| 01 | Main body | Aluminum material |
| 02 | Cover of sensor module | Nylon |
| 03 | QD transfer circuit board | PCB |
| 04 | Cover | ABS resin |
| 05 | Bottom | Silicone |
| 06 | Acrylic display frame | Acrylic |
| 07 | LCD | LCD |
| 08 | LCD support bracket | Polycarbonate |
| 09 | Flow sensor module | PCB |
| 10 | Fairing board | Stainless steel |

## FPF (10L, 20L, 50L, 100L, 200L)


17
CHELIC
Flow Switch
M
bar kPa psi 1 2
CFM mL/min 1 2
M8x1
Cable screw
1.5
41.75
29.7
10
55
69.1

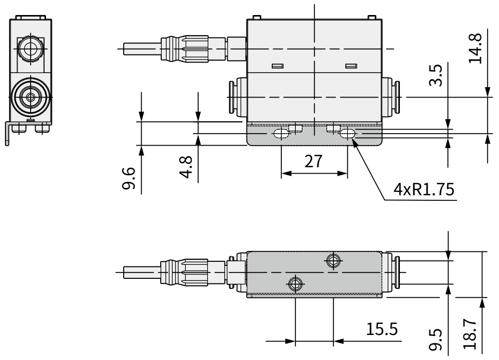
## FPF (500L, 1000L)

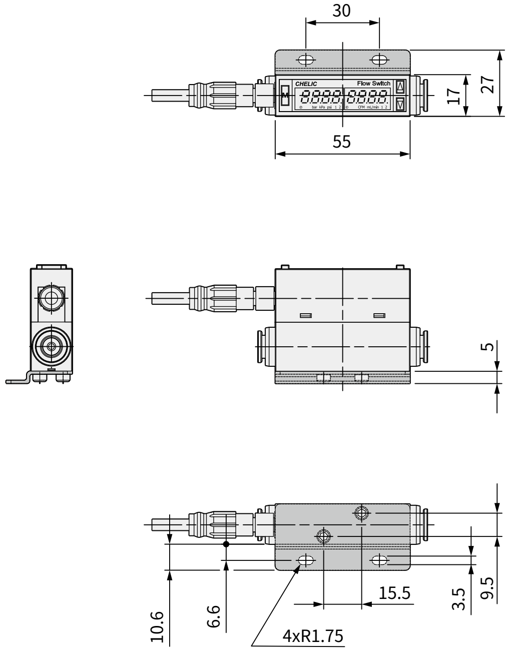

80
61
30
CHELIC
Flow Switch
M
bar kPa psi 1 2
CFM mL/min 1 2
M8x1
Cable screw
1.5
37.6
14
28
49.75

## FPF S/M type bracket (option)

Flat bracket-B

L type bracket-L


14.8
3.5
9.6
4.8
27
4xR1.75
15.5
9.5
18.7

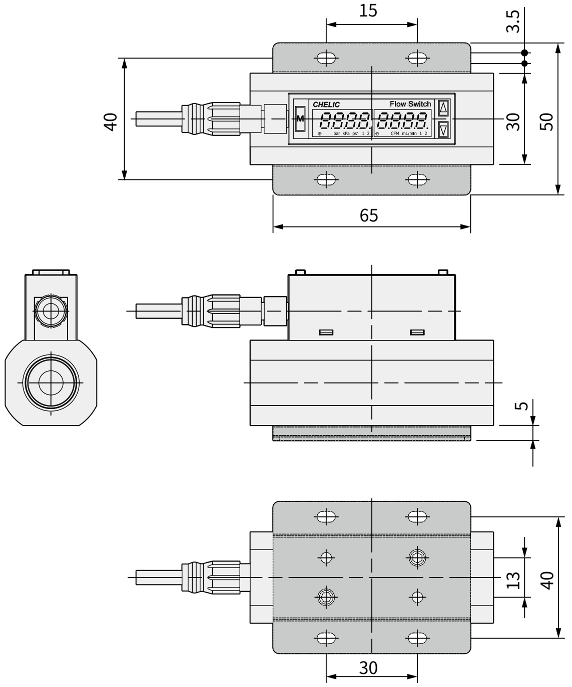

30
CHELIC
Flow Switch
M
17
27
55
5
10.6
6.6
4xR1.75
15.5
3.5
9.5

# FPF series Digital Pressure and Flow Switch

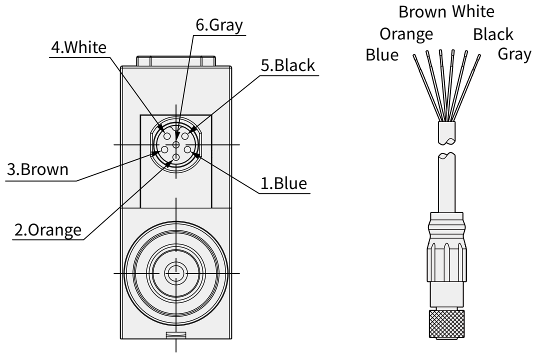
## Dimensions

### FPF H type bracket (option)

- L type bracket-L


15
3.5
40
30
50
65
CHELIC
Flow Switch
M
5
13
40
30

### FPF series wire connector


6.Gray
4.White
5.Black
3.Brown
1.Blue
2.Orange
Brown White
Orange
Black
Blue
Gray

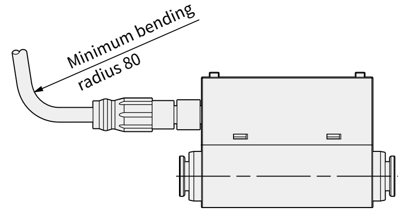
| PIN | Color | Specification |
|---|---|---|
| 1 | Blue | Power － (GND) |
| 2 | Orange | Flow: Voltage output: 1-5V<br>Load impedance 50kΩ or above |
| 3 | Brown | Power ＋ ( 24V ) |
| 4 | White | CH1 (Switch output1 : max : 50mA) |
| 5 | Black | CH2 (Switch output2: max : 50mA) |
| 6 | Gray | Pressure: Voltage output: 1-5V<br>Load impedance 50kΩ or above |

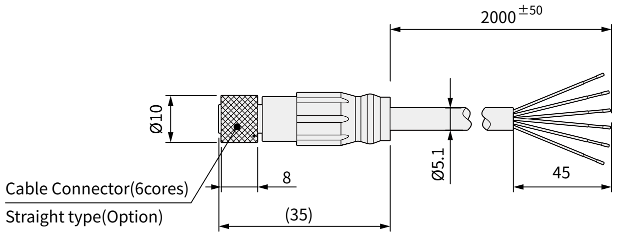
※The cable connector also has a angle type with connector is downward lead (OUT).

※The cable connector cannot be rotated. It will cause damaged if it rotated hard.

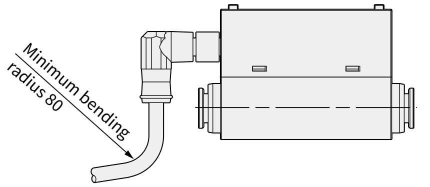
### Fitting size graph (option)

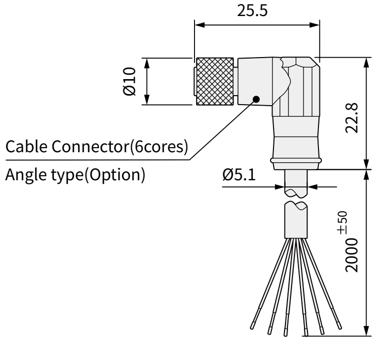
- Straight type -S


Minimum bending radius 80


2000±50
Ø10
Ø5.1
8
45
(35)
Cable Connector(6cores)
Straight type(Option)

- Angle type -H


Minimum bending radius 80


25.5
Ø10
22.8
Cable Connector(6cores)
Angle type(Option)
Ø5.1
2000±50

# FP series Differential Pressure Type Flow Switch

## Product features

CHELIC

### Feature

- Two-color display, easy to detect the value.
- No moving parts, longer lifetime.
- Differential pressure structure, high reliability.

### Specification

| Item | | Model | FPS | | FPM | | | FPH | |
|---|---|---|---|---|---|---|---|---|---|
| **Flow rate** | | L/min | 10 | 20 | 50 | 100 | 200 | 500 | 1000 |
| **Port size** | | mm | Ø4, Ø6 | | Ø6, Ø8 | Ø8 | | PT1/2 | |
| Measure fluid | | | Air, nitrogen Note 2 | | | | | | |
| Flow unit Note: 1 | Display | | 2 color LCD | | | | | | |
| | Displayable range | L/min | 0~10 | 0~20 | 0~50 | 0~100 | 0~200 | 0~500 | 0~1000 |
| | Min. display unit | L/min | 0.01 | 0.1 | | | 1 | | |
| Accumulated pulse flow function | Displayable range | L | 99999.99 | 999999.9 | | | 9999999 | | |
| | Min. display unit | L | 0.01 | 0.1 | | | 1 | | |
| Power Type | Voltage | | DC24V(±10%) | | | | | | |
| Current consumption | | | 50mA or less Note 5 | | | | | | |
| Response time | | | 50ms or less | | | | | | |
| Environment Note: 2 | Min. operating pressure | MPa | 0.2 | | | | | | |
| | Max. operating pressure | MPa | 0.7 | | | | | | |
| | Proof pressure | MPa | 1.0 | | | | | | |
| | Ambient of fluid temperature and humidity | | 0~50°C , 90%RH or less | | | | | | |
| | Operating temperature range | | 0~50°C | | | | | | |
| Accuracy Note: 3 | Operating range | | 3~100%F.S. | | | | | | |
| | Linearity | | within ±3%F.S.(The secondary atmospheric release) | | | | | | |
| | Pressure characteristics | | within ±2%F.S. | | | | | | |
| | Temperature characteristics | | within ±2%F.S/°C (15~35°C , 25°C base) | | | | | | |
| | Repeatability | | within ±1%F.S. | | | | | | |
| **Output type** | Analog output | | Voltage output: 1~5V, Load Impedance: 50kΩ<br>Voltage output: 4~20mA , Load Impedance: 600Ω Note 4 | | | | | | |
| | Switch output | | 2NPN open collector output<br>2PNP open collector output (Max. loading current: 50mA; Power supply voltage: DC24V) | | | | | | |
| Wiring | | | Cable Connector X 5 Core (QD) | | | | | | |
| Enclosure | | | IP40 | | | | | | |
| Circuit protection Note: 6 | | | Reverse power connect protection, Output reverse connection protection | | | | | | |
| Weight | | g | 62.2 | | | | | 141.61 | |

Note:
1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 ° C or colder),and oil mist filter (maximum oil concentration: 0.1 mg/m3) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 ° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
7.Please refer to P.1-4.88 for FP precautions.

## Sequence 1 Flow range selection

### Flow reference table

| Flow | Measuring flow range | F.S. flow deviation |
|---|---|---|
| 10L | 0.3L~10L | ±0.3L |
| 20L | 0.6L~20L | ±0.6L |
| 50L | 1.5L~50L | ±1.5L |
| 100L | 3L~100L | ±3L |
| 200L | 6L~200L | ±6L |
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |

1. F.S. flow deviation (allowable error ±3%)
   ex: 10L (1000mL) flowmeter 1000mL*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
2. Before selecting a flow meter, you need to determine the flow range you used.
   ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
3. Pay attention to the Min. flow range for the flowmeter
   ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
4. If the rate is higher than F.S. 3%, the flowmeter will display H.
   ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

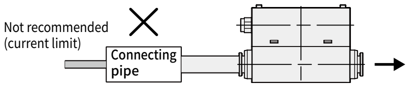
## Sequence 2 Port size selection

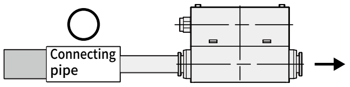
- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.
  (EX: 500 type connection caliber only Ø6 and Ø8 specifications can be used directly)
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

## Sequence 3 Analog output and switch output selection

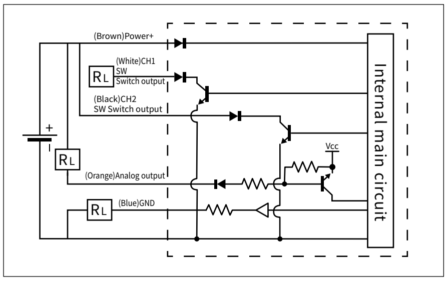
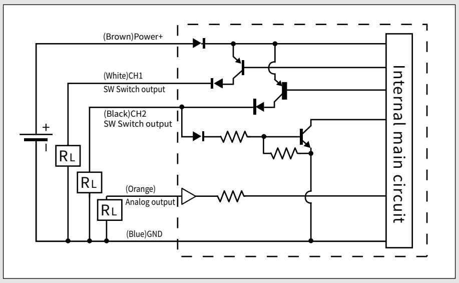
- The output signal has voltage and current options, please confirm the output signal and choose.

| | | |
|---|---|---|
| Output signal | Voltage type | DC1-5V |
| | Current type | DC4-20mA |
| Output impedance | Voltage type | 50kΩ |
| | Current type | 300Ω |


Not recommended
(current limit)
Connecting pipe


Connecting pipe

- Confirm the switch signal NPN or PNP type.

| | NPN | PNP |
|---|---|---|
| Switch output |  (Brown)Power+<br>(White)CH1<br>SW<br>Switch output<br>(Black)CH2<br>SW Switch output<br>(Orange)Analog output<br>(Blue)GND<br>RL<br>Vcc<br>Internal main circuit |  (Brown)Power+<br>(White)CH1<br>SW Switch output<br>(Black)CH2<br>SW Switch output<br>(Orange)<br>Analog output<br>(Blue)GND<br>RL<br>Internal main circuit |

# FP series Differential Pressure Type Flow Switch

## Code of order

## Code of order- Differential pressure type flow switch

**FP S - 100 - C06 - V - N - B - S**

① ② ③ ④ ⑤ ⑥ ⑦

①

| Mark | Type |
|---|---|
| S | Small flow rate |
| M | Medium Flow rate |
| H | Large flow rate |

②

| Type | Mark | Flow(L/min) |
|---|---|---|
| FPS | 100 | 10 |
| | 200 | 20 |
| FPM | 500 | 50 |
| | 101 | 100 |
| | 201 | 200 |
| FPH | 501 | 500 |
| | 102 | 1000 |

③

| Mark | Port Size | FPS | | FPM | | | FPH | |
|---|---|---|---|---|---|---|---|---|
| | | 100 | 200 | 500 | 101 | 201 | 501 | 102 |
| C04 | Ø4 | ● | ● | - | - | - | - | - |
| C06 | Ø6 | ● | ● | ● | - | - | - | - |
| C08 | Ø8 | - | - | ● | ● | ● | - | - |
| P04 | PT1/2 | - | - | - | - | - | ● | ● |

④

| Mark | Display Output |
|---|---|
| V | Voltage type 1-5V |
| A | Current type 4-20mA |

※ Please contact CHELIC for customized type A current

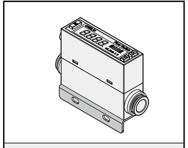
⑤

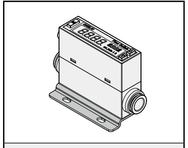
| Mark | Switch Output |
|---|---|
| N | NPN Output |
| P | PNP Output |

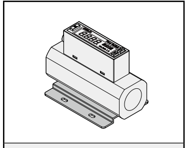
⑥

| Mark | Bracket | FPS | FPM | FPH |
|---|---|---|---|---|
| None | - | No bracket | | |
| B | Flat bracket | ● | ● | - |
| L | L type bracket | ● | ● | ● |

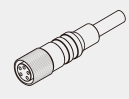
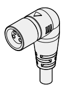
Image


FPS/ FPM
Flat bracket


FPS/ FPM
L type bracket


FPH
L type bracket

⑦

| Mark | Cable Connector | Image |
|---|---|---|
| None | Without cable | — |
| S | Straight type 2m |  |
| H | Angle type 2m |  |

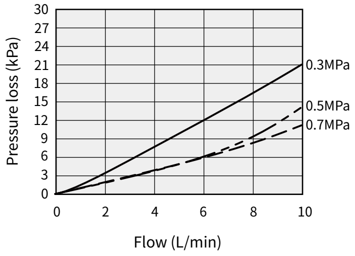
# FP series Differential Pressure Type Flow Switch

## Characteristics graph

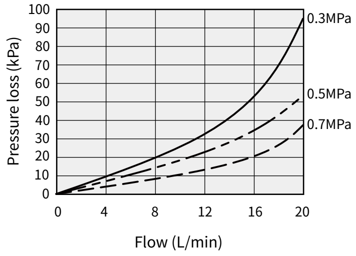
CHELIC

### Pressure loss characteristics

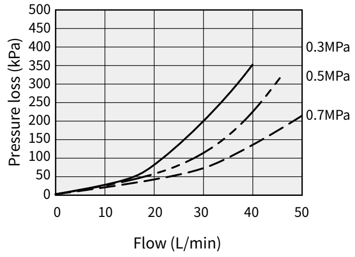
**FPS-100**



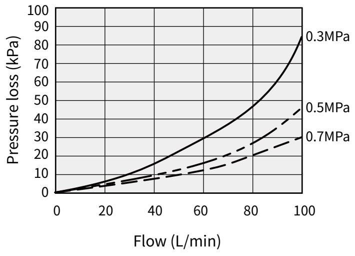
**FPS-200**



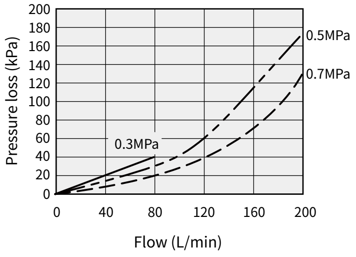
**FPM-500**



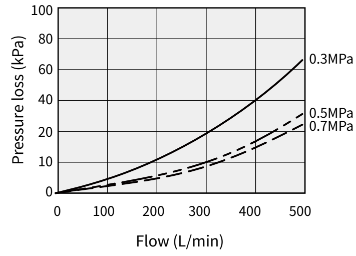
**FPM-101**



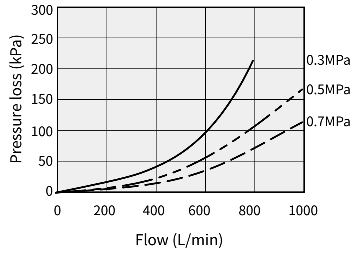
**FPM-201**



**FPH-501**



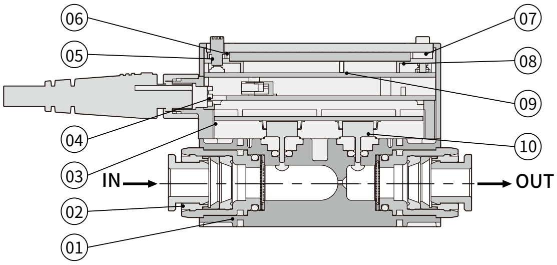
**FPH-102**



# FP series Differential Pressure Type Flow Switch

## Product features

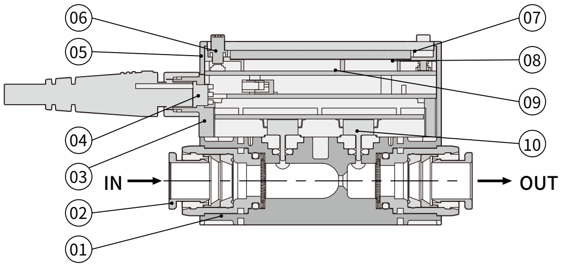
### FPS



### Components and material list

| No. | Item | Material |
|---|---|---|
| 1 | Main body | Nylon fiber |
| 2 | Fitting assembly | Brass |
| 3 | Cover of sensor module | Nylon |
| 4 | QD transfer circuit board | PCB |
| 5 | Cover | ABS resin |
| 6 | Bottom | Silicone |
| 7 | Acrylic display frame | Acrylic |
| 8 | LCD | – |
| 9 | LCD support bracket | Polycarbonate |
| 10 | Flow sensor module | PCB |

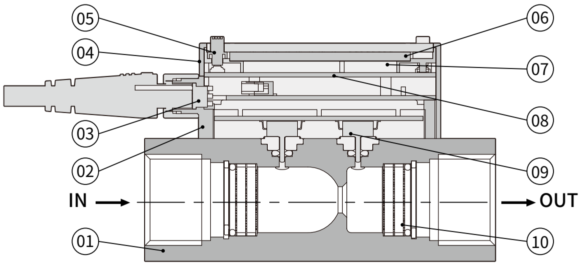
### FPM



### Components and material list

| No. | Item | Material |
|---|---|---|
| 1 | Main body | Nylon fiber |
| 2 | Fitting assembly | Brass |
| 3 | Cover of sensor module | Nylon |
| 4 | QD transfer circuit board | PCB |
| 5 | Cover | ABS resin |
| 6 | Bottom | Silicone |
| 7 | Acrylic display frame | Acrylic |
| 8 | LCD | – |
| 9 | LCD support bracket | Polycarbonate |
| 10 | Flow sensor module | PCB |

### FPH



### Components and material list

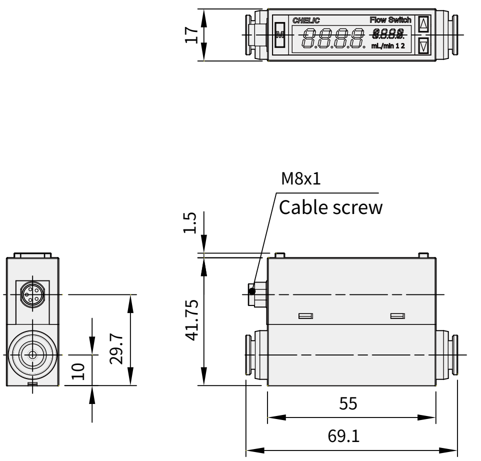
| No. | Item | Material |
|---|---|---|
| 1 | Main body | Aluminum material |
| 2 | Cover of sensor module | Nylon |
| 3 | QD transfer circuit board | PCB |
| 4 | Cover | ABS resin |
| 5 | Bottom | Silicone |
| 6 | Acrylic display frame | Acrylic |
| 7 | LCD | – |
| 8 | LCD support bracket | Polycarbonate |
| 9 | Flow sensor module | PCB |
| 10 | Fairing board | Stainless steel |

# FP series Differential Pressure Type Flow Switch

## Dimensions

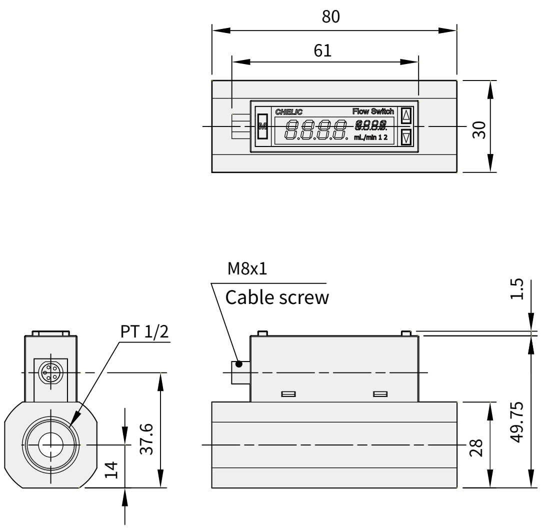
CHELIC

### FPS/ FPM



17
CHELIC
Flow Switch
M8x1
Cable screw
1.5
41.75
29.7
10
55
69.1

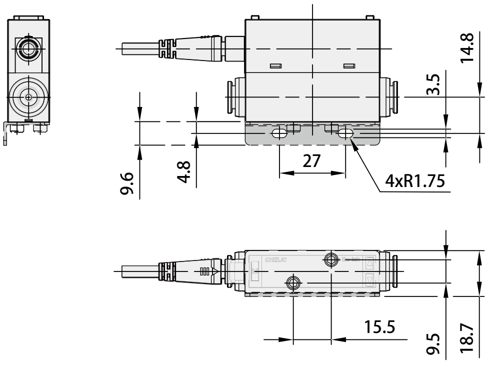
### FPH



80
61
30
M8x1
Cable screw
PT 1/2
1.5
49.75
28
37.6
14

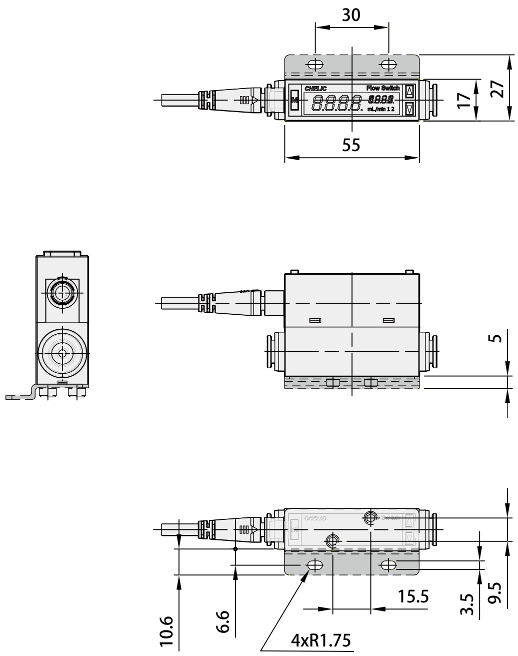
### FPS/ FPM Bracket

Flat bracket-B



14.8
3.5
9.6
4.8
27
4xR1.75
15.5
9.5
18.7

L type bracket-L



30
27
17
55
5
10.6
6.6
4xR1.75
15.5
3.5
9.5

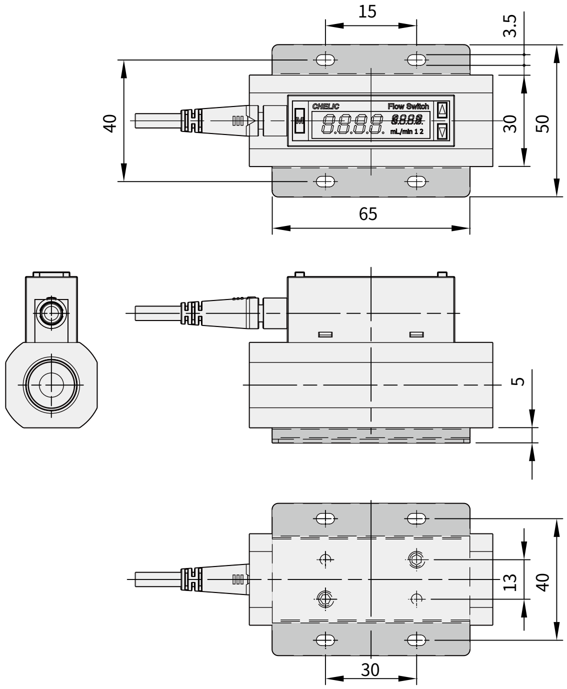
# FP series Differential Pressure Type Flow Switch

## Dimensions/ Wire connector

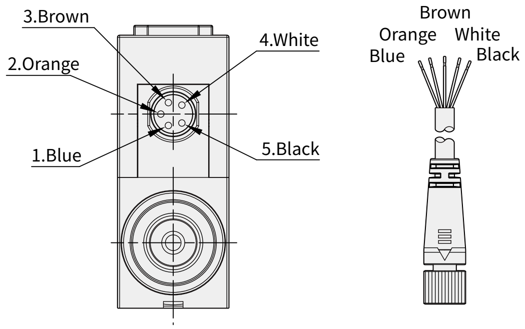
CVTR
CVAR
CVFR
CMT□
CMA□
FPF
FP
FPX
FC
FC-D
FC-R

### FPH Bracket

- L type bracket-L


15
3.5
40
30
50
65
CHELIC
Flow Switch
8.8.8.8.
8.8.8.8.
mL/min 1 2
5
13
40
30

### FP series wire connector


3.Brown
2.Orange
4.White
1.Blue
5.Black
Brown
Orange
White
Blue
Black

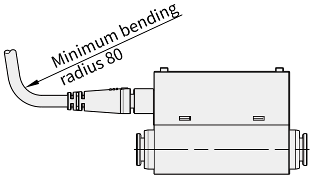
| PIN | Color | Specification |
|---|---|---|
| 01 | Blue | Power－(GND) |
| 02 | Orange | Voltage output: 1-5V<br>Load impedance 50kΩ or above<br>Current output: 4-20mA<br>Load impedance 300kΩ or less |
| 03 | Brown | Power＋( 24V ) |
| 04 | White | CH1 (Switch output : max : 50mA) |
| 05 | Black | CH2 (Switch output2: max : 50mA) |

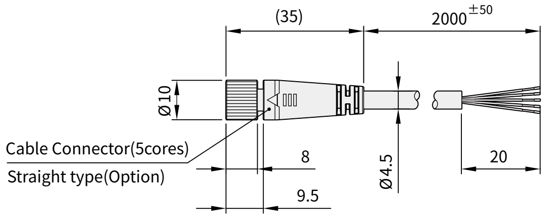
※The cable connector also has a angle type with connector is downward lead (OUT).

※The cable connector cannot be rotated. It will cause damaged if it rotated hard.

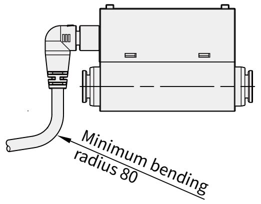
### Fitting size graph

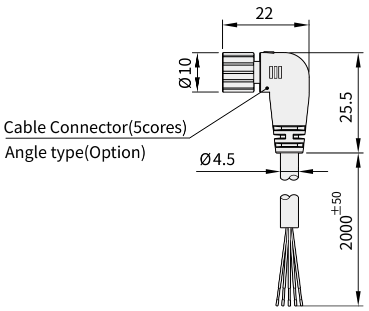
- Straight type -S


Minimum bending
radius 80


(35)
2000±50
Ø10
Cable Connector(5cores)
Straight type(Option)
8
9.5
Ø4.5
20

- Angle type -H


Minimum bending
radius 80


22
Ø10
Cable Connector(5cores)
Angle type(Option)
Ø4.5
25.5
2000±50

# **FPX series** Differential Pressure Type Flow Switch/ Large Flow

## Product features

CHELIC

## Feature

- ● Flow unit can be switched
- ● Through bore construction, resistance to foreign matter.
- ● Rotatable screen, high visibility.

## Specification

| Item | | | FPX | |
|---|---|---|---|---|
| Flow rate | | L/min | 3000 | 4000 |
| Port size | | mm | PT1 | |
| Measure fluid | | | Air, nitrogen Note 2 | |
| Flow unit Note 1 | Display | | 2 color LCD | |
| | Displayable range | L/min | 30 ~ 3000 | 40 ~ 4000 |
| | Min. display unit | | 1L/min, 1CFM | |
| Cumulative flow | Displayable range | L | 99999999 | |
| | Min. display unit | | 1L, 1CF | |
| Power Type | Voltage | | DC24V(±10%) | |
| Current consumption | | | 50mA or below Note 5 | |
| Response time | | | 50ms or below | |
| Environment | Min. operating pressure | MPa | 0.2 | |
| | Max. operating pressure | MPa | 0.7 | |
| | Proof pressure | MPa | 1.0 | |
| | Ambient of fluid temperature and humidity | | 0~50°C, 90%RH or less | |
| | Operating temperature range | | 0~50°C | |
| Accuracy Note 3 | Operating range | | 3~100%F.S. | |
| | Linearity | | within ±3%F.S.(The secondary atmospheric release) | |
| | Pressure characteristics | | within ±2%F.S. | |
| | Temperature characteristics | | within ±2%F.S./ °C(0~40°C, 25°C base) | |
| | Repeatability | | within ±1%F.S. | |
| Output type | Analog output | | Voltage output: 0~10V & 1~5V, Load Impedance: 50kΩ<br>Current output: 4~20mA, Load Impedance: 300Ω Note 4 | |
| | Switch output | | 1NPN or 1PNP open collector output, Max. loading current: 50mA<br>Power supply voltage: DC24V, Residual voltage24V or less | |
| Wiring | | | Cable connector X 4Core (QD) | |
| Enclosure | | | IP65 | |
| Circuit protection Note 6 | | | Reverse power connect protection, Output reverse connection protection | |
| Weight | | g | 486 | |

Note:
1. Converted to volumetric flow at 20°C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 °C or colder),and oil mist filter (maximum oil concentration: 0.1 mg/m3) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 °C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
7. Please refer to P.1-4.88 for FPX precautions.

# FPX series Differential Pressure Type Flow Switch/ Large Flow

## Model selection

## Sequence 1 Flow range selection

### Flow reference table

| Flow | Measuring flow range | F.S. flow deviation |
|---|---|---|
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |
| 3000L | 90L~3000L | ±90L |
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |
| 3000L | 90L~3000L | ±90L |
| 4000L | 120L~4000L | ±120L |

1. F.S. flow deviation (allowable error ±3%)
   ex: 10L (1000mL) flowmeter 1000mL*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
2. Before selecting a flow meter, you need to determine the flow range you used.
   ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
3. Pay attention to the Min. flow range for the flowmeter
   ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
4. If the rate is higher than F.S. 3%, the flowmeter will display H.
   ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

## Sequence 2 Port size selection

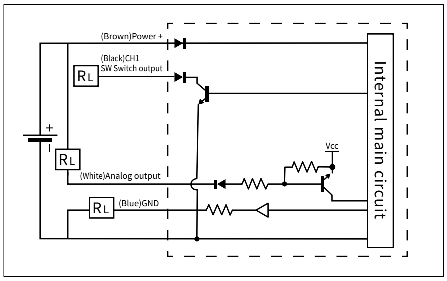
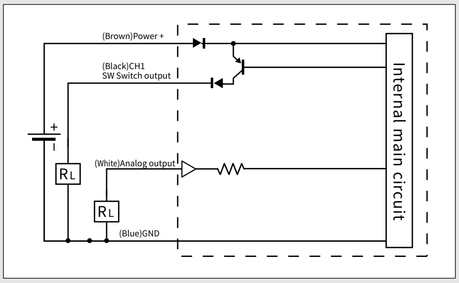
- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

## Sequence 3 Analog output and switch output selection

- The output signal has voltage and current options, please confirm the output signal and choose.

| | | |
|---|---|---|
| **Output signal** | Voltage type | DC1-5V/DC0-10V |
| | Current type | DC4-20mA |
| **Output impedance** | Voltage type | 50kΩ |
| | Current type | 300Ω |

- Confirm the switch signal NPN or PNP type.

| | NPN | PNP |
|---|---|---|
| Switch output |  (Brown)Power +<br>(Black)CH1<br>SW Switch output<br>RL<br>+<br>RL<br>(White)Analog output<br>Vcc<br>RL<br>(Blue)GND<br>Internal main circuit |  (Brown)Power +<br>(Black)CH1<br>SW Switch output<br>+<br>(White)Analog output<br>RL<br>RL<br>(Blue)GND<br>Internal main circuit |

# FPX series Differential Pressure Type Flow Switch/ Large Flow

## Code of order

### Code of order-Differential pressure type flow switch

**FP X – 302 – P08 – V – N – S**

① ② ③ ④ ⑤ ⑥

①

| Mark | Type |
|---|---|
| X | Differential pressure type flow switch/ large flow |

②

| Mark | Flow(L/min) |
|---|---|
| 302 | 3000 |
| 402 | 4000 |

③

| Mark | Port Size |
|---|---|
| P08 | PT1 |

④

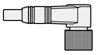
| Mark | Display Output |
|---|---|
| V Note | Voltage type 1-5V<br>Voltage type 0-10V |
| A | Current type 4-20mA |

- Note: You can have two choices for Voltage output (V).(Factory setting is 0-10V)

⑤

| Mark | Switch Output |
|---|---|
| N | NPN Output |
| P | PNP Output |

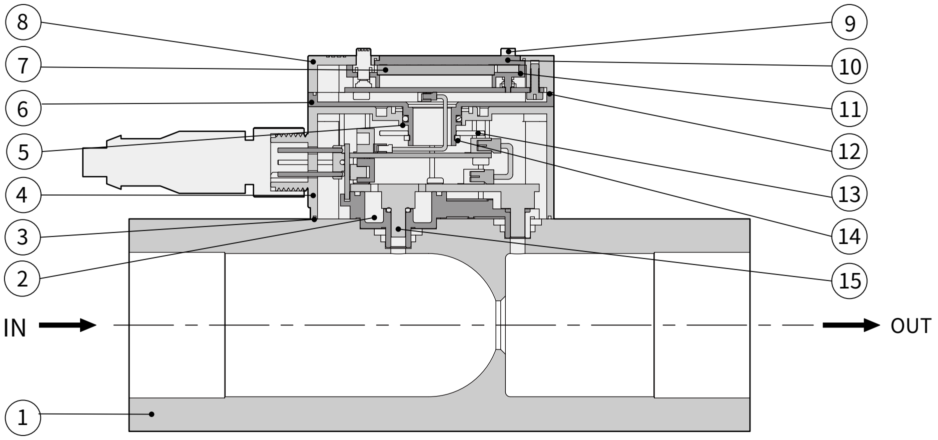
⑥

| Mark | Cable Connector | Image |
|---|---|---|
| None | Without cable | — |
| S | Straight type 1.5m | |
| H | Angle type 1.5m |  |

# **FPX series** Differential Pressure Type Flow Switch/ Large Flow

## Product features

### Internal structure

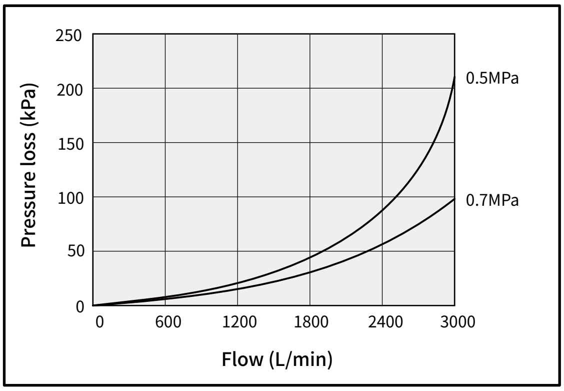


### Components and Material list

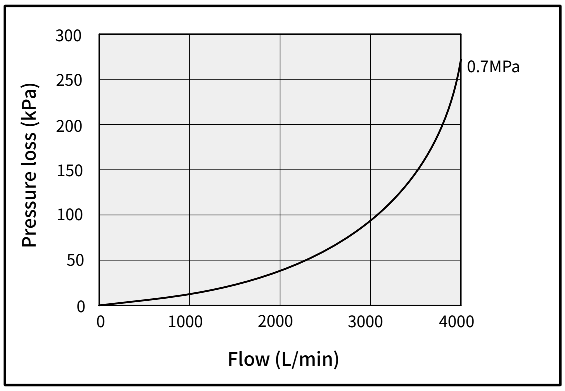
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Main body | Aluminum alloy(A6061) | 09 | Bottom | Rubber |
| 02 | Differential pressure chamber | Plastic(PA66+30%GF) | 10 | Acrylic display frame | Acrylic |
| 03 | Waterproof gasket for lower cover | Rubber | 11 | LCD bracket | Plastic |
| 04 | Display mount cover | Plastic | 12 | Waterproof gasket for upper cover | Rubber |
| 05 | Bow washer | Steel | 13 | Washer | Stainless steel |
| 06 | Rotate monitor bottom cover | Plastic | 14 | C clip | Steel |
| 07 | LCD | – | 15 | Flow sensor module | – |
| 08 | Rotate monitor front cover | Plastic | | | |

### FPX Pressure loss (Reference data)

FPX-302



FPX-402

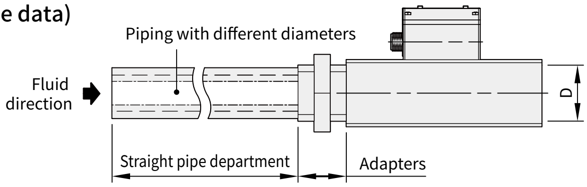


# FPX series Differential Pressure Type Flow Switch/ Large Flow

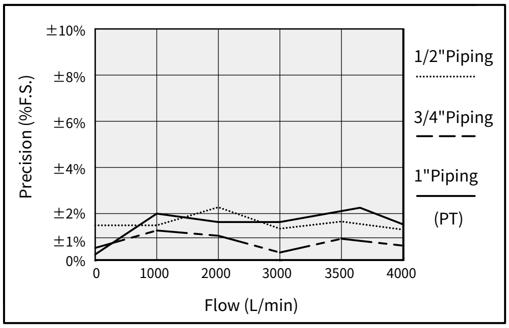
## Characteristics graph

### IN side straight pipe and accuracy (reference data)

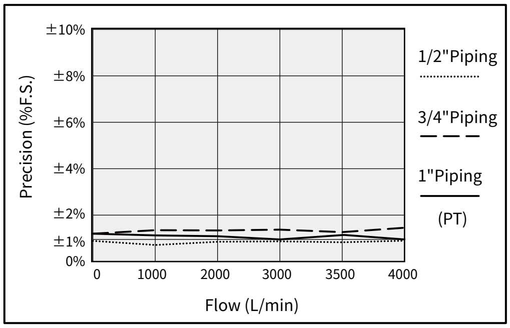
Straight pipe refers to a long straight pipe without a bent pipe, it installed at the inlet of the flow meter IN side. The purpose is to allow the fluid to achieve a steady flow effect. Recommended the pipe length above 5 times the inner diameter (5D) and straight pipe section for better accuracy.



FPX-302/402 Straight pipe department 50mm(1.7D)

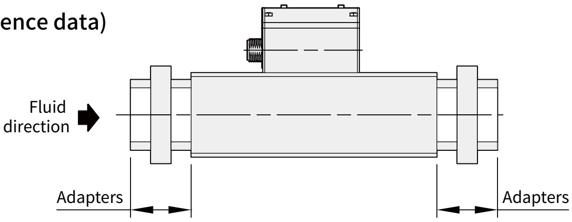


FPX-302/ 402 Straight pipe department 50mm(6.7D)

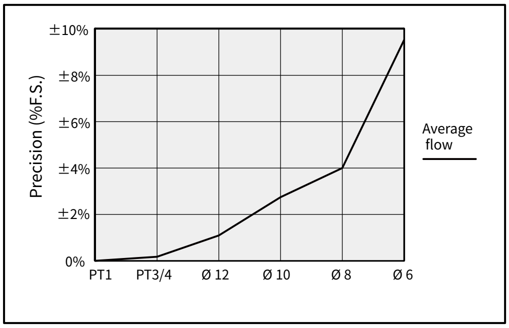


### Different pipe diameters and accuracy (reference data)

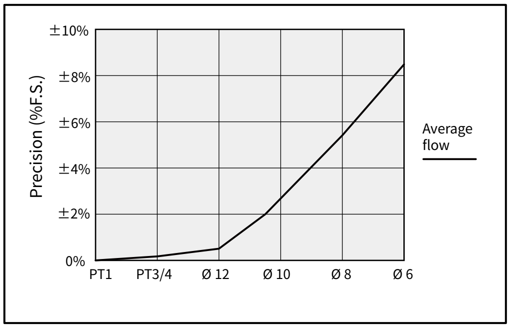
Different pipe diameters will directly affect the accuracy, especially the pipe diameter at the outlet end, it is recommended not smaller than Ø12, otherwise it will affect the current limit and cause the error.



FPX-302 Different pipe diameter adapters



FPX-402 Different pipe diameter adapters

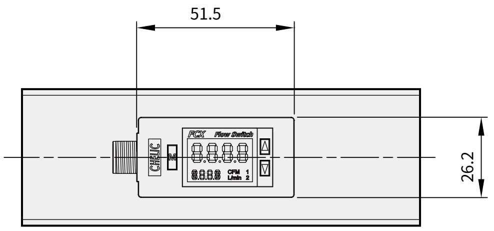


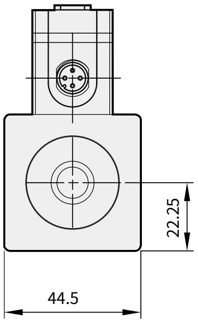
Note: 1. When the product is controlled at the front end; the straight pipe is about 1D long and the accuracy can also reach about ±3%.
2. We suggest to install a straight pipe at the back end to improve the error effect if the pipe diameter is too small.
3. We suggest use the inner diameter of the pipe size more than Ø12 to avoid the flow restriction and pressure instability.

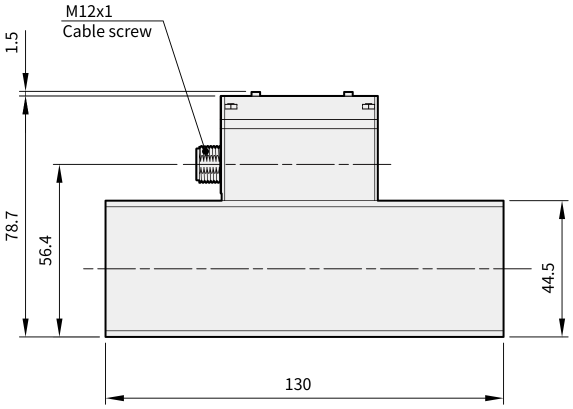
# FPX series Differential Pressure Type Flow Switch/ Large Flow

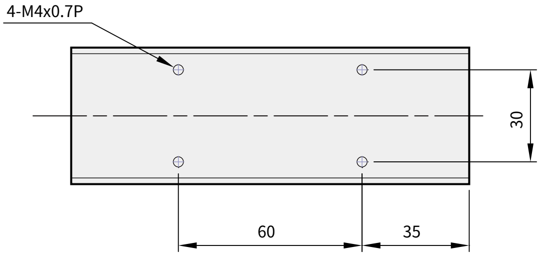
## Dimensions

### FPX


51.5
26.2
FPX Flow Switch
CHELIC
CFM 1
L/min 2




M12x1
Cable screw
1.5
78.7
56.4
44.5
130

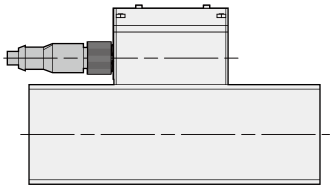

4-M4x0.7P
30
60
35

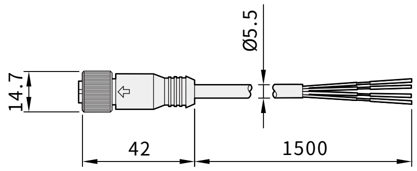
# FPX series Differential Pressure Type Flow Switch/ Large Flow

## Dimensions/ Wire connector

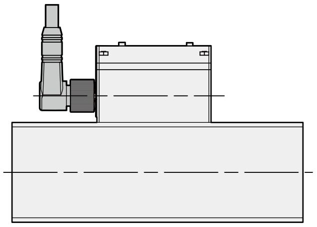
## Fitting size graph

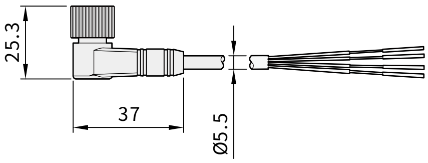
● Straight type-S



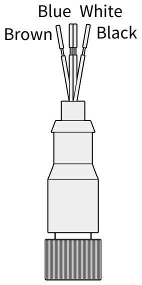

Ø5.5
14.7
42
1500

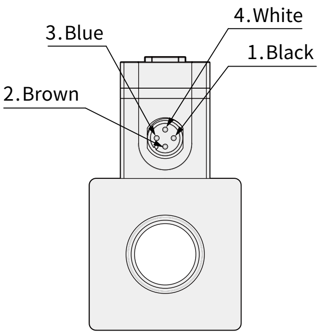
● Angle type-H





## FPX series Wire connector


Blue
White
Brown
Black


4.White
3.Blue
1.Black
2.Brown

| PIN | Color | Specification |
|---|---|---|
| 01 | Black | Switch output: max : 50mA |
| 02 | Brown | Power＋(24V) |
| 03 | Blue | Power－(GND) |
| 04 | White | Voltage output: 1-5V or 0-10V<br>Current output(Load impedance): 4-20mA |

# FC series Thermal Type Flow Switch

## Product features

### Feature

- Two-color display, easy to detect the value.
- Intuitive integration, convenient and easy to operate.
- Lightweight and easy to install.

### Specification

| Item | Model | FCS | | | | FCM | | | FCH | |
|---|---|---|---|---|---|---|---|---|---|---|
| Flow rate L/min | | 0.5 | 2 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 |
| Port size mm | | Ø4, Ø6, Ø8, PT1/4, PT1/8 | | | | Ø6, Ø8, PT1/4, PT1/8 | | | PT1/2 | |
| Measure fluid | | Air, nitrogen Note 2 | | | | | | | | |
| Flow unit Note 1 | Display | 2 color LCD | | | | | | | | |
| | Displayable range L/min | 0~0.5 | 0~2 | 0~10 | 0~20 | 0~50 | 0~100 | 0~200 | 0~500 | 0~1000 |
| | Min. display unit L/min | 0.001 | 0.01 | | 0.1 | | | 1 | | |
| Accumulated pulse flow function | Displayable range L | 99999.99 | | | 999999.9 | | | 9999999 | | |
| | Min. display unit L | 0.001 | 0.01 | | 0.1 | | | 1 | | |
| Power Type | Voltage | DC24V(±10%) | | | | | | | | |
| Current consumption | | 50mA or below Note 5 | | | | | | | | |
| Response time | | 50ms or below | | | | | | | | |
| Environment Note 2 | Min. operating pressure MPa | 0.1 | | | | | | | | |
| | Max. operating pressure MPa | 0.7 | | | | | | | | |
| | Proof pressure MPa | 1 | | | | | | | | |
| | Ambient of fluid temperature and humidity | 0~50°C , 90% RH or below | | | | | | | | |
| | Operating temperature range | 0~50°C | | | | | | | | |
| Accuracy Note 3 | Operating range | 3~100%F.S. | | | | | | | | |
| | Linearity | within ±3%F.S.(The secondary atmospheric release) | | | | | | | | |
| | Pressure characteristics | within ±5%F.S. | | | | | | | | |
| | Temperature characteristics | within ±0.2%F.S/°C (15~35°C , 25°C base) | | | | | | | | |
| | Repeatability | within ±1%F.S. | | | | | | | | |
| Output type | Analog output | Voltage output: 0.5~4.5V, Load Impedance: 50kΩ<br>Voltage output: 4~20mA , Load Impedance: 600Ω Note 4 | | | | | | | | |
| | Switch output | 2NPN open collector output<br>2PNP open collector output (Max. loading current: 50mA; Power supply voltage: DC24V) | | | | | | | | |
| Wiring | | Ø3.8AWG26 X 5Core | | | | | | | | |
| Enclosure | | IP40 | | | | | | | | |
| Circuit protection Note 6 | | Reverse power connect protection, Output reverse connection protection | | | | | | | | |
| Weight g | | 59 | | | | | | | 138 | |

Note: 1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 ° C or colder),and oil mist filter (maximum oil concentration: 0.1 mg/m3) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 ° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
7. Please refer to P.1-4.88 for FC precautions.

# FC series Thermal Type Flow Switch

## Model selection

## Sequence 1 Flow range selection

### Flow reference table

| Flow | Measuring flow range | F.S. flow deviation |
|---|---|---|
| 500mL | 15mL~500mL | ±15mL |
| 2L | 0.06L~2L | ±0.06L |
| 10L | 0.3L~10L | ±0.3L |
| 20L | 0.6L~20L | ±0.6L |
| 50L | 1.5L~50L | ±1.5L |
| 100L | 3L~100L | ±3L |
| 200L | 6L~200L | ±6L |
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |

1. F.S. flow deviation (allowable error ±3%)
   ex: 10L (1000mL) flowmeter 1000mL*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
2. Before selecting a flow meter, you need to determine the flow range you used.
   ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
3. Pay attention to the Min. flow range for the flowmeter
   ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
4. If the rate is higher than F.S. 3%, the flowmeter will display H.
   ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

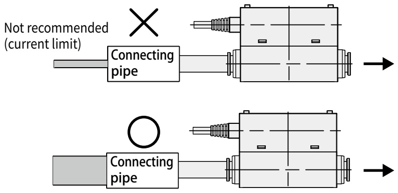
## Sequence 2 Port size selection

- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.
  (EX: 500 type connection caliber only Ø6 and Ø8 specifications can be used directly)
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

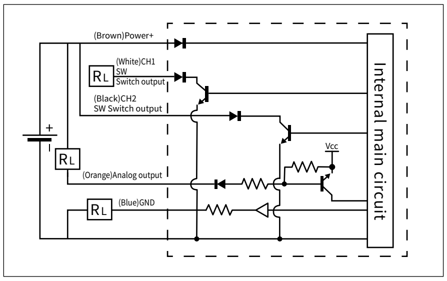
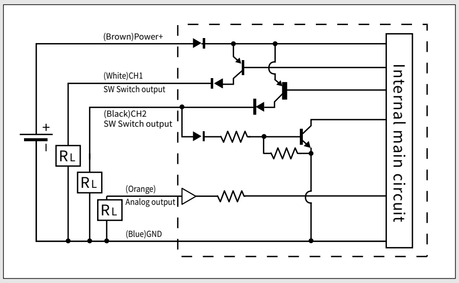
## Sequence 3 Analog output and switch output is option

- The output signal has voltage and current options, please confirm the output signal and choose.

| | | |
|---|---|---|
| Output signal | Voltage type | DC0.5-4.5V |
| | Current type | DC4-20mA |
| Output impedance | Voltage type | 50kΩ |
| | Current type | 300Ω |


Not recommended
(current limit)
Connecting pipe
Connecting pipe

- Confirm the switch signal NPN or PNP type.

| | NPN | PNP |
|---|---|---|
| Switch output |  |  |

(Brown)Power+
(White)CH1 SW Switch output
(Black)CH2 SW Switch output
(Orange)Analog output
(Blue)GND
RL
Vcc
Internal main circuit
(Brown)Power+
(White)CH1 SW Switch output
(Black)CH2 SW Switch output
(Orange) Analog output
(Blue)GND
RL
Internal main circuit

## Code of order -Thermal type flow switch

**FC S - 020 - C04 - V - N - B - 3**

① ② ③ ④ ⑤ ⑥ ⑦

①

| Mark | Type |
|---|---|
| S | Small flow rate |
| M | Medium flow rate |
| H | Large flow rate |

②

| Type | Mark | Flow(L/min) |
|---|---|---|
| FCS | 005 | 500mL |
|  | 020 | 2 |
|  | 100 | 10 |
|  | 200 | 20 |
| FCM | 500 | 50 |
|  | 101 | 100 |
|  | 201 | 200 |
| FCH | 501 | 500 |
|  | 102 | 1000 |

③

| Mark | Port Size | FCS |  |  |  | FCM |  |  | FCH |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 005 | 020 | 100 | 200 | 500 | 101 | 201 | 501 | 102 |
| C04 | Ø4 | ● | ● | ● | – | – | – | – | – | – |
| C06 | Ø6 | ● | ● | ● | ● | ● | – | – | – | – |
| C08 | Ø8 | – | – | – | – | ● | ● | ● | – | – |
| P01 | PT1/8 | ● | ● | ● | ● | ● | – | – | ● | ● |
| P02 | PT1/4 | – | – | – | ● | ● | ● | ● | – | – |
| P04 | PT1/2 | – | – | – | – | – | – | – | ● | ● |

④

| Mark | Display Output |
|---|---|
| V | Voltage type 0.5-4.5V |
| A | Current type 4-20mA |

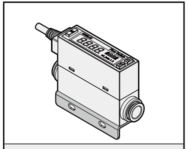
⑤

| Mark | Switch Output |
|---|---|
| N | NPN Output |
| P | PNP Output |

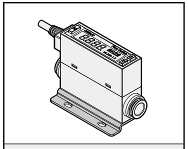
⑥

| Mark | Bracket | FCS | FCM | FCH |
|---|---|---|---|---|
| None | – | No bracket |  |  |
| B | Flat bracket | ● | ● | – |
| L | L type bracket | ● | ● | ● |

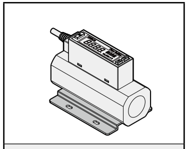
● Image



FCS/FCM
Flat bracket



FCS/FCM
L type bracket



FCH
L type bracket

⑦

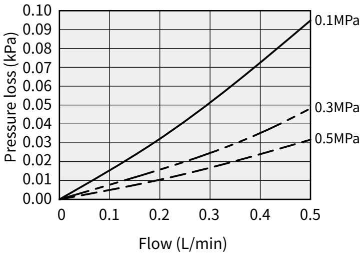
| Mark | Cable Connector |
|---|---|
| None | Without cable |
| 1 | 1m |
| 3 | 3m |

# FC series Thermal Type Flow Switch

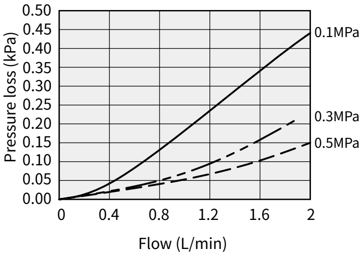
## Characteristics graph

### Pressure loss characteristics

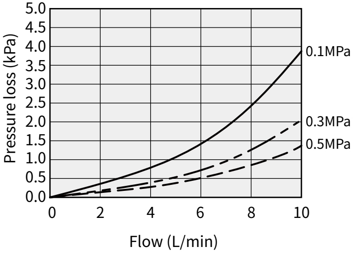
FCS-005



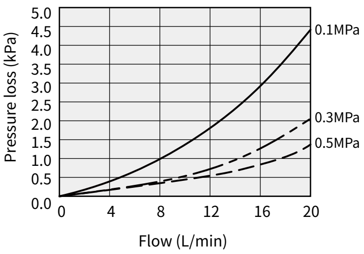
FCS-020



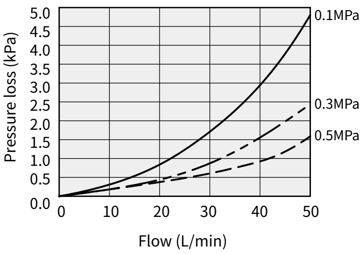
FCS-100



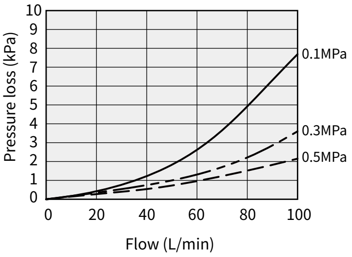
FCS-200



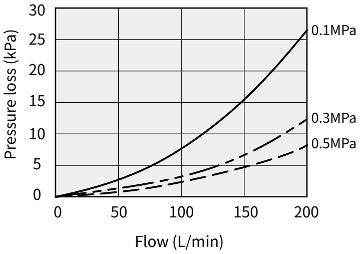
FCM-500



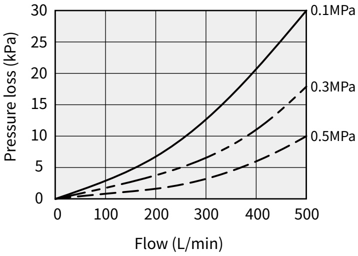
FCM-101



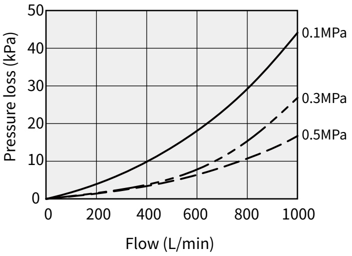
FCM-201



FCH-501



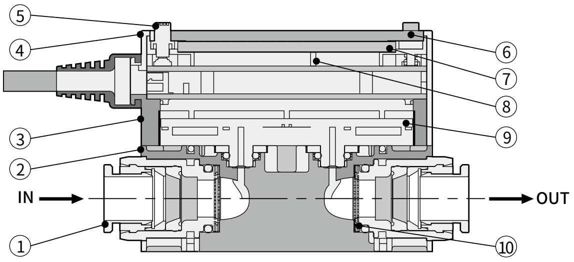
FCH-102



# FC series Thermal Type Flow Switch

## Product features

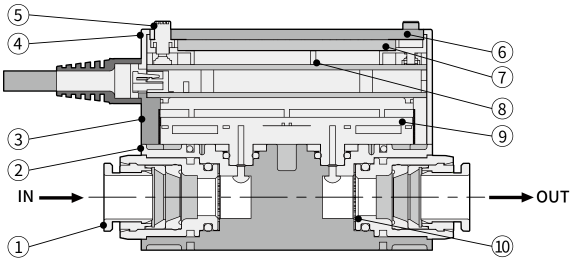
### FCS



### Components and Material list

| No. | Item | Material |
|---|---|---|
| 1 | Fitting assembly | Aluminum material |
| 2 | Main body | Nylon fiber |
| 3 | Cover of sensor module | Nylon |
| 4 | Cover | ABS resin |
| 5 | Bottom | Silicone |
| 6 | Acrylic display frame | Acrylic |
| 7 | LCD | – |
| 8 | LCD support bracket | Polycarbonate |
| 9 | Flow sensor module | PCB |
| 10 | Fairing board | Stainless steel |

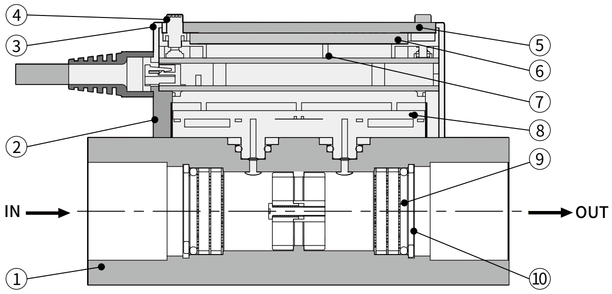
### FCM



### Components and Material list

| No. | Item | Material |
|---|---|---|
| 1 | Fitting assembly | Aluminum material |
| 2 | Main body | Nylon fiber |
| 3 | Cover of sensor module | Nylon |
| 4 | Cover | ABS resin |
| 5 | Bottom | Silicone |
| 6 | Acrylic display frame | Acrylic |
| 7 | LCD | – |
| 8 | LCD support bracket | Polycarbonate |
| 9 | Flow sensor module | PCB |
| 10 | Fairing board | Stainless steel |

### FCH



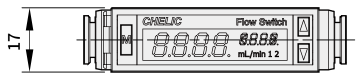
### Components and Material list

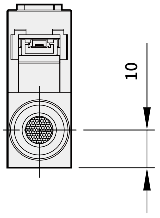
| No. | Item | Material |
|---|---|---|
| 1 | Main body | Aluminum material |
| 2 | Cover of sensor module | Nylon |
| 3 | Cover | ABS resin |
| 4 | Bottom | Silicone |
| 5 | Acrylic display frame | Acrylic |
| 6 | LCD | – |
| 7 | LCD support bracket | Polycarbonate |
| 8 | Flow sensor module | PCB |
| 9 | Fairing board | Stainless steel |
| 10 | O-ring | Stainless steel |

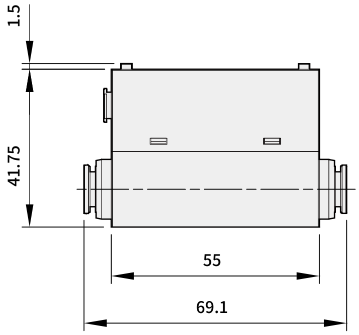
# FC series Thermal Type Flow Switch

## Dimensions

### FCS/ FCM

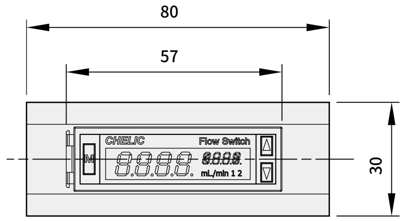

17
CHELIC
Flow Switch
M
8.8.8.8.
8.8.8.
mL/min 1 2

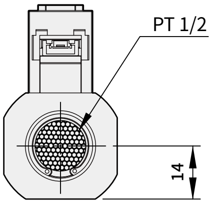


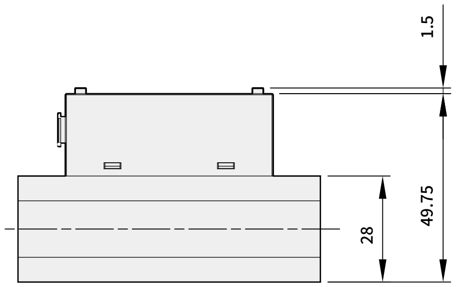

1.5
41.75
55
69.1

---

### FCH


80
57
CHELIC
Flow Switch
M
8.8.8.8.
8.8.8.
mL/min 1 2
30



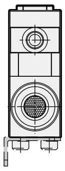


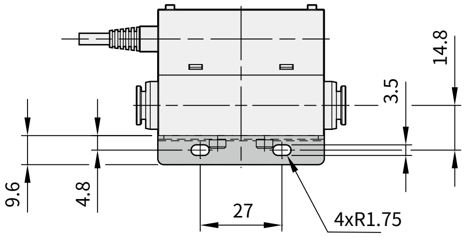
# FC series Thermal Type Flow Switch

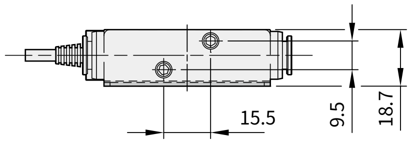
## Dimensions

### FCS/ FCM Bracket

Flat bracket- B




14.8
3.5
9.6
4.8
27
4xR1.75



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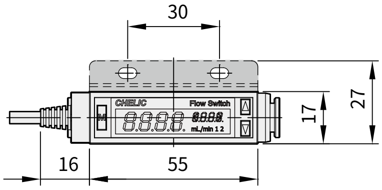
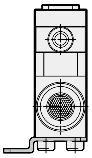
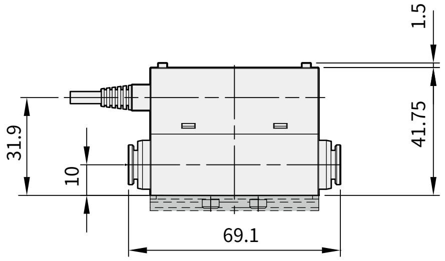
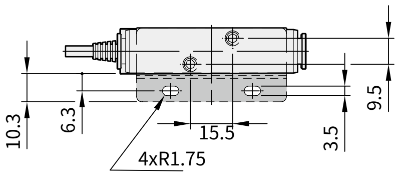
L type bracket- L


30
CHELIC
Flow Switch
8.8.8.8.
mL/min 1 2
17
27
16
55




1.5
41.75
31.9
10
69.1

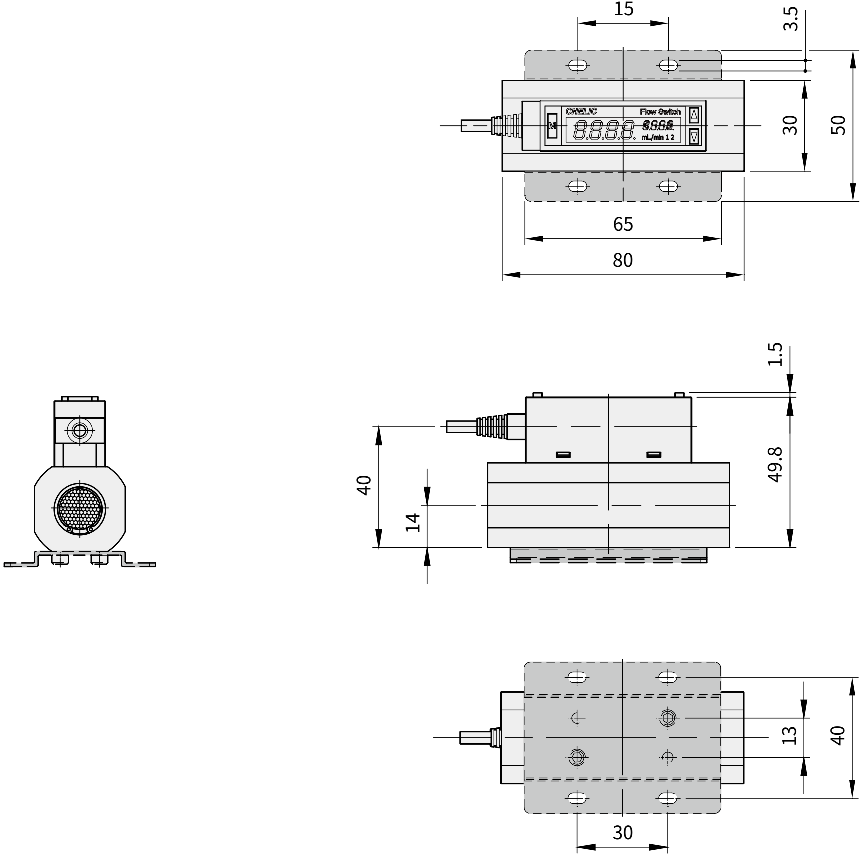

10.3
6.3
15.5
9.5
3.5
4xR1.75

# FC series Thermal Type Flow Switch

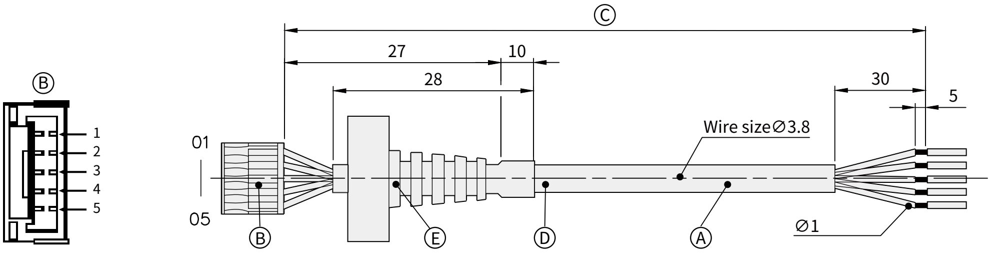
## Dimensions/ Wire connector

### FCH Bracket

- L type bracket- L


15
3.5
CHELIC
Flow Switch
M
8888.
8888.
mL/min 1 2
30
50
65
80
1.5
49.8
40
14
13
40
30

### FC series wire connector


Ⓒ
27
10
28
30
5
Ⓑ
1
2
3
4
5
01
05
Wire size∅3.8
∅1
Ⓑ
Ⓔ
Ⓓ
Ⓐ

| PIN | Wire color | Specification |
|---|---|---|
| 01 | Brown | Power+( 24V ) |
| 02 | White | CH1 (switch output 1: max: 50mA) |
| 03 | Black | CH2 (switch output 2: max: 50mA) |
| 04 | Orange | Voltage output: 0.5-4.5V<br>Current output: 4-20mA |
| 05 | Blue | Power−(GND) |

| NO. | Specification |
|---|---|
| Ⓐ | Wire: Inside (AWG26/ 5 line); cover: white |
| Ⓑ | 5 PIN connector |
| Ⓒ | Wire length: L = 1000mm ±50 or<br>L = 3000mm ± 50 (depend on part number) |
| Ⓓ | Heat shrink tubing (black) |
| Ⓔ | FC-D/ FC-R series electronic connector anti-folding sleeve |

# FC-D series Display-split Thermal Type Flow Switch

## Model selection order

**CHELIC**

## Sequence 1 Flow range selection

### Flow reference table

| Flow | Measuring flow range | F.S. flow deviation |
|---|---|---|
| 500mL | 15mL~500mL | ±15mL |
| 2L | 0.06L~2L | ±0.06L |
| 10L | 0.3L~10L | ±0.3L |
| 20L | 0.6L~20L | ±0.6L |
| 50L | 1.5L~50L | ±1.5L |
| 100L | 3L~100L | ±3L |
| 200L | 6L~200L | ±6L |
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |

1. F.S. flow deviation (allowable error ±3%)
   ex: 10L (1000mL) flowmeter 1000mL*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
2. Before selecting a flow meter, you need to determine the flow range you used.
   ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
3. Pay attention to the Min. flow range for the flowmeter
   ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
4. If the rate is higher than F.S. 3%, the flowmeter will display H.
   ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

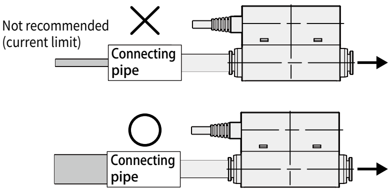
## Sequence 2 Port size selection

- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.
  (EX: 500 type connection caliber only Ø6 and Ø8 specifications can be used directly)
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

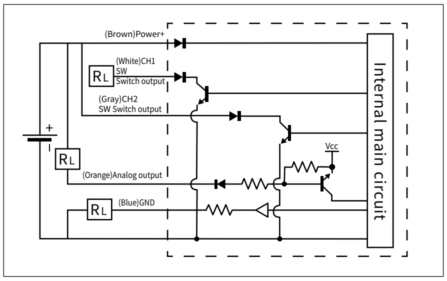
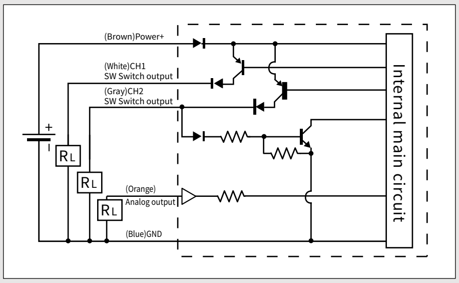
## Sequence 3 Analog output and switch output is option

- The output signal has voltage and current options, please confirm the output signal and choose.

| | | |
|---|---|---|
| Output signal | Voltage type | DC0.5-4.5V |
| Output impedance | Voltage type | 50kΩ |
| | Current type | 300Ω |


Not recommended
(current limit)
✕
Connecting pipe
○
Connecting pipe

- Confirm the switch signal NPN or PNP type.

| | NPN | PNP |
|---|---|---|
| Switch output |  |  |

(Brown)Power+
(White)CH1
SW
Switch output
(Gray)CH2
SW Switch output
(Orange)Analog output
(Blue)GND
RL
RL
RL
Vcc
+
Internal main circuit

(Brown)Power+
(White)CH1
SW Switch output
(Gray)CH2
SW Switch output
(Orange)
Analog output
(Blue)GND
RL
RL
RL
+
Internal main circuit

# FC-D series Display-split Thermal Type Flow Switch

## Product features

**CHELIC**

## Feature

- ● Horizontal display function.
- ● Detachable display, optimized visibility.
- ● No need for straight pipe.

## Specification

| Item | | Model | FCSD | | | | FCMD | | | FCHD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow rate | | L/min | 0.5 | 2 | 10 | 20 | 50 | 100 | 200 | 500 | 1000 |
| Port size | | mm | Ø4, Ø6, Ø8 | | | | Ø6, Ø8 | Ø8 | | Rc1/2 | |
| Measure fluid | | | Air, nitrogen Note 2 | | | | | | | | |
| Flow unit Note 1 | Display | | 2 color LCD | | | | | | | | |
| | Displayable range | L/min | 0~0.5 | 0~2 | 0~10 | 0~20 | 0~50 | 0~100 | 0~200 | 0~500 | 0~1000 |
| | Min. display unit | L/min | 0.001 | 0.01 | | 0.1 | | | 1 | | |
| Accumulated pulse flow function | Displayable range | L | 99999.99 | | | 999999.9 | | | 9999999 | | |
| | Min. display unit | L | 0.001 | 0.01 | | 0.1 | | | 1 | | |
| Power Type | Voltage | | DC24V(±10%) | | | | | | | | |
| Current consumption | | | 50mA or below Note 5 | | | | | | | | |
| Response time | | | 50ms or below | | | | | | | | |
| Environment Note 2 | Min. operating pressure | MPa | 0.1 | | | | | | | | |
| | Max. operating pressure | MPa | 0.7 | | | | | | | | |
| | Proof pressure | MPa | 1 | | | | | | | | |
| | Ambient of fluid temperature and humidity | | 0~50°C , 90%RH or below | | | | | | | | |
| | Operating temperature range | | 0~50°C | | | | | | | | |
| Accuracy Note 3 | Operating range | | 3~100%F.S. | | | | | | | | |
| | Linearity | | within ±3%F.S.(The secondary atmospheric release) | | | | | | | | |
| | Pressure characteristics | | within ±5%F.S. | | | | | | | | |
| | Temperature characteristics | | within ±0.2%F.S/°C (15~35°C , 25°C base) | | | | | | | | |
| | Repeatability | | within ±1%F.S. | | | | | | | | |
| Output type | Analog output | | Voltage output: 0.5~4.5V, Load Impedance: 50kΩ Note 4 | | | | | | | | |
| | Switch output | | 2NPN open collector output<br>2PNP open collector output (Max. loading current: 50mA; Power supply voltage: DC24V) | | | | | | | | |
| Wiring | | | Ø3.8AWG26 X 5 Core | | | | | | | | |
| Enclosure | | | IP40 | | | | | | | | |
| Circuit protection Note 6 | | | Reverse power connect protection, Output reverse connection protection | | | | | | | | |
| Weight | | g | 56 | | | | | | 141 | | |

Note:
1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 ° C or colder),and oil mist filter (maximum oil concentration: 0.1 mg/m3) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 ° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
7. Please refer to P.1-4.88 for FC-D precautions.

# FC-D series Display-split Thermal Type Flow Switch

## Product features

### Feature

- Connected way, simple wiring.
- Unlimited installation methods.
- Display interface, easy to install and managed .

### Specification

| Item \ Model | | FCD | |
|---|---|---|---|
| Setting flow range Note: 1 | | ml | 5, 10, 50, 100 ,500 |
| | | l | 1, 2, 4, 5, 10, 12, 20 ,25, 32, 50 , 100, 200, 500, 1000, 1500 |
| Ambient of fluid temperature and humidity Note: 5 °C | | 0 ~ 50 | |
| Display type | | 4 digit + 4 digit; 2 color LCD display | |
| Input voltage | | 0.5~4.5V | |
| Output type | Analog output | 0.5 ~ 4.5 V voltage output 1 point (load impedance 50k Ω above) Note: 4 | |
| | Switch output | 2 NPN open collector output, 50mA or below, voltage dropping | |
| Power supply voltage | | DC12~24V (10.8~26.4V) | |
| Current consumption Note: 2 | | Below 40mA (when reach to DC24V, load impedance ) | |
| Wiring | | Ø 3.7 is AWG 26 x 5 core (connector), insulator outter dia. Ø 1.0 | |
| Function | | Flow display, flow display to peak holding, on-off output, analog output | |
| Enclosure | | IEC standard equal to IP 40 | |
| Circuit protection Note: 3, 6 | | Reverse power connect protection | |
| Accessory | | 1 sensing connector with 1 meter cable | |
| Weight (body only) g | | about 16 | |

Note: 1. When connecting FC monitor, it detects flow range automatically (The setting will be down before delivery).
2. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
3. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. When using compressed air, use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10° C or colder), and oil mist filter (maximum oil concentration: 0.1 mg/m3) on the primary side of this product to maintain product functions.
6. Please collabrate the product within specification requested. The environment condition: 25+/ - 3 ° C, voltage output DC 24V +/ - 0.1V. F.S. indicates the actual portion of flow rate.
7. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
8. Please refer to P.1-4.88 for FC-D precautions.

# FC-D series Display-split Thermal Type Flow Switch

## Code of order

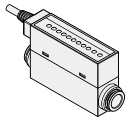
**CHELIC**

### Code of order-Seperateable flow switch

**FC SD - 020 - C04 - V - B - 3**

① ② ③ ④ ⑤ ⑥

①



| Mark | Type |
|---|---|
| SD | Small flow rate |
| MD | Medium Flow rate |
| HD | Large flow rate |

②

| Type | Mark | Flow (L/min) |
|---|---|---|
| FCSD | 005 | 500mL |
| | 020 | 2 |
| | 100 | 10 |
| | 200 | 20 |
| FCMD | 500 | 50 |
| | 101 | 100 |
| | 201 | 200 |
| FCHD | 501 | 500 |
| | 102 | 1000 |

③

| Mark | Port size | FCSD | | | | FCMD | | | FCHD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 005 | 020 | 100 | 200 | 500 | 101 | 201 | 501 | 102 |
| C04 | Ø4 | ● | ● | ● | - | - | - | - | - | - |
| C06 | Ø6 | ● | ● | ● | ● | ● | - | - | - | - |
| C08 | Ø8 | - | - | - | - | ● | ● | ● | - | - |
| P04 | PT1/2 | - | - | - | - | - | - | - | ● | ● |

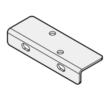
④

| Mark | Monitor Output |
|---|---|
| V | Voltage type 0.5-4.5V |

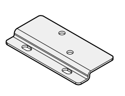
⑤

| Mark | Bracket | FCSD | FCMD | FCHD |
|---|---|---|---|---|
| None | - | No bracket | | |
| B | Flat bracket | ● | ● | - |
| L | L type bracket | ● | ● | ● |

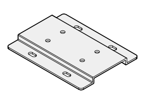
● Image



FCSD/FCMD
Flat bracket



FCSD/FCMD
L type bracket



FCHD
L type bracket

⑥

| Mark | Cable Connector |
|---|---|
| None | Without cable |
| 1 | 1m |
| 3 | 3m |

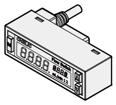
### Code of order-Seperateable Flow Switch

(This product is for numerical display only without flow sensing function.)

**FCD - 020 - V - N - F - 3**

① ② ③ ④ ⑤ ⑥

①



FCD

②

| Type | Mark | Flow(L/min) |
|---|---|---|
| FCD | 005 | 500mL |
| | 020 | 2 |
| | 100 | 10 |
| | 200 | 20 |
| | 500 | 50 |
| | 101 | 100 |
| | 201 | 200 |
| | 501 | 500 |
| | 102 | 1000 |

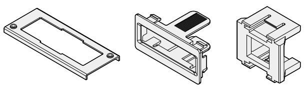
③

| Mark | Monitor Output |
|---|---|
| V | Voltage type 0.5-4.5V |

④

| Mark | Switch Output |
|---|---|
| N | NPN Output |
| P | PNP Output |

⑤

| Mark | Type |
|---|---|
| None | Without accessory |
| F | Monitor assembly accessory<br> |

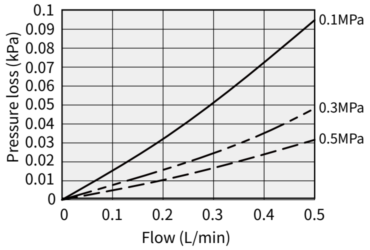
⑥

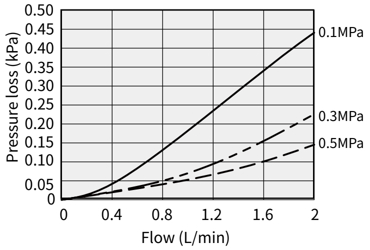
| Mark | Cable Connector |
|---|---|
| None | Without cable |
| 1 | 1m |
| 3 | 3m |

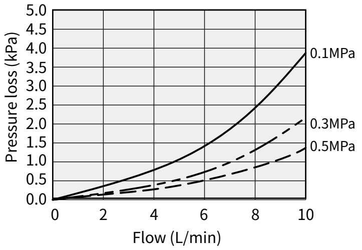
# FC-D series Display-split Thermal Type Flow Switch

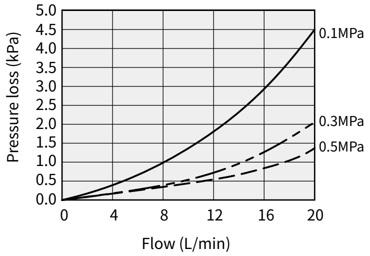
## Characteristics graph

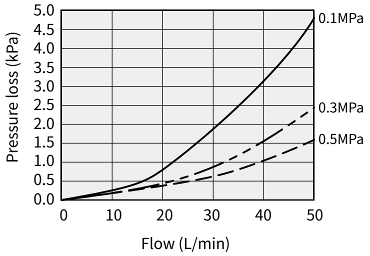
### Pressure loss characteristics

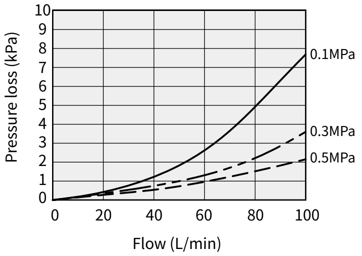

FCSD-005

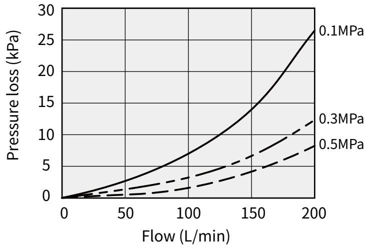

FCSD-020

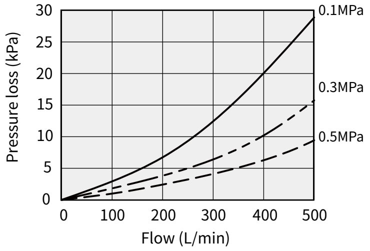

FCSD-100

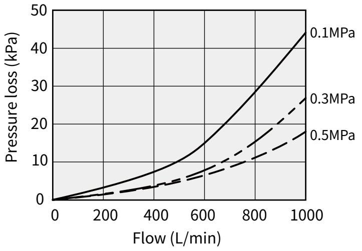

FCSD-200


FCMD-500


FCMD-101


FCMD-201

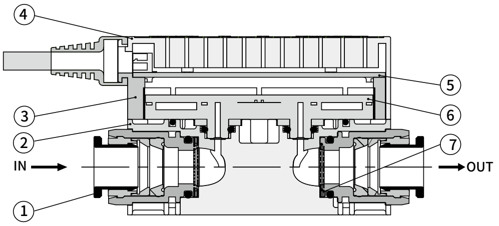

FCHD-501


FCHD-102

# FC-D series Display-split Thermal Type Flow Switch

## Product features

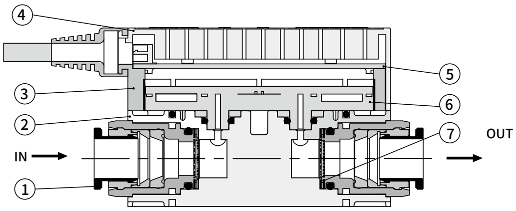
### FCSD



### Components and material list

| No. | Item | Material |
|---|---|---|
| 1 | Fitting assembly | Copper |
| 2 | Main body | Nylon fiber |
| 3 | Cover of sensor module | Nylon |
| 4 | Cover | ABS resin |
| 5 | Upper display panel | PCB |
| 6 | Flow sensor module | PCB |
| 7 | Fairing board | Stainless steel |

### FCMD

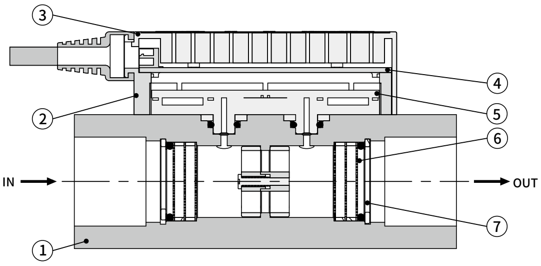


### Components and material list

| No. | Item | Material |
|---|---|---|
| 1 | Fitting assembly | Copper |
| 2 | Main body | Nylon fiber |
| 3 | Cover of sensor module | Nylon |
| 4 | Cover | ABS resin |
| 5 | Upper display panel | PCB |
| 6 | Flow sensor module | PCB |
| 7 | Fairing board | Stainless steel |

---

### FCHD

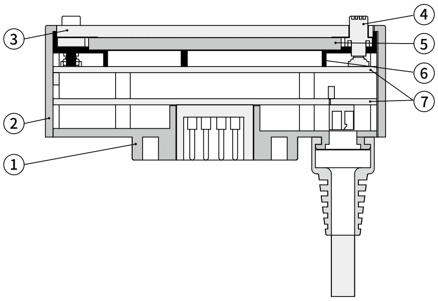


### Components and material list

| No. | Item | Material |
|---|---|---|
| 1 | Main body | Aluminum material |
| 2 | Cover of sensor module | Nylon |
| 3 | Cover | ABS resin |
| 4 | Upper display panel | PCB |
| 5 | Flow sensor module | PCB |
| 6 | Fairing board | Stainless steel |
| 7 | O-ring | Stainless steel |

### FCD

#### Display component list



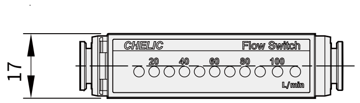
### Components and material list

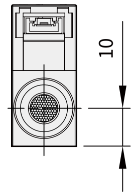
| No. | Item | Material |
|---|---|---|
| 1 | Flow display bottom cover | Nylon |
| 2 | Cover | ABS resin |
| 3 | Acrylic display frame | Acrylic |
| 4 | Bottom | Silicone |
| 5 | LCD | – |
| 6 | LCD support bracket | Polycarbonate |
| 7 | Upper display module | PCB |

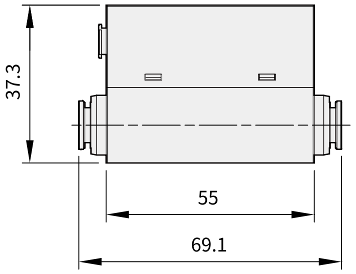
# FC-D series Display-split Thermal Type Flow Switch

## Dimensions

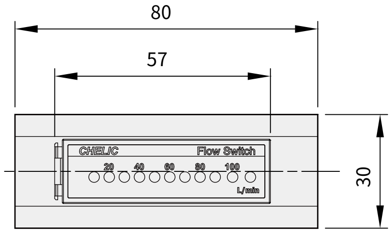
### FCSD/ FCMD

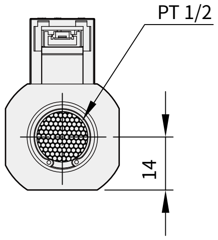

17
CHELIC
Flow Switch
20
40
60
80
100
L/min

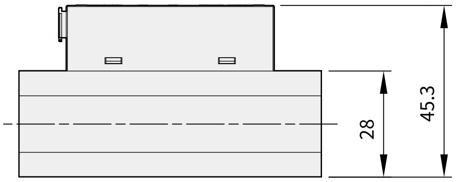




### FCHD


80
57
CHELIC
Flow Switch
20
40
60
80
100
L/min
30

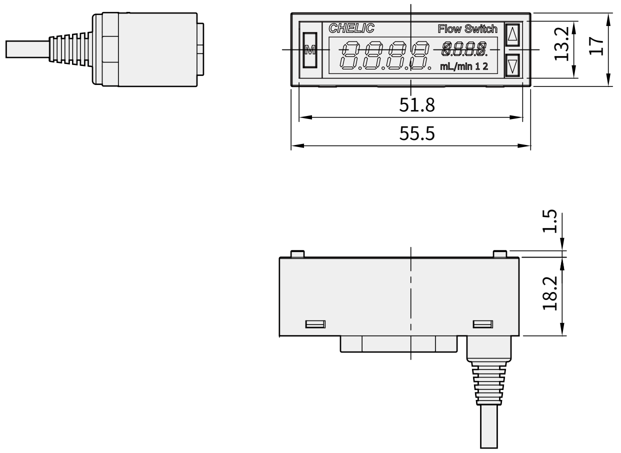




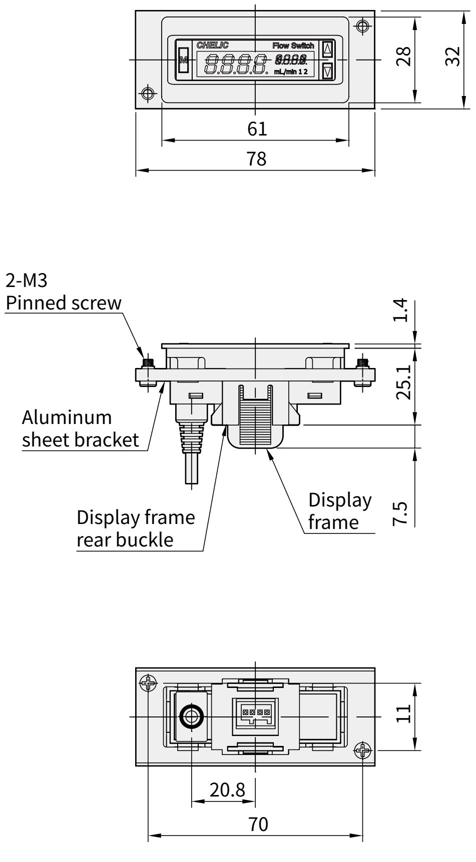
# FC-D series Display-split Thermal Type Flow Switch

## Dimensions

### FCD Display

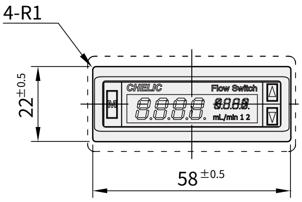

CHELIC
Flow Switch
M
8.8.8.8.
mL/min 1 2
13.2
17
51.8
55.5
1.5
18.2

### FCD Display bracket

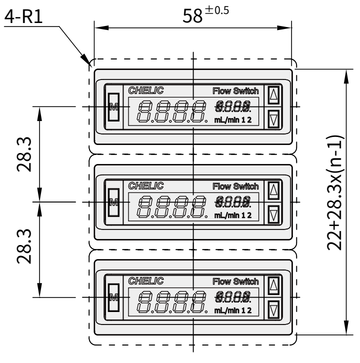

CHELIC
Flow Switch
M
28
32
61
78
2-M3
Pinned screw
1.4
25.1
Aluminum
sheet bracket
Display frame
rear buckle
Display
frame
7.5
11
20.8
70

### Display dimension

- When FCD single unit assembled


4-R1
22±0.5
CHELIC
Flow Switch
M
58±0.5

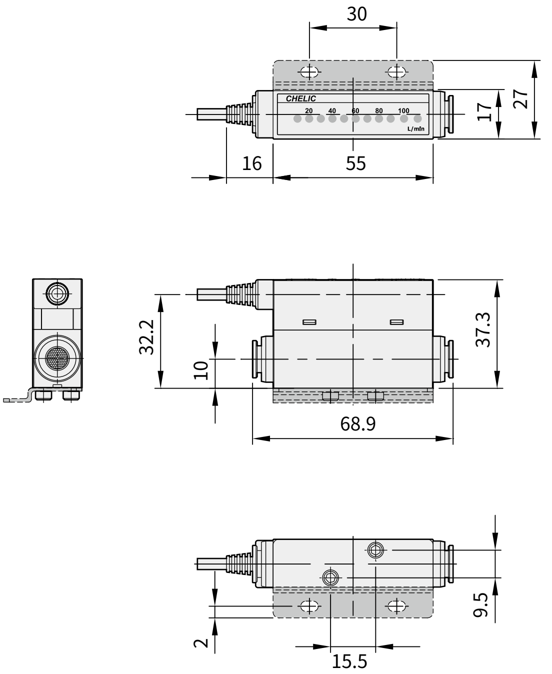
- When FCD assembled in grouping


4-R1
58±0.5
28.3
28.3
22+28.3x(n-1)
CHELIC
Flow Switch
M

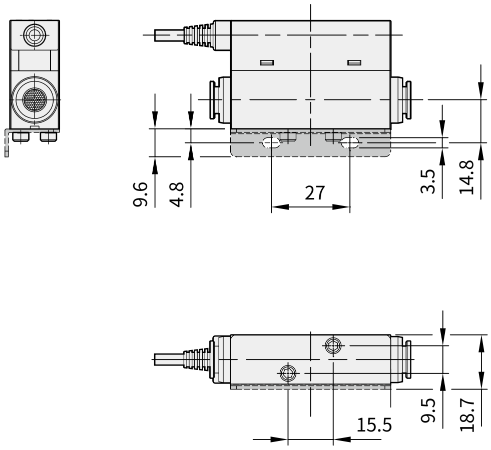
# FC-D series Display-split Thermal Type Flow Switch

## FCSD/ FCMD Bracket

- L type bracket- L

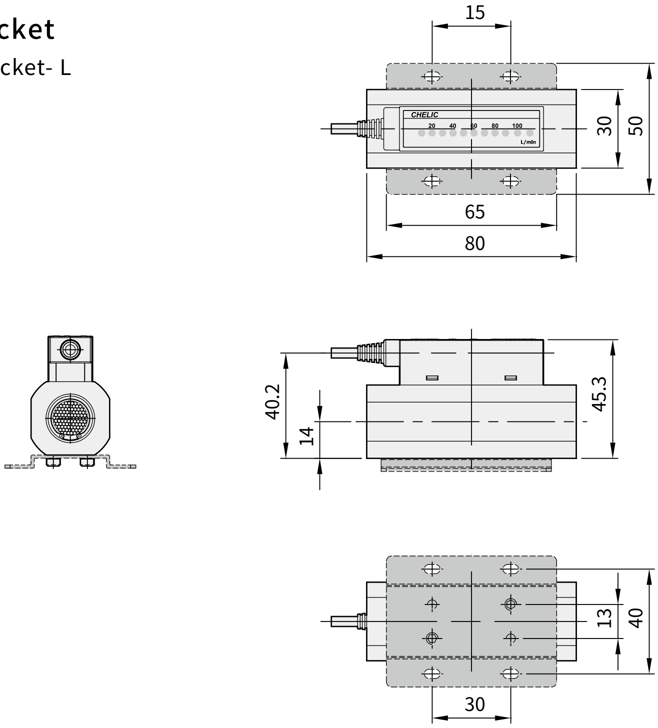

30
27
17
CHELIC
20
40
60
80
100
L/min
16
55
32.2
10
37.3
68.9
9.5
2
15.5

- Flat bracket- B


9.6
4.8
27
3.5
14.8
15.5
9.5
18.7

## FCHD Bracket

- L type bracket- L

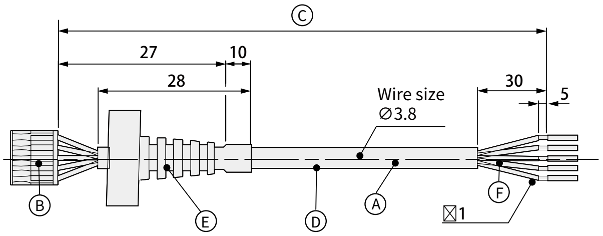

15
CHELIC
20
40
60
80
100
L/min
30
50
65
80
40.2
14
45.3
13
40
30

# FC-D series Display-split Thermal Type Flow Switch

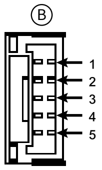
Cable assembly

## Cable assembly

### FC

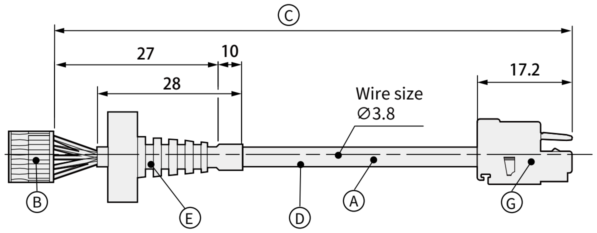

Ⓒ
27
10
28
Wire size
Ø3.8
30
5
Ⓑ
Ⓔ
Ⓓ
Ⓐ
Ⓕ
☒1

Wire connector 1.25Px5pin

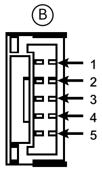


| PIN | Wire color | Specification |
|---|---|---|
| 01 | Brown | Power ＋( 24V ) |
| 02 | White | CH1 (Switch output 1: max: 50mA) |
| 03 | Black | CH2 (Switch output 2: max: 50mA) |
| 04 | Orange | Voltage output: 0.5-4.5V<br>Load impedance: 50kΩ above |
| 05 | Blue | Power －(GND) |

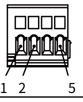
### FCD


Ⓒ
27
10
28
17.2
Wire size
Ø3.8
Ⓑ
Ⓔ
Ⓓ
Ⓐ
Ⓖ

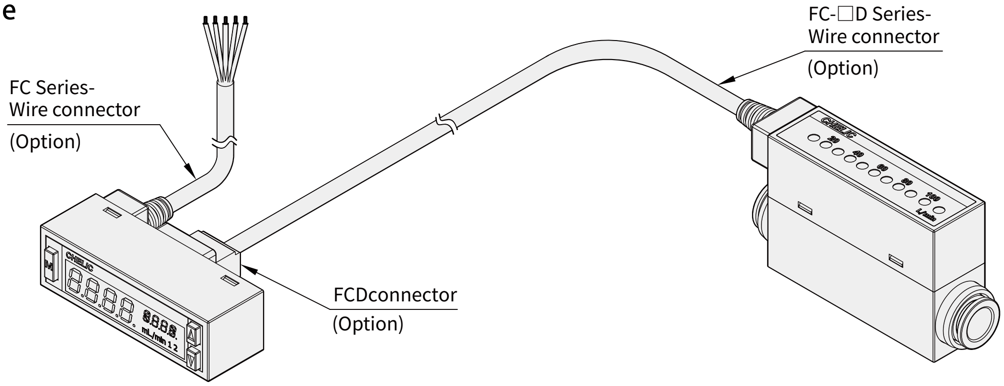
Wire connector 1.25Px5pin



| PIN | Wire color | Specification |
|---|---|---|
| 01 | Brown | Power ＋( 24V ) |
| 02 | White | Voltage output: 0.5-4.5V<br>Load impedance: 50kΩ above |
| 03 | Black | N･C |
| 04 | Orange | N･C |
| 05 | Blue | Power －(GND) |

<table>
<tr><th>NO.</th><th>Specification</th><th>NO.</th><th colspan="5">Specification</th></tr>
<tr><td>Ⓐ</td><td>Wire: Inside (AWG26/ 5 line); cover: white</td><td rowspan="2">Ⓕ</td><td colspan="5" rowspan="2">Insulator outer diameter: About Ø1<br>Insulator tone: Brown, White, Black, Orange, Blue</td></tr>
<tr><td>Ⓑ</td><td>5 PIN connector</td></tr>
<tr><td>Ⓒ</td><td>Wire length: L= 1000mm±50 or L= 3000mm±50</td><td rowspan="3">Ⓖ</td><td rowspan="3">FCD connector<br> </td><td colspan="4">Corresponding to the color wiring of the FCD wire terminal also attach a separate wiring hand tool.</td></tr>
<tr><td>Ⓓ</td><td>Heat shrink tubing (black)</td><td>01</td><td>02</td><td></td><td>05</td></tr>
<tr><td>Ⓔ</td><td>FC-D/ FC-R series electronic connector anti-folding sleeve</td><td>Brown</td><td>White</td><td></td><td>Blue</td></tr>
</table>

## Image


FC Series-
Wire connector
(Option)
FCDconnector
(Option)
FC-□D Series-
Wire connector
(Option)

# FC-R series Speed-control Thermal Type Flow Switch

## Product features

CVTR
CVAR
CVFR
CMT□
CMA□
FPF
FP
FPX
FC
FC-D
FC-R

### Feature

- Adjustable flow rate
- Suitable for fixed constant speed
- Integration the flow switch and regulating valve (Space saving)

### Specification

| Item / Model | | | FCSR | | | | FCMR | | |
|---|---|---|---|---|---|---|---|---|---|
| Flow rate | | L/min | 0.5 | 2 | 10 | 20 | 50 | 100 | 200 |
| Port size | | mm | Ø4, Ø6 | | | Ø6 | Ø6, Ø8 | Ø8 | |
| Measure fluid | | | Air, nitrogen Note 2 | | | | | | |
| Flow unit Note 1 | Display | | 2 color LCD | | | | | | |
| | Displayable range | L/min | 0~0.5 | 0~2 | 0~10 | 0~20 | 0~50 | 0~100 | 0~200 |
| | Min. display unit | L/min | 0.001 | 0.01 | | 0.1 | | | 1 |
| Accumulated pulse flow function | Displayable range | L | 99999.99 | | | 999999.9 | | | 9999999 |
| | Min. display unit | L | 0.001 | 0.01 | | 0.1 | | | 1 |
| Power Type | Voltage | | DC24V(±10%) | | | | | | |
| Current consumption | | | 50mA or below Note 5 | | | | | | |
| Response time | | | 50ms or below | | | | | | |
| Environment Note 2 | Min. operating pressure | MPa | 0.1 | | | | | | |
| | Max. operating pressure | MPa | 0.7 | | | | | | |
| | Proof pressure | MPa | 1 | | | | | | |
| | Ambient of fluid temperature and humidity | | 0~50°C , 90%RH or below | | | | | | |
| | Operating temperature range | | 0~50°C | | | | | | |
| Accuracy Note 3 | Operating range | | 3~100%F.S. | | | | | | |
| | Linearity | | within ±3%F.S.(The secondary atmospheric release) | | | | | | |
| | Pressure characteristics | | within ±5%F.S. | | | | | | |
| | Temperature characteristics | | within ±0.2%F.S/°C (15~35°C , 25°C base) | | | | | | |
| | Repeatability | | within ±1%F.S. | | | | | | |
| Output type | Analog output | | Voltage output: 0.5~4.5V, Load Impedance: 50kΩ Note 4 | | | | | | |
| | Switch output | | 2NPN open collector output<br>2PNP open collector output (Max. loading current: 50mA; Power supply voltage: DC24V) | | | | | | |
| Wiring | | | Φ3.8AWG26 X 5 Core | | | | | | |
| Enclosure | | | IP40 | | | | | | |
| Circuit protection Note 6 | | | Reverse power connect protection, Output reverse connection protection | | | | | | |
| Weight | | g | 87 | | | | | | |

Note:
1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).
2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10 ° C or colder),and oil mist filter (maximum oil concentration: 0.1 mg/m3) on the primary side of this product to maintain product functions.
3. Please collabrate the product within specification requested. The environment condition: 25+/- 3 ° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.
4. Analog output is with load impendance 1kΩ. When the connection to load impedance is low, the output value differenciation will increase. Please do make sure the connection of load impendance difference before use.
5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.
6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.
7. Please refer to P.1-4.88 for FC-R precautions.

# FC-R series Speed-control Thermal Type Flow Switch

## Model selection order

## Sequence 1 Flow range selection

### Flow reference table

| Flow | Measuring flow range | F.S. flow deviation |
|---|---|---|
| 500mL | 15mL~500mL | ±15mL |
| 2L | 0.06L~2L | ±0.06L |
| 10L | 0.3L~10L | ±0.3L |
| 20L | 0.6L~20L | ±0.6L |
| 50L | 1.5L~50L | ±1.5L |
| 100L | 3L~100L | ±3L |
| 200L | 6L~200L | ±6L |
| 500L | 15L~500L | ±15L |
| 1000L | 30L~1000L | ±30L |

1. F.S. flow deviation (allowable error ±3%)
   ex: 10L (1000mL) flowmeter 1000mL*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
2. Before selecting a flow meter, you need to determine the flow range you used.
   ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
3. Pay attention to the Min. flow range for the flowmeter
   ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
4. If the rate is higher than F.S. 3%, the flowmeter will display H.
   ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

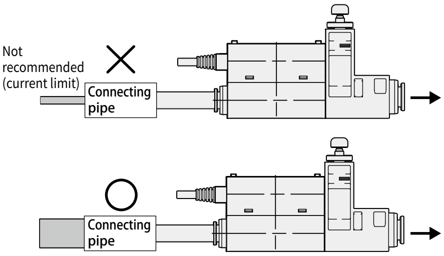
## Sequence 2 Port size selection

- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.
  (EX: 500 type connection caliber only Ø6 and Ø8 specifications can be used directly)
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

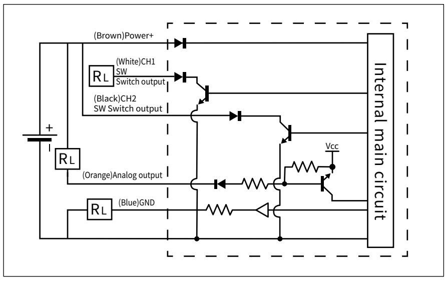
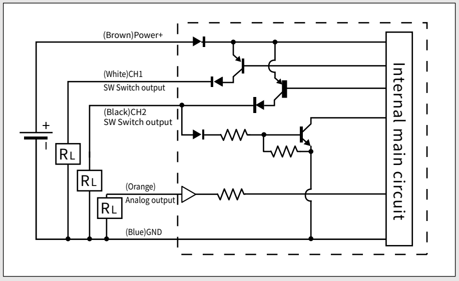
## Sequence 3 Analog output and switch output is option

- The output signal has voltage and current options, please confirm the output signal and choose.

| | | |
|---|---|---|
| Output signal | Voltage type | DC0.5-4.5V |
| Output impedance | Voltage type | 50kΩ |
| | Current type | 300Ω |


Not recommended (current limit)
×
Connecting pipe
○
Connecting pipe

- Confirm the switch signal NPN or PNP type.

| | NPN | PNP |
|---|---|---|
| Switch output |  |  |

(Brown)Power+
(White)CH1 SW Switch output
(Black)CH2 SW Switch output
RL
+
Vcc
(Orange)Analog output
(Blue)GND
Internal main circuit

(Brown)Power+
(White)CH1 SW Switch output
(Black)CH2 SW Switch output
+
RL
(Orange) Analog output
(Blue)GND
Internal main circuit

# FC-R series Speed-control Thermal Type Flow Switch

## Code of order

CHELIC

CVTR
CVAR
CVFR
CMT□
CMA□
FPF
FP
FPX
FC
FC-D
FC-R

## Code of order-Speed-control thermal type flow switch

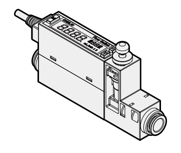
**FC SR - 020 - C04 - V - N - B - 3**

① ② ③ ④ ⑤ ⑥ ⑦

①

| Mark | Type |
|---|---|
| SR | Small flow rate |
| MR | Medium flow rate |

● Image



R: With needle valve

②

| Type | Mark | Flow(L/min) |
|---|---|---|
| FCSR | 005 | 500mL |
| | 020 | 2 |
| | 100 | 10 |
| | 200 | 20 |
| FCMR | 500 | 50 |
| | 101 | 100 |
| | 201 | 200 |

③

| Mark | Port Size | FCSR | | | | FCMR | | |
|---|---|---|---|---|---|---|---|---|
| | | 005 | 020 | 100 | 200 | 500 | 101 | 201 |
| C04 | Ø4 | ● | ● | ● | - | - | - | - |
| C06 | Ø6 | ● | ● | ● | ● | ● | - | - |
| C08 | Ø8 | - | - | - | - | ● | ● | ● |

④

| Mark | Monitor Output |
|---|---|
| V | Current type 0.5-4.5V |

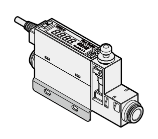
⑤

| Mark | Switch Output |
|---|---|
| N | NPN Output |
| P | PNP Output |

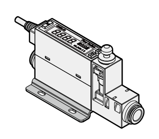
⑥

| Mark | Bracket | FCSR | FCMR |
|---|---|---|---|
| None | - | No bracket | |
| B | Flat bracket | ● | ● |
| L | L type bracket | ● | ● |

● Image



FCSR/ FCMR
Flat bracket



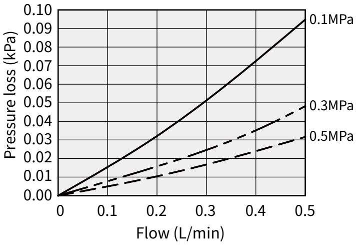
FCSR/ FCMR
L type bracket

⑦

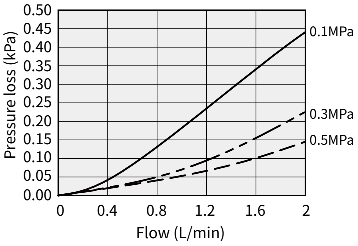
| Mark | Cable Connector |
|---|---|
| None | Without cable |
| 1 | 1m |
| 3 | 3m |

## Pressure loss characteristics

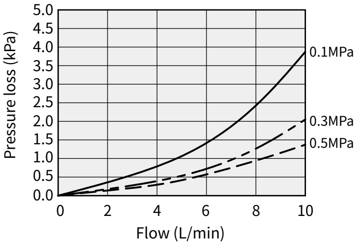
### FCSR-005



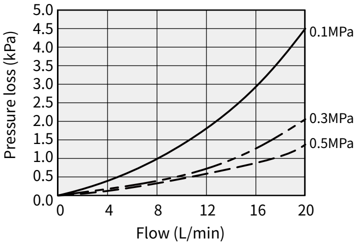
### FCSR-020



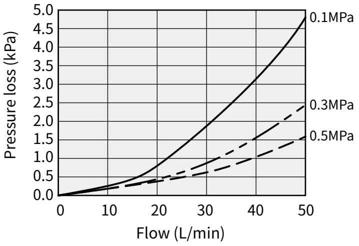
### FCSR-100



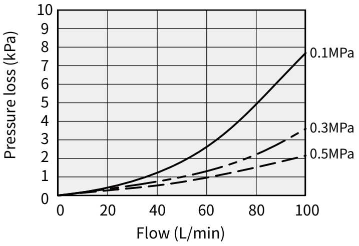
### FCSR-200



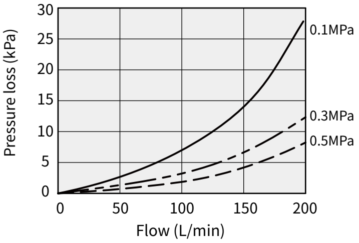
### FCMR-500



### FCMR-101



### FCMR-201

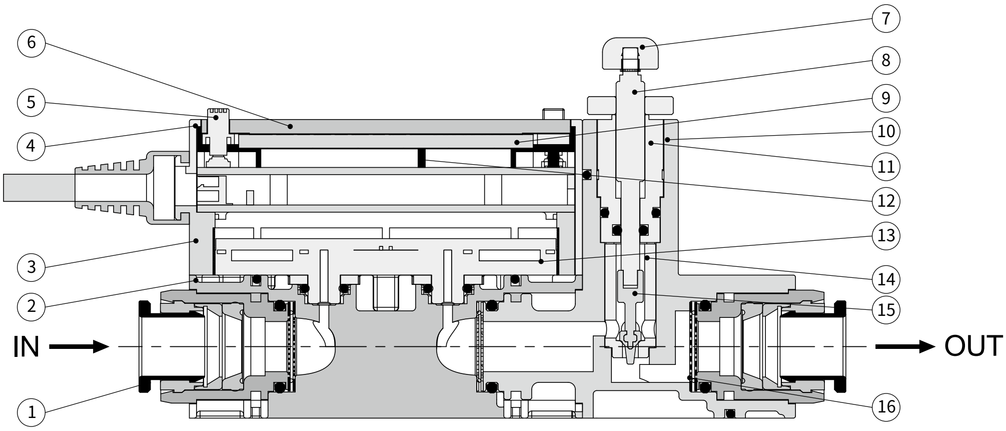


# FC-R series Speed-control Thermal Type Flow Switch

## Product Features

CVTR
CVAR
CVFR
CMT☐
CMA☐
FPF
FP
FPX
FC
FC-D
FC-R

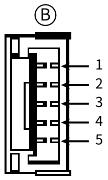
### FCSR/ FCMR

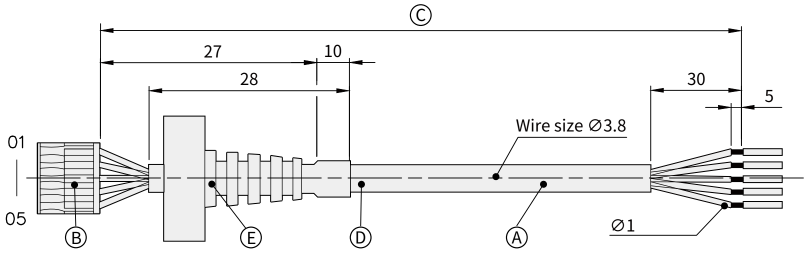


### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 1 | Fitting assembly | Copper | 9 | LCD | — |
| 2 | Main body | Nylon fiber | 10 | Body | Nylon fiber |
| 3 | Cover of sensor module | Nylon | 11 | The body | Copper |
| 4 | Cover | ABS resin | 12 | LCD support bracket | Polycarbonate |
| 5 | Bottom | Silicon | 13 | Flow sensor module | PCB |
| 6 | Acrylic display frame | Acrylic | 14 | The body (fasten accessory) | Copper |
| 7 | Adjusting bolt | Aluminum alloy, plastic | 15 | The body (cone shapping rubberized) | Copper, Rubber |
| 8 | Adjusting rod | Copper | 16 | Fairing board | Stainless steel |

### FC series Wire connector





| PIN | Wire color | Specification |
|---|---|---|
| 01 | Brown | Power+( 24V ) |
| 02 | White | CH1 (Switch output 1: max: 50mA) |
| 03 | Black | CH2 (Switch output 2: max: 50mA) |
| 04 | Orange | Voltage output: 0.5-4.5V<br>Load impedance: 50kΩ above |
| 05 | Blue | Power−(GND) |

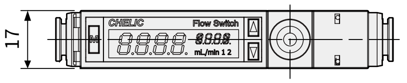
| NO. | Specification |
|---|---|
| Ⓐ | Wire: Inside (AWG26/ 5 line); cover: white |
| Ⓑ | 5 PIN connector |
| Ⓒ | Wire length: L= 1000mm±50 or<br>L= 3000mm±50 (depend on part number) |
| Ⓓ | Heat shrink tubing (black) |
| Ⓔ | FC-D/ FC-R series electronic connector anti-folding sleeve |

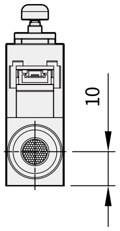
# FC-R series Speed-control Thermal Type Flow Switch

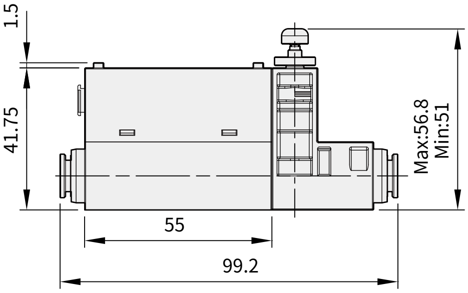
## Dimensions

CHELIC

### FCSR/ FCMR


17
CHELIC
Flow Switch
8.8.8.8.
mL/min 1 2

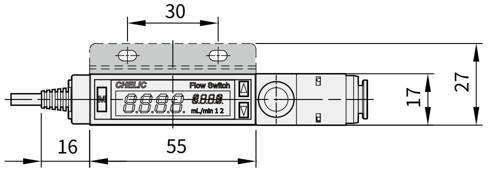


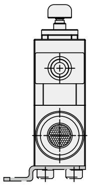

1.5
41.75
Max:56.8
Min:51
55
99.2

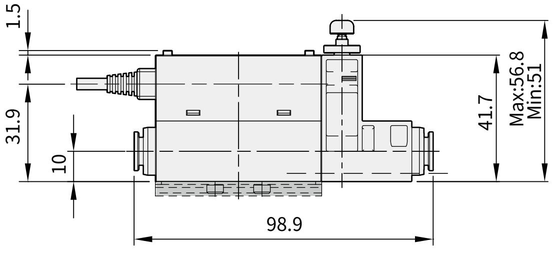
---

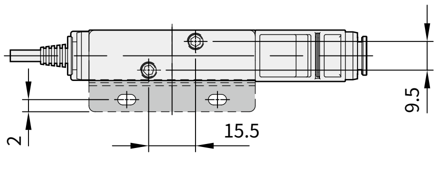
### FCSR/ FCMR Bracket

- L type bracket- L


30
CHELIC
Flow Switch
8.8.8.8.
mL/min 1 2
17
27
16
55



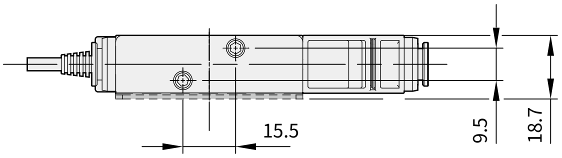

1.5
31.9
10
41.7
Max:56.8
Min:51
98.9

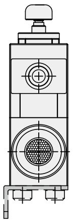


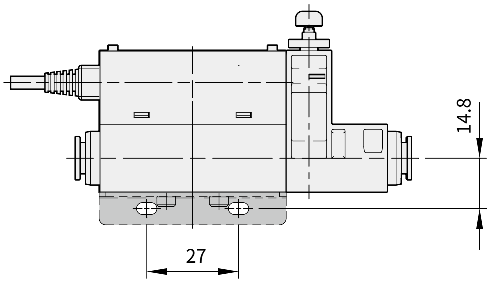
# FC-R series Speed-control Thermal Type Flow Switch

## Dimensions

### Flat bracket- B







# ⚠ General Cautions for FPF/ FP/ FPX/ FC series

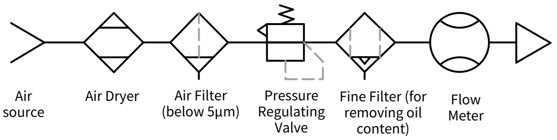
## Applicable Fluid

### ⚠ DANGER

- Do not use the product with the flammable gas.

### ⚠ WARNING

- Let the fluid flow after adjusting the Pressure Regulating Valve.
  (To avoid feeding the flow with pressure exceeding the rated value as to cause the damage.)
- Do not use the product as the metering gauge.
  (This product is incompatible with the metering method. Please use it in industrial sensing purpose.)
- Do not use the fluid other than the recommended product.
- As the fluid may contain impurities, the filter should be installed at the front section.
  (It should be provided with relevant air loop).


Air source
Air Dryer
Air Filter (below 5μm)
Pressure Regulating Valve
Fine Filter (for removing oil content)
Flow Meter

### ⚠ CAUTION

- Use the dry gas that does not contain corrosive compositions such as chlorine and sulfur. Further, it shall also be the clean gas without any dust or oil mist.
- Please use the pressure according to the rating specified in the Specification, otherwise it will affect the service life of the sensor.
- If the compressive air contains massive amount of condensate, then it may cause the defects of this product or other type of pneumatic components. Therefore, it should be provided with Rear Cooler, Air Dryer and Condensate Collector, etc.
- Excessive carbon powder produced by the Air Compressor may attach to the internal side of the product as to cause defective action.
- Due to the varied pressure-resistant level of the respective product model, care should be used when selecting the desired model.
  (If the flow rate is exceeding the required level, it will cause the product damage.)

## Applicable Environment

### ⚠ DANGER

- Do not use this product in an environment containing explosive gas.

### ⚠ WARNING

- Do not use this product in the location subjecting to surging voltage.
- Do not use this product in the corrosive environment.
- Environment temperature/ gas temperature
  (This product should be used within 0~50℃ of environment/ gas temperature range.)

### ⚠ CAUTION

- Do not use this product in an environment where temperature is violently fluctuating.
  (The location subjecting to abnormal temperature change and circulation will affect the accuracy.)
- Water-resistant environment.
  (Except for that FPX model belongs to IP65 class, the rest of others are rated at IP40 class. Do not install this product in a location filled with moisture, salty mist and dust to avoid damage.)

## Installation

### ⚠ WARNING

- Please watch the flowing direction of the fluid.
  (The flowing direction should be that indicated by the arrow symbol as being marked on the main body.)
- Before starting the installation, please remove the residual dirt from the pipeline with air purging method.
- Falling and tapping actions are not allowed.
  (If applying excessive impact, it may lead to internal damage.)
- Please hold the main body firmly when installing the product.
  (During the installation, do not drag the power cord to avoid damage that may be caused by excessive dragging force.)
- Do not install the flow meter at the position underneath the pipeline legs.

### ⚠ CAUTION

- The flow rate displayed in the LCD of this product may be blurred due to the angle.
- When installing, keep the product from attaching to the main body too tightly. When both units are heated, it will force the temperature to rise as to cause the change of the main body or the deterioration of the resin material.
  (Please maintain over 10mm of interval.)
- Please fasten the flow meter with appropriate torsional force.

# ⚠ General Cautions for FPF/ FP/ FPX/ FC series

## Wiring

### ⚠ DANGER

- Be sure to use the rated voltage for the voltage and the output of the power source.
  (If the voltage applied is higher than the specified rating, it may cause the product damage or the electrocution and even the fire in severest scenario.)

### ⚠ WARNING

- Avoid the overload or the short circuit.
  (This product is provided with overload protection, but it cannot prevent all of the incorrect wiring. Therefore, the wires should be carefully deployed.)
- Please confirm the insulation of the wires used.
  (Prevent the wires from mixing with or contacting other type of circuit, as it may lead to over-current as to cause the damage.)
- Do not install the electrical wires and the power wires in the same wiring line.
  (Please use different wires to prevent the interference from the switch-included control circuit as to cause the false action.)
- Do not execute the wiring action when the product is carrying the current.
  (To avoid causing the connector damage or the electrocution risks.)
- When installing this product and the wires, please keep them away from the noise source such as the wires carrying strong current. Please also take necessary protective action to prevent the surge applied to the power cord, otherwise it may cause the change in displaying or outputting.
- Do not touch the terminal or the connecting board when the flow meter is operating.
  (To avoid electrocution, operation errors or switch damage.)

### ⚠ CAUTION

- The cable connector of this product is provided with a protective gland in order to prevent problems that may be caused by defective reasons such as impurities.
- During the wiring process, be sure to confirm the wire color and the terminal number.
  (Incorrect wiring will cause the switch damage, failure and false action. For this reason, be sure to confirm the wire color and the terminal number in the Operation Instructions before starting the wiring process. In the meantime, please also use the DC power provided with sufficient capacity and less fluctuation.)

Applicable FPF/ FC/ FP Series

| PIN No. | Wire Color | Description |
|---|---|---|
| 01 | Brown | Power + (24V) |
| 02 | Orange | Voltage output: 0.5~4.5V/1~5, with load impedance over 50kΩ.<br>Current output: 4~20mA, with load impedance below 300Ω. |
| 03 | White | CH1 (Switch Output 1: max. 50mA) |
| 04 | Black | CH2 (Switch Output 2: max. 50mA) |
| 05 | Blue | Power – (GND) |

Applicable FPX Series

| PIN No. | Wire Color | Description |
|---|---|---|
| 01 | Black | Switch Output: max. 50mA |
| 02 | Brown | Power + (24V) |
| 03 | Blue | Power – (GND) |
| 04 | White | Voltage output: 1.5V or 0-10V<br>Current output: Load impedance - 4~20mA |

Please arrange the wires according to the method indicated above when inserting the cable into the socket of the main body.

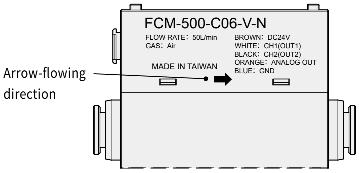
## Piping

### ⚠ WARNING

- When installing the pipeline, the anti-leakage tape should be wrapped starting from the internal side that is located over 2mm from the pipe threads and then wrap towards the thread direction and its reverse direction alternately to prevent the air leakage as to affect the accuracy.
- The pipeline connecting to the Air Compressor shall not get loosened due to vibration, releasing or tension effect.
- When using the fast coupler, be sure to insert the hose and the start the use after confirming that it is impossible to pull out the hose. When cutting the hose, be sure that the pipe is being cut into vertical profile so as to proceed with the final cutting.
- When checking the leakage of the pipeline, do not let the leakage inspection liquid flow into the product.

### ⚠ CAUTION

- Do not turn the connector when the product is subjecting to fluid pressure, or it may cause the external leakage.
- When dismantling or replacing the pipeline port, it may present 2~3% of change in accuracy.
- The diameter of the rear-end pipe should be wider than that of this product.
- Because the flow meter of this product is designed in one-way flowing type, be sure to watch the flowing direction before starting the piping work.



# ⚠ General Cautions for FPF/ FP/ FPX/ FC series

## Fluid Measuring

### ⚠ WARNING

- Please use this product in a location without the falling impact or vibration concern. During the installation and the moving process, this product should be handled by considering as the precision machine.
- Please confirm that the Pressure Regulating Valve or the Throttle Valve has been properly adjusted before letting the fluid flow.
  (Watch the pressure upper limit, as the sensor may damage if exceeding the rated pressure.)
- To prevent foreign matters from mixing with the fluid, be sure to install additional filter at the primary side of the product in order to prevent the foreign matter from blocking as to affect the accuracy.
- When measuring the fluid, please use the fluid specified in the product catalogue.
  (The accuracy will vary depending on the density of the fluid.)
- When measuring the flow rate with this product, it shall be used within the rated flow rate and the rated pressure range suitable for such model.
- Do not attempt to turn the connector when this product is applying the fluid pressure, or it may cause the external leakage of the pipeline. Further, it is also required to check if the connector is securely fixed in position.
- Be sure to starting power when the flow rate falls to the “Zero” baseline.
- Flow rate unit
  (The flow meter will be measured according to the mass flow rate that will not be affected by temperature and pressure. Therefore, the measuring unit selected will be L/min which represents the volumetric flow rate by translating the mass flow rate to 00C, 101.3 kPa based volumetric flow rate.)

#### 【 FPF/ FP/ FPX SERIES 】

- When resetting the flow rate to zero instantly (under saturated pressure), the hysteresis phenomenon will be presented for the differential pressure allowing the displayed flow to be reset to zero gradually. However, such kind of phenomenon will not happen when discharging the flow rate to the atmosphere.

### ⚠ CAUTION

- When using this product, be sure to set up the standby time. (longer than 5 minutes after being supplied with power).

#### 【 FC SERIES 】

- When the meter is empty and when longer standby time is required, the LCD of the Thermal Mass Flow Meter may present trivial shifting sign due to internal temperature.
- When sustaining the vibration, the Needle Valve of (FC-R) Speed-regulating Flow Meter may rotate as to change the flow rate. Therefore, the knob fixing lock should be turned tightly.

#### 【 FPF/ FP/ FPX SERIES 】

- After being supplied with power, this product will execute the self-diagnosis automatically and the flow rate inspection will remain inactive for a short period of time. For this reason, please set the control circuit and the program in order to ignore the signal being transmitted during the first 5 seconds of time after the product is supplied with power.
- When using this product without any fluid, be sure to supply the power and then charge the gas to ensure that the product zero point will be correctly calibrated.
- When using the Differential Flow Meter, ensure that stabilized pressure source will be provided.
- If the flow path outlet of the Differential Flow Meter is facing directly to the atmosphere, the sensing accuracy should be below ±3%. In the event the rear-end of the outlet is provided with a Speed Regulating Valve for regulating the flow rate, then its sensing accuracy should be below ±5%.
- When using FP/FPX series of larger-sized flow meter, its working pressure should be over 5 bars. If less than 5 bars, then the working scope of the measurable flow rate will be reduced accordingly.
- The flow rate will become zero during the pressure saturating process. In this case, the pressure will present trivial amount of differential change that it may cause the shifting of the zero-point value.

## Maintenance and Inspection

### ⚠ WARNING

- Please conduct the periodic inspection and confirm that the machine is operating normally.
- If failing to follow the instructions provided in the Operation Instructions, it would be impossible to ensure the machine safety.
- Do not attempt to dismantle or modify the structure of this product, as it may cause the incorrect accuracy or the sensor damage.
- When carrying out the maintenance or the inspection, be sure to stop the machine from operating, shut down the power and release the gas from the pipeline.

### ⚠ CAUTION

- Do not wipe this product with chemical agent such as volatile oil or thinner.
- Do not insert a rod into the pipeline to prevent from scratching the internal side.
- If any anomaly emerges during the operating process, be sure to cut off the power, stop the machine from operating and then contact the dealer.
- When using the LCD display model, do not press the display area to prevent the display panel from damage or failure.

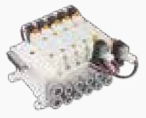
# Solenoid Valve

## Box type, 5&3-Port solenoid valves, NAMUR type, High frequency, ISO valves

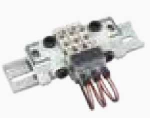
CHELIC

Solenoid Valve

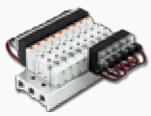
### Box type


**SRM** series P.2-1.4
Remote Control/Base Mounted Solenoid Valve

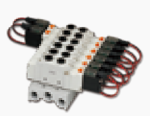
**SRVB** series P.2-1.11
D-sub Connector/Direct Ported Solenoid Valve


**SF** series P.2-1.16
DIN Rail Cassette/Body Ported Solenoid Valve

### 5-Port solenoid valves


**SR** series P.2-1.33
One-touch Fitting Body Ported Solenoid Valve

**SRB** series P.2-1.79
Base Mounted Solenoid Valve
(One-touch fitting in option)


**SM** series P.2-1.99
Body Ported Solenoid Valve

**SMB** series P.2-1.131
Base Mounted Solenoid Valve

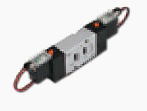
**SRK** series P.2-1.147
One-touch Fitting Body Ported Solenoid Valve

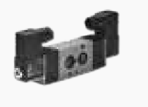
**SZB** series P.2-1.165
Base Mounted Solenoid Valve

**SK** series P.2-1.183
Body Ported Solenoid Valve

**SV** series P.2-1.201
Body Ported Solenoid Valve

### NAMUR type

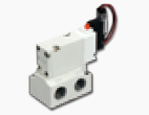

**SNK** series P.2-1.216
Wire connector Type Solenoid Valve

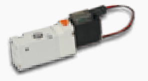

**SN** series P.2-1.219
Namur Solenoid Valve

### 3-Port solenoid valves

#### Air operated

**SRU** series P.2-1.235
3/2 Solenoid Valve


**SRUB** series P.2-1.242
3/2 Base Mounted Solenoid Valve

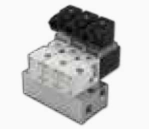

**SMU** series P.2-1.249
3/2 Body Ported Solenoid Valve

**SMUB** series P.2-1.256
3/2 Base Mounted Solenoid Valve

**SKU** series P.2-1.263
3/2 Body Ported Solenoid Valve

#### Direct operated

**SR2-100** series P.2-1.38
Solenoid valve direct operated


**SKB** series P.2-1.273
3/2 Direct Operated Solenoid Valve

**SKV** series P.2-1.285
3/2 Single Unit Solenoid Valve

**SV310** series P.2-1.294
Body Ported Solenoid Valve

### ISO valves

**ISO 200** series P.2-1.220
ISO Standard Solenoid Valve

### High frequency

**SWB** series P.2-1.296
High Frequency Solenoid Valve

# ⚠ Safety Notice/ Solenoid Valve/ Caution For Application

Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Caution of this product

### ⚠ WARNING

- While designing the circuit, make thorough understanding to the characteristic of the compressed air and the application of this product.
- Except the fluid noted in the Specification Table, do not use other fluids to avoid the damages to the products and influence the safety of products.
- The air in use is compressed, please note that expandable and unstable pressure may fly out, burst out or leak.
- Beware of the fluid temperature, please follow the range defined by Specification Table ( 0 ~ 60˚C ).
- While designing and selecting the machine model, please consider the incorrect shift of the driven object caused by emergency or transient power interruption which may impair safety. When choosing the machine model, please have the competence of controlling model, and the fixed position or automatic shift model during power interruption under consideration.
- Excessive water in the pipeline will cause malfunction of the solenoid valve, please install water removing filter at front end.
- Carbon powder chip and debris will occur when the air compressor is running; malfunction of solenoid is possible then the attached amount is excessive. Filter is required to prevent jammed in inside portion.

- **Requirement of ambient environment:**
  (1) Avoid chemical, inflammable substance, corrosive, sea water, and high temperature in working environment.
  (2) Avoid application in place with heating and radiation heat.
  (3) Follow the requirement of the caution operation range stated in the Specification Table.
  (4) Prevent malfunction caused by freezing while used in cold place.
  (5) Avoid expose under outdoor sunlight, dusty condition which may cause unstable quality.
  (6) Avoid application in places with oily, inflammable substance explosion proof.

### ⚠ CAUTION

(1) Use 5 port valve as 3 port valve
Solenoid valve can be used as 3 port valve by plugging either A or B cylinder port. Make sure exhaust port without plug.

(2) While intermediate stop position in three positions and used in pressure holding, beware of the impact of position change caused by pressure drop while there is leakage in air supply piping and change in air source.

(3) Take care of the impact of leak current that may affect the normal operation of other controller under machine work. Therefore, proper circuit protection device is necessary; also need to avoid the error action of the solenoid valve.

- **Allowable values**

| | |
|---|---|
| While used in DC 12V | Below 1.5 mA |
| While used in DC 24V | Below 1.8 mA |
| While used in AC 110V | Below 1.5 mA |
| While used in AC 220V | Below 3.0 mA |

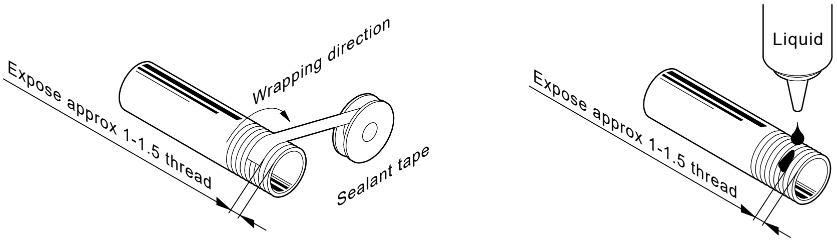
# Safety Notice/ Solenoid Valve/ Caution For Application

Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Caution for installation

### WARNING

- Caution for manner of installation: for the complex moving and three position model, please install in horizontally.
- Do not use if the vibration of the mounting position exceed 50 m/s²; for the place with low vibration, install with the solenoid valve axis perpendicular to direction of vibration to prevent loosen.
- Prevent entrance of debris and dust foreign object into solenoid valve before pipe laying in order to prevent failure and error action.
- Prevent debris and leak proof tape residue from entering the pipe while pipe laying and assembling the fitting. Reserve 1~1.5 thread not wound with tape while winding the tape.



- If the fitting is locked by using anoxic glue, avoid excessive amount and fluid glue from flowing in the body, which may cause jammed and poor movement.
- Follow the torque in table below while laying the pipe ( tighten the fitting ), never exceed the range of application to avoid damage of product.
- **Torque chart for piping:**

| Size of pipe | Appropriate turning torque N.m (kgf.cm) |
|---|---|
| M5 | 1.5~2(15~20) |
| Rc(PT)1/8 | 7~9(70~90) |
| Rc(PT)1/4 | 12~14(120~140) |
| Rc(PT)3/8 | 22~24(220~240) |
| Rc(PT)1/2 | 28~30(280~300) |

- The exhaust of solenoid valve should be equipped with muffler to prevent excessive noise. If there is no muffler equipped, avoid to discharge the exhaust gas to peripheral and absorbed by foreign object; mount the exhaust pipe downward ( avoid to face upward and suck in foreign object )
- Take care for concentrated exhaust while manifold is used, fail to discharge completely will cause back pressure and affect the switch and normal operation of solenoid valve.
- Avoid the destruction of plastic material by water soluble solvent and coating equipment after installation causing blockage and poor action.
- When using manifold to secure the solenoid valve, take care proper position to the manifold packing, and then tighten at both sides evenly to prevent leakage.
- Avoid lengthy distance between solenoid valve and piping; long pipeline will affect the activation effect and response.

# SRM series 4-Port valve Cassette Type Manifold

## Product features

## Feature

- Various types: Capable with SRB series solenoid valve.
- Fitting port selection: The port size can be adjusted as required.
- Simple wiring: D-type Fitting port, easy and fast for wiring.
- Pressure monitoring: The pressure of air source can be display with a set of switch to output.
- Modulable and maximum to 10 stations.

## Specification

| Item | Model | SRM 300 | SRM 500 |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range | kgf / $cm^2$ (kPa) | 1.5 ~7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature | ° C | 0 ~ 50 | |
| Pilot type | | Air operated | |
| Number of positions | | 4/2-position; 4/3-position | |
| Type of actuation | | Normally closed | |
| Orifice | $mm^2$ (CV) | 3.6(0.2) | 10.8 (0.6) |
| Manual override | | Push-turn and lock | |
| Port size | A, B | Ø4, Ø6 | Ø6, Ø8 |
| | P, R | Ø6, Ø8 | Ø8, Ø10 |
| Lubrication | | Lubrication free type | |
| Voltage | DC | 24 V±10% | |
| Manifold quantity | | 2 ~ 10 M | |
| Cable type | | D-Sub(25pin) | |

## Pressure switch specification

| Item | Model | | Pressure Switch |
|---|---|---|---|
| Pressure range | | bar | 0 ~ 10 |
| Set pressure resolution | | bar | 0.01 |
| Power voltage | | DC | 12 to 24 V±10% |
| Current consumption | | | ≦ 40 mA (With no load ) |
| Switch output | Output | | NPN or PNP open collector |
| | Max. load current | | 80mA |
| | Power voltage | | 24VDC |
| | Residual voltage | | ≤ 1.5V |
| | Response time | ms | ≤ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| | Output short circuit protection | | Yes |
| Display | Display | | 4-digit, 7-step display (green) |
| | Switch on indic ator | | OUT1 green |
| | Renewing | | Approx. 0.2 sec |
| | Indicator accuracy | | ±0.2% F.S.± 1 digit (Temperature: 25±3° C) |
| Environmental Resistance | Enclosure | | IP40 |
| | Ambient temp. range | | 0~50° C (No condensation or freezing ) |
| | Ambient humidity range | | Operation/ S torage: 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand voltage | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | ≥ 50 MΩ ( a t 500 V DC, between case and lead wire ) |
| | Vibration | | Total amplitude 1.5 mm, 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | 980 $m/s^2$ ( 100G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | | ±2% F.S. (within 0 ~ 50° C temperature range) |

# SRM series 4-Port valve Cassette Type Manifold

## Code of order - SRM 300

### Code of order - Solenoid valve only

**SRM3 10 0 – C6 – D2**

① ② ③ ④

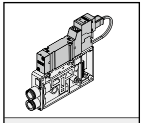
①

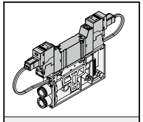
| Mark | Coil number |
|---|---|
| 10 | Single coil |
| 20 | Double coil |

| Mark | Coil number |
|---|---|
| 30 | Normal close |
| 40 | Normal exhaust |
| 50 | Normal open |

● 4/3-position double coils only

● Image


Single coil


Double coil

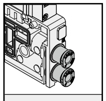
②

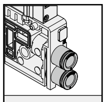
| Mark | Port type |
|---|---|
| 0 | One-touch fitting |

③

| Mark | Fitting type |
|---|---|
| C4 | Ø4 tube |
| C6 | Ø6 tube |

● Image


Ø4 tube


Ø6 tube

④

| Mark | Voltage |
|---|---|
| D2 | DC24V |

● All the coil are non-polarity

### Code of order - Left and right side end plates

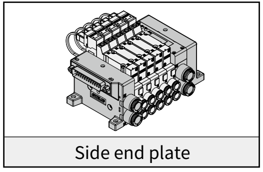
**SRM 3Y – E S8 – SP – 1 – C – M5**

⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

⑤

| Mark | Exhaust |
|---|---|
| 3Y | Side end plate |

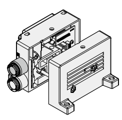
● Image

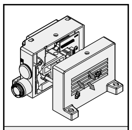

Side end plate

⑥

| Mark | Exhaust |
|---|---|
| None | Exhaust by port |
| E | Direct exhaust |

● Image


Exhaust by port

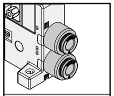

Direct exhaust

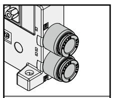
● The "E" type has air exhaust from right plate and the fitting port will be blind hole.

⑦

| Mark | Fitting type |
|---|---|
| S6 | Ø6 tube |
| S8 | Ø8 tube |

● Image

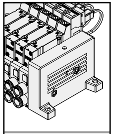

Ø6 tube

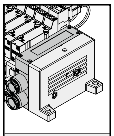

Ø8 tube

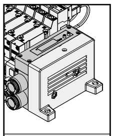
⑧

| Mark | Expansion design of side end plate |
|---|---|
| None | Without side end plate |
| M | Side end plate |
| SN | Pressure switch (NPN Output) |
| SP | Pressure switch (PNP Output) |

● Image


Without side end plate

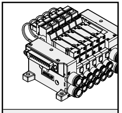

Side end plate

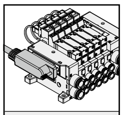

Pressure switch

⑨

| Mark | D-sub connector |
|---|---|
| None | Without wire |
| 1 | 1M |
| 3 | 3M |

● Image

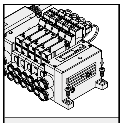

With wire

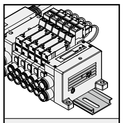

D-sub connector

⑩

| Mark | Bracket |
|---|---|
| None | Without Rail |
| C | Rail bracket |

● Image


Without Rail


Rail bracket

● C: The rail should be ordered separately

⑪

| Mark | Solenoid valve quantity |
|---|---|
| M2 | 2 Sets |
| M3 | 3 Sets |
| ⋮ | ⋮ |
| M10 | 10 Sets |

# SRM series 4-Port valve Cassette Type Manifold

## Code of order -SRM 500

CHELIC

## Code of order - Solenoid valve only

**SRM5 10 0 – C8 – D2**

① ② ③ ④

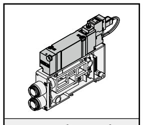
①

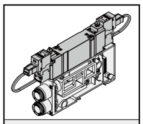
| Mark | Coil number |
|---|---|
| 10 | Single coil |
| 20 | Double coil |

| Mark | Coil number |
|---|---|
| 30 | Normal close |
| 40 | Normal exhaust |
| 50 | Normal open |

● 4/3-position double coils only

● Image


Single coil


Double coil

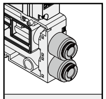
②

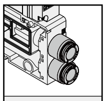
| Mark | Port type |
|---|---|
| 0 | One-touch fitting |

③

| Mark | Fitting type |
|---|---|
| C6 | Ø6 tube |
| C8 | Ø8 tube |

● Image


Ø6 tube


Ø8 tube

④

| Mark | Voltage |
|---|---|
| D2 | DC24V |

● All the coil are non-polarity

## Code of order - Left and right side end plates

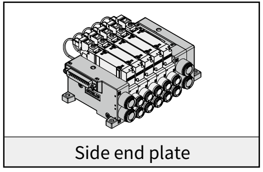
**SRM 5Y – E S10 – SP – 1 – C – M5**

⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

⑤

| Mark | Exhaust |
|---|---|
| 5Y | Side end plate |

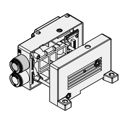
● Image

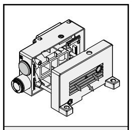

Side end plate

⑥

| Mark | Exhaust |
|---|---|
| None | Exhaust by port |
| E | Direct exhaust |

● Image


Exhaust by port

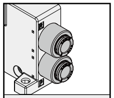

Direct exhaust

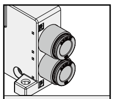
● The "E" type has air exhaust from right plate and the fitting port will be blind hole.

⑦

| Mark | Fitting type |
|---|---|
| S8 | Ø8 tube |
| S10 | Ø10 tube |

● Image

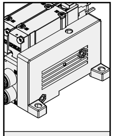

Ø8 tube

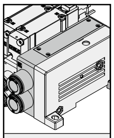

Ø10 tube

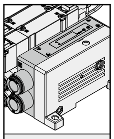
⑧

| Mark | Expansion design of side end plate |
|---|---|
| None | Without side end plate |
| M | Side end plate |
| SN | Pressure switch (NPN Output) |
| SP | Pressure switch (PNP Output) |

● Image


Without side end plate

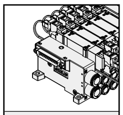

Side end plate

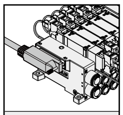

Pressure switch

⑨

| Mark | D-sub connector |
|---|---|
| None | Without wire |
| 1 | 1M |
| 3 | 3M |

● Image

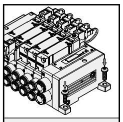

With wire

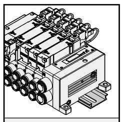

D-sub connector

⑩

| Mark | Bracket |
|---|---|
| None | Without Rail |
| C | Rail bracket |

● Image


Without Rail


Rail bracket

● C: The rail should be ordered separately

⑪

| Mark | Solenoid valve quantity |
|---|---|
| M2 | 2 Sets |
| M3 | 3 Sets |
| ⋮ | ⋮ |
| M10 | 10 Sets |

# SRM series 4-Port valve Cassette Type Manifold

## Circuit wiring diagrams, Order code expression

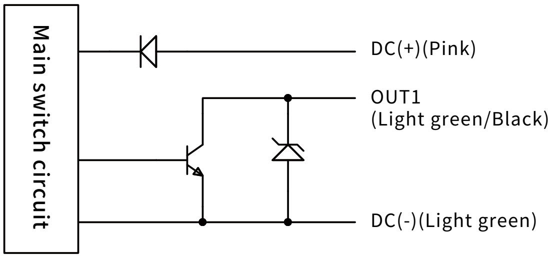
## Circuit wiring diagrams

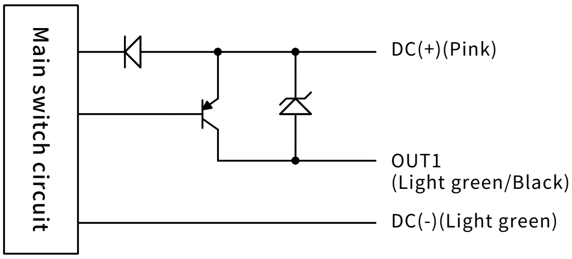
- SRM 5Y - E S10 - SN - 1 - C - M5

  NPN output

- SRM 5Y - E S10 - SP - 1 - C - M5

  PNP output


Main switch circuit
DC(+)(Pink)
OUT1
(Light green/Black)
DC(-)(Light green)


Main switch circuit
DC(+)(Pink)
OUT1
(Light green/Black)
DC(-)(Light green)

## Order code expression (please contact regional salesperson for details)

1.SRM5300-C8-D2----------1 PCS

+

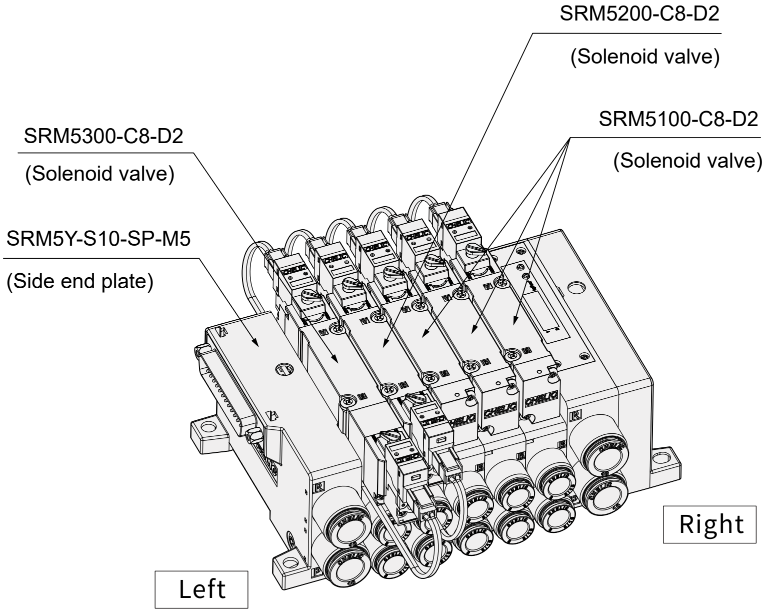
2.SRM5200-C8-D2----------1 PCS

+

3.SRM5100-C8-D2----------3 PCS

+

4.SRM5Y-S10-M5-----------1 PCS

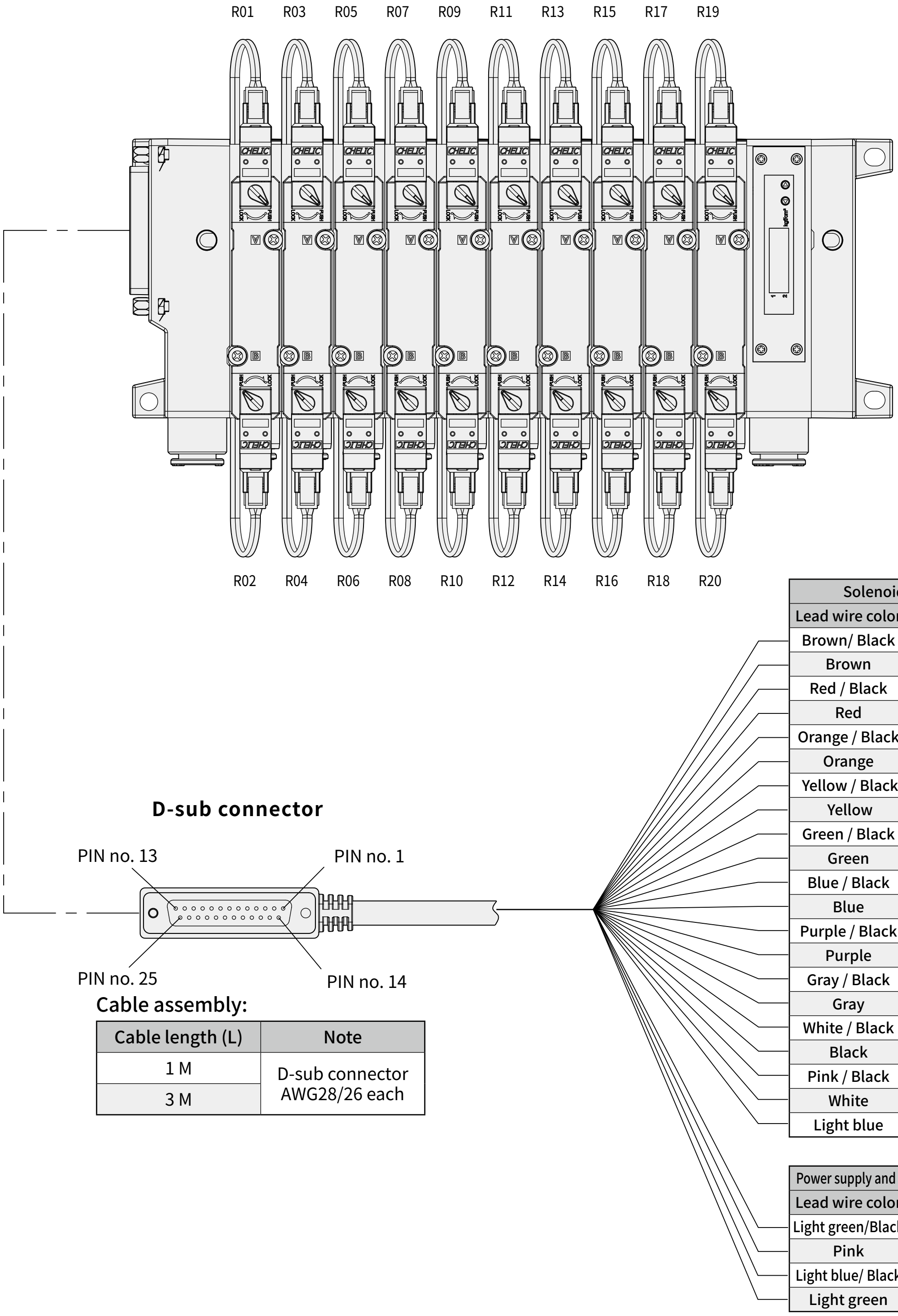

SRM5200-C8-D2
(Solenoid valve)
SRM5100-C8-D2
(Solenoid valve)
SRM5300-C8-D2
(Solenoid valve)
SRM5Y-S10-SP-M5
(Side end plate)
Right
Left

※Solenoid valve selection and installation sequence: from left to right

# SRM series 4-Port valve Cassette Type Manifold

Wiring expression

## Solenoid valve with D-sub connector


R01
R03
R05
R07
R09
R11
R13
R15
R17
R19
R02
R04
R06
R08
R10
R12
R14
R16
R18
R20
D-sub connector
PIN no. 13
PIN no. 1
PIN no. 25
PIN no. 14

| Solenoid valve control | | |
|---|---|---|
| Lead wire color | PIN no. | Coil no. |
| Brown/ Black | 14 | R01 |
| Brown | 01 | R02 |
| Red / Black | 15 | R03 |
| Red | 02 | R04 |
| Orange / Black | 16 | R05 |
| Orange | 03 | R06 |
| Yellow / Black | 17 | R07 |
| Yellow | 04 | R08 |
| Green / Black | 18 | R09 |
| Green | 05 | R10 |
| Blue / Black | 19 | R11 |
| Blue | 06 | R12 |
| Purple / Black | 20 | R13 |
| Purple | 07 | R14 |
| Gray / Black | 21 | R15 |
| Gray | 08 | R16 |
| White / Black | 22 | R17 |
| Black | 09 | R18 |
| Pink / Black | 23 | R19 |
| White | 10 | R20 |
| Light blue | 13 | COM |

Cable assembly:

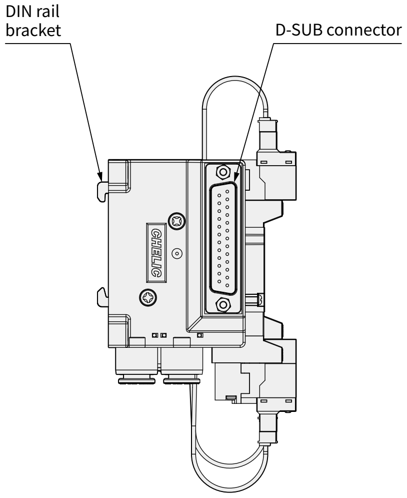
| Cable length (L) | Note |
|---|---|
| 1 M | D-sub connector<br>AWG28/26 each |
| 3 M | |

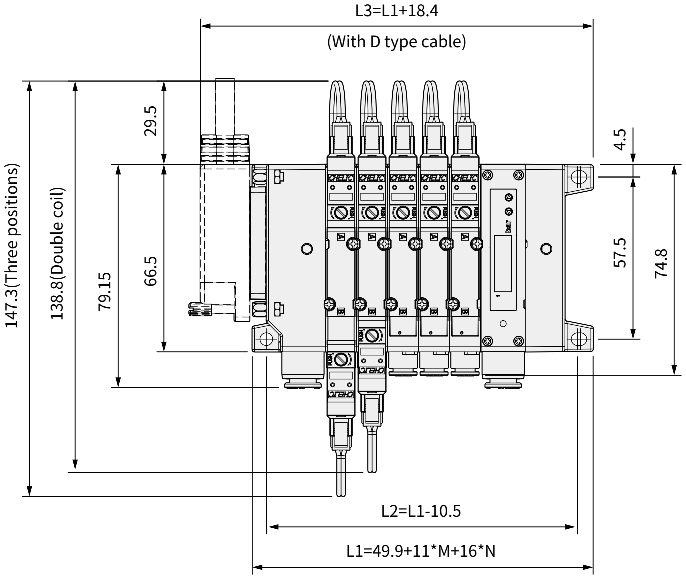
| Power supply and output for pressure switch | | |
|---|---|---|
| Lead wire color | PIN no. | Coil no. |
| Light green/Black | 24 | OUT |
| Pink | 11 | DC(+) |
| Light blue/ Black | 25 | Without coil |
| Light green | 12 | DC(-) |

# SRM series 4-Port valve Cassette Type Manifold

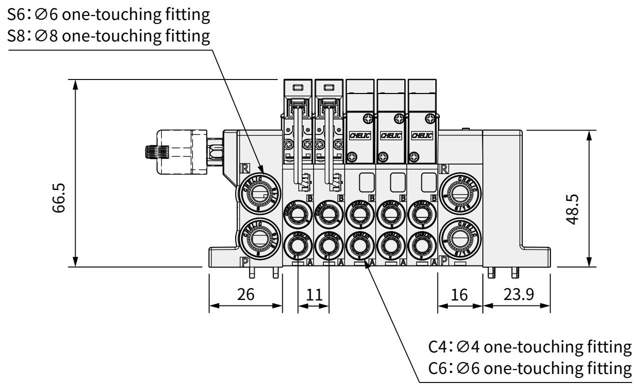
## Dimensions

### SRM 300 series - Manifold size


DIN rail bracket
D-SUB connector
CHELIC


L3=L1+18.4
(With D type cable)
29.5
4.5
147.3(Three positions)
138.8(Double coil)
79.15
66.5
57.5
74.8
L2=L1-10.5
L1=49.9+11*M+16*N

M: Solenoid valve quantity
N: Side end plate quantity


S6: ∅6 one-touching fitting
S8: ∅8 one-touching fitting
66.5
48.5
26
11
16
23.9
C4: ∅4 one-touching fitting
C6: ∅6 one-touching fitting

### Without side end plate

Unit: mm

| Manifold | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 71.9 | 82.9 | 93.9 | 104.9 | 115.9 | 126.9 | 137.9 | 148.9 | 159.9 |
| L2 | 61.4 | 72.4 | 83.4 | 94.4 | 105.4 | 116.4 | 127.4 | 138.4 | 149.4 |
| L3 | 90.3 | 101.3 | 112.3 | 123.3 | 134.3 | 145.3 | 156.3 | 167.3 | 178.3 |

### Have side end plate

Unit: mm

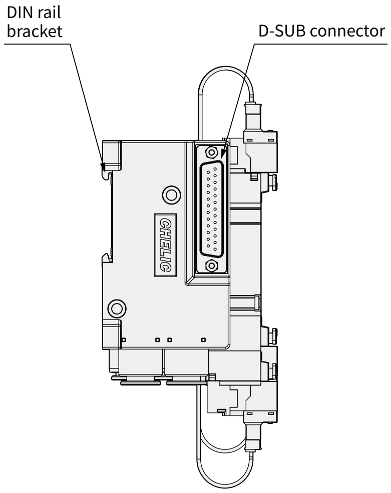
| Manifold | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 87.9 | 98.9 | 109.9 | 120.9 | 131.9 | 142.9 | 153.9 | 164.9 | 175.9 |
| L2 | 77.4 | 88.4 | 99.4 | 110.4 | 121.4 | 132.4 | 143.4 | 154.4 | 165.4 |
| L3 | 106.3 | 117.3 | 128.3 | 139.3 | 150.3 | 161.3 | 172.3 | 183.3 | 194.3 |

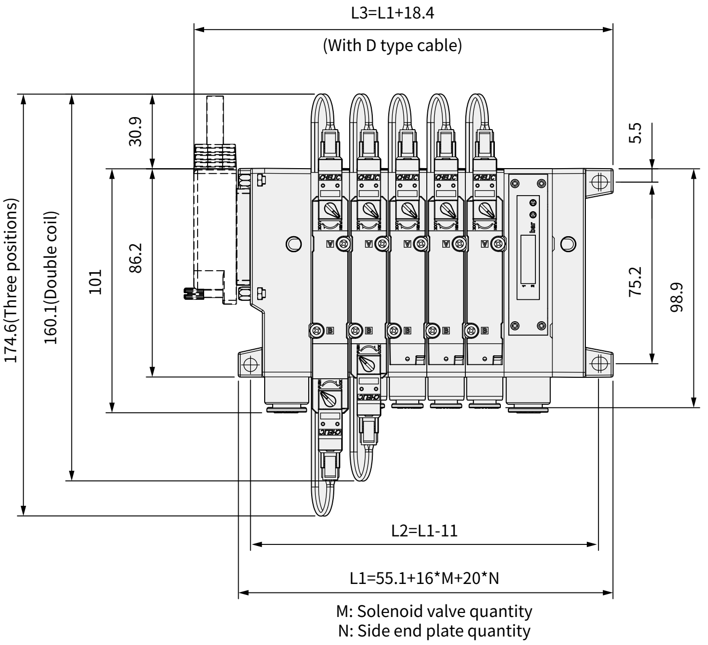
# SRM series 4-Port valve Cassette Type Manifold

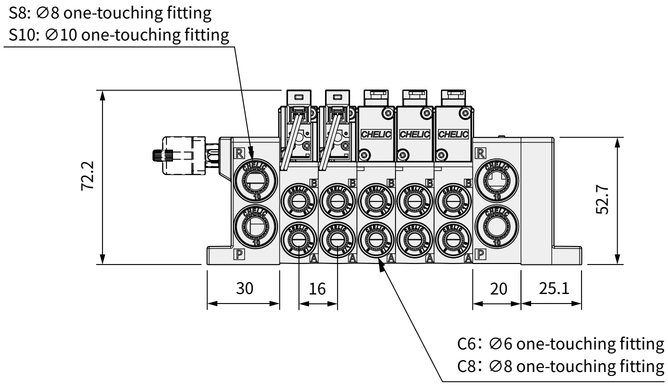
## Dimensions

CHELIC

### SRM 500 series - Manifold size


DIN rail bracket
D-SUB connector
CHELIC


L3=L1+18.4
(With D type cable)
30.9
5.5
174.6(Three positions)
160.1(Double coil)
101
86.2
75.2
98.9
L2=L1-11
L1=55.1+16*M+20*N
M: Solenoid valve quantity
N: Side end plate quantity


S8: ∅8 one-touching fitting
S10: ∅10 one-touching fitting
72.2
52.7
R
P
B
A
30
16
20
25.1
C6: ∅6 one-touching fitting
C8: ∅8 one-touching fitting

### Without side end plate

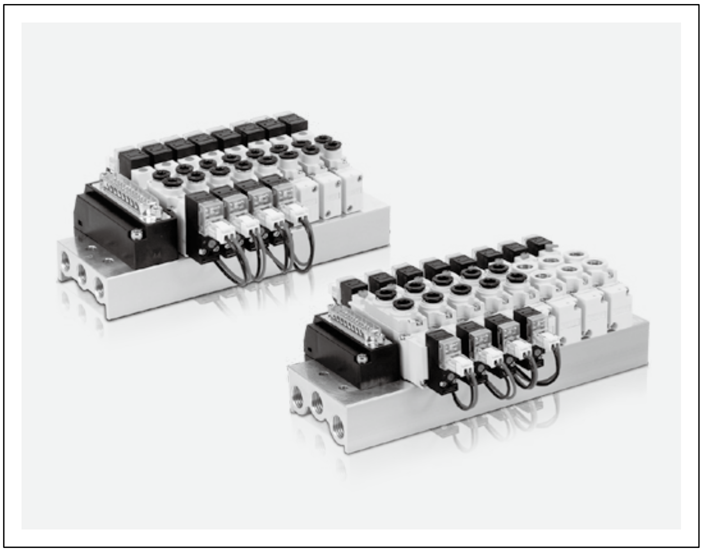
Unit: mm

| Manifold | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 87.1 | 103.1 | 119.1 | 135.1 | 151.1 | 167.1 | 183.1 | 199.1 | 215.1 |
| L2 | 76.1 | 92.1 | 108.1 | 124.1 | 140.1 | 156.1 | 172.1 | 188.1 | 204.1 |
| L3 | 105.5 | 121.5 | 137.5 | 153.5 | 169.5 | 185.5 | 201.5 | 217.5 | 233.5 |

### Have side end plate

Unit: mm

| Manifold | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 107.1 | 123.1 | 139.1 | 155.1 | 171.1 | 187.1 | 203.1 | 219.1 | 235.1 |
| L2 | 96.1 | 112.1 | 128.1 | 144.1 | 160.1 | 176.1 | 192.1 | 208.1 | 224.1 |
| L3 | 125.5 | 141.5 | 157.5 | 173.5 | 189.5 | 205.5 | 221.5 | 237.5 | 253.5 |

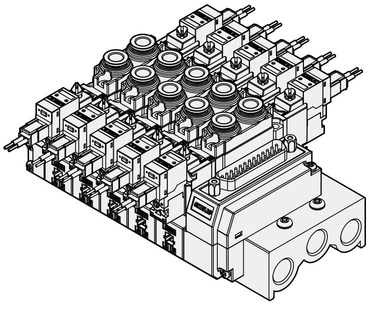


Provide CAD external dimension.

**Characteristic:**
1. Manifold number from 2 to 12.
2. D-Sub (25 PIN) connector with wire length from 1m to 3m.
3. Simplified the wiring system diaphram.
4. Available solenoid valve: SR 300 Series and SR 500 Series.
5. To saving wiring time and assembly cost.

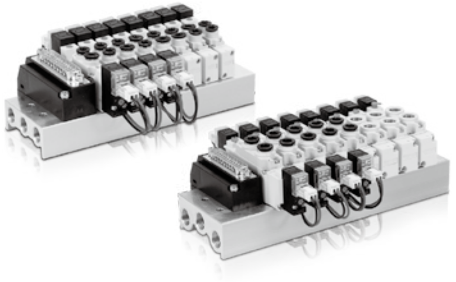
**SRVB 300** Manifold ------- **SRVB 300 series** ----- **P.2-1.11**

**SRVB 500** Manifold ------- **SRVB 500 series** ----- **P.2-1.12**

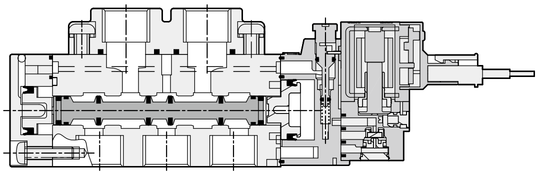


# SRVB series D-sub Connector/Direct Ported Solenoid Valve (One-touch fitting in option)

## Product features/ Code of order



### Internal structure



### Specification

| Item \ Model | SRVB300 | SRVB500 |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 (150 ~ 700) | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | |
| Pilot type | Air operated | |
| Number of positions | 5/2-position, 5/3-position | |
| Type of actuation | Normally closed | |
| Effective orifice mm²(CV) | 3.6 (0.2) | 9 (0.5) |
| Manual override | Push-turn and lock | |
| Port size | M5, Rc1/8, Ø4, Ø6, Ø8 | |
| Lubrication | Lubrication free type | |
| Power supply | 12 VDC, 24 VDC | |
| Manifold | 2 ~ 12 | |
| Cable type | D-Sub (25pin) | |

### Code of order

**SRVB** – **5** **10** – **1** – **C4** – **D2** – **M** **2** – **1**

**Model**

SRVB manifold

**Model number**

3: 300 series
5: 500 series

**Coil q'ty**

10: Single
20: Double
30: Closed center
40: Exhaust center
50: Pressure center

SRVB: 5/3-position double coils only

**Port size**

| Thread type | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8p | SR300 |
| 1 | Rc1/8 | SR500 |

For A and B port

| | |
|---|---|
| 0 | With fitting port |

**With fitting port**

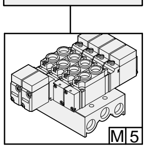
| | | |
|---|---|---|
| C4 | Ø4 | SR300 |
| C4 | Ø4 | SR500 |
| C6 | Ø6 | |
| C8 | Ø8 | |

None: Thread type

**Voltage**

| | |
|---|---|
| D1 | 12VDC, +COM |
| D1P | 12VDC, –COM |
| D2 | 24VDC, +COM |
| D2P | 24VDC, –COM |

**Manifold**



None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮
M12 = 12 sets

**Wire length**

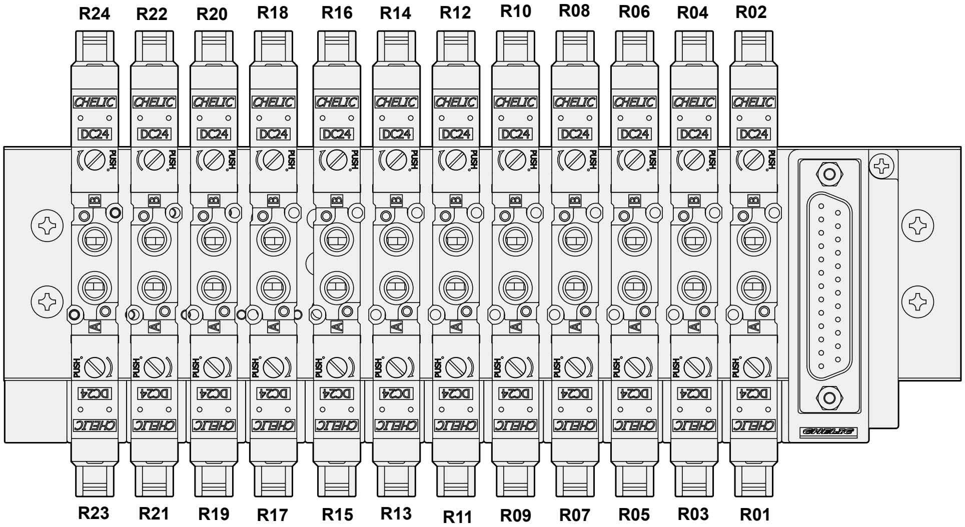
| | |
|---|---|
| None | No wire |
| 1 | 1 meter |
| 3 | 3 meter |

# **SRVB series** D-sub Connector/Direct Ported Solenoid Valve (One-touch fitting in option)

## Product features

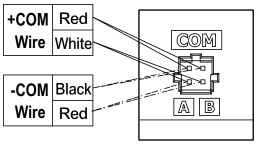
CHELIC

### Connection setting sequence


R24
R22
R20
R18
R16
R14
R12
R10
R08
R06
R04
R02
CHELIC
DC24
PUSH
B
A
R23
R21
R19
R17
R15
R13
R11
R09
R07
R05
R03
R01

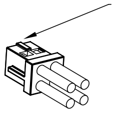
| Wire color | Pin No. | Coil No. |
|---|---|---|
| Brown / Black | 14 | R01 |
| Brown | 01 | R02 |
| Red / Black | 15 | R03 |
| Red | 02 | R04 |
| Orange / Black | 16 | R05 |
| Orange | 03 | R06 |
| Yellow / Black | 17 | R07 |
| Yellow | 04 | R08 |
| Green / Black | 18 | R09 |
| Green | 05 | R10 |
| Blue / Black | 19 | R11 |
| Blue | 06 | R12 |
| Purple / Black | 20 | R13 |
| Purple | 07 | R14 |
| Gray / Black | 21 | R15 |
| Gray | 08 | R16 |
| White / Black | 22 | R17 |
| Black | 09 | R18 |
| Pink / Black | 23 | R19 |
| White | 10 | R20 |
| Light Green / Black | 24 | R21 |
| Pink | 11 | R22 |
| Light Blue / Black | 25 | R23 |
| Light Green | 12 | R24 |
| Light Blue | 13 | COM |

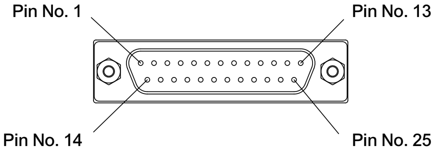
### Connector assembly expression


+COM Wire
Red
White
-COM Wire
Black
Red
COM
A
B

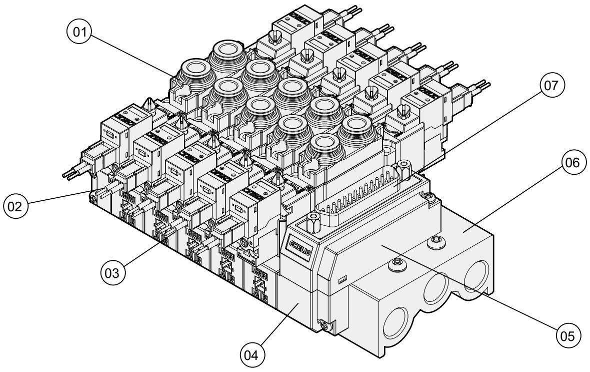
- COM type for PNP connection
+ COM type for NPN connection

**Correct connector direction**




Pin No. 1
Pin No. 13
Pin No. 14
Pin No. 25

### Components • Material list


01
02
03
04
05
06
07

| NO. | Item | Material |
|---|---|---|
| 01 | Solenoid valve | - |
| 02 | Rear cover | POM |
| 03 | Outer cover | POM |
| 04 | Bottom cover | POM |
| 05 | Upper cover | POM |
| 06 | Manifold body | Aluminum alloy |
| 07 | D-Sub Connector | - |

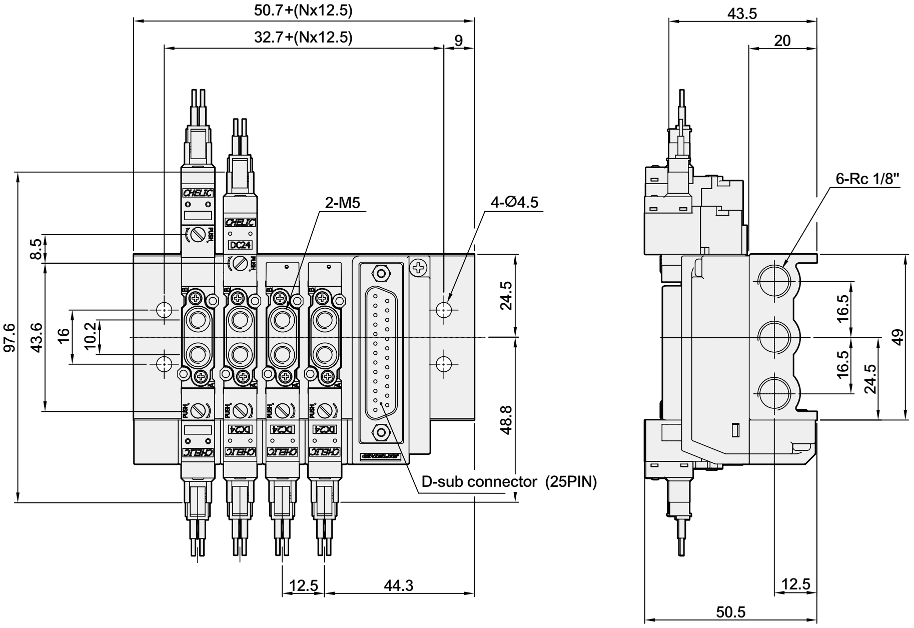
# SRVB series D-sub Connector/Direct Ported Solenoid Valve (One-touch fitting in option)

## Dimensions

CHELIC.

### SRVB300 series - Standard type

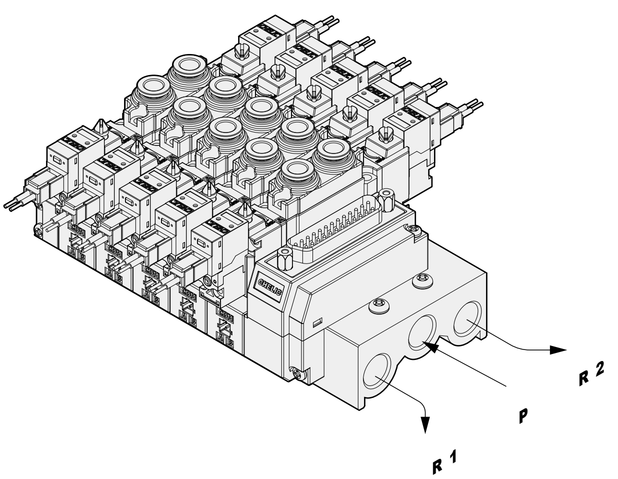
Manifold dimension



50.7+(Nx12.5)
32.7+(Nx12.5)
9
2-M5
4-Ø4.5
97.6
43.6
16
10.2
8.5
24.5
48.8
CHELIC
DC24
PUSH
D-sub connector (25PIN)
12.5
44.3
43.5
20
6-Rc 1/8"
16.5
16.5
24.5
49
12.5
50.5

### Manifold

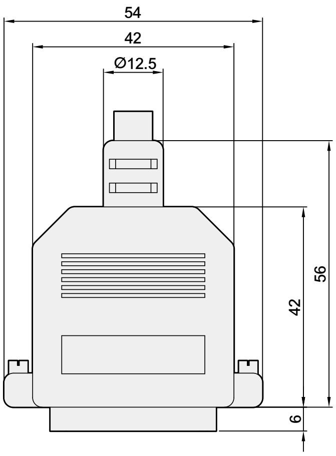
**SRVB - 300 • 500 series**



CHELIC
R 2
P
R 1

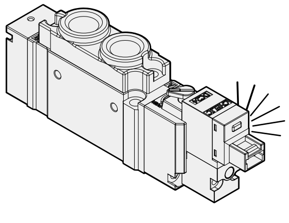
### SRVB series - DB25PIN Cable size

Manifold dimension



54
42
Ø12.5
56
42
6

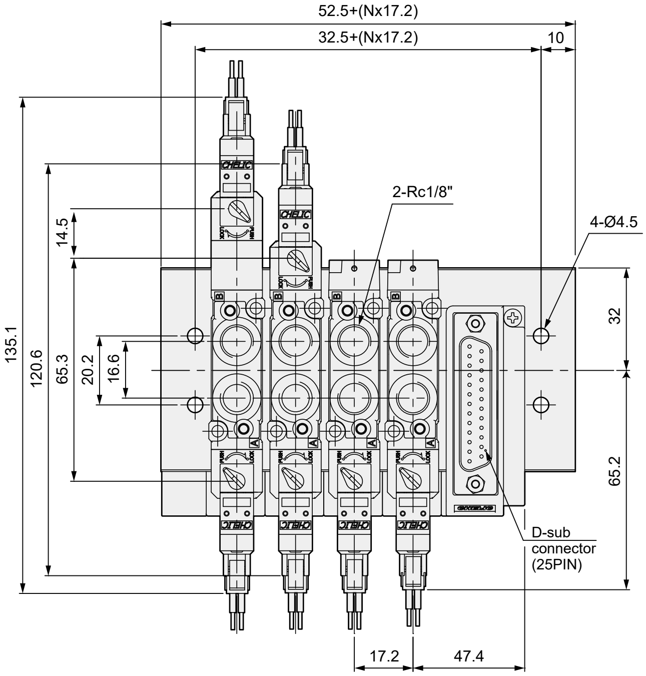
### With indicator light - All this series with indicator light and voltage protection circuit.

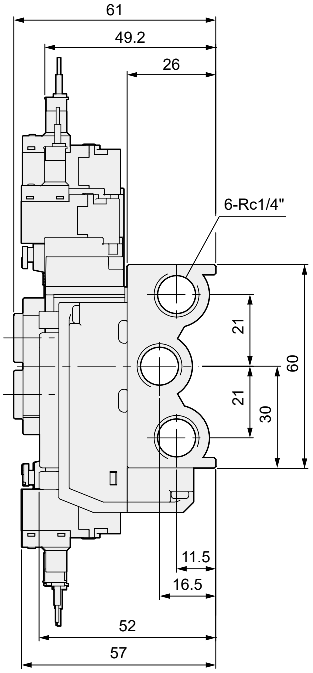


# SRVB series D-sub Connector/Direct Ported Solenoid Valve (One-touch fitting in option)

## SRVB500 series - Standard type

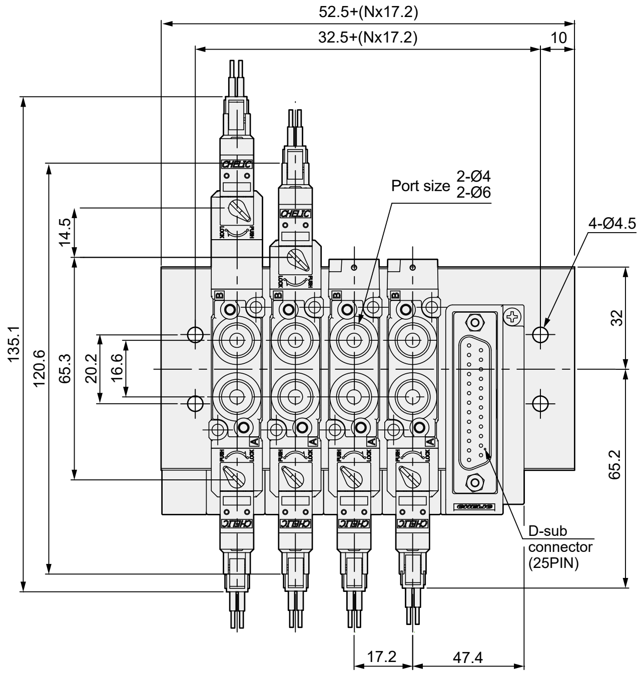
Manifold dimension

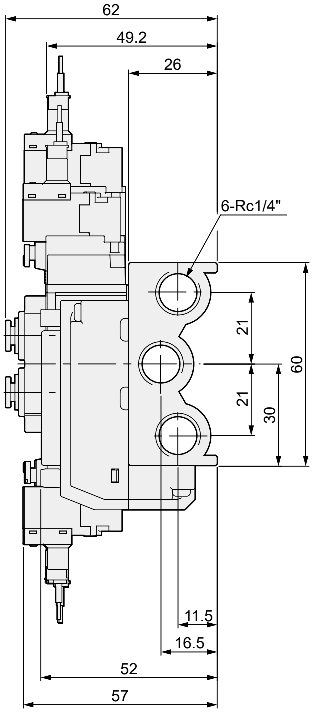

52.5+(Nx17.2)
32.5+(Nx17.2)
10
2-Rc1/8"
4-Ø4.5
135.1
120.6
65.3
20.2
16.6
14.5
32
65.2
D-sub
connector
(25PIN)
17.2
47.4
CHELIC
B
A


61
49.2
26
6-Rc1/4"
21
21
30
60
11.5
16.5
52
57

## SRVB500 series - With fitting port

Manifold dimension

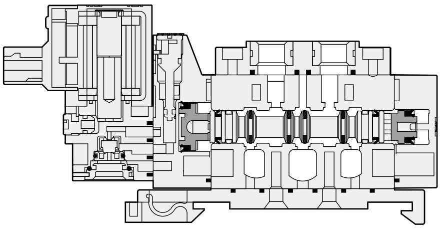

52.5+(Nx17.2)
32.5+(Nx17.2)
10
Port size 2-Ø4
2-Ø6
4-Ø4.5
135.1
120.6
65.3
20.2
16.6
14.5
32
65.2
D-sub
connector
(25PIN)
17.2
47.4
CHELIC
B
A


62
49.2
26
6-Rc1/4"
21
21
30
60
11.5
16.5
52
57

# SF300 series DIN Rail Cassette

## Product features

### Internal structure



### Specification

| Item / Model | | SF300 | |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range | kgf/cm(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature | °C | 5 ~ 60 | |
| Pilot type | | Air operated | |
| Number of positions | | 5/2-position | 5/3-position |
| Type of actuation | | Normally closed | |
| Effective orifice | mm$^2$(CV) | 3.6 ( 0.2 ) | |
| Manual override | | Push-turn and lock | |
| Port size | | M5, Ø4 | |
| Lubrication | | Lubrication free type | |

### Ordering expression

1. SF310M5-DC24V-L ------------ 2pcs

+

2. SF3200-C6-DC24V-L ---------- 1pcs

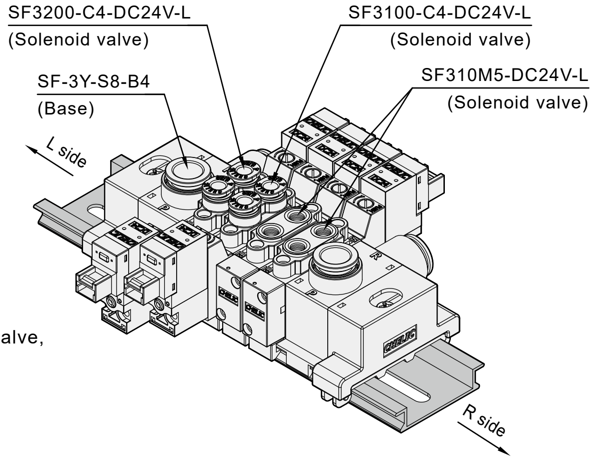
+

3. SF3300-C6-DC24V-L ---------- 1pcs

+

4. SF-3Y-S8-B4 ------------------- 1pcs

※ Please confirm the model and quantity of solenoid valve, and then confirm the spec of the base.


SF3200-C4-DC24V-L
(Solenoid valve)
SF3100-C4-DC24V-L
(Solenoid valve)
SF-3Y-S8-B4
(Base)
SF310M5-DC24V-L
(Solenoid valve)
L side
R side

# SF300 series DIN Rail Cassette

## Code of order

### Code of order - Solenoid valve

**SF** – **3** – **10** – **M5** – ( ) – **DC24** – **L**

**Model**

SF series:
Din rail
cassette type
solenoid valve

**Model number**

300 series

**Coil q'ty**

10: Single
20: Double

30: Closed center
40: Exhaust center
50: Pressure center

**Port size**

| Thread type (Standard) | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8P | SF300 |

None: For A and B port

| 0 | With fitting port |
|---|---|

**With fitting port**

| Mark | Size | Model |
|---|---|---|
| C4 | Ø4 | SF300 |

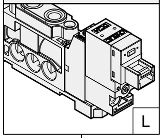
None: Standard type
(Thread type )

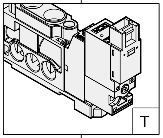
**Voltage**

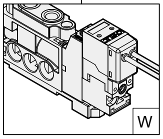
| Standard voltage |
|---|
| 12V DC / 1.2W |
| 24V DC / 1.2W |

**Electrical entry**

Standard


L


T


W

(With wire length 300mm)

### Code of order - DIN Rail

**SF** – **3** – **Y** – **S8** – **B 3**

**Model**

SF series:
Din rail
cassette type
solenoid valve

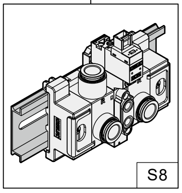
**Model number**

300 series

**With DIN Rail**

**With fitting port**

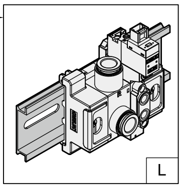
| Mark | Size | Model |
|---|---|---|
| S8 | Ø8 | Vertical entry |


S8

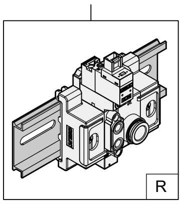
**DIN Rail type**

| Mark | Pos. | Manifold |
|---|---|---|
| L | Left | 1~9 M |
| R | Right | 1~9 M |
| B | Both sides | 1~20 M |

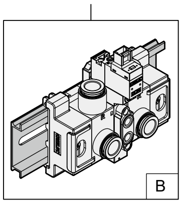
Note: Without selecting code means no DIN Rail


L

※ Up to 9 valves


R

※ Up to 9 valves


B

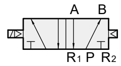
※ Up to 20 valves

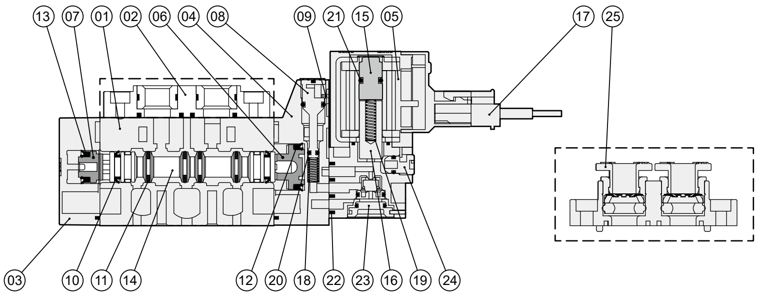
# SF300 series DIN Rail Cassette

## Product features

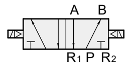
### Internal structure

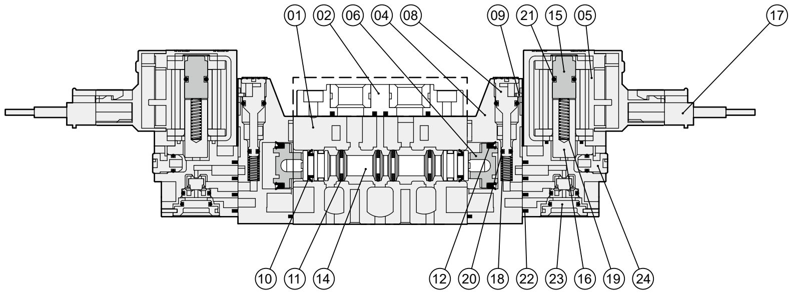
#### 5 port 2-position single



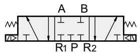

13
07
01
02
06
04
08
09
21
15
05
17
25
03
10
11
14
12
20
18
22
23
16
19
24

#### 5 port 2-position double

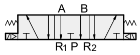



01
02
06
04
08
09
21
15
05
17
10
11
14
12
20
18
22
23
16
19
24

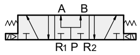
#### 5 port 3-position double



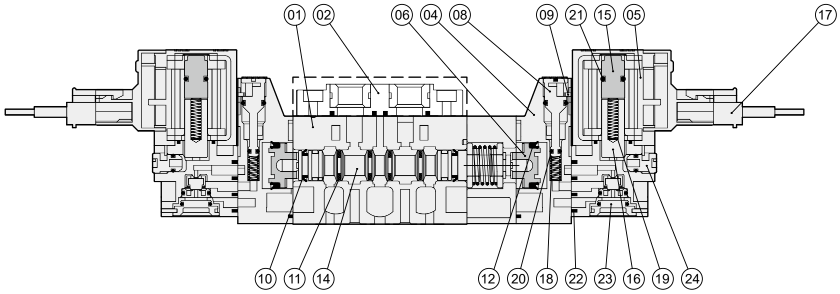
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
02
06
04
08
09
21
15
05
17
10
11
14
12
20
18
22
23
16
19
24

### Components and Material list

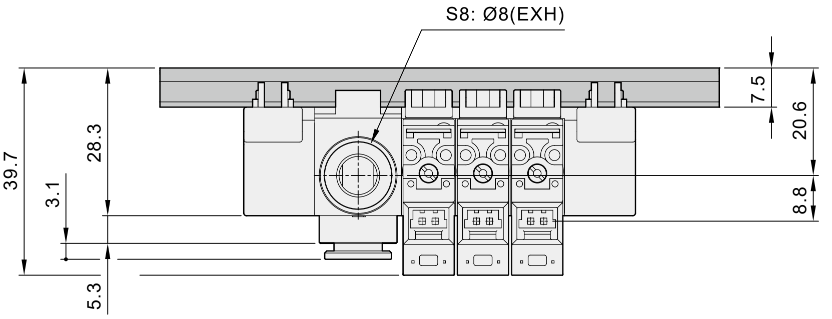
| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **14** | Shaft | Aluminum alloy |
| **02** | Thread tapped top cover | Resin+Copper | **15** | Coil insert bushing | Stainless steel |
| **03** | Rear cover | Resin | **16** | Spring bushing | Stainless steel |
| **04** | Holder | Resin | **17** | Wire plug | Resin |
| **05** | Coil | — | **18** | Manual override spring | Stainless steel |
| **06** | Holder piston | POM | **19** | Spring bushing spring | Stainless steel |
| **07** | Rear cover piston | POM | **20** | Manual override O-ring | NBR |
| **08** | Manual override | POM | **21** | Coil insert bushing O-ring | NBR |
| **09** | Position iron plate | Iron | **22** | Rubber Lining | NBR |
| **10** | Spool packing | NBR | **23** | Valve rear cap | Copper alloy |
| **11** | Spool packing | NBR | **24** | Manual override | Copper alloy |
| **12** | Holder piston packing | NBR | **25** | Top cover (fitting) | — |
| **13** | Rear cover packing | NBR | | | |

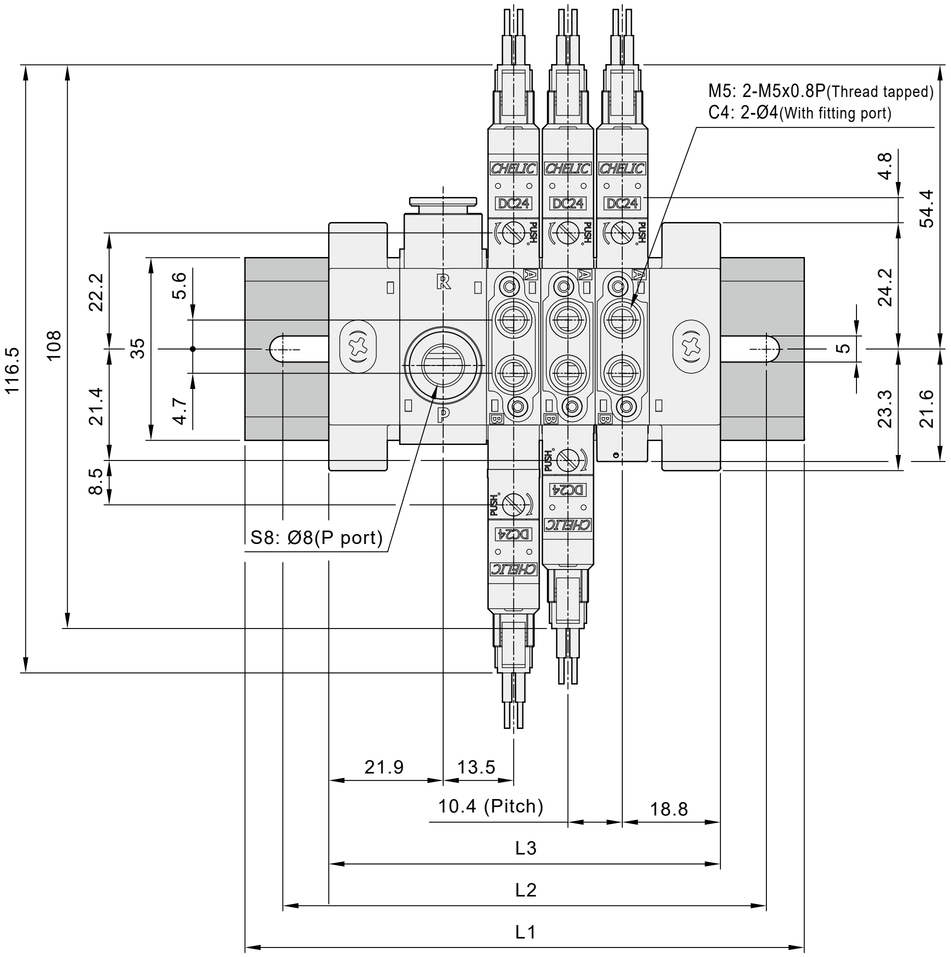
Note: The main body treated with painting.

# SF300 series DIN Rail Cassette

## Dimensions

### SF310M5+SF-3Y-S8-L
### SF3100-C4+SF-3Y-S8-L


S8: Ø8(EXH)
39.7
28.3
3.1
5.3
7.5
20.6
8.8

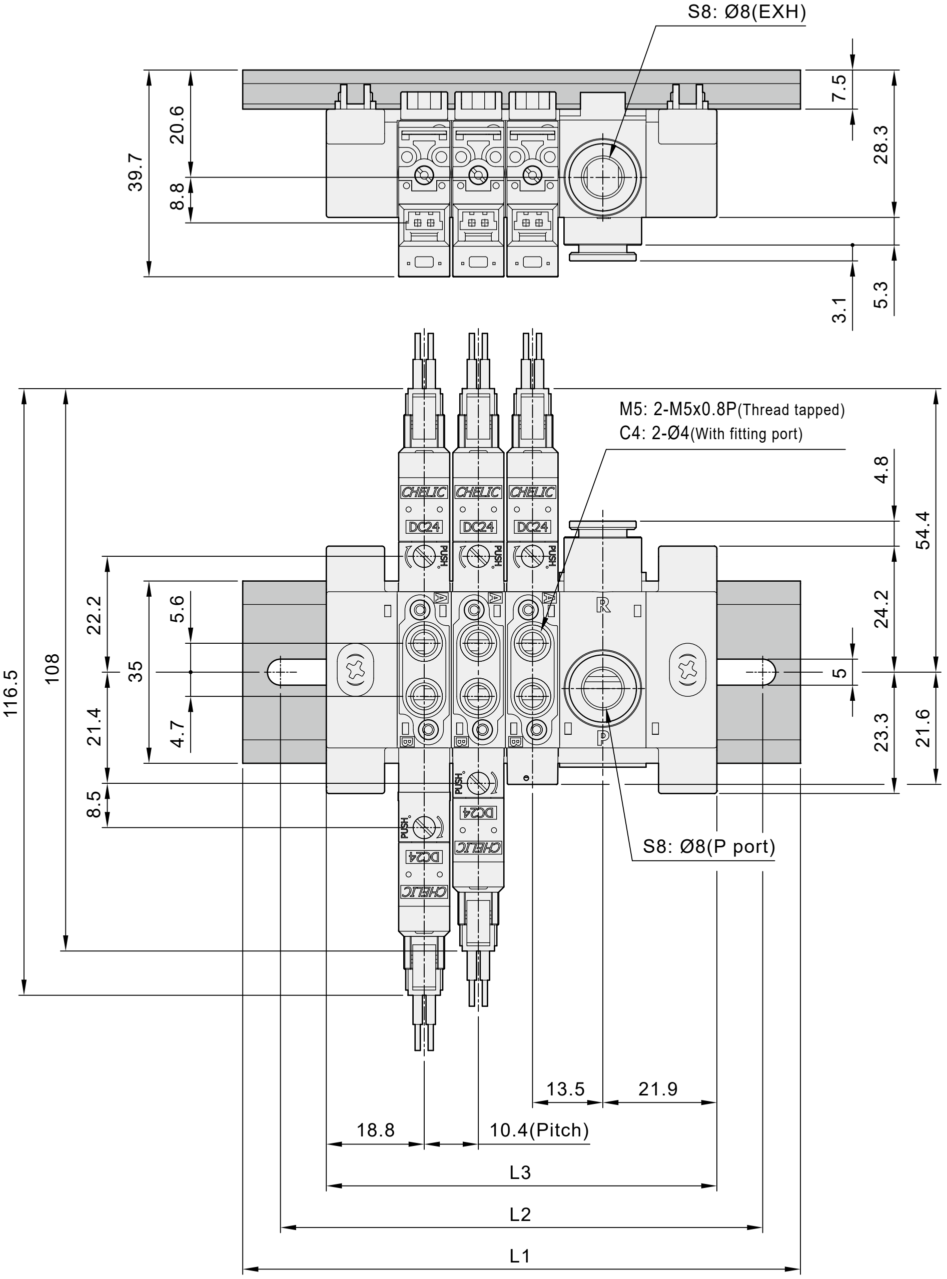

M5: 2-M5x0.8P(Thread tapped)
C4: 2-Ø4(With fitting port)
CHELIC
DC24
PUSH
R
P
A
B
116.5
108
22.2
35
5.6
21.4
4.7
8.5
4.8
54.4
24.2
5
23.3
21.6
S8: Ø8(P port)
21.9
13.5
10.4 (Pitch)
18.8
L3
L2
L1

| Right manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 71.4 | 107.1 | 107.1 | 107.1 | 142.8 | 142.8 | 142.8 | 178.5 | 178.5 |
| L2 | 56.9 | 92.6 | 92.6 | 92.6 | 128.3 | 128.3 | 128.3 | 164 | 164 |
| L3 | 54.2 | 64.6 | 75 | 85.4 | 95.8 | 106.2 | 116.6 | 137.4 | 137.4 |

# SF300 series DIN Rail Cassette

## Dimensions

### SF310M5+SF-3Y-S8-R
### SF3100-C4+SF-3Y-S8-R

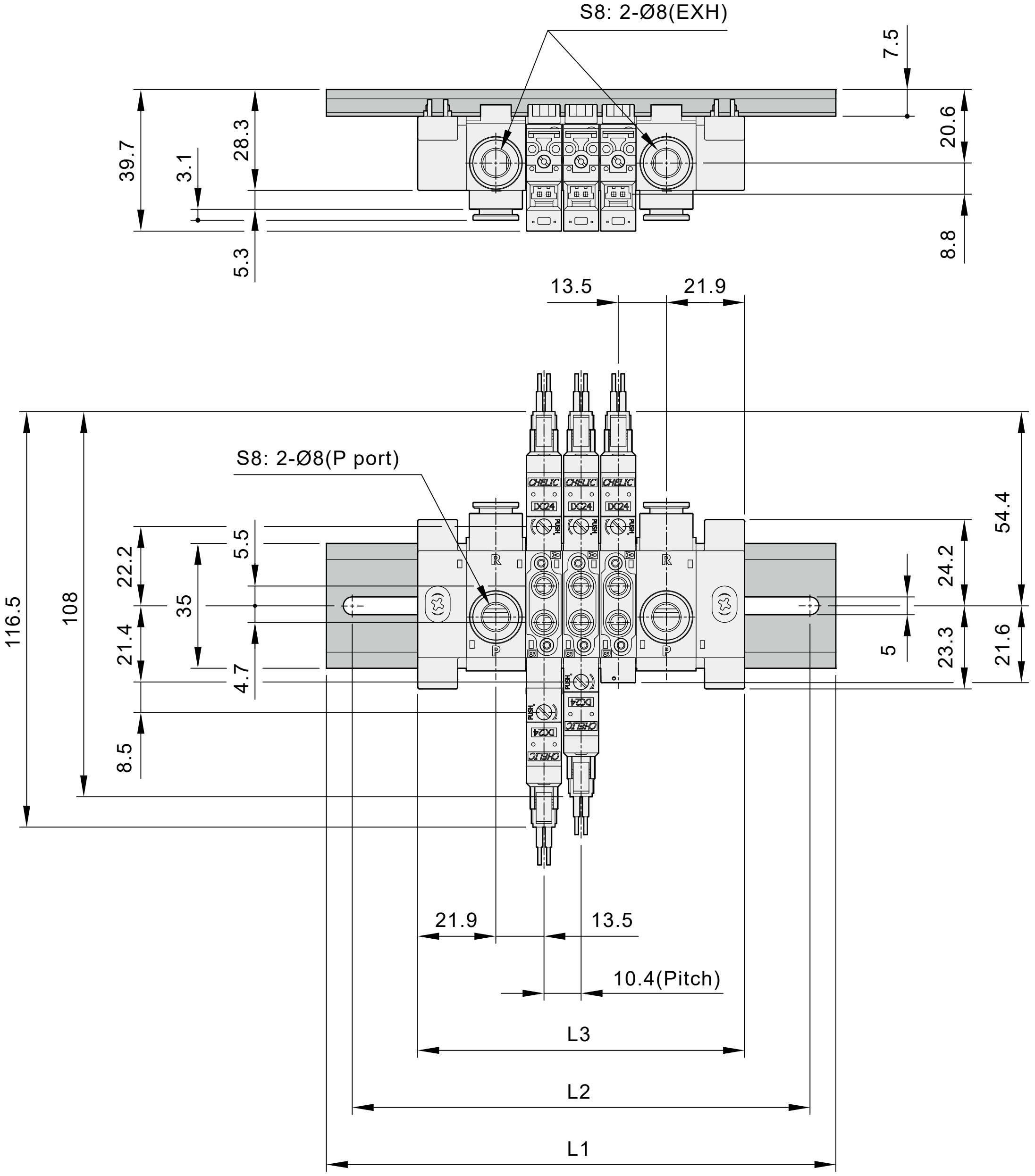

S8: Ø8(EXH)
7.5
28.3
20.6
39.7
8.8
3.1
5.3
M5: 2-M5x0.8P(Thread tapped)
C4: 2-Ø4(With fitting port)
4.8
54.4
24.2
5
23.3
21.6
116.5
108
22.2
5.6
35
21.4
4.7
8.5
CHELIC
DC24
PUSH
A
B
R
P
S8: Ø8(P port)
13.5
21.9
18.8
10.4(Pitch)
L3
L2
L1

| Left manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M |
|---|---|---|---|---|---|---|---|---|---|
| **L1** | 71.4 | 107.1 | 107.1 | 107.1 | 142.8 | 142.8 | 142.8 | 178.5 | 178.5 |
| **L2** | 56.9 | 92.6 | 92.6 | 92.6 | 128.3 | 128.3 | 128.3 | 164 | 164 |
| **L3** | 54.2 | 64.6 | 75 | 85.4 | 95.8 | 106.2 | 116.6 | 137.4 | 137.4 |

# SF300 series DIN Rail Cassette

## Dimensions

### SF310M5+SF-3Y-S8-B
### SF3100-C4+SF-3Y-S8-B


S8: 2-Ø8(EXH)
7.5
39.7
3.1
28.3
20.6
5.3
8.8
13.5
21.9
S8: 2-Ø8(P port)
CHELIC
DC24
PUSH
R
P
116.5
108
22.2
5.5
35
21.4
4.7
8.5
54.4
24.2
5
23.3
21.6
21.9
13.5
10.4(Pitch)
L3
L2
L1

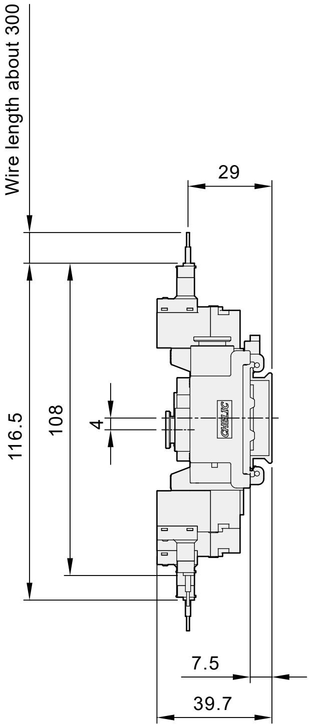
| Both ends manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M | 10 M | 11 M | 12 M | 13 M | 14 M | 15 M | 16 M | 17 M | 18 M | 19 M | 20 M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 71.4 | 107.1 | 142.8 | 142.8 | 142.8 | 178.5 | 178.5 | 178.5 | 214.2 | 214.2 | 214.2 | 214.2 | 249.9 | 249.9 | 249.9 | 285.6 | 285.6 | 285.6 | 321.3 | 321.3 |
| L2 | 56.9 | 92.6 | 128.3 | 128.3 | 128.3 | 164 | 164 | 164 | 199.7 | 199.7 | 199.7 | 199.7 | 235.4 | 235.4 | 235.4 | 271.1 | 271.1 | 271.1 | 306.8 | 306.8 |
| L3 | 70.8 | 81.2 | 91.6 | 102 | 112.4 | 122.8 | 133.2 | 143.6 | 154 | 164.4 | 174.8 | 185.2 | 195.6 | 206 | 216.4 | 226.8 | 237.2 | 247.6 | 258 | 268.4 |

# SF300 series DIN Rail Cassette

## Dimensions

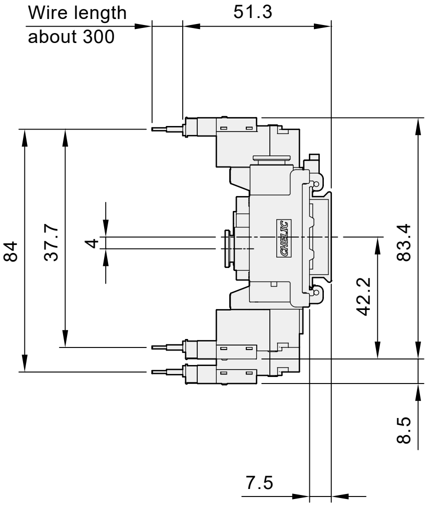
CHELIC

### L wire type - L



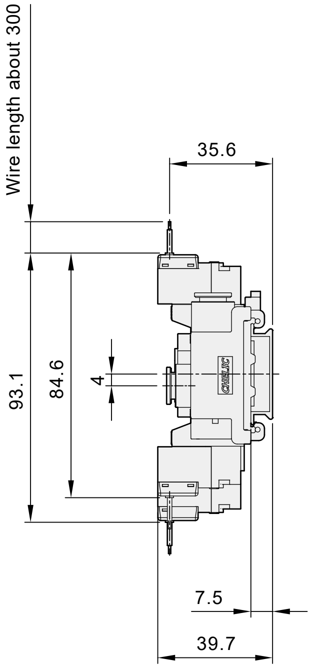
Wire length about 300
29
116.5
108
4
CHELIC
7.5
39.7

### T wire type - T



Wire length about 300
51.3
84
37.7
4
CHELIC
83.4
42.2
8.5
7.5

### W wire type - W

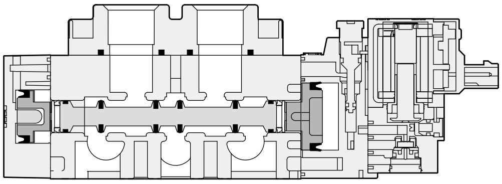


Wire length about 300
35.6
93.1
84.6
4
CHELIC
7.5
39.7

# SF500 series DIN Rail Cassette

## Product features

### Internal structure



### Specification

| Item \ Model | | SF500 | |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range | kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature | °C | 5 ~ 60 | |
| Pilot type | | Air operated | |
| Number of positions | | 5/2-position | 5/3-position |
| Type of actuation | | Normally closed | |
| Effective orifice | mm²(CV) | 9 ( 0.5 ) | |
| Manual override | | Push-turn and lock | |
| Port size | | Rc 1/8, Ø4, Ø6, Ø8 | |
| Lubrication | | Lubrication free type | |

### Ordering expression

1. SF5101-DC24V-L ------------- 1 pcs

+

2. SF5100-C6-DC24V-L --------- 1 pcs

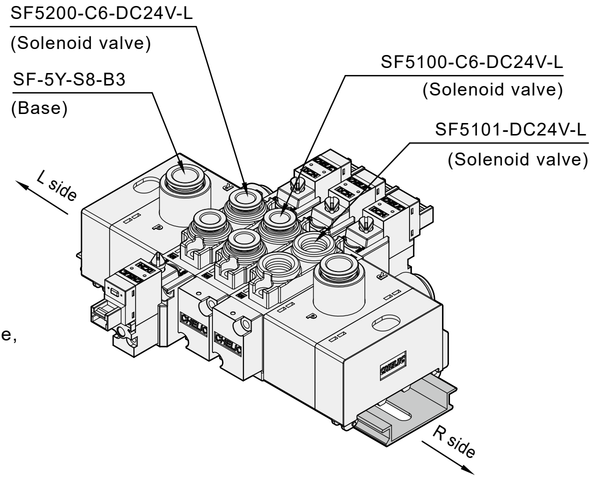
+

3. SF5200-C6-DC24V-L --------- 1 pcs

+

4. SF-5Y-S8-B3 ----------------- 1 pcs

※ Please confirm the model and quantity of solenoid valve, and then confirm the spec of the base.


SF5200-C6-DC24V-L
(Solenoid valve)
SF-5Y-S8-B3
(Base)
SF5100-C6-DC24V-L
(Solenoid valve)
SF5101-DC24V-L
(Solenoid valve)
L side
R side

# SF500 series DIN Rail Cassette

## Code of order

### Code of order - Solenoid valve

**SF** – **5** – **10** – **1** – ( ) – **DC24** – **L**

**Model**

SF series:
Din rail
cassette type
solenoid valve

**Model number**

500 series

**Coil q'ty**

10: Single
20: Double

30: Closed center
40: Exhaust center
50: Pressure center

**Port size**

| Thread type (Standard) | | |
|---|---|---|
| Mark | Thread | Model |
| 1 | Rc1/8 | SF500 |

For A and B port

| 0 | With fitting port |
|---|---|

**With fitting port**

| Mark | Size | Model |
|---|---|---|
| C4 | Ø4 | SF500 |
| C6 | Ø6 | |
| C8 | Ø8 | |

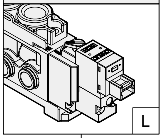
None: Standard type
(Thread type )

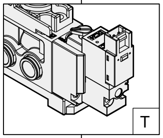
**Voltage**

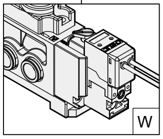
| Standard voltage |
|---|
| 12V DC / 1.2W |
| 24V DC / 1.2W |

**Electrical entry**

Standard


L


T


W

(With wire length 300mm)

### Code of order - DIN Rail type

**SF** – **5** – **Y** – **S8** – ( ) – **L 3**

**Model**

SF series:
Din rail
cassette type
solenoid valve

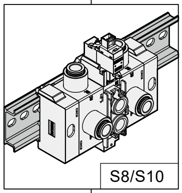
**Model number**

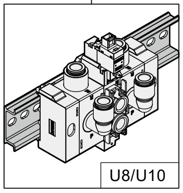
500 series

**With DIN Rail**

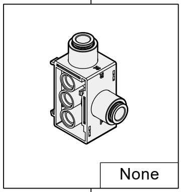
**With fitting port**

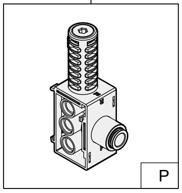
| Mark | Size | Model |
|---|---|---|
| S8 | Ø8 | Vertical entry |
| S10 | Ø10 | |
| U8 | Ø8 | L type side entry |
| U10 | Ø10 | |


S8/S10


U8/U10

| None | Direct EXH |
|---|---|
| P | EXH with silencer |

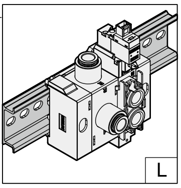

None


P

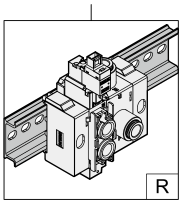
**DIN Rail type**

| Mark | Pos. | Manifold |
|---|---|---|
| L | Left | 1~9 M |
| R | Right | 1~9 M |
| B | Both sides | 1~20 M |

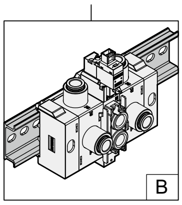
Note: Without selecting code means no DIN Rail


L

※ Up to 9 valves


R

※ Up to 9 valves


B

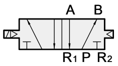
※ Up to 20 valves

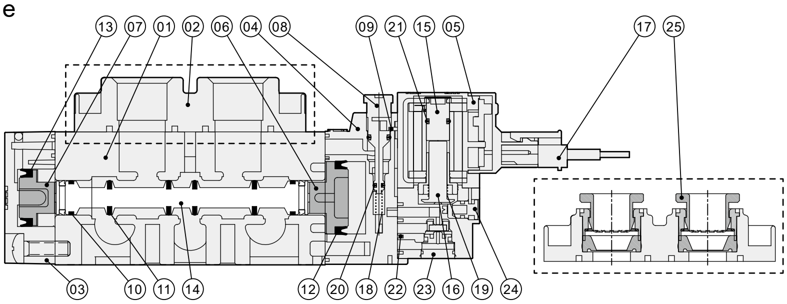
# SF500 series DIN Rail Cassette

## Product features

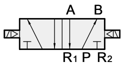
### Internal structure

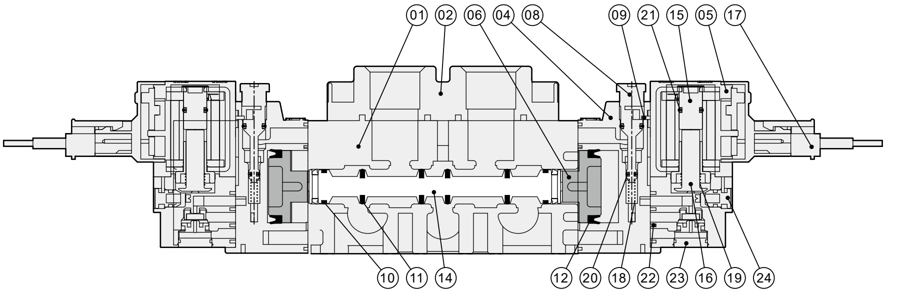
- 5 port 2-position single



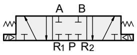

13
07
01
02
06
04
08
09
21
15
05
17
25
03
10
11
14
12
20
18
22
23
16
19
24

- 5 port 2-position double

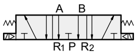



01
02
06
04
08
09
21
15
05
17
10
11
14
12
20
18
22
23
16
19
24

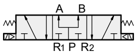
- 5 port 3-position double



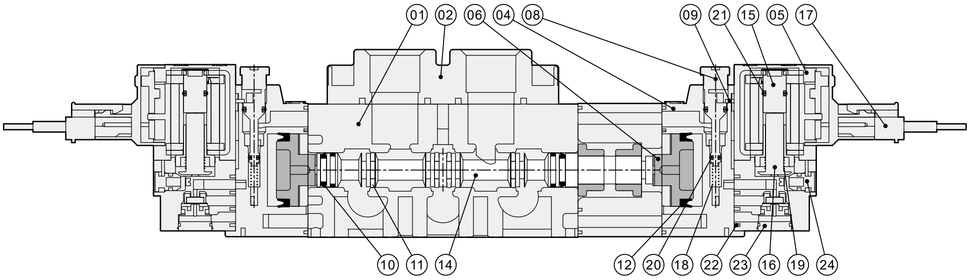
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
02
06
04
08
09
21
15
05
17
10
11
14
12
20
18
22
23
16
19
24

### Components and Material list

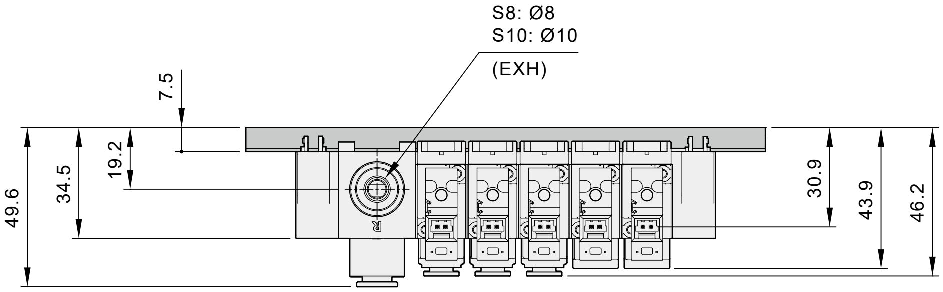
| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 14 | Shaft | Aluminum alloy |
| 02 | Top cover | Alloy | 15 | Coil insert bushing | Stainless steel |
| 03 | Rear cover | Resin | 16 | Spring bushing | Stainless steel |
| 04 | Holder | Resin | 17 | Wire plug | Resin |
| 05 | Coil | — | 18 | Manual override spring | Stainless steel |
| 06 | Holder piston | POM | 19 | Spring bushing spring | Stainless steel |
| 07 | Rear cover piston | POM | 20 | Manual override O-ring | NBR |
| 08 | Manual override | POM | 21 | Coil insert bushing O-ring | NBR |
| 09 | Position iron plate | Iron | 22 | Rubber Lining | NBR |
| 10 | Spool packing | NBR | 23 | Valve rear cap | Copper alloy |
| 11 | Spool packing | NBR | 24 | Manual override | Copper alloy |
| 12 | Holder piston packing | NBR | 25 | Connector | — |
| 13 | Rear cover packing | NBR | | | |

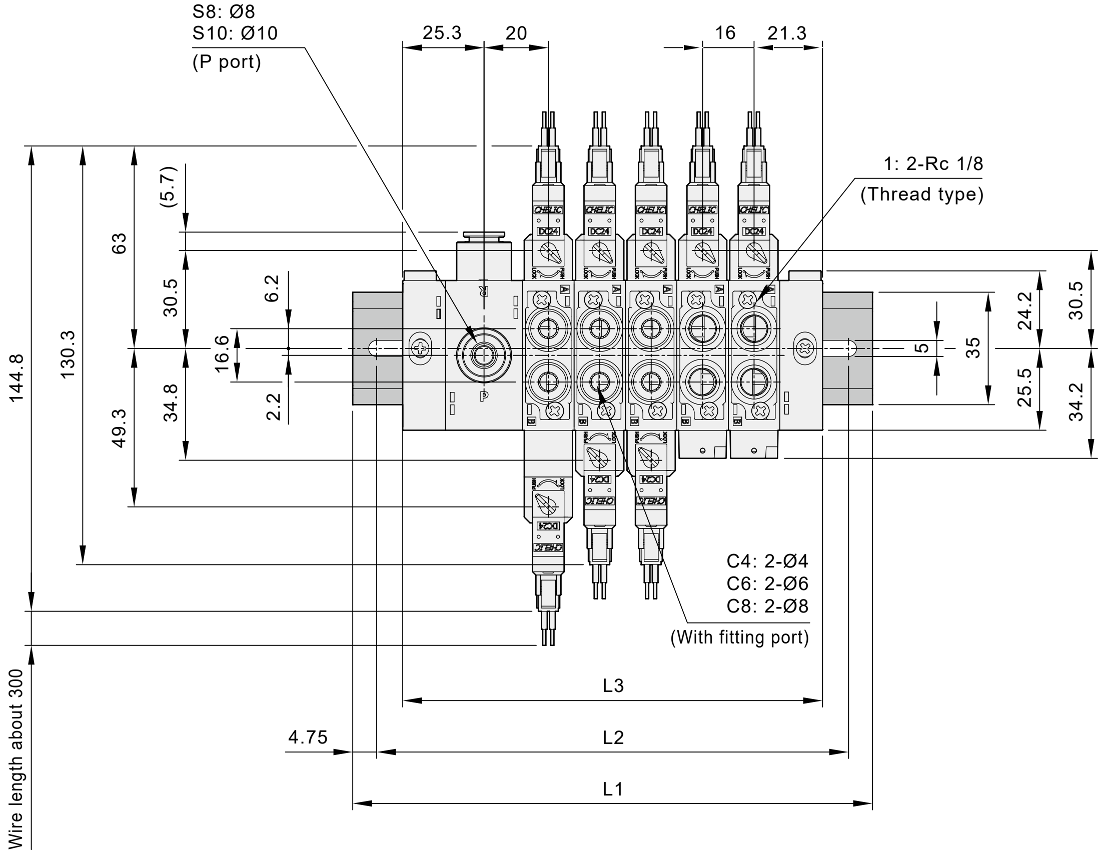
Note : The main body treated with painting.

# SF500 series DIN Rail Cassette

## Dimensions

### SF5101+SF-5Y-S8-L
### SF5100-C4+SF-5Y-S8-L
### SF5100-C6+SF-5Y-S8-L
### SF5100-C8+SF-5Y-S8-L


S8: Ø8
S10: Ø10
(EXH)
7.5
19.2
34.5
49.6
30.9
43.9
46.2
R

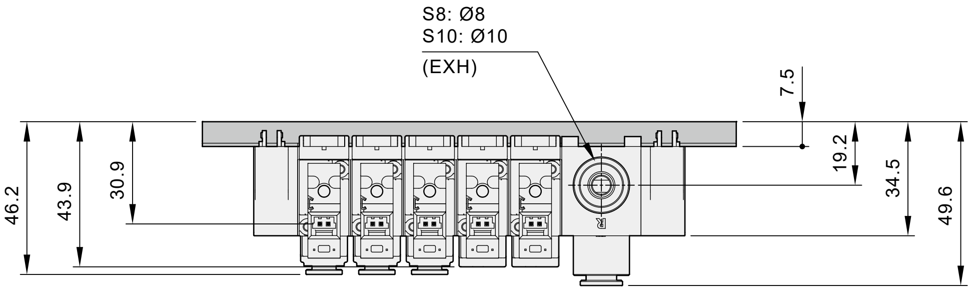

S8: Ø8
S10: Ø10
(P port)
25.3
20
16
21.3
1: 2-Rc 1/8
(Thread type)
(5.7)
63
30.5
6.2
16.6
2.2
34.8
49.3
130.3
144.8
24.2
30.5
5
35
25.5
34.2
R
P
A
B
CHELIC
DC24
C4: 2-Ø4
C6: 2-Ø6
C8: 2-Ø8
(With fitting port)
L3
4.75
L2
L1
Wire length about 300

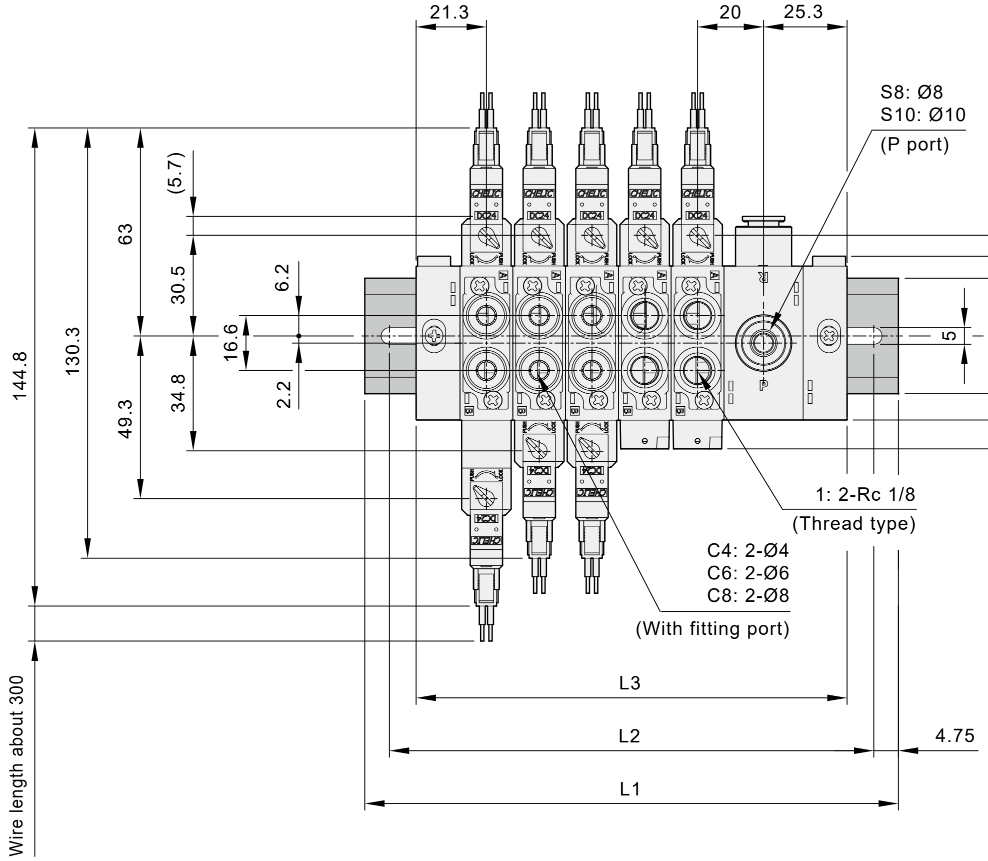
| Left manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M |
|---|---|---|---|---|---|---|---|---|---|
| **L1** | 107.1 | 107.1 | 142.8 | 142.8 | 178.5 | 178.5 | 178.5 | 214.2 | 214.2 |
| **L2** | 92.6 | 92.6 | 128.3 | 128.3 | 164 | 164 | 164 | 199.7 | 199.7 |
| **L3** | 66.6 | 82.6 | 114.6 | 114.6 | 146.6 | 146.6 | 162.6 | 178.6 | 194.6 |

# SF500 series DIN Rail Cassette

## Dimensions

**SF5101+SF-5Y-S8-R**
**SF5100-C4+SF-5Y-S8-R**
**SF5100-C6+SF-5Y-S8-R**
**SF5100-C8+SF-5Y-S8-R**


S8: Ø8
S10: Ø10
(EXH)
7.5
19.2
34.5
49.6
46.2
43.9
30.9

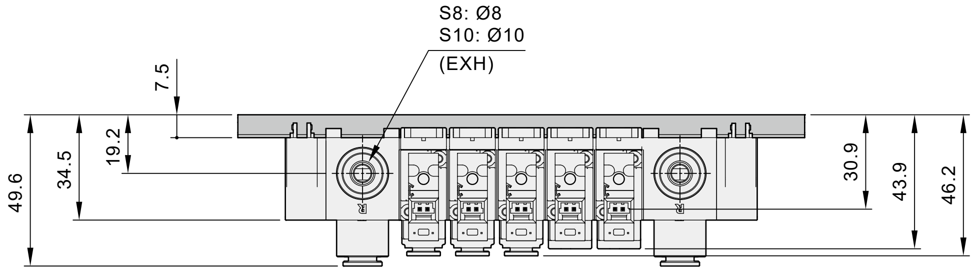

21.3
20
25.3
S8: Ø8
S10: Ø10
(P port)
(5.7)
63
30.5
6.2
16.6
2.2
34.8
49.3
130.3
144.8
24.2
30.5
5
35
25.5
34.2
1: 2-Rc 1/8
(Thread type)
C4: 2-Ø4
C6: 2-Ø6
C8: 2-Ø8
(With fitting port)
L3
L2
4.75
L1
Wire length about 300

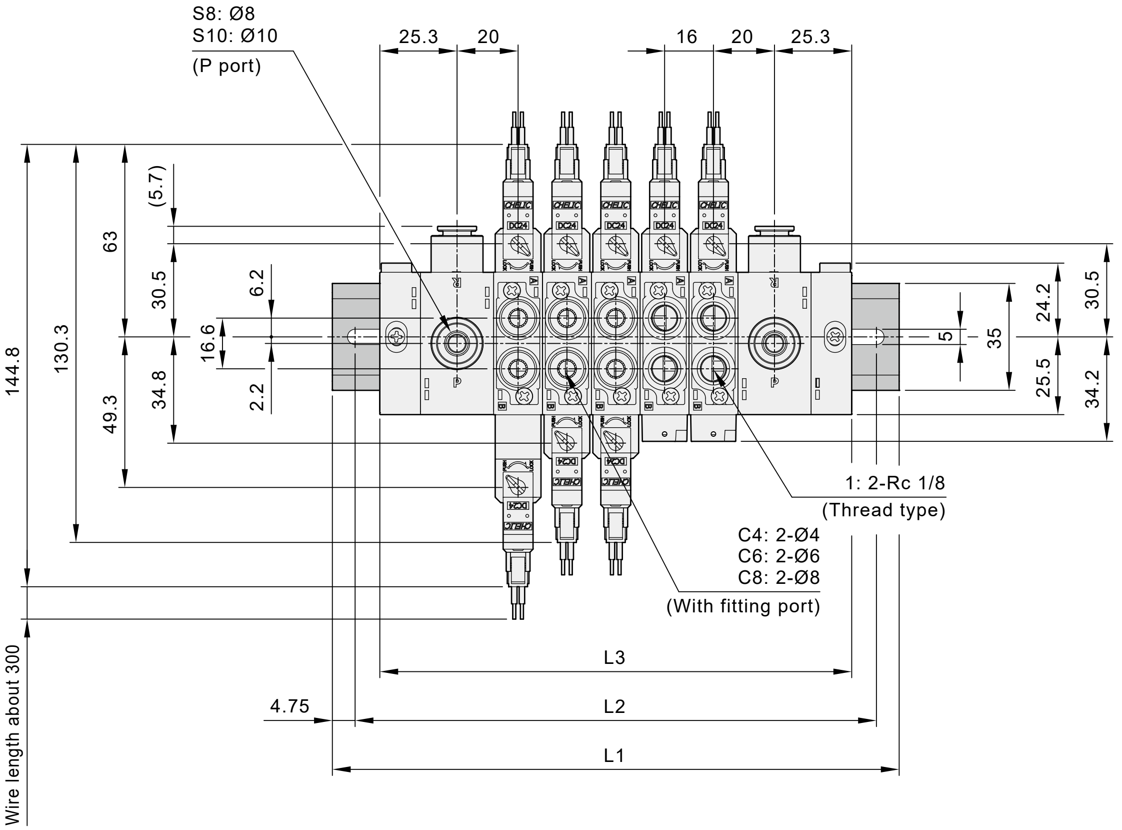
| Right manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 107.1 | 107.1 | 142.8 | 142.8 | 178.5 | 178.5 | 178.5 | 214.2 | 214.2 |
| L2 | 92.6 | 92.6 | 128.3 | 128.3 | 164 | 164 | 164 | 199.7 | 199.7 |
| L3 | 66.6 | 82.6 | 114.6 | 114.6 | 146.6 | 146.6 | 162.6 | 178.6 | 194.6 |

# SF500 series DIN Rail Cassette

## Dimensions

### SF5101+SF-5Y-S8-B
### SF5100-C4+SF-5Y-S8-B
### SF5100-C6+SF-5Y-S8-B
### SF5100-C8+SF-5Y-S8-B


S8: Ø8
S10: Ø10
(EXH)
7.5
19.2
34.5
49.6
30.9
43.9
46.2

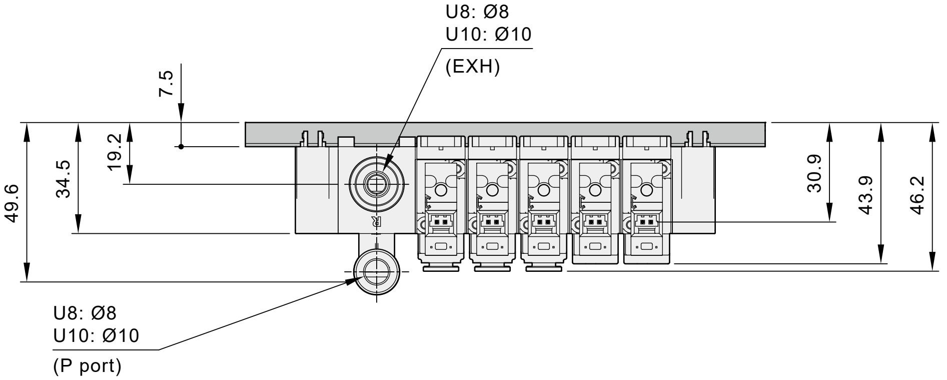

S8: Ø8
S10: Ø10
(P port)
25.3
20
16
20
25.3
(5.7)
63
30.5
6.2
16.6
2.2
34.8
49.3
130.3
144.8
24.2
30.5
5
35
25.5
34.2
1: 2-Rc 1/8
(Thread type)
C4: 2-Ø4
C6: 2-Ø6
C8: 2-Ø8
(With fitting port)
L3
4.75
L2
L1
Wire length about 300

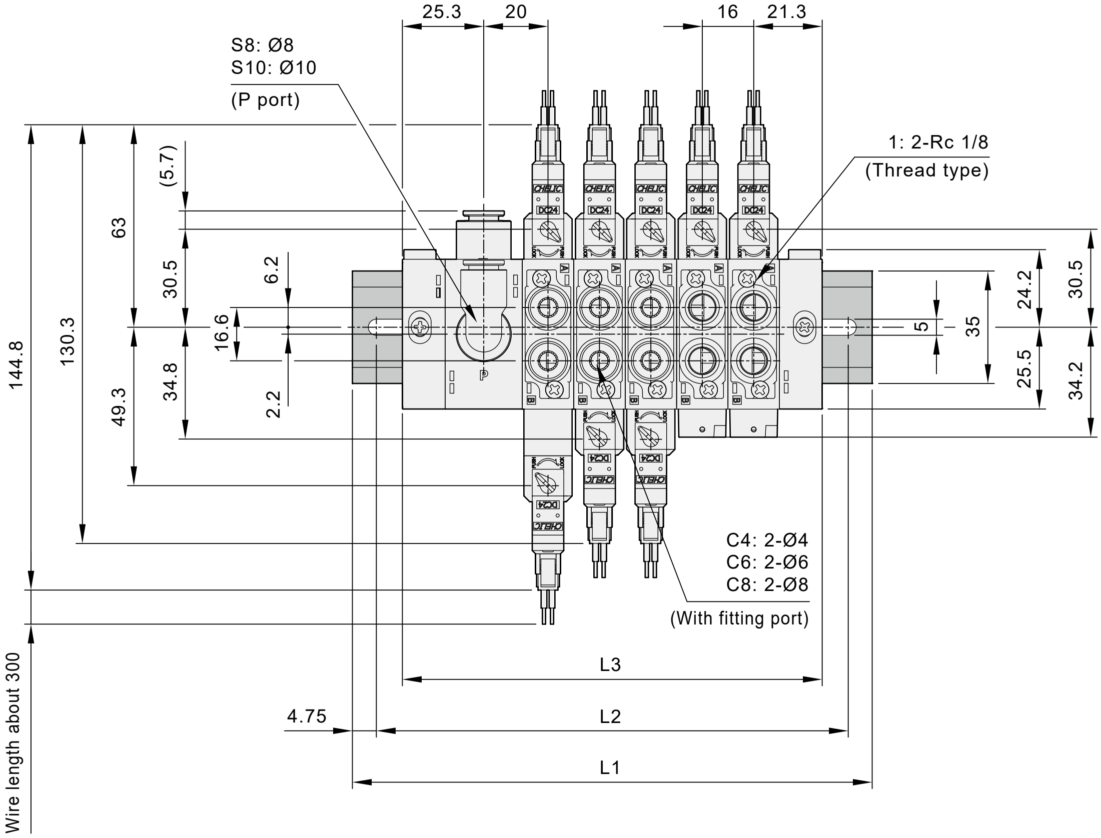
| Both ends manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M | 10 M | 11 M | 12 M | 13 M | 14 M | 15 M | 16 M | 17 M | 18 M | 19 M | 20 M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 142.8 | 142.8 | 142.8 | 178.5 | 178.5 | 214.2 | 214.2 | 249.9 | 249.9 | 285.6 | 285.6 | 321.3 | 321.3 | 357 | 357 | 392.7 | 392.7 | 392.7 | 428.4 | 428.4 |
| L2 | 128.3 | 128.3 | 128.3 | 164 | 164 | 199.7 | 199.7 | 235.4 | 235.4 | 271.1 | 271.1 | 306.8 | 306.8 | 342.5 | 342.5 | 378.2 | 378.2 | 378.2 | 413.9 | 413.9 |
| L3 | 106.6 | 106.6 | 122.6 | 138.6 | 154.6 | 170.6 | 186.6 | 202.6 | 218.6 | 234.6 | 250.6 | 266.6 | 282.6 | 298.6 | 314.6 | 330.6 | 346.6 | 362.6 | 378.6 | 394.6 |

# SF500 series DIN Rail Cassette

## Dimensions

**SF5101+SF-5Y-U8-L**
**SF5100-C4+SF-5Y-U8-L**
**SF5100-C6+SF-5Y-U8-L**
**SF5100-C8+SF-5Y-U8-L**


U8: Ø8
U10: Ø10
(EXH)
7.5
19.2
34.5
49.6
30.9
43.9
46.2
U8: Ø8
U10: Ø10
(P port)

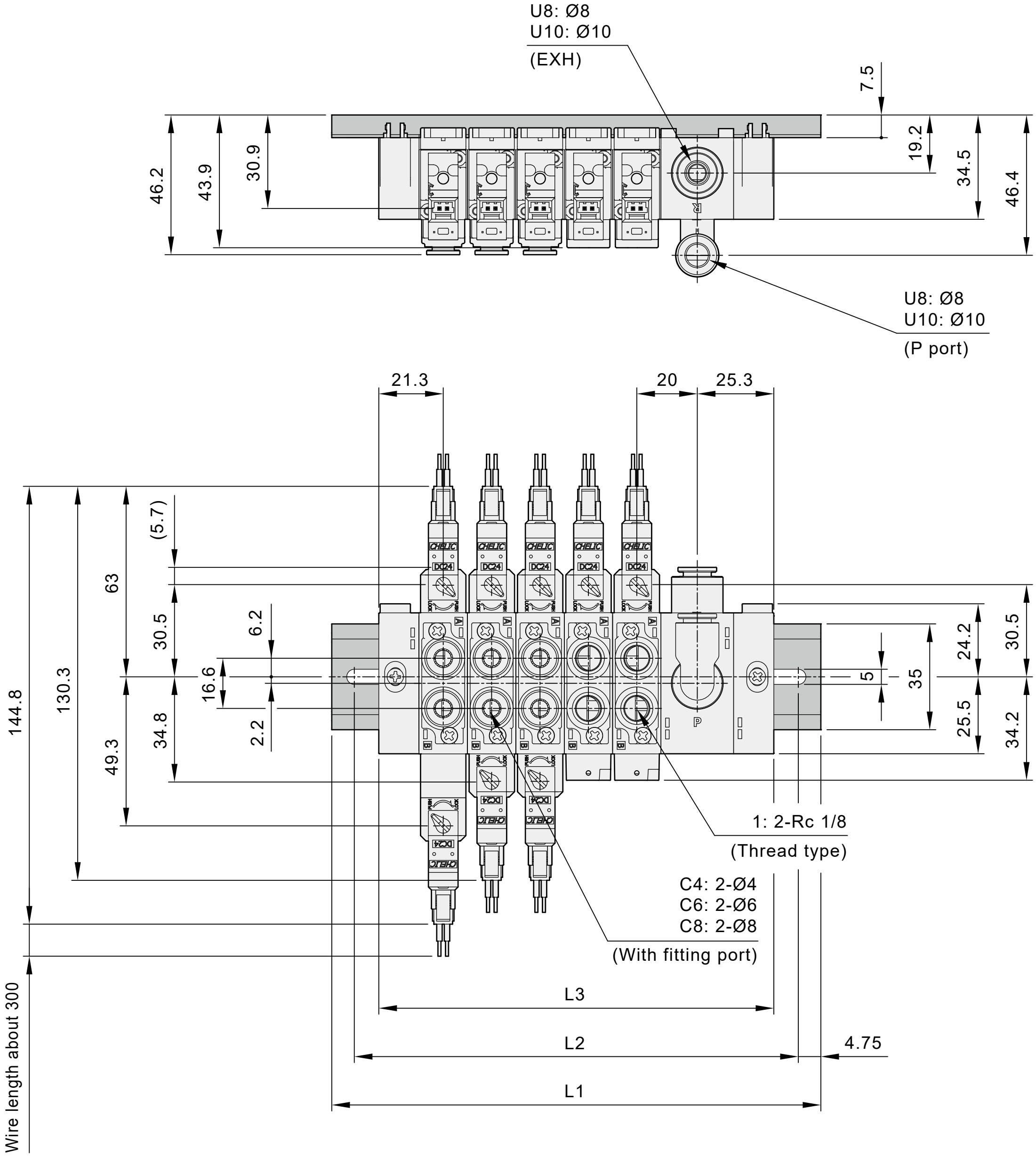

25.3
20
16
21.3
S8: Ø8
S10: Ø10
(P port)
1: 2-Rc 1/8
(Thread type)
(5.7)
63
30.5
6.2
16.6
2.2
34.8
49.3
130.3
144.8
5
35
24.2
30.5
25.5
34.2
C4: 2-Ø4
C6: 2-Ø6
C8: 2-Ø8
(With fitting port)
L3
4.75
L2
L1
Wire length about 300

| Left manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M |
|---|---|---|---|---|---|---|---|---|---|
| **L1** | 107.1 | 107.1 | 107.1 | 142.8 | 142.8 | 178.5 | 178.5 | 214.2 | 214.2 |
| **L2** | 92.6 | 92.6 | 92.6 | 128.3 | 128.3 | 164 | 164 | 199.7 | 199.7 |
| **L3** | 66.6 | 82.6 | 98.6 | 114.6 | 130.6 | 146.6 | 162.6 | 178.6 | 194.6 |

# SF500 series DIN Rail Cassette

## Dimensions

### SF5101+SF-5Y-U8-R
SF5100-C4+SF-5Y-U8-R
SF5100-C6+SF-5Y-U8-R
SF5100-C8+SF-5Y-U8-R

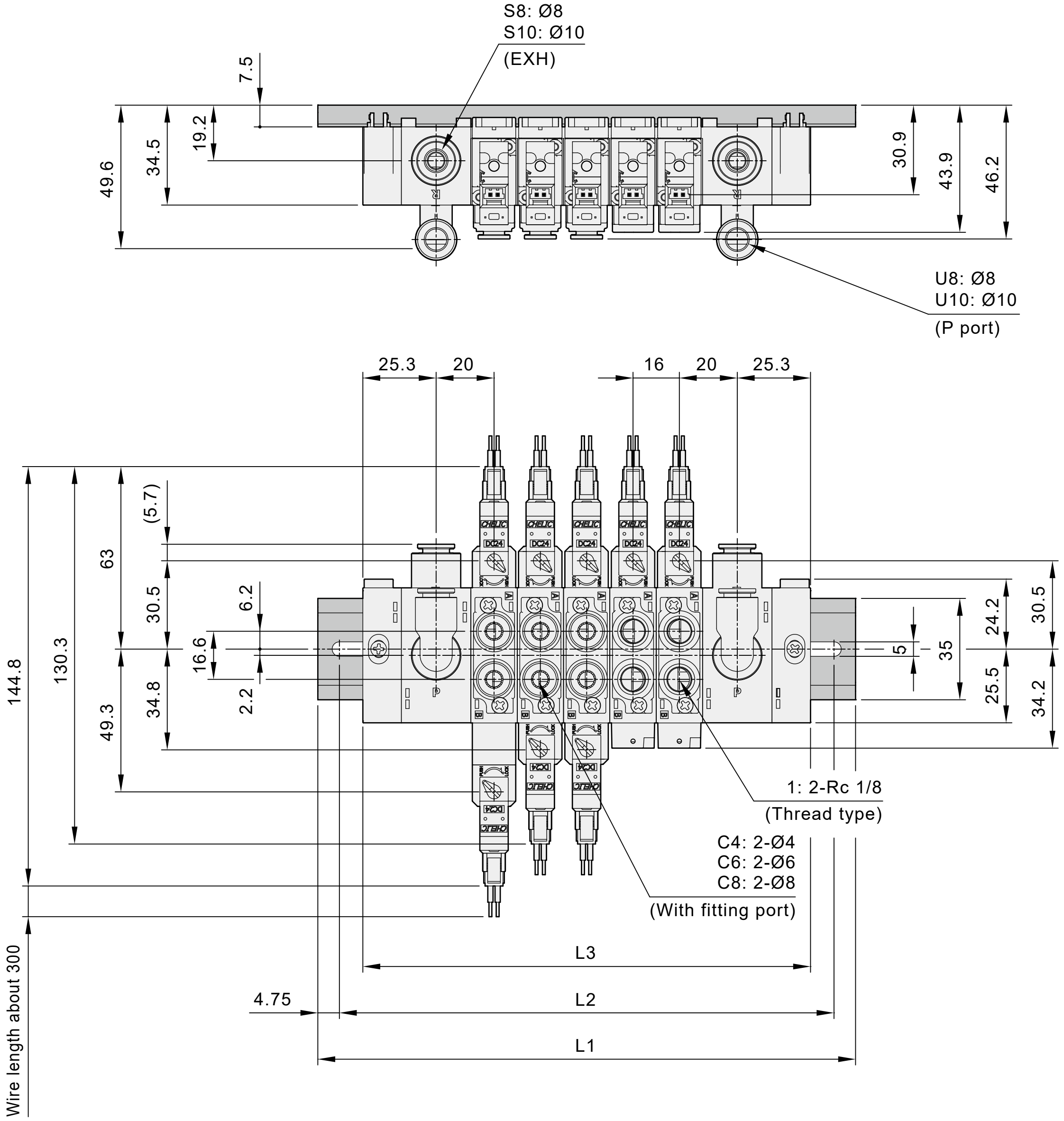

U8: Ø8
U10: Ø10
(EXH)
7.5
19.2
34.5
46.4
46.2
43.9
30.9
U8: Ø8
U10: Ø10
(P port)
21.3
20
25.3
(5.7)
63
30.5
6.2
16.6
2.2
34.8
49.3
130.3
144.8
5
35
24.2
30.5
25.5
34.2
1: 2-Rc 1/8
(Thread type)
C4: 2-Ø4
C6: 2-Ø6
C8: 2-Ø8
(With fitting port)
L3
L2
4.75
L1
Wire length about 300

| Right manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 107.1 | 107.1 | 107.1 | 142.8 | 142.8 | 178.5 | 178.5 | 214.2 | 214.2 |
| L2 | 92.6 | 92.6 | 92.6 | 128.3 | 128.3 | 164 | 164 | 199.7 | 199.7 |
| L3 | 66.6 | 82.6 | 98.6 | 114.6 | 130.6 | 146.6 | 162.6 | 178.6 | 194.6 |

# SF500 series DIN Rail Cassette

## Dimensions

**SF5101+SF-5Y-U8-B**
**SF5100-C4+SF-5Y-U8-B**
**SF5100-C6+SF-5Y-U8-B**
**SF5100-C8+SF-5Y-U8-B**

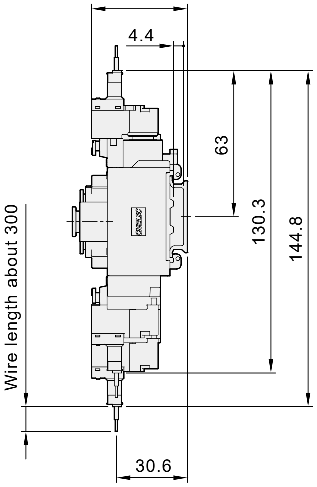

S8: Ø8
S10: Ø10
(EXH)
7.5
19.2
34.5
49.6
30.9
43.9
46.2
U8: Ø8
U10: Ø10
(P port)
25.3
20
16
20
25.3
(5.7)
63
30.5
6.2
16.6
2.2
34.8
49.3
130.3
144.8
24.2
30.5
5
35
25.5
34.2
1: 2-Rc 1/8
(Thread type)
C4: 2-Ø4
C6: 2-Ø6
C8: 2-Ø8
(With fitting port)
L3
4.75
L2
L1
Wire length about 300
CHELIC
DC24
P
R
A
B

| Both ends manifold | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M | 9 M | 10 M | 11 M | 12 M | 13 M | 14 M | 15 M | 16 M | 17 M | 18 M | 19 M | 20 M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 142.8 | 142.8 | 142.8 | 178.5 | 178.5 | 214.2 | 214.2 | 249.9 | 249.9 | 285.6 | 285.6 | 321.3 | 321.3 | 357 | 357 | 392.7 | 392.7 | 392.7 | 428.4 | 428.4 |
| L2 | 128.3 | 128.3 | 128.3 | 164 | 164 | 199.7 | 199.7 | 235.4 | 235.4 | 271.1 | 271.1 | 306.8 | 306.8 | 342.5 | 342.5 | 378.2 | 378.2 | 378.2 | 413.9 | 413.9 |
| L3 | 106.6 | 106.6 | 122.6 | 138.6 | 154.6 | 170.6 | 186.6 | 202.6 | 218.6 | 234.6 | 250.6 | 266.6 | 282.6 | 298.6 | 314.6 | 330.6 | 346.6 | 362.6 | 378.6 | 394.6 |

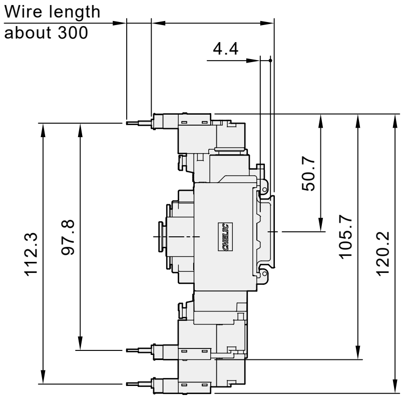
# SF500 series DIN Rail Cassette

## Dimensions

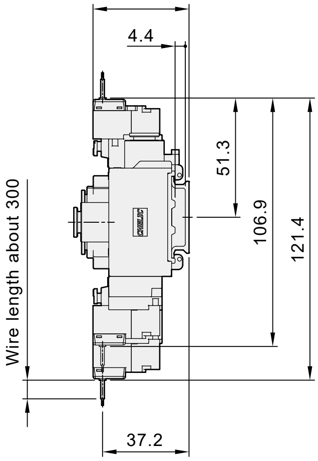
### L wire type - L


4.4
63
130.3
144.8
Wire length about 300
30.6

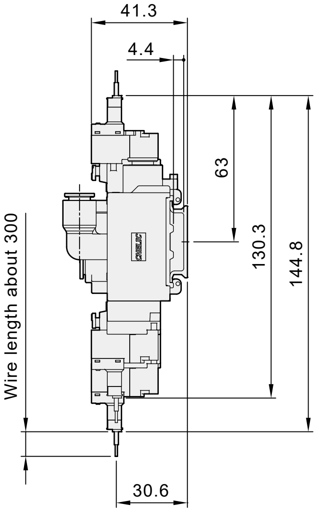
### T wire type - T


Wire length
about 300
4.4
50.7
105.7
120.2
112.3
97.8

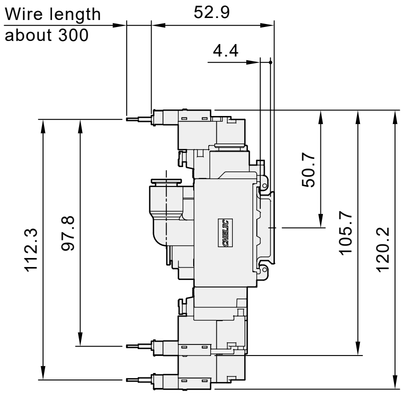
### W wire type - W


4.4
51.3
106.9
121.4
Wire length about 300
37.2

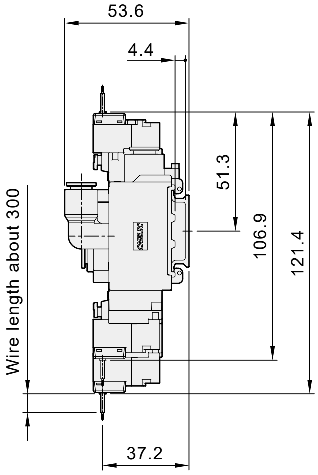
### L wire type - L


41.3
4.4
63
130.3
144.8
Wire length about 300
30.6

### T wire type - T


Wire length
about 300
52.9
4.4
50.7
105.7
120.2
112.3
97.8

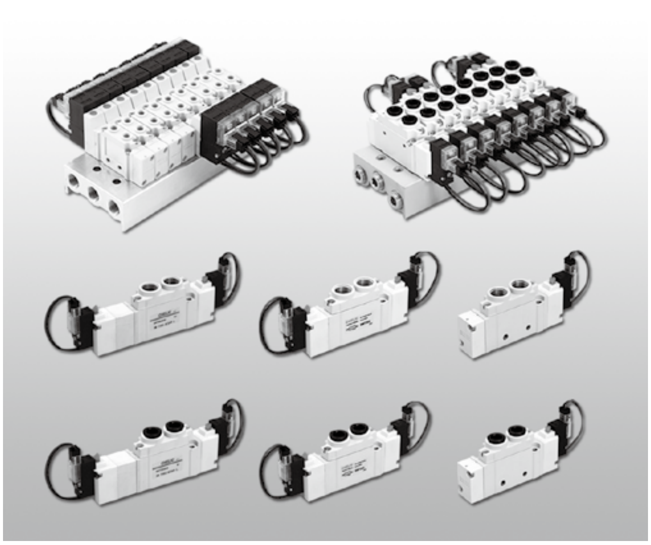
### W wire type - W


53.6
4.4
51.3
106.9
121.4
Wire length about 300
37.2

# Directional control — SR series Body Ported Solenoid Valve

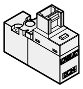
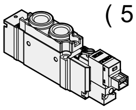
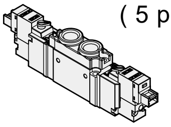
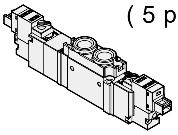
## SR300, SR500, SR700, SR900 Solenoid valve

CHELIC



Provide CAD external dimension.

Small size, big flow rate!
High responding time below 10ms
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.

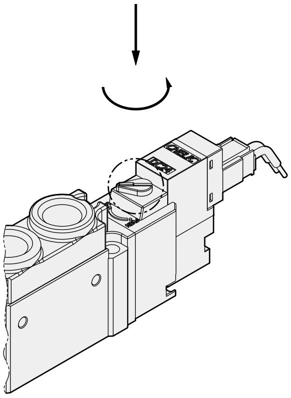
| | | | |
|---|---|---|---|
| **Solenoid valve single coil**<br>( 3 port 2-position )<br>( Direct operated )<br> | **SR2 - 100 series** | **M5** | **P.2-1.38** |
| **Solenoid valve single coil**<br>( 5 port 2-position )<br> | **SR - 300 series** | **M5** | **P.2-1.44** |
| | **SR - 500 series** | **Rc 1/8, Ø4, Ø6, Ø8** | **P.2-1.48** |
| | **SR - 700 series** | **Rc 1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.59** |
| | **SR - 900 series** | **Rc 1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-1.70** |
| **Solenoid valve double coils**<br>( 5 port 2-position )<br> | **SR - 300 series** | **M5** | **P.2-1.45** |
| | **SR - 500 series** | **Rc 1/8, Ø4, Ø6, Ø8** | **P.2-1.49** |
| | **SR - 700 series** | **Rc 1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.60** |
| | **SR - 900 series** | **Rc 1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-1.71** |
| **Solenoid valve double coils**<br>( 5 port 3-position)<br> | **SR - 300 series** | **M5** | **P.2-1.46** |
| | **SR - 500 series** | **Rc 1/8, Ø4, Ø6, Ø8** | **P.2-1.50** |
| | **SR - 700 series** | **Rc 1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.61** |
| | **SR - 900 series** | **Rc 1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-1.72** |

# ⚠ General Cautions for SR Solenoid Valve series

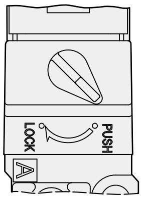
Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Operation and Instruction for manual for manual override

- Press down manual override to rotate the switching position so that solenoid valve on the lock status.



- The purpose of pressing the manual override is to provide manual test or test run adjustment. It is not for normal use.
- Must be check the lock status if it has been lifted. Manually button must be at **Push** position that it can be normal used for electronic control.



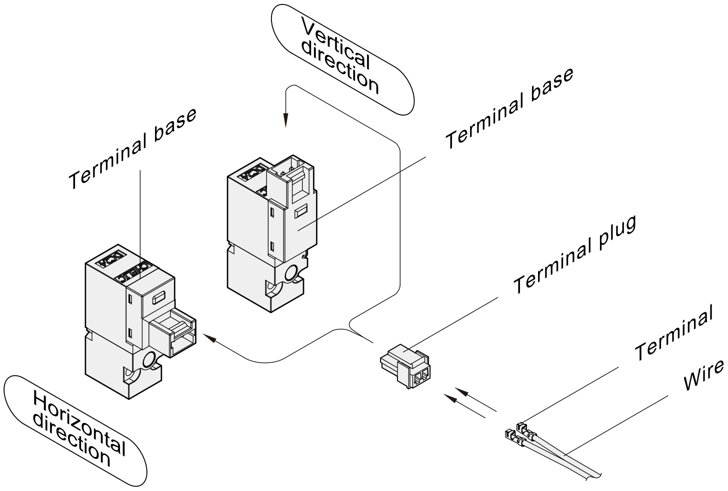
## Sage surge voltage protection circuit

| | |
|---|---|
| DC 24V | Below ±0.1 mA |

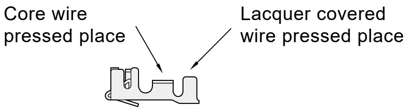
## Method and description of the selection of terminal board

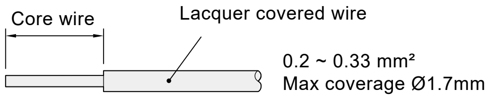
(1) Direction ( Horizontal& Vertical )

(2) Terminal and Wire ( Pressed )

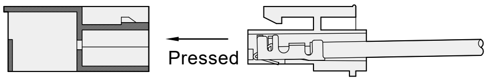

Vertical direction
Terminal base
Terminal base
Terminal plug
Terminal
Wire
Horizontal direction

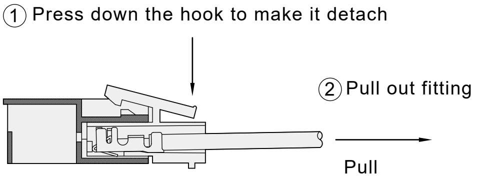
(3) Terminal and Press chain ( Device positioning )


Core wire
pressed place
Lacquer covered
wire pressed place


Core wire
Lacquer covered wire
0.2 ~ 0.33 mm²
Max coverage Ø1.7mm

(4) Press chain and Socket ( Pressed and Pulled )

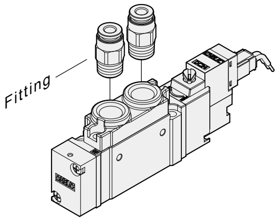



① Press down the hook to make it detach
② Pull out fitting
Pull

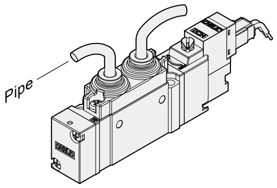
- Note: It will cause plug and coil damaged because of pulling out fitting by wrong way.

## Selection and use of the through hole connection plate

- Select " thread type connection plate ", may select various fitting in discretion and fixed by screw thread.



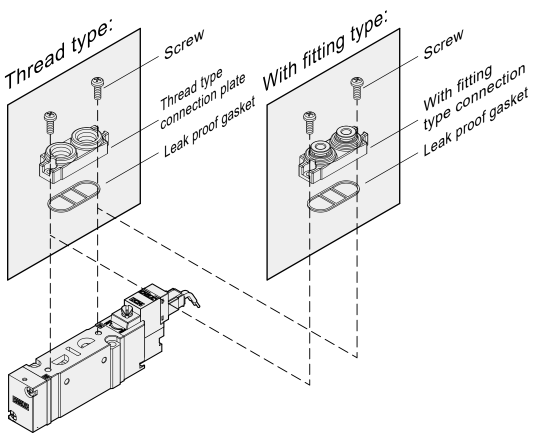
- Select " connection plate with fitting ", first select the size of pipe diameter; just insert the pipe into position while assembling, need no connector tightening.



- Selection specification of the through hole connection plate:

| Model | Thread type | | | | Piping of fitting type | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | M5 | 1/8 | 1/4 | 3/8 | Ø4 | Ø6 | Ø8 | Ø10 | Ø12 |
| SR300 | ● | — | — | — | ● | — | — | — | — |
| SR500 | — | ● | — | — | ● | ● | ● | — | — |
| SR700 | — | ● | ● | — | — | ● | ● | ● | — |
| SR900 | — | — | ● | ● | — | — | ● | ● | ● |

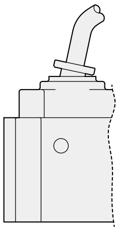
Note: The solenoid valve with fitting that the height is lower and easy to install.


Thread type:
Screw
Thread type
connection plate
Leak proof gasket
With fitting type:
Screw
With fitting
type connection
Leak proof gasket

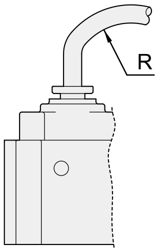
# General Cautions for SR Solenoid Valve series

Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Attention for connecting pipe application



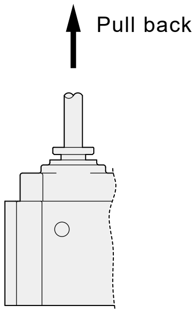
( X )



( ○ )

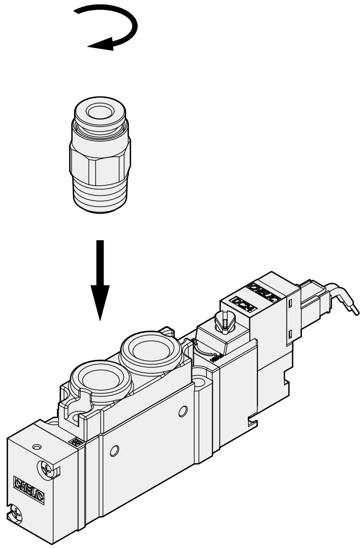
- The pressed piece should not skew at bent portion which will tend to leakage and rapture.

- According to the pipe diameter as illustrated to prevent too small radius resulting to leakage and poor flow of the fluid.



- There are two stages tighter feeling while inserting the pipe, this in normal, the pipe must be inserted to very end.

- Pull back the pipe while finish inserting to make sure tightness.



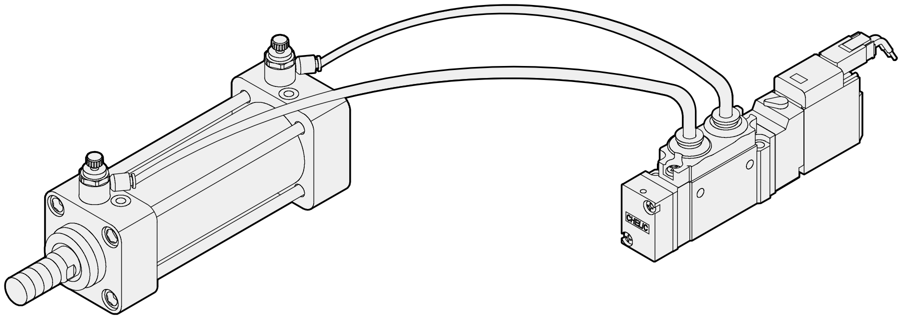
- Please secure the solenoid valve before inserting the fitting.

- Never press the solenoid valve when tightening which cause damage at the joint.

# SR series Body Ported Solenoid Valve

## Flow rate and applicable cylinder

### **Applicable cylinder** ( Reference )

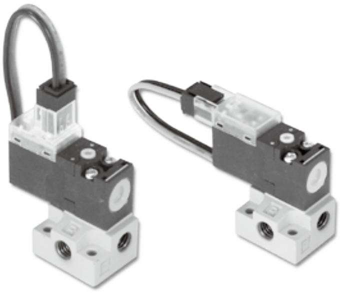


- Max. driving speed of the cylinder ( Length of piping: 1mm, diameter Ø8 ) ( diameter: Ø10 )

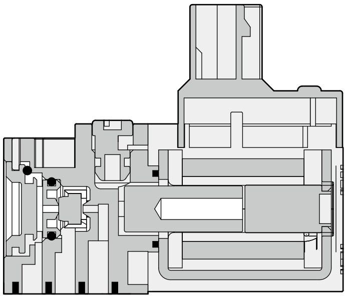
| Model | CV Value | Cylinder speed mm/s | SDA • DB • FDA series | | | | | | DMB • DN • DU series | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ø12 | Ø16 | Ø20 | Ø25 | Ø32 | Ø40 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 |
| **SR300** | 0.2 | 100 | | | | | | | | | ● | | |
| | | 200 | | | | | | | | ● | | | |
| | | 300 | | | | | | ● | ● | | | | |
| | | 400 | | | | | ● | | | | | | |
| | | 500 | | | | ● | | | | | | | |
| | | 600 | | | ● | | | | | | | | |
| **SR500** | 0.5 | 150 | | | | | | | | | ● | | |
| | | 300 | | | | | | | | ● | | | |
| | | 450 | | | | | ● | ● | ● | | | | |
| | | 600 | | | | ● | | | | | | | |
| | | 750 | | | ● | | | | | | | | |
| | | 900 | ● | ● | | | | | | | | | |
| **SR700** | 0.9 | 150 | | | | | | | | | | | ● |
| | | 300 | | | | | | | | | | ● | |
| | | 450 | | | | | | ● | | | ● | | |
| | | 600 | | | | | ● | | | ● | | | |
| | | 750 | | | | ● | | | ● | | | | |
| | | 900 | | | ● | | | | | | | | |
| **SR900** | 1.7 | 150 | | | | | | | | | | | ● |
| | | 300 | | | | | | | | | ● | ● | |
| | | 450 | | | | | | ● | ● | ● | | | |
| | | 600 | | | ● | ● | ● | | | | | | |
| | | 750 | | | | | | | | | | | |
| | | 900 | | | | | | | | | | | |

# SR2 100 series - Solenoid Valve Direct Operated

## Product features



### Internal structure



### Specification

| Item \ Model | SR2 100 |
|---|---|
| Fluid | Air |
| Pressure range kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) |
| Ambient and fluid temperature °C | 5 ~ 60 |
| Pilot type | Direct operated |
| Number of positions | 3/2-position |
| Type of actuation | Normally closed |
| Effective orifice mm²(CV) | 0.126 ( 0.007 ) |
| Manual override | Push |
| Port size | M5 |
| Lubrication | Lubrication free type |

### Code of order

SR2 — 1 — 0 — 0 — M5 — L — 24 VDC — M 4

**Model**

Direct operated
SR 100
3 port 2-position

**Model number**

1: 100 series

**Coil q'ty**

0: Single

**Position**

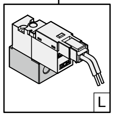
0: 2 ports

**Port size**

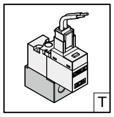
| Mark | Thread | Model |
|---|---|---|
| M5 | M5x0.8p | SR100 |

None: Without manifold

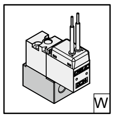
**Electrical entry**



(With wire length 300mm)



(With wire length 300mm)

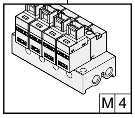


(With wire length 300mm)

**Voltage**

Standard:
12V DC 1.2 W
24V DC 1.2 W

**Manifold**



M1 = 1 set
M2 = 2 sets
M3 = 3 sets
⋮
M20 = 20 sets

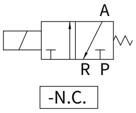
# SR2 100 series - Solenoid Valve Direct Operated

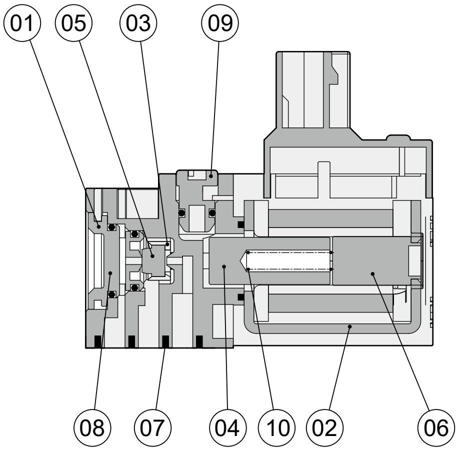
## Product features

SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

### Internal structure

3 port 2-position single





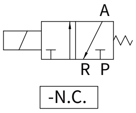
### Components and Material list

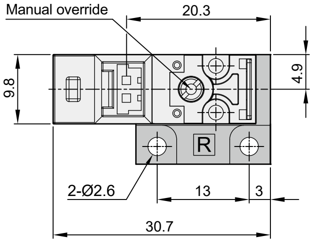
| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Resin | **06** | Coil insert bushing | Stainless steel |
| **02** | Coil | Resin | **07** | Rubber lining | NBR |
| **03** | Valve port rubber ring base | Resin | **08** | Rear cover | POM |
| **04** | Spring bushing | Stainless steel | **09** | Manual override | POM |
| **05** | Valve port rubber ring | NBR | **10** | Spring bushing spring | Stainless steel |

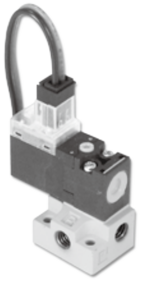
# SR2 100 series - Solenoid Valve Direct Operated

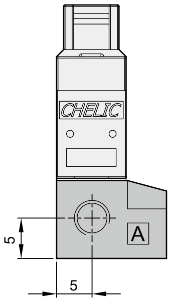
## Dimension/ 3 port 2 position

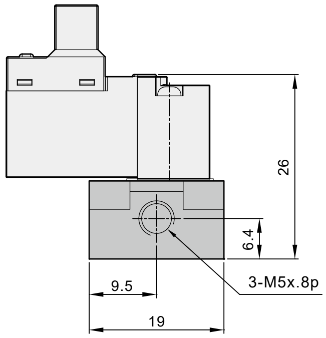
### SR2 - 100 - T type

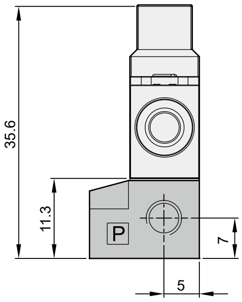



Manual override
20.3
9.8
4.9
R
2-Ø2.6
13
3
30.7

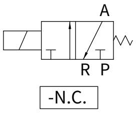


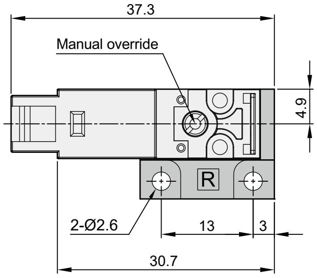


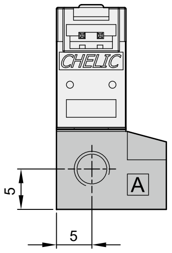

26
6.4
3-M5x.8p
9.5
19

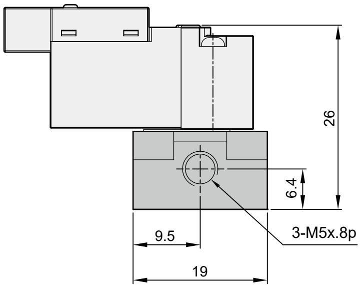


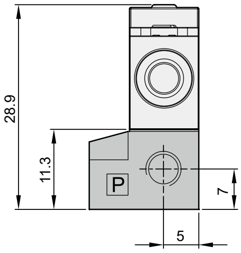
### SR2 - 100 - L type




37.3
Manual override
4.9
R
2-Ø2.6
13
3
30.7



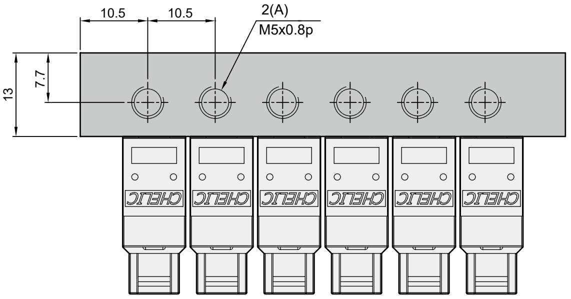

26
6.4
3-M5x.8p
9.5
19

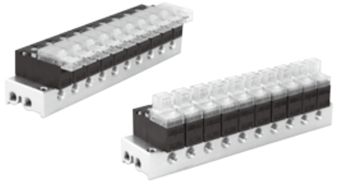


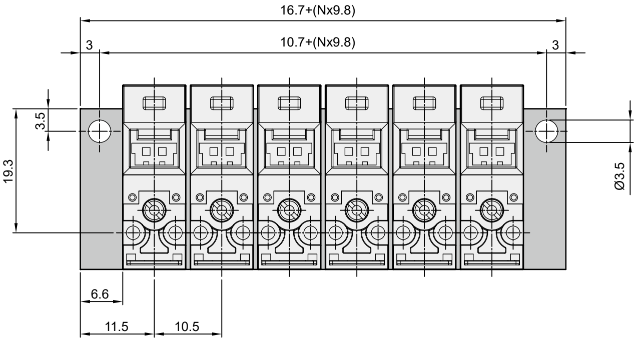
# SR2 100 series - Solenoid Valve Direct Operated

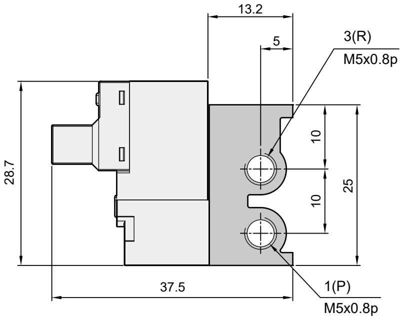
## Dimension/ 3 port 2 position

### SR2-100 series
Manifold dimension - T type


10.5
10.5
2(A)
M5x0.8p
13
7.7
CHELIC



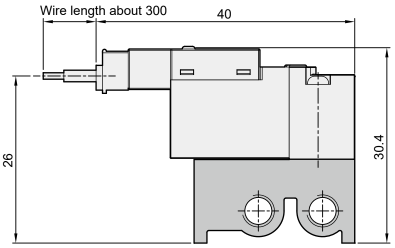

16.7+(Nx9.8)
3
10.7+(Nx9.8)
3
3.5
19.3
Ø3.5
6.6
11.5
10.5

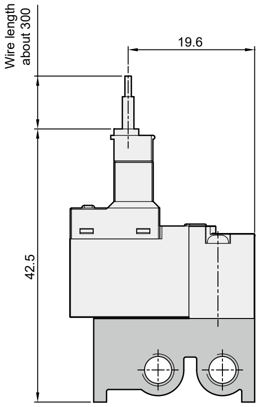

13.2
5
3(R)
M5x0.8p
28.7
10
10
25
37.5
1(P)
M5x0.8p

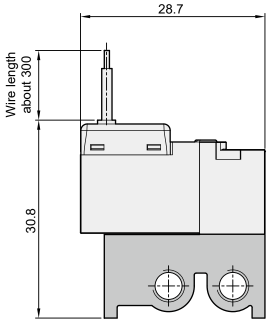
### L wire type - L

### T wire type - T

### W wire type - W

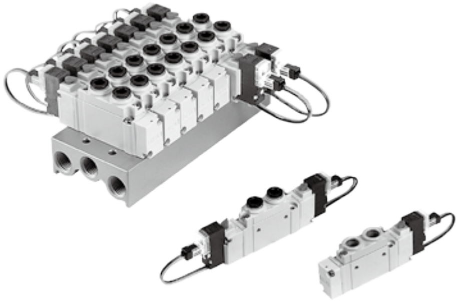

Wire length about 300
40
26
30.4


Wire length about 300
19.6
42.5

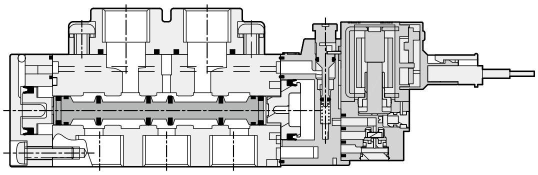

Wire length about 300
28.7
30.8

# SR 300, 500, 700, 900 series Body Ported Solenoid Valve

## Product features



### Internal structure



### Specification

| Item \ Model | SR300 | SR500 | SR700 | SR900 |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 (150 ~ 700) | | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | | |
| Pilot type | Air operated | | | |
| Number of positions | 5/2-position, 5/3-position | | | |
| Type of actuation | Normally closed | | | |
| Effective orifice mm²(CV) | 3.6 ( 0.2 ) | 9 ( 0.5 ) | 16.2 ( 0.9 ) | 30.6 ( 1.7 ) |
| Manual override | Push and lock | | | |
| Port size | M5, Rc 1/8, Ø4, Ø6, Ø8 | | Rc1/8, Rc 1/4, Rc 3/8, Ø6, Ø8, Ø10, Ø12 | |
| Lubrication | Lubrication free type | | | |

### Code of order

**SR** – **5** – **10** – **1** – – **24VDC** – **L** – **M 2**

**Model**

SR:
Solenoid valve

**Model number**

3: 300 series
5: 500 series
7: 700 series
9: 900 series

**Coil q'ty**

10:Single
20:Double

30: Closed center
40: Exhaust center
50: Pressure center

5/3-position double coils only

**Port size**

Thread type (standard)

| Mark | Thread | Model |
|---|---|---|
| M5 | M5x0.8p | SR300 |
| 1 | Rc 1/8" | SR500 |
| 1 | Rc 1/8" | SR700 |
| 2 | Rc 1/4" | |
| 2 | Rc 1/4" | SR900 |
| 3 | Rc 3/8" | |

A, B hole connector type

| | |
|---|---|
| 0 | With fitting port |

**With fitting port**

| Mark | Bore size | Model |
|---|---|---|
| C4 | Ø4 | SR300 |
| C4 | Ø4 | SR500 |
| C6 | Ø6 | |
| C8 | Ø8 | |
| C6 | Ø6 | SR700 |
| C8 | Ø8 | |
| C10 | Ø10 | |
| C8 | Ø8 | SR900 |
| C10 | Ø10 | |
| C12 | Ø12 | |

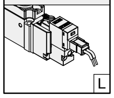
None:
Standard type
(Thread type)

**Voltage**

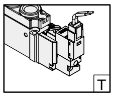
Standard:
12V DC 1.2W
24V DC 1.2W

**Electrical entry**

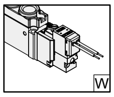
Standard



(With wire length 300mm)

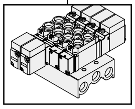


(With wire length 300mm)



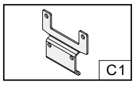
Grommet
(With wire length 300mm)

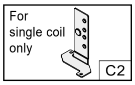
**Manifold**



None:
Without manifold

M2 = 2 sets
M3 = 3 sets
⋮
M20 = 20 sets





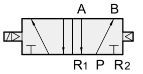
None: no bracket
C1 : Side fixing bracket
C2 : Vertical fixing bracket
SR9000 without bracket option

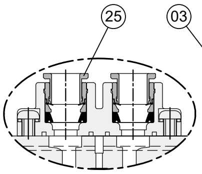
# SR 300, 500, 700, 900 series Body Ported Solenoid Valve

## Product features

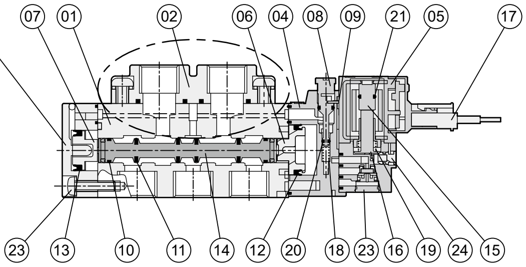
### Internal structure

- 5 port 2-position single

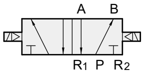


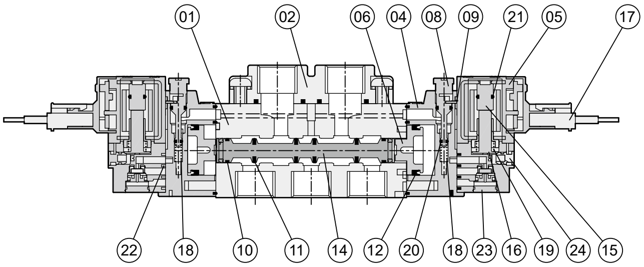


-With fitting type

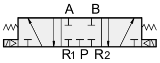

03
07
01
02
06
04
08
09
21
05
17
23
13
10
11
14
12
20
18
23
16
19
24
15

- 5 port 2-position double

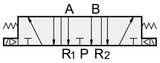



01
02
06
04
08
09
21
05
17
22
18
10
11
14
12
20
18
23
16
19
24
15

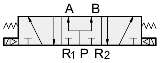
- 5 port 3-position double



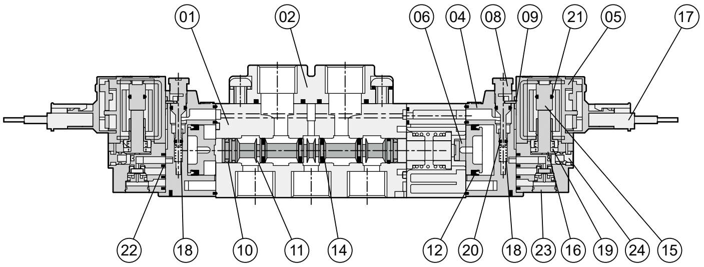
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
02
06
04
08
09
21
05
17
22
18
10
11
14
12
20
18
23
16
19
24
15

### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 14 | Shaft | Aluminum alloy |
| 02 | Top cover | Resin+Copper/ Aluminum alloy | 15 | Coil insert bushing | Stainless steel |
| 03 | Rear cover | Resin | 16 | Spring bushing | Stainless steel |
| 04 | Holder | Resin | 17 | Wire plug | Resin |
| 05 | Coil | — | 18 | Manual override spring | Stainless steel |
| 06 | Holder piston | POM | 19 | Spring bushing spring | Stainless steel |
| 07 | Rear cover piston | POM | 20 | Manual override O-ring | NBR |
| 08 | Manual override | POM | 21 | Coil insert bushing O-ring | NBR |
| 09 | Position iron plate | Iron | 22 | Rubber Lining | NBR |
| 10 | Spool packing | NBR | 23 | Valve rear cap | Copper alloy |
| 11 | Spool packing | NBR | 24 | Manual override | Copper alloy |
| 12 | Holder piston packing | NBR | 25 | Connector | — |
| 13 | Rear cover packing | NBR | | | |

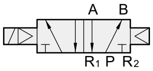
Note: body adopt painting.

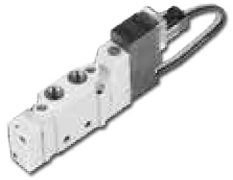
# SR 300 series Body Ported Solenoid Valve

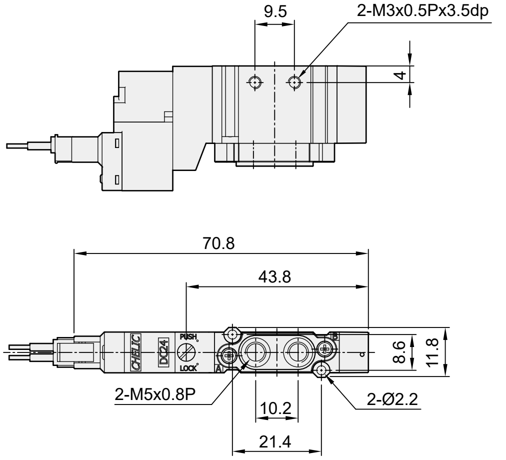
## Dimensions/ Standard

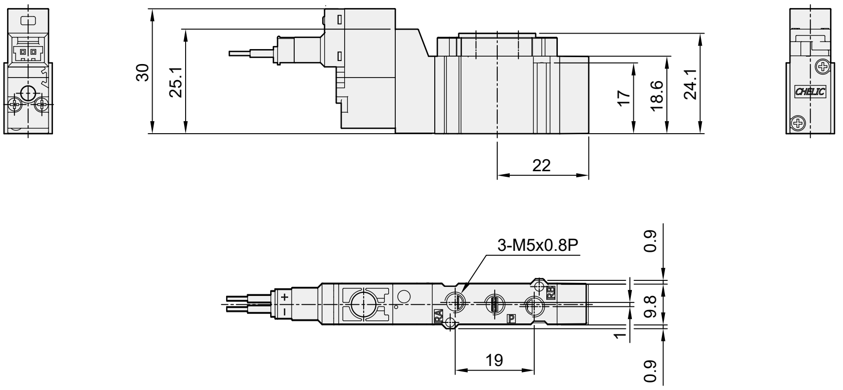
### SR 310M5

5 port 2-position single








9.5
2-M3x0.5Px3.5dp
4
70.8
43.8
PUSH
LOCK
CHELIC
DC24
A
B
8.6
11.8
2-M5x0.8P
10.2
2-Ø2.2
21.4
30
25.1
17
18.6
24.1
22
3-M5x0.8P
0.9
9.8
1
0.9
19
RA
RB
P

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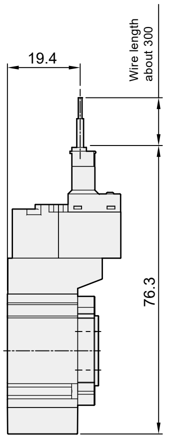
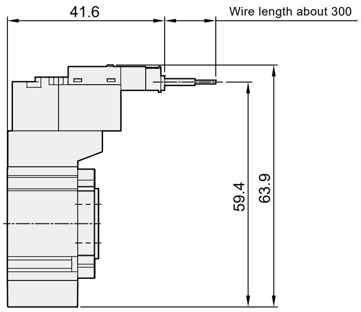
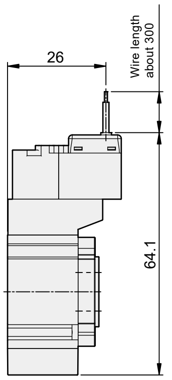
### L wire type - L


19.4
Wire length about 300
76.3

### T wire type - T


41.6
Wire length about 300
59.4
63.9

### W wire type - W

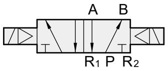

26
Wire length about 300
64.1

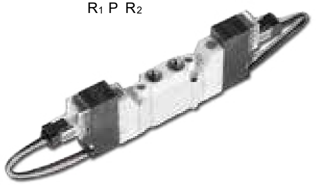
# SR 300 series Body Ported Solenoid Valve

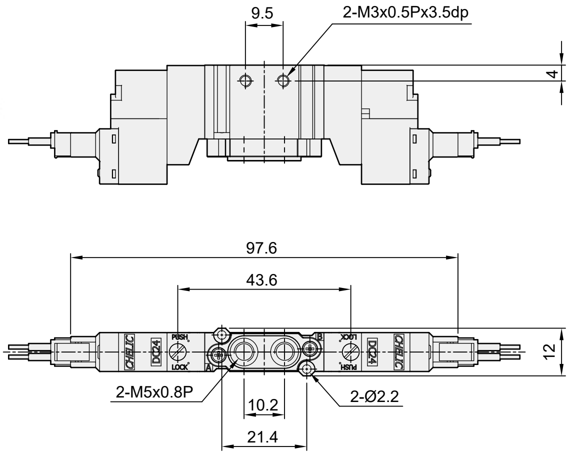
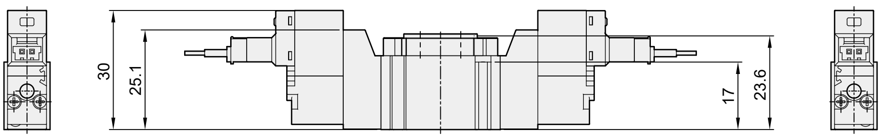
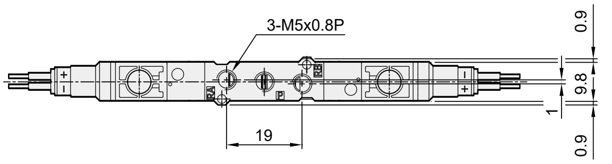
## Dimensions/ Standard

### SR 320M5

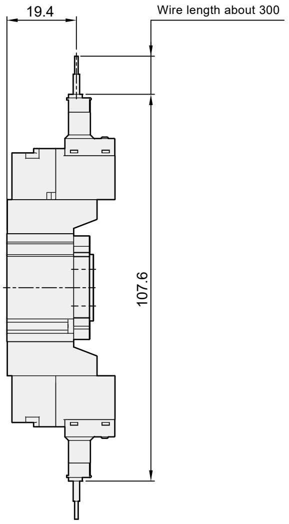
5 port 2-position double



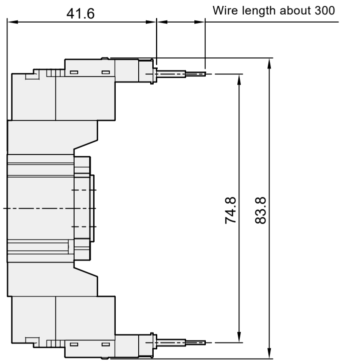





9.5
2-M3x0.5Px3.5dp
4
97.6
43.6
12
CHELIC
DC24
PUSH
LOCK
A
B
2-M5x0.8P
10.2
2-Ø2.2
21.4
30
25.1
17
23.6
3-M5x0.8P
0.9
9.8
1
0.9
RA
RB
P
19

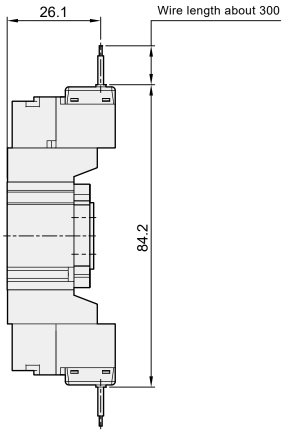
### L wire type - L


19.4
Wire length about 300
107.6

### T wire type - T


41.6
Wire length about 300
74.8
83.8

### W wire type - W


26.1
Wire length about 300
84.2

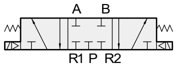
# SR 300 series Body Ported Solenoid Valve

## Dimensions/ Standard

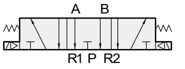
CHELIC

### SR 3(3)0M5
### SR 3(4)0M5
### SR 3(5)0M5

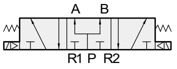
5 port 3-position double



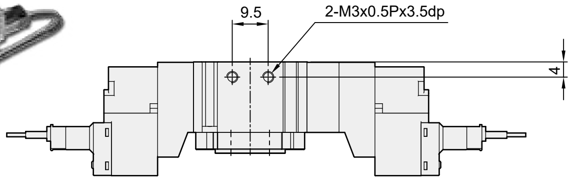
SR-3(3)0M5 (Closed center) N.C.

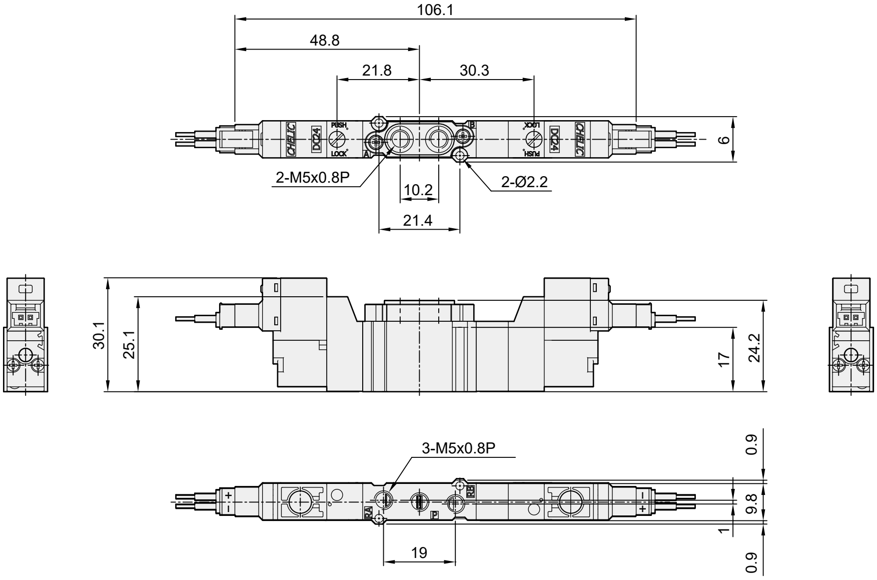


SR-3(4)0M5(Exhaust center) N.F.

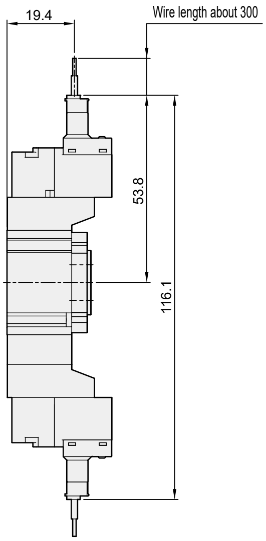


SR-3(5)0M5 (Pressure center) N.O.

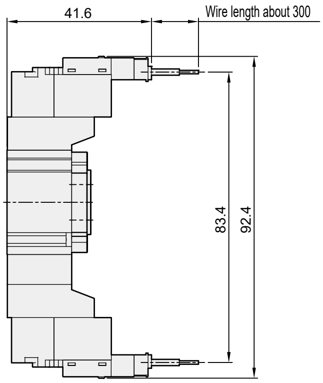

9.5
2-M3x0.5Px3.5dp
4


106.1
48.8
21.8
30.3
6
2-M5x0.8P
10.2
2-Ø2.2
21.4
CHELIC
DC24
PUSH
LOCK
A
B
30.1
25.1
17
24.2
3-M5x0.8P
0.9
9.8
1
0.9
19
R1
R2
P

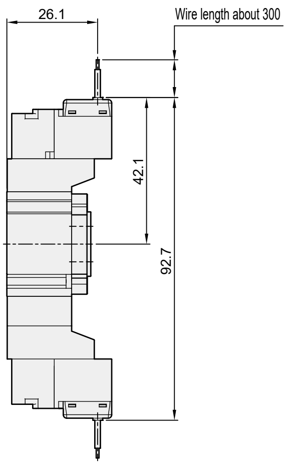
### L wire type - L


19.4
Wire length about 300
53.8
116.1

### T wire type - T


41.6
Wire length about 300
83.4
92.4

### W wire type - W


26.1
Wire length about 300
42.1
92.7

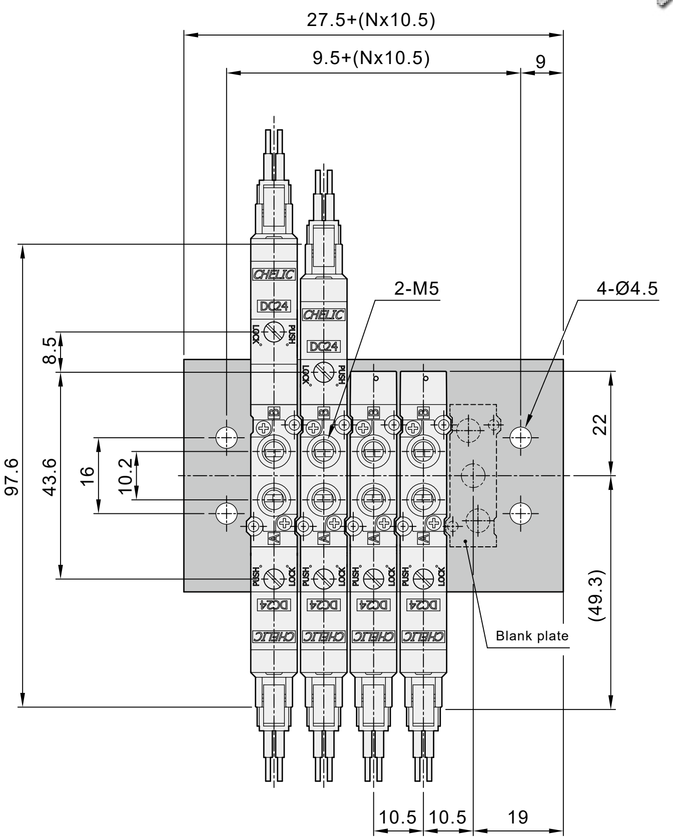
# SR 300 series Body Ported Solenoid Valve

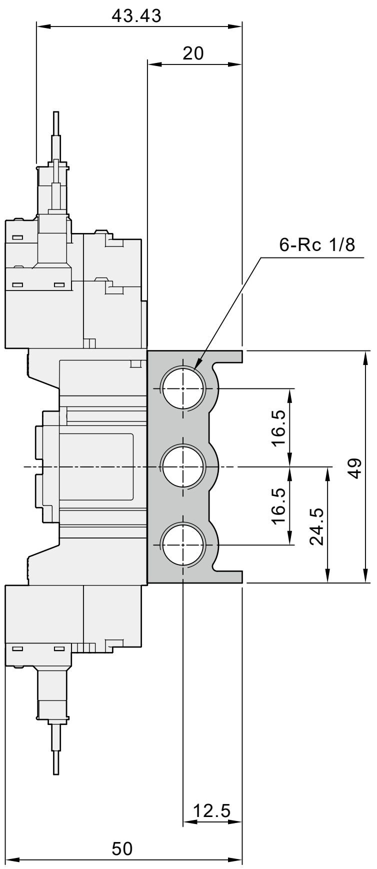
## Dimensions/ Manifold type

SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

### SR 300 series - Standard

Manifold dimension


27.5+(Nx10.5)
9.5+(Nx10.5)
9
2-M5
4-Ø4.5
CHELIC
DC24
LOCK
PUSH
B
A
8.5
97.6
43.6
16
10.2
22
(49.3)
Blank plate
10.5
10.5
19


43.43
20
6-Rc 1/8
16.5
16.5
24.5
49
12.5
50

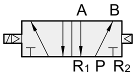
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

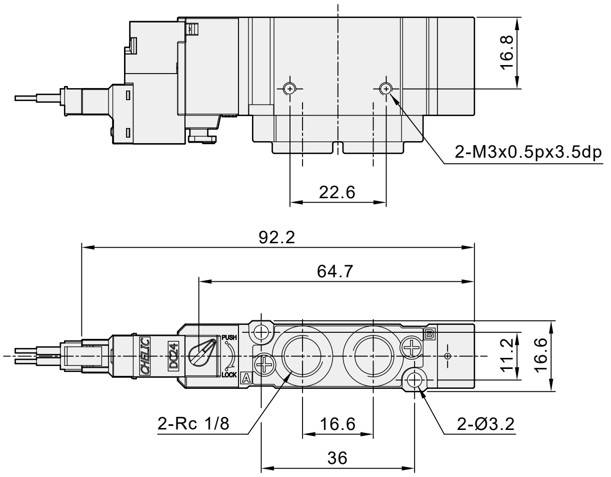
# SR 500 series Body Ported Solenoid Valve

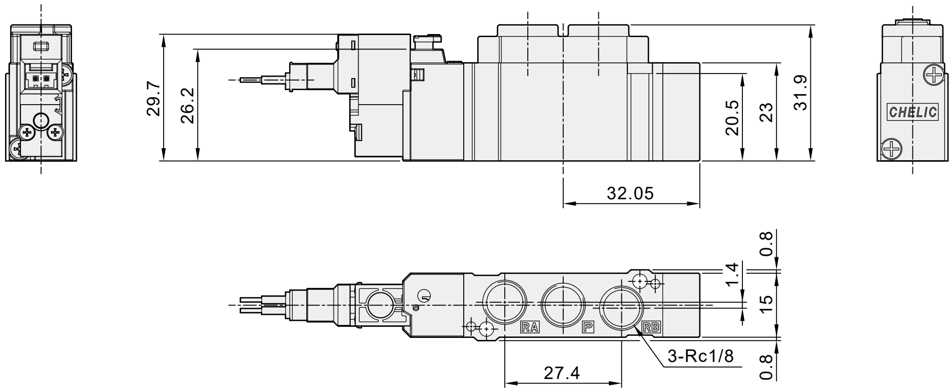
## Dimensions/ Standard

### SR 5101

5 port 2-position single



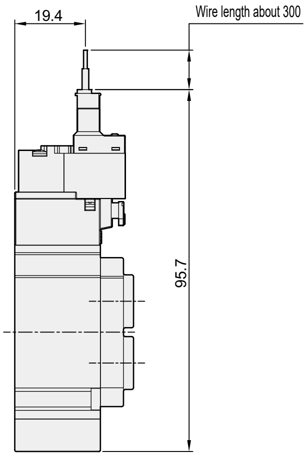

16.8
2-M3x0.5px3.5dp
22.6
92.2
64.7
CHELIC
DC24
PUSH
LOCK
A
B
11.2
16.6
2-Rc 1/8
16.6
2-Ø3.2
36

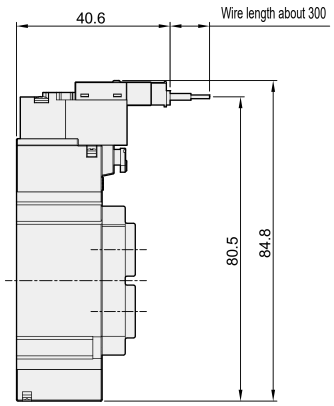

29.7
26.2
20.5
23
31.9
32.05
CHELIC
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

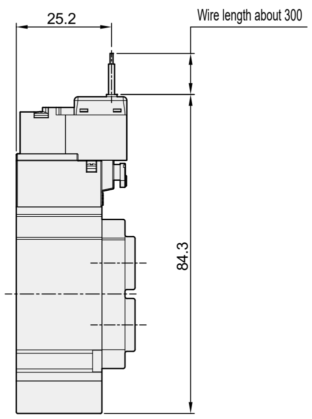
### L wire type - L

### T wire type - T

### W wire type - W


19.4
Wire length about 300
95.7


40.6
Wire length about 300
80.5
84.8

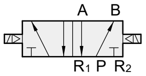

25.2
Wire length about 300
84.3

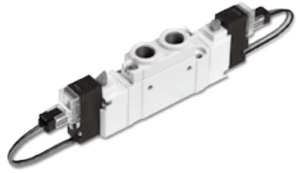
# SR 500 series Body Ported Solenoid Valve

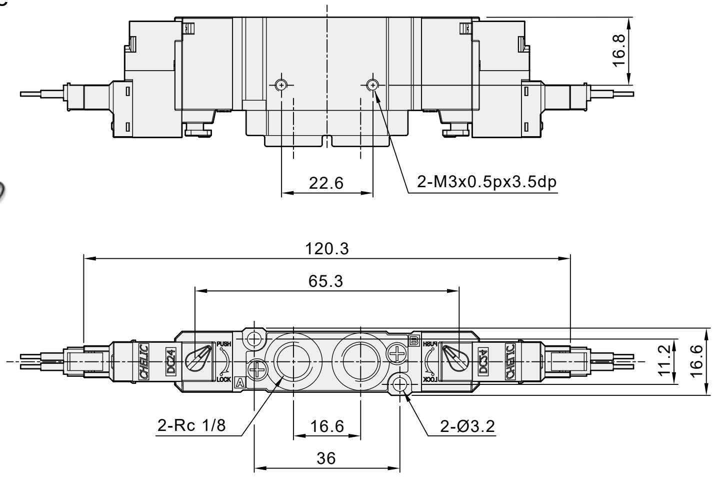
## Dimensions/ Standard

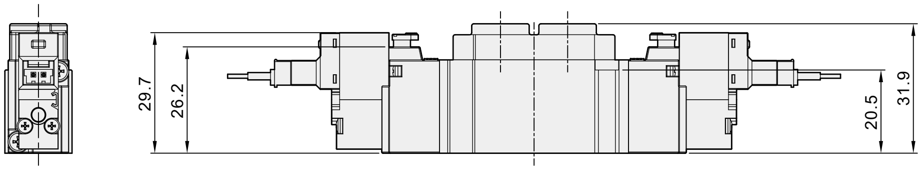
### SR 5201

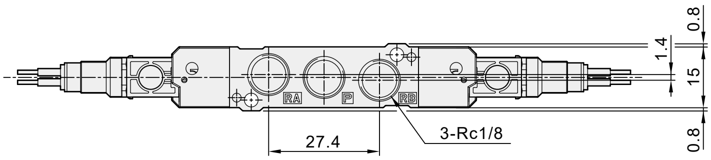
5 port 2-position double





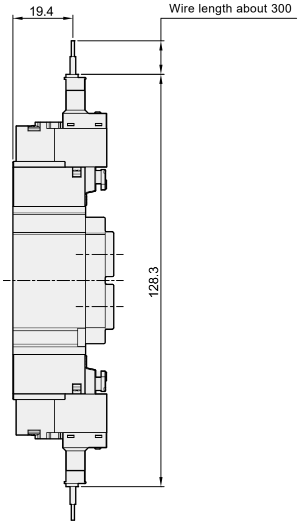

16.8
22.6
2-M3x0.5px3.5dp
120.3
65.3
11.2
16.6
2-Rc 1/8
16.6
2-Ø3.2
36


29.7
26.2
20.5
31.9

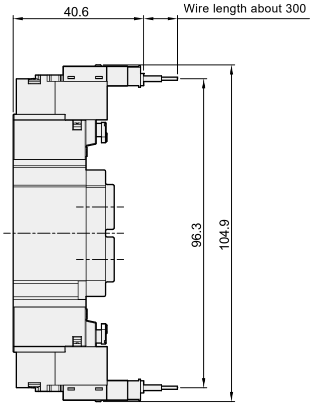

0.8
1.4
15
0.8
RA
P
RB
27.4
3-Rc1/8

---

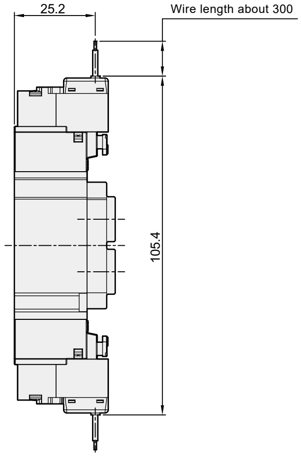
### L wire type - L


19.4
Wire length about 300
128.3

### T wire type - T


40.6
Wire length about 300
96.3
104.9

### W wire type - W


25.2
Wire length about 300
105.4

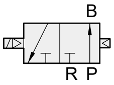
# SR 500 series Body Ported Solenoid Valve

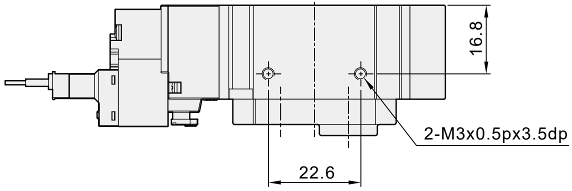
## Dimensions/ Standard/ 3 port 2 position

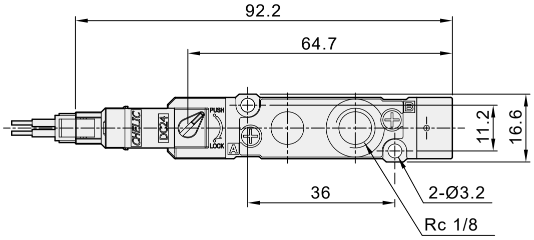
CHELIC

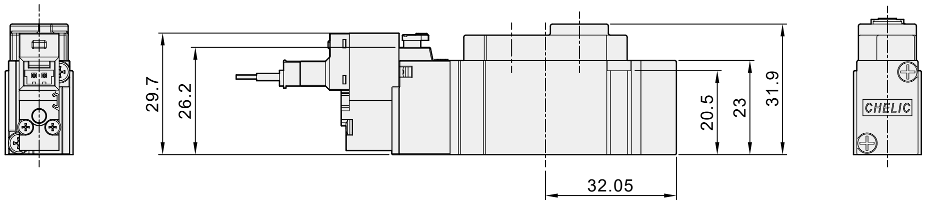
### SR 5101 - TA

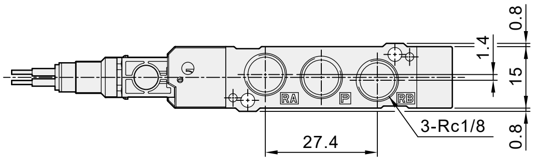
3 port 2-position single



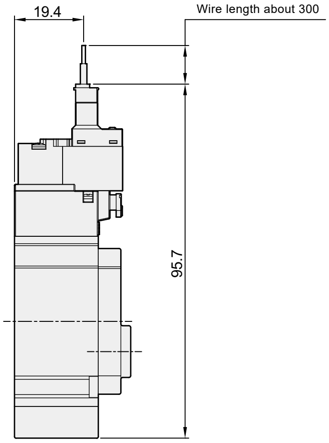

16.8
2-M3x0.5px3.5dp
22.6


92.2
64.7
CHELIC
DC24
PUSH
LOCK
A
B
11.2
16.6
36
2-Ø3.2
Rc 1/8

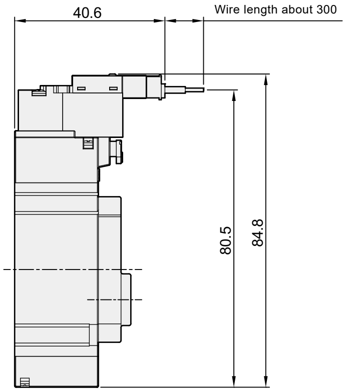

29.7
26.2
20.5
23
31.9
32.05
CHELIC


0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

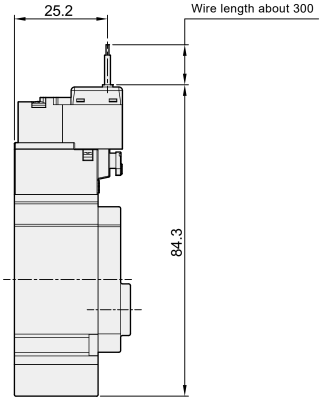
### L wire type - L


19.4
Wire length about 300
95.7

### T wire type - T


40.6
Wire length about 300
80.5
84.8

### W wire type - W


25.2
Wire length about 300
84.3

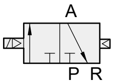
# SR 500 series Body Ported Solenoid Valve

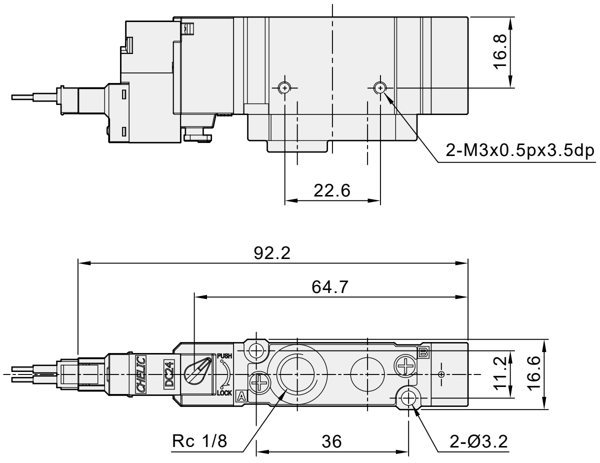
## Dimensions/ Standard/ 3 port 2 position

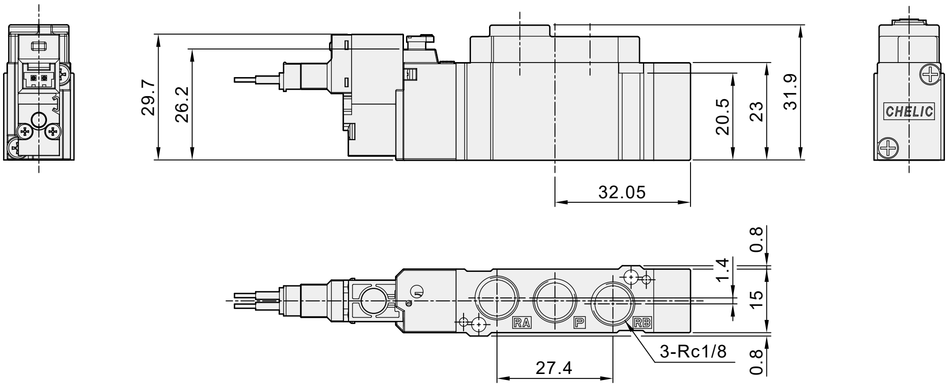
CHELIC

### SR 5101 - TB

3 port 2-position single



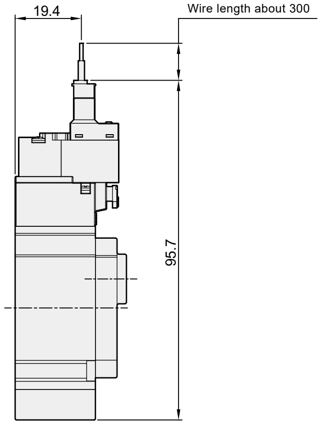

16.8
2-M3x0.5px3.5dp
22.6
92.2
64.7
11.2
16.6
CHELIC
DC24
PUSH
LOCK
A
B
Rc 1/8
36
2-Ø3.2

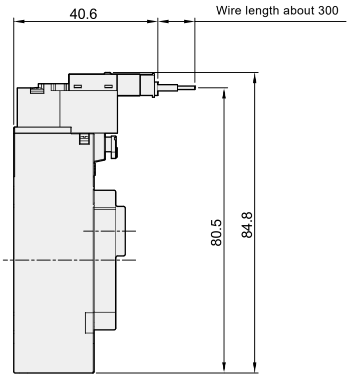

29.7
26.2
20.5
23
31.9
32.05
CHELIC
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

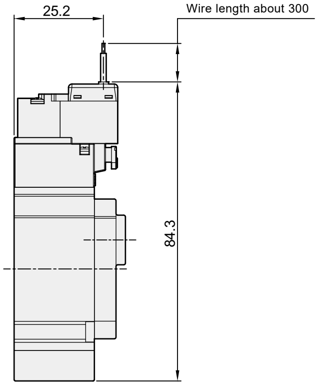
### L wire type - L

### T wire type - T

### W wire type - W


19.4
Wire length about 300
95.7


40.6
Wire length about 300
80.5
84.8

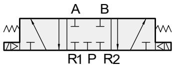

25.2
Wire length about 300
84.3

# SR 500 series Body Ported Solenoid Valve

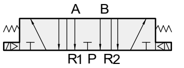
## Dimensions/ Standard

## SR 5(3)01
## SR 5(4)01
## SR 5(5)01

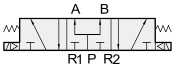
5 port 3-position double



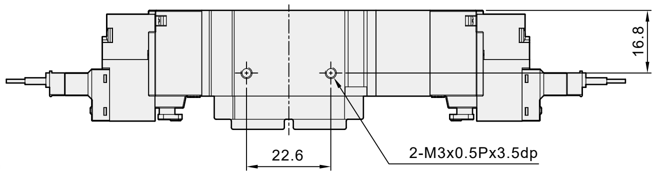
SR-5(3)01 (Closed center) N.C.

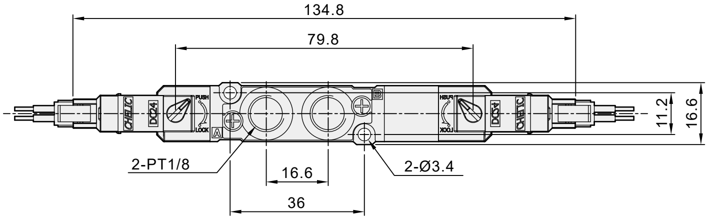


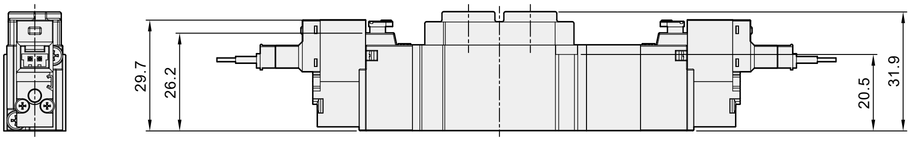
SR-5(4)01 (Exhaust center) N.F.

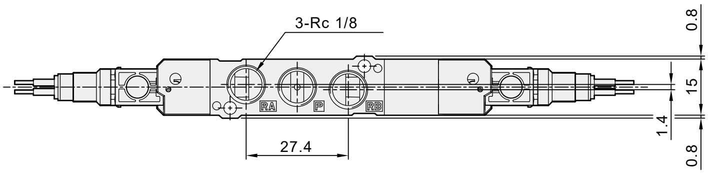


SR-5(5)01 (Pressure center) N.O.

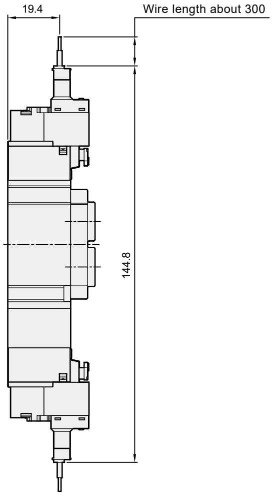

16.8
22.6
2-M3x0.5Px3.5dp


134.8
79.8
11.2
16.6
2-PT1/8
16.6
36
2-Ø3.4

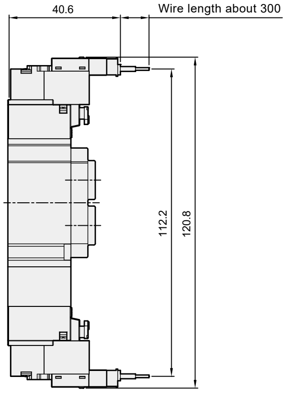

29.7
26.2
20.5
31.9


3-Rc 1/8
0.8
15
1.4
0.8
27.4
RA
P
RB

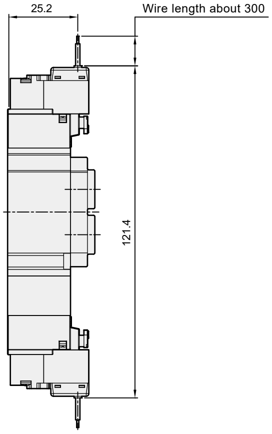
## L wire type - L


19.4
Wire length about 300
144.8

## T wire type - T


40.6
Wire length about 300
112.2
120.8

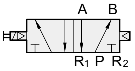
## W wire type - W

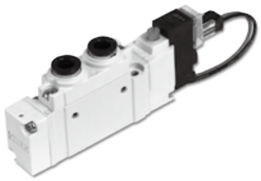

25.2
Wire length about 300
121.4

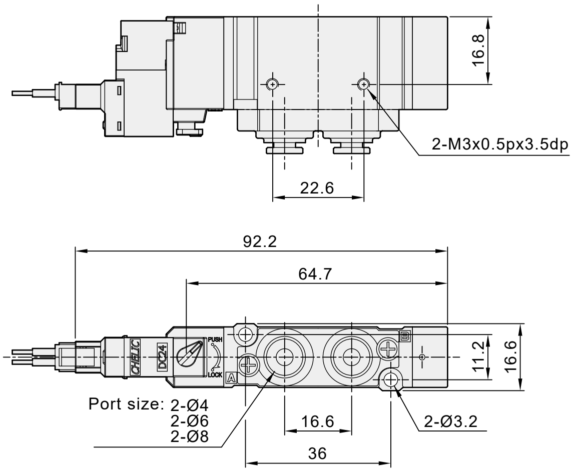
# SR 500 series Body Ported Solenoid Valve

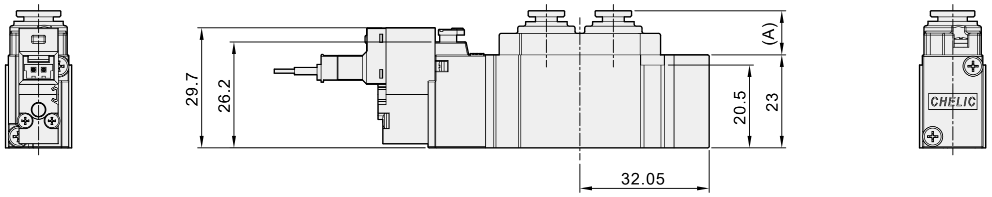
## Dimensions/ With fitting

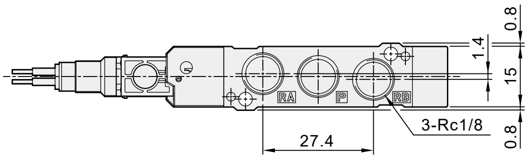
**SR 5100-C4 (Ø4)**
**SR 5100-C6 (Ø6)**
**SR 5100-C8 (Ø8)**
5 port 2-position single





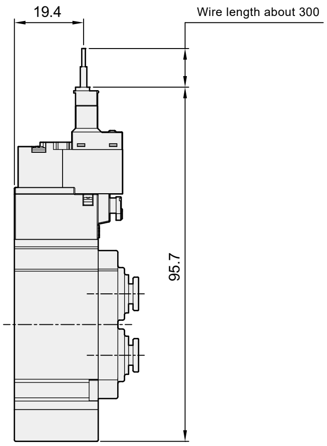

16.8
2-M3x0.5px3.5dp
22.6
92.2
64.7
PUSH
LOCK
CHELIC
A
B
11.2
16.6
Port size: 2-Ø4
2-Ø6
2-Ø8
16.6
2-Ø3.2
36


29.7
26.2
(A)
20.5
23
32.05
CHELIC

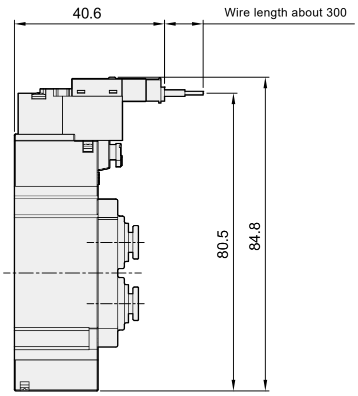

0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

| Model | A |
|---|---|
| SR5100-C4 | 11.6 |
| SR5100-C6 | 12.2 |
| SR5100-C8 | 13.5 |

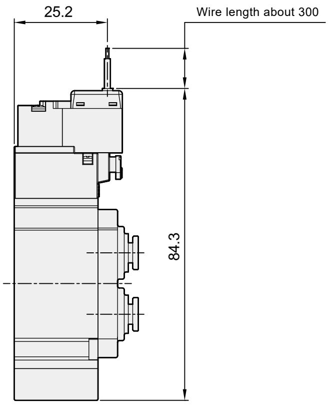
### L wire type - L


19.4
Wire length about 300
95.7

### T wire type - T


40.6
Wire length about 300
80.5
84.8

### W wire type - W

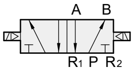

25.2
Wire length about 300
84.3

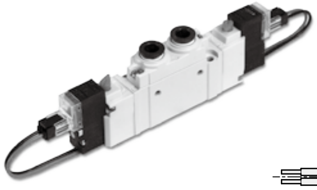
# SR 500 series Body Ported Solenoid Valve

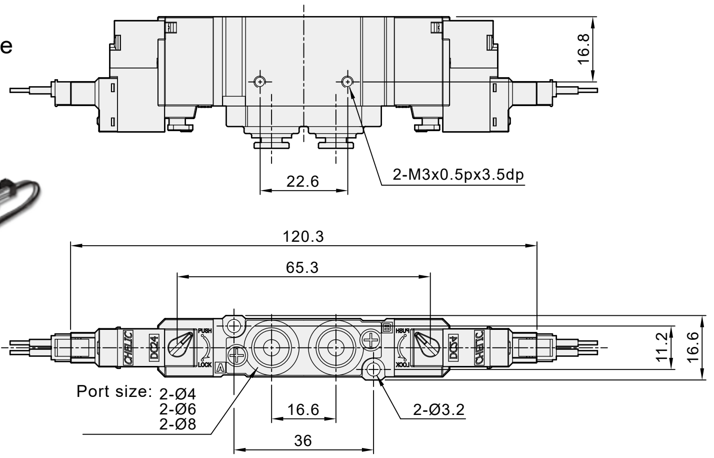
## Dimensions/ With fitting

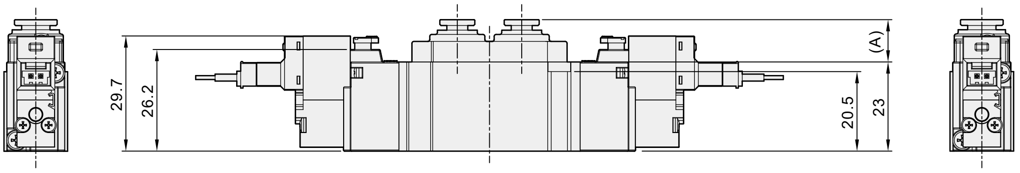
### SR 5200-C4 (Ø4)
### SR 5200-C6 (Ø6)
### SR 5200-C8 (Ø8)

5 port 2-position double

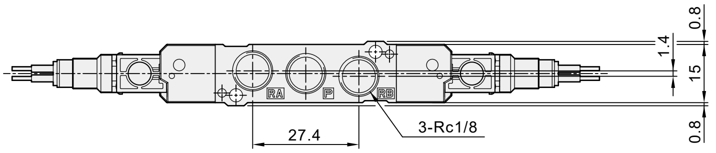





16.8
22.6
2-M3x0.5px3.5dp
120.3
65.3
11.2
16.6
Port size: 2-Ø4
2-Ø6
2-Ø8
16.6
36
2-Ø3.2
PUSH
LOCK
A
B
CHELIC

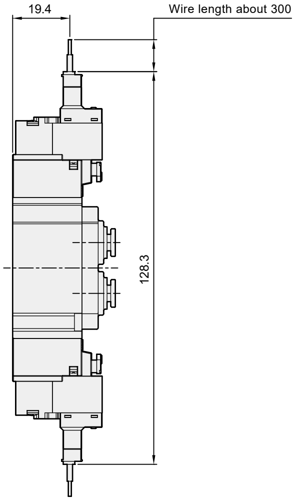

29.7
26.2
(A)
20.5
23

| Model | A |
|---|---|
| SR5200-C4 | 11.6 |
| SR5200-C6 | 12.2 |
| SR5200-C8 | 13.5 |

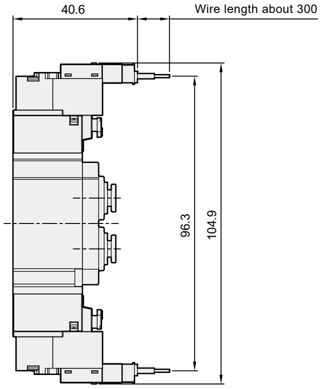

0.8
1.4
15
0.8
RA
P
RB
27.4
3-Rc1/8

---

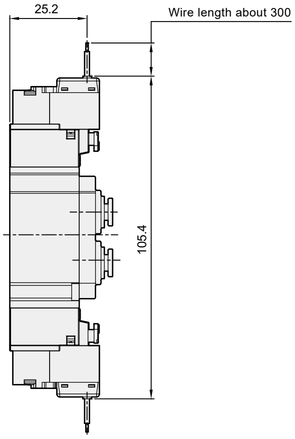
### L wire type - L


19.4
Wire length about 300
128.3

### T wire type - T


40.6
Wire length about 300
96.3
104.9

### W wire type - W


25.2
Wire length about 300
105.4

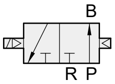
# SR 500 series Body Ported Solenoid Valve

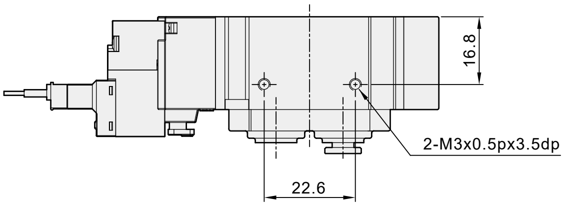
## Dimensions/ With fitting/ 3 port 2 position

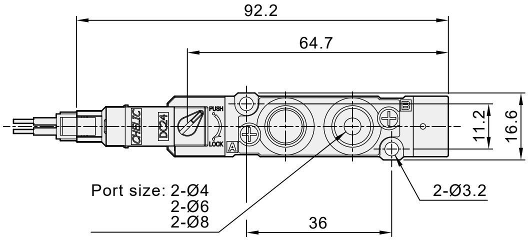
CHELIC

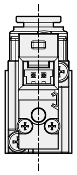
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

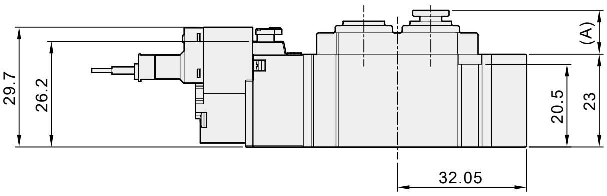
**SR 5100-C4 - TA (Ø4)**
**SR 5100-C6 - TA (Ø6)**
**SR 5100-C8 - TA (Ø8)**
3 port 2-position single

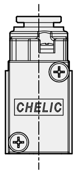



16.8
2-M3x0.5px3.5dp
22.6

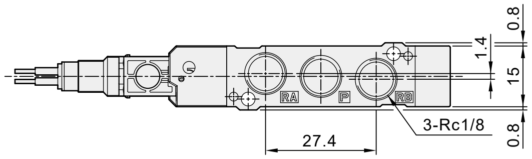

92.2
64.7
11.2
16.6
CHELIC
DC24
PUSH
LOCK
A
B
Port size: 2-Ø4
2-Ø6
2-Ø8
36
2-Ø3.2



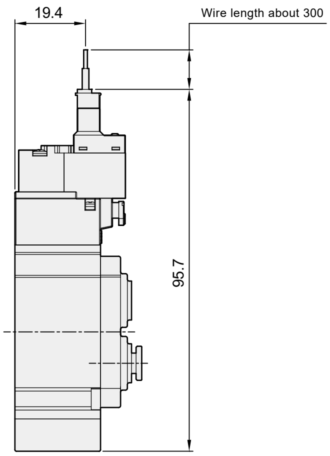

29.7
26.2
(A)
20.5
23
32.05



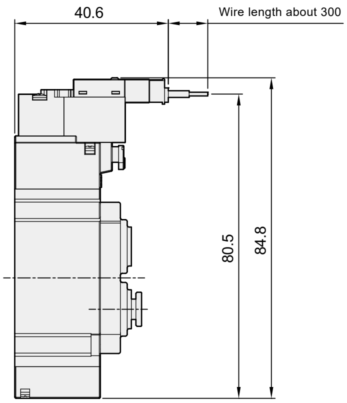
| Model | A |
|---|---|
| SR5100-C4-TA | 11.6 |
| SR5100-C6-TA | 12.2 |
| SR5100-C8-TA | 13.5 |


0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

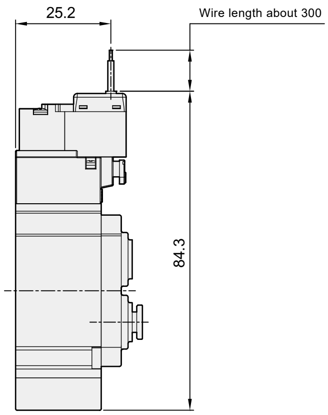
### L wire type - L


19.4
Wire length about 300
95.7

### T wire type - T


40.6
Wire length about 300
80.5
84.8

### W wire type - W

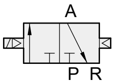

25.2
Wire length about 300
84.3

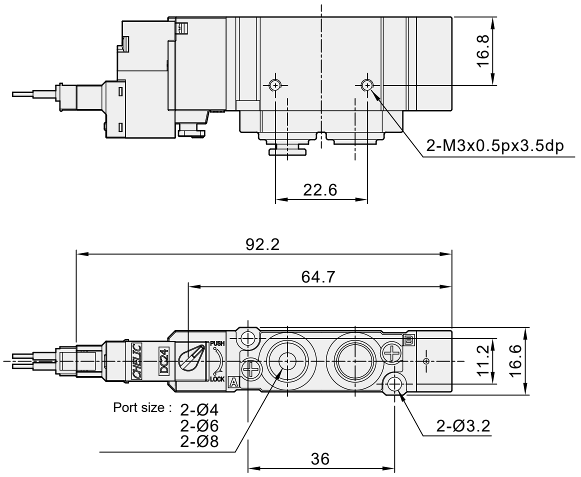
# SR 500 series Body Ported Solenoid Valve

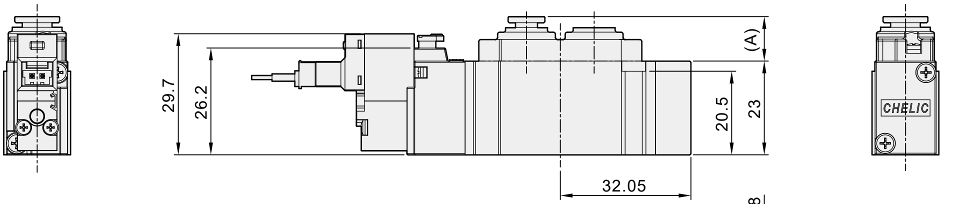
## Dimensions/ With fitting/ 3 port 2 position

### SR 5100-C4 - TB (Ø4)
### SR 5100-C6 - TB (Ø6)
### SR 5100-C8 - TB (Ø8)

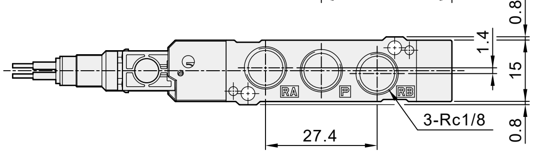
3 port 2-position single



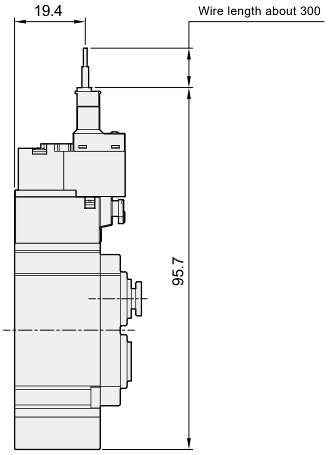

16.8
2-M3x0.5px3.5dp
22.6
92.2
64.7
CHELIC
DC24
PUSH
LOCK
A
11.2
16.6
Port size : 2-Ø4
2-Ø6
2-Ø8
2-Ø3.2
36


29.7
26.2
(A)
20.5
23
32.05
CHELIC

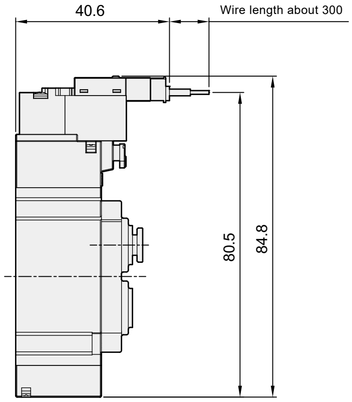
| Model | A |
|---|---|
| SR5100-C4-TB | 11.6 |
| SR5100-C6-TB | 12.2 |
| SR5100-C8-TB | 13.5 |


0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

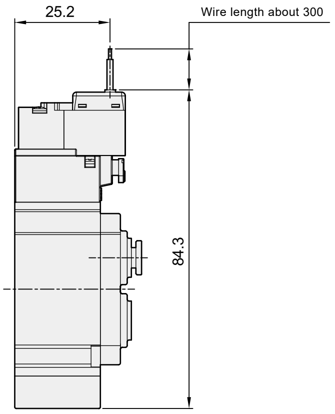
### L wire type - L


19.4
Wire length about 300
95.7

### T wire type - T


40.6
Wire length about 300
80.5
84.8

### W wire type - W

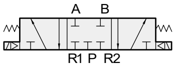

25.2
Wire length about 300
84.3

# SR 500 series Body Ported Solenoid Valve

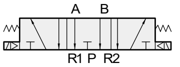
## Dimensions/ With fitting

### SR 5(3)00-C4 (Ø4) • C6 (Ø6) • C8 (Ø8)
### SR 5(4)00-C4 (Ø4) • C6 (Ø6) • C8 (Ø8)
### SR 5(5)00-C4 (Ø4) • C6 (Ø6) • C8 (Ø8)

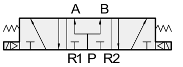
5 port 3-position double



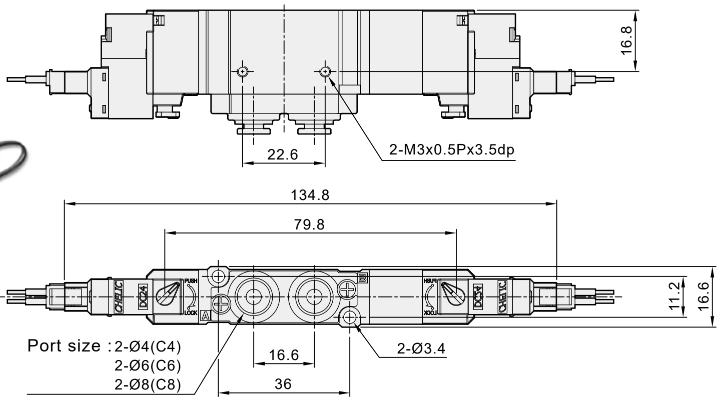
SR-5(3)00 (Closed center) N.C.

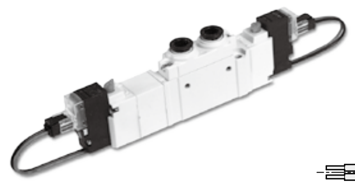


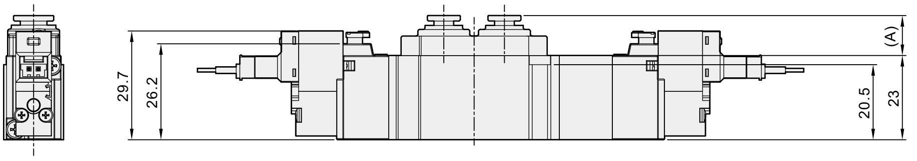
SR-5(4)00 (Exhaust center) N.F.



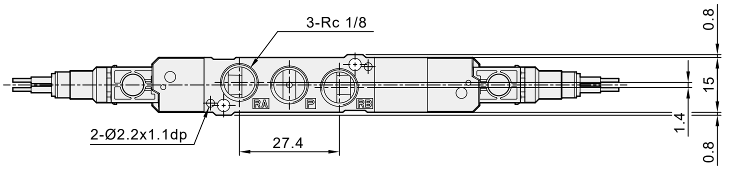
SR-5(5)00 (Pressure center) N.O.


16.8
22.6
2-M3x0.5Px3.5dp
134.8
79.8
11.2
16.6
Port size :2-Ø4(C4)
2-Ø6(C6)
2-Ø8(C8)
16.6
36
2-Ø3.4

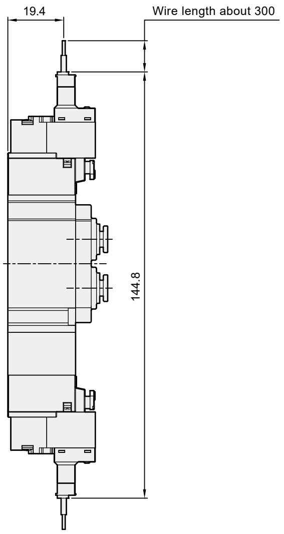



29.7
26.2
(A)
20.5
23

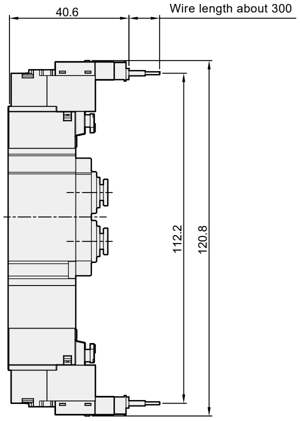
| Model | A |
|---|---|
| SR5(3)00-C4 | 11.6 |
| SR5(4)00-C6 | 12.2 |
| SR5(5)00-C8 | 13.5 |


3-Rc 1/8
0.8
15
1.4
0.8
RA
P
RB
2-Ø2.2x1.1dp
27.4

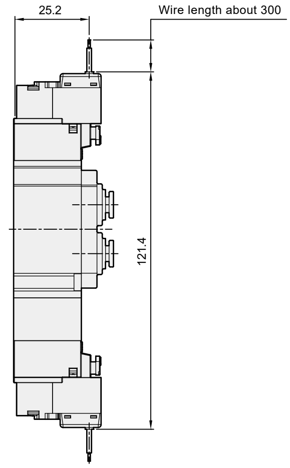
### L wire type - L


19.4
Wire length about 300
144.8

### T wire type - T


40.6
Wire length about 300
112.2
120.8

### W wire type - W

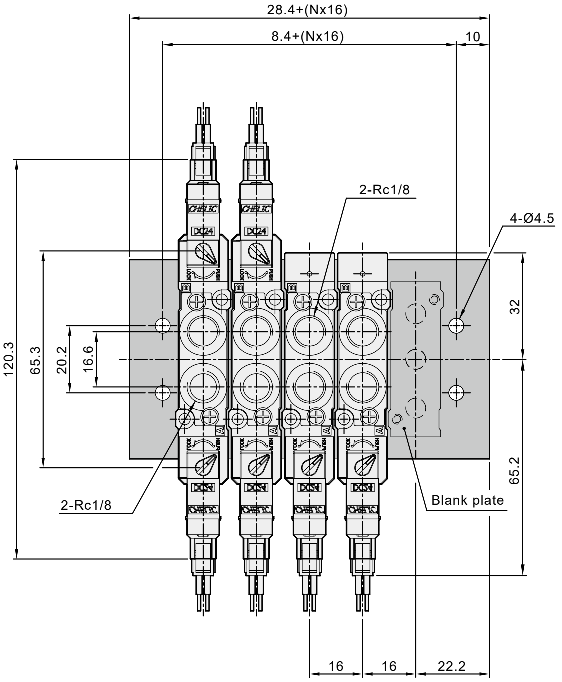

25.2
Wire length about 300
121.4

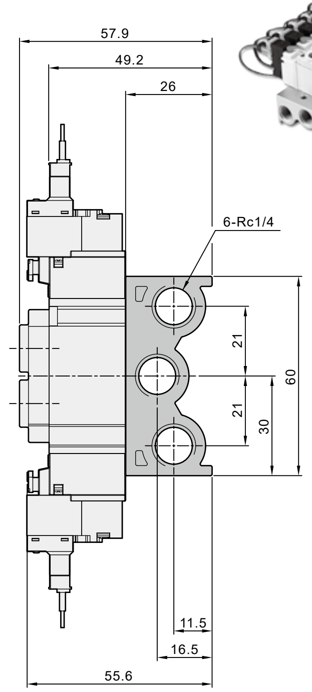
# SR 500 series Body Ported Solenoid Valve

## Dimensions/ Manifold type

### SR 500 series - Standard

Manifold dimension

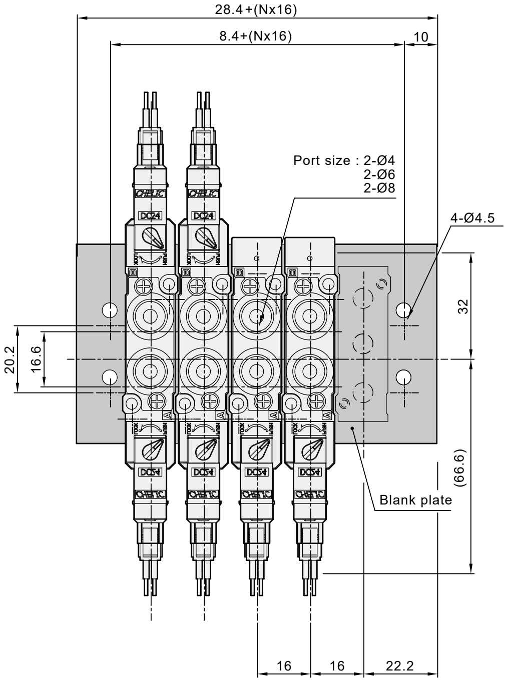

28.4+(Nx16)
8.4+(Nx16)
10
2-Rc1/8
4-Ø4.5
32
120.3
65.3
20.2
16.6
65.2
2-Rc1/8
Blank plate
16
16
22.2
CHELIC
DC24

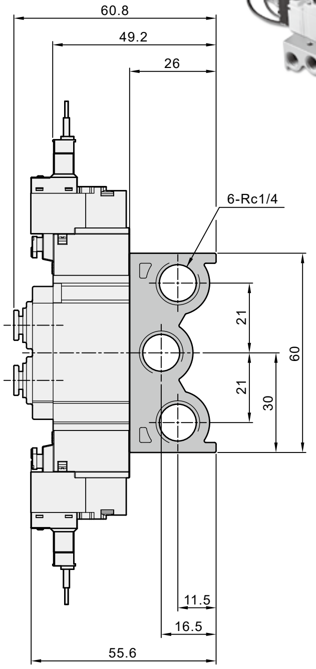

57.9
49.2
26
6-Rc1/4
21
21
30
60
11.5
16.5
55.6

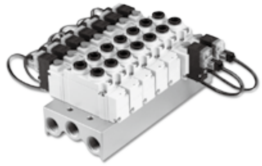
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SR 500 series - With fitting port

Manifold dimension


28.4+(Nx16)
8.4+(Nx16)
10
Port size : 2-Ø4
2-Ø6
2-Ø8
4-Ø4.5
32
20.2
16.6
(66.6)
Blank plate
16
16
22.2
CHELIC
DC24


60.8
49.2
26
6-Rc1/4
21
21
30
60
11.5
16.5
55.6



Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

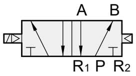
# SR 700 series Body Ported Solenoid Valve

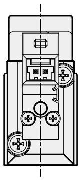
## Dimensions/ Standard

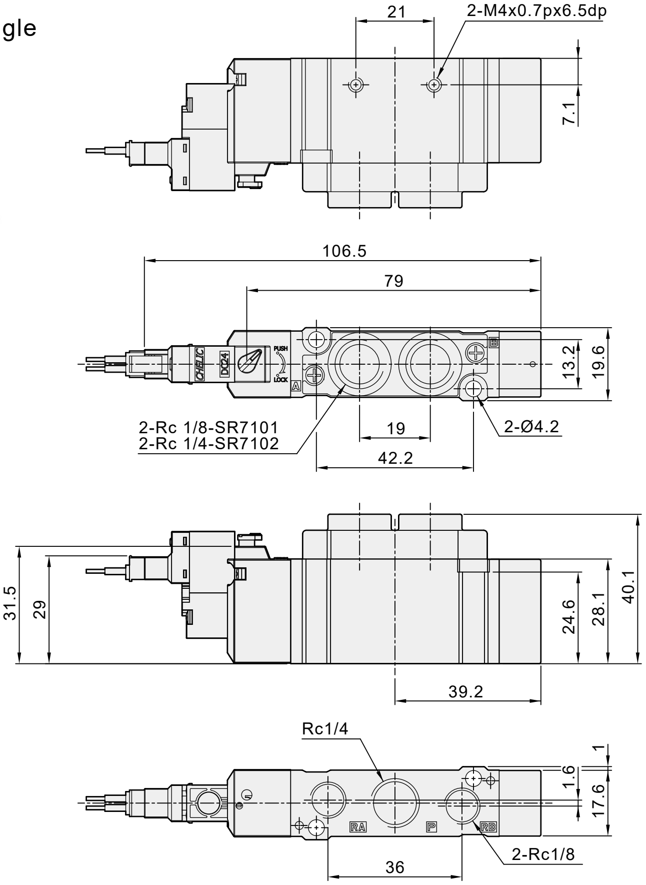
CHELIC

### SR 7101
### SR 7102

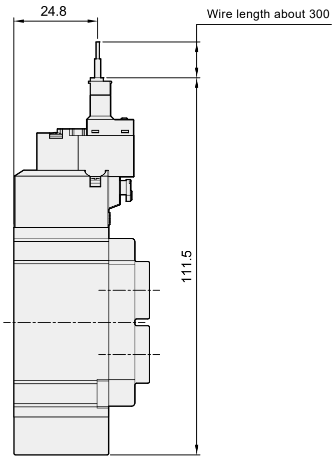
5 port 2-position single



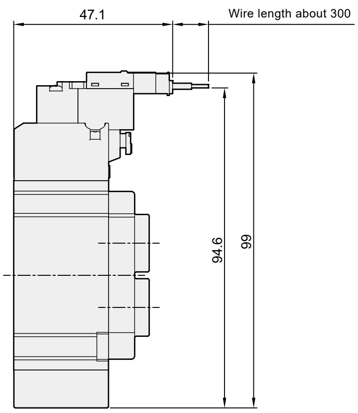



21
2-M4x0.7px6.5dp
7.1
106.5
79
13.2
19.6
2-Rc 1/8-SR7101
2-Rc 1/4-SR7102
19
2-Ø4.2
42.2
31.5
29
24.6
28.1
40.1
39.2
CHELIC
Rc1/4
1
1.6
17.6
2-Rc1/8
36
RA
P
RB

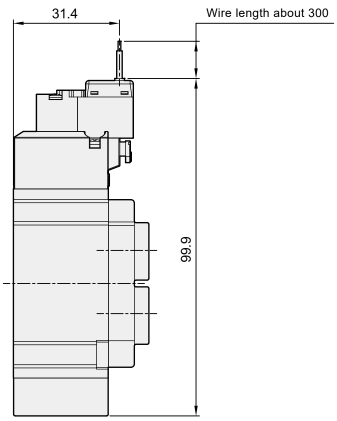
### L wire type - L


24.8
Wire length about 300
111.5

### T wire type - T


47.1
Wire length about 300
94.6
99

### W wire type - W

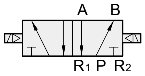

31.4
Wire length about 300
99.9

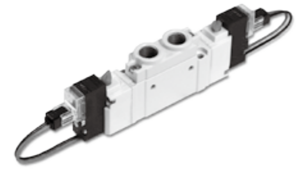
# SR 700 series Body Ported Solenoid Valve

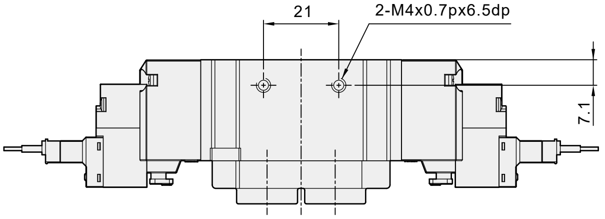
## Dimensions/ Standard

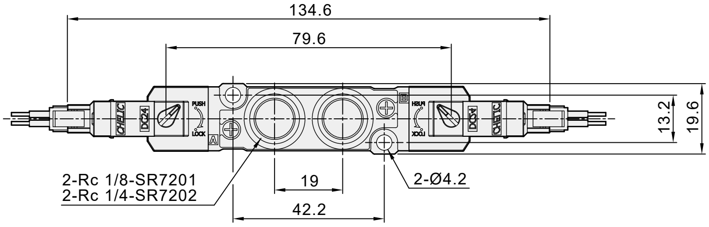
### SR 7201
### SR 7202

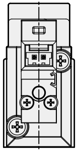
5 port 2-position double

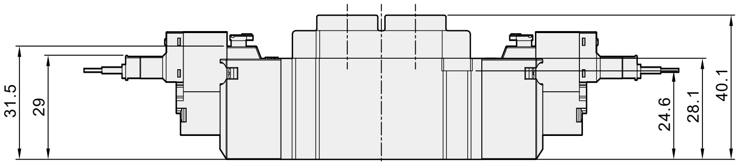


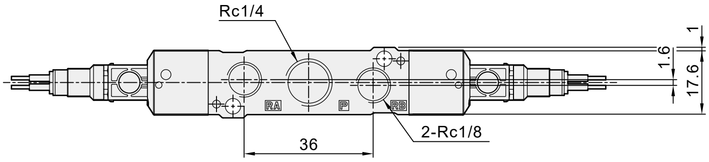



21
2-M4x0.7px6.5dp
7.1


134.6
79.6
13.2
19.6
2-Rc 1/8-SR7201
2-Rc 1/4-SR7202
19
42.2
2-Ø4.2



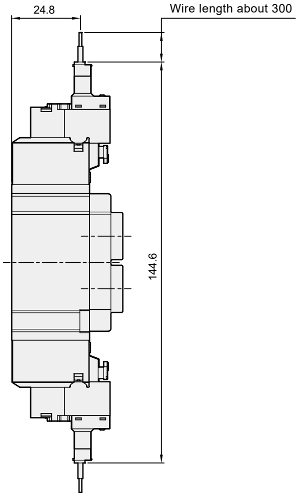

31.5
29
24.6
28.1
40.1

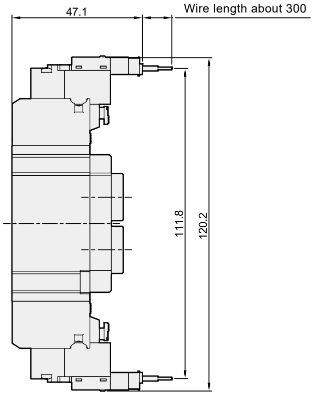

Rc1/4
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

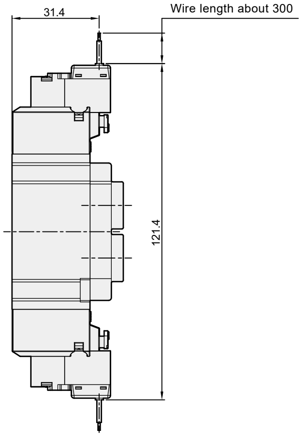
**L wire type - L**

**T wire type - T**

**W wire type - W**


24.8
Wire length about 300
144.6


47.1
Wire length about 300
111.8
120.2

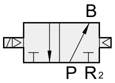

31.4
Wire length about 300
121.4

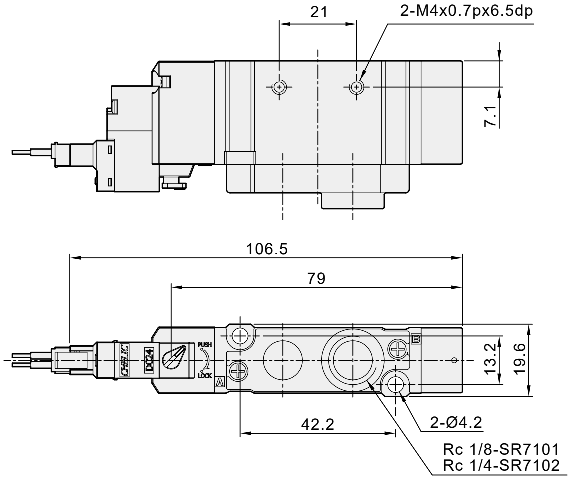
# SR 700 series Body Ported Solenoid Valve

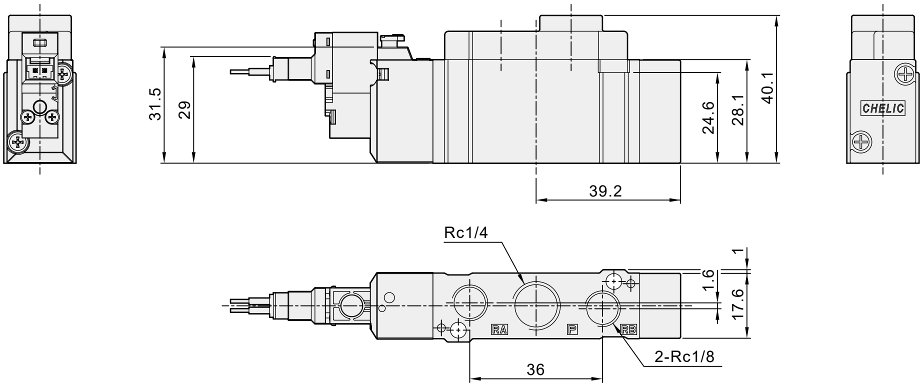
## Dimensions/ Standard/ 3 port 2 position

### SR 7101 - TA
### SR 7102 - TA

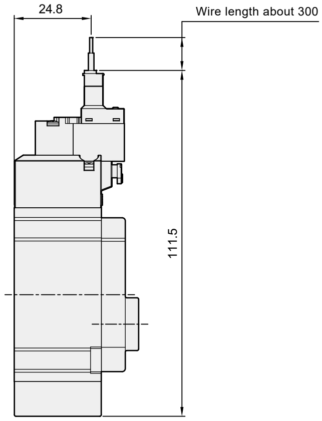
5 port 2-position single



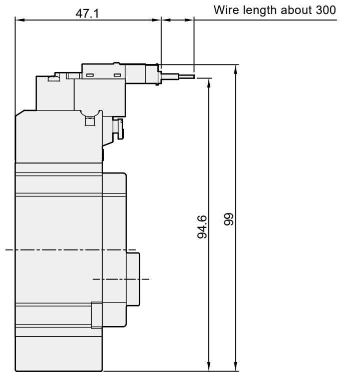

21
2-M4x0.7px6.5dp
7.1
106.5
79
13.2
19.6
42.2
2-Ø4.2
Rc 1/8-SR7101
Rc 1/4-SR7102
PUSH
LOCK
CHELIC
DC24


31.5
29
24.6
28.1
40.1
39.2
CHELIC
Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36

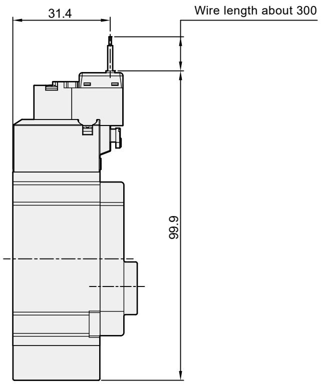
### L wire type - L


24.8
Wire length about 300
111.5

### T wire type - T


47.1
Wire length about 300
94.6
99

### W wire type - W


31.4
Wire length about 300
99.9

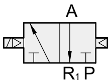
# SR 700 series Body Ported Solenoid Valve

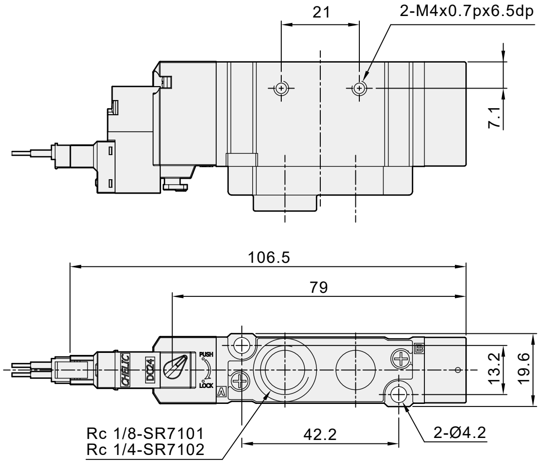
## Dimensions/ Standard/ 3 port 2 position

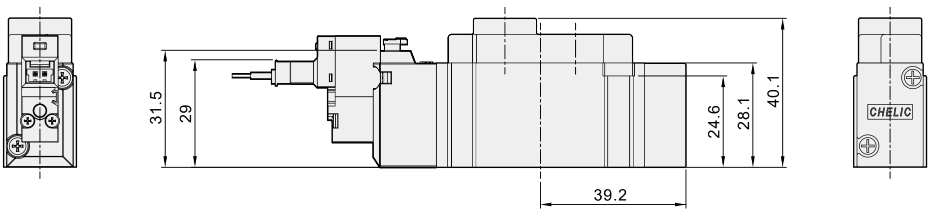
CHELIC

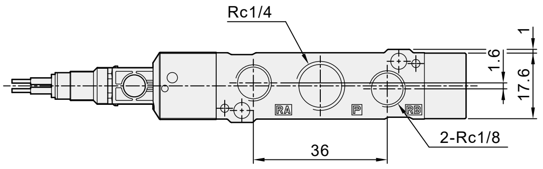
### SR 7101 - TB
### SR 7102 - TB

3 port 2-position single

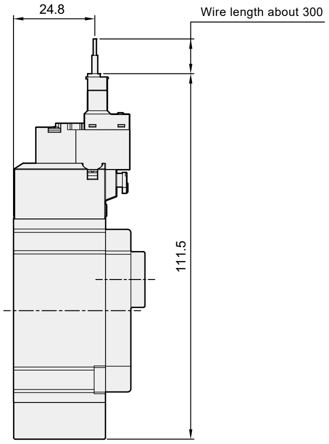



21
2-M4x0.7px6.5dp
7.1
106.5
79
PUSH
LOCK
CHELIC
DC24
13.2
19.6
Rc 1/8-SR7101
Rc 1/4-SR7102
42.2
2-Ø4.2

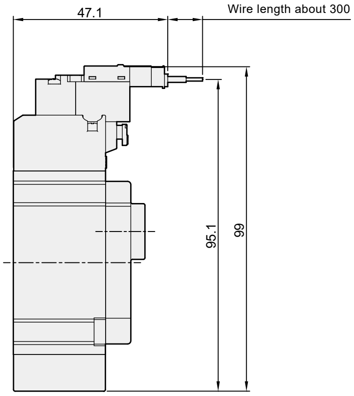

31.5
29
24.6
28.1
40.1
39.2
CHELIC


Rc1/4
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

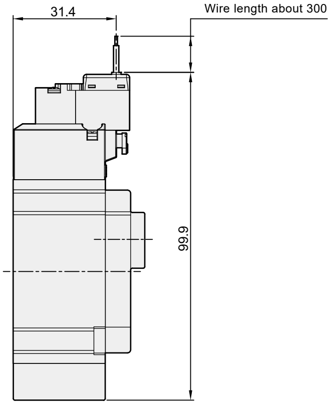
### L wire type - L


24.8
Wire length about 300
111.5

### T wire type - T


47.1
Wire length about 300
95.1
99

### W wire type - W

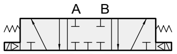

31.4
Wire length about 300
99.9

# SR 700 series Body Ported Solenoid Valve

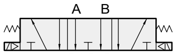
## Dimensions/ Standard

### SR 7(3)01 • 02
### SR 7(4)01 • 02
### SR 7(5)01 • 02

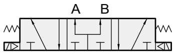
5 port 3-position double



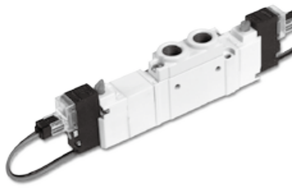
SR-7(3)01 (Closed center) N.C.

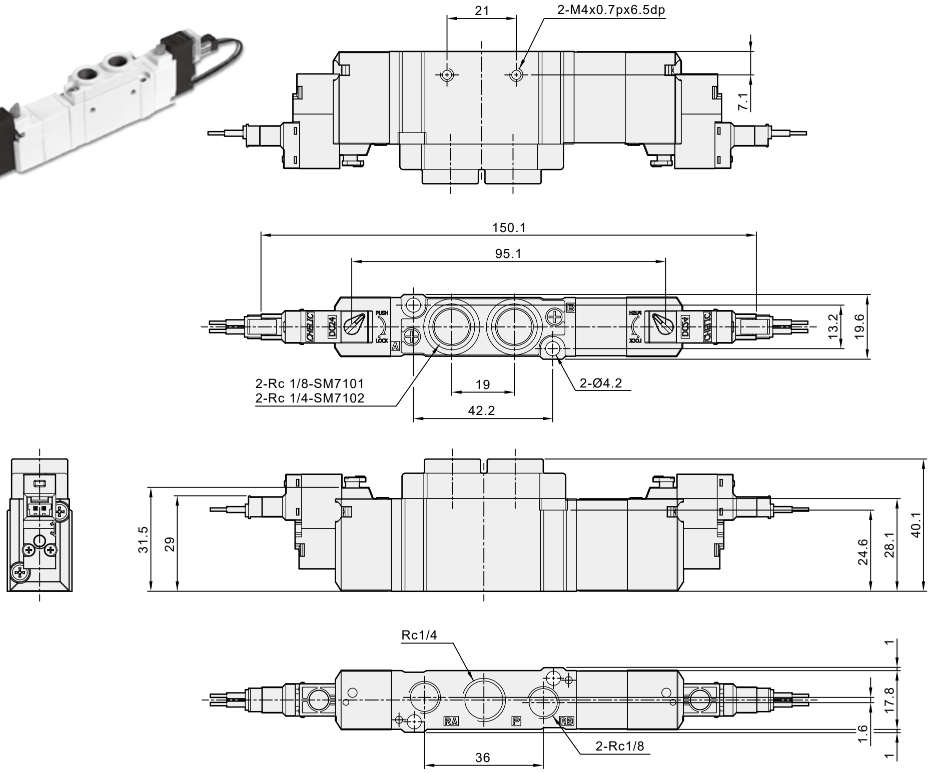


SR-7(4)01 (Exhaust center) N.F.

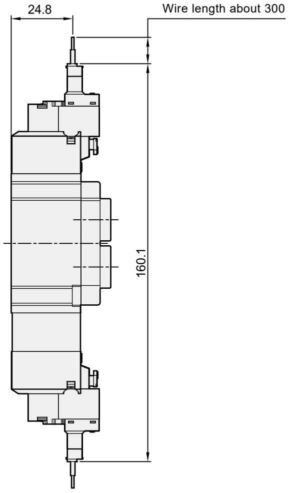


SR-7(5)01 (Pressure center) N.O.

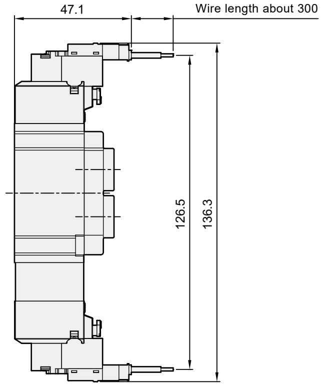



21
2-M4x0.7px6.5dp
7.1
150.1
95.1
13.2
19.6
2-Rc 1/8-SM7101
2-Rc 1/4-SM7102
19
42.2
2-Ø4.2
31.5
29
24.6
28.1
40.1
Rc1/4
1
17.8
1.6
1
36
2-Rc1/8
RA
P
RB

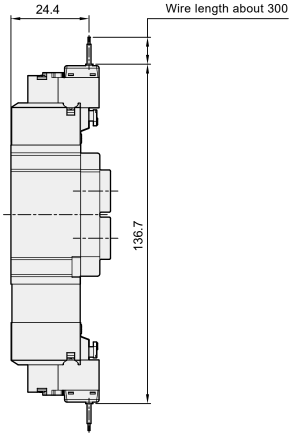
### L wire type - L


24.8
Wire length about 300
160.1

### T wire type - T


47.1
Wire length about 300
126.5
136.3

### W wire type - W

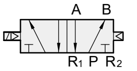

24.4
Wire length about 300
136.7

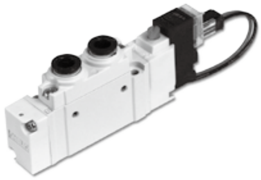
# SR 700 series Body Ported Solenoid Valve

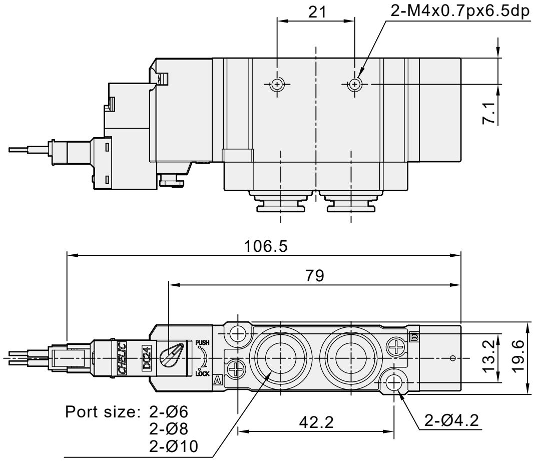
## Dimensions/ With fitting

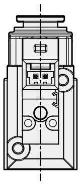
### SR 7100-C6 (Ø6)
### SR 7100-C8 (Ø8)
### SR 7100-C10 (Ø10)

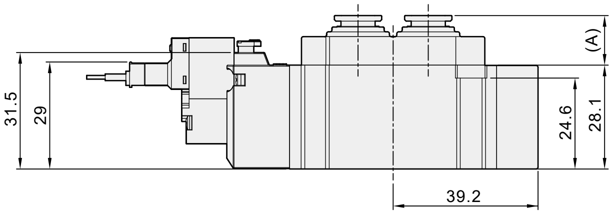
5 port 2-position single

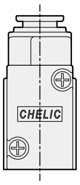


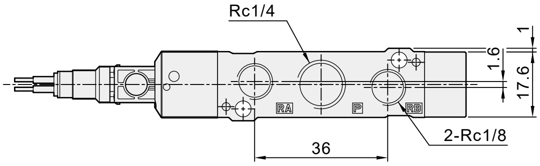



21
2-M4x0.7px6.5dp
7.1
106.5
79
13.2
19.6
PUSH
LOCK
CHELIC
DC24
A
B
Port size: 2-Ø6
2-Ø8
2-Ø10
42.2
2-Ø4.2



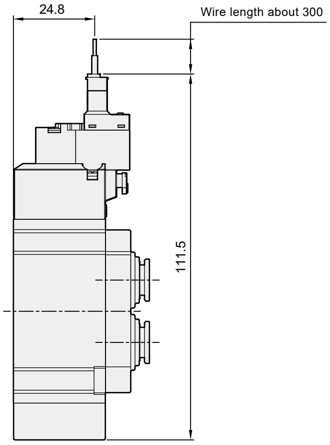

31.5
29
(A)
24.6
28.1
39.2



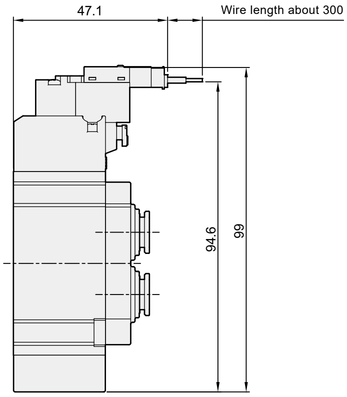

Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36

| Model | A |
|---|---|
| SR7100-C6 | 12.9 |
| SR7100-C8 | 13.3 |
| SR7100-C10 | 18.6 |

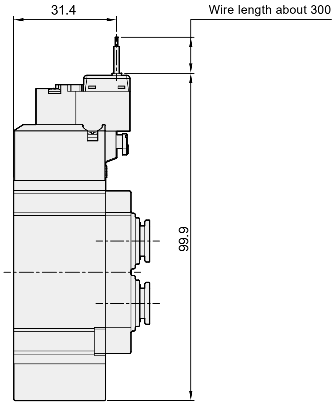
### L wire type - L


24.8
Wire length about 300
111.5

### T wire type - T


47.1
Wire length about 300
94.6
99

### W wire type - W

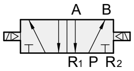

31.4
Wire length about 300
99.9

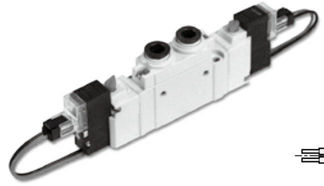
# SR 700 series Body Ported Solenoid Valve

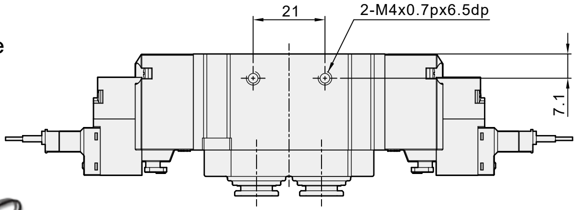
## Dimensions/ With fitting

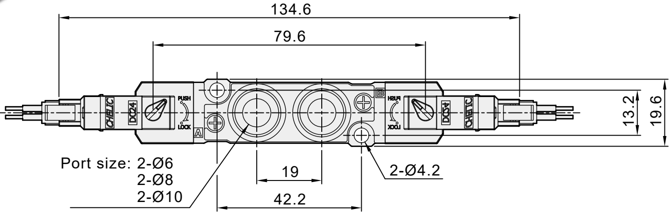
### SR 7200-C6 (Ø6)
### SR 7200-C8 (Ø8)
### SR 7200-C10 (Ø10)

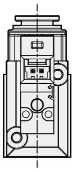
5 port 2-position double

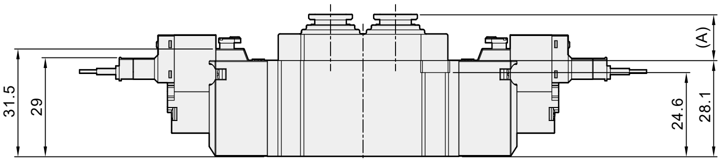


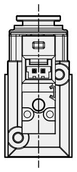


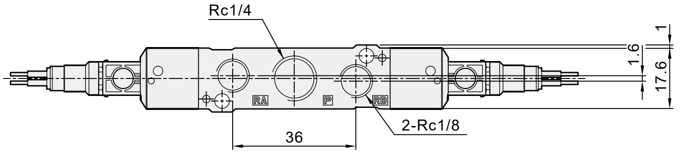

21
2-M4x0.7px6.5dp
7.1


134.6
79.6
13.2
19.6
Port size: 2-Ø6
2-Ø8
2-Ø10
19
2-Ø4.2
42.2



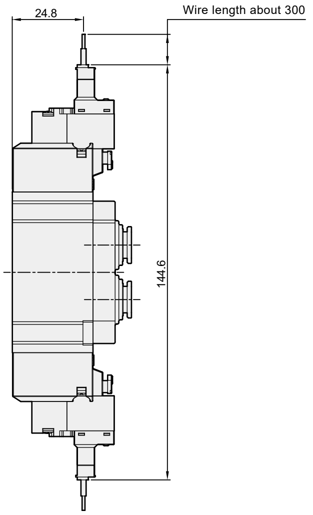

(A)
31.5
29
24.6
28.1



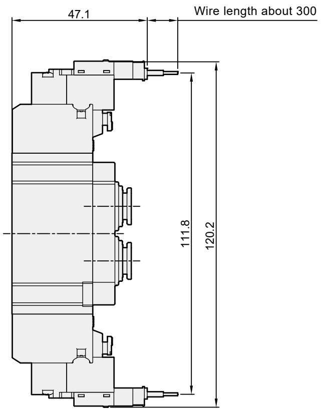

Rc1/4
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

| Model | A |
|---|---|
| SR7200-C6 | 12.9 |
| SR7200-C8 | 13.3 |
| SR7200-C10 | 18.6 |

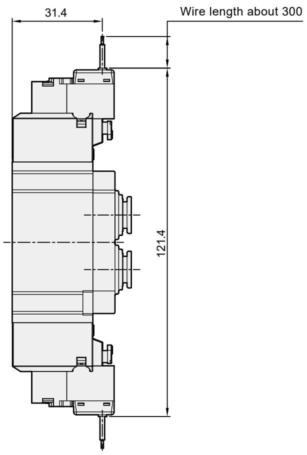
### L wire type - L


24.8
Wire length about 300
144.6

### T wire type - T


47.1
Wire length about 300
111.8
120.2

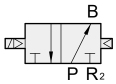
### W wire type - W

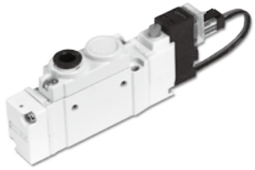

31.4
Wire length about 300
121.4

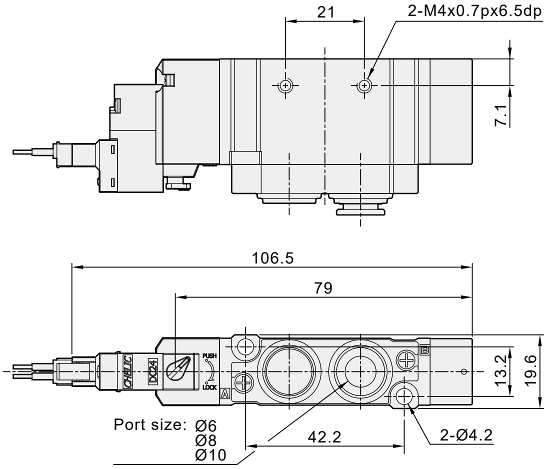
# SR 700 series Body Ported Solenoid Valve

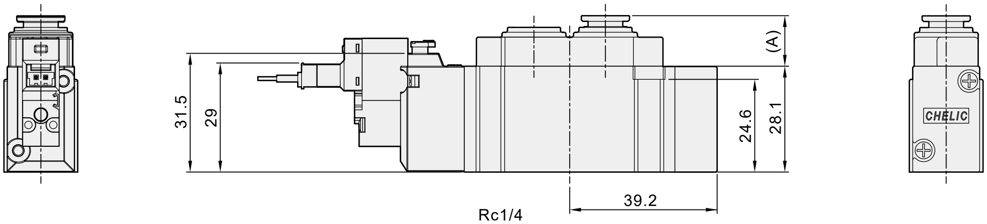
## Dimensions/ With fitting/ 3 port 2 position

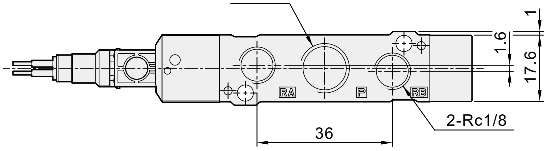
**SR 7100-C6 - TA (Ø6)**
**SR 7100-C8 - TA (Ø8)**
**SR 7100-C10 - TA (Ø10)**
3 port 2-position single





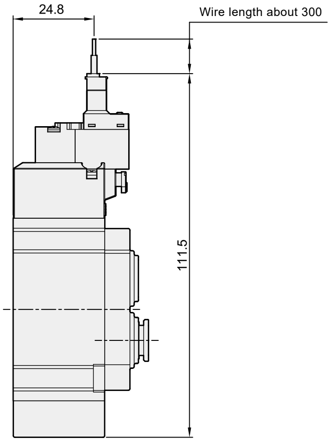

21
2-M4x0.7px6.5dp
7.1
106.5
79
PUSH
LOCK
CHELIC
DC24
A
B
13.2
19.6
Port size: Ø6
Ø8
Ø10
42.2
2-Ø4.2


(A)
31.5
29
24.6
28.1
39.2
CHELIC

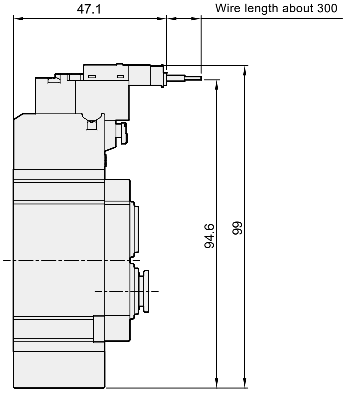

Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36

| Model | A |
|---|---|
| SR7100-C6-TA | 12.9 |
| SR7100-C8-TA | 13.3 |
| SR7100-C10-TA | 18.6 |

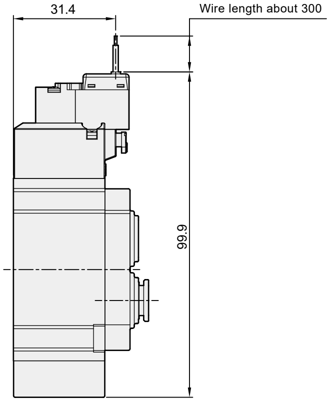
**L wire type - L**


24.8
Wire length about 300
111.5

**T wire type - T**


47.1
Wire length about 300
94.6
99

**W wire type - W**

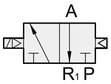

31.4
Wire length about 300
99.9

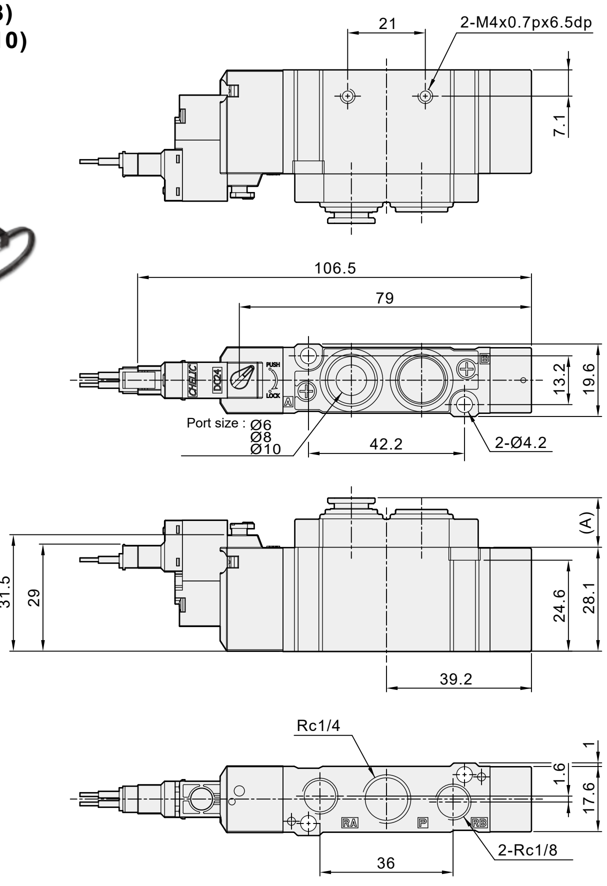
# SR 700 series Body Ported Solenoid Valve

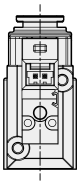
## Dimensions/ With fitting/ 3 port 2 position

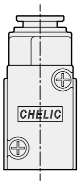
### SR 7100-C6 - TB (Ø6)
### SR 7100-C8 - TB (Ø8)
### SR 7100-C10 - TB (Ø10)

3 port 2-position single



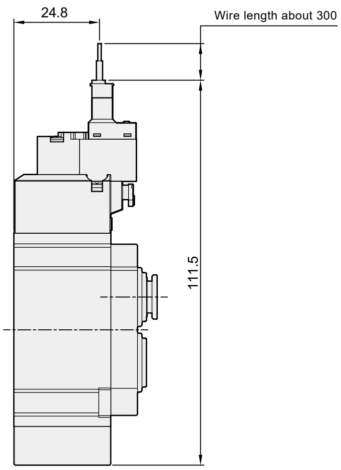

21
2-M4x0.7px6.5dp
7.1
106.5
79
PUSH
LOCK
CHELIC
DC24
13.2
19.6
Port size : Ø6
Ø8
Ø10
42.2
2-Ø4.2
(A)
31.5
29
24.6
28.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36



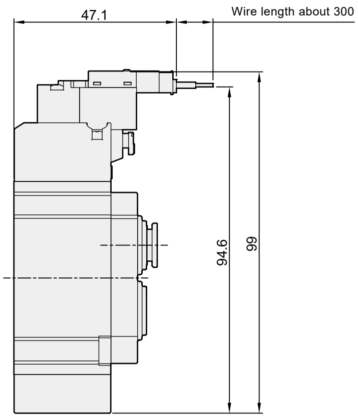


| Model | A |
|---|---|
| SR7100-C6-TB | 12.9 |
| SR7100-C8-TB | 13.3 |
| SR7100-C10-TB | 18.6 |

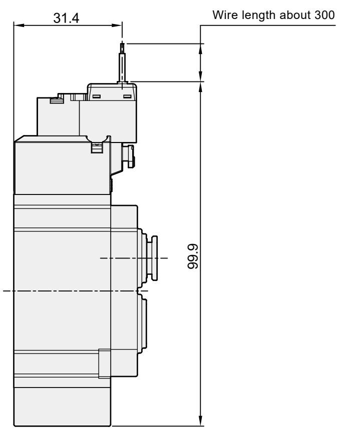
### L wire type - L


24.8
Wire length about 300
111.5

### T wire type - T


47.1
Wire length about 300
94.6
99

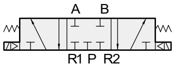
### W wire type - W


31.4
Wire length about 300
99.9

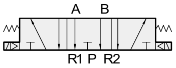
# SR 700 series Body Ported Solenoid Valve

## Dimensions/ With fitting

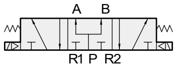
**SR 7(3)00-C6 (Ø6) • C8 (Ø8) • C10 (Ø10)**
**SR 7(4)00-C6 (Ø6) • C8 (Ø8) • C10 (Ø10)**
**SR 7(5)00-C6 (Ø6) • C8 (Ø8) • C10 (Ø10)**
5 port 3-position double



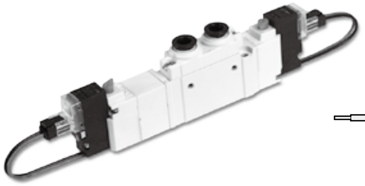
SR-7(3)00(Closed center) N.C.

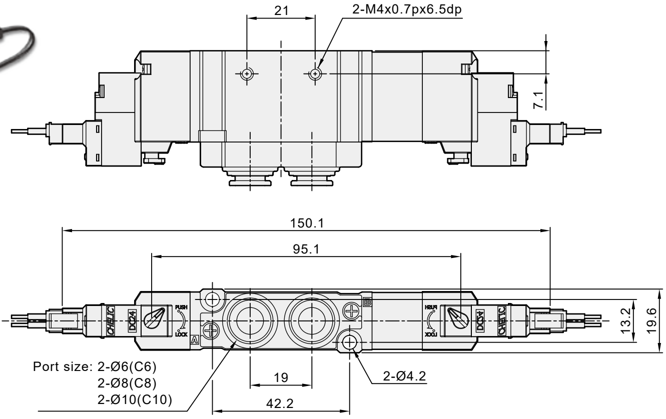


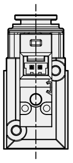
SR-7(4)00(Exhaust center) N.F.

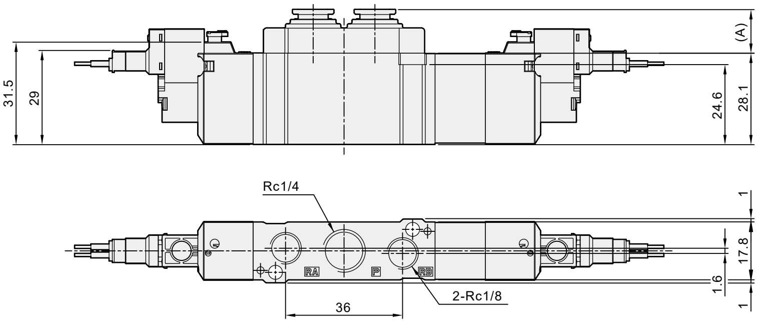


SR-7(5)00 (Pressure center) N.O.



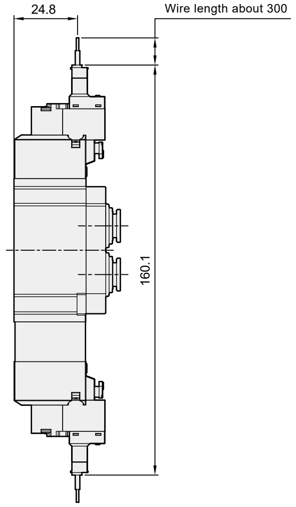

21
2-M4x0.7px6.5dp
7.1
150.1
95.1
13.2
19.6
Port size: 2-Ø6(C6)
2-Ø8(C8)
2-Ø10(C10)
19
42.2
2-Ø4.2



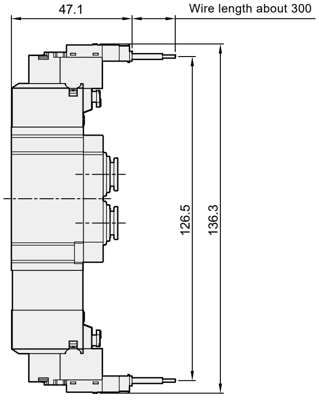

31.5
29
(A)
24.6
28.1
Rc1/4
1
17.8
1.6
1
36
2-Rc1/8

| Model | A |
|---|---|
| SR7100-C6 | 12.9 |
| SR7100-C8 | 13.3 |
| SR7100-C10 | 18.6 |

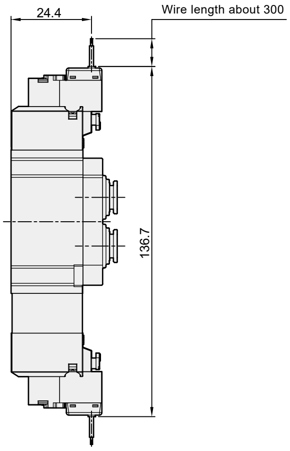
**L wire type - L**


24.8
Wire length about 300
160.1

**T wire type - T**


47.1
Wire length about 300
126.5
136.3

**W wire type - W**


24.4
Wire length about 300
136.7

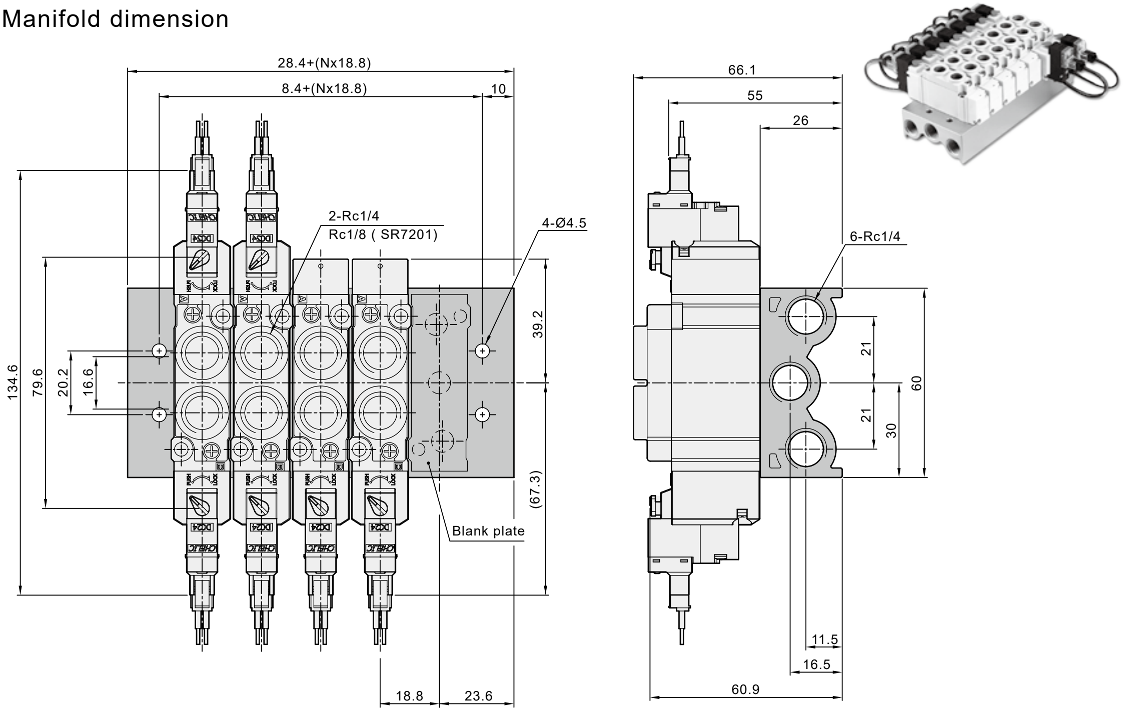
# SR 700 series Body Ported Solenoid Valve

## Dimensions/ Manifold type

**CHELIC**

### SR 7000 series - standard

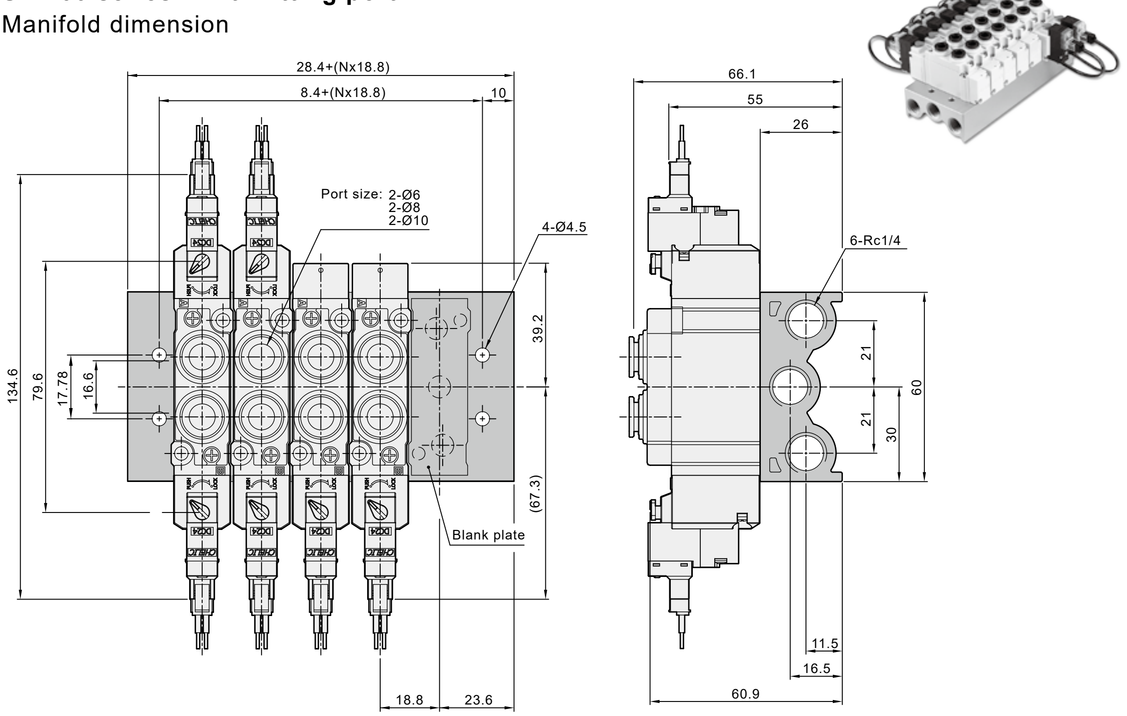
Manifold dimension


28.4+(Nx18.8)
8.4+(Nx18.8)
10
2-Rc1/4
Rc1/8 ( SR7201)
4-Ø4.5
39.2
134.6
79.6
20.2
16.6
(67.3)
Blank plate
18.8
23.6
66.1
55
26
6-Rc1/4
21
21
30
60
11.5
16.5
60.9

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SR 700 series - With fitting port

Manifold dimension


28.4+(Nx18.8)
8.4+(Nx18.8)
10
Port size: 2-Ø6
2-Ø8
2-Ø10
4-Ø4.5
39.2
134.6
79.6
17.78
16.6
(67.3)
Blank plate
18.8
23.6
66.1
55
26
6-Rc1/4
21
21
30
60
11.5
16.5
60.9

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

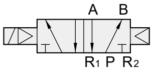
# SR 900 series Body Ported Solenoid Valve

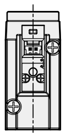
## Dimensions/ Standard

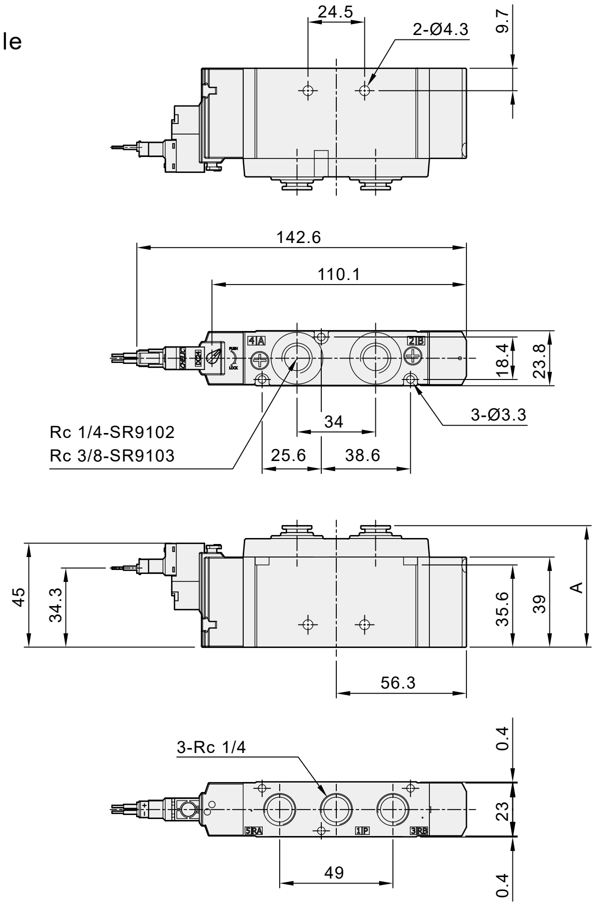
CHELIC

### SR 9102
### SR 9103

5 port 2-position single

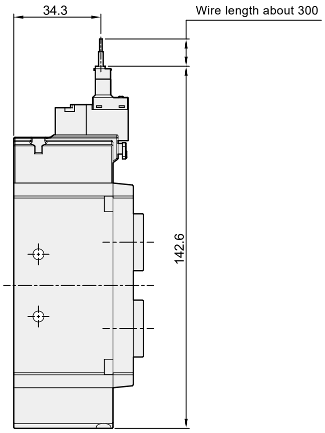




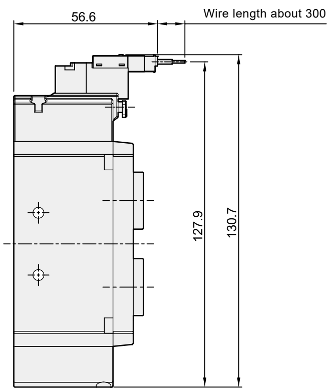

24.5
2-Ø4.3
9.7
142.6
110.1
4A
2B
18.4
23.8
3-Ø3.3
34
Rc 1/4-SR9102
Rc 3/8-SR9103
25.6
38.6
45
34.3
35.6
39
A
56.3
CHELIC
3-Rc 1/4
0.4
23
0.4
5RA
1P
3RB
49

---

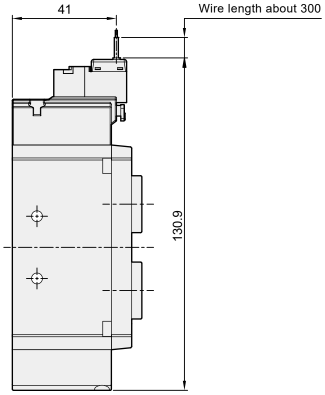
### L wire type - L


34.3
Wire length about 300
142.6

### T wire type - T


56.6
Wire length about 300
127.9
130.7

### W wire type - W


41
Wire length about 300
130.9

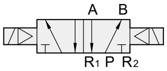
# SR 900 series Body Ported Solenoid Valve

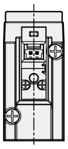
## Dimensions/ Standard

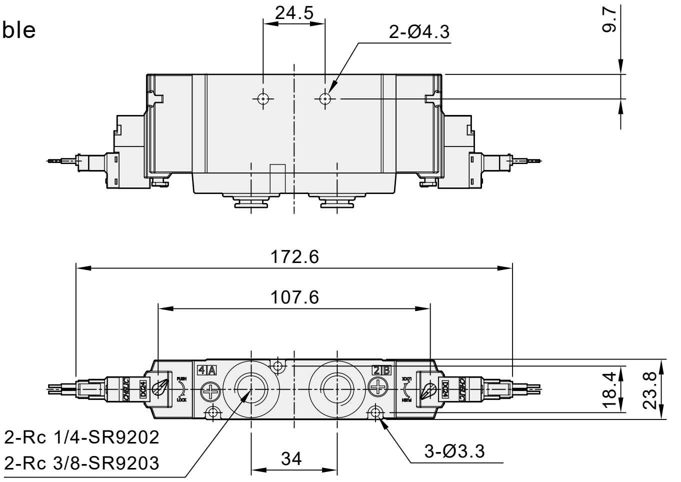
CHELIC

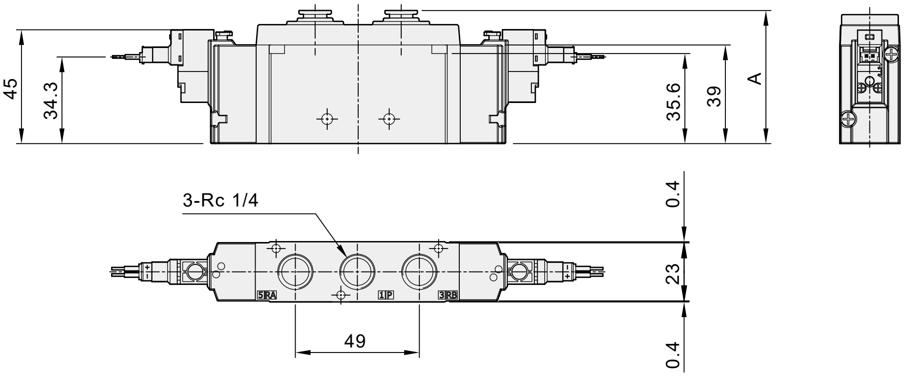
### SR 9202
### SR 9203

5 port 2-position double



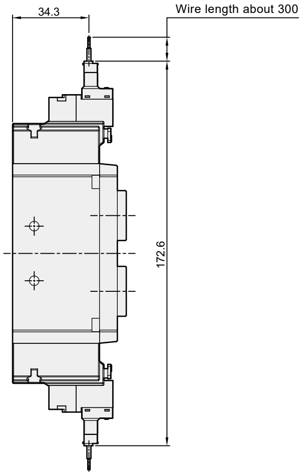




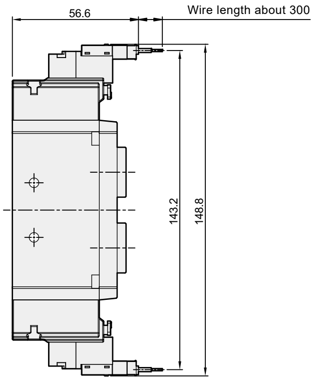

24.5
2-Ø4.3
9.7
172.6
107.6
4A
2B
18.4
23.8
2-Rc 1/4-SR9202
2-Rc 3/8-SR9203
34
3-Ø3.3
45
34.3
35.6
39
A
3-Rc 1/4
0.4
23
0.4
5RA
1P
3RB
49

---

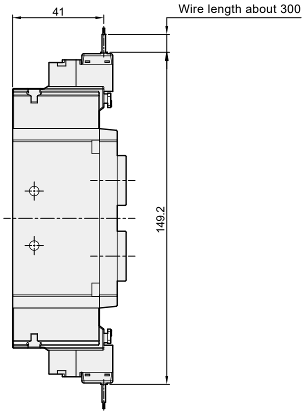
**L wire type -** L


34.3
Wire length about 300
172.6

**T wire type -** T


56.6
Wire length about 300
143.2
148.8

**W wire type -** W

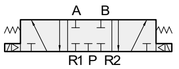

41
Wire length about 300
149.2

# SR 900 series Body Ported Solenoid Valve

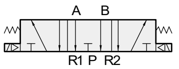
## Dimensions/ Standard

### SR 9(3)02 • 03
### SR 9(4)02 • 03
### SR 9(5)02 • 03

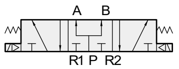
5 port 3-position double



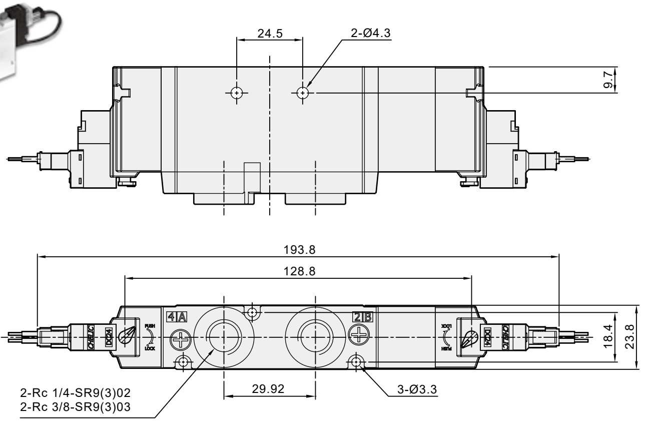
SR-9(3)02 (Closed center) N.C.

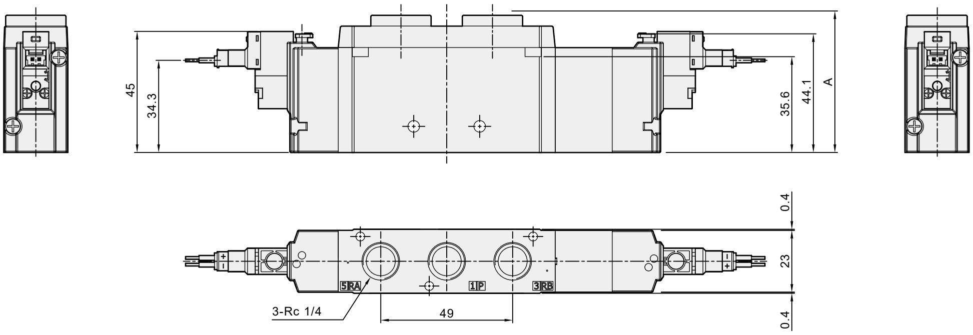


SR-9(4)02 (Exhaust center) N.F.



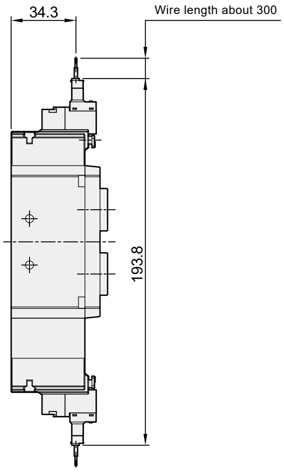
SR-9(5)02 (Pressure center) N.O.


24.5
2-Ø4.3
9.7
193.8
128.8
18.4
23.8
2-Rc 1/4-SR9(3)02
2-Rc 3/8-SR9(3)03
29.92
3-Ø3.3
4A
2B

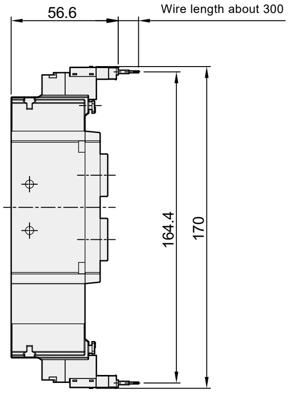

45
34.3
35.6
44.1
A
0.4
23
0.4
5RA
1P
3RB
3-Rc 1/4
49

---

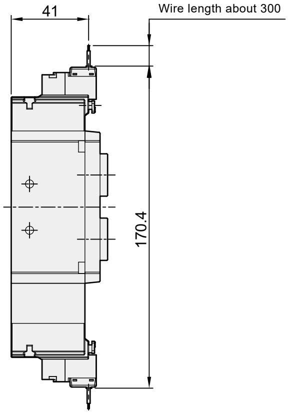
### L wire type - L


34.3
Wire length about 300
193.8

### T wire type - T


56.6
Wire length about 300
164.4
170

### W wire type - W

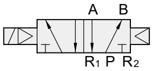

41
Wire length about 300
170.4

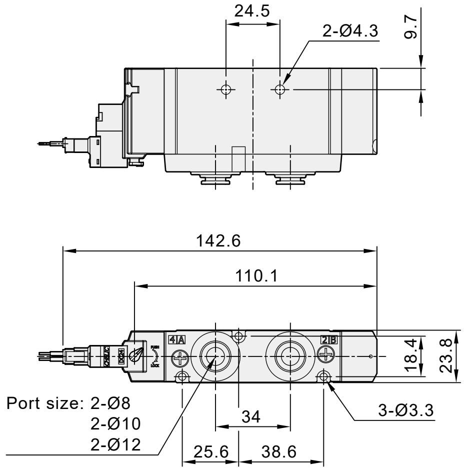
# SR 900 series Body Ported Solenoid Valve

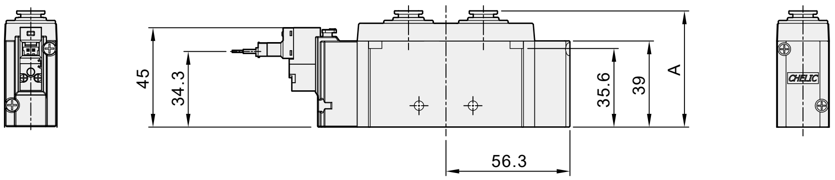
## Dimensions/ With fitting

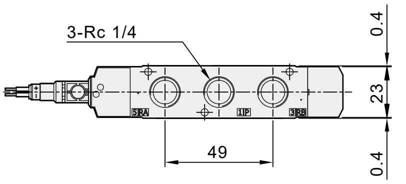
### SR 9100-C8 (Ø8)
### SR 9100-C10 (Ø10)
### SR 9100-C12 (Ø12)

5 port 2-position single



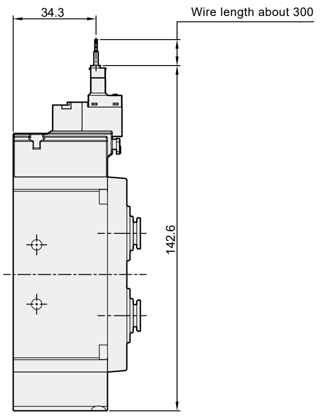

24.5
2-Ø4.3
9.7
142.6
110.1
18.4
23.8
Port size: 2-Ø8
2-Ø10
2-Ø12
34
3-Ø3.3
25.6
38.6
4A
2B


45
34.3
35.6
39
A
56.3
CHELIC

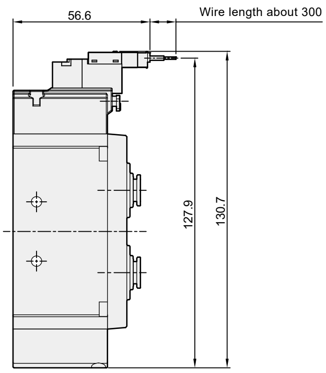

3-Rc 1/4
0.4
23
0.4
49
5RA
1P
3RB

| Model | A |
|---|---|
| SR9100-C8 | 52.5 |
| SR9100-C10 | 57.6 |
| SR9100-C12 | 60.6 |

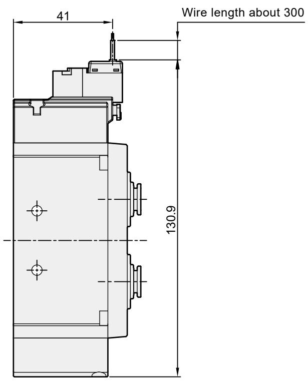
### L wire type - L


34.3
Wire length about 300
142.6

### T wire type - T


56.6
Wire length about 300
127.9
130.7

### W wire type - W

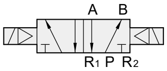

41
Wire length about 300
130.9

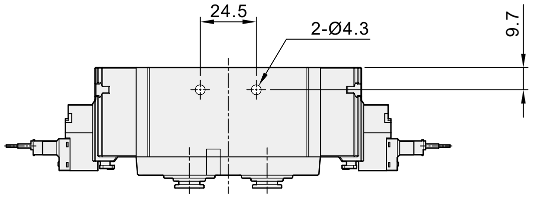
# SR 900 series Body Ported Solenoid Valve

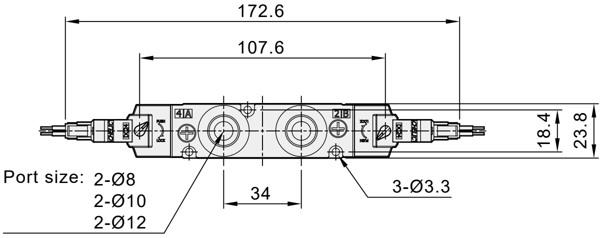
## Dimensions/ With fitting

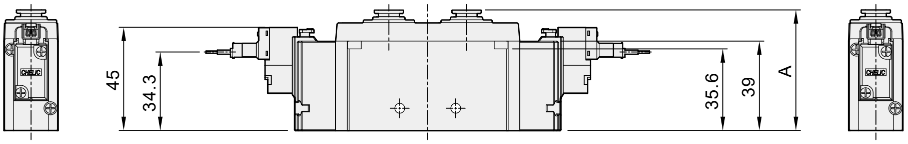
### SR 9200-C8 (Ø8)
### SR 9200-C10 (Ø10)
### SR 9200-C12 (Ø12)

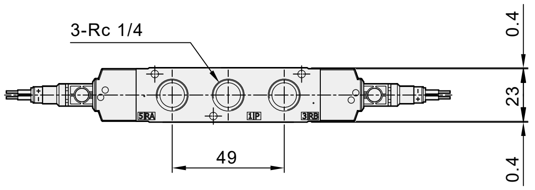
5 port 2-position double





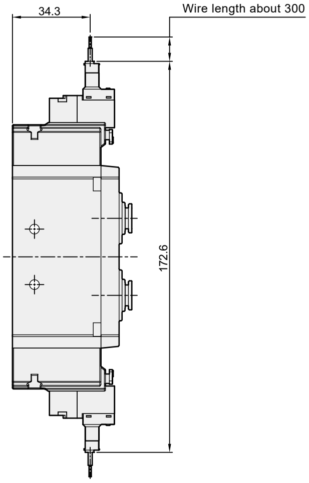

172.6
107.6
4A
2B
18.4
23.8
Port size: 2-Ø8
2-Ø10
2-Ø12
34
3-Ø3.3


45
34.3
35.6
39
A

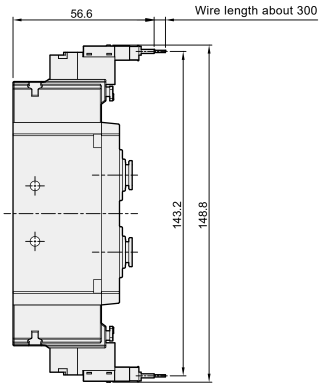

3-Rc 1/4
0.4
23
0.4
5RA
1P
3RB
49

| Model | A |
|---|---|
| SR9200-C8 | 52.5 |
| SR9200-C10 | 57.6 |
| SR9200-C12 | 60.6 |

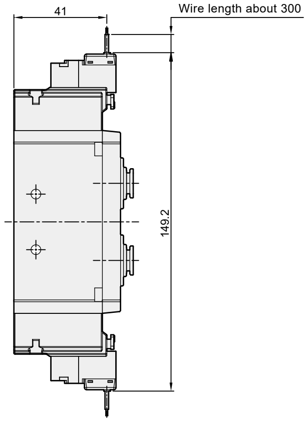
### L wire type - L


34.3
Wire length about 300
172.6

### T wire type - T


56.6
Wire length about 300
143.2
148.8

### W wire type - W

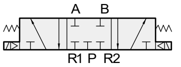

41
Wire length about 300
149.2

# SR 900 series Body Ported Solenoid Valve

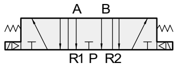
## Dimensions/ With fitting

### SR 9(3)00-C8(Ø8) • C10(Ø10) • C12(Ø12)
### SR 9(4)00-C8(Ø8) • C10(Ø10) • C12(Ø12)
### SR 9(5)00-C8(Ø8) • C10(Ø10) • C12(Ø12)

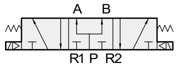
5 port 3-position double



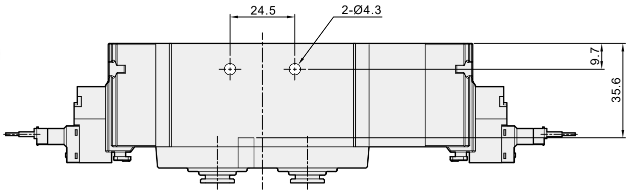
SR-9(3)00 (Closed center) N.C.

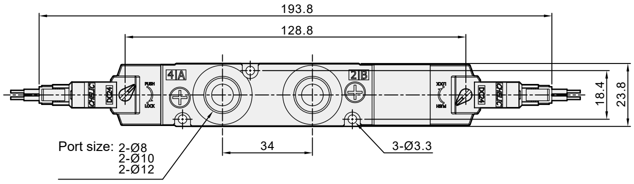


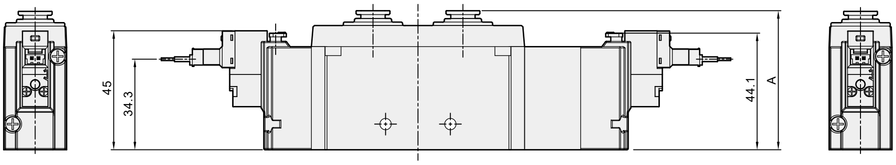
SR-9(4)00 (Exhaust center) N.F.



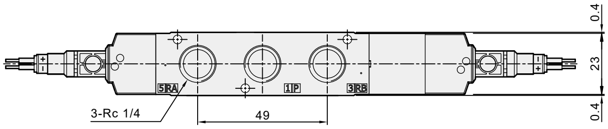
SR-9(5)00 (Pressure center) N.O.


24.5
2-Ø4.3
9.7
35.6

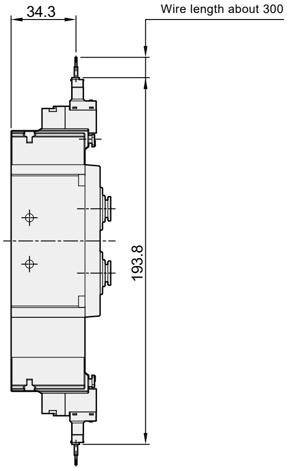

193.8
128.8
4A
2B
18.4
23.8
Port size: 2-Ø8
2-Ø10
2-Ø12
34
3-Ø3.3



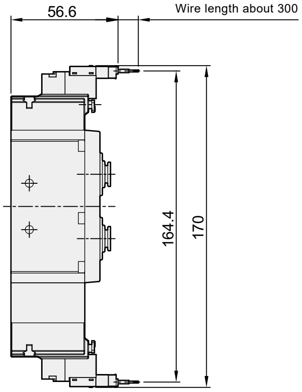
| Model | A |
|---|---|
| SR9100-C8 | 52.5 |
| SR9100-C10 | 57.6 |
| SR9100-C12 | 60.6 |


0.4
23
0.4
5RA
1P
3RB
3-Rc 1/4
49

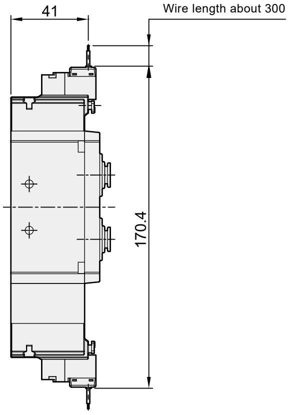
### L wire type - L


34.3
Wire length about 300
193.8

### T wire type - T


56.6
Wire length about 300
164.4
170

### W wire type - W

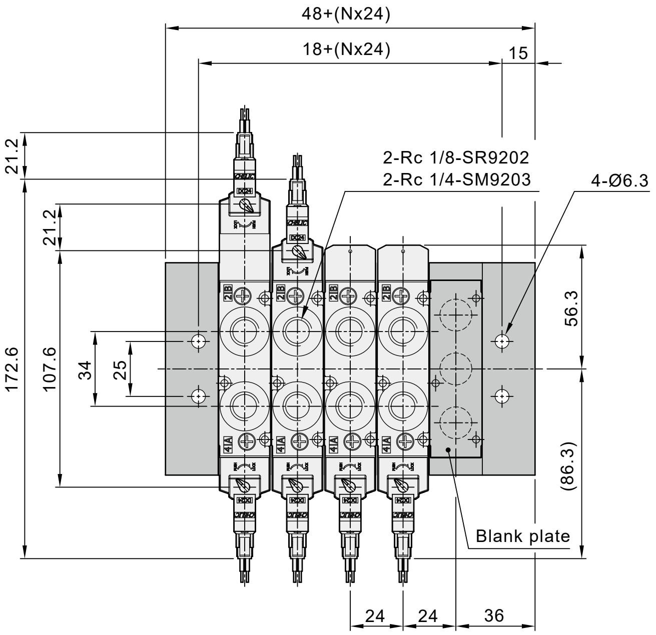

41
Wire length about 300
170.4

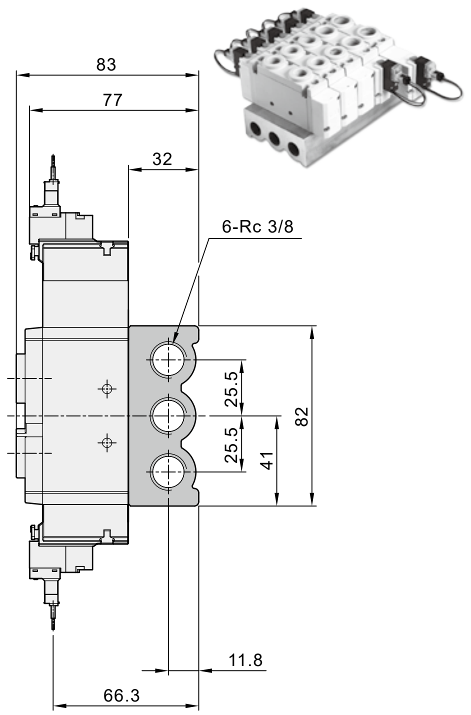
# SR 900 series Body Ported Solenoid Valve

## Dimensions/ Manifold type

### SR 900 series - standard

Manifold dimension

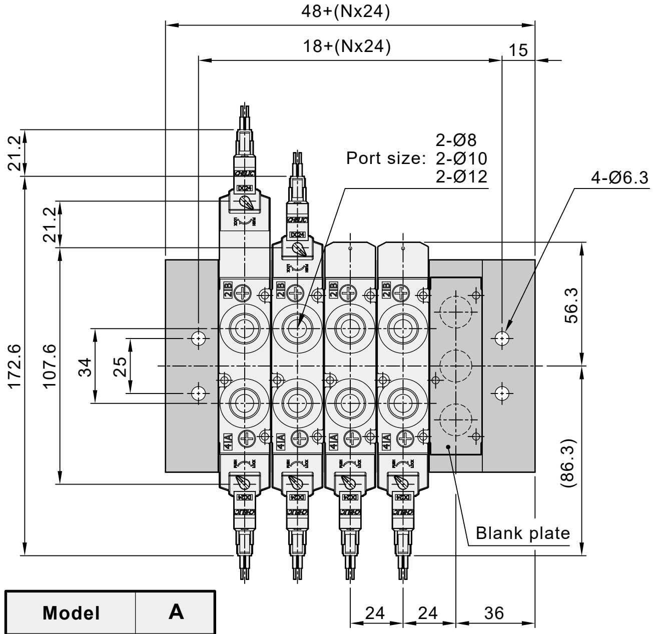

48+(Nx24)
18+(Nx24)
15
21.2
21.2
172.6
107.6
34
25
2-Rc 1/8-SR9202
2-Rc 1/4-SM9203
4-Ø6.3
56.3
(86.3)
2B
4A
Blank plate
24
24
36

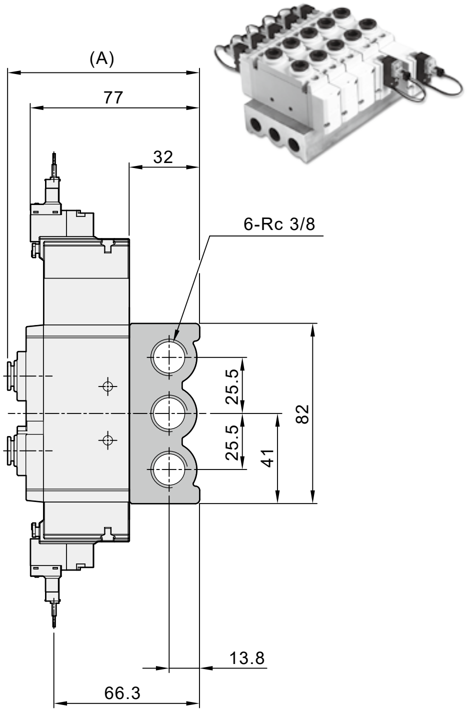

83
77
32
6-Rc 3/8
25.5
25.5
41
82
11.8
66.3

- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SR 900 series - With fitting port

Manifold dimension


48+(Nx24)
18+(Nx24)
15
21.2
21.2
172.6
107.6
34
25
Port size: 2-Ø8
2-Ø10
2-Ø12
4-Ø6.3
56.3
(86.3)
2B
4A
Blank plate
24
24
36


(A)
77
32
6-Rc 3/8
25.5
25.5
41
82
13.8
66.3

| Model | A |
|---|---|
| SR9102-C8 | 84 |
| SR9102-C10 | 89.1 |
| SR9102-C12 | 92.1 |

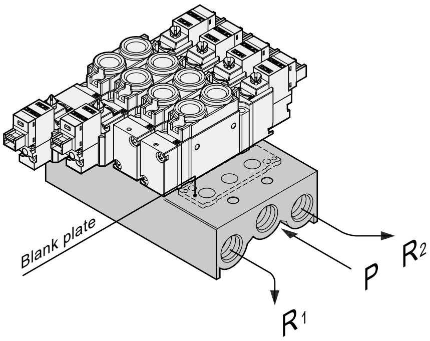
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SR series Body Ported Solenoid Valve

## Accessories/ Installation

### Manifold

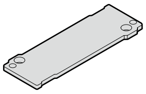
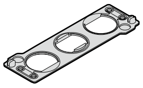
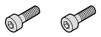
**SR-300/ 500/ 700/ 900 series**



### Manifold accessory

**SR-300/ 500/ 700/ 900 series**

※ The accessories of blank plate.

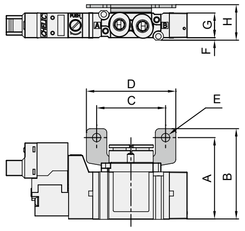




| | Blank plate | Rubber lining | Mounting screw | |
|---|---|---|---|---|
| SR-300 series | MSM03041 | MSM03039 | M2×8L | MSM03040 |
| SR-500 series | MSM05041 | MSM05039 | M4×8L | MSM05040 |
| SR-700 series | MSM07041 | MSM07039 | M4×8L | MSM07040 |
| SR-900 series | MSM09041 | MSM09039 | M3×8L | MSM09040 |

### Bracket assembly ( SR-300, 500, 700 series)

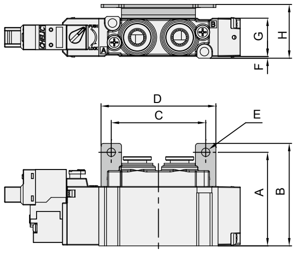
| Size / Model | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SR300** | 32 | 35.5 | 27 | 35 | Ø3.3 | 0.9 | 9.8 | 13.9 | Ø3.3 | 78.9 | 30 | 11.6 | 17 | 24 | 31 | 38 |
| **SR500** | 36.7 | 40.2 | 37 | 45 | Ø3.3 | 0.7 | 15 | 21.1 | Ø3.3 | 100.3 | 30.3 | 16.4 | 22 | 29 | 38 | 47 |
| **SR700** | 42.5 | 49.5 | 52 | 66 | Ø4.3 | 0.9 | 18 | 25.5 | Ø4.3 | 117.8 | 35 | 19.8 | 28 | 38 | 46 | 57 |

● Side bracket - C1



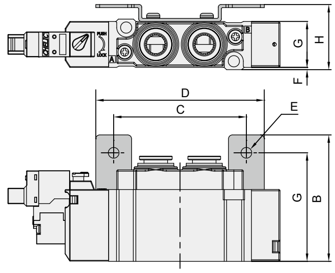
SR 300 series

MSM030 – C1



SR 500 series

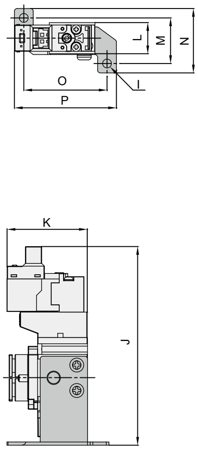
MSM050 – C1



SR 700 series

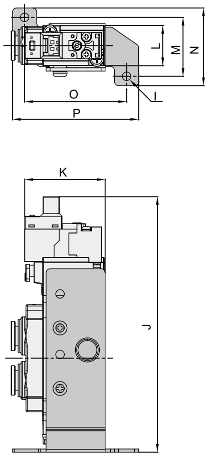
MSM070 – C1

● Vertical bracket - C2



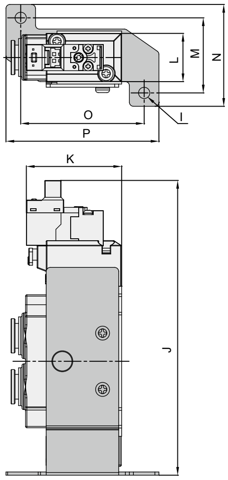
SR 300 series

MSM030 – C2



SR 500 series

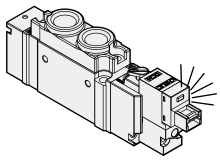
MSM050 – C2



SR 700 series

MSM070 – C2

### With indicator light: all this series with indicator light and voltage protection circuit



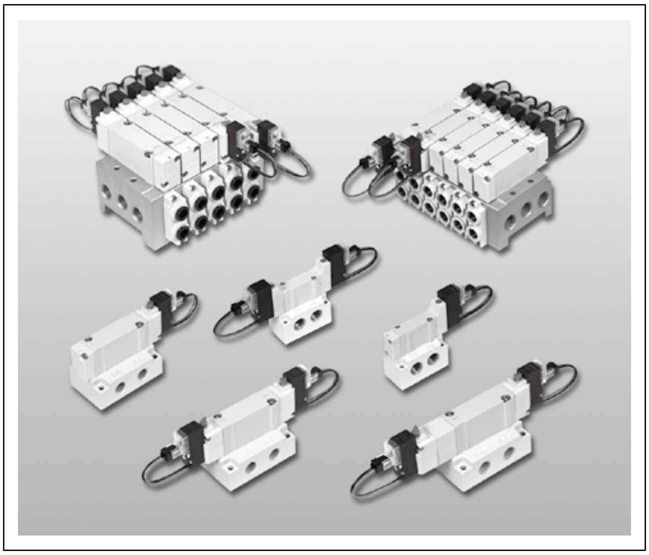
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

# MEMO

# Directional control ─ SRB series Base Mounted Solenoid Valve

## SRB300, SRB500, SRB700, SRB900 Solenoid Valve

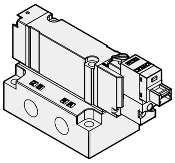
CHELIC



Provide CAD external dimension.

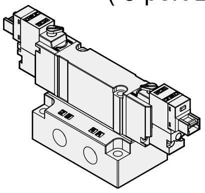
Small size, big flow rate!
High responding time below 10ms
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.

**Solenoid valve single coil** ( 5 port 2-position )



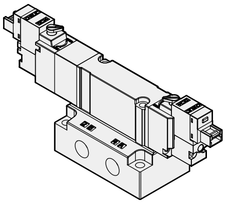
| | | | |
|---|---|---|---|
| Solenoid valve single coil ( 5 port 2-position ) | SRB - 300 series | M5 | P.2-1.82 |
| | SRB - 500 series | Rc 1/8, Ø4, Ø6, Ø8 | P.2-1.86 |
| | SRB - 700 series | Rc 1/8, 1/4, Ø6, Ø8, Ø10 | P.2-1.91 |
| | SRB - 900 series | Rc 3/8 | P.2-1.96 |

**Solenoid valve double coils** ( 5 port 2-position )



| | | | |
|---|---|---|---|
| Solenoid valve double coils ( 5 port 2-position ) | SRB - 300 series | M5 | P.2-1.83 |
| | SRB - 500 series | Rc 1/8, Ø4, Ø6, Ø8 | P.2-1.87 |
| | SRB - 700 series | Rc 1/8, 1/4, Ø6, Ø8, Ø10 | P.2-1.92 |
| | SRB - 900 series | Rc 3/8 | P.2-1.97 |

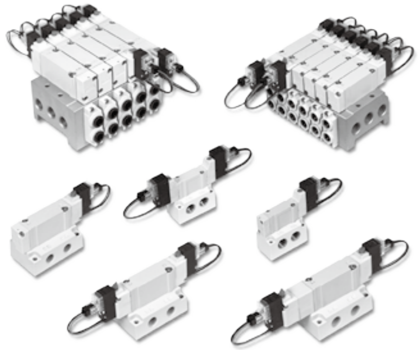
**Solenoid valve double coils** ( 5 port 3-position)



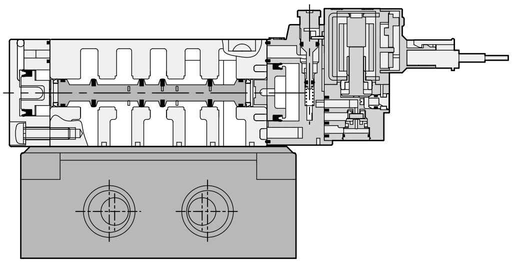
| | | | |
|---|---|---|---|
| Solenoid valve double coils ( 5 port 3-position) | SRB - 300 series | M5 | P.2-1.84 |
| | SRB - 500 series | Rc 1/8, Ø4, Ø6, Ø8 | P.2-1.88 |
| | SRB - 700 series | Rc 1/8, 1/4, Ø6, Ø8, Ø10 | P.2-1.93 |
| | SRB - 900 series | Rc 3/8 | P.2-1.98 |

# SRB series Base Mounted Solenoid Valve (One-touch fitting in option)

## Product features



### Internal structure



### Specification

| Item / Model | SRB300 | SRB500 | SRB700 | SRB900 |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 (150 ~ 700) | | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | | |
| Pilot type | Air operated | | | |
| Number of positions | 5/2-position, 5/3-position | | | |
| Type of actuation | Normally closed | | | |
| Effective orifice mm²(CV) | 3.6 ( 0.2 ) | 10.8 ( 0.6 ) | 18 ( 1.0 ) | 36 ( 2.0 ) |
| Manual override | Push and lock | | | |
| Port size | M5 | Rc 1/8, Ø4, Ø6, Ø8 | Rc1/8, Rc 1/4, Ø6, Ø8, Ø10 | Rc 3/8 |
| Lubrication | Lubrication free type | | | |

### Code of order

**SRB** — **5** — **10** — **1** — **[ ]** — **24VDC** — **L** — **M 6**

**Model**

SRB:
Solenoid valve
Base mounted type

**Model number**

- 3: 300 series
- 5: 500 series
- 7: 700 series
- 9: 900 series

**Coil q'ty**

- 10: Single
- 20: Double
- 30:Closed center
- 40:Exhaust center
- 50:Pressure center

5/3-position double coils only

**Port size**

| Thread type (standard) | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8P | SRB300 |
| 1 | Rc 1/8 | SRB500 |
| 1 | Rc 1/8 | SRB700 |
| 2 | Rc 1/4 | |
| 3 | Rc 3/8 | SRB900 |

For A and B port

| 0 | With fitting port |
|---|---|

| Single base mounting type | | |
|---|---|---|
| Mark | Thread | Model |
| 1 | Rc 1/8 | SRB300 |
| 1 | Rc 1/8 | SRB500 |
| 2 | Rc 1/4 | SRB700 |
| 3 | Rc 3/8 | SRB900 |

**With fitting port**

| Mark | Bore size | Model |
|---|---|---|
| C4 | Ø4 | SRB500 |
| C6 | Ø6 | |
| C8 | Ø8 | |
| C6 | Ø6 | SRB700 |
| C8 | Ø8 | |
| C10 | Ø10 | |

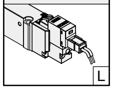
None: thread type

**Voltage**

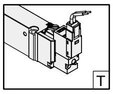
Standard
12V DC 1.2W
24V DC 1.2W

**Electrical entry**

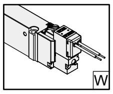
Standard



(With wire length 300mm)

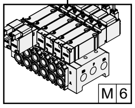


(With wire length 300mm)



Grommet
(With wire length 300mm)

**Manifold**



None:
Without manifold

M1 = 1 set
M2 = 2 sets
M3 = 3 sets
⋮
M15 = 15 sets

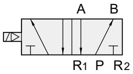
※ SRB900
Without manifold type

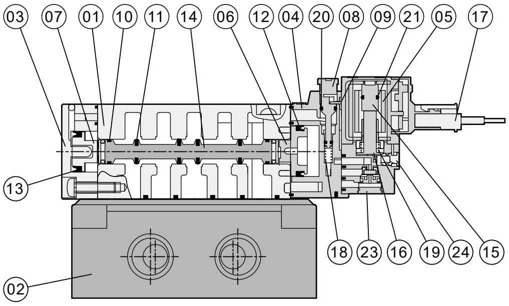
# SRB series Base Mounted Solenoid Valve (One-touch fitting in option)

## Product features

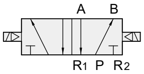
### Internal structure

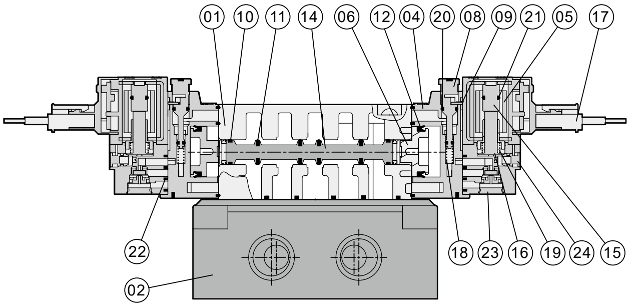
- 5 port 2-position single



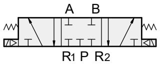

03
07
01
10
11
14
06
12
04
20
08
09
21
05
17
13
18
23
16
19
24
15
02

- 5 port 2-position double

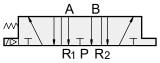



01
10
11
14
06
12
04
20
08
09
21
05
17
22
18
23
16
19
24
15
02

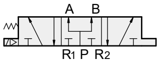
- 5 port 3-position double



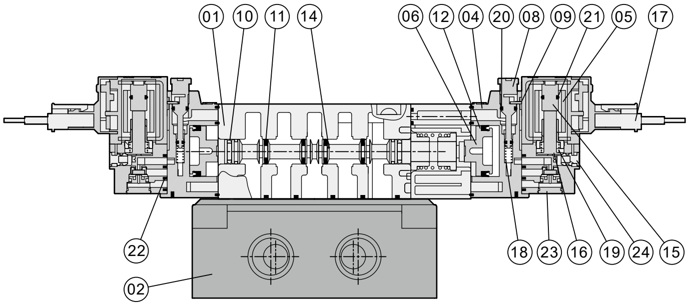
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
10
11
14
06
12
04
20
08
09
21
05
17
22
18
23
16
19
24
15
02

## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 14 | Shaft | Aluminum alloy |
| 02 | Single sub-plate | Aluminum alloy | 15 | Coil insert bushing | Stainless steel |
| 03 | Rear cover | Resin | 16 | Spring bushing | Stainless steel |
| 04 | Holder | Resin | 17 | Wire plug | Resin |
| 05 | Coil | — | 18 | Manual override spring | Stainless steel |
| 06 | Holder piston | POM | 19 | Spring bushing spring | Stainless steel |
| 07 | Rear cover piston | POM | 20 | Manual override O-ring | NBR |
| 08 | Manual override | POM | 21 | Coil insert bushing O-ring | NBR |
| 09 | Position iron plate | Iron | 22 | Rubber Lining | NBR |
| 10 | Spool packing | NBR | 23 | Valve rear cap | Copper alloy |
| 11 | Spool packing | NBR | 24 | Manual override | Copper alloy |
| 12 | Holder piston packing | NBR | 25 | Connector | Plastic |
| 13 | Rear cover packing | NBR | | | |

Note: The main body be treated with painting.

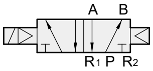
# SRB 300 series Base Mounted Solenoid Valve (One-touch fitting in option)

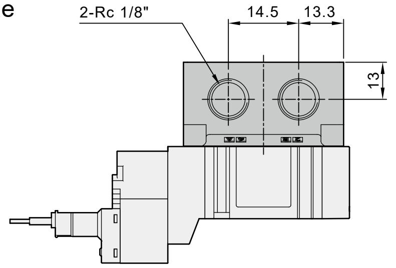
## Dimensions/ Standard

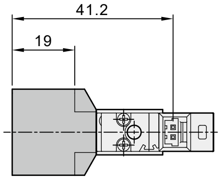
CHELIC

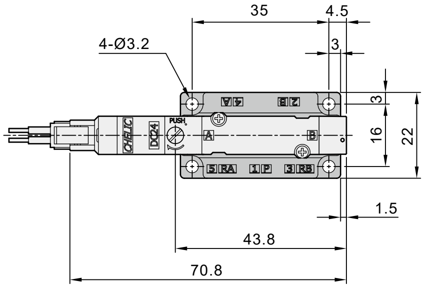
### SRB 3101

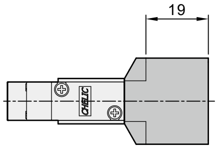
Single exhausting sub-plate
5 port 2-position single

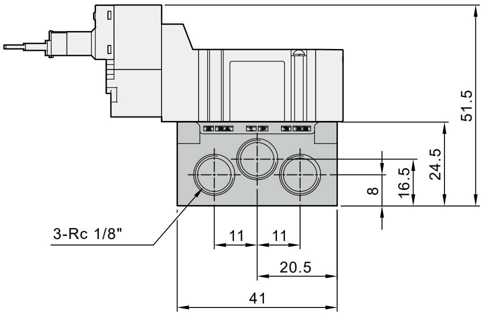



2-Rc 1/8"
14.5
13.3
13




35
4.5
4-Ø3.2
3
3
16
22
1.5
43.8
70.8
PUSH
DC24
CHELIC
A
B
4A
2B
5 RA
1 P
3 RB

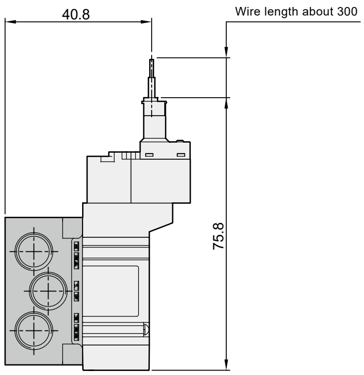


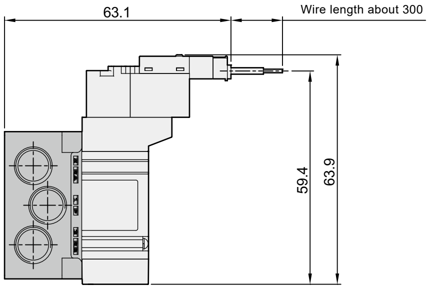

51.5
24.5
16.5
8
3-Rc 1/8"
11
11
20.5
41

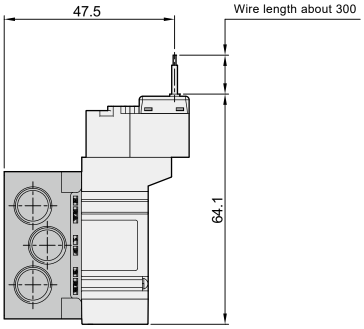
### L wire type - L

### T wire type - T

### W wire type - W


40.8
Wire length about 300
75.8


63.1
Wire length about 300
59.4
63.9

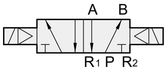

47.5
Wire length about 300
64.1

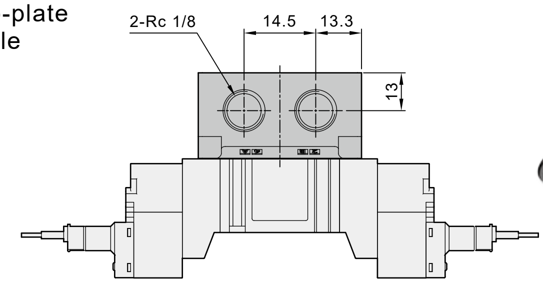
# SRB 300 series Base Mounted Solenoid Valve (One-touch fitting in option)

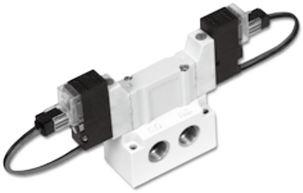
## Dimensions/ Standard

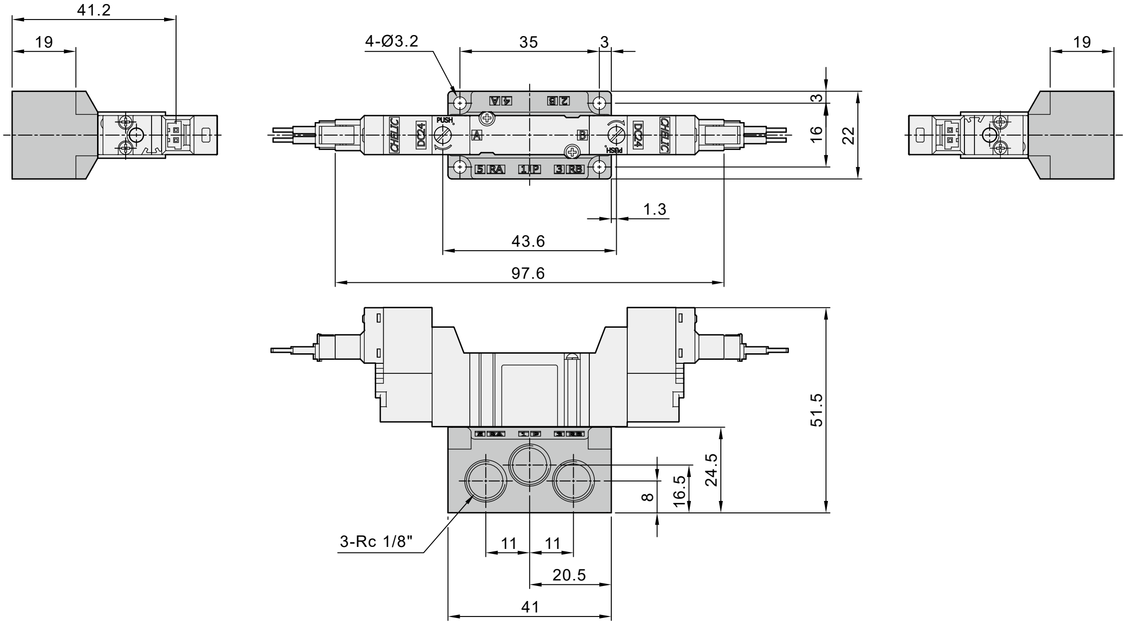
### SRB 3201

Single exhausting sub-plate
5 port 2-position double



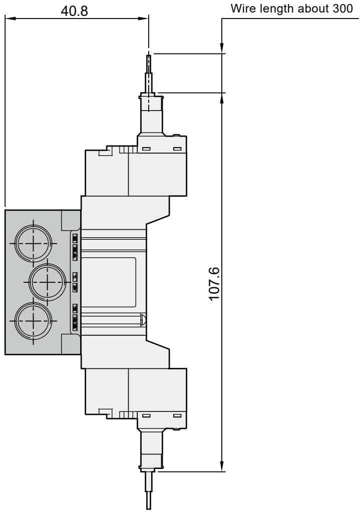

2-Rc 1/8
14.5
13.3
13



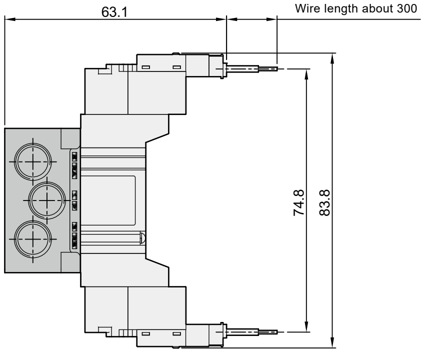

41.2
19
4-Ø3.2
35
3
19
3
16
22
1.3
43.6
97.6
PUSH
DC24
A
B
4A
2B
5RA
1P
3RB
51.5
24.5
16.5
8
3-Rc 1/8"
11
11
20.5
41

---

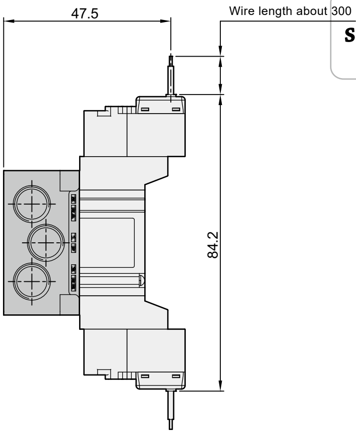
### L wire type - L


40.8
Wire length about 300
107.6

### T wire type - T


63.1
Wire length about 300
74.8
83.8

### W wire type - W


47.5
Wire length about 300
84.2

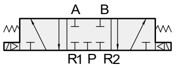
# SRB 300 series Base Mounted Solenoid Valve (One-touch fitting in option)

## Dimensions/ Standard

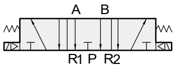
CHELIC.

### SRB 3(3)01
### SRB 3(4)01
### SRB 3(5)01

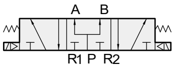
Single exhausting sub-plate
5 port 3-position double



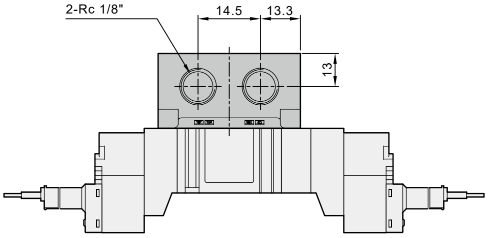
SRB 3(3)0M5 (Closed center) N.C.

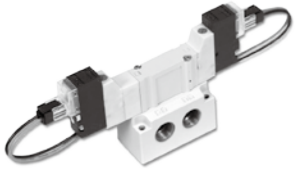


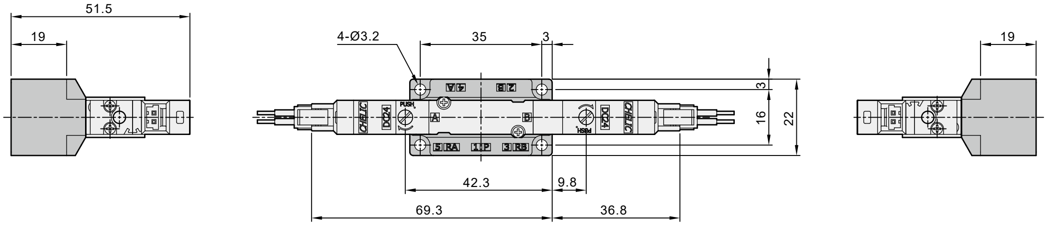
SRB 3(4)0M5 (Exhaust center) N.F.

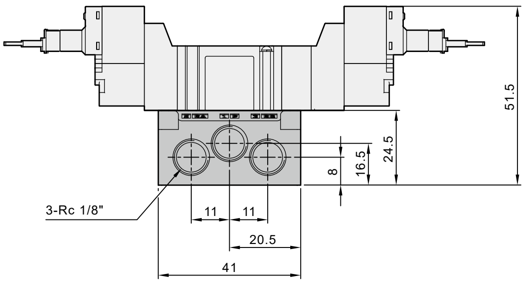


SRB 3(5)0M5 (Pressure center) N.O.

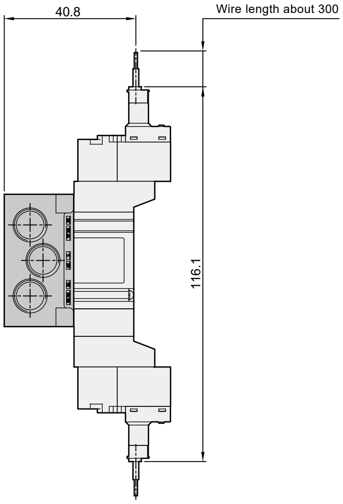

2-Rc 1/8"
14.5
13.3
13



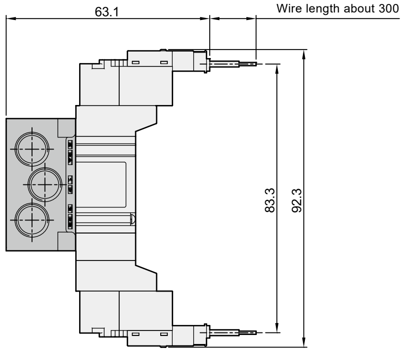

51.5
19
4-Ø3.2
35
3
3
16
22
42.3
9.8
69.3
36.8
19


51.5
24.5
16.5
8
3-Rc 1/8"
11
11
20.5
41

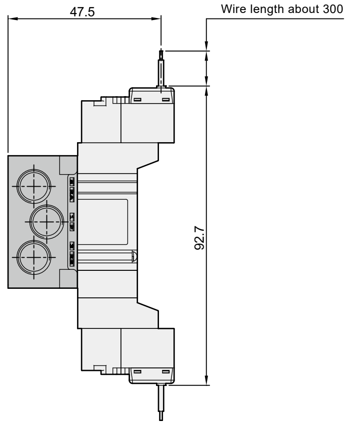
### L wire type - L


40.8
Wire length about 300
116.1

### T wire type - T

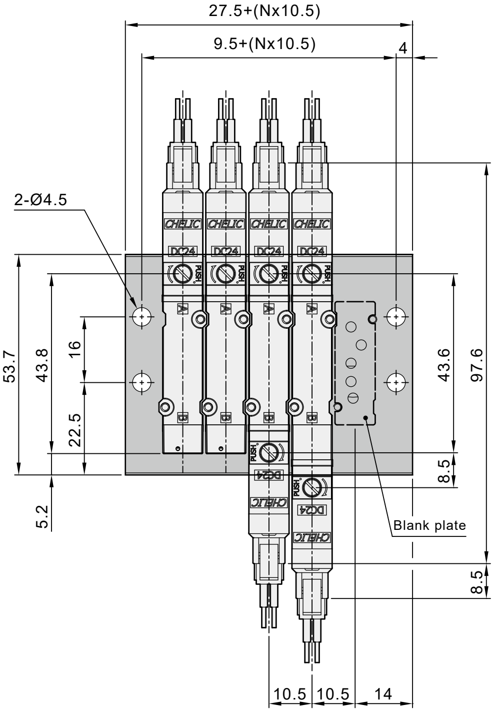

63.1
Wire length about 300
83.3
92.3

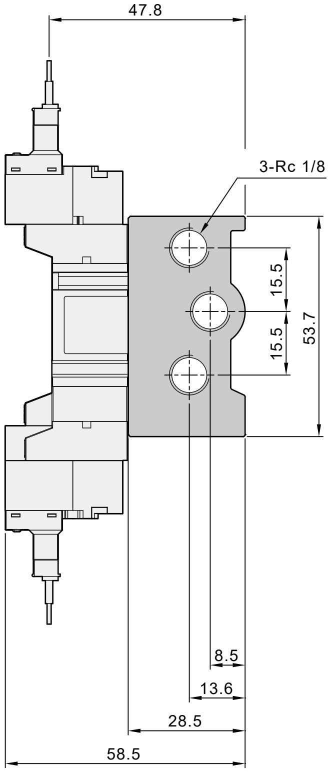
### W wire type - W


47.5
Wire length about 300
92.7

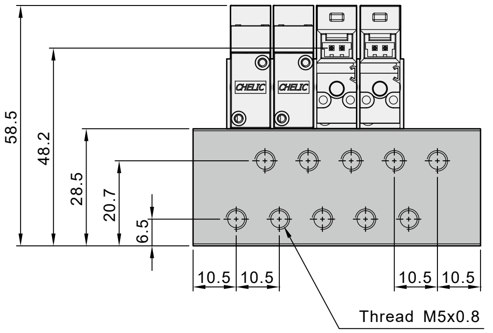
### SRB 300 series - Standard

Exhaust manifold dimension


27.5+(Nx10.5)
9.5+(Nx10.5)
4
2-Ø4.5
CHELIC
DC24
PUSH
A
B
53.7
43.8
16
22.5
5.2
43.6
97.6
8.5
8.5
Blank plate
10.5
10.5
14


47.8
3-Rc 1/8
15.5
15.5
53.7
8.5
13.6
28.5
58.5

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

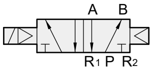

58.5
48.2
28.5
20.7
6.5
CHELIC
10.5
10.5
10.5
10.5
Thread M5x0.8

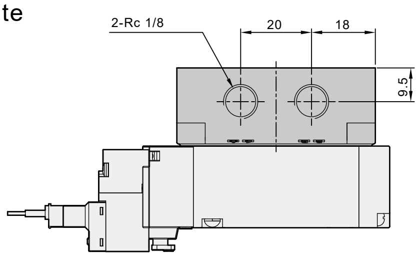
# SRB 500 series Base Mounted Solenoid Valve (One-touch fitting in option)

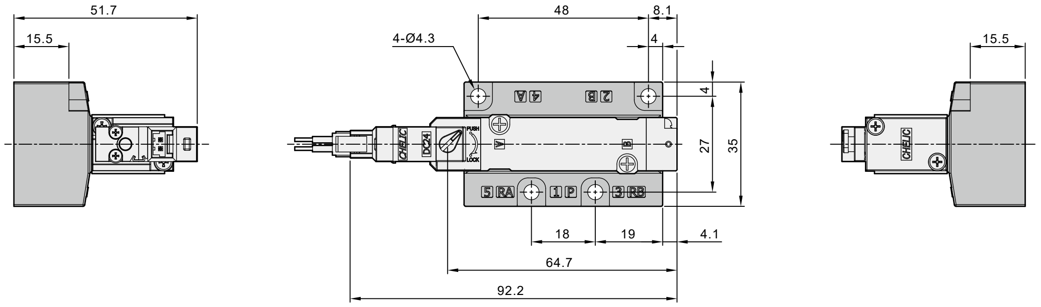
## Dimensions/ Standard

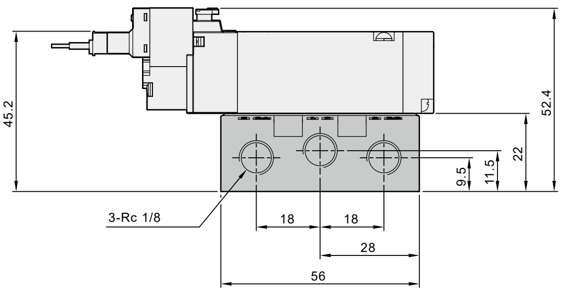
### SRB 5101

Single exhausting sub-plate
5 port 2-position single

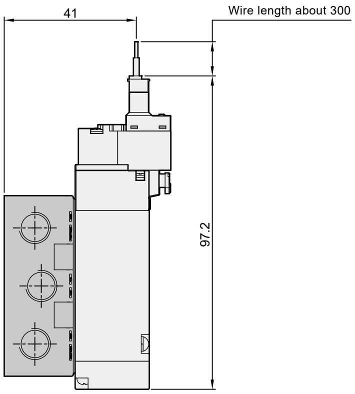



2-Rc 1/8
20
18
9.5

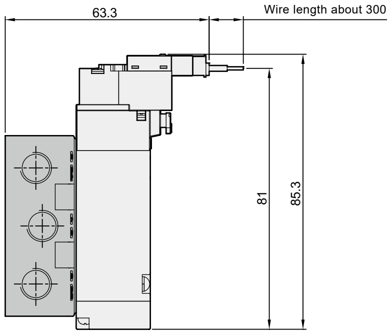

51.7
15.5
48
8.1
4-Ø4.3
4
4
27
35
15.5
4A
2B
5RA
1P
3RB
CHELIC
DC24
PUSH
LOCK
18
19
4.1
64.7
92.2


45.2
52.4
22
9.5
11.5
3-Rc 1/8
18
18
28
56

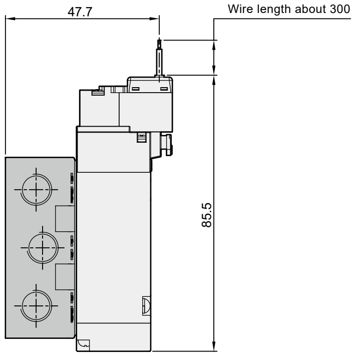
### L wire type - L


41
Wire length about 300
97.2

### T wire type - T


63.3
Wire length about 300
81
85.3

### W wire type - W


47.7
Wire length about 300
85.5

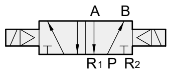
# SRB 500 series Base Mounted Solenoid Valve (One-touch fitting in option)

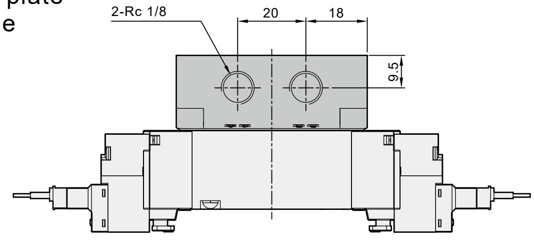
## Dimensions/ Standard

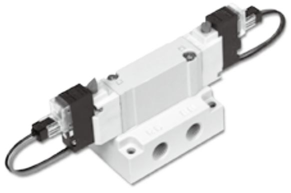
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

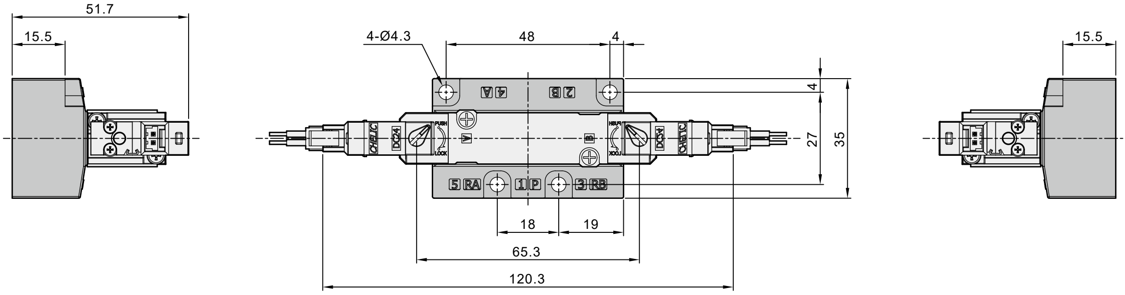
### SRB 5201

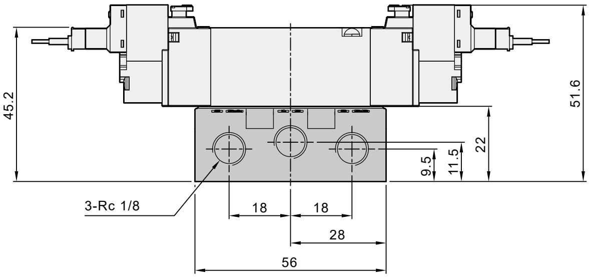
Single exhausting sub-plate
5 port 2-position double




2-Rc 1/8
20
18
9.5

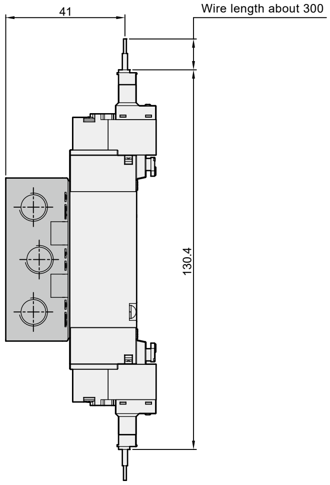



51.7
15.5
4-Ø4.3
48
4
4A
2B
5RA
1P
3RB
4
27
35
18
19
65.3
120.3
15.5

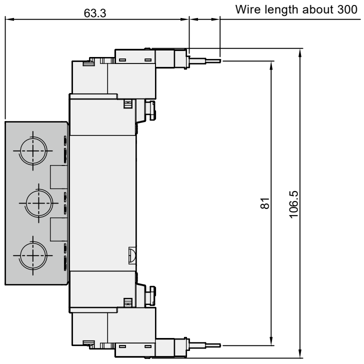

45.2
51.6
22
9.5
11.5
3-Rc 1/8
18
18
28
56

---

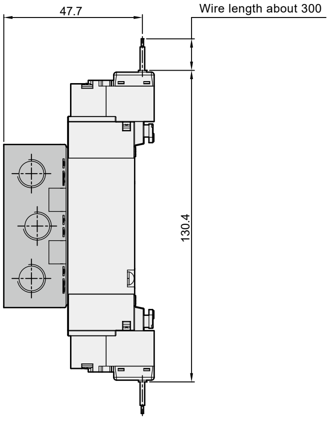
### L wire type - L


41
Wire length about 300
130.4

### T wire type - T


63.3
Wire length about 300
81
106.5

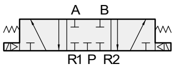
### W wire type - W


47.7
Wire length about 300
130.4

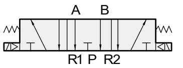
# SRB 500 series Base Mounted Solenoid Valve (One-touch fitting in option)

## Dimensions/ Standard

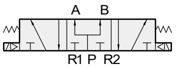
**SRB 5(3)01**
**SRB 5(4)01**
**SRB 5(5)01**
Single exhausting sub-plate
5 port 3-position double



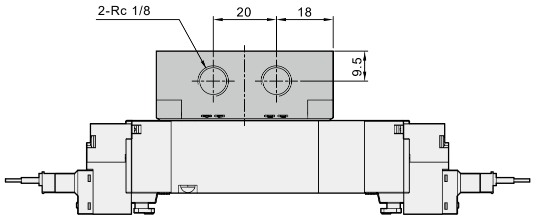
SRB 5(3)01 (Closed center) N.C.

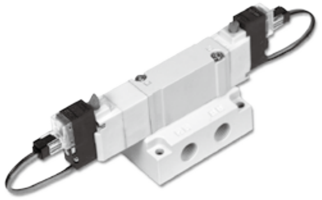


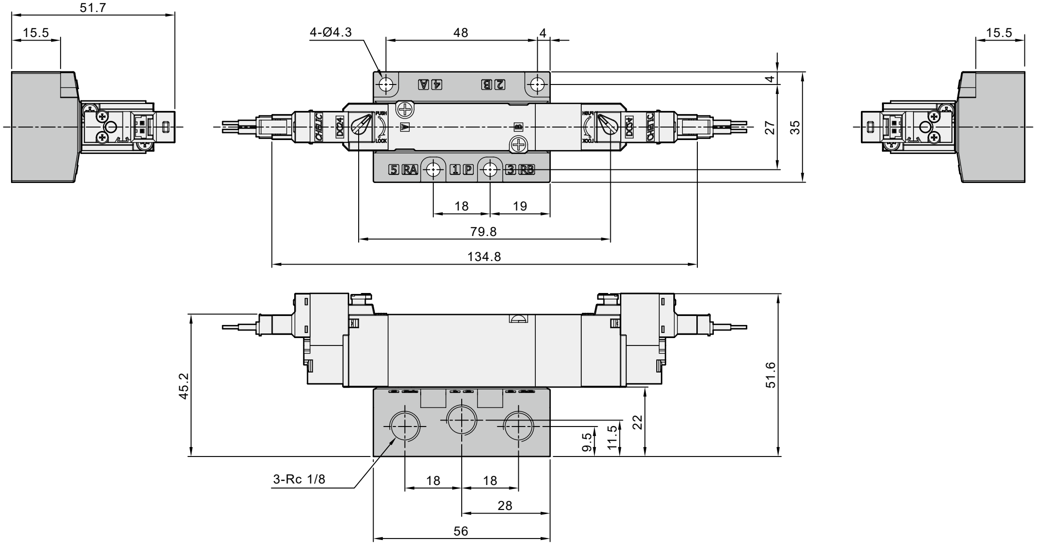
SRB 5(4)01 (Exhaust center) N.F.



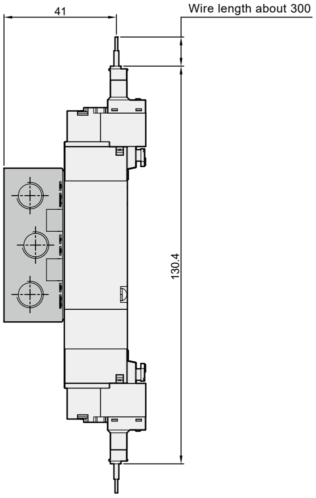
SRB 5(5)01 (Pressure center) N.O.


2-Rc 1/8
20
18
9.5

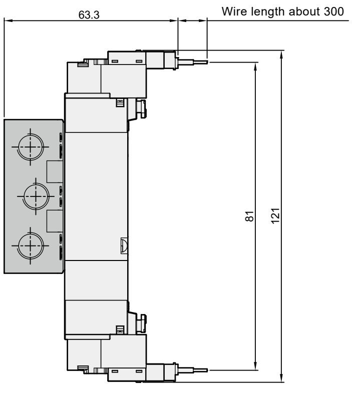



51.7
15.5
4-Ø4.3
48
4
15.5
4A
2B
5RA
1P
3RB
4
27
35
18
19
79.8
134.8
45.2
51.6
22
11.5
9.5
3-Rc 1/8
18
18
28
56

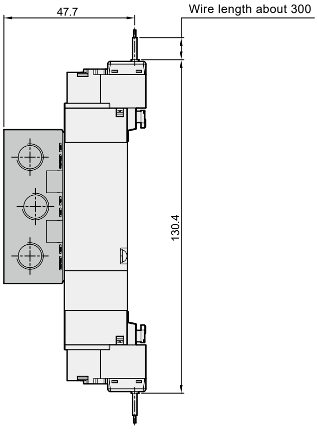
### L wire type - L


41
Wire length about 300
130.4

### T wire type - T


63.3
Wire length about 300
81
121

### W wire type - W

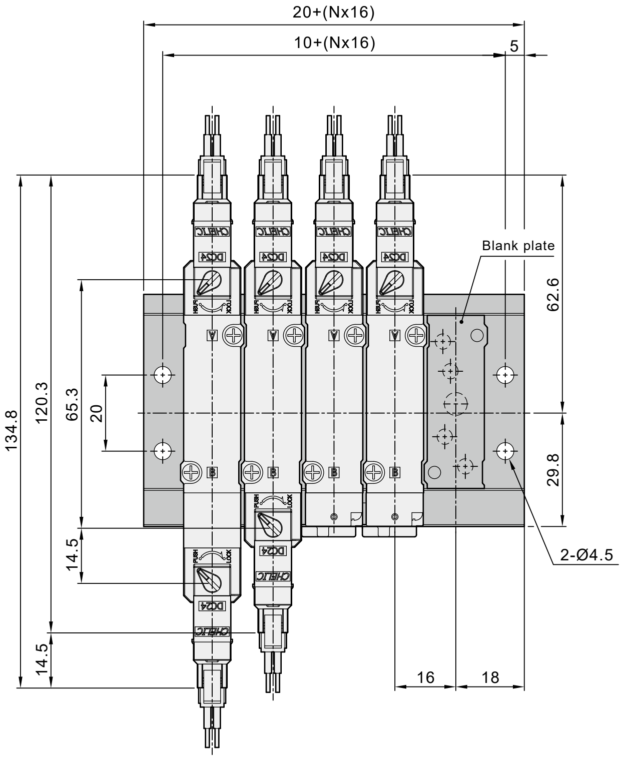

47.7
Wire length about 300
130.4

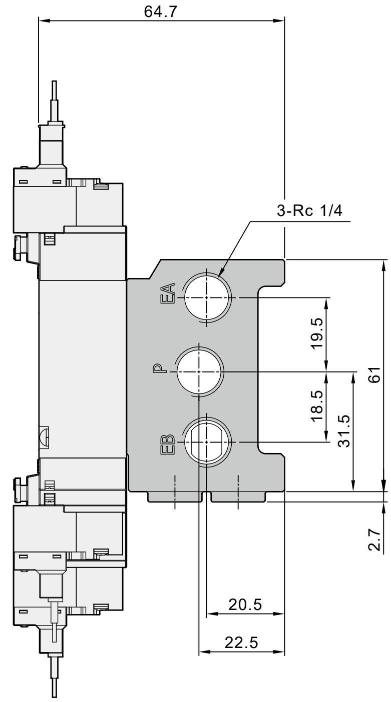
# SRB 500 series Base Mounted Solenoid Valve (One-touch fitting in option)

## Dimensions/ Manifold type

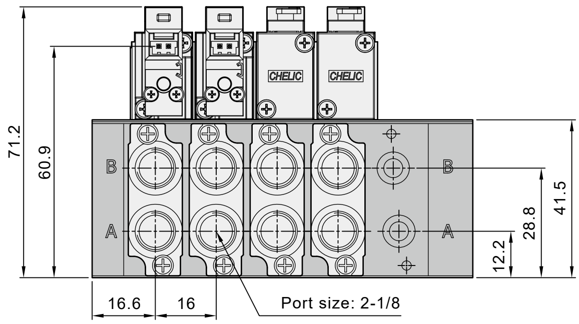
### SRB 500 series- Standard

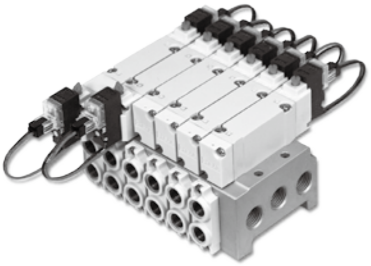
Exhaust manifold dimension


20+(Nx16)
10+(Nx16)
5
Blank plate
62.6
29.8
2-Ø4.5
134.8
120.3
65.3
20
14.5
14.5
16
18
CHELIC
DC24
PUSH
LOCK


64.7
3-Rc 1/4
EA
P
EB
19.5
18.5
31.5
61
2.7
20.5
22.5

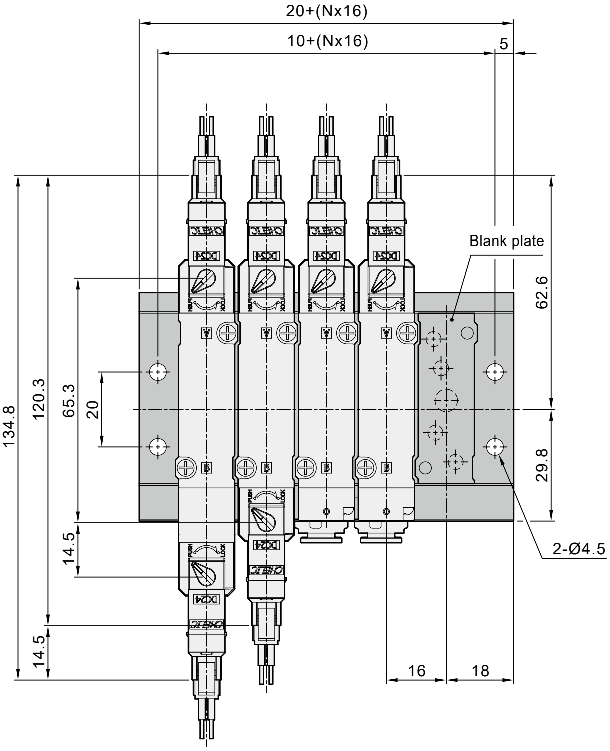
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

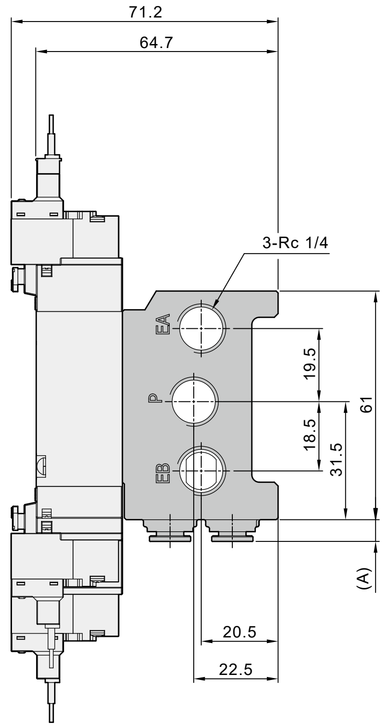

CHELIC
CHELIC
B
A
B
A
71.2
60.9
12.2
28.8
41.5
16.6
16
Port size: 2-1/8

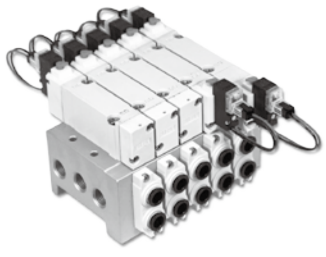


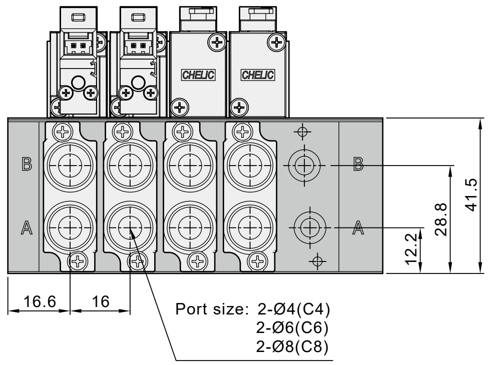
### SRB 500 series - With fitting port

Exhaust manifold dimension


20+(Nx16)
10+(Nx16)
5
Blank plate
62.6
29.8
2-Ø4.5
134.8
120.3
65.3
20
14.5
14.5
16
18


71.2
64.7
3-Rc 1/4
EA
P
EB
19.5
18.5
61
31.5
(A)
20.5
22.5




B
A
B
A
CHELIC
CHELIC
41.5
28.8
12.2
16.6
16
Port size: 2-Ø4(C4)
2-Ø6(C6)
2-Ø8(C8)

| Model | A |
|---|---|
| SRB 5100-C4 | 5.4 |
| SRB 5100-C6 | 6 |
| SRB 5100-C8 | 7.3 |

- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

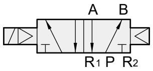
# SRB 700 series Base Mounted Solenoid Valve (One-touch fitting in option)

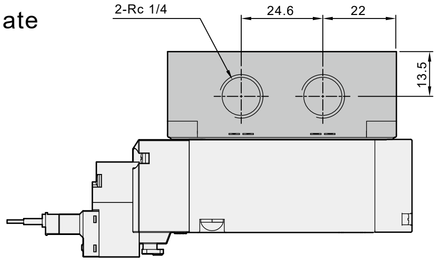
## Dimensions/ Standard

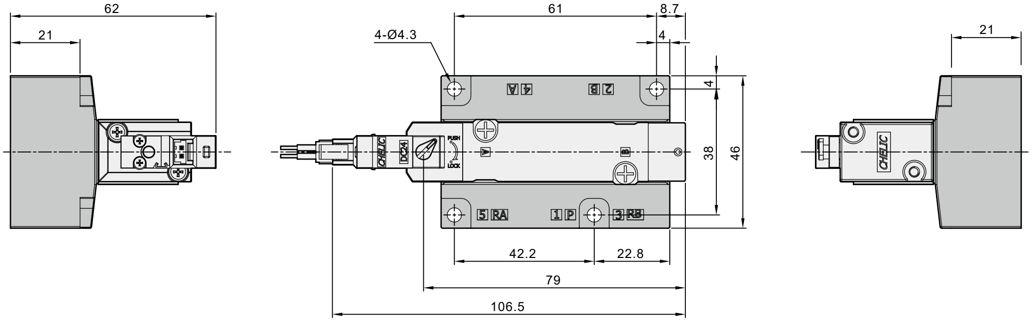
CHELIC

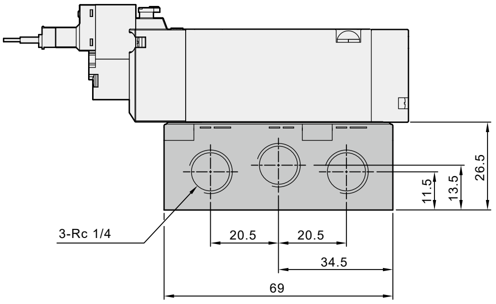
### SRB 7102

Single exhausting sub-plate
5 port 2-position single




2-Rc 1/4
24.6
22
13.5

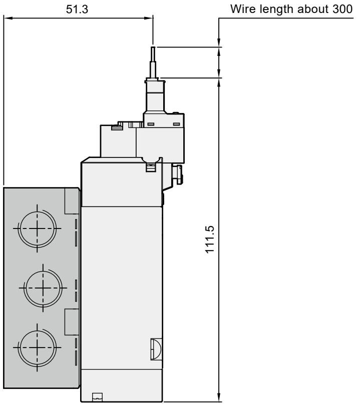

62
21
61
8.7
4-Ø4.3
4
4
38
46
4A
2B
5RA
1P
3RB
PUSH
LOCK
DC24
CHELIC
42.2
22.8
79
106.5
21

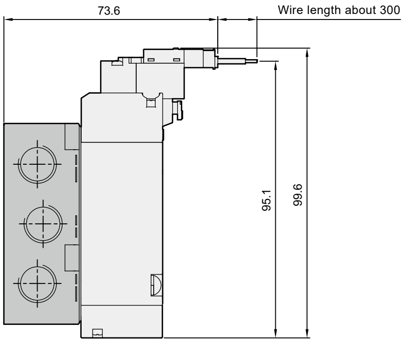

3-Rc 1/4
20.5
20.5
34.5
69
11.5
13.5
26.5

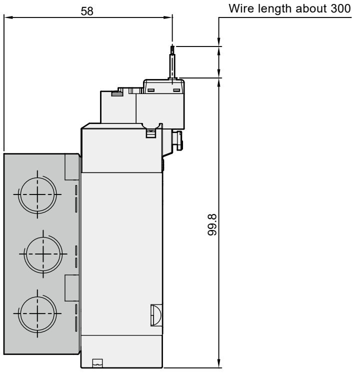
### L wire type - L

### T wire type - T

### W wire type - W


51.3
Wire length about 300
111.5


73.6
Wire length about 300
95.1
99.6


58
Wire length about 300
99.8

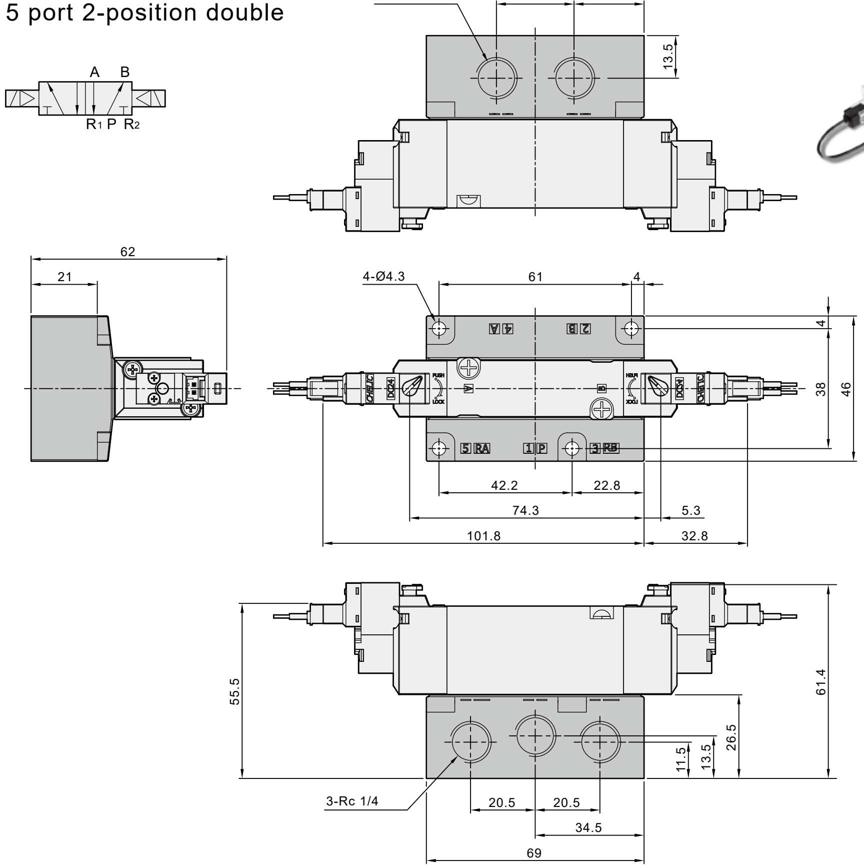
# SRB 700 series Base Mounted Solenoid Valve (One-touch fitting in option)

## Dimensions/ Standard

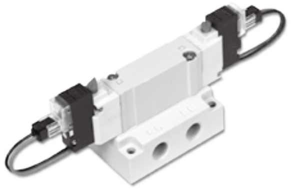
**CHELIC**

### SRB 7202

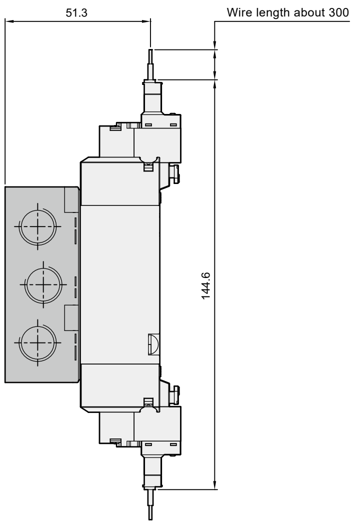
Single exhausting sub-plate
5 port 2-position double



A
B
R1
P
R2
2-Rc 1/4
24.6
22.2
13.5
62
21
4-Ø4.3
61
4
4
38
46
4A
2B
5RA
1P
3RB
42.2
22.8
74.3
5.3
101.8
32.8
55.5
61.4
26.5
11.5
13.5
3-Rc 1/4
20.5
20.5
34.5
69

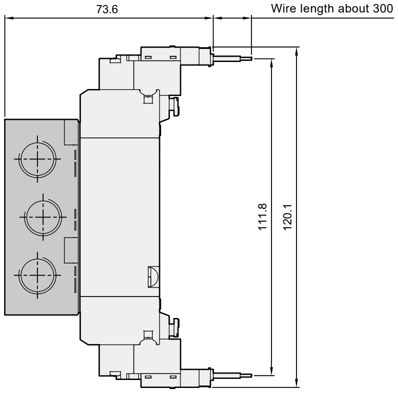


### L wire type - L



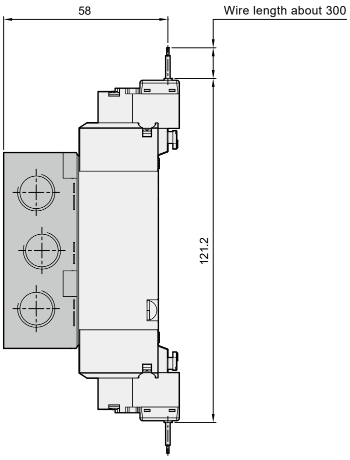
51.3
Wire length about 300
144.6

### T wire type - T



73.6
Wire length about 300
111.8
120.1

### W wire type - W



58
Wire length about 300
121.2

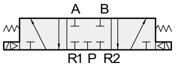
# SRB 700 series Base Mounted Solenoid Valve (One-touch fitting in option)

## Dimensions/ Standard

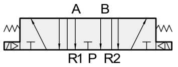
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

### SRB 7(3)02
### SRB 7(4)02
### SRB 7(5)02

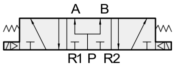
Single exhausting sub-plate
5 port 3-position double



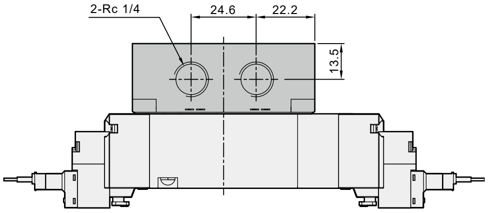
SRB 7(3)02 (Closed center) N.C.

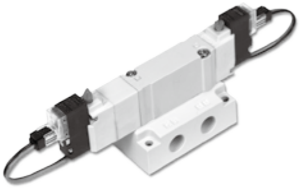


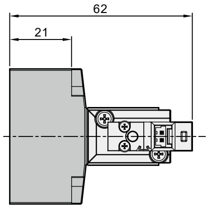
SRB 7(4)02 (Exhaust center) N.F.

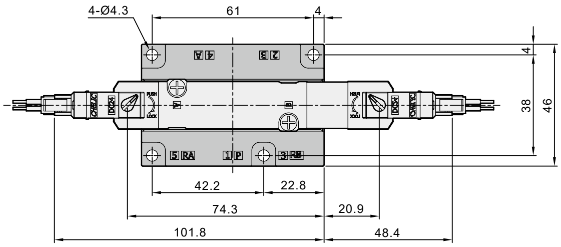


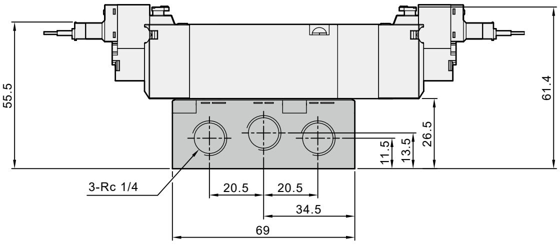
SRB 7(5)02 (Pressure center) N.O.


2-Rc 1/4
24.6
22.2
13.5



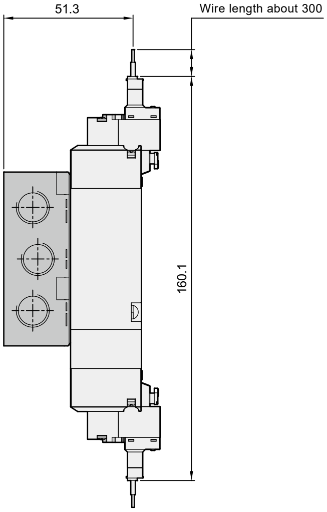



4-Ø4.3
61
4
4
38
46
4 A
2 B
5 RA
1 P
3 RB
42.2
22.8
74.3
20.9
101.8
48.4

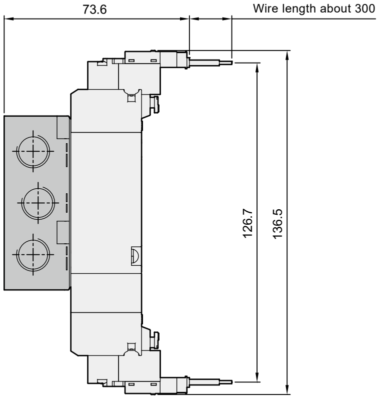

55.5
61.4
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

---

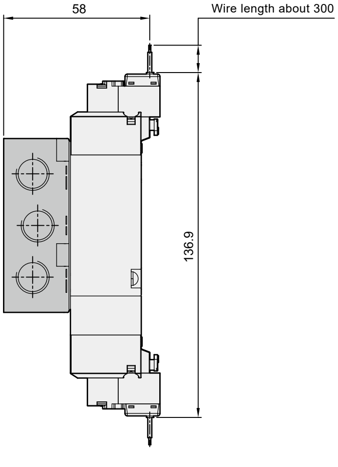
### L wire type - L


51.3
Wire length about 300
160.1

### T wire type - T


73.6
Wire length about 300
126.7
136.5

### W wire type - W

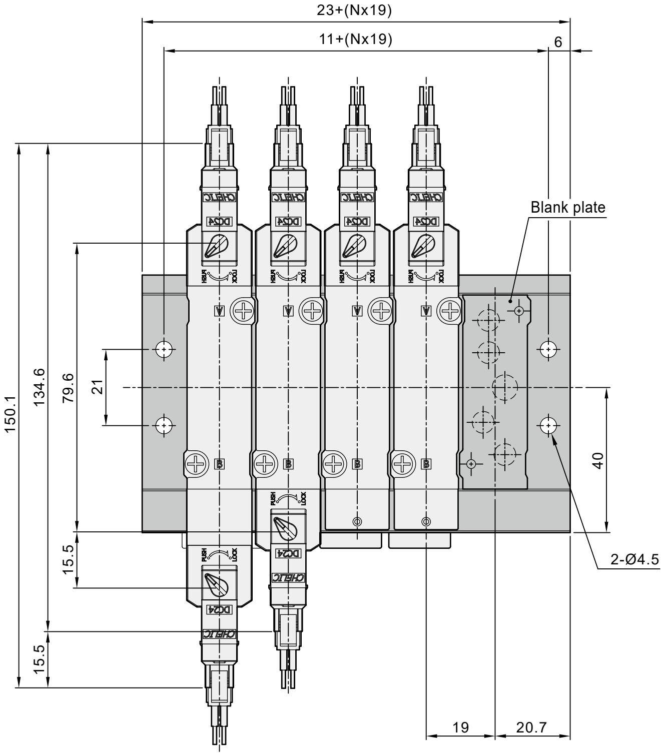

58
Wire length about 300
136.9

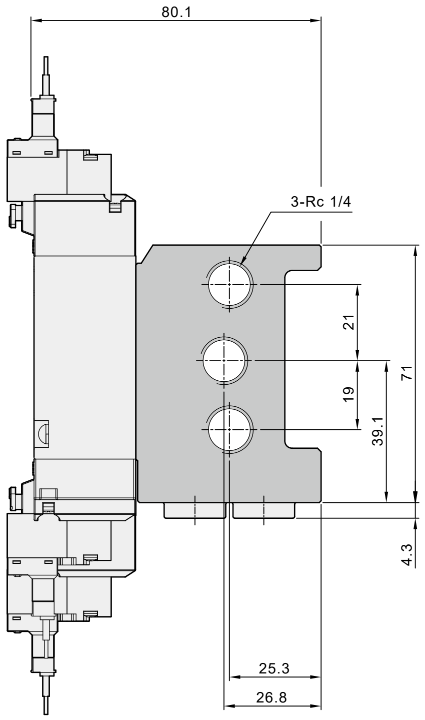
# SRB 700 series Base Mounted Solenoid Valve (One-touch fitting in option)

## Dimensions/ Manifold type

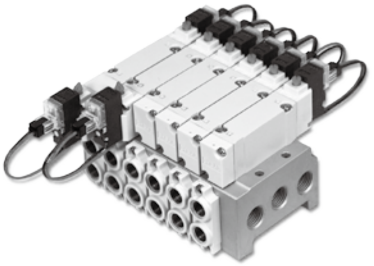
### SRB 700 series- Standard type

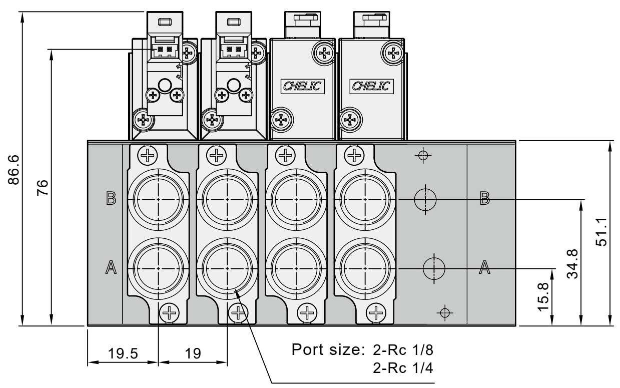
Exhaust manifold dimension


23+(Nx19)
11+(Nx19)
6
Blank plate
150.1
134.6
79.6
21
40
15.5
15.5
2-Ø4.5
19
20.7
CHELIC
DC24
PUSH
LOCK
A
B


80.1
3-Rc 1/4
21
19
71
39.1
4.3
25.3
26.8

- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

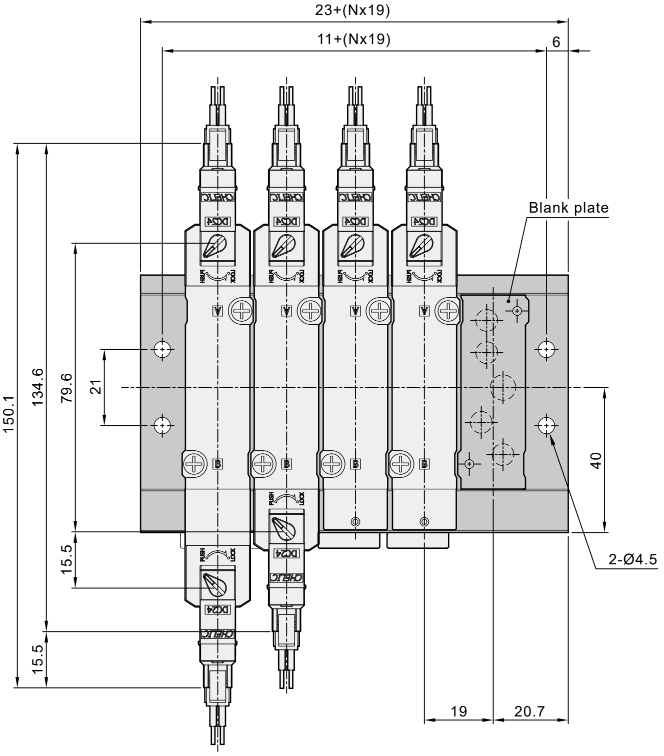


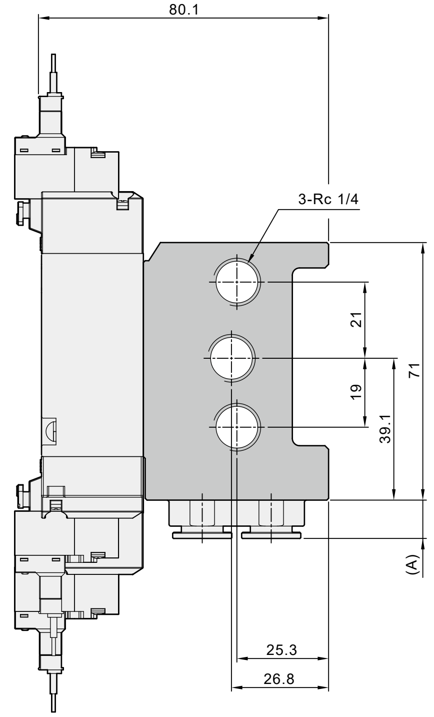

86.6
76
B
A
B
A
51.1
34.8
15.8
19.5
19
CHELIC
CHELIC

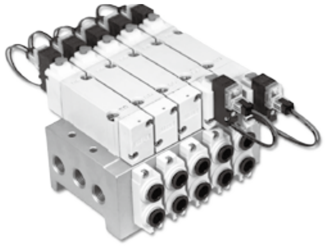
Port size: 2-Rc 1/8
2-Rc 1/4

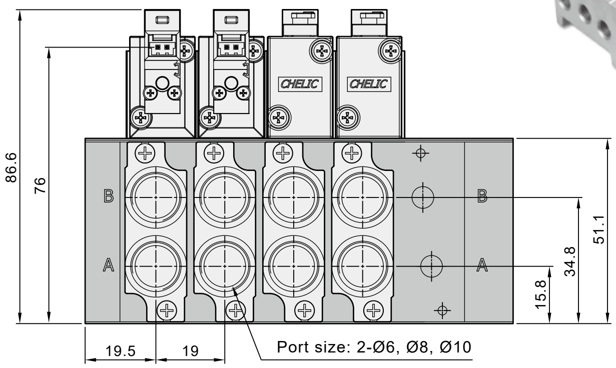
## SRB 700 series - With fitting port

Exhaust manifold dimension


23+(Nx19)
11+(Nx19)
6
Blank plate
150.1
134.6
79.6
21
40
15.5
15.5
2-Ø4.5
19
20.7
CHELIC
DC24
PUSH
LOCK
A
B


80.1
3-Rc 1/4
21
19
71
39.1
(A)
25.3
26.8




86.6
76
B
A
B
A
CHELIC
51.1
34.8
15.8
19.5
19
Port size: 2-Ø6, Ø8, Ø10

| Model | A |
|---|---|
| SRB 7100-C6 | 5.4 |
| SRB 7100-C8 | 5.6 |
| SRB 7100-C10 | 10.9 |

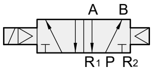
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

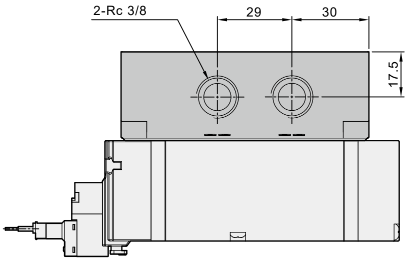
# SRB 900 series Base Mounted Solenoid Valve (One-touch fitting in option)

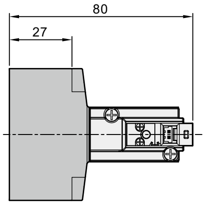
## Dimensions/ Standard

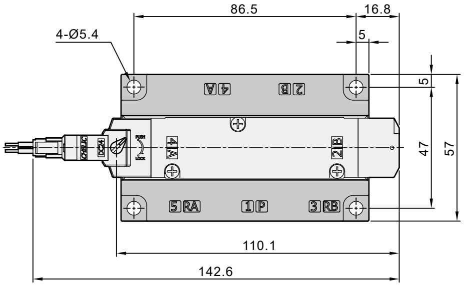
### SRB 9103

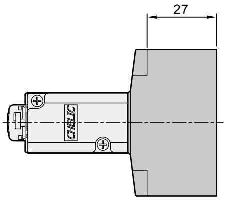
Single exhausting sub-plate
5 port 2-position single

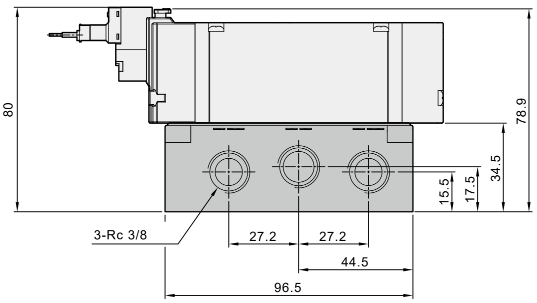



2-Rc 3/8
29
30
17.5

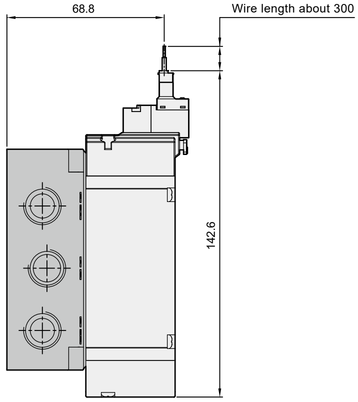



86.5
16.8
4-Ø5.4
5
5
47
57
4 A
2 B
5 RA
1 P
3 RB
110.1
142.6

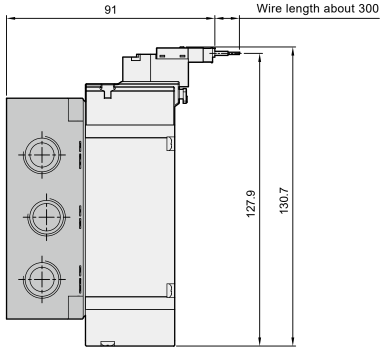



80
78.9
34.5
17.5
15.5
3-Rc 3/8
27.2
27.2
44.5
96.5

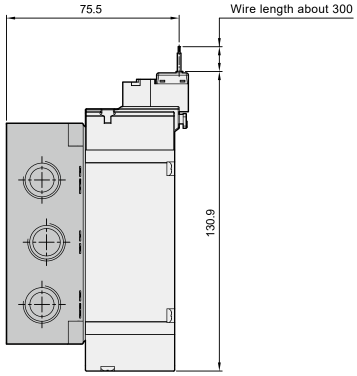
### L wire type - L


68.8
Wire length about 300
142.6

### T wire type - T


91
Wire length about 300
127.9
130.7

### W wire type - W


75.5
Wire length about 300
130.9

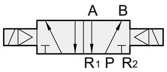
# SRB 900 series Base Mounted Solenoid Valve (One-touch fitting in option)

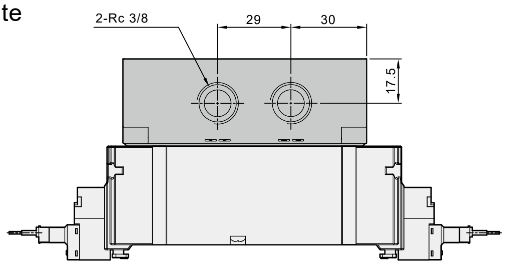
## Dimensions/ Standard

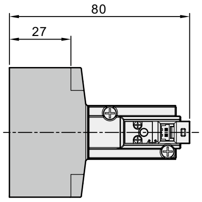
CHELIC

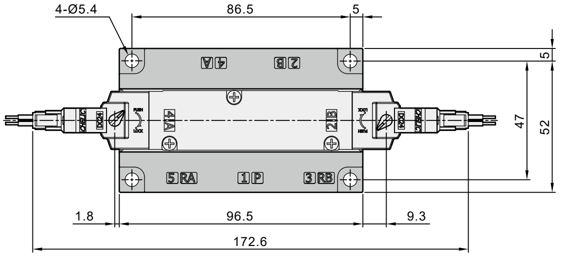
### SRB 9203

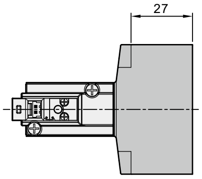
Single exhausting sub-plate
5 port 2-position double

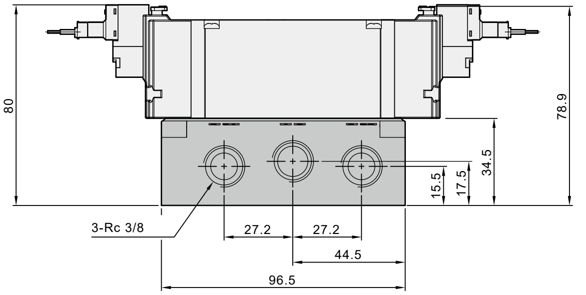



2-Rc 3/8
29
30
17.5



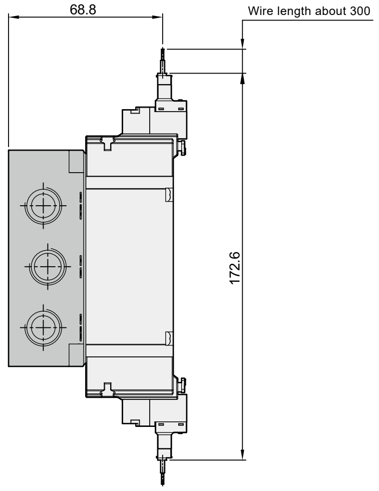

4-Ø5.4
86.5
5
5
47
52
4A
2B
5RA
1P
3RB
1.8
96.5
9.3
172.6



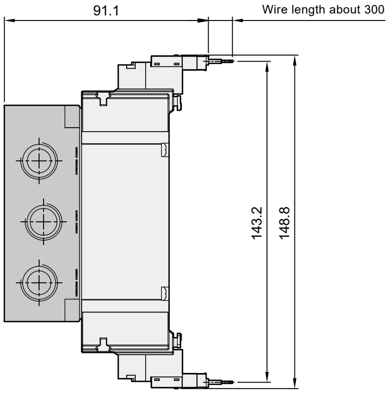

80
78.9
34.5
17.5
15.5
3-Rc 3/8
27.2
27.2
44.5
96.5

---

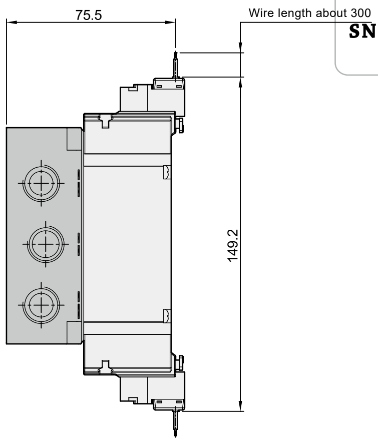
### L wire type - L


68.8
Wire length about 300
172.6

### T wire type - T


91.1
Wire length about 300
143.2
148.8

### W wire type - W

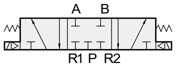

75.5
Wire length about 300
149.2

# SRB 900 series Base Mounted Solenoid Valve (One-touch fitting in option)

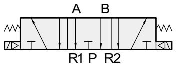
## Dimensions/ Standard

### SRB 9(3)03
### SRB 9(4)03
### SRB 9(5)03

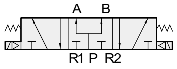
Single exhausting sub-plate
5 port 3-position double



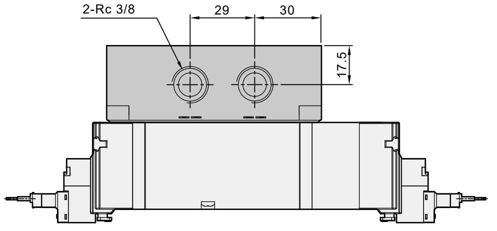
SRB 9(3)03 (Closed center) N.C.

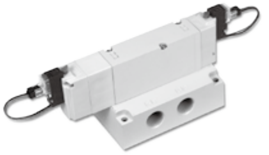


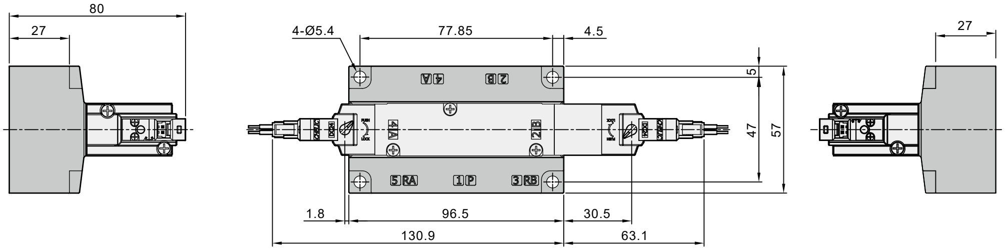
SRB 9(4)03 (Exhaust center) N.F.

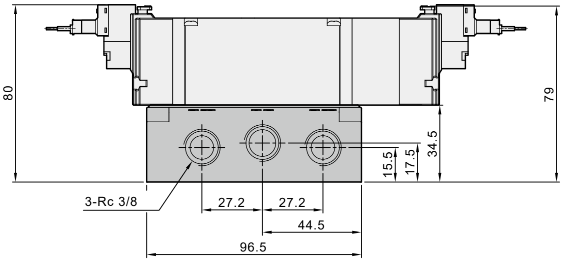


SRB 9(5)03 (Pressure center) N.O.

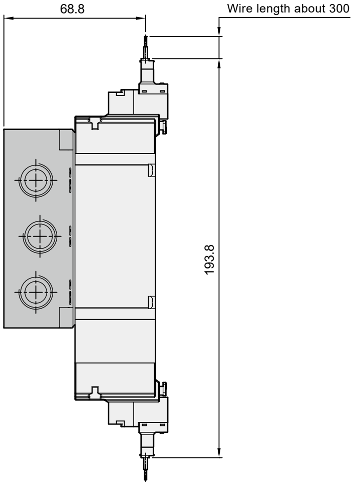

2-Rc 3/8
29
30
17.5



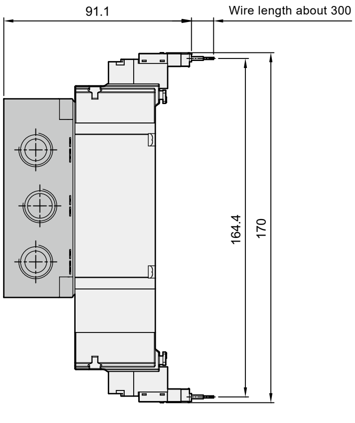

80
27
4-Ø5.4
77.85
4.5
4A
2B
5RA
1P
3RB
5
47
57
1.8
96.5
30.5
130.9
63.1
27


80
79
15.5
17.5
34.5
3-Rc 3/8
27.2
27.2
44.5
96.5

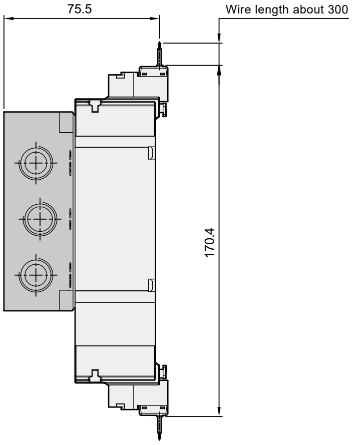
### L wire type - L


68.8
Wire length about 300
193.8

### T wire type - T

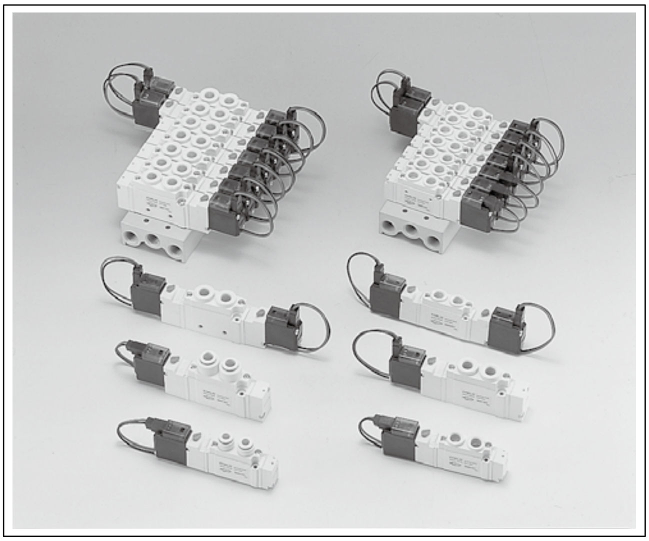

91.1
Wire length about 300
164.4
170

### W wire type - W


75.5
Wire length about 300
170.4

# Directional control — SM series Base Mounted Solenoid Valve

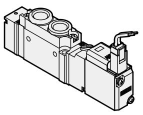
## SM5000, SM7000, SM9000 Solenoid Valve



Provide CAD external dimension.

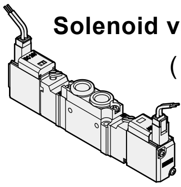
Small size, big flow rate!
High responding time below 10ms
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.

**Solenoid valve single coil**
( 5 port 2-position )



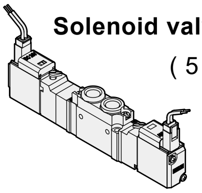
| | | |
|---|---|---|
| **SM - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-1.106** |
| **SM - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.114** |
| **SM - 9000 series** | **Rc1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-1.122** |

**Solenoid valve double coils**
( 5 port 2-position )



| | | |
|---|---|---|
| **SM - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-1.107** |
| **SM - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.115** |
| **SM - 9000 series** | **Rc1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-1.123** |

**Solenoid valve double coils**
( 5 port 3-position )



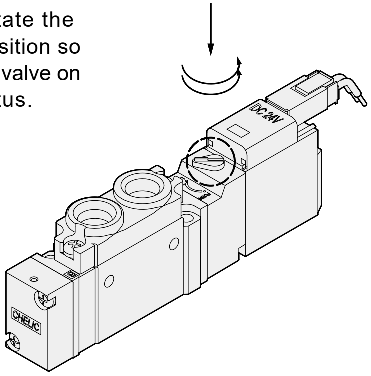
| | | |
|---|---|---|
| **SM - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-1.108** |
| **SM - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.116** |
| **SM - 9000 series** | **Rc1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-1.124** |

# General Cautions for SM Solenoid Valve series

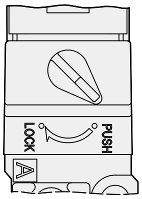
Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Operation and Instruction for manual for manual override

- Press down manual button to rotate the switching position so that solenoid valve on the lock status.



- The purpose of pressing the manual button is to provide manual test or test run adjustment. It is not for normal use.
- Must be check the lock status if it has been lifted. Manually button must be at **Push** position that it can be normal used for electronic control.



## AV220V Solenoid Coil

**WARNING:** Electrification, High temperature and Instruction

- SM solenoid coil with built-in rectifying circuit and electrified indicator light, with specification of AC220V, the built-in circuit is heated when electrified with high surface temperature (It is within safety range, Don't worry ), Please avoid touching it.

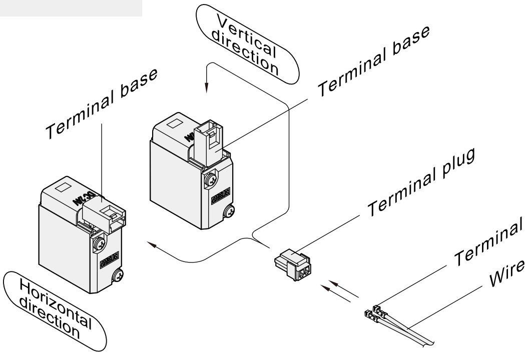
## Sage surge voltage protection circuit

| | |
|---|---|
| DC 12V | Below ±0.1 mA |
| DC 24V | Below ±0.1 mA |
| AC 110V | Below ±0.1 mA |
| AC 220V | Below ±0.1 mA |

## Method and description of the selection of terminal board

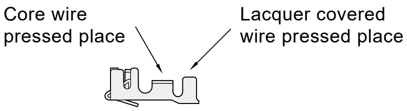
(1) Direction ( Horizontal& Vertical )

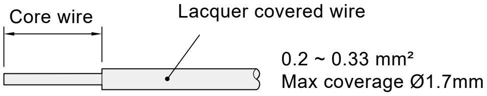
(2) Terminal and Wire ( Pressed )



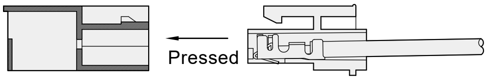
# General Cautions for SM Solenoid Valve series

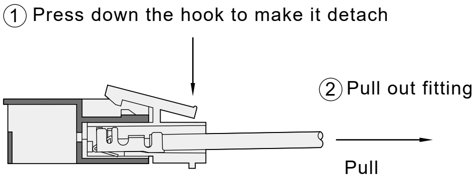
(3) Terminal and Press chain ( Device positioning )


Core wire
pressed place
Lacquer covered
wire pressed place


Core wire
Lacquer covered wire
0.2 ~ 0.33 mm²
Max coverage Ø1.7mm

(4) Press chain and Socket ( Pressed and Pulled )

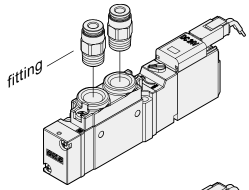



① Press down the hook to make it detach
② Pull out fitting
Pull

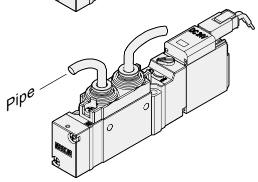
- Note : It will cause plug and coil damaged because of pulling out fitting by wrong way.

## Selection and use of the through hole connection plate

- Select " thread type connection plate ", may select various fitting in discretion and fixed by screw thread.



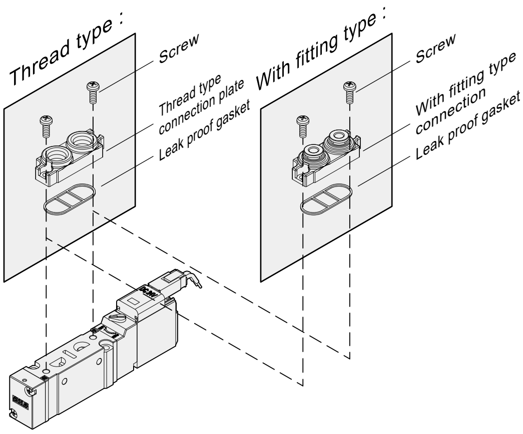
- Select " connection plate with fitting ", first select the size of pipe diameter; just insert the pipe into position while assembling, need no fitting tightening.



- Selection specification of the through hole connection plate :

| Model | Thread type | | | Piping of fitting type | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1/8 | 1/4 | 3/8 | Ø4 | Ø6 | Ø8 | Ø10 | Ø12 |
| SM5000 | ● | – | – | ● | ● | ● | – | – |
| SM7000 | ● | ● | – | – | ● | ● | ● | – |
| SM9000 | – | ● | ● | – | – | ● | ● | ● |

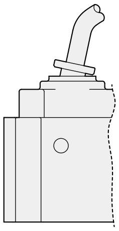
Note : The solenoid valve with fitting that the height is lower and easy to install.


Thread type :
Screw
Thread type connection plate
Leak proof gasket
With fitting type :
Screw
With fitting type connection
Leak proof gasket

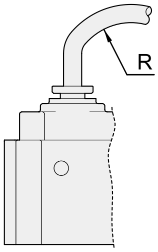
# General Cautions for SM Solenoid Valve series

Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

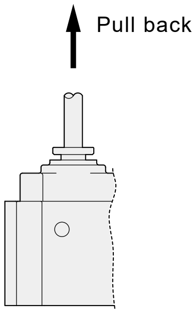
## Attention for connecting pipe application



( X )

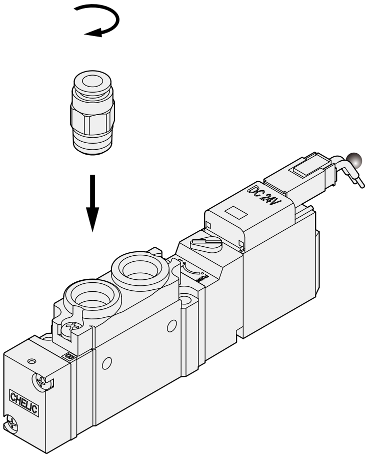


( ○ )



- The pressed piece should not skew at bent portion which will tend to leakage and rapture.
- According to the pipe diameter as illustrated to prevent too small radius resulting to leakage and poor flow of the fluid.

- There are two stages tighter feeling while inserting the pipe, this in normal, the pipe must be inserted to very end.
- Pull back the pipe while finish inserting to make sure tightness.

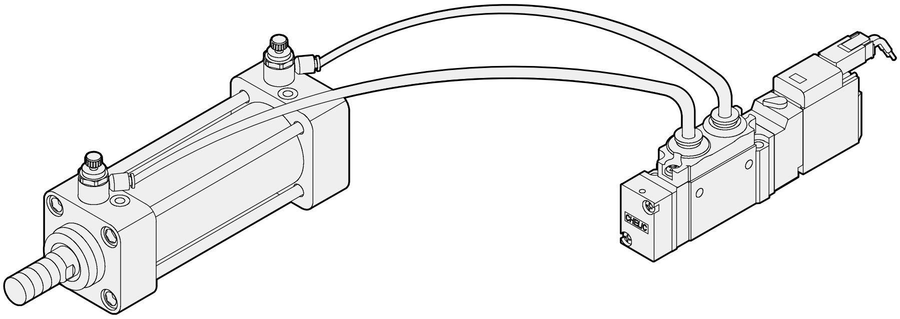


- Please secure the solenoid valve before inserting the fitting.
- Never press the solenoid valve when tightening which cause damage at the joint.

# SM series Body Ported Solenoid Valve

## Flow rate and applicable cylinder

### **Applicable cylinder** ( Reference )



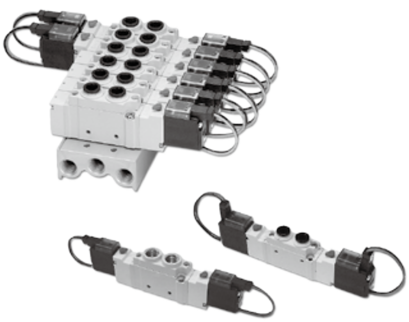
- Max. driving speed of the cylinder ( Length of piping: 1m, diameter Ø8 )

| Model | CV Value | Cylinder speed mm/s | SDA, DB, FDA series | | | | | | DMB, DN, DU series | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ø12 | Ø16 | Ø20 | Ø25 | Ø32 | Ø40 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 |
| **SM5000** | 0.5 | 150 | | | | | | | | | ● | | |
| | | 300 | | | | | | | | ● | | | |
| | | 450 | | | | | ● | ● | ● | | | | |
| | | 600 | | | | ● | | | | | | | |
| | | 750 | | | ● | | | | | | | | |
| | | 900 | ● | ● | | | | | | | | | |
| **SM7000** | 0.9 | 150 | | | | | | | | | | | ● |
| | | 300 | | | | | | | | | | ● | |
| | | 450 | | | | | | ● | | | ● | | |
| | | 600 | | | | | ● | | | ● | | | |
| | | 750 | | | | ● | | | ● | | | | |
| | | 900 | | | ● | | | | | | | | |
| **SM9000** | 1.7 | 150 | | | | | | | | | | | ● |
| | | 300 | | | | | | | | | ● | ● | |
| | | 450 | | | | | | ● | ● | ● | | | |
| | | 600 | | | ● | ● | ● | | | | | | |
| | | 750 | | | | | | | | | | | |
| | | 900 | | | | | | | | | | | |

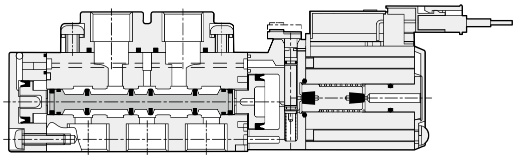
# SM 500, 700, 900 series Body Ported Solenoid Valve

## Product features

**CHELIC**



### Internal structure



### Specification

| Item / Model | SM5000 | SM7000 | SM9000 |
|---|---|---|---|
| Fluid | Air | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | |
| Pilot type | Air operated | | |
| Number of positions | 5/2-position, 5/3-position | | |
| Type of actuation | Normally closed | | |
| Effective orifice mm²(CV) | 9 (0.5) | 16.2 ( 0.9 ) | 30.6 (1.7) |
| Manual override | Push and lock | | |
| Port size | Rc 1/8, Ø4, Ø6, Ø8 | Rc 1/8, Rc 1/4, Rc 3/8, Ø6, Ø8, Ø10, Ø12 | |
| Lubrication | Lubrication free type | | |

### Code of order

**SM** – **5** – **10** – **1** – ‌ – **110** – **L** – **M** **2**

**Model**

SM :
Solenoid valve

**Model number**

5: 5000 series
7: 7000 series
9: 9000 series

**Coil q'ty**

10:Single
20:Double

30: Closed center
40: Exhaust center
50: Pressure center

5/3-position double coils only

**Port size**

| Thread type (standard) | | |
|---|---|---|
| Mark | Thread | Model |
| 1 | Rc 1/8 | SM5000 |
| 1 | Rc 1/8 | SM7000 |
| 2 | Rc 1/4 | |
| 2 | Rc 1/4 | SM9000 |
| 3 | Rc 3/8 | |

For A and B port

| | |
|---|---|
| 0 | With fitting port |

**With fitting port**

| Mark | Bore size | Model |
|---|---|---|
| C4 | Ø4 | SM5000 |
| C6 | Ø6 | |
| C8 | Ø8 | |
| C6 | Ø6 | SM7000 |
| C8 | Ø8 | |
| C10 | Ø10 | |
| C8 | Ø8 | SM9000 |
| C10 | Ø10 | |
| C12 | Ø12 | |

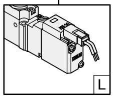
None :
Standard type
(Thread type)

**Voltage type**

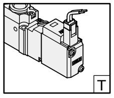
Standard :

| | |
|---|---|
| 12V DC | 1.5W |
| 24V DC | 1.5W |
| 110V AC | 0.9VA |
| 220V AC | 1.8VA |

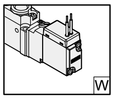
**Electrical entry**



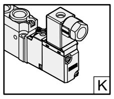
(With wire length 300mm)



(With wire length 300mm)

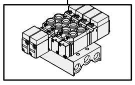


Grommet
(With wire length 300mm)



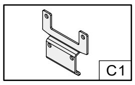
DIN Terminal
Only for AC220/ DC24 voltage

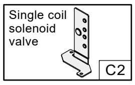
**Manifold**



None :
Without manifold

M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets



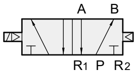


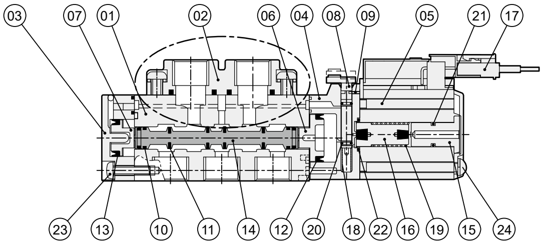
None: no bracket
C1 : Side fixing bracket
C2 : Vertical fixing bracket
SM9000 without bracket option

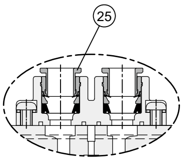
# SM 500, 700, 900 series Body Ported Solenoid Valve

## Product features

### 5 port 2-position single

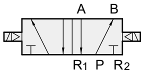


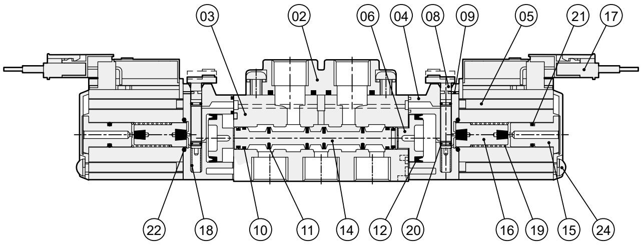

03
07
01
02
06
04
08
09
05
21
17
23
13
10
11
14
12
20
18
22
16
19
15
24



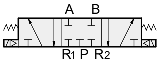
-With fitting type

### 5 port 2-position double

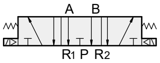



03
02
06
04
08
09
05
21
17
22
18
10
11
14
12
20
16
19
15
24

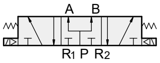
### 5 port 3-position double



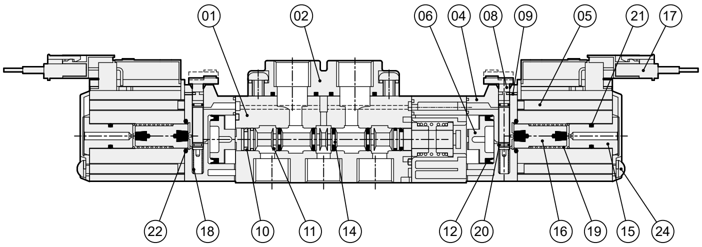
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
02
06
04
08
09
05
21
17
22
18
10
11
14
12
20
16
19
15
24

## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 14 | Shaft | Aluminum alloy |
| 02 | Top cover | Aluminum alloy | 15 | Coil insert bushing | Stainless steel |
| 03 | Rear cover | Resin | 16 | Spring bushing | Stainless steel |
| 04 | Holder | Resin | 17 | Wire plug | Resin |
| 05 | Coil | — | 18 | Manual override spring | Stainless steel |
| 06 | Holder piston | POM | 19 | Spring bushing spring | Stainless steel |
| 07 | Rear cover piston | POM | 20 | Manual override O-ring | NBR |
| 08 | Manual override | POM | 21 | Coil insert bushing O-ring | NBR |
| 09 | Position iron plate | Iron | 22 | O-ring | NBR |
| 10 | Spool packing | NBR | 23 | Rear screw | Alloy steel |
| 11 | Spool packing | NBR | 24 | Coil cover screw | Alloy steel |
| 12 | Holder piston packing | NBR | 25 | Connector | Plastic |
| 13 | Rear cover packing | NBR | | | |

Note: The main body be treated with painting.

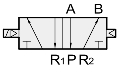
# SM 500 series Body Ported Solenoid Valve

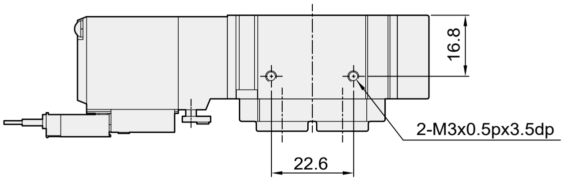
## Dimensions/ Standard

CHELIC

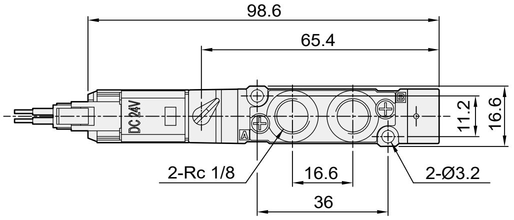
### SM 5101

5 port 2-position single

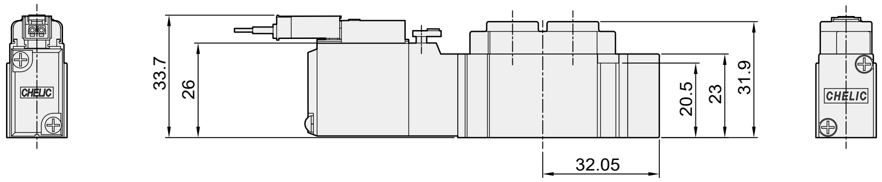




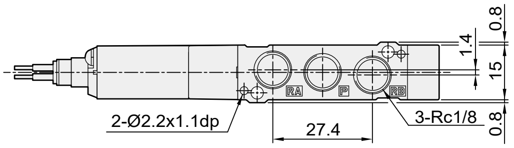
16.8
2-M3x0.5px3.5dp
22.6



98.6
65.4
DC 24V
11.2
16.6
2-Rc 1/8
16.6
2-Ø3.2
36



CHELIC
33.7
26
20.5
23
31.9
32.05
CHELIC



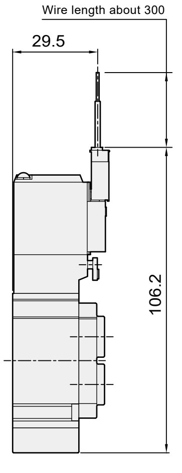
0.8
1.4
15
RA
P
RB
2-Ø2.2x1.1dp
27.4
3-Rc1/8
0.8

**L wire type -** L

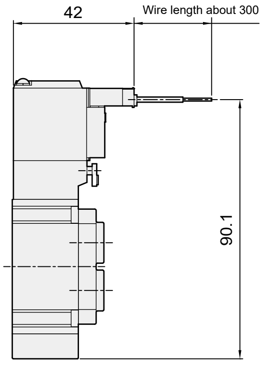
**T wire type -** T

**W wire type -** W

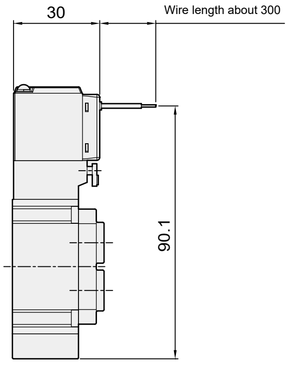
**K wire type -** K



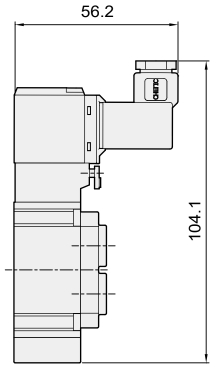
Wire length about 300
29.5
106.2



42
Wire length about 300
90.1



30
Wire length about 300
90.1

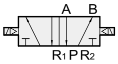


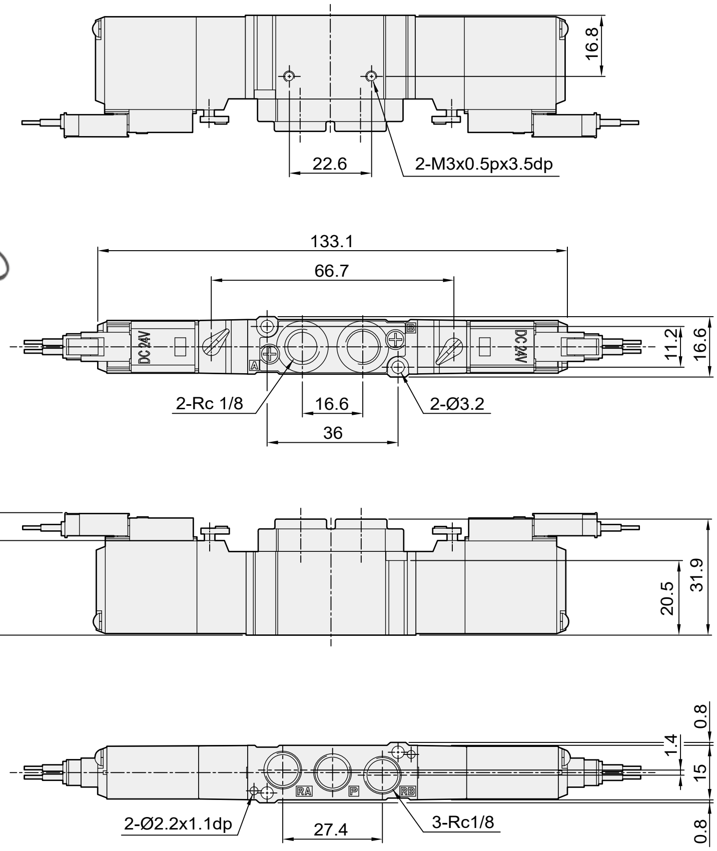
# SM 500 series Body Ported Solenoid Valve

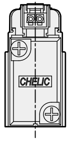
## Dimensions/ Standard

### SM 5201

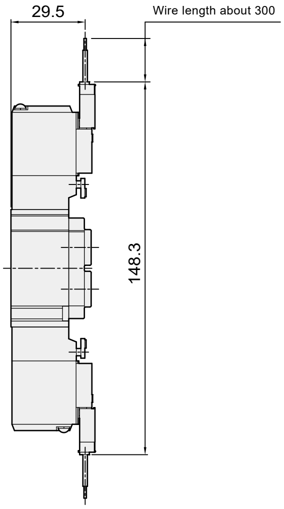
5 port 2-position double



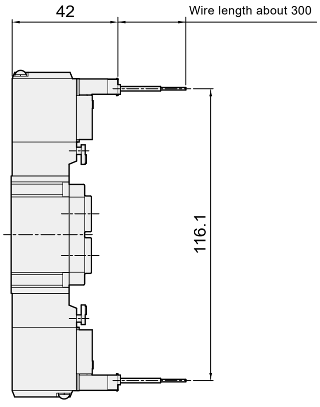

16.8
22.6
2-M3x0.5px3.5dp
133.1
66.7
DC24V
A
B
11.2
16.6
2-Rc 1/8
16.6
36
2-Ø3.2
33.7
26
20.5
31.9
0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
27.4
3-Rc1/8



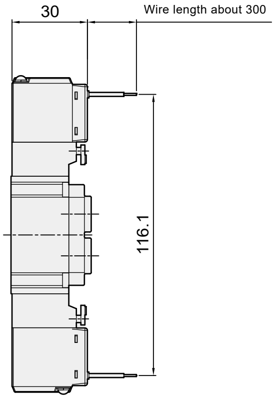
**L wire type - L**


29.5
Wire length about 300
148.3

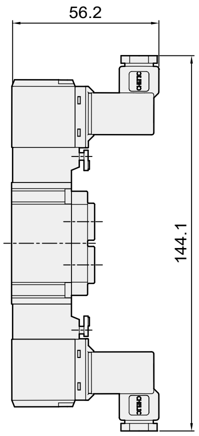
**T wire type - T**


42
Wire length about 300
116.1

**W wire type - W**


30
Wire length about 300
116.1

**K wire type - K**

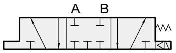


# SM 500 series Body Ported Solenoid Valve

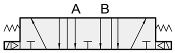
## Dimensions/ Standard

### SM 5(3)01
### SM 5(4)01
### SM 5(5)01

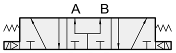
5 port 3-position double



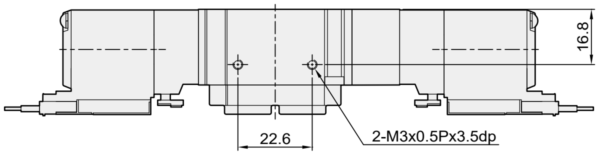
SM-5301 (Closed center) N.C.

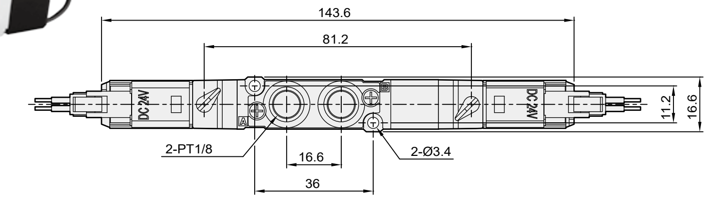


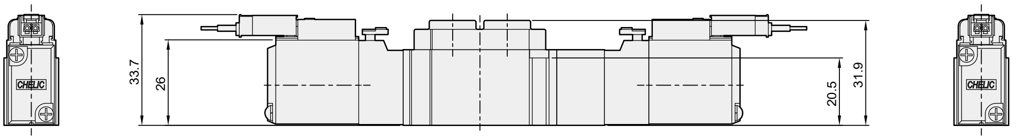
SM-5401 (Exhaust center) N.F.

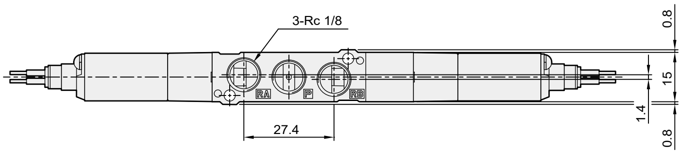


SM-5501 (Pressure center) N.O.


16.8
22.6
2-M3x0.5Px3.5dp


143.6
81.2
DC24V
DC24V
11.2
16.6
2-PT1/8
16.6
36
2-Ø3.4


CHELIC
33.7
26
20.5
31.9
CHELIC

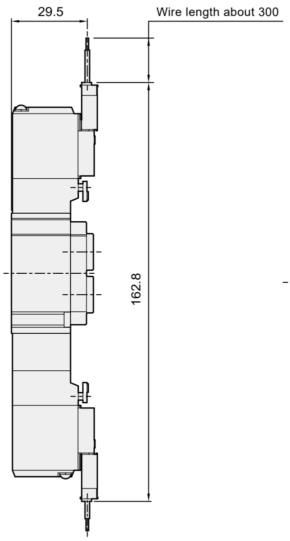

3-Rc 1/8
RA
P
RB
0.8
15
1.4
0.8
27.4

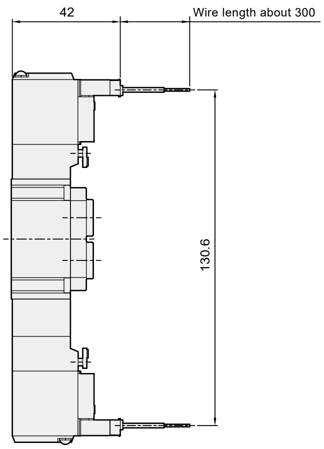
**L wire type -** L

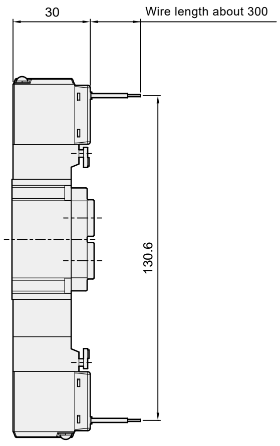
**T wire type -** T

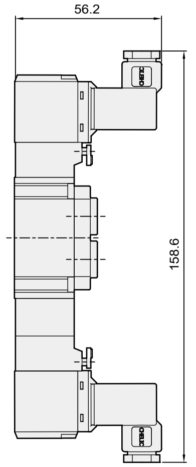
**W wire type -** W

**K wire type -** K


29.5
Wire length about 300
162.8


42
Wire length about 300
130.6


30
Wire length about 300
130.6

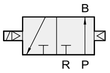


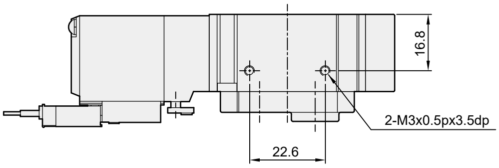
# SM 500 series Body Ported Solenoid Valve

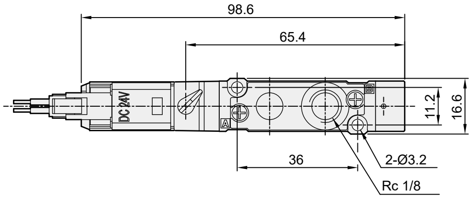
## Dimensions/ Standard/ 3 port 2 position

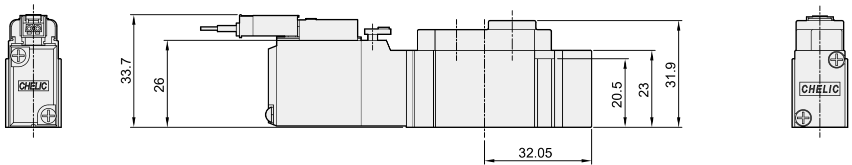
### SM 5101 - TA

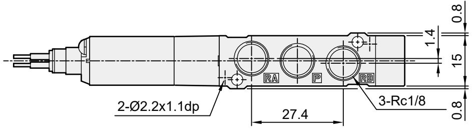
3 port 2-position single




16.8
2-M3x0.5px3.5dp
22.6

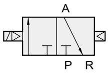

98.6
65.4
DC 24V
11.2
16.6
36
2-Ø3.2
Rc 1/8

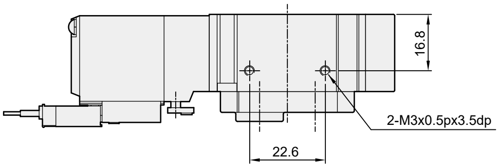

CHELIC
33.7
26
20.5
23
31.9
32.05
CHELIC

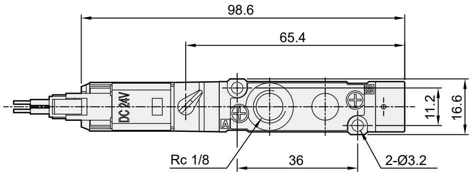

0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
27.4
3-Rc1/8

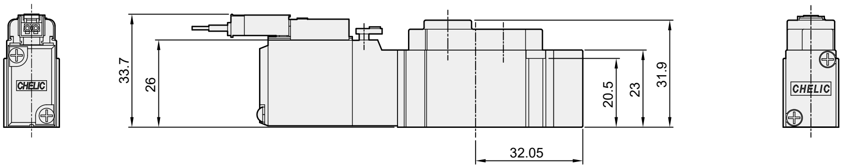
### SM 5101 - TB

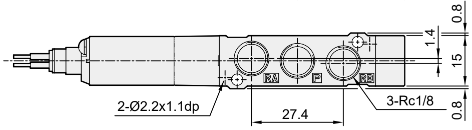
3 port 2-position single




16.8
2-M3x0.5px3.5dp
22.6


98.6
65.4
DC 24V
11.2
16.6
Rc 1/8
36
2-Ø3.2


CHELIC
33.7
26
20.5
23
31.9
32.05
CHELIC

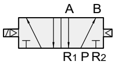

0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
27.4
3-Rc1/8

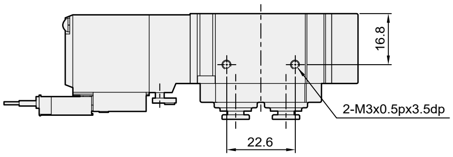
# SM 500 series Body Ported Solenoid Valve

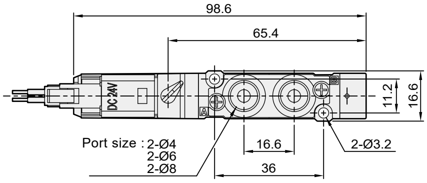
## Dimensions/ With fitting

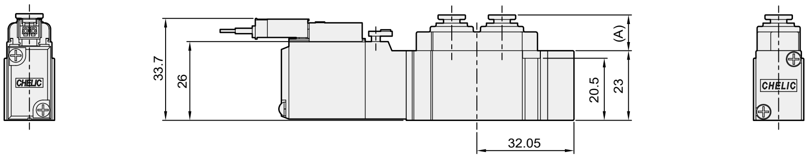
### SM 5100-C4(Ø4)
### SM 5100-C6(Ø6)
### SM 5100-C8(Ø8)

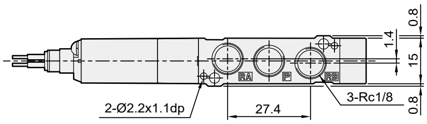
5 port 2-position single




16.8
2-M3x0.5px3.5dp
22.6


98.6
65.4
DC24V
A
B
11.2
16.6
Port size : 2-Ø4
2-Ø6
2-Ø8
16.6
36
2-Ø3.2

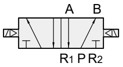

CHELIC
33.7
26
(A)
20.5
23
32.05
CHELIC

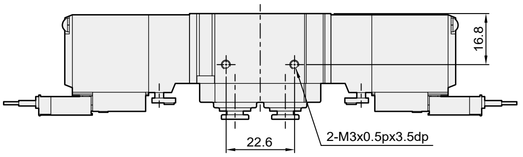

0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
27.4
3-Rc1/8

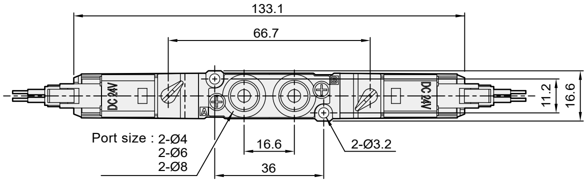
| Model | A |
|---|---|
| SM5100-C4 | 11.6 |
| SM5100-C6 | 12.2 |
| SM5100-C8 | 13.5 |

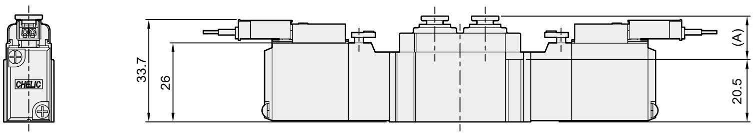
### SM 5200-C4(Ø4)
### SM 5200-C6(Ø6)
### SM 5200-C8(Ø8)

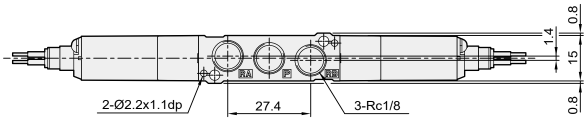
5 port 2-position double




16.8
22.6
2-M3x0.5px3.5dp


133.1
66.7
DC24V
A
B
DC24V
11.2
16.6
Port size : 2-Ø4
2-Ø6
2-Ø8
16.6
36
2-Ø3.2


CHELIC
33.7
26
(A)
20.5


0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
27.4
3-Rc1/8

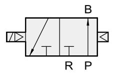
| Model | A |
|---|---|
| SM5200-C4 | 11.6 |
| SM5200-C6 | 12.2 |
| SM5200-C8 | 13.5 |

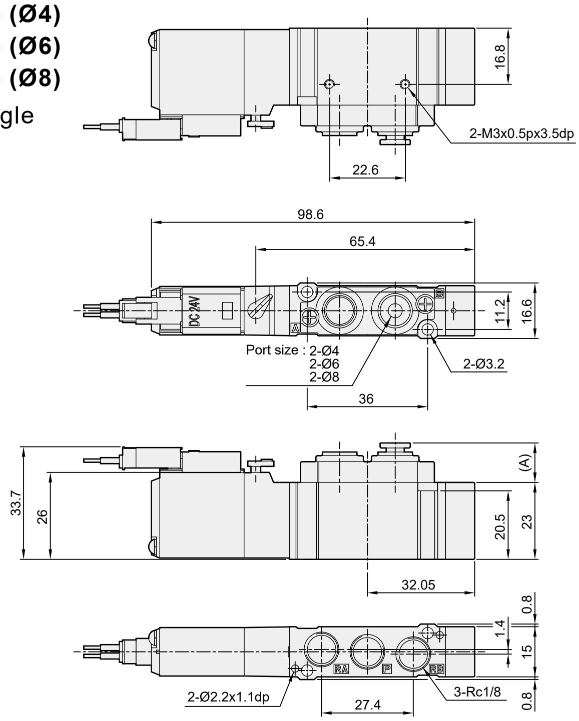
# SM 500 series Body Ported Solenoid Valve

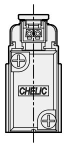
## Dimensions/ With fitting/ 3 port 2 position

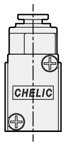
### SM 5100 - C4 - TA - (Ø4)
### SM 5100 - C6 - TA - (Ø6)
### SM 5100 - C8 - TA - (Ø8)

3 port 2-position single




16.8
2-M3x0.5px3.5dp
22.6
98.6
65.4
DC24V
A
11.2
16.6
Port size : 2-Ø4
2-Ø6
2-Ø8
2-Ø3.2
36
33.7
26
(A)
20.5
23
32.05
0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
3-Rc1/8
27.4



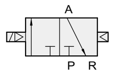


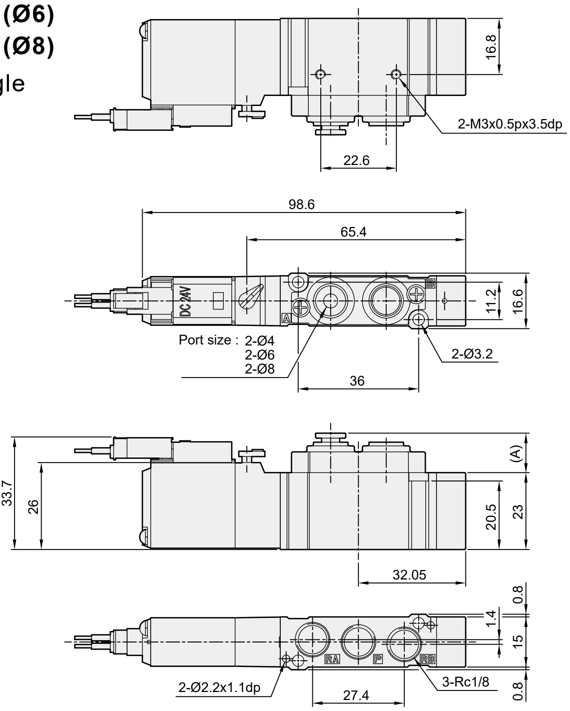
| Model | A |
|---|---|
| SM5100-C4-TA | 11.6 |
| SM5100-C6-TA | 12.2 |
| SM5100-C8-TA | 13.5 |

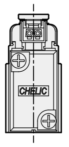
---

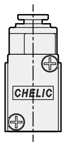
### SM 5100 - C4 - TB - (Ø4)
### SM 5100 - C6 - TB - (Ø6)
### SM 5100 - C8 - TB - (Ø8)

3 port 2-position single




16.8
2-M3x0.5px3.5dp
22.6
98.6
65.4
DC24V
A
11.2
16.6
Port size : 2-Ø4
2-Ø6
2-Ø8
2-Ø3.2
36
33.7
26
(A)
20.5
23
32.05
0.8
1.4
15
0.8
RA
P
RB
2-Ø2.2x1.1dp
3-Rc1/8
27.4





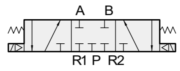
| Model | A |
|---|---|
| SM5100-C4-TB | 11.6 |
| SM5100-C6-TB | 12.2 |
| SM5100-C8-TB | 13.5 |

# SM 500 series Body Ported Solenoid Valve

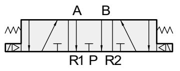
## Dimensions/ With fitting

**CHELIC**

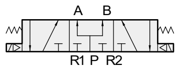
**SM 5(3)00-C4(Ø4), C6(Ø6), C8(Ø8)**
**SM 5(4)00-C4(Ø4), C6(Ø6), C8(Ø8)**
**SM 5(5)00-C4(Ø4), C6(Ø6), C8(Ø8)**
5 port 3-position double



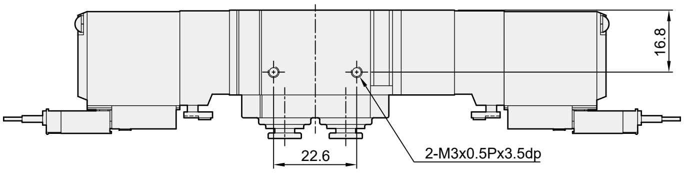
SM-5(3)00 (Closed center) N.C.

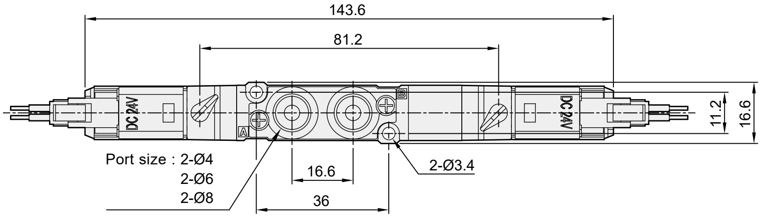


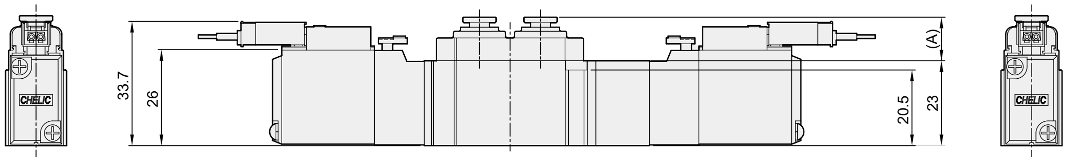
SM-5(4)00 (Exhaust center) N.F.

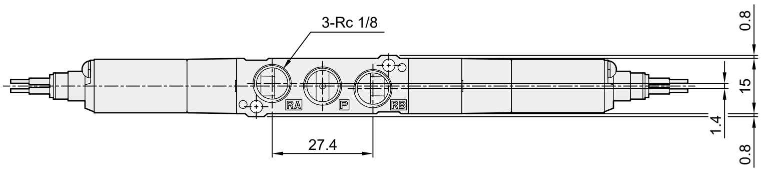


SM-5(5)00 (Pressure center) N.O.


16.8
22.6
2-M3x0.5Px3.5dp


143.6
81.2
DC 24V
DC 24V
B
A
11.2
16.6
Port size : 2-Ø4
2-Ø6
2-Ø8
16.6
36
2-Ø3.4

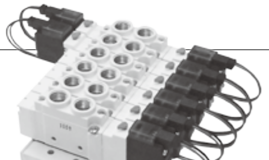

CHELIC
33.7
26
(A)
20.5
23
CHELIC


3-Rc 1/8
RA
P
RB
27.4
0.8
15
1.4
0.8

| Model | A |
|---|---|
| SM5(3)00-C4 | 11.6 |
| SM5(3)00-C6 | 12.2 |
| SM5(3)00-C8 | 13.5 |

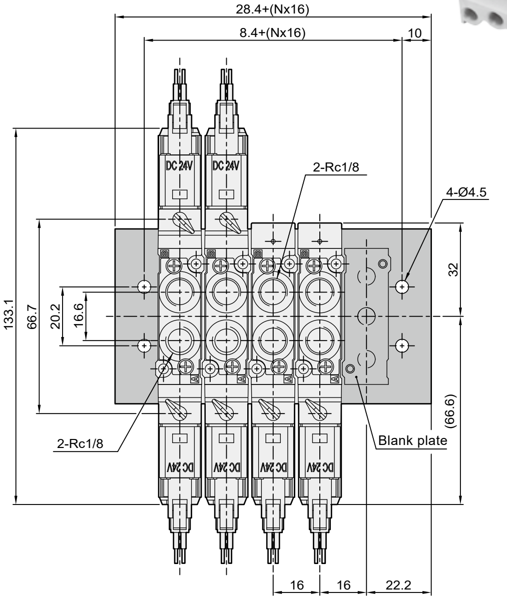
# SM 500 series Body Ported Solenoid Valve

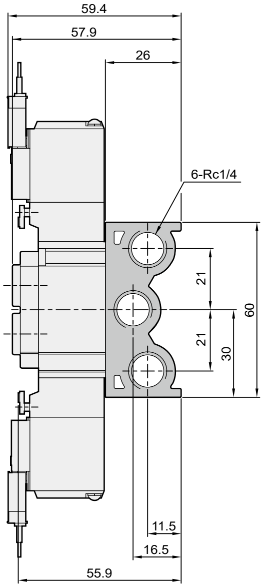
## Dimensions/ Manifold type



### SM 5000 series - Standard

Manifold dimension

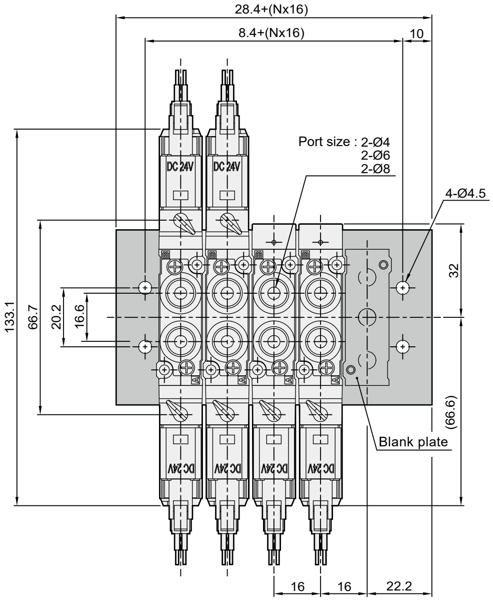

28.4+(Nx16)
8.4+(Nx16)
10
DC 24V
2-Rc1/8
4-Ø4.5
32
133.1
66.7
20.2
16.6
2-Rc1/8
(66.6)
Blank plate
16
16
22.2

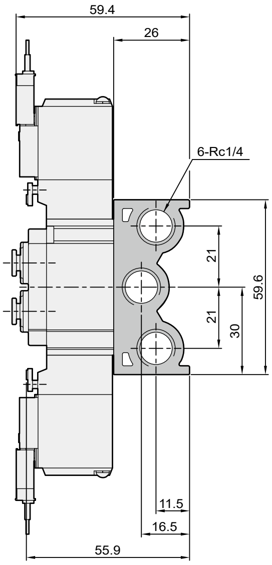

59.4
57.9
26
6-Rc1/4
21
21
30
60
11.5
16.5
55.9

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SM 5000 series - With fitting port

Manifold dimension


28.4+(Nx16)
8.4+(Nx16)
10
DC 24V
Port size : 2-Ø4
2-Ø6
2-Ø8
4-Ø4.5
32
133.1
66.7
20.2
16.6
(66.6)
Blank plate
16
16
22.2


59.4
26
6-Rc1/4
21
21
30
59.6
11.5
16.5
55.9

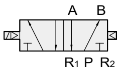
Note :Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

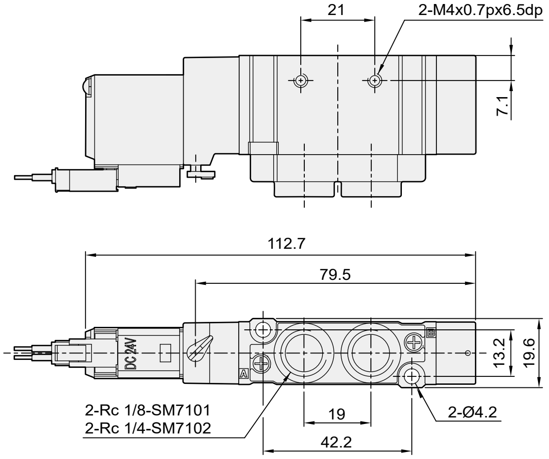
# SM 700 series Body Ported Solenoid Valve

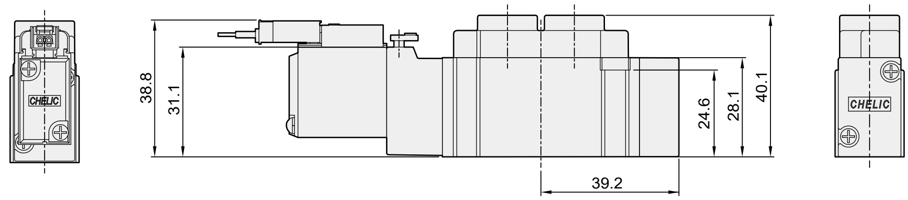
## Dimensions/ Standard

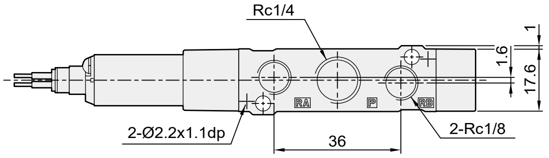
### SM 7101
### SM 7102

5 port 2-position single




21
2-M4x0.7px6.5dp
7.1
112.7
79.5
DC24V
B
A
13.2
19.6
2-Rc 1/8-SM7101
2-Rc 1/4-SM7102
19
2-Ø4.2
42.2


CHELIC
38.8
31.1
24.6
28.1
40.1
39.2
CHELIC

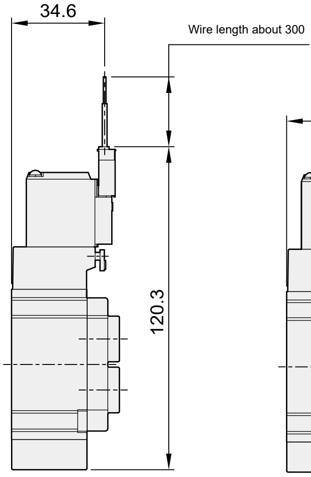

Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

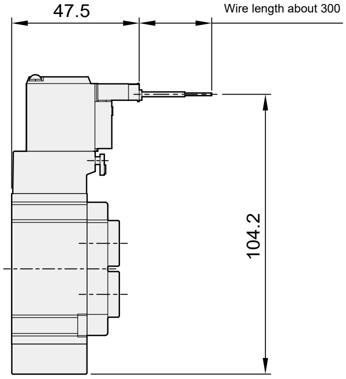
**L wire type -** L

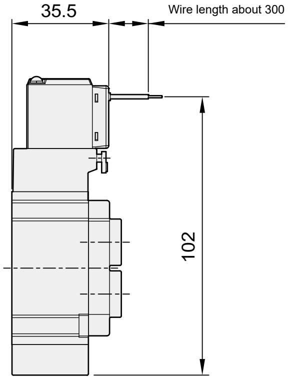
**T wire type -** T

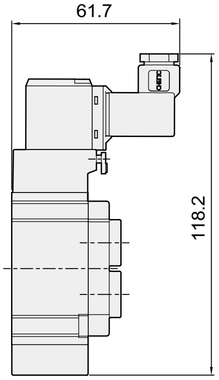
**W wire type -** W

**K wire type -** K


34.6
Wire length about 300
120.3


47.5
Wire length about 300
104.2


35.5
Wire length about 300
102

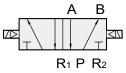


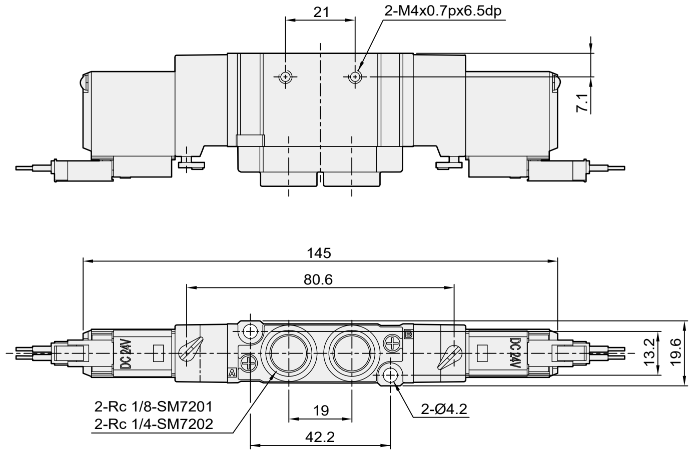
# SM 700 series Body Ported Solenoid Valve

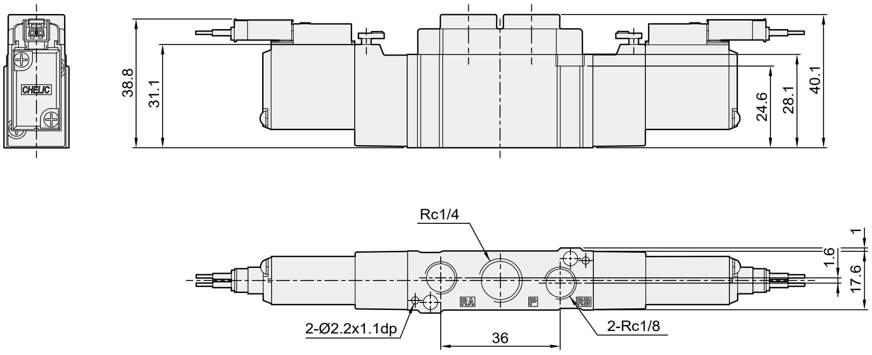
## Dimensions/ Standard

### SM 7201
### SM 7202

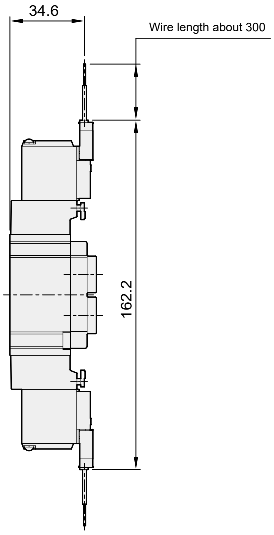
5 port 2-position double



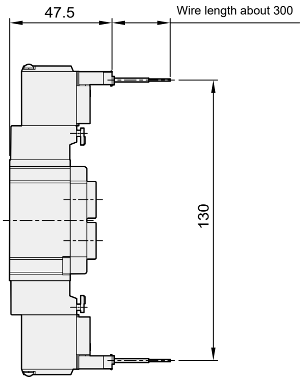

21
2-M4x0.7px6.5dp
7.1
145
80.6
DC24V
A
B
13.2
19.6
2-Rc 1/8-SM7201
2-Rc 1/4-SM7202
19
2-Ø4.2
42.2


CHELIC
38.8
31.1
24.6
28.1
40.1
Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

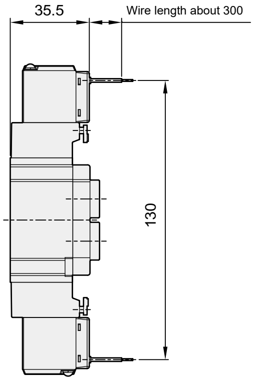
### L wire type - L


34.6
Wire length about 300
162.2

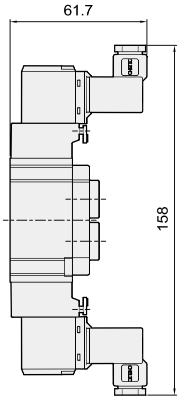
### T wire type - T


47.5
Wire length about 300
130

### W wire type - W


35.5
Wire length about 300
130

### K wire type - K

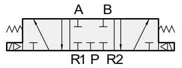


# SM 700 series Body Ported Solenoid Valve

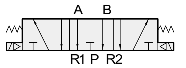
## Dimensions/ Standard

### SM 7(3)01 • 02
### SM 7(4)01 • 02
### SM 7(5)01 • 02

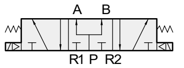
5 port 3-position double



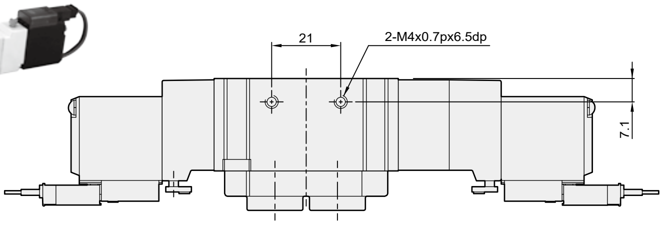
SM-7(3)01 (Closed center) N.C.

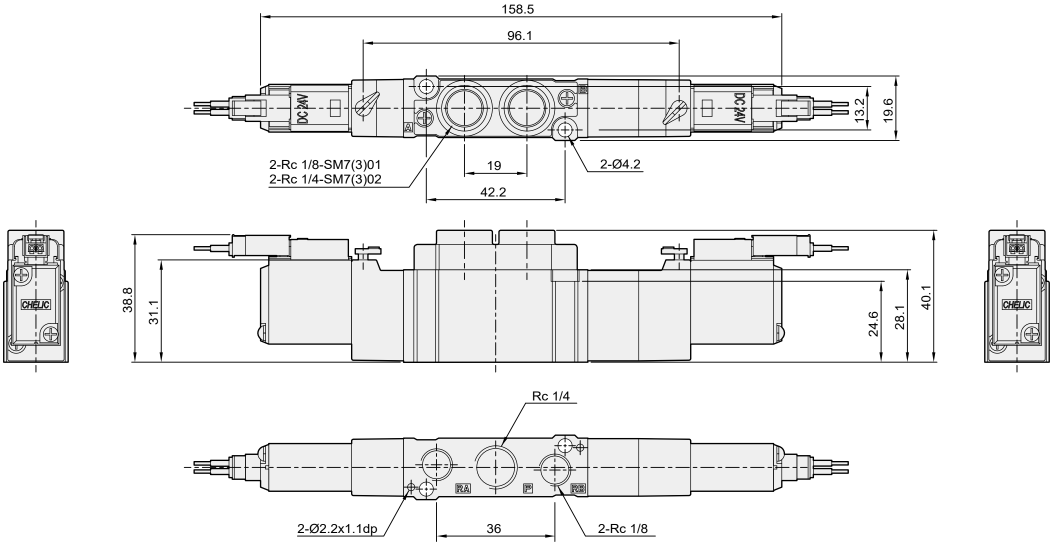


SM-7(4)01 (Exhaust center) N.F.



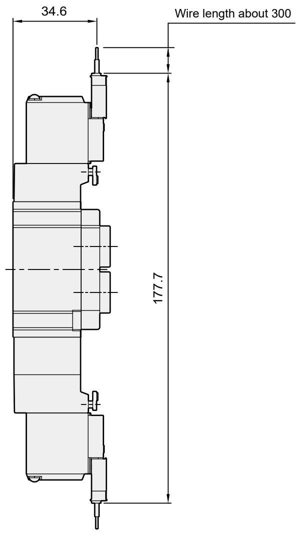
SM-7(5)01 (Pressure center) N.O.


21
2-M4x0.7px6.5dp
7.1

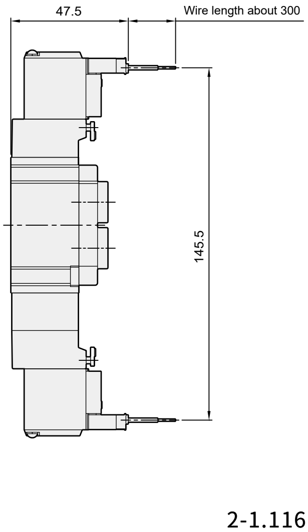

158.5
96.1
DC24V
DC24V
13.2
19.6
2-Rc 1/8-SM7(3)01
2-Rc 1/4-SM7(3)02
19
2-Ø4.2
42.2
38.8
31.1
24.6
28.1
40.1
CHELIC
CHELIC
Rc 1/4
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc 1/8

---

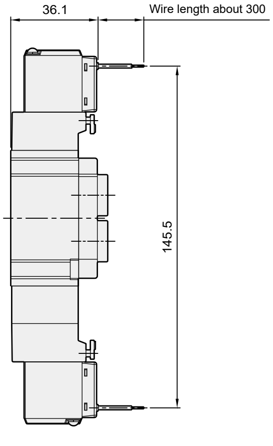
**L wire type - L**


34.6
Wire length about 300
177.7

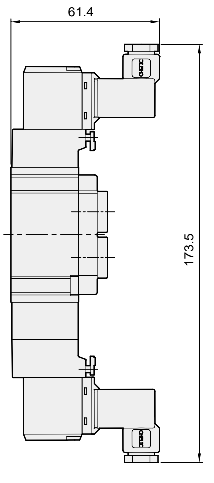
**T wire type - T**


47.5
Wire length about 300
145.5

**W wire type - W**


36.1
Wire length about 300
145.5

**K wire type - K**

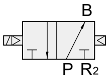


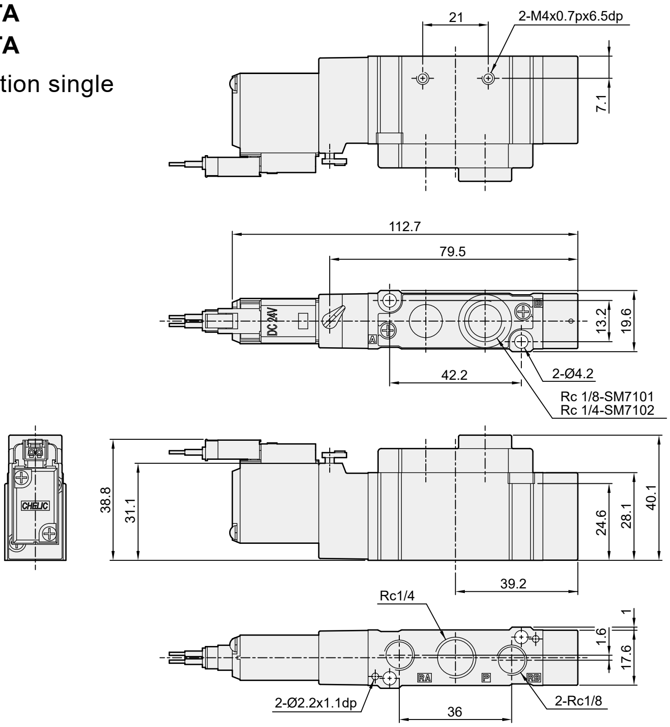
# SM 700 series Body Ported Solenoid Valve

## Dimensions/ Standard/ 3 port 2 position

### SM 7101 - TA
### SM 7102 - TA

3 port 2-position single

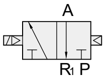


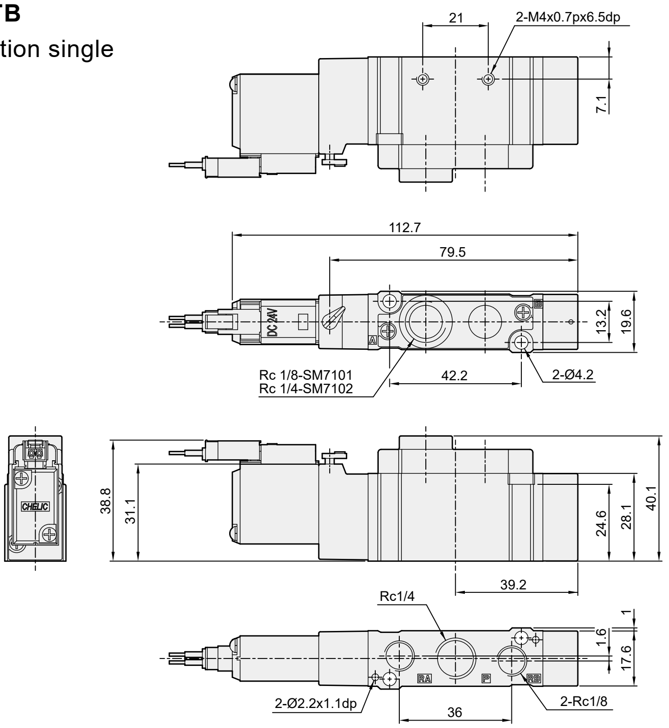

21
2-M4x0.7px6.5dp
7.1
112.7
79.5
DC 24V
13.2
19.6
42.2
2-Ø4.2
Rc 1/8-SM7101
Rc 1/4-SM7102
CHELIC
38.8
31.1
24.6
28.1
40.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

---

### SM 7101 - TB
### SM 7102 - TB

3 port 2-position single



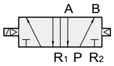

21
2-M4x0.7px6.5dp
7.1
112.7
79.5
DC 24V
13.2
19.6
Rc 1/8-SM7101
Rc 1/4-SM7102
42.2
2-Ø4.2
CHELIC
38.8
31.1
24.6
28.1
40.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

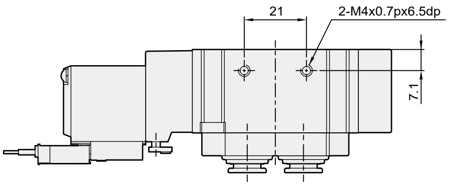
# SM 700 series Body Ported Solenoid Valve

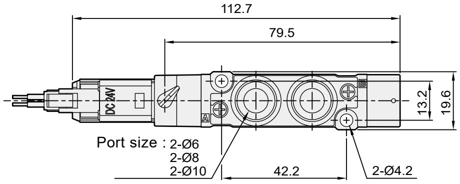
## Dimensions/ With fitting

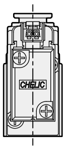
### SM 7100-C6(Ø6)
### SM 7100-C8(Ø8)
### SM 7100-C10(Ø10)

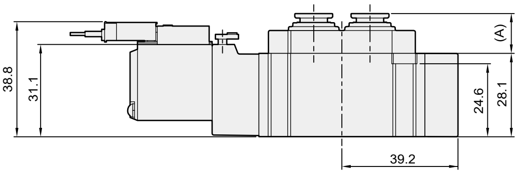
5 port 2-position single

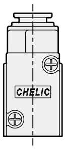



21
2-M4x0.7px6.5dp
7.1

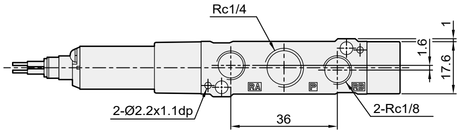

112.7
79.5
DC 24V
13.2
19.6
Port size : 2-Ø6
2-Ø8
2-Ø10
42.2
2-Ø4.2




38.8
31.1
(A)
24.6
28.1
39.2

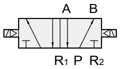


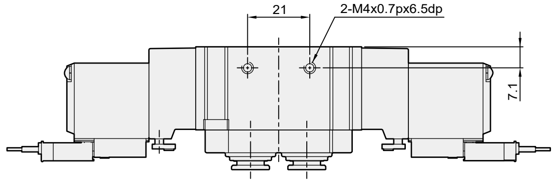
| Model | A |
|---|---|
| SM7100-C6 | 12.9 |
| SM7100-C8 | 13.3 |
| SM7100-C10 | 18.6 |

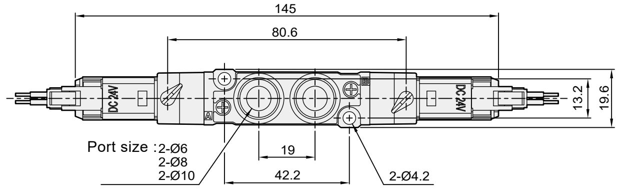

Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

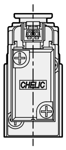
### SM 7200-C6(Ø6)
### SM 7200-C8(Ø8)
### SM 7200-C10(Ø10)

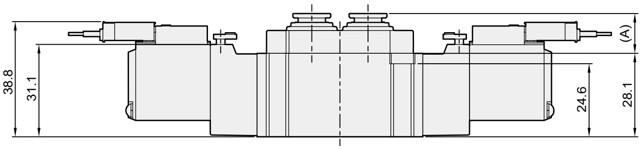
5 port 2-position double



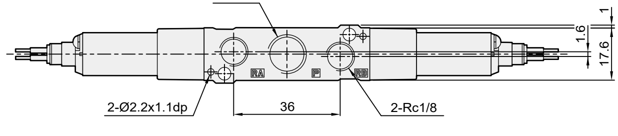

21
2-M4x0.7px6.5dp
7.1


145
80.6
DC 24V
DC 24V
13.2
19.6
Port size :2-Ø6
2-Ø8
2-Ø10
19
42.2
2-Ø4.2




38.8
31.1
(A)
24.6
28.1

| Model | A |
|---|---|
| SM7200-C6 | 12.9 |
| SM7200-C8 | 13.3 |
| SM7200-C10 | 18.6 |

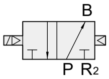

Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

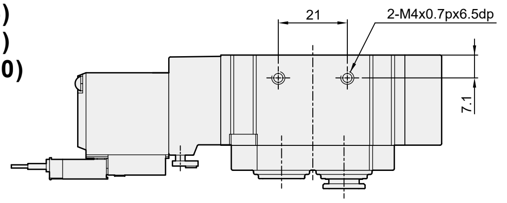
# SM 700 series Body Ported Solenoid Valve

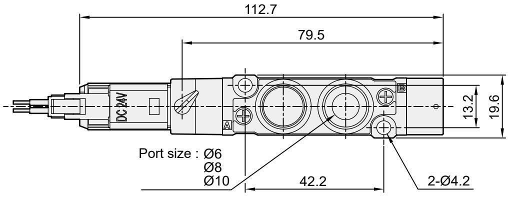
## Dimensions/ Standard/ 3 port 2 position

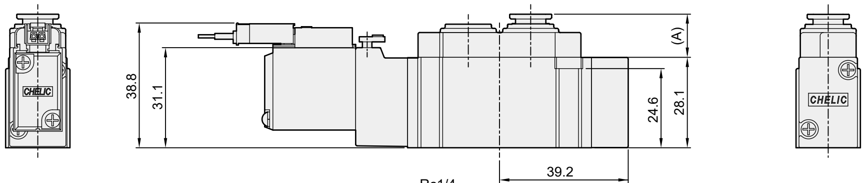
### SM 7100 - C6 - TA - (Ø6)
### SM 7100 - C8 - TA - (Ø8)
### SM 7100 - C10 - TA - (Ø10)

3 port 2-position single

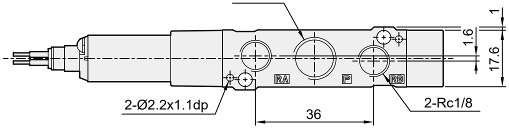



21
2-M4x0.7px6.5dp
7.1


112.7
79.5
DC24V
A
B
13.2
19.6
Port size : Ø6
Ø8
Ø10
42.2
2-Ø4.2

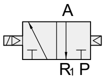

CHELIC
38.8
31.1
(A)
24.6
28.1
39.2
CHELIC

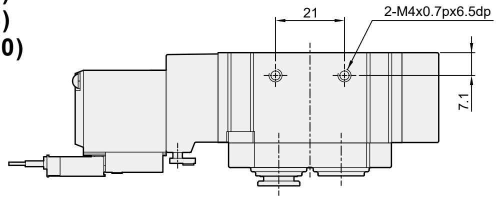
| Model | A |
|---|---|
| SM7100-C6-TA | 12.9 |
| SM7100-C8-TA | 13.3 |
| SM7100-C10-TA | 18.6 |

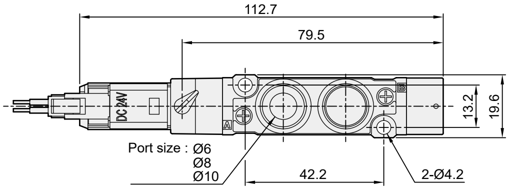

Rc1/4
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

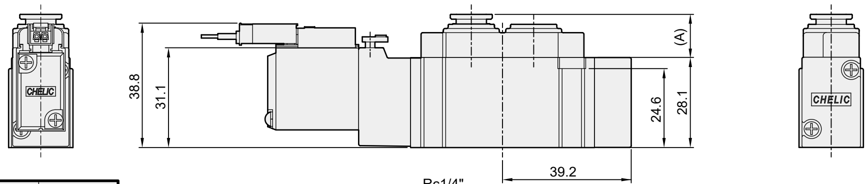
### SM 7100 - C6 - TB - (Ø6)
### SM 7100 - C8 - TB - (Ø8)
### SM 7100 - C10 - TB - (Ø10)

3 port 2-position single

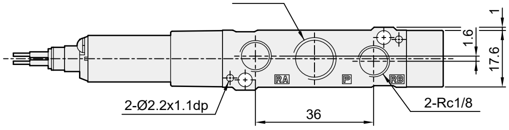



21
2-M4x0.7px6.5dp
7.1


112.7
79.5
DC24V
A
B
13.2
19.6
Port size : Ø6
Ø8
Ø10
42.2
2-Ø4.2


CHELIC
38.8
31.1
(A)
24.6
28.1
39.2
CHELIC

| Model | A |
|---|---|
| SM7100-C6-TB | 12.9 |
| SM7100-C8-TB | 13.3 |
| SM7100-C10-TB | 18.6 |

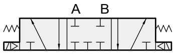

Rc1/4"
1
1.6
17.6
RA
P
RB
2-Ø2.2x1.1dp
36
2-Rc1/8

# SM 700 series Body Ported Solenoid Valve

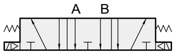
## Dimensions/ With fitting

### SM 7(3)00-C6(Ø6) • C8(Ø8) • C10(Ø10)
### SM 7(4)00-C6(Ø6) • C8(Ø8) • C10(Ø10)
### SM 7(5)00-C6(Ø6) • C8(Ø8) • C10(Ø10)

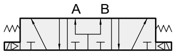
5 port 3-position double



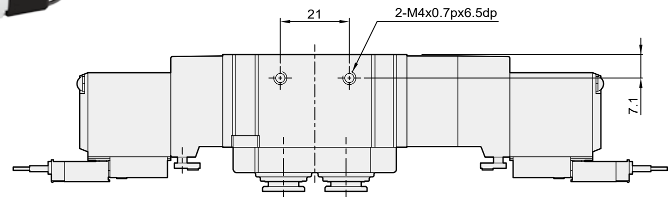
SM-7301 (Closed center) N.C.

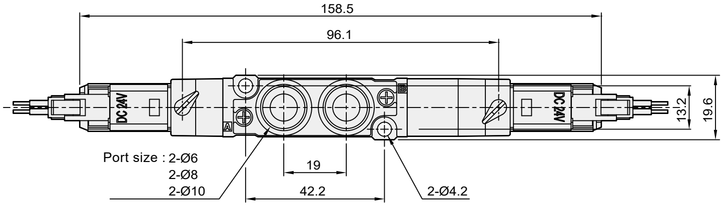


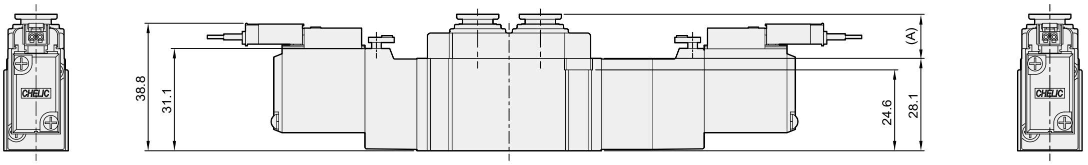
SM-7401 (Exhaust center) N.F.

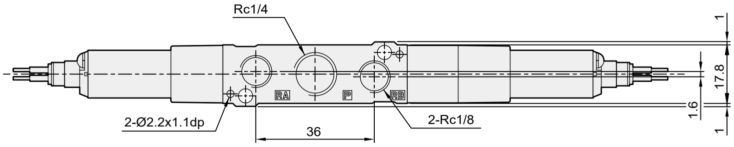


SM-7501 (Pressure center) N.O.


21
2-M4x0.7px6.5dp
7.1


158.5
96.1
DC24V
DC24V
A
B
13.2
19.6
Port size : 2-Ø6
2-Ø8
2-Ø10
19
42.2
2-Ø4.2

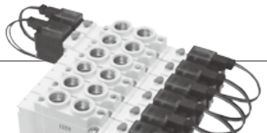

CHELIC
38.8
31.1
(A)
24.6
28.1
CHELIC


Rc1/4
RA
P
RB
1
17.8
1.6
1
2-Ø2.2x1.1dp
36
2-Rc1/8

| Model | A |
|---|---|
| SM7100-C6 | 12.9 |
| SM7100-C8 | 13.3 |
| SM7100-C10 | 18.6 |

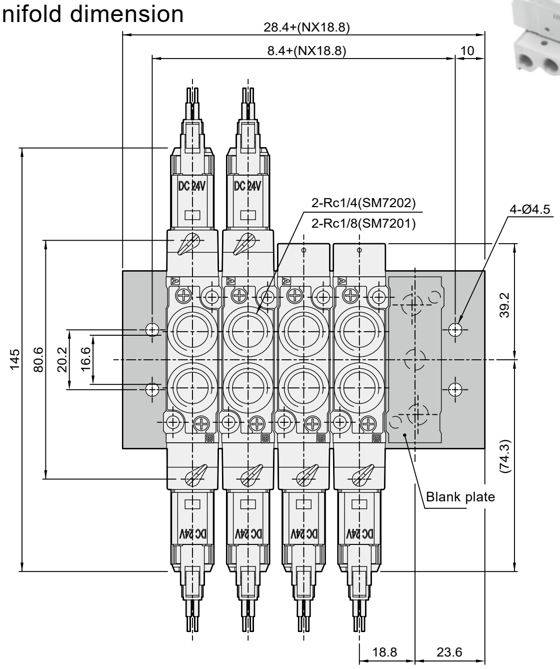
# SM 700 series Body Ported Solenoid Valve

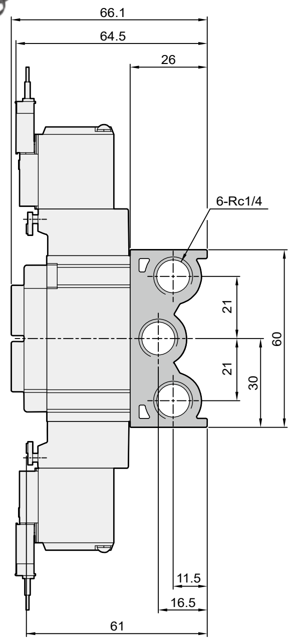
## Dimensions/ Manifold type



### SM 7000 series - Standard

Manifold dimension

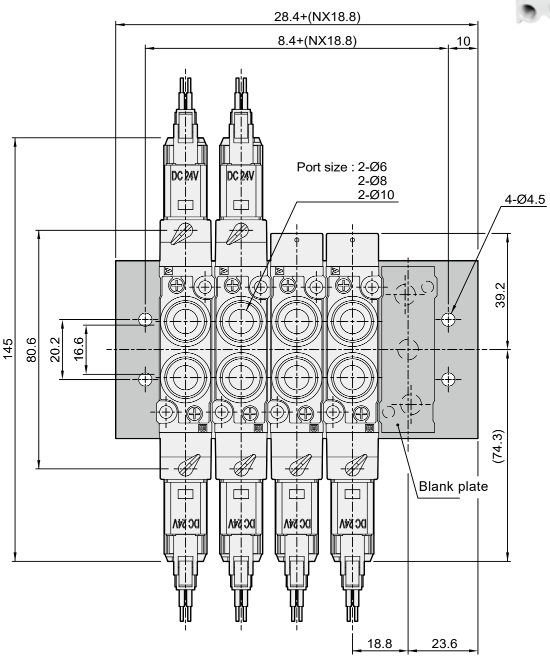

28.4+(NX18.8)
8.4+(NX18.8)
10
DC 24V
2-Rc1/4(SM7202)
2-Rc1/8(SM7201)
4-Ø4.5
39.2
(74.3)
145
80.6
20.2
16.6
Blank plate
18.8
23.6

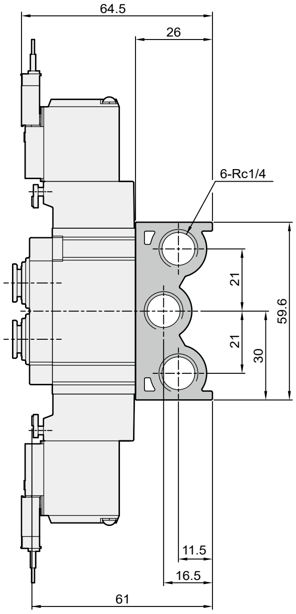

66.1
64.5
26
6-Rc1/4
21
21
30
60
11.5
16.5
61

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SM 7000 series - With fitting port

Manifold dimension


28.4+(NX18.8)
8.4+(NX18.8)
10
DC 24V
Port size : 2-Ø6
2-Ø8
2-Ø10
4-Ø4.5
39.2
(74.3)
145
80.6
20.2
16.6
Blank plate
18.8
23.6


64.5
26
6-Rc1/4
21
21
30
59.6
11.5
16.5
61

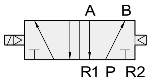
Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

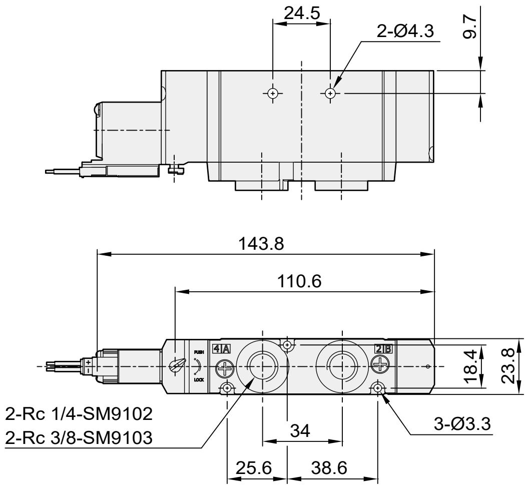
# SM 900 series Body Ported Solenoid Valve

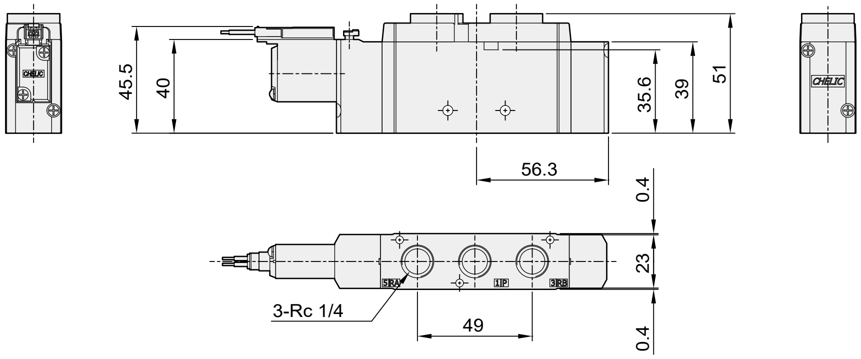
## Dimensions/ Standard

### SM 9102
### SM 9103

5 port 2-position single

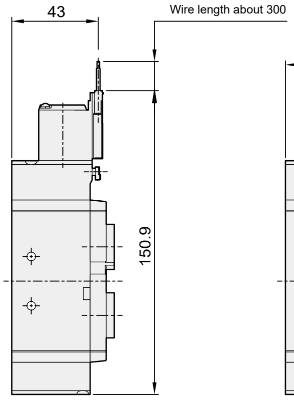



24.5
2-Ø4.3
9.7
143.8
110.6
18.4
23.8
2-Rc 1/4-SM9102
2-Rc 3/8-SM9103
34
3-Ø3.3
25.6
38.6
4(A)
2(B)
PUSH
LOCK

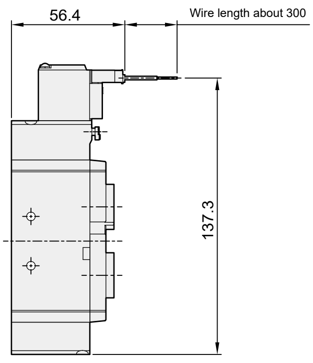

45.5
40
35.6
39
51
56.3
0.4
23
0.4
3-Rc 1/4
49
5(RA)
1(P)
3(RB)
CHELIC

---

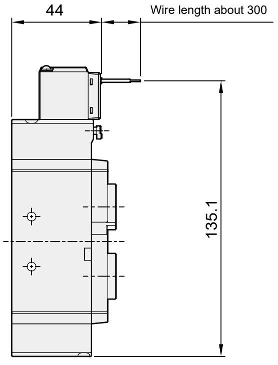
### L wire type - L


43
Wire length about 300
150.9

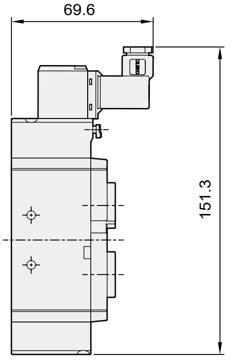
### T wire type - T


56.4
Wire length about 300
137.3

### W wire type - W


44
Wire length about 300
135.1

### K wire type - K



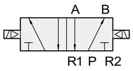
# SM 900 series Body Ported Solenoid Valve

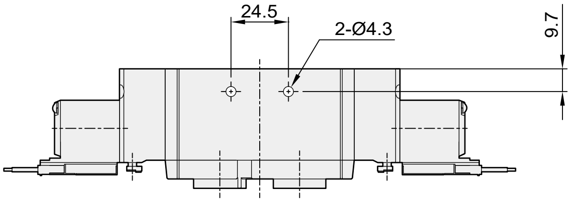
## Dimensions/ Standard

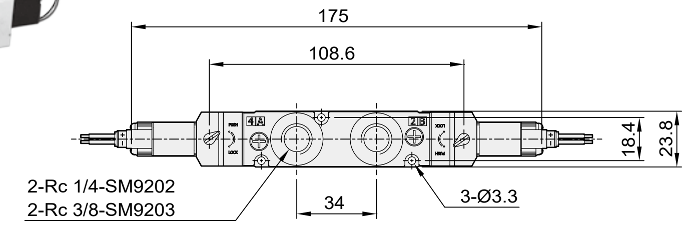
**CHELIC**

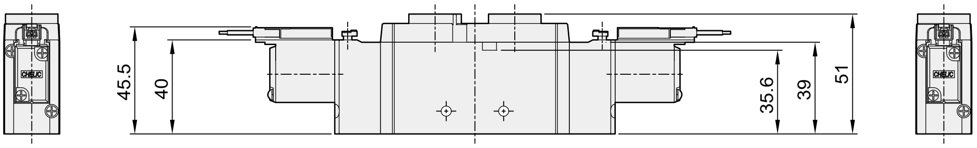
### ▶ SM 9202
### SM 9203

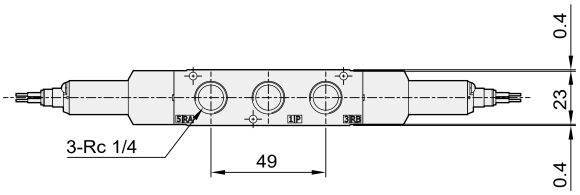
5 port 2-position double





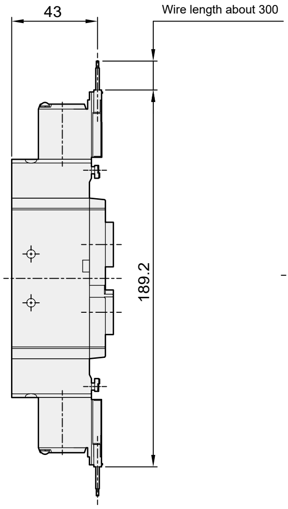

175
108.6
18.4
23.8
4A
2B
2-Rc 1/4-SM9202
2-Rc 3/8-SM9203
34
3-Ø3.3

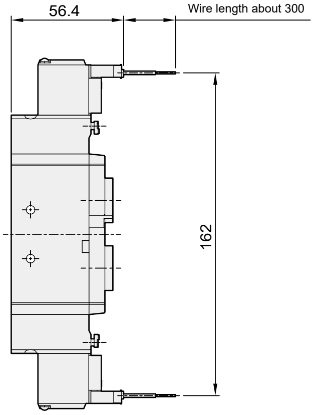

45.5
40
35.6
39
51

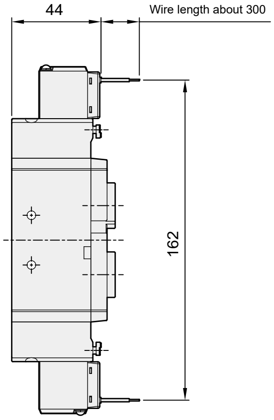

0.4
23
0.4
5RA
1P
3RB
3-Rc 1/4
49

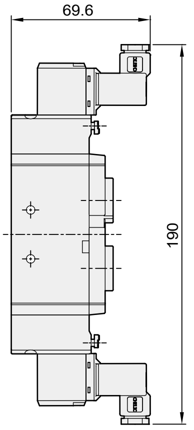
---

▶ **L wire type - L**　▶ **T wire type - T**　▶ **W wire type - W**　▶ **K wire type - K**


43
Wire length about 300
189.2


56.4
Wire length about 300
162


44
Wire length about 300
162

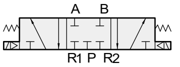


# SM 900 series Body Ported Solenoid Valve

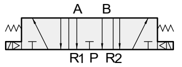
## Dimensions/ Standard

### SM 9(3)02 • 03
### SM 9(4)02 • 03
### SM 9(5)02 • 03

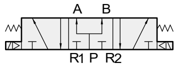
5 port 3-position double



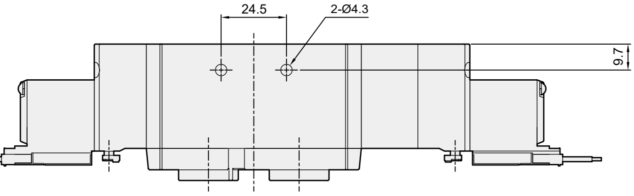
SM-9(3)02 (Closed center) N.C.

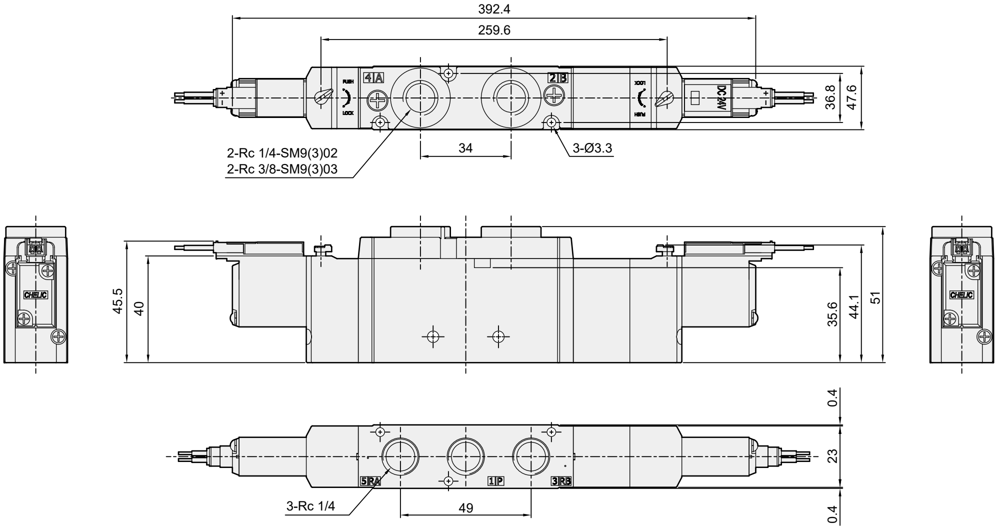


SM-9(4)02 (Exhaust center) N.F.

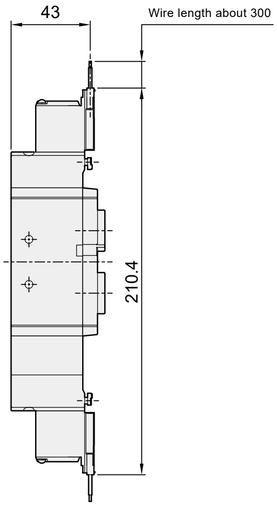


SM-9(5)02 (Pressure center) N.O.

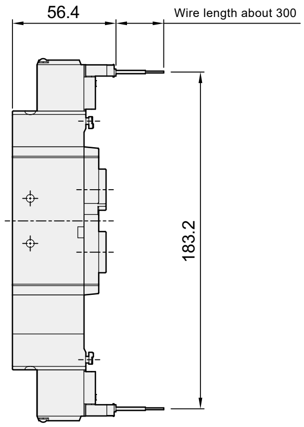



24.5
2-Ø4.3
9.7
392.4
259.6
4A
2B
36.8
47.6
2-Rc 1/4-SM9(3)02
2-Rc 3/8-SM9(3)03
34
3-Ø3.3
45.5
40
35.6
44.1
51
0.4
23
0.4
5RA
1P
3RB
3-Rc 1/4
49

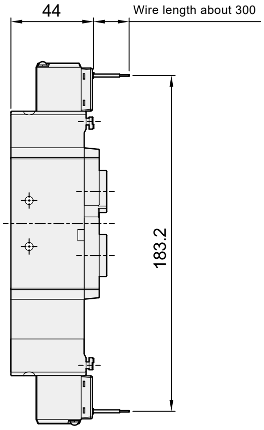
### L wire type - L


43
Wire length about 300
210.4

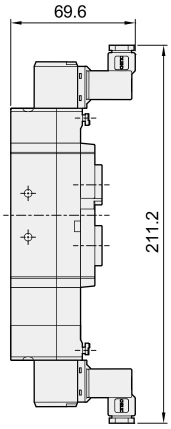
### T wire type - T


56.4
Wire length about 300
183.2

### W wire type - W


44
Wire length about 300
183.2

### K wire type - K



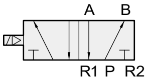
# SM 900 series Body Ported Solenoid Valve

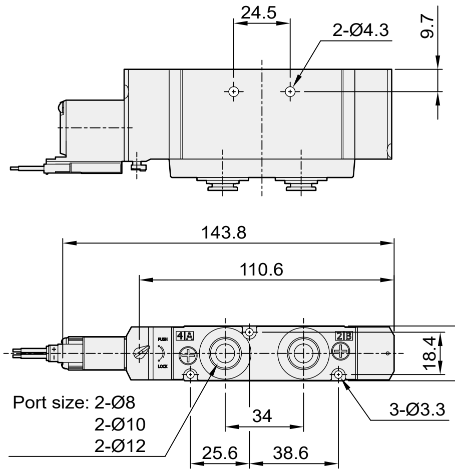
## Dimensions/ With fitting

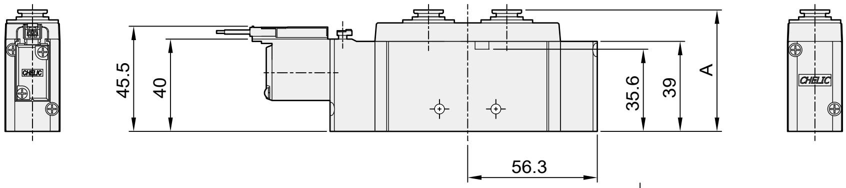
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

### SM 9100-C8(Ø8)
### SM 9100-C10(Ø10)
### SM 9100-C12(Ø12)

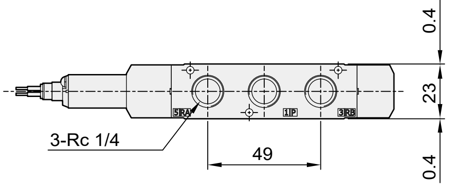
5 port 2-position single



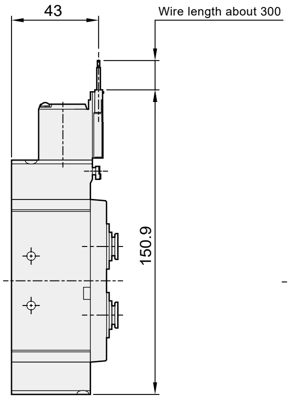

24.5
2-Ø4.3
9.7
143.8
110.6
18.4
23.8
Port size: 2-Ø8
2-Ø10
2-Ø12
34
3-Ø3.3
25.6
38.6
4A
2B
PUSH
LOCK


45.5
40
35.6
39
A
56.3
CHELIC

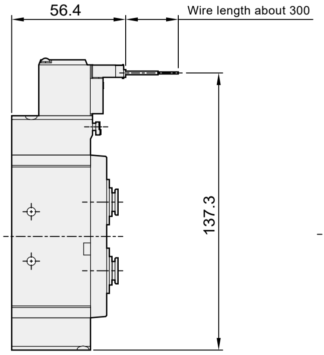
| Model | A |
|---|---|
| SM9102-C8 | 52.5 |
| SM9102-C10 | 57.6 |
| SM9102-C12 | 60.6 |


0.4
23
0.4
3-Rc 1/4
49
5RA
1P
3RB

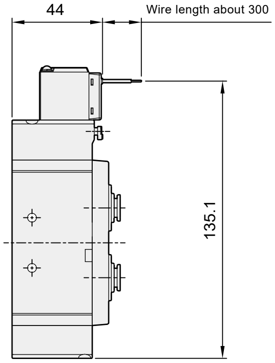
### L wire type - L


43
Wire length about 300
150.9

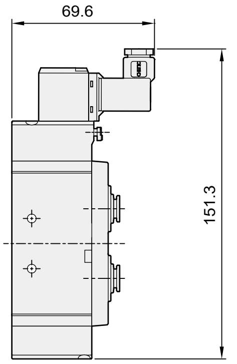
### T wire type - T


56.4
Wire length about 300
137.3

### W wire type - W


44
Wire length about 300
135.1

### K wire type - K

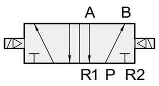


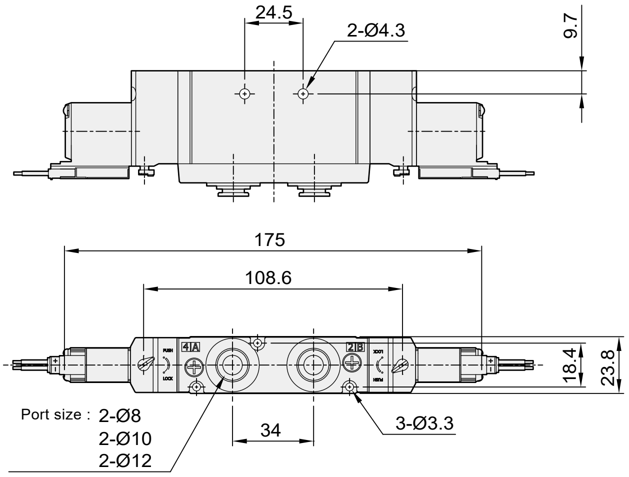
# SM 900 series Body Ported Solenoid Valve

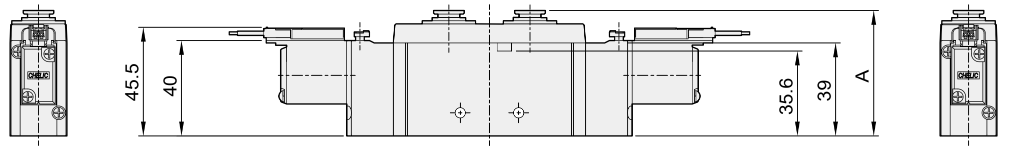
## Dimensions/ With fitting

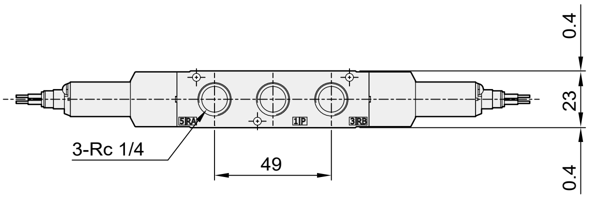
### SM 9200-C8(Ø8)
### SM 9200-C10(Ø10)
### SM 9200-C12(Ø12)

5 port 2-position double




24.5
2-Ø4.3
9.7
175
108.6
4A
2B
PUSH
LOCK
18.4
23.8
Port size : 2-Ø8
2-Ø10
2-Ø12
34
3-Ø3.3


45.5
40
35.6
39
A
CHELIC


0.4
23
0.4
5RA
1P
3RB
3-Rc 1/4
49

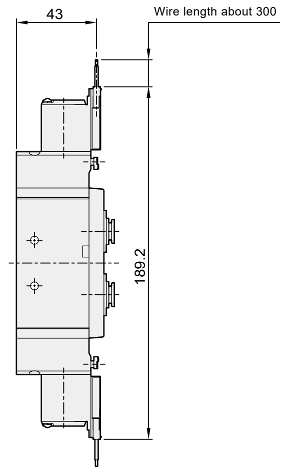
| Model | A |
|---|---|
| SM9102-C8 | 52.5 |
| SM9102-C10 | 57.6 |
| SM9102-C12 | 60.6 |

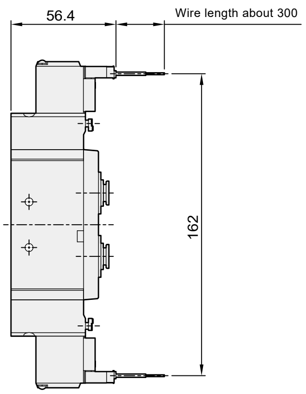
**L wire type - L**

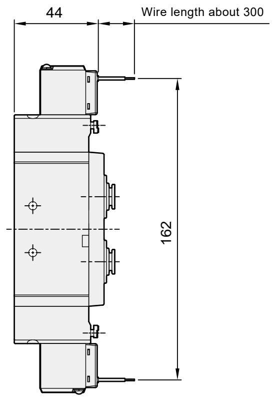
**T wire type - T**

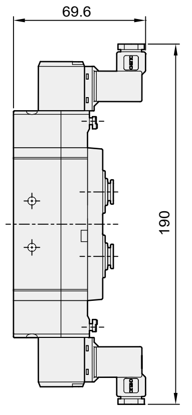
**W wire type - W**

**K wire type - K**


43
Wire length about 300
189.2


56.4
Wire length about 300
162


44
Wire length about 300
162

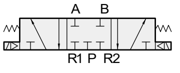


# SM 900 series Body Ported Solenoid Valve

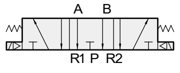
## Dimensions/ With fitting

### SM 9(3)00-C8(Ø8) • C10(Ø10) • C12(Ø12)
### SM 9(4)00-C8(Ø8) • C10(Ø10) • C12(Ø12)
### SM 9(5)00-C8(Ø8) • C10(Ø10) • C12(Ø12)

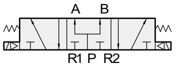
5 port 3-position double



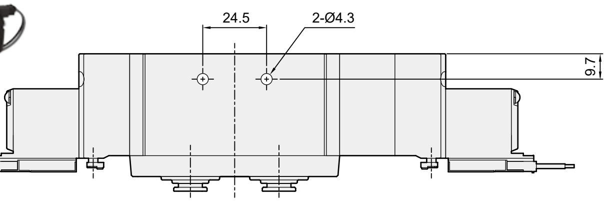
SM-9(3)00 (Closed center) N.C.

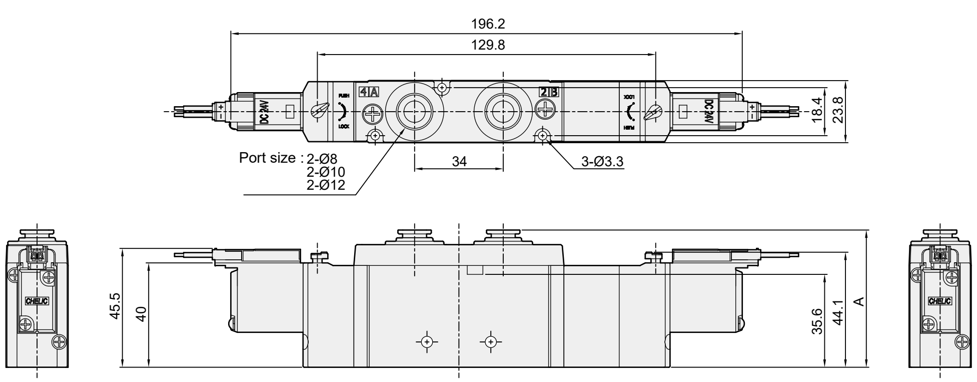


SM-9(4)00 (Exhaust center) N.F.

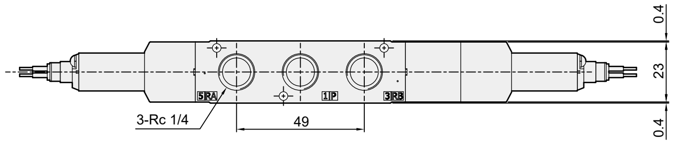


SM-9(5)00 (Pressure center) N.O.

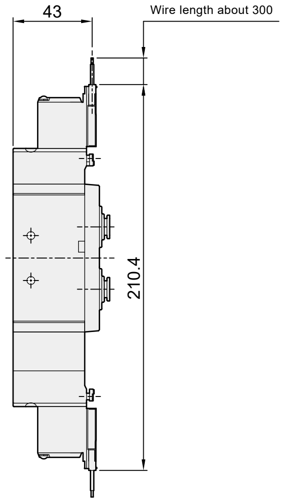



24.5
2-Ø4.3
9.7
196.2
129.8
4A
2B
18.4
23.8
Port size : 2-Ø8
2-Ø10
2-Ø12
34
3-Ø3.3
45.5
40
35.6
44.1
A

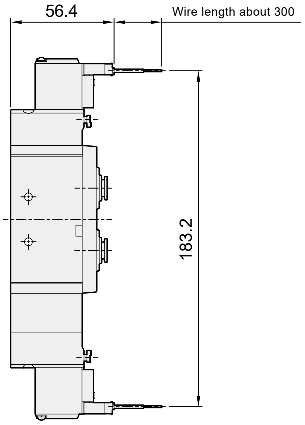
| Model | A |
|---|---|
| SM9102-C8 | 52.5 |
| SM9102-C10 | 57.6 |
| SM9102-C12 | 60.6 |


0.4
23
0.4
5RA
1P
3RB
3-Rc 1/4
49

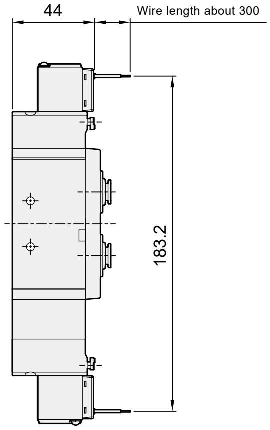
### L wire type - L


43
Wire length about 300
210.4

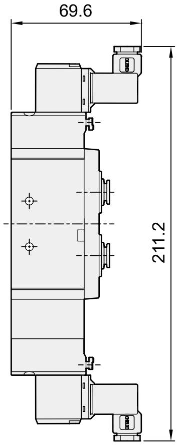
### T wire type - T


56.4
Wire length about 300
183.2

### W wire type - W


44
Wire length about 300
183.2

### K wire type - K

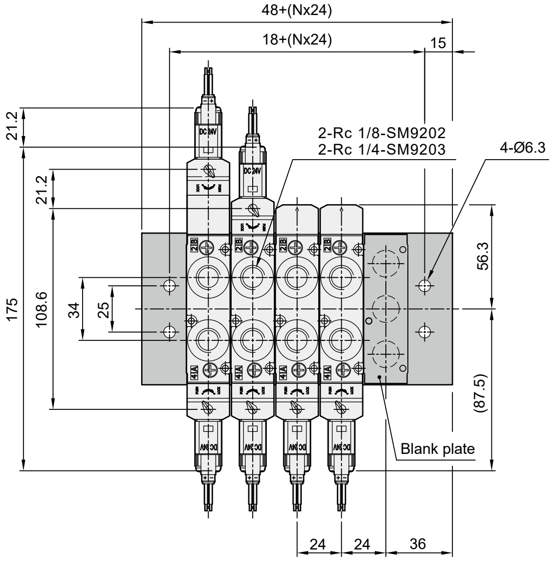


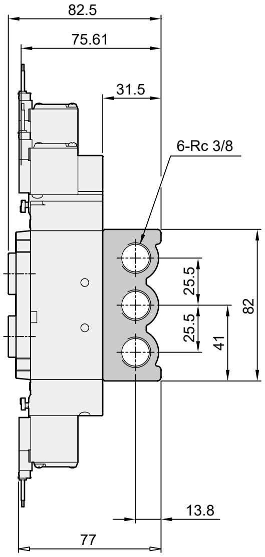
# SM 900 series Body Ported Solenoid Valve

## Dimensions/ Manifold type

### SM 9000 series - Standard

Manifold dimension

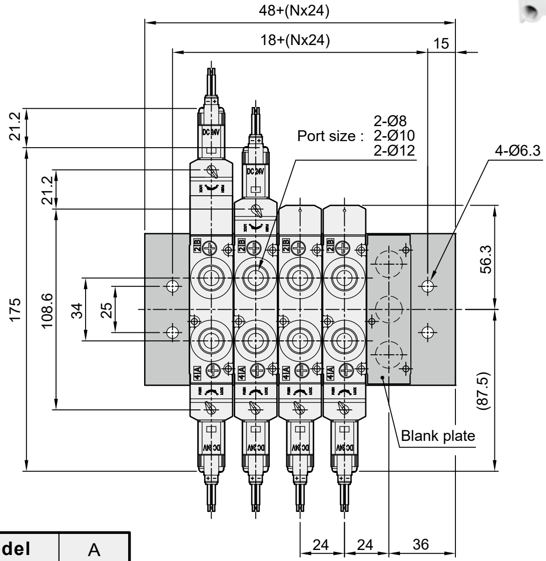

48+(Nx24)
18+(Nx24)
15
21.2
21.2
2-Rc 1/8-SM9202
2-Rc 1/4-SM9203
4-Ø6.3
175
108.6
34
25
56.3
(87.5)
Blank plate
24
24
36
DC24V

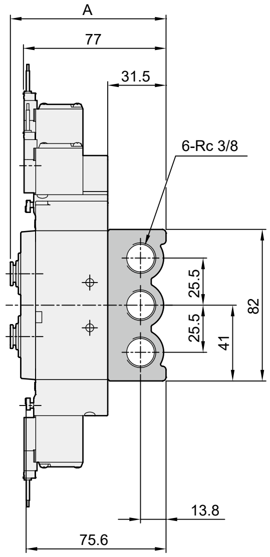

82.5
75.61
31.5
6-Rc 3/8
25.5
25.5
41
82
13.8
77

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SM 9000 series - With fitting port

Manifold dimension


48+(Nx24)
18+(Nx24)
15
21.2
21.2
Port size : 2-Ø8
2-Ø10
2-Ø12
4-Ø6.3
175
108.6
34
25
56.3
(87.5)
Blank plate
24
24
36
DC24V


A
77
31.5
6-Rc 3/8
25.5
25.5
41
82
13.8
75.6

| Model | A |
|---|---|
| SM9102-C8 | 84 |
| SM9102-C10 | 89.1 |
| SM9102-C12 | 92.1 |

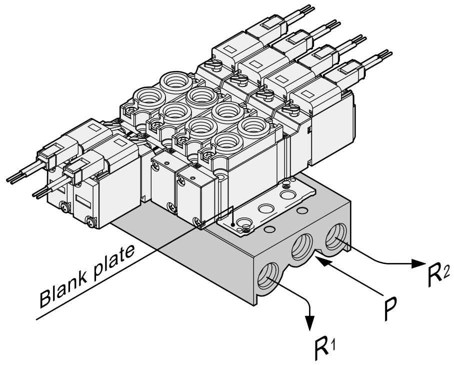
Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SM series Body Ported Solenoid Valve

## Accessories/ Installation

### Manifold

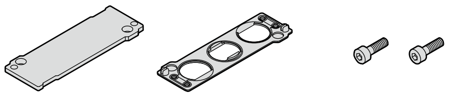
**SM-5000 • 7000 • 9000 series**


Blank plate
R2
P
R1

### Manifold accessory

**SM-5000 • 7000 • 9000 series**

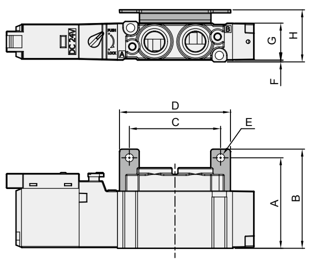
※ The accessories of blank plate.



| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| **SM-5000 series** | MSM05041 | MSM05039 | M3X8L MSM05040 |
| **SM-7000 series** | MSM07041 | MSM07039 | M4X8L MSM07040 |
| **SM-9000 series** | MSM09041 | MSM09039 | M3X8L MSM09040 |

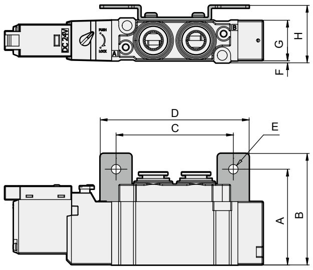
### Bracket assembly ( SM-5000, 7000 series )

Side bracket - C1


DC24V
PUSH
LOCK
G
H
F
D
C
E
A
B

SM 5000 series

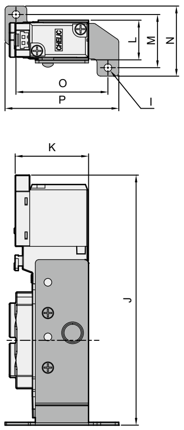
MSM050 – C1


DC24V
PUSH
LOCK
G
H
F
D
C
E
A
B

SM 7000 series

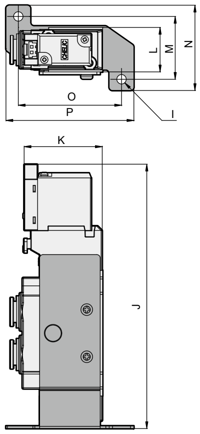
MSM070 – C1

Vertical bracket - C2


CHELIC
L
M
N
O
P
I
K
J

SM 5000 series

MSM050 – C2

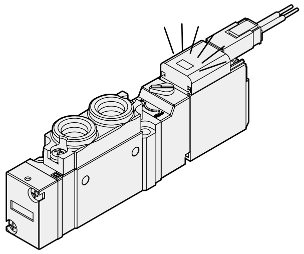

CHELIC
L
M
N
O
P
I
K
J

SM 7000 series

MSM070 – C2

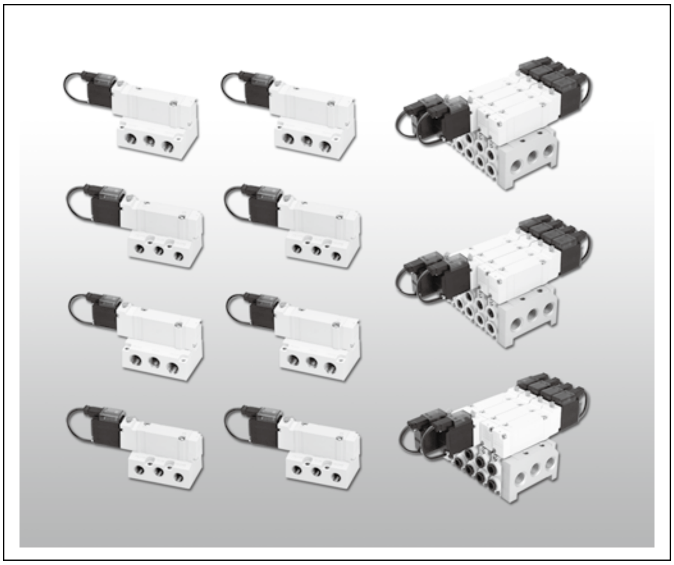
| Size / Model | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SM5000** | 36.7 | 40.2 | 37 | 45 | Ø3.3 | 0.7 | 15 | 21.1 | Ø3.3 | 103.5 | 30.3 | 16.4 | 22 | 29 | 38 | 47 |
| **SM7000** | 42.5 | 49.5 | 52 | 66 | Ø4.3 | 0.9 | 18 | 25.5 | Ø4.3 | 117.8 | 35 | 19.8 | 28 | 38 | 46 | 57 |

### With indicator light all this series with indicator light and voltage protection circuit.



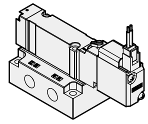
# MEMO

SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

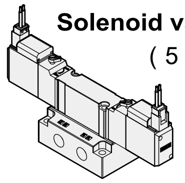


Provide CAD external dimension.

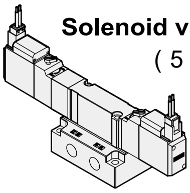
Small size, big flow rate!
High responding time below 10ms.
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.



| | | | |
|---|---|---|---|
| **Solenoid valve single coil** ( 5 port 2-position ) | **SMB - 5000 series** | **Rc 1/8, Ø4, Ø6, Ø8** | **P.2-1.134** |
| | **SMB - 7000 series** | **Rc 1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.139** |
| | **SMB - 9000 series** | **Rc 3/8** | **P.2-1.144** |



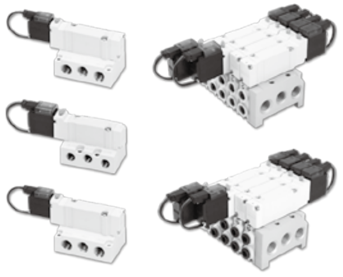
| | | | |
|---|---|---|---|
| **Solenoid valve double coils** ( 5 port 2-position ) | **SMB - 5000 series** | **Rc 1/8, Ø4, Ø6, Ø8** | **P.2-1.135** |
| | **SMB - 7000 series** | **Rc 1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.140** |
| | **SMB - 9000 series** | **Rc 3/8** | **P.2-1.145** |



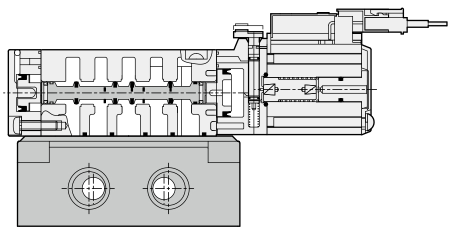
| | | | |
|---|---|---|---|
| **Solenoid valve double coils** ( 5 port 3-position ) | **SMB - 5000 series** | **Rc 1/8, Ø4, Ø6, Ø8** | **P.2-1.136** |
| | **SMB - 7000 series** | **Rc 1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-1.141** |
| | **SMB - 9000 series** | **Rc 3/8** | **P.2-1.146** |

# SMB 5000, 7000, 9000 series Base Mounted Solenoid Valve

## Product features



## Internal structure



## Specification

| Item \ Model | SMB5000 | | SMB7000 | | SMB9000 | |
|---|---|---|---|---|---|---|
| Fluid | Air | | | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | | | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | | | | |
| Pilot type | Air operated | | | | | |
| Number of positions | 5/2-position | 5/3-position | 5/2-position | 5/3-position | 5/2-position | 5/3-position |
| Type of actuation | Normally closed | | | | | |
| Effective orifice mm²(CV) | 10.8(0.6) | | 18.2(1.0) | | 36(2.0) | |
| Manual override | Push and lock | | | | | |
| Port size | Rc 1/8, Ø4, Ø6, Ø8 | | Rc 1/8, Rc 1/4, Ø6, Ø8, Ø10 | | Rc 3/8 | |
| Lubrication | Lubrication free type | | | | | |

## Code of order

SMB — 5 — 10 — 1 — — 110 — L — M 2

**Model**

SMB:
Solenoid valve

**Model number**

5: 5000 series
7: 7000 series
9: 9000 series

**Coil q'ty**

10:Single
20:Double

30:Closed center
40:Exhaust center
50:Pressure center

5/3-position double coils only

**Port size**

| Thread type (standard) | | |
|---|---|---|
| Mark | Thread | Model |
| 1 | Rc 1/8 | SMB5000 |
| 1 | Rc 1/8 | SMB7000 |
| 2 | Rc 1/4 | |

For A and B port

| 0 | With fitting port |
|---|---|

| Single manifold type | | |
|---|---|---|
| 1 | Rc 1/8 | SMB5000 |
| 2 | Rc 1/4 | SMB7000 |
| 3 | Rc 3/8 | SMB9000 |

**With fitting port**

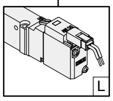
| Mark | Bore size | Model |
|---|---|---|
| C4 | Ø4 | SMB5000 |
| C6 | Ø6 | |
| C8 | Ø8 | |
| C6 | Ø6 | SMB7000 |
| C8 | Ø8 | |
| C10 | Ø10 | |

None :
Standard type
(Thread type)

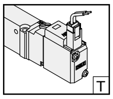
**Voltage**

| Standard : | |
|---|---|
| 12V DC | 1.5W |
| 24V DC | 1.5W |
| 110V AC | 0.9VA |
| 220V AC | 1.8VA |

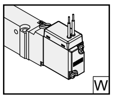
**Electrical entry**



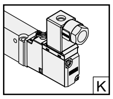
(With wire length 300mm)



(With wire length 300mm)

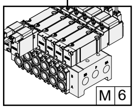


Grommet
(With wire length 300mm)



DIN Terminal

**Manifold**



None:
Without manifold

M1 = Single manifold type

M2 = 2sets
M3 = 3sets
⋮
M15 = 15sets

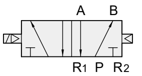
※ SMB900
Without manifold type

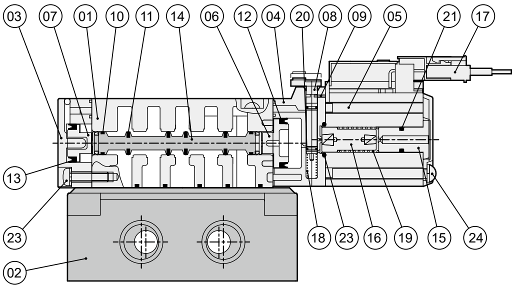
# SMB 5000, 7000, 9000 series Base Mounted Solenoid Valve

## Product features

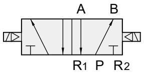
### Internal structure

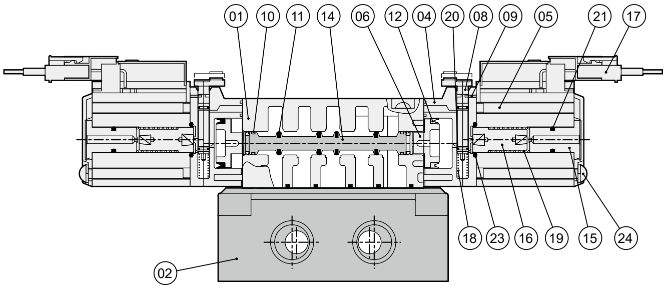
- 5 port 2-position single



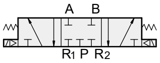

03
07
01
10
11
14
06
12
04
20
08
09
05
21
17
13
23
02
18
23
16
19
15
24

- 5 port 2-position double

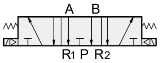



01
10
11
14
06
12
04
20
08
09
05
21
17
02
18
23
16
19
15
24

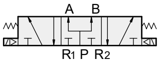
- 5 port 3-position double



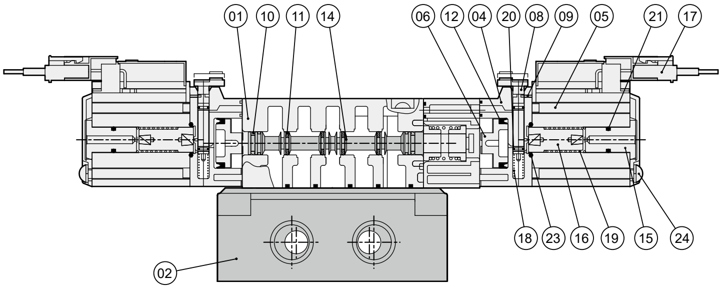
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
10
11
14
06
12
04
20
08
09
05
21
17
02
18
23
16
19
15
24

### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 14 | Shaft | Aluminum alloy |
| 02 | Single sub-plate | Aluminum alloy | 15 | Coil insert bushing | Stainless steel |
| 03 | Rear cover | Resin | 16 | Spring bushing | Stainless steel |
| 04 | Holder | Resin | 17 | Wire plug | Resin |
| 05 | Coil | — | 18 | Manual override spring | Stainless steel |
| 06 | Holder piston | POM | 19 | Spring bushing spring | Stainless steel |
| 07 | Rear cover piston | POM | 20 | Manual override O-ring | NBR |
| 08 | Manual override | POM | 21 | Coil insert bushing O-ring | NBR |
| 09 | Position iron plate | Iron | 22 | O-ring | NBR |
| 10 | Spool packing | NBR | 23 | Rear screw | Alloy steel |
| 11 | Spool packing | NBR | 24 | Coil cover screw | Alloy steel |
| 12 | Holder piston packing | NBR | 25 | Fitting | Plastic |
| 13 | Rear cover packing | NBR | | | |

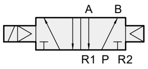
Note: The main body be treated with painting.

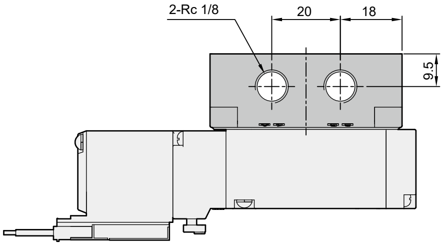
# SMB 5000 series Base Mounted Solenoid Valve

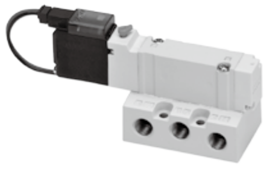
## Dimensions/ Standard

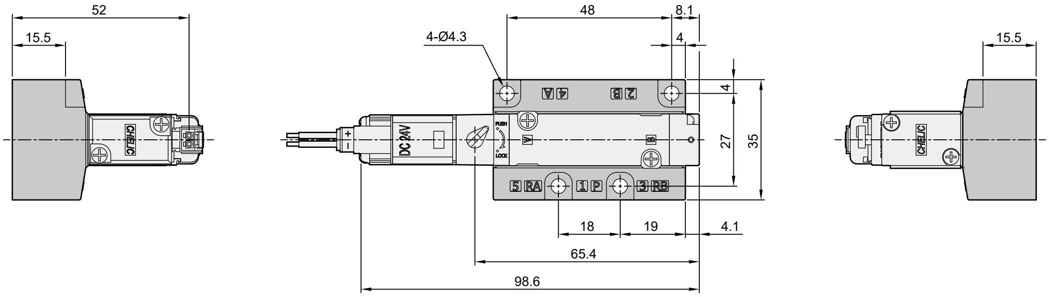
### SMB 5101

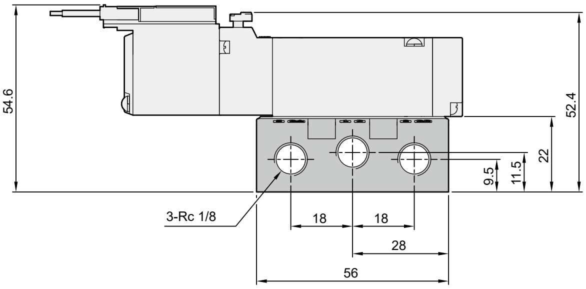
Single exhausting sub-plate
5 port 2-position single



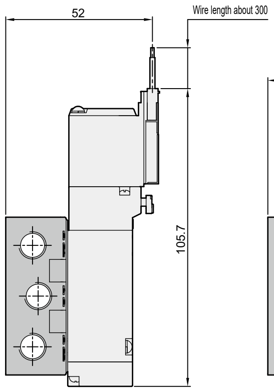

2-Rc 1/8
20
18
9.5



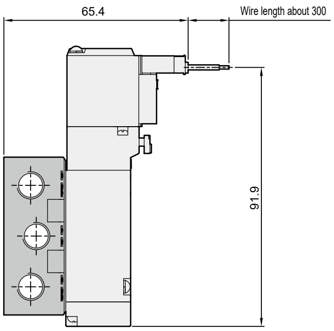

52
15.5
48
8.1
4-Ø4.3
4
4
27
35
15.5
4A
2B
5RA
1P
3RB
DC24V
PUSH
LOCK
CHELIC
18
19
4.1
65.4
98.6


54.6
52.4
22
11.5
9.5
3-Rc 1/8
18
18
28
56

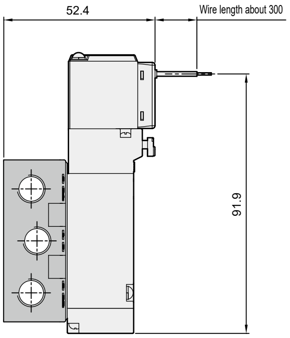
### L wire type - L


52
Wire length about 300
105.7

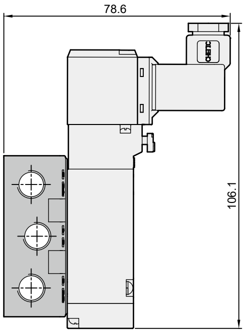
### T wire type - T


65.4
Wire length about 300
91.9

### W wire type - W


52.4
Wire length about 300
91.9

### K wire type - K

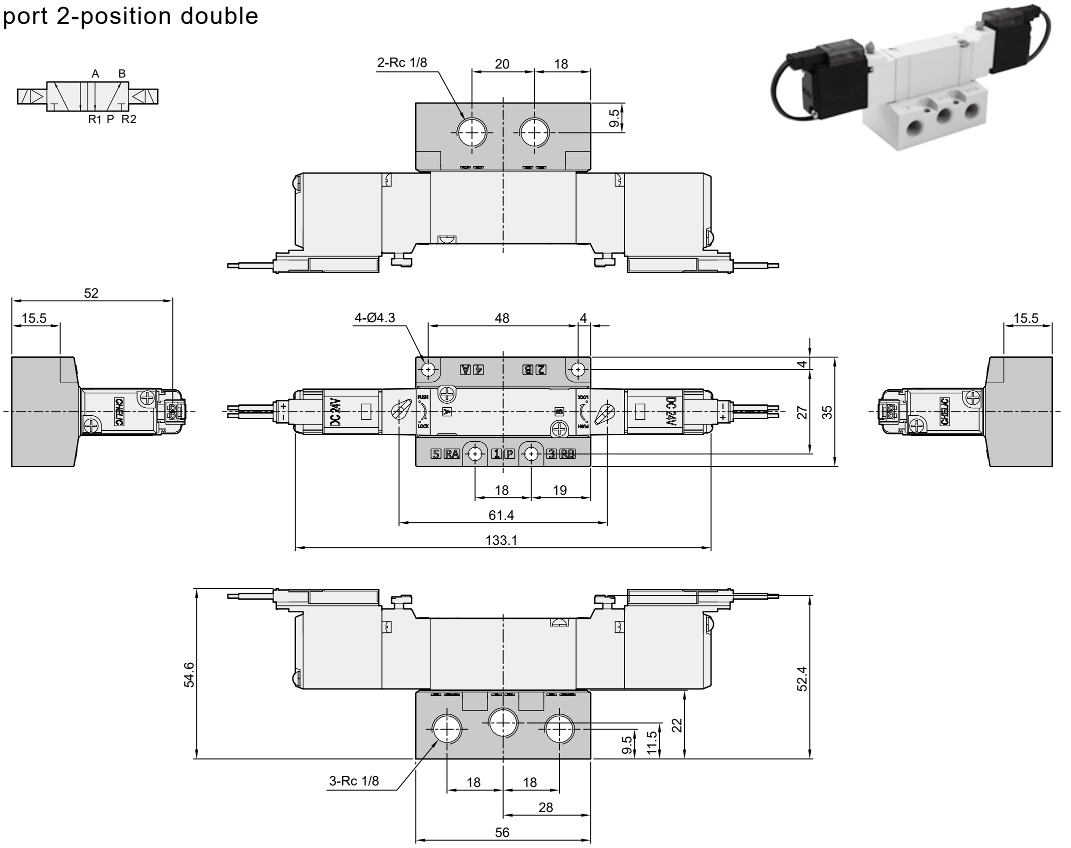

78.6
106.1
CHELIC

# SMB 5000 series Base Mounted Solenoid Valve

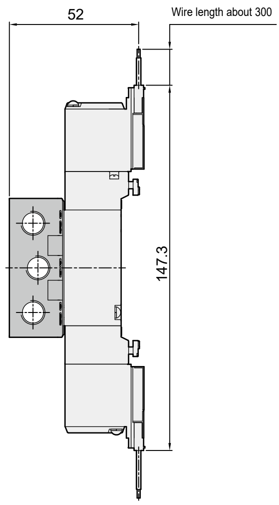
## Dimensions/ Standard

### SMB 5201

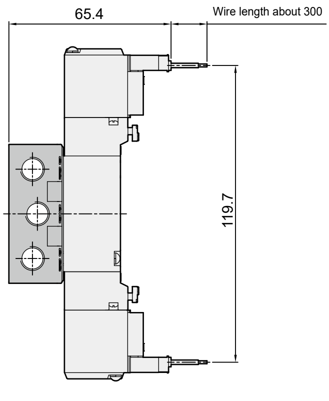
Single exhausting sub-plate
5 port 2-position double


A
B
R1
P
R2
2-Rc 1/8
20
18
9.5
52
15.5
4-Ø4.3
48
4
15.5
4
27
35
DC 24V
PUSH
LOCK
4A
2B
5RA
1P
3RB
18
19
61.4
133.1
54.6
52.4
22
11.5
9.5
3-Rc 1/8
18
18
28
56

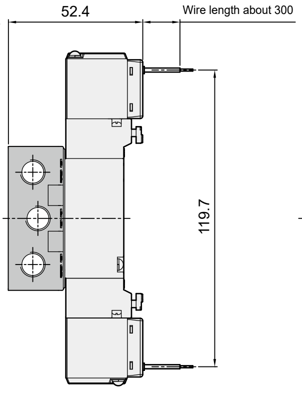
### L wire type - L


52
Wire length about 300
147.3

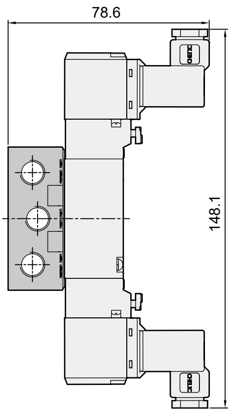
### T wire type - T


65.4
Wire length about 300
119.7

### W wire type - W


52.4
Wire length about 300
119.7

### K wire type - K



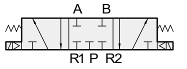
# SMB 5000 series Base Mounted Solenoid Valve

## Dimensions/ Standard

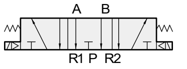
CHELIC

### SMB 5(3)01
### SMB 5(4)01
### SMB 5(5)01

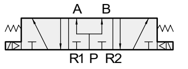
Single exhausting sub-plate
5 port 3-position double



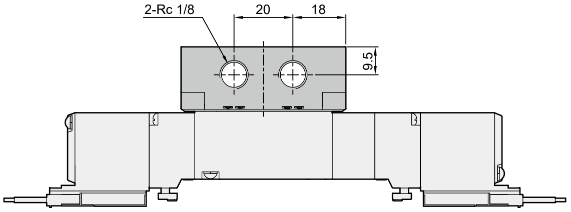
SMB 5(3)01 (Closed center) N.C.

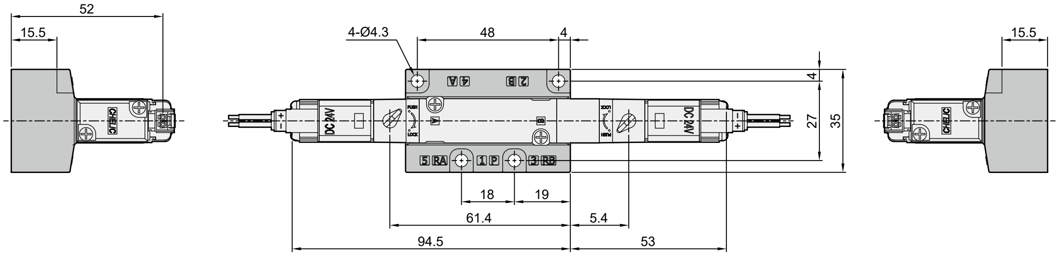


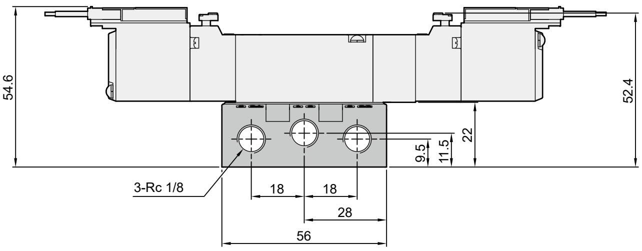
SMB 5(4)01 (Exhaust center) N.F.



SMB 5(5)01 (Pressure center) N.O.

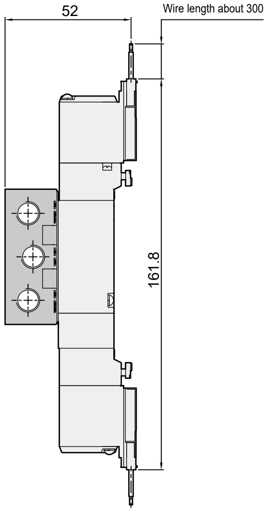

2-Rc 1/8
20
18
9.5


52
15.5
4-Ø4.3
48
4
15.5
4
27
35
4A
2B
5RA
1P
3RB
DC24V
18
19
61.4
5.4
94.5
53

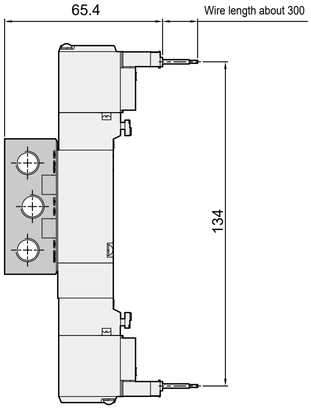

54.6
52.4
22
9.5
11.5
3-Rc 1/8
18
18
28
56

---

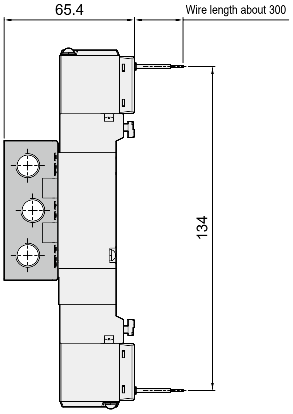
### L wire type - L


52
Wire length about 300
161.8

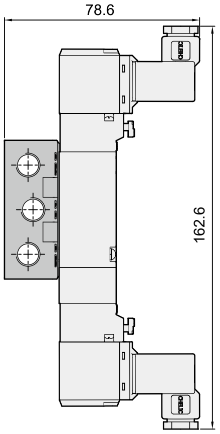
### T wire type - T


65.4
Wire length about 300
134

### W wire type - W


65.4
Wire length about 300
134

### K wire type - K

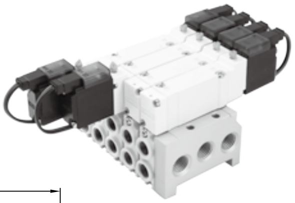


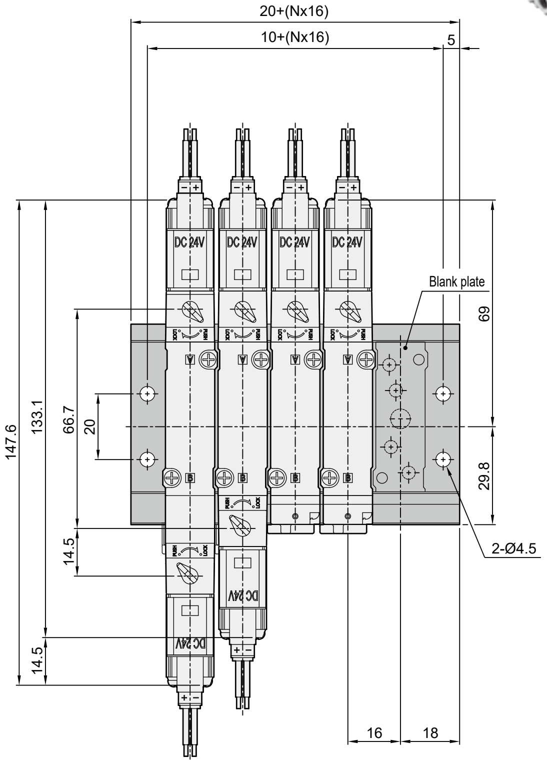
# SMB 5000 series Base Mounted Solenoid Valve

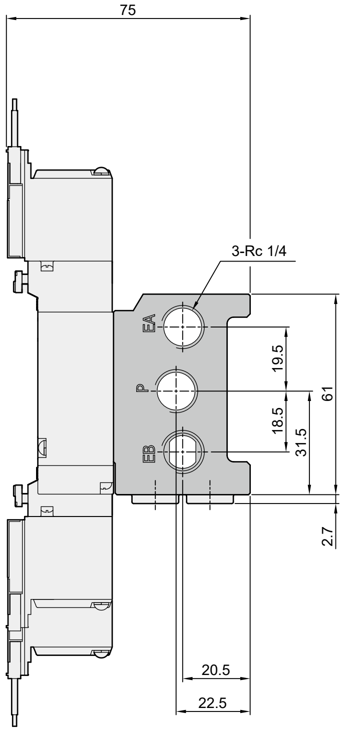
## Dimensions/ Manifold type

### SMB 5000 series - Standard type

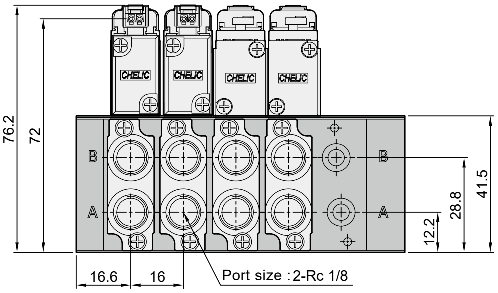
Exhaust manifold dimension




20+(Nx16)
10+(Nx16)
5
DC 24V
Blank plate
69
147.6
133.1
66.7
20
29.8
14.5
14.5
2-Ø4.5
16
18


75
3-Rc 1/4
EA
P
EB
19.5
18.5
31.5
61
2.7
20.5
22.5

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

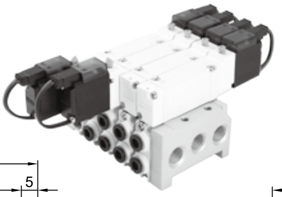

CHELIC
76.2
72
B
A
B
A
41.5
28.8
12.2
16.6
16
Port size :2-Rc 1/8

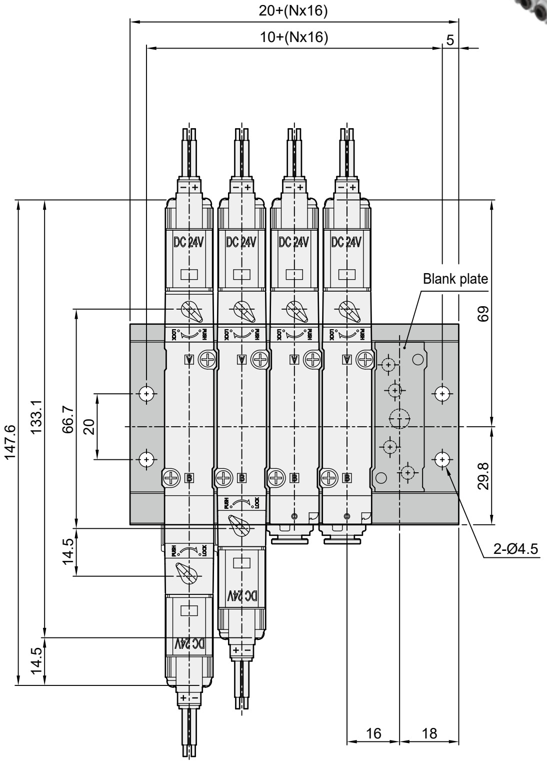
# SMB 5000 series Base Mounted Solenoid Valve

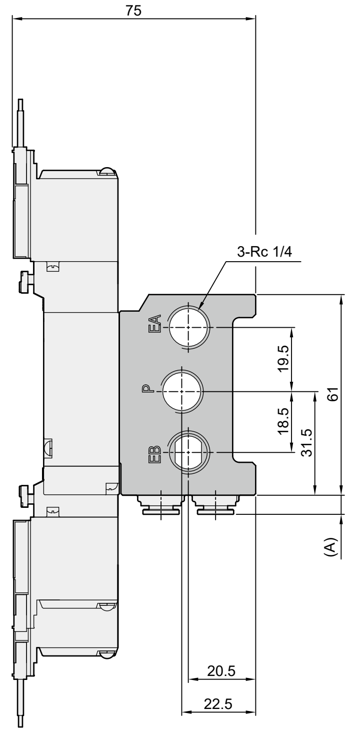
## Dimensions/ Manifold type

### SMB 5000 series - With connector

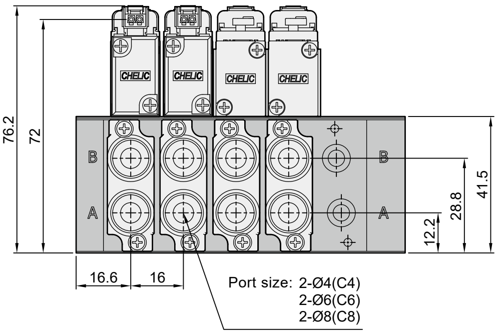
Exhaust manifold dimension




20+(Nx16)
10+(Nx16)
5
DC 24V
Blank plate
69
147.6
133.1
66.7
20
29.8
14.5
14.5
2-Ø4.5
16
18


75
3-Rc 1/4
EA
P
EB
19.5
18.5
31.5
61
(A)
20.5
22.5

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.


CHELIC
B
A
76.2
72
41.5
28.8
12.2
16.6
16
Port size: 2-Ø4(C4)
2-Ø6(C6)
2-Ø8(C8)

| Model | A |
|---|---|
| SMB5100-C4 | 5.4 |
| SMB5100-C6 | 6 |
| SMB5100-C8 | 7.3 |

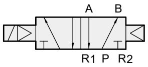
# SMB 7000 series Base Mounted Solenoid Valve

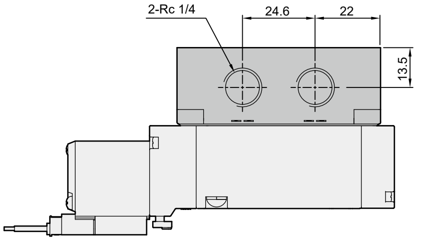
## Dimensions/ Standard

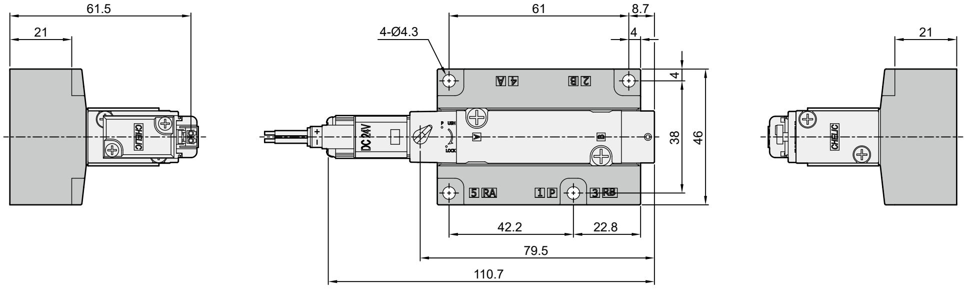
CHELIC

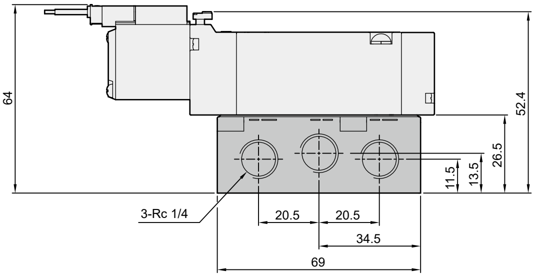
### SMB 7102

Single exhausting sub-plate
5 port 2-position single

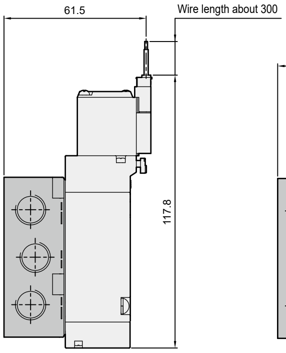



2-Rc 1/4
24.6
22
13.5

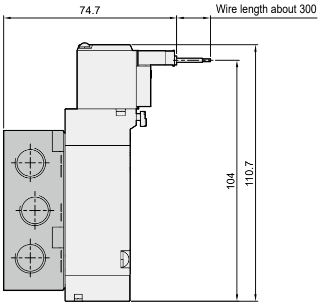

61.5
21
61
8.7
4-Ø4.3
4
4
38
46
42.2
22.8
79.5
110.7
21
4A
2B
5RA
1P
3RB
DC24V
CHELIC


64
52.4
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

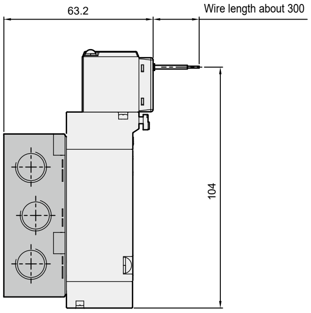
### L wire type - L


61.5
Wire length about 300
117.8

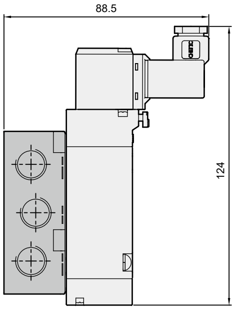
### T wire type - T


74.7
Wire length about 300
104
110.7

### W wire type - W


63.2
Wire length about 300
104

### K wire type - K

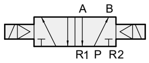


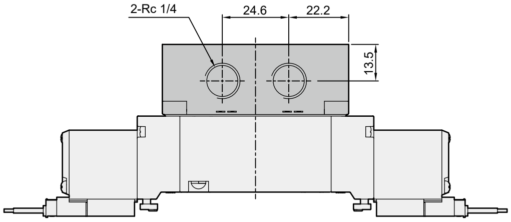
# SMB 7000 series Base Mounted Solenoid Valve

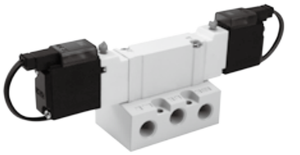
## Dimensions/ Standard

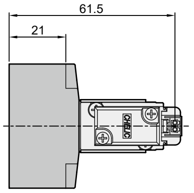
### SMB 7202

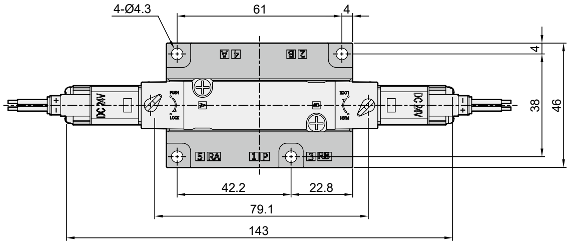
Single exhausting sub-plate
5 port 2-position double

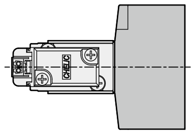


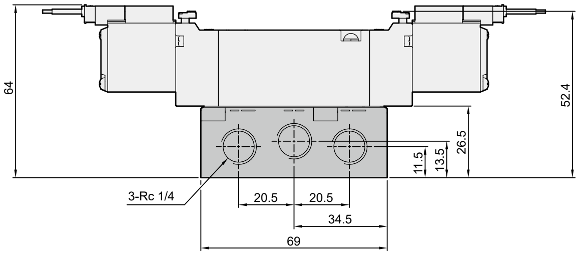

2-Rc 1/4
24.6
22.2
13.5





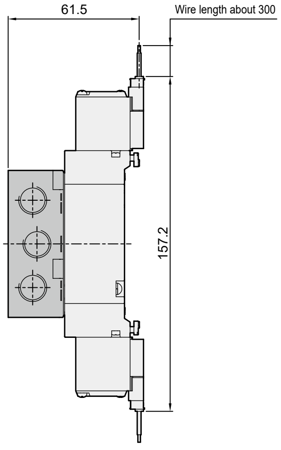

4-Ø4.3
61
4
4 A
2 B
DC24V
PUSH
LOCK
5 RA
1 P
3 RB
4
38
46
42.2
22.8
79.1
143



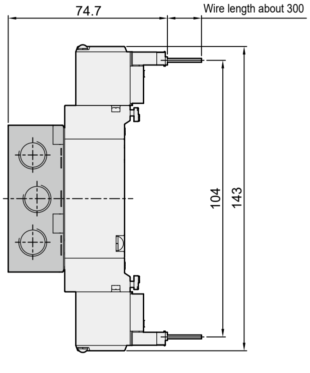

64
52.4
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

---

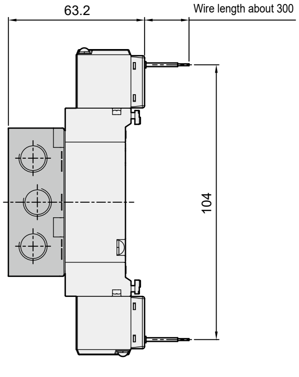
### L wire type - L


61.5
Wire length about 300
157.2

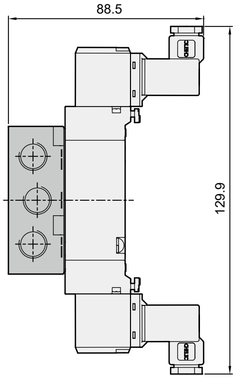
### T wire type - T


74.7
Wire length about 300
104
143

### W wire type - W


63.2
Wire length about 300
104

### K wire type - K

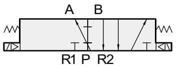


# SMB 7000 series Base Mounted Solenoid Valve

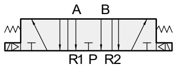
## Dimensions/ Standard

### SMB 7(3)02
### SMB 7(4)02
### SMB 7(5)02

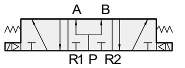
Single exhausting sub-plate
5 port 3-position double



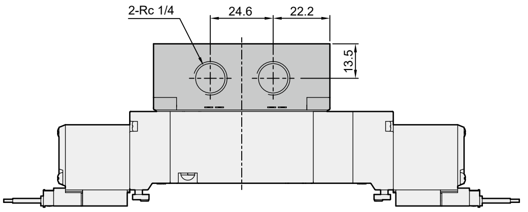
SMB 7(3)02 (Closed center) N.C.

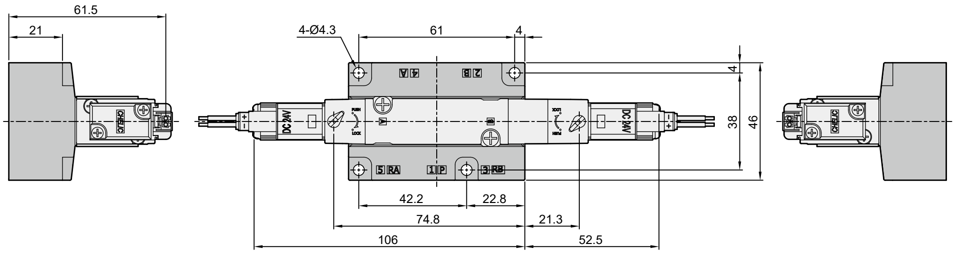


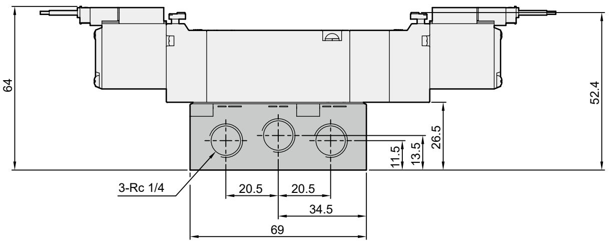
SMB 7(4)02 (Exhaust center) N.F.



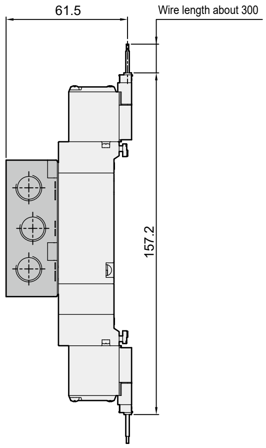
SMB 7(5)02 (Pressure center) N.O.


2-Rc 1/4
24.6
22.2
13.5

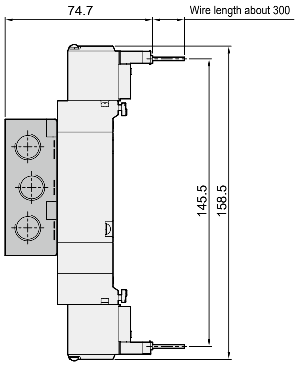

61.5
21
4-Ø4.3
61
4
4
38
46
4 A
2 B
5 RA
1 P
3 RB
DC24V
PUSH
LOCK
42.2
22.8
74.8
21.3
106
52.5


64
52.4
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

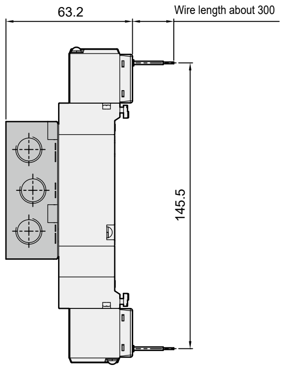
### L wire type - L


61.5
Wire length about 300
157.2

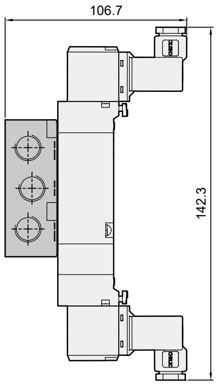
### T wire type - T


74.7
Wire length about 300
145.5
158.5

### W wire type - W


63.2
Wire length about 300
145.5

### K wire type - K

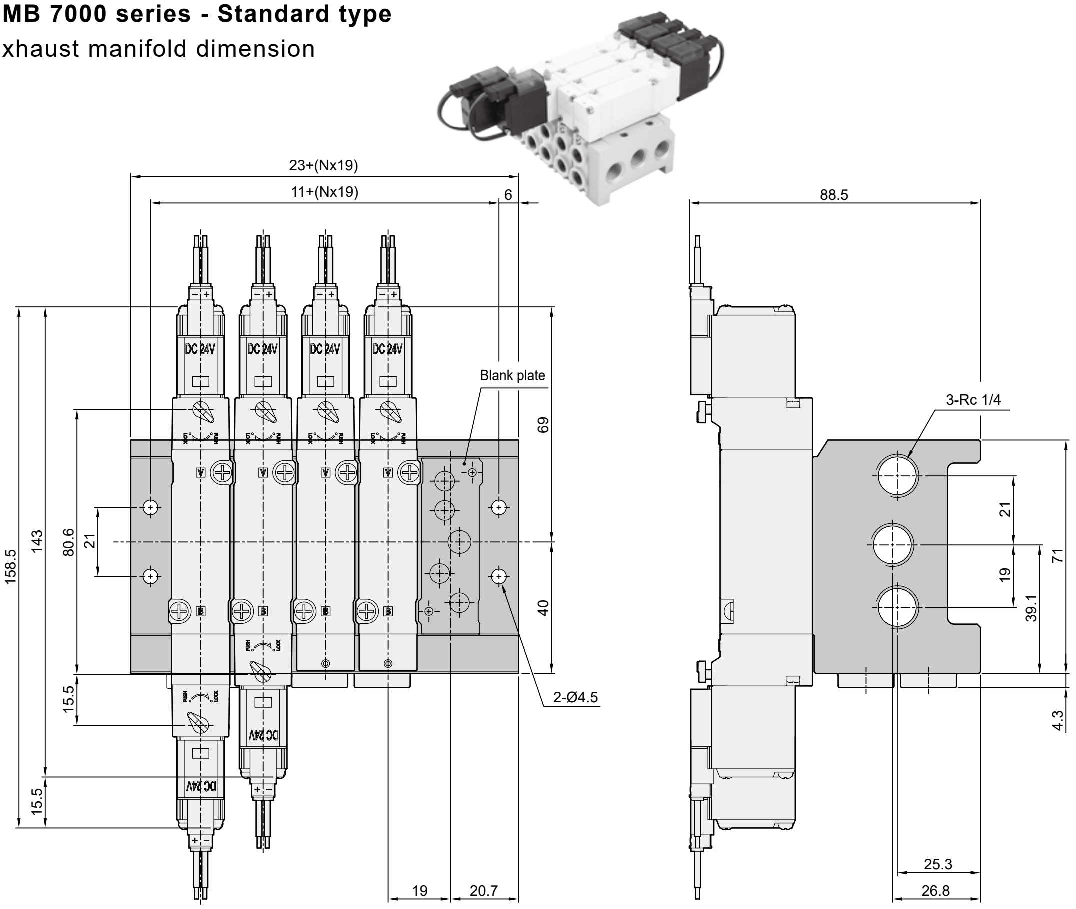


# SMB 7000 series Base Mounted Solenoid Valve

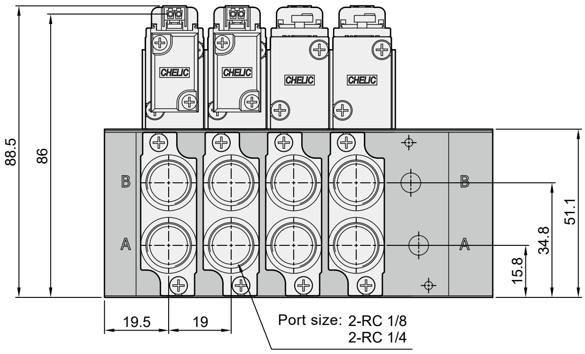
## Dimensions/ Manifold type

### SMB 7000 series - Standard type

Exhaust manifold dimension


23+(Nx19)
11+(Nx19)
6
88.5
DC 24V
PUSH
LOCK
Blank plate
3-Rc 1/4
69
40
158.5
143
80.6
21
15.5
15.5
2-Ø4.5
19
20.7
21
19
71
39.1
4.3
25.3
26.8

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

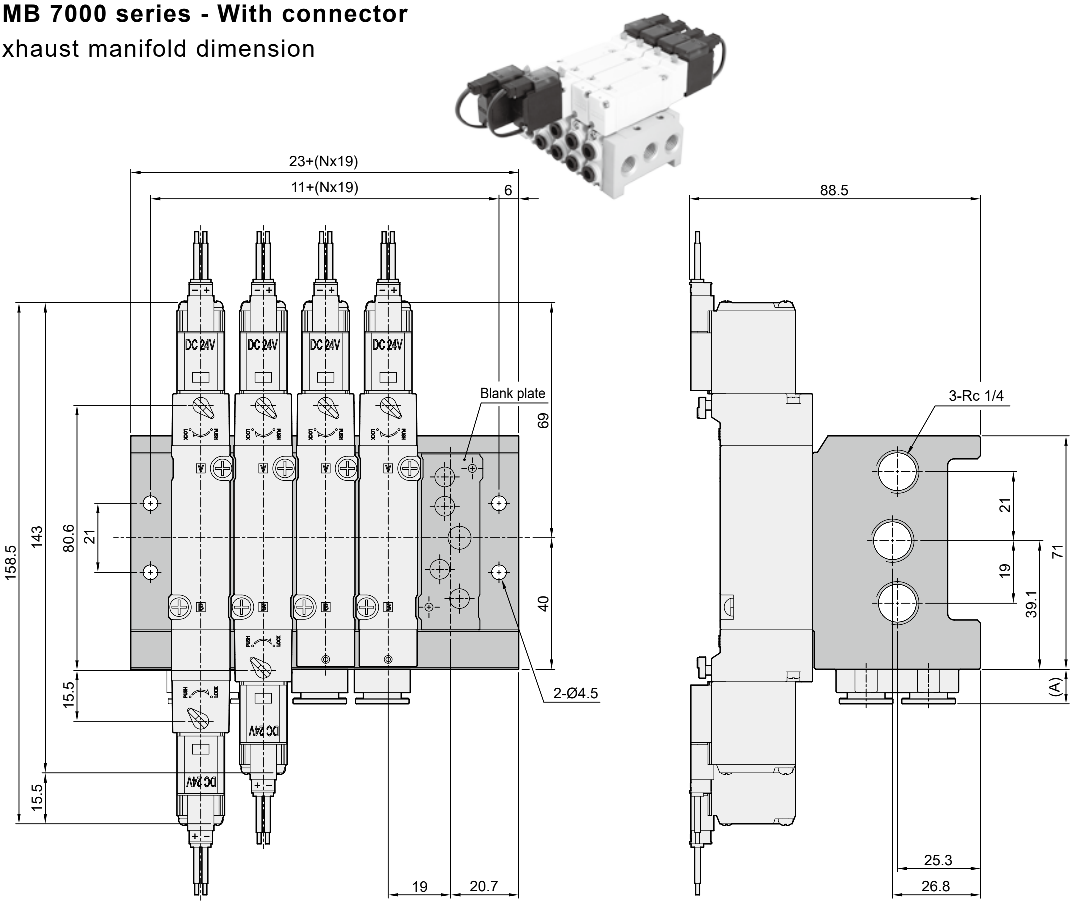

CHELIC
88.5
86
B
A
51.1
34.8
15.8
19.5
19
Port size: 2-RC 1/8
2-RC 1/4

# SMB 7000 series Base Mounted Solenoid Valve

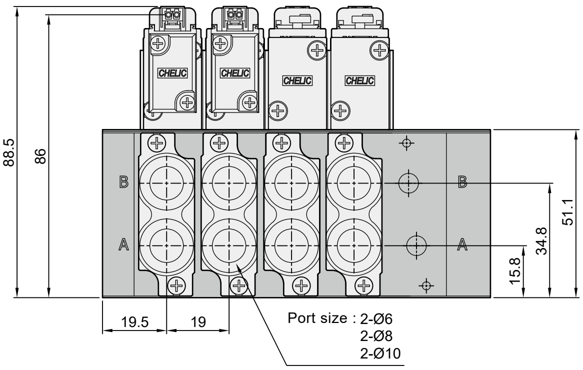
## Dimensions/ Manifold type

### SMB 7000 series - With connector

Exhaust manifold dimension


23+(Nx19)
11+(Nx19)
6
88.5
DC 24V
Blank plate
3-Rc 1/4
69
40
158.5
143
80.6
21
15.5
15.5
2-Ø4.5
21
19
71
39.1
(A)
19
20.7
25.3
26.8

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.


CHELIC
B
A
88.5
86
51.1
34.8
15.8
19.5
19

Port size : 2-Ø6
2-Ø8
2-Ø10

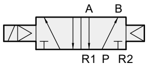
| Model | A |
|---|---|
| SMB7100-C6 | 5.4 |
| SMB7100-C8 | 5.6 |
| SMB7100-C10 | 10.9 |

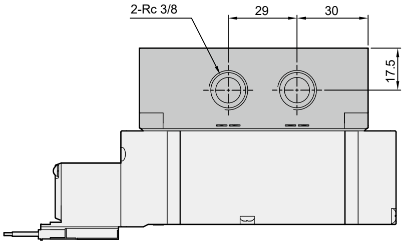
# SMB 9000 series Base Mounted Solenoid Valve

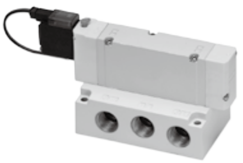
## Dimensions/ Standard

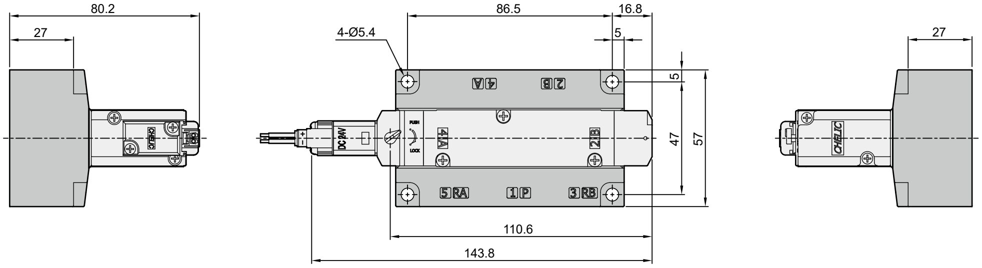
### SMB 9103

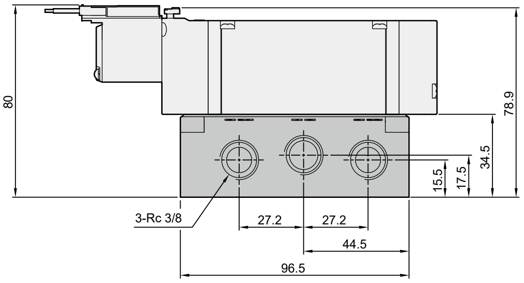
Single exhausting sub-plate
5 port 2-position single



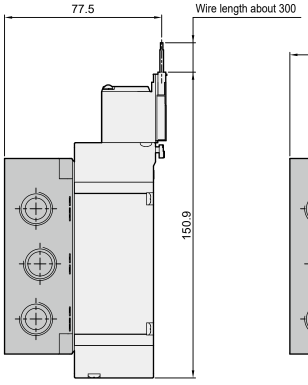

2-Rc 3/8
29
30
17.5

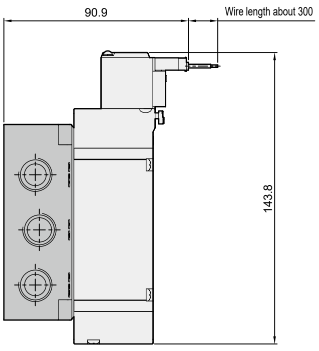


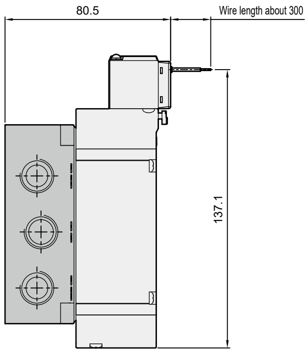

80.2
27
86.5
16.8
4-Ø5.4
5
5
47
57
4A
2B
5RA
1P
3RB
DC24V
PUSH
LOCK
110.6
143.8
27

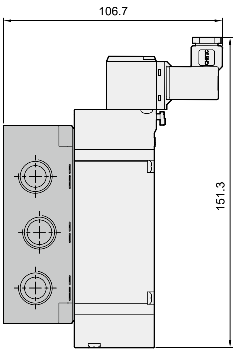

80
78.9
34.5
17.5
15.5
3-Rc 3/8
27.2
27.2
44.5
96.5

**L wire type - L** **T wire type - T** **W wire type - W** **K wire type - K**


77.5
Wire length about 300
150.9


90.9
Wire length about 300
143.8


80.5
Wire length about 300
137.1



# SMB 9000 series Base Mounted Solenoid Valve

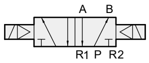
## Dimensions/ Standard

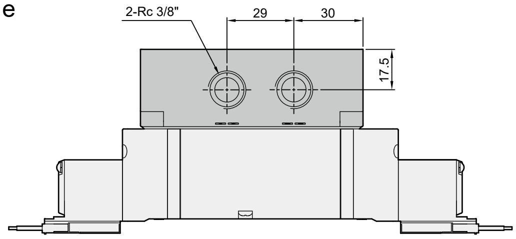
CHELIC

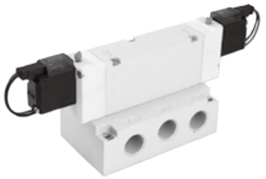
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

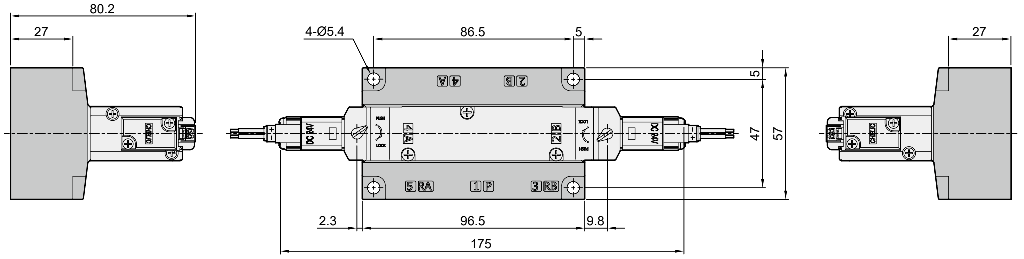
### SMB 9203

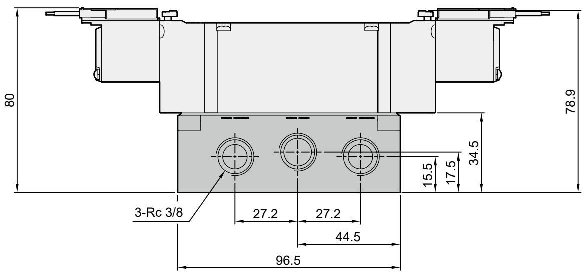
Single exhausting sub-plate
5 port 2-position double



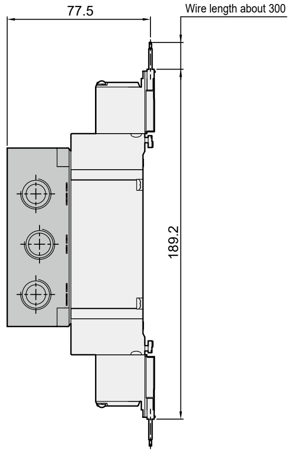

2-Rc 3/8"
29
30
17.5



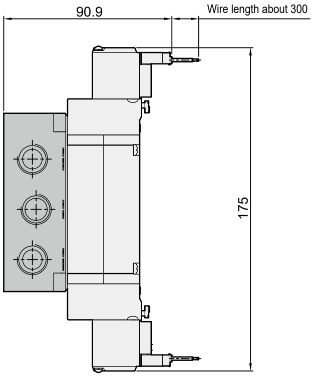

80.2
27
4-Ø5.4
86.5
5
27
4A
2B
5RA
1P
3RB
DC 24V
PUSH
LOCK
5
47
57
2.3
96.5
9.8
175


80
78.9
34.5
17.5
15.5
3-Rc 3/8
27.2
27.2
44.5
96.5

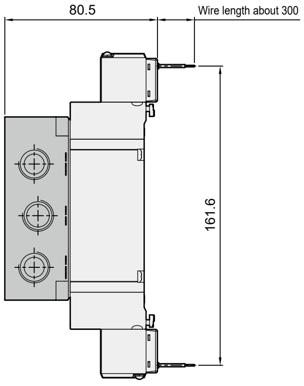
### L wire type - L


77.5
Wire length about 300
189.2

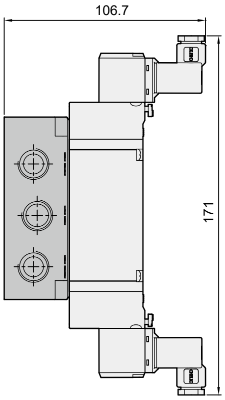
### T wire type - T


90.9
Wire length about 300
175

### W wire type - W


80.5
Wire length about 300
161.6

### K wire type - K



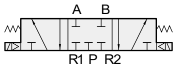
# SMB 9000 series Base Mounted Solenoid Valve

## Dimensions/ Standard

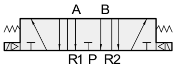
CHELIC

### SMB 9(3)03
### SMB 9(4)03
### SMB 9(5)03

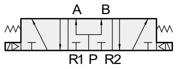
Single exhausting sub-plate
5 port 3-position double



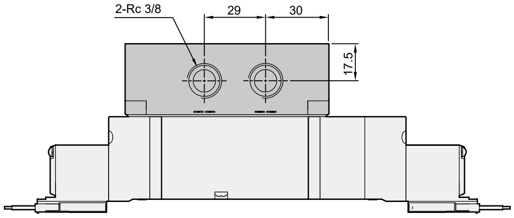
SMB 9(3)03 (Closed center) N.C.

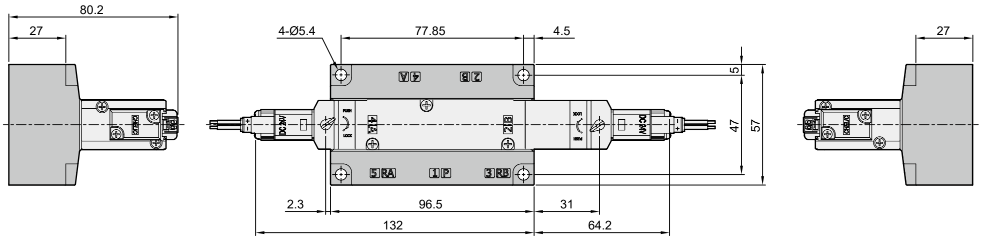


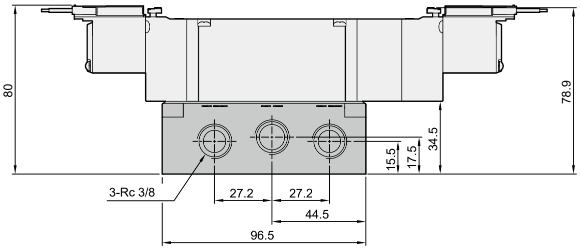
SMB 9(4)03 (Exhaust center) N.F.



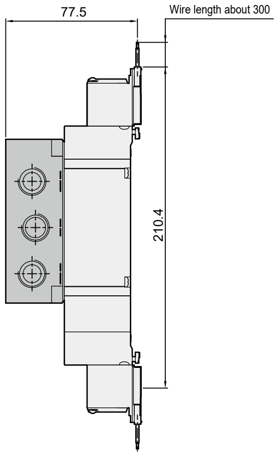
SMB 9(5)03 (Pressure center) N.O.


2-Rc 3/8
29
30
17.5

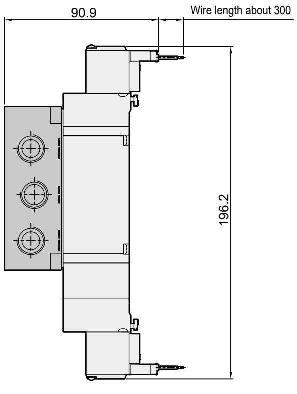

80.2
27
4-Ø5.4
77.85
4.5
27
5
47
57
4A
2B
5RA
1P
3RB
2.3
96.5
31
132
64.2


80
78.9
34.5
17.5
15.5
3-Rc 3/8
27.2
27.2
44.5
96.5

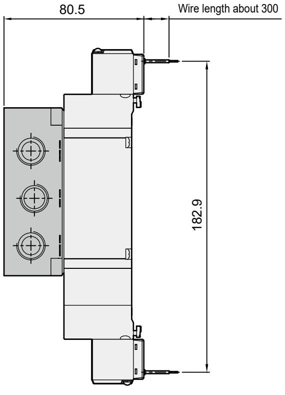
### L wire type - L


77.5
Wire length about 300
210.4

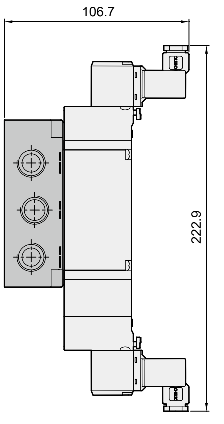
### T wire type - T

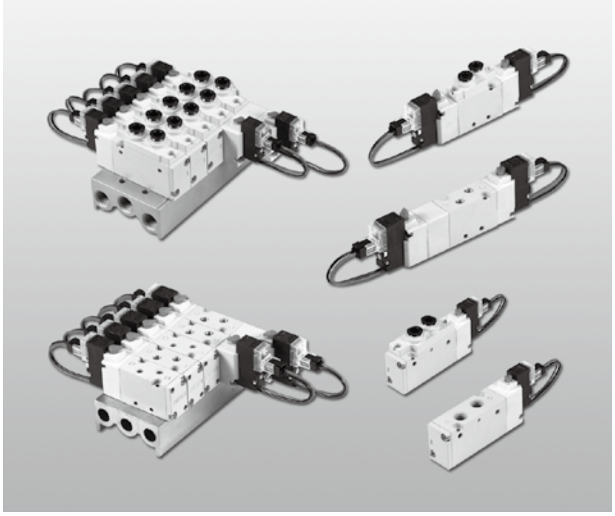

90.9
Wire length about 300
196.2

### W wire type - W


80.5
Wire length about 300
182.9

### K wire type - K

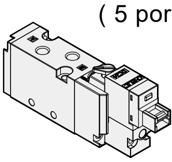




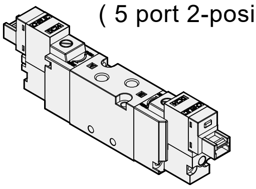
Provide CAD external dimension.

Small size, big flow rate!
High responding time below 10ms.
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.

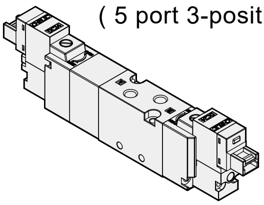
**Solenoid valve single coil** - - - - **SRK - 500 series** - - - **M5, Ø4, Ø6** - - - - - - - - - - - - - - - - **P.2-1.150**
( 5 port 2-position )
**SRK - 700 series** - - - **Rc 1/8, Ø6, Ø8** - - - - - - - - - - - - - - - **P.2-1.157**



**Solenoid valve double coils** ----- **SRK - 500 series** - - - **M5, Ø4, Ø6** - - - - - - - - - - - - - - - **P.2-1.151**
( 5 port 2-position )
**SRK - 700 series** - - - **Rc 1/8, Ø6, Ø8** - - - - - - - - - - - - - - **P.2-1.158**

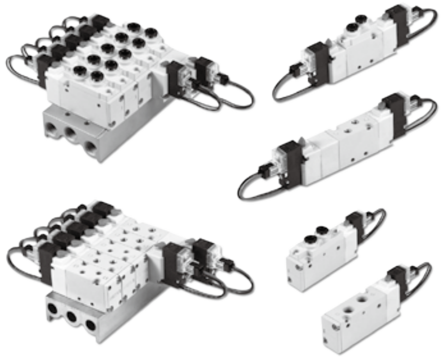


**Solenoid valve double coils** ----- **SRK - 500 series** - - - **M5, Ø4, Ø6** - - - - - - - - - - - - - - - **P.2-1.152**
( 5 port 3-position )
**SRK - 700 series** - - - **Rc 1/8, Ø6, Ø8** - - - - - - - - - - - - - - **P.2-1.159**

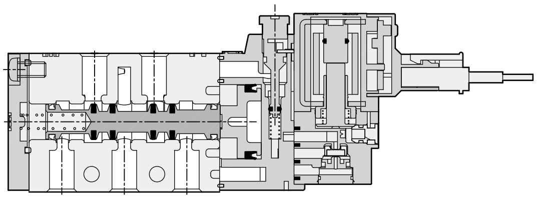


# SRK 500, 700 series One-touch Fitting Body Ported Solenoid Valve

## Product features



### Internal structure



### Specification

| Item / Model | SRK 500 | | SRK 700 | |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 (150 ~ 700) | | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | | |
| Pilot type | Air operated | | | |
| Number of positions | 5/2-position | 5/3-position | 5/2-position | 5/3-position |
| Type of actuation | Normally closed | | | |
| Effective orifice mm²(CV) | 9 ( 0.5 ) | | 16.2 ( 0.9 ) | |
| Manual override | Push and lock | | | |
| Port size | M5, Ø4, Ø6 | | Rc1/8, Ø6, Ø8 | |
| Lubrication | Lubrication free type | | | |

### Code of order

**SRK – 5 – 10 – M5 – – 24VDC – L – M 2**

**Model**

SRK:
Solenoid valve

**Model number**

5: 500 series
7: 700 series

**Coil q'ty**

10: Single
20: Double

30: Closed center
40: Exhaust center
50: Pressure center

SRK:
5/3-position double coils only

**Port size**

| Thread type (standard) | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8P | SRK500 |
| 1 | Rc 1/8 | SRK700 |

For A and B port

| | |
|---|---|
| 0 | With fitting port |

**With fitting port**

| Mark | Thread | Model |
|---|---|---|
| C4 | Ø4 | SRK500 |
| C6 | Ø6 | |
| C6 | Ø6 | SRK700 |
| C8 | Ø8 | |

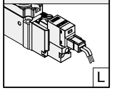
None:
Standard type
(Thread type)

**Voltage**

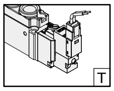
Standard voltage
12V DC 1.2W
24V DC 1.2W

**Electrical entry**

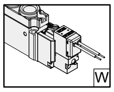
Standard



(With wire length 300mm)

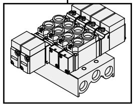


(With wire length 300mm)



Grommet
(With wire length 300mm)

**Manifold**



None:
Without manifold

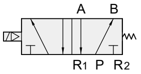
M2 = 2 sets
M3 = 3 sets
⋮
M20 = 20 sets

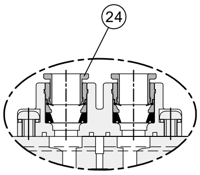
# SRK 500, 700 series One-touch Fitting Body Ported Solenoid Valve

## Product features

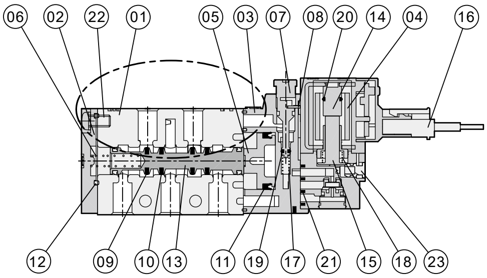
### Internal structure

- 5 port 2-position single

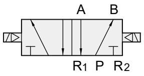


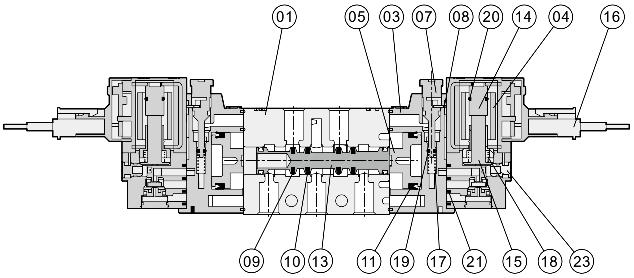


-with fitting type

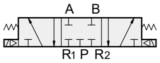

06
02
22
01
05
03
07
08
20
14
04
16
12
09
10
13
11
19
17
21
15
18
23

- 5 port 2-position double

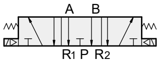



01
05
03
07
08
20
14
04
16
09
10
13
11
19
17
21
15
18
23

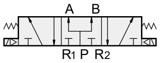
- 5 port 3-position double



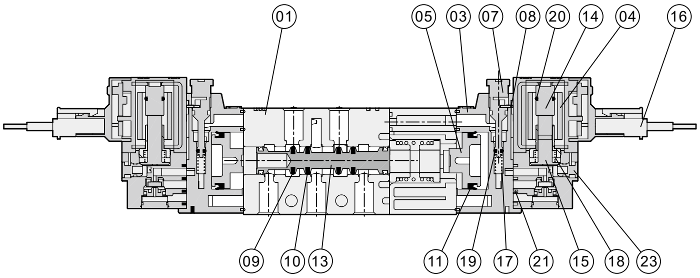
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
05
03
07
08
20
14
04
16
09
10
13
11
19
17
21
15
18
23

### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 13 | Shaft | Aluminum alloy |
| 02 | Rear cover | Aluminum alloy | 14 | Coil insert bushing | Stainless steel |
| 03 | Holder | Resin | 15 | Spring bushing | Stainless steel |
| 04 | Coil | — | 16 | Wire plug | Resin |
| 05 | Holder piston | POM | 17 | Manual override spring | Stainless steel |
| 06 | Rear cover piston | Stainless steel | 18 | Spring bushing spring | Stainless steel |
| 07 | Manual override | POM | 19 | Manual override O-ring | NBR |
| 08 | Position iron plate | Iron | 20 | Coil insert bushing O-ring | NBR |
| 09 | Spool packing | NBR | 21 | Rubber Lining | NBR |
| 10 | Spool packing | NBR | 22 | Rear screw | Alloy steel |
| 11 | Holder piston packing | NBR | 23 | Valve rear cap | Cooper alloy |
| 12 | Rear cover O-ring | NBR | 24 | Fitting | — |

Note: The main body be treated with painting.

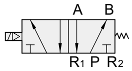
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

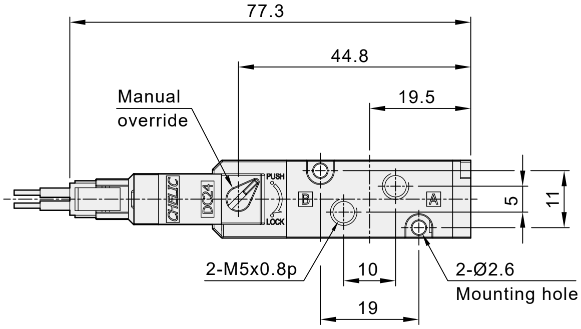
## Dimensions/ Standard

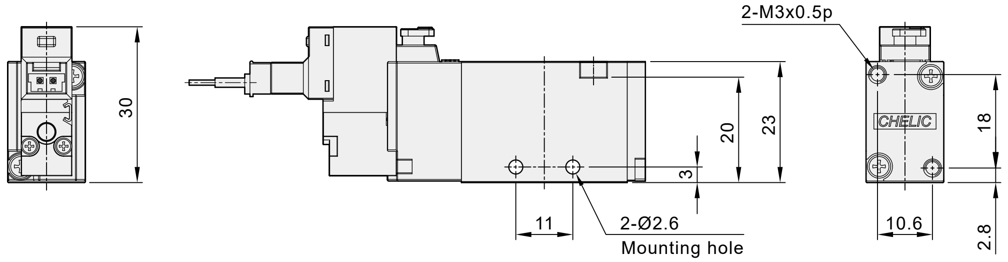
CHELIC

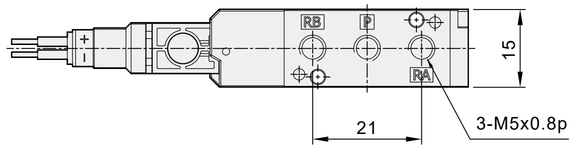
### SRK 510M5

5 port 2-position single

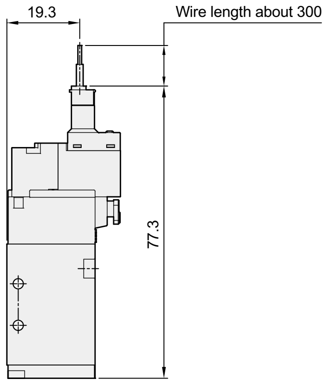



77.3
44.8
19.5
Manual override
PUSH
LOCK
CHELIC
DC24
B
A
5
11
2-M5x0.8p
10
19
2-Ø2.6
Mounting hole

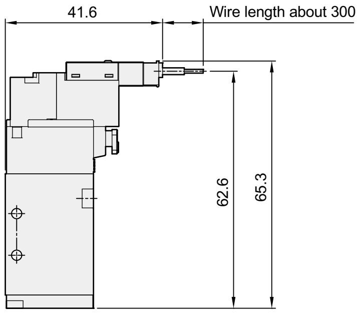

30
2-M3x0.5p
20
23
3
11
2-Ø2.6
Mounting hole
CHELIC
18
10.6
2.8


RB
P
RA
+
−
15
21
3-M5x0.8p

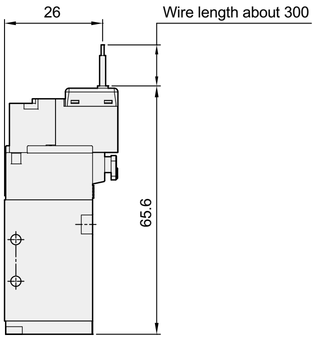
### L wire type - L


19.3
Wire length about 300
77.3

### T wire type - T


41.6
Wire length about 300
62.6
65.3

### W wire type - W

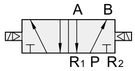

26
Wire length about 300
65.6

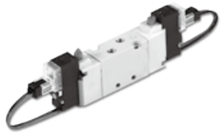
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

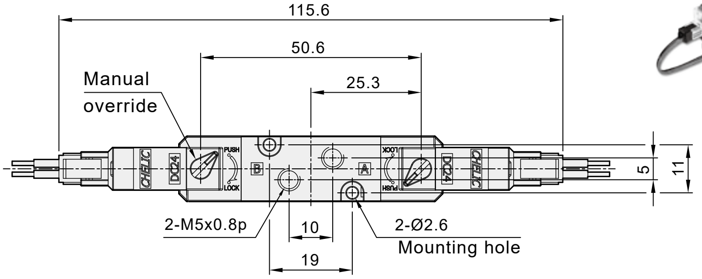
## Dimensions/ Standard

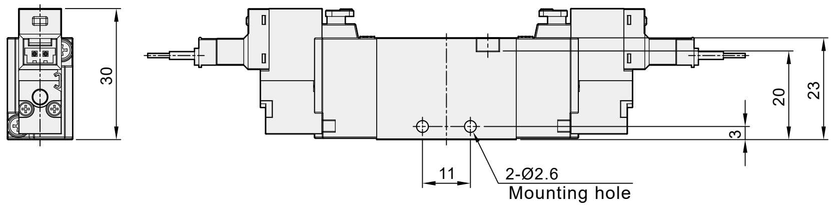
### SRK 520M5

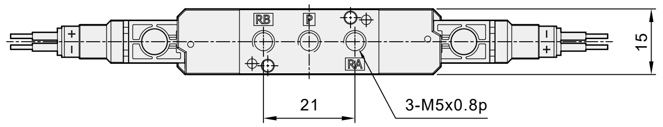
5 port 2-position double



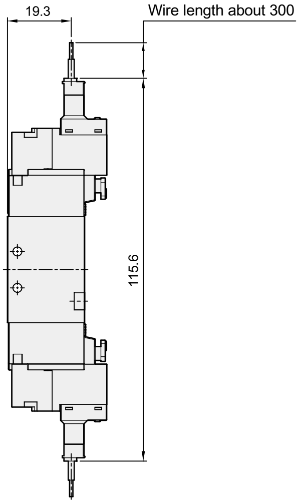



115.6
50.6
25.3
Manual override
CHELIC
DC24
PUSH
LOCK
B
A
5
11
2-M5x0.8p
10
19
2-Ø2.6
Mounting hole

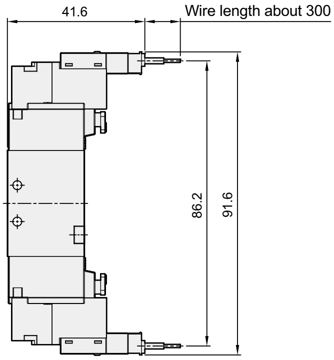

30
20
23
3
11
2-Ø2.6
Mounting hole


RB
P
RA
+
-
15
21
3-M5x0.8p

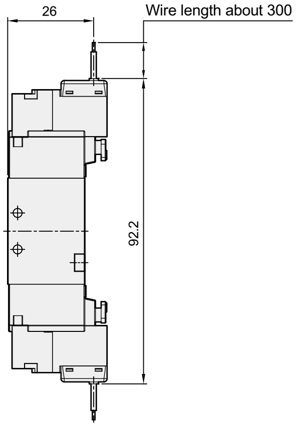
### L wire type - L


19.3
Wire length about 300
115.6

### T wire type - T


41.6
Wire length about 300
86.2
91.6

### W wire type - W


26
Wire length about 300
92.2

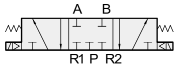
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

## Dimensions/ Standard

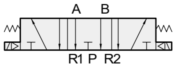
CHELIC

### SRK 5(3)0M5
### SRK 5(4)0M5
### SRK 5(5)0M5

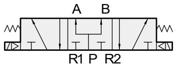
5 port 3-position double



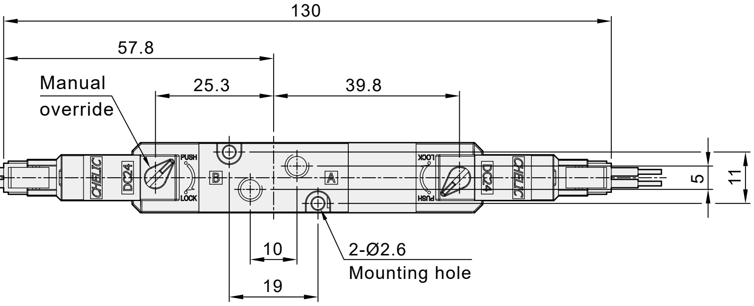
SRK-5(3)0M5 (Closed center) N.C.



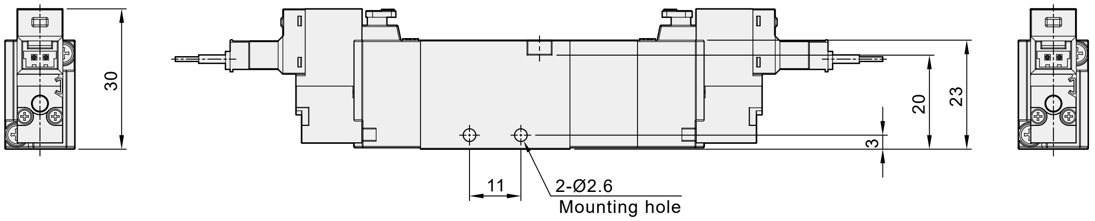
SRK-5(4)0M5 (Exhaust center) N.F.



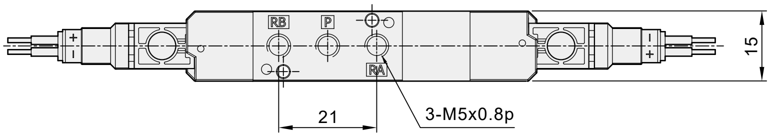
SRK-5(5)0M5 (Pressure center) N.O.



130
57.8
Manual override
25.3
39.8
PUSH
LOCK
DC24
CHELIC
B
A
5
11
10
19
2-Ø2.6
Mounting hole

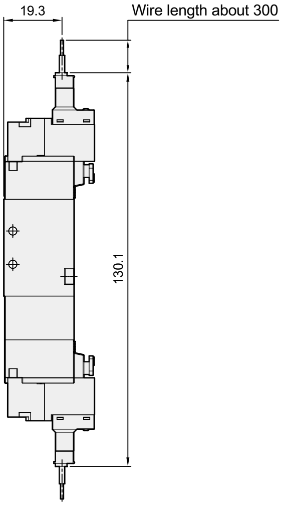


30
20
23
3
11
2-Ø2.6
Mounting hole



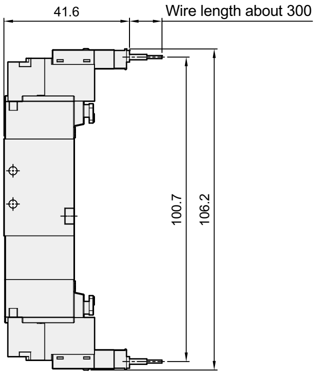
RB
P
RA
-
+
15
21
3-M5x0.8p

### L wire type - L



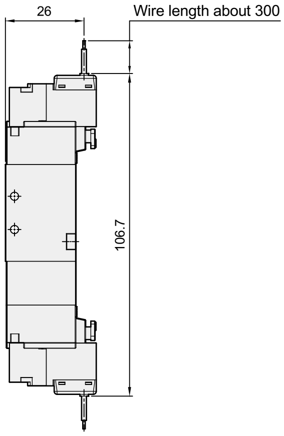
19.3
Wire length about 300
130.1

### T wire type - T



41.6
Wire length about 300
100.7
106.2

### W wire type - W



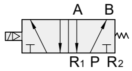
26
Wire length about 300
106.7

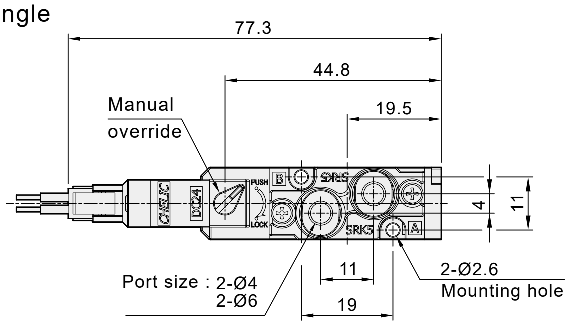
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

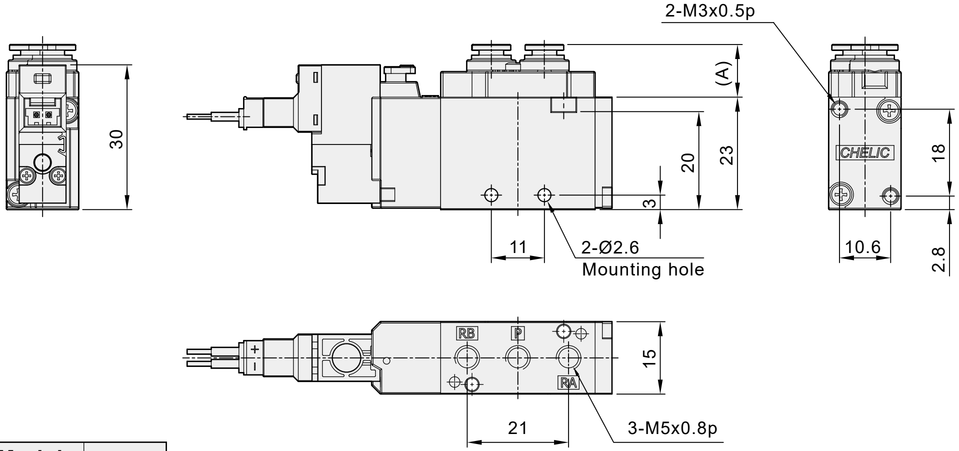
## Dimensions/ With fitting

### SRK 5100-C4 (Ø4)
### SRK 5100-C6 (Ø6)

5 port 2-position single

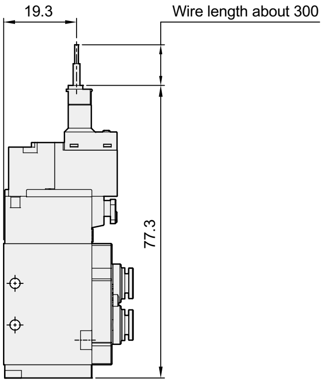



77.3
44.8
19.5
Manual override
PUSH
LOCK
CHELIC
DC24
B
SRK5
A
4
11
11
19
2-Ø2.6
Mounting hole
Port size : 2-Ø4
2-Ø6

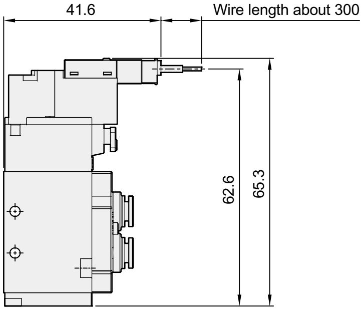

30
2-M3x0.5p
(A)
20
23
3
11
2-Ø2.6
Mounting hole
CHELIC
18
10.6
2.8
+
-
RB
P
RA
15
21
3-M5x0.8p

| Model | A |
|---|---|
| SRK5100-C4 | 10.9 |
| SRK5100-C6 | 11.1 |

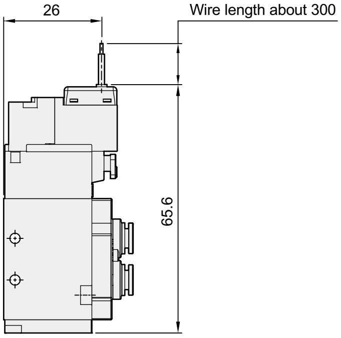
### L wire type - L


19.3
Wire length about 300
77.3

### T wire type - T


41.6
Wire length about 300
62.6
65.3

### W wire type - W


26
Wire length about 300
65.6

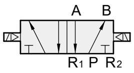
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

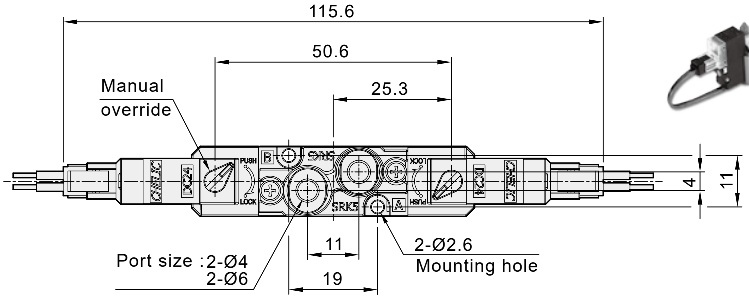
## Dimensions/ With fitting

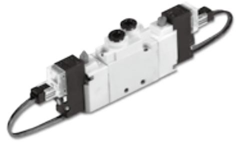
CHELIC.

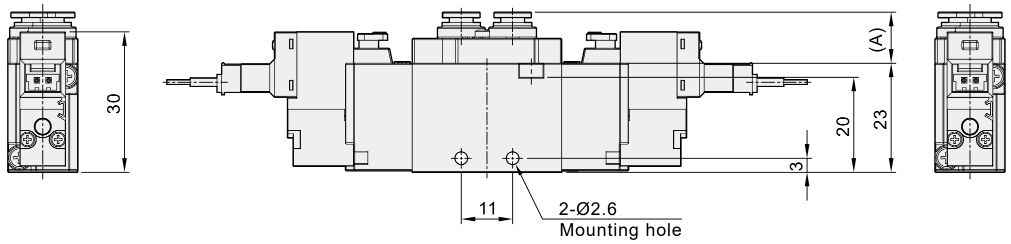
### SRK 5200-C4 (Ø4)
### SRK 5200-C6 (Ø6)

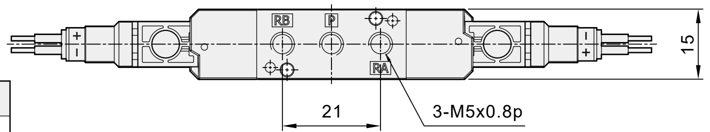
5 port 2-position double




115.6
50.6
25.3
Manual override
4
11
11
19
2-Ø2.6
Mounting hole
Port size :2-Ø4
2-Ø6
B
A
SRK5
PUSH
LOCK
DC24
CHELIC

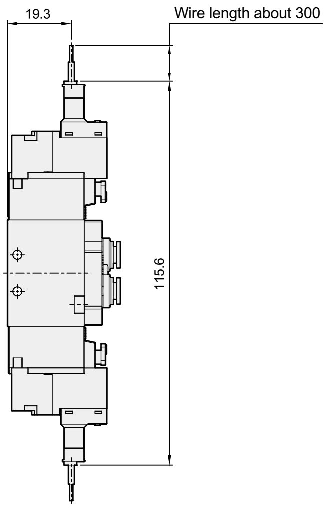



30
(A)
20
23
3
11
2-Ø2.6
Mounting hole

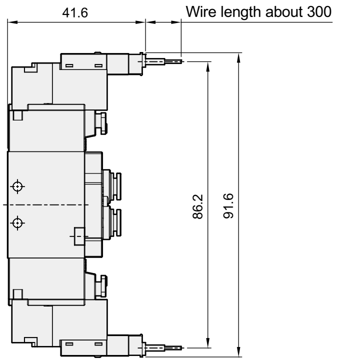

RB
P
RA
15
21
3-M5x0.8p
+
-

| Model | A |
|---|---|
| SRK5200-C4 | 10.9 |
| SRK5200-C6 | 11.1 |

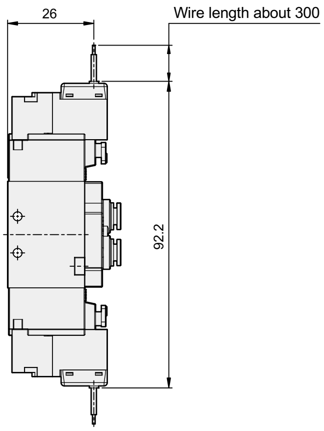
### L wire type - L


19.3
Wire length about 300
115.6

### T wire type - T


41.6
Wire length about 300
86.2
91.6

### W wire type - W


26
Wire length about 300
92.2

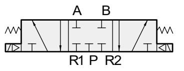
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

## Dimensions/ With fitting

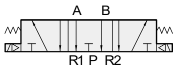
CHELIC

### SRK 5(3)00 - C4 (Ø4) • C6 (Ø6)
### SRK 5(4)00 - C4 (Ø4) • C6 (Ø6)
### SRK 5(5)00 - C4 (Ø4) • C6 (Ø6)

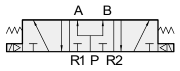
5 port 3-position double



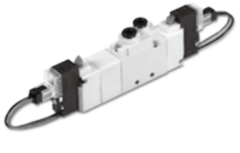
SRK-5(3)00 (Closed center) N.C.

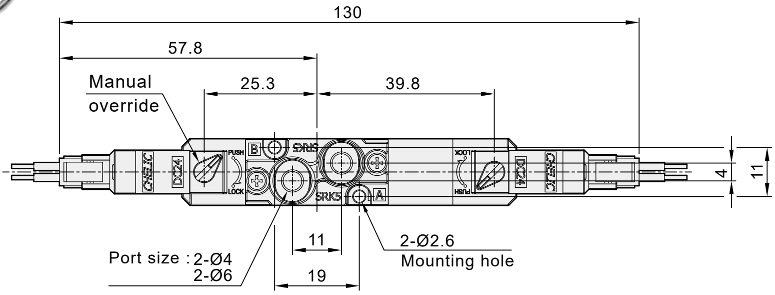


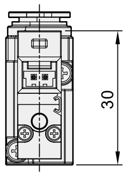
SRK-5(4)00 (Exhaust center) N.F.

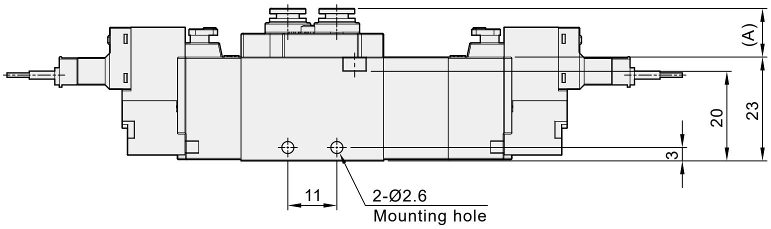


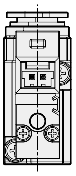
SRK-5(5)00 (Pressure center) N.O.

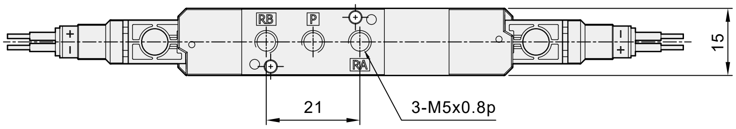



130
57.8
Manual override
25.3
39.8
PUSH
LOCK
B
SRK5
A
DC24
CHELIC
4
11
11
19
2-Ø2.6
Mounting hole
Port size : 2-Ø4
2-Ø6



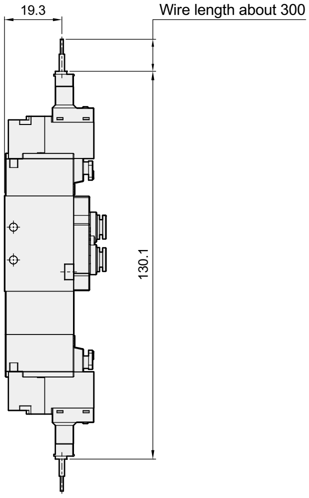

(A)
23
20
3
11
2-Ø2.6
Mounting hole



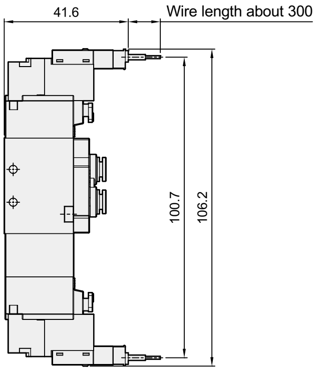

RB
P
RA
+
-
15
21
3-M5x0.8p

| Model | A |
|---|---|
| SRK5100-C4 | 10.9 |
| SRK5100-C6 | 11.1 |

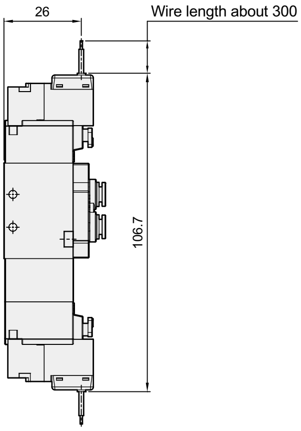
### L wire type - L


19.3
Wire length about 300
130.1

### T wire type - T


41.6
Wire length about 300
100.7
106.2

### W wire type - W


26
Wire length about 300
106.7

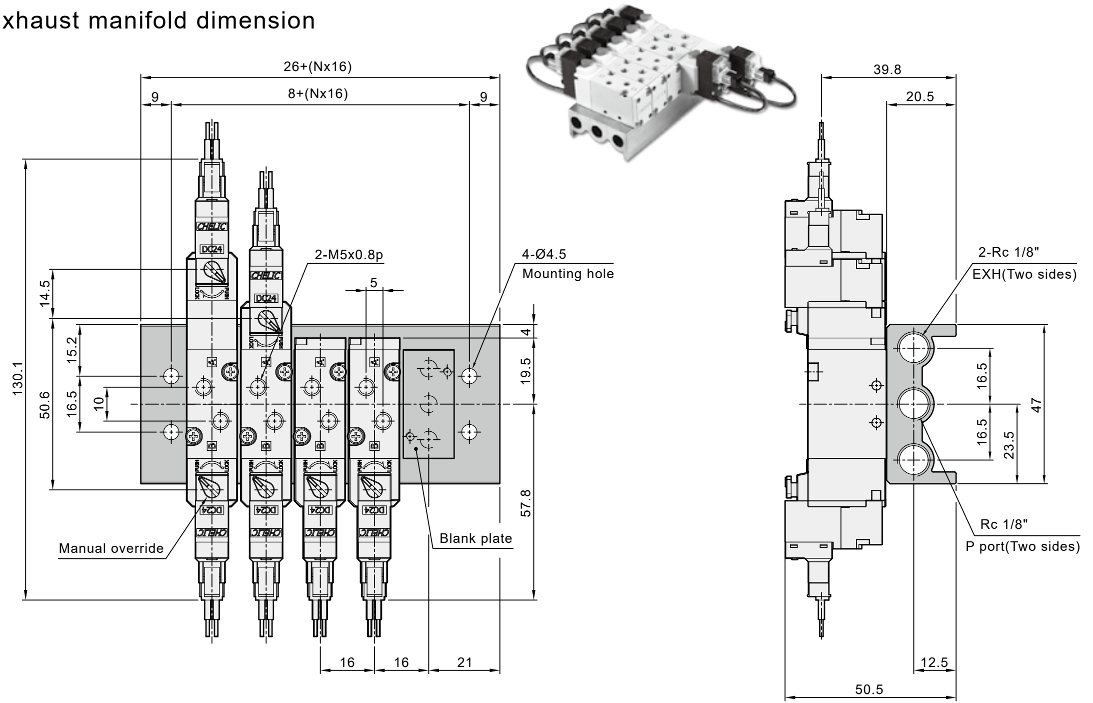
# SRK 500 series One-touch Fitting Body Ported Solenoid Valve

## Dimensions/ With fitting

**CHELIC**

### SRK 500 series - standard

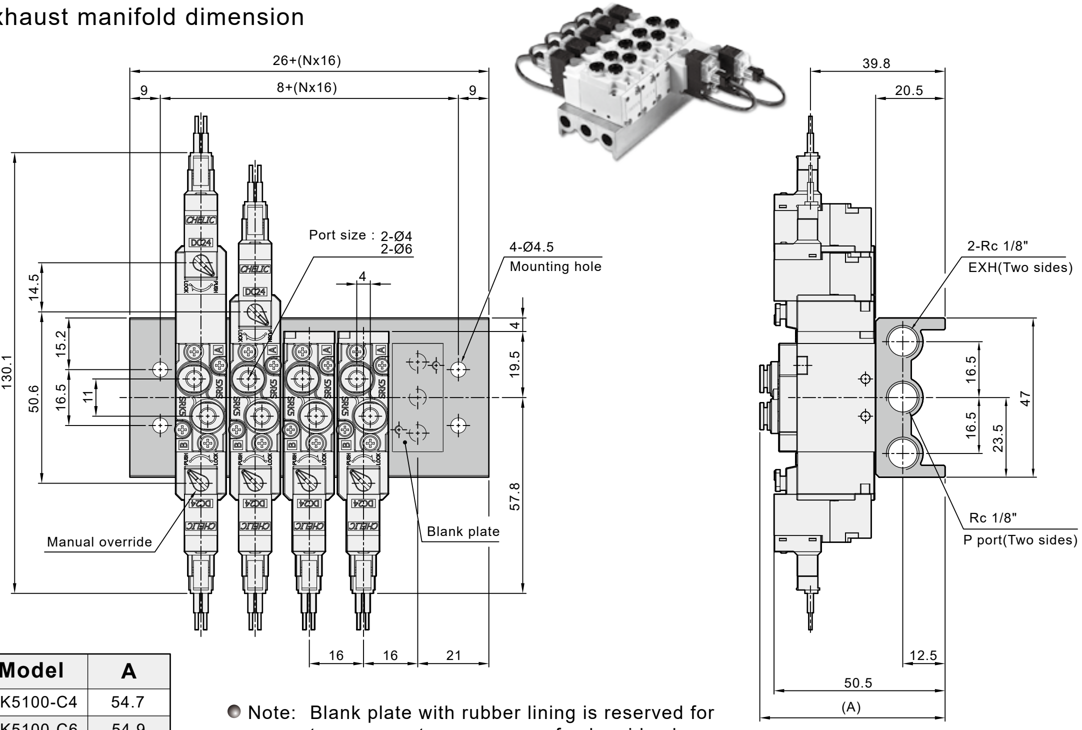
Exhaust manifold dimension


26+(Nx16)
9
8+(Nx16)
9
2-M5x0.8p
5
4-Ø4.5
Mounting hole
14.5
130.1
15.2
50.6
16.5
10
4
19.5
57.8
Manual override
Blank plate
16
16
21
39.8
20.5
2-Rc 1/8"
EXH(Two sides)
16.5
47
16.5
23.5
Rc 1/8"
P port(Two sides)
12.5
50.5

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SRK 500 series - With fitting port

Exhaust manifold dimension


26+(Nx16)
9
8+(Nx16)
9
Port size : 2-Ø4
2-Ø6
4
4-Ø4.5
Mounting hole
14.5
130.1
15.2
50.6
16.5
11
4
19.5
57.8
Manual override
Blank plate
16
16
21
39.8
20.5
2-Rc 1/8"
EXH(Two sides)
16.5
47
16.5
23.5
Rc 1/8"
P port(Two sides)
12.5
50.5
(A)

| Model | A |
|---|---|
| SRK5100-C4 | 54.7 |
| SRK5100-C6 | 54.9 |

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

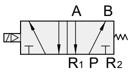
# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

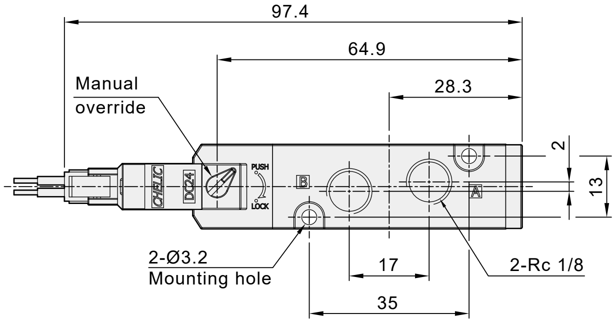
## Dimensions/ Standard

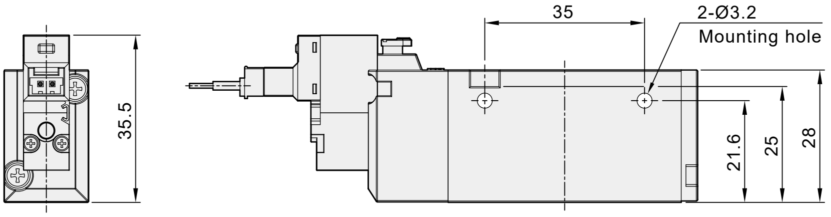
CHELIC.

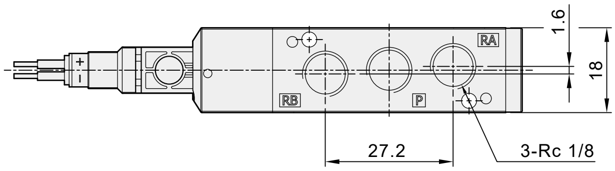
### SRK 7101

5 port 2-position single

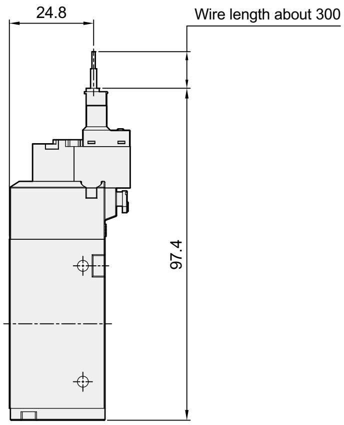



97.4
64.9
28.3
Manual override
CHELIC
DC24
PUSH
LOCK
B
A
2
13
2-Ø3.2 Mounting hole
17
2-Rc 1/8
35

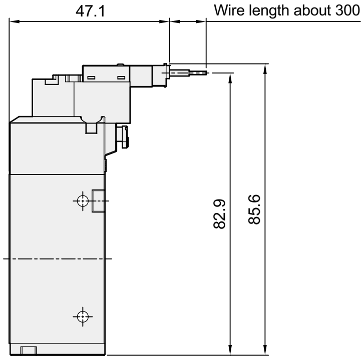

35.5
35
2-Ø3.2 Mounting hole
21.6
25
28
CHELIC


1.6
18
RA
RB
P
+
-
27.2
3-Rc 1/8

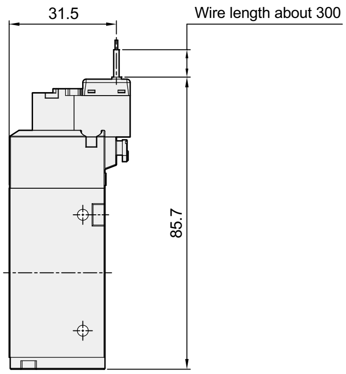
### L wire type - L


24.8
Wire length about 300
97.4

### T wire type - T


47.1
Wire length about 300
82.9
85.6

### W wire type - W

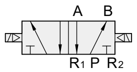

31.5
Wire length about 300
85.7

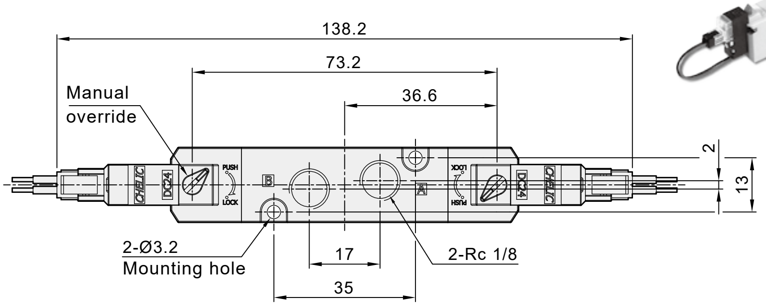
# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

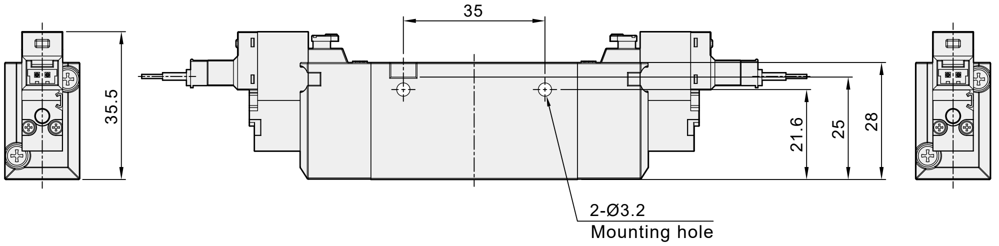
## Dimensions/ Standard

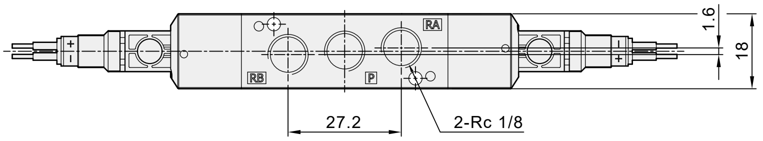
### SRK 7201

5 port 2-position double

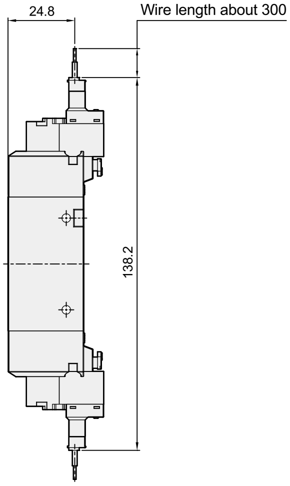



138.2
73.2
36.6
Manual override
2
13
CHELIC
DC24
PUSH
LOCK
B
A
2-Ø3.2
Mounting hole
17
35
2-Rc 1/8

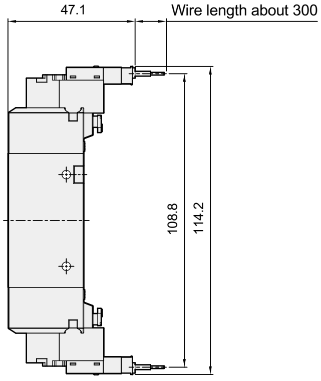

35
35.5
21.6
25
28
2-Ø3.2
Mounting hole


1.6
18
RA
RB
P
+
-
27.2
2-Rc 1/8

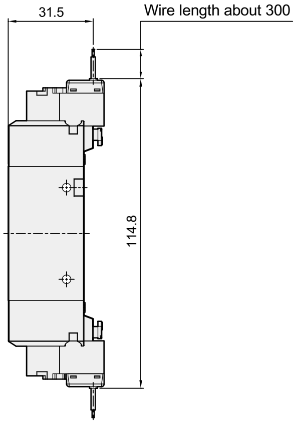
### L wire type - L


24.8
Wire length about 300
138.2

### T wire type - T


47.1
Wire length about 300
108.8
114.2

### W wire type - W

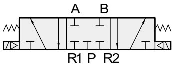

31.5
Wire length about 300
114.8

# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

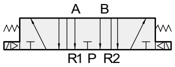
## Dimensions/ Standard

### SRK 7(3)01
### SRK 7(4)01
### SRK 7(5)01

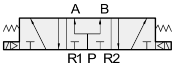
5 port 3-position double



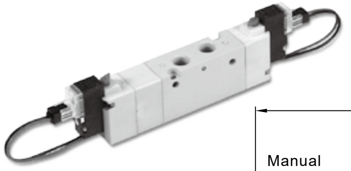
SRK-7(3)01 (Closed center) N.C.

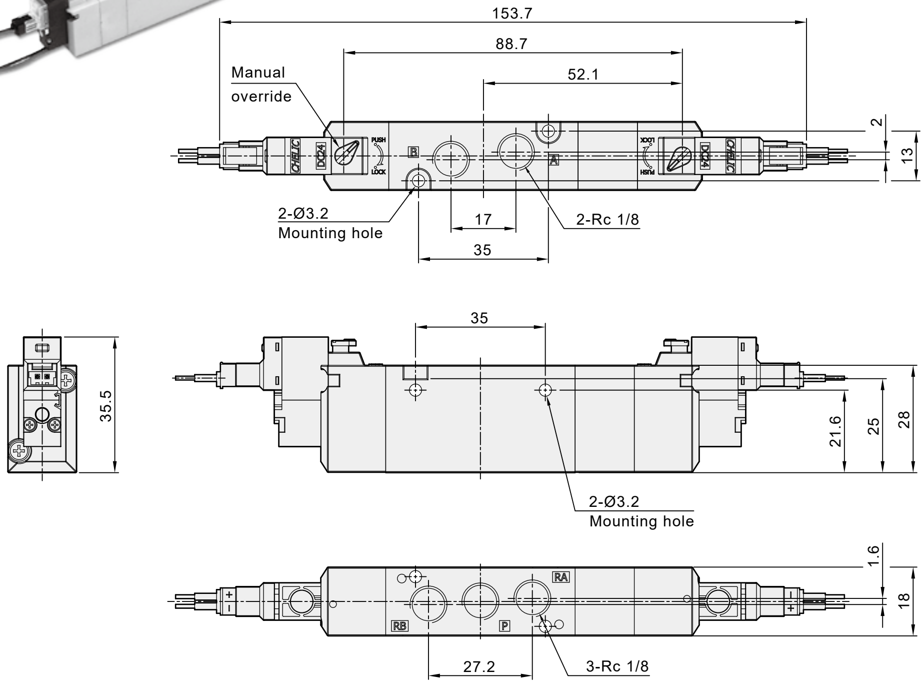


SRK-7(4)01 (Exhaust center) N.F.

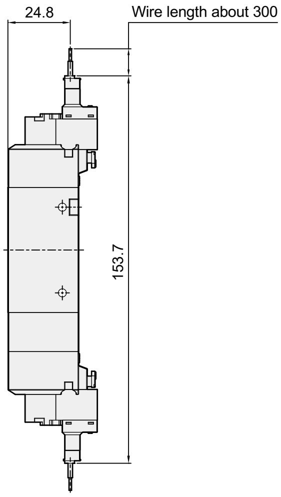


SRK-7(5)01 (Pressure center) N.O.

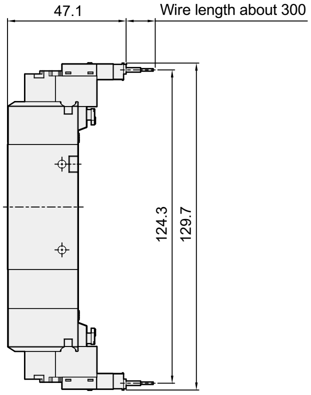



153.7
88.7
52.1
Manual override
2
13
CHELIC
DC24
PUSH
LOCK
B
A
2-Ø3.2
Mounting hole
17
2-Rc 1/8
35
35
35.5
21.6
25
28
2-Ø3.2
Mounting hole
1.6
18
RA
RB
P
27.2
3-Rc 1/8

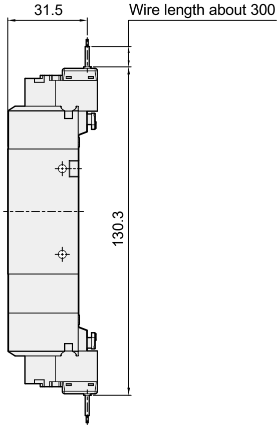
### L wire type - L


24.8
Wire length about 300
153.7

### T wire type - T


47.1
Wire length about 300
124.3
129.7

### W wire type - W

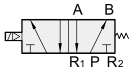

31.5
Wire length about 300
130.3

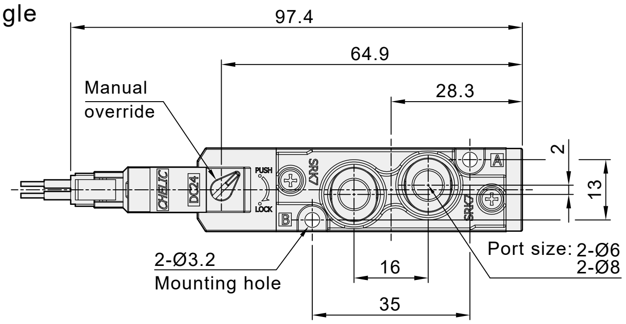
# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

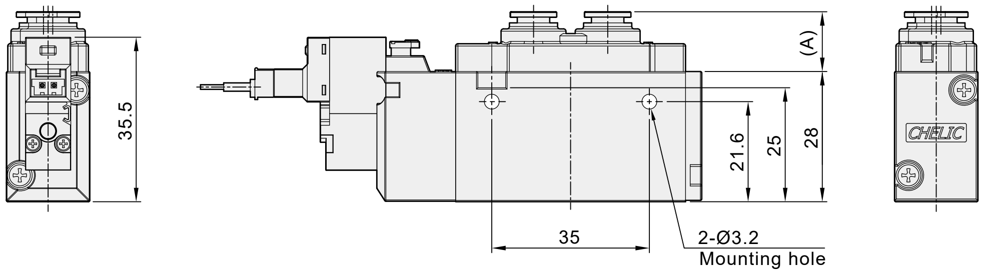
## Dimensions/ With fitting

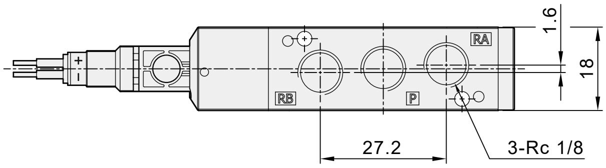
### SRK 7100-C6 (Ø6)
### SRK 7100-C8 (Ø8)

5 port 2-position single



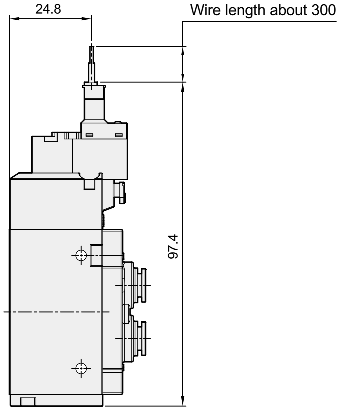

97.4
64.9
28.3
Manual override
CHELIC
DC24
PUSH
LOCK
SRK7
A
B
2
13
2-Ø3.2 Mounting hole
16
35
Port size: 2-Ø6 2-Ø8


35.5
(A)
21.6
25
28
35
2-Ø3.2 Mounting hole
CHELIC

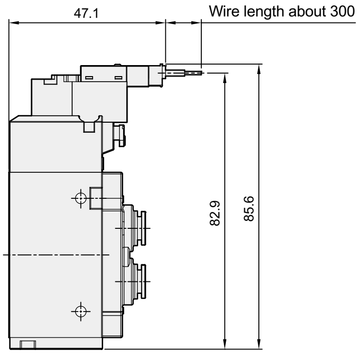

+
−
RA
RB
P
1.6
18
27.2
3-Rc 1/8

| Model | A |
|---|---|
| SRK7100-C6 | 12.9 |
| SRK7100-C8 | 13.6 |

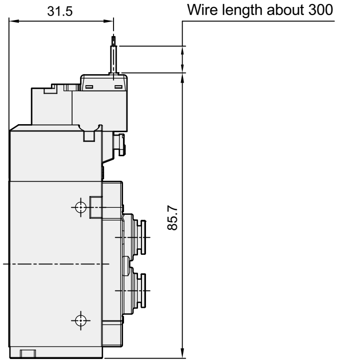
### L wire type - L


24.8
Wire length about 300
97.4

### T wire type - T


47.1
Wire length about 300
82.9
85.6

### W wire type - W


31.5
Wire length about 300
85.7

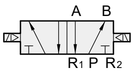
# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

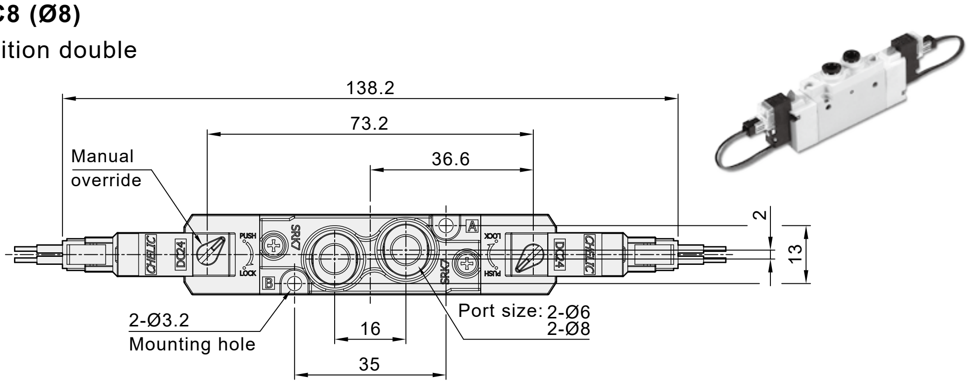
## Dimensions/ With fitting

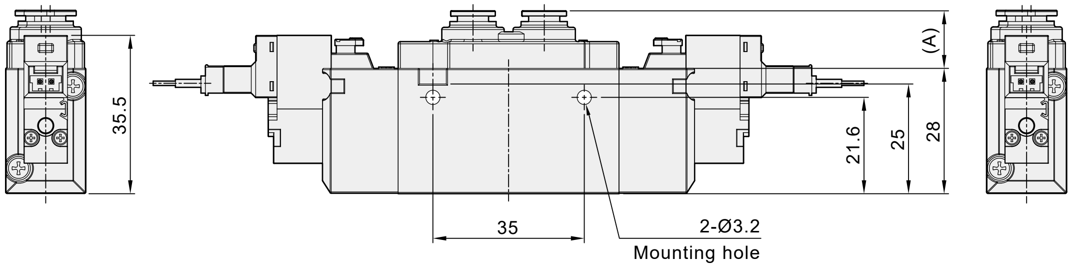
CHELIC

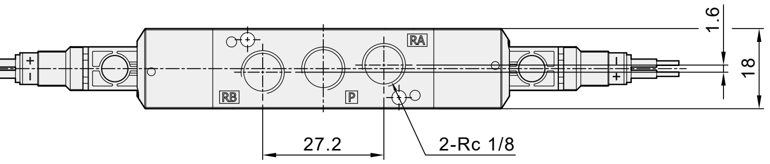
### SRK 7200-C6 (Ø6)
### SRK 7200-C8 (Ø8)

5 port 2-position double



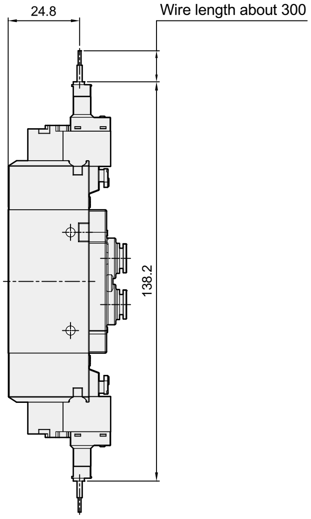

138.2
73.2
36.6
Manual override
PUSH
LOCK
SRK
DC24
CHELIC
A
B
2
13
2-Ø3.2
Mounting hole
16
35
Port size: 2-Ø6
2-Ø8


35.5
(A)
21.6
25
28
35
2-Ø3.2
Mounting hole

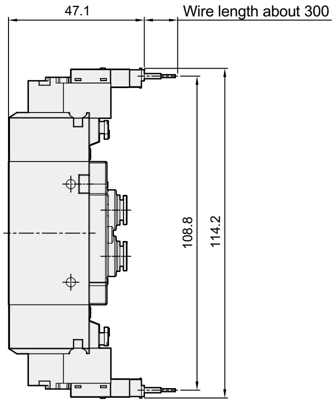

1.6
18
RA
RB
P
27.2
2-Rc 1/8

| Model | A |
|---|---|
| SRK7200-C6 | 12.9 |
| SRK7200-C8 | 13.6 |

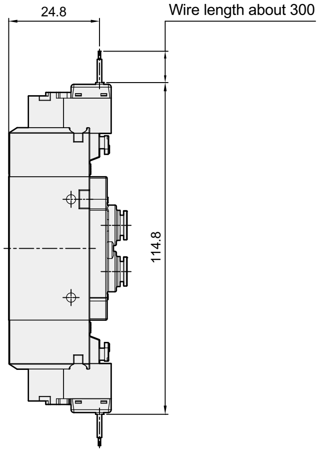
### L wire type - L


24.8
Wire length about 300
138.2

### T wire type - T


47.1
Wire length about 300
108.8
114.2

### W wire type - W

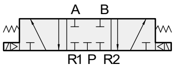

24.8
Wire length about 300
114.8

# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

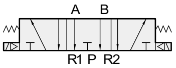
## Dimensions/ With fitting

### SRK 7(3)00 - C6 (Ø6) • C8 (Ø8)
### SRK 7(4)00 - C6 (Ø6) • C8 (Ø8)
### SRK 7(5)00 - C6 (Ø6) • C8 (Ø8)

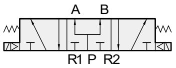
5 port 3-position double



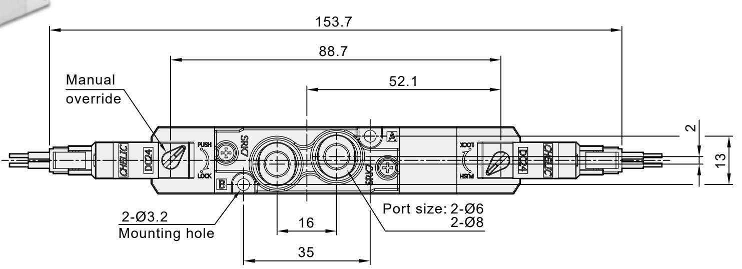
SRK-7(3)00 (Closed center) N.C.

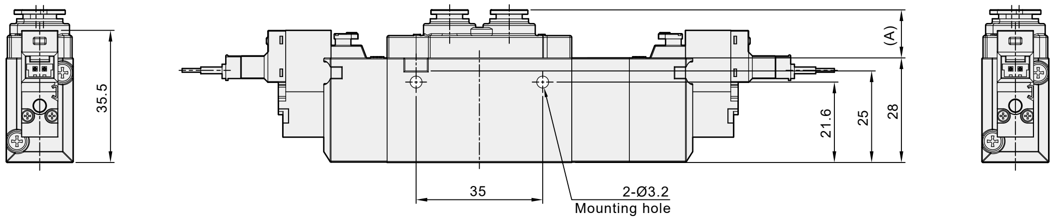


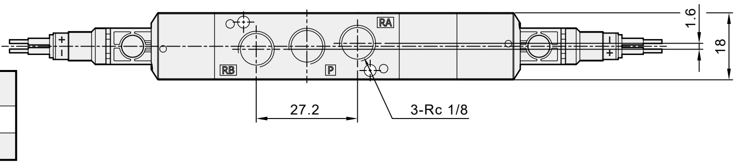
SRK-7(4)00 (Exhaust center) N.F.



SRK-7(5)00 (Pressure center) N.O.

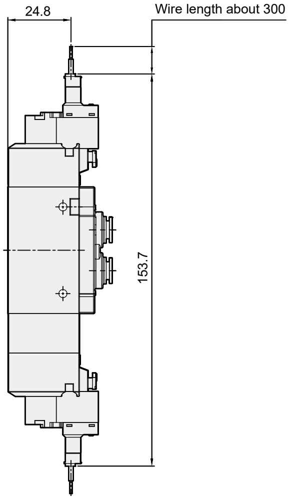

153.7
88.7
52.1
Manual override
2
13
2-Ø3.2 Mounting hole
16
35
Port size: 2-Ø6 2-Ø8
A
B
PUSH
LOCK


35.5
(A)
21.6
25
28
35
2-Ø3.2 Mounting hole

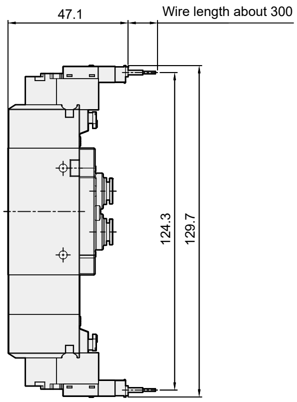

1.6
18
RA
RB
P
27.2
3-Rc 1/8
+
-

| Model | A |
|---|---|
| SRK7100-C6 | 12.9 |
| SRK7100-C8 | 13.6 |

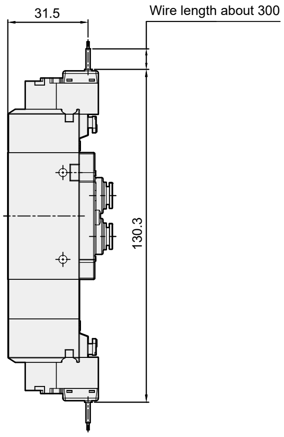
### L wire type - L


24.8
Wire length about 300
153.7

### T wire type - T


47.1
Wire length about 300
124.3
129.7

### W wire type - W


31.5
Wire length about 300
130.3

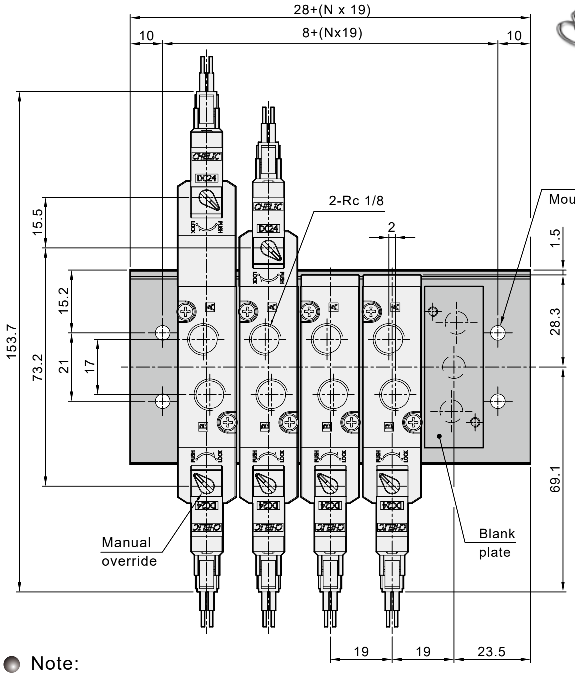
# SRK 700 series One-touch Fitting Body Ported Solenoid Valve

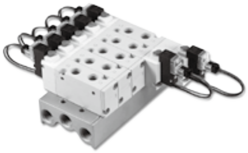
## Dimensions/ Manifold type

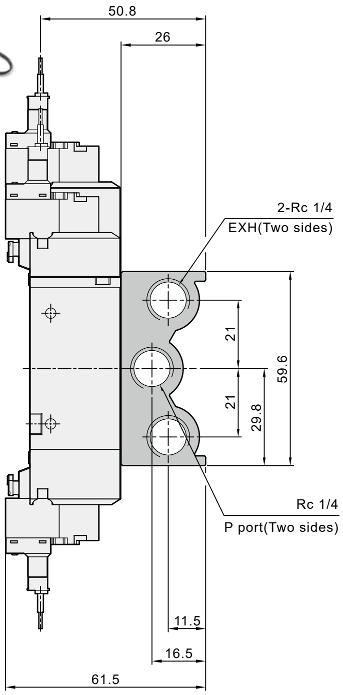
**CHELIC**

### SRK 700 series - Standard

Manifold dimension


28+(N x 19)
10
8+(Nx19)
10
153.7
15.5
73.2
15.2
21
17
2-Rc 1/8
2
4-Ø4.5
Mounting hole
1.5
28.3
69.1
CHELIC
DC24
Manual override
Blank plate
19
19
23.5

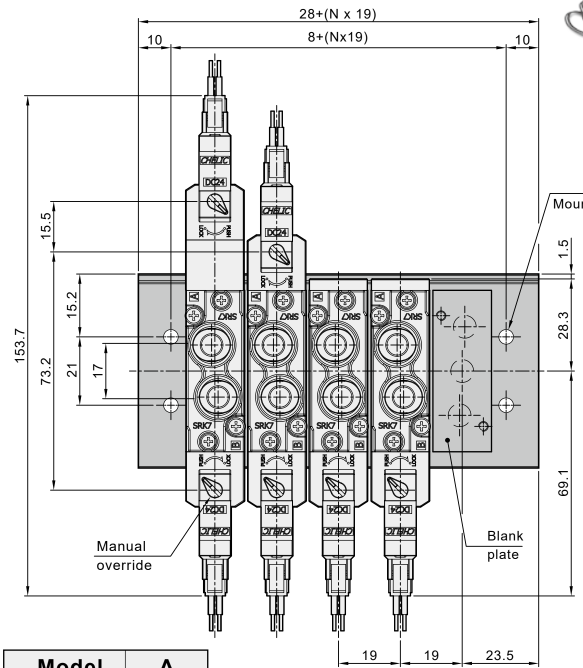


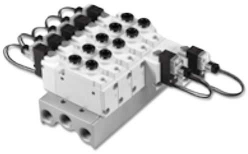

50.8
26
2-Rc 1/4
EXH(Two sides)
21
21
59.6
29.8
Rc 1/4
P port(Two sides)
11.5
16.5
61.5

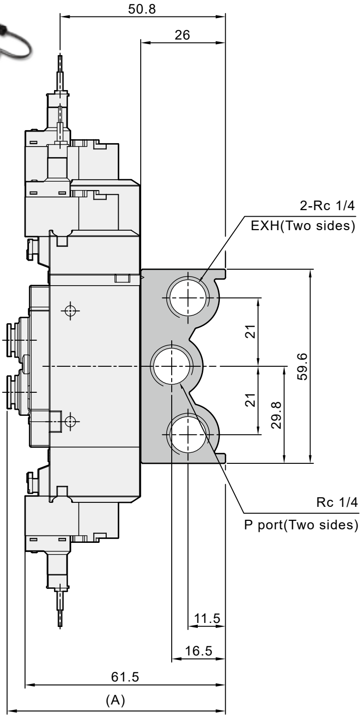
Note:
Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SRK 700 series - With fitting port

Manifold dimension


28+(N x 19)
10
8+(Nx19)
10
153.7
15.5
73.2
15.2
21
17
4-Ø4.5
Mounting hole
1.5
28.3
69.1
SRK7
CHELIC
DC24
Manual override
Blank plate
19
19
23.5



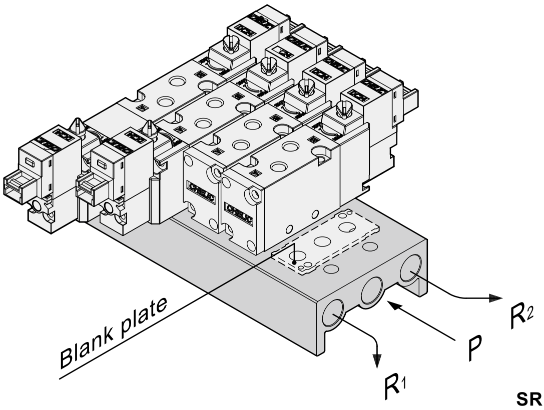

50.8
26
2-Rc 1/4
EXH(Two sides)
21
21
59.6
29.8
Rc 1/4
P port(Two sides)
11.5
16.5
61.5
(A)

| Model | A |
|---|---|
| SRK7100-C6 | 67 |
| SRK7100-C8 | 67.5 |

Note:
Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

## Manifold

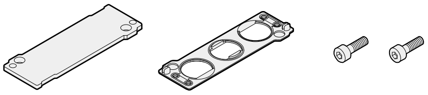
**SRK - 500 • 700 series**



## Manifold accessory

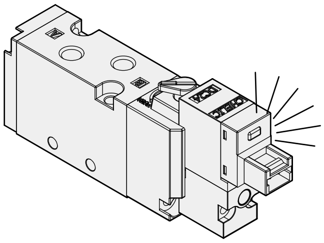
**SRK - 500 • 700 series**

※ The accessories of blank plate.



| | Blank plate | Rubber lining | Mounting screw | |
|---|---|---|---|---|
| SRK-500 series | MSRK05041 | MSRK05039 | M2.5×8L | MSRK05040 |
| SRK-700 series | MSRK07041 | MSRK07039 | M3×8L | MSRK07040 |

## With indicator light: all this series with indicator light and voltage protection circuit

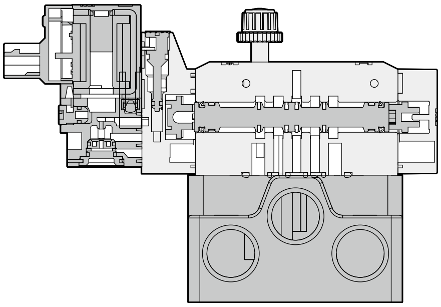


# SZBC series Flow Control Type Base Mounted Solenoid Valve

## Product features

Note: Exhaust restrictor inside to adjust speed

### Internal structure



### Specification

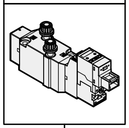
| Item / Model | SZBC2000 | SZB2000 |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7.0 (150 ~ 700) | |
| Ambient and fluid temperature °C | 5 ~ 60 | |
| Pilot type | Air operated | |
| Number of positions | 5/2-position, 5/3-position | |
| Type of actuation | Normally closed | |
| Effective orifice mm²(CV) | 0.16 | |
| Exhaust speed adjust / Number of needle rotations | 11 ( Rotations) | |
| Manual override | Manual push and turn | |
| Single sub-plate port size | Rc 1/8 | |
| Manifold port size | M5 | |
| Lubrication | Lubrication free type | |

### Code of order

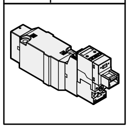
**SZBC - 2 - 10 1 DC24 - L - M 1**

**Model**

SZBC:
Exhausting sub-plate with restrictor



SZB:
Exhausting sub-plate



**Model number**

2: 2000 series

**Coil q'ty**

10: Single
20: Double

30: Closed center
40: Exhaust center
50: Pressure center

5/3-position double coils only

**With fitting port**

0: Without sub-plate
1: Single sub-plate
M5: Manifold

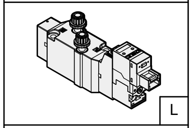
Note: For manifold 2M – 15M

**Voltage**

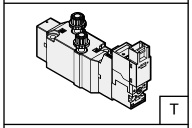
Standard voltage:
DC 12 / 1.2W
DC 24 / 1.2W

**Electrical entry**

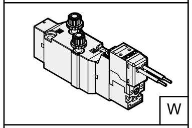
Standard:



With wire length 300mm

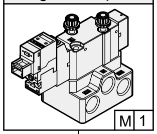


With wire length 300mm

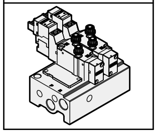


With wire length 300mm

**Single sub-plate**



**Manifold**



None:
without manifold

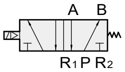
M2 = 2 sets
M3 = 3 sets
⋮
M15 = 15 sets

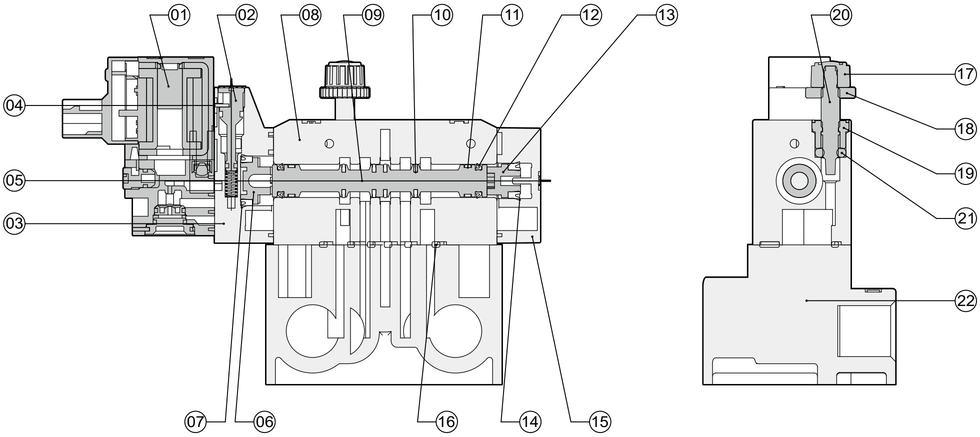
# SZBC series Flow Control Type Base Mounted Solenoid Valve

## Product features

## Internal structure

- 5 port 2-position single





## Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Coil | - | **12** | Shaft packing | NBR |
| **02** | Manual override | POM | **13** | Rear cover piston | POM |
| **03** | Holder | Resin | **14** | Rear cover packing | NBR |
| **04** | Position iron plate | Iron | **15** | Rear cover | Resin |
| **05** | Manual override spring | Stainless steel | **16** | Manifold gasket | NBR |
| **06** | Holder piston | POM | **17** | Adjust nut | POM |
| **07** | Holder piston packing | NBR | **18** | Nut | Cooper |
| **08** | Body | Alloy | **19** | Base holder | Cooper |
| **09** | Shaft | Aluminum alloy | **20** | Screw rod | Cooper |
| **10** | Spool packing | NBR | **21** | O-ring | NBR |
| **11** | Wear ring | POM | **22** | Single sub-plate | Alloy |

Note : The main body treated with painting.

# SZBC series Flow Control Type Base Mounted Solenoid Valve

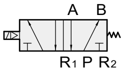
## Dimensions/ Single sub-plate

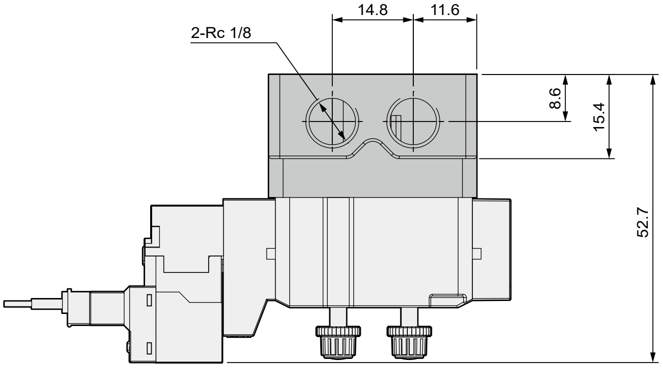
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

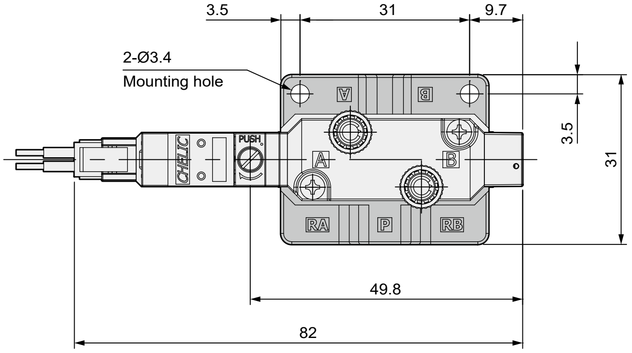
### SZBC 2101

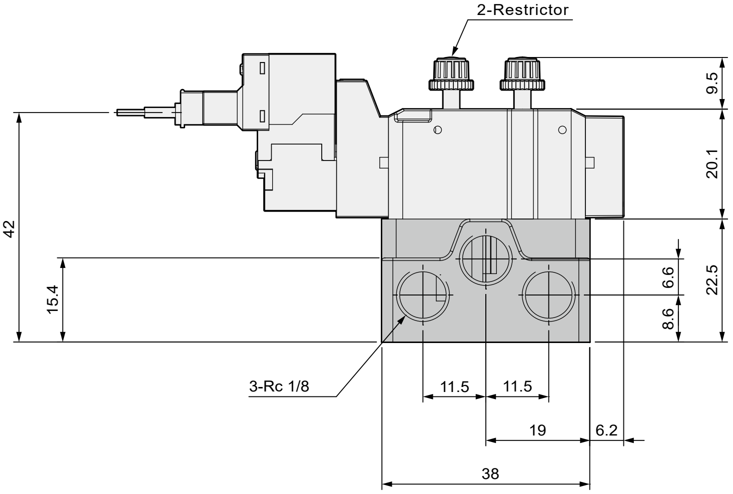
Single exhausting sub-plate with restrictor

- 5 port 2-position single




2-Rc 1/8
14.8
11.6
8.6
15.4
52.7

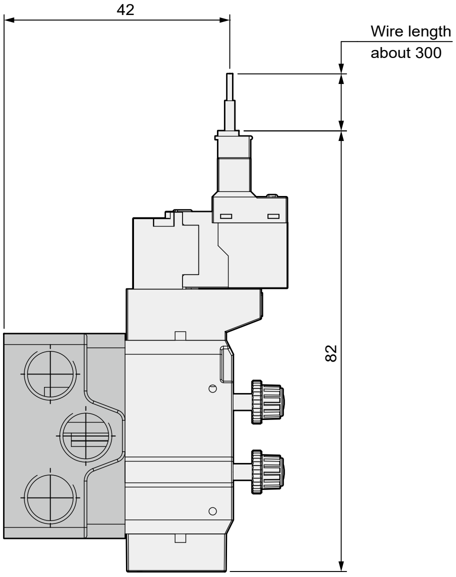

3.5
31
9.7
2-Ø3.4
Mounting hole
A
B
PUSH
CHELIC
RA
P
RB
3.5
31
49.8
82


2-Restrictor
9.5
20.1
42
15.4
6.6
8.6
22.5
3-Rc 1/8
11.5
11.5
19
6.2
38

# SZBC series Flow Control Type Base Mounted Solenoid Valve

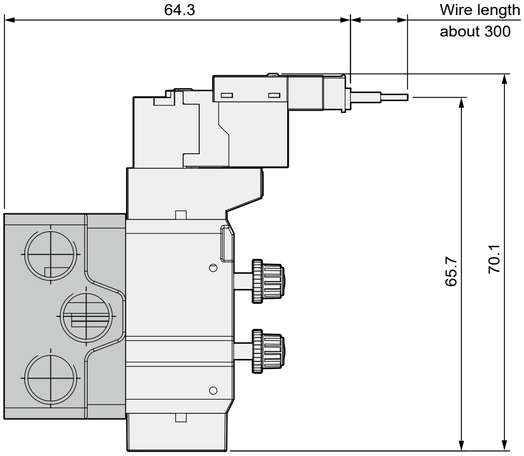
## Dimensions/ Single sub-plate

### L wire type - L



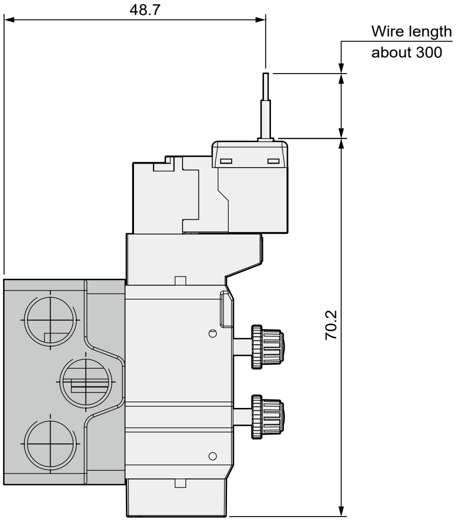
42
Wire length
about 300
82

### T wire type - T



64.3
Wire length
about 300
65.7
70.1

### W wire type - W



48.7
Wire length
about 300
70.2

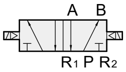
# SZBC series Flow Control Type Base Mounted Solenoid Valve

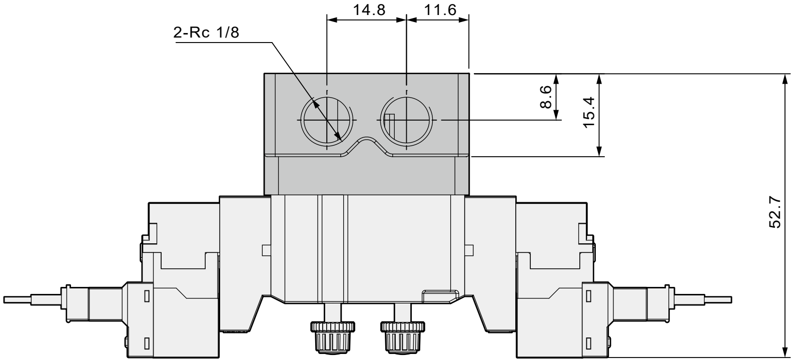
## Dimensions/ Single sub-plate

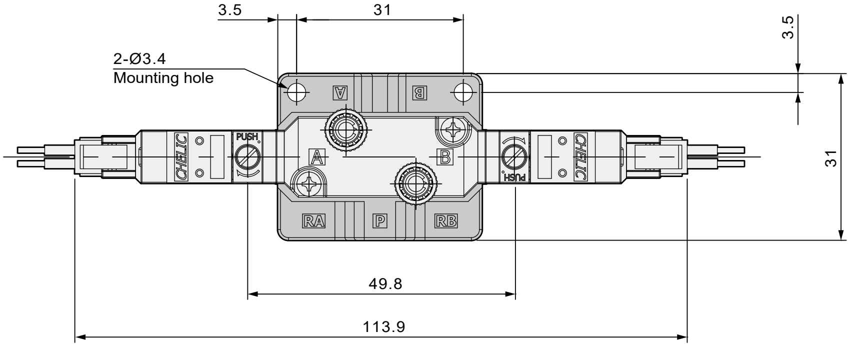
### SZBC 2201

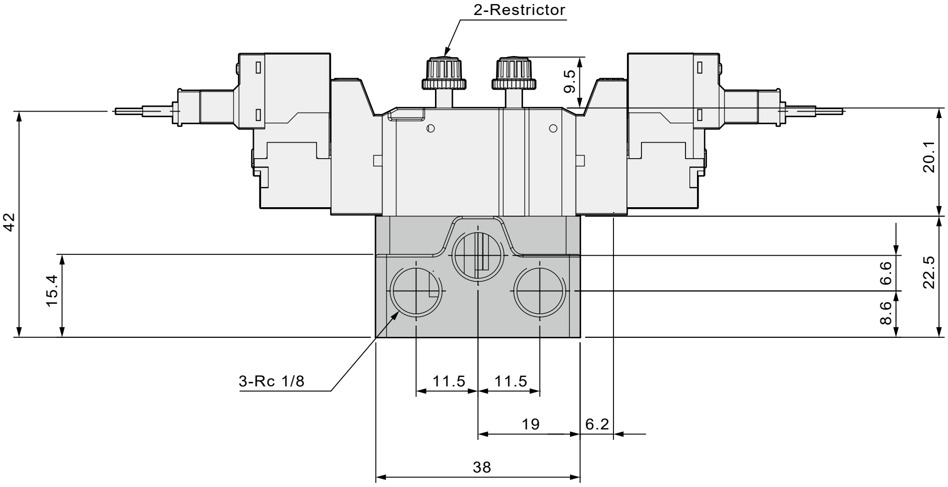
Single exhausting sub-plate with restrictor

- 5 port 2-position double

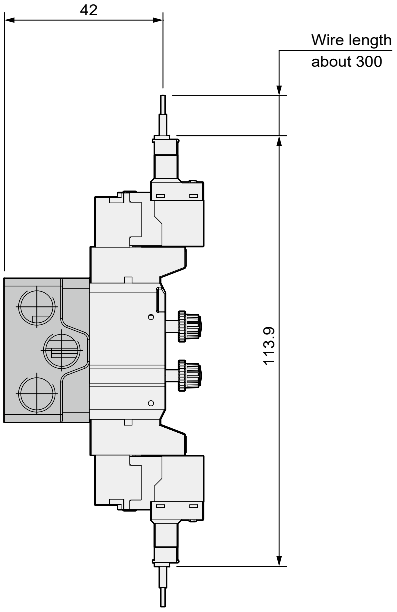



14.8
11.6
2-Rc 1/8
8.6
15.4
52.7

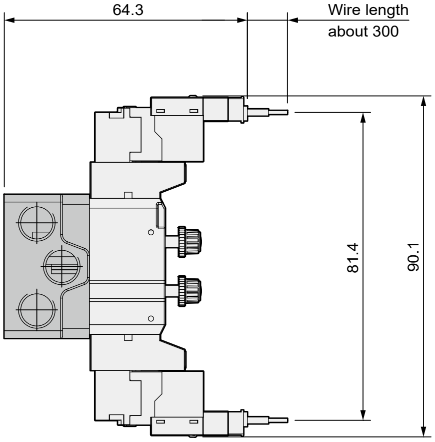

3.5
31
3.5
2-Ø3.4
Mounting hole
A
B
PUSH
CHELIC
RA
P
RB
31
49.8
113.9


2-Restrictor
9.5
20.1
42
15.4
6.6
8.6
22.5
3-Rc 1/8
11.5
11.5
19
6.2
38

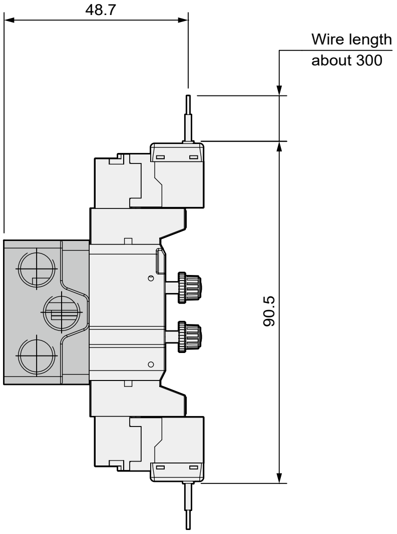
### L wire type - L


42
Wire length
about 300
113.9

### T wire type - T


64.3
Wire length
about 300
81.4
90.1

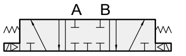
### W wire type - W


48.7
Wire length
about 300
90.5

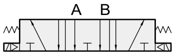
### SZBC 2301

Single exhausting sub-plate with restrictor

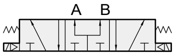
- 5 port 3-position double



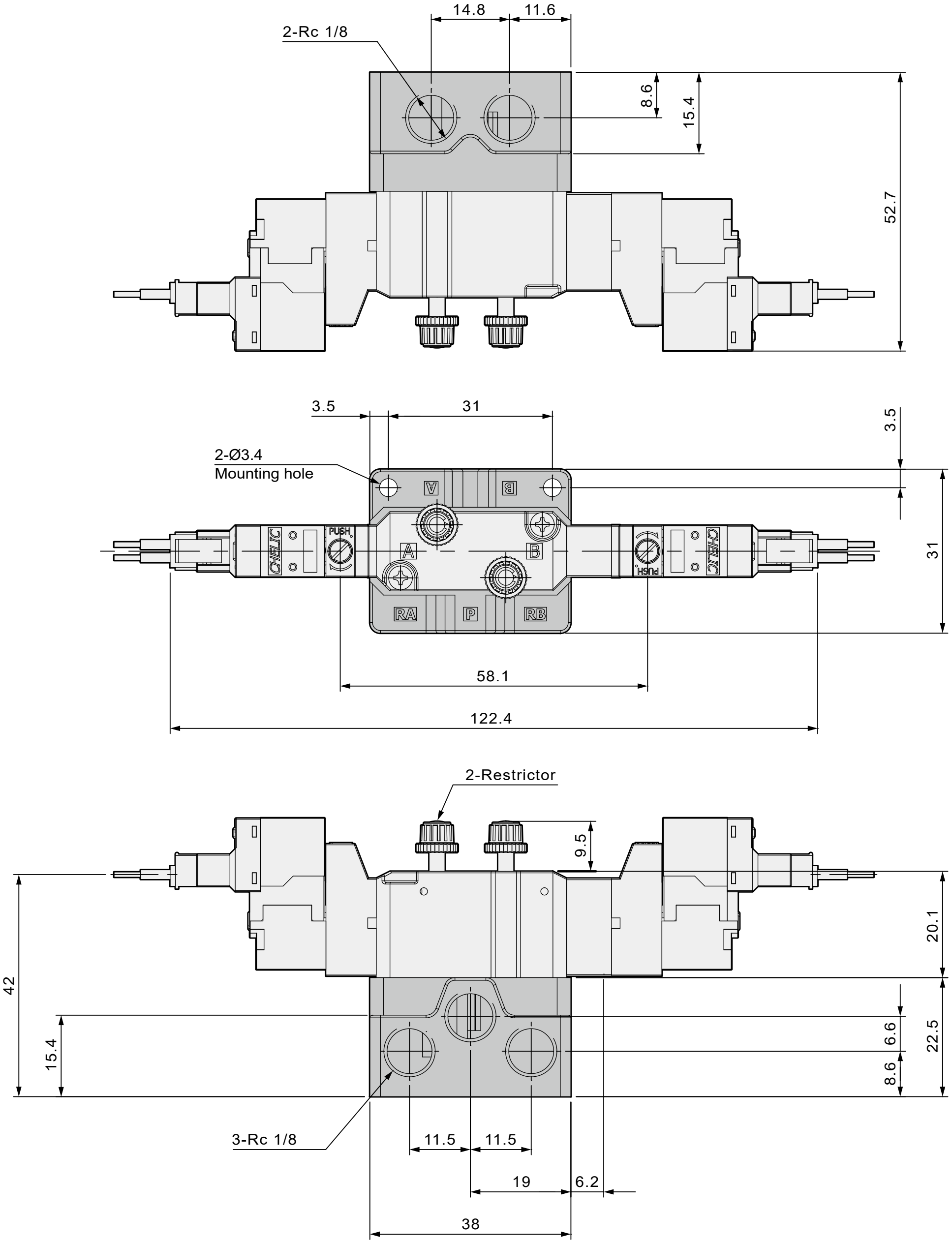
SZBC 2(3)01 (Closed center) N.C.



SZBC 2(4)01 (Exhaust center) N.F.



SZBC 2(5)01 (Pressure center) N.O.

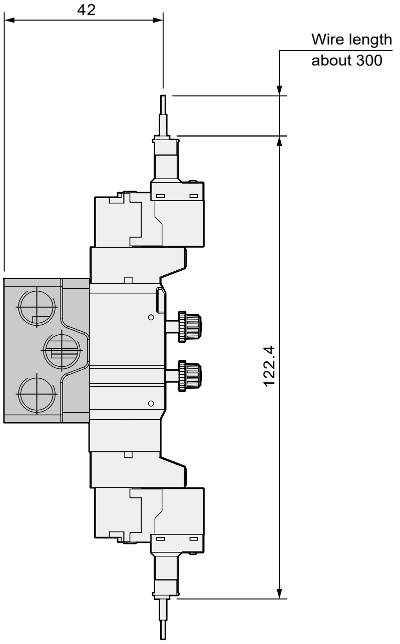


14.8
11.6
2-Rc 1/8
8.6
15.4
52.7
3.5
31
3.5
2-Ø3.4
Mounting hole
A
B
PUSH
CHELIC
RA
P
RB
31
58.1
122.4
2-Restrictor
9.5
20.1
42
15.4
6.6
22.5
8.6
3-Rc 1/8
11.5
11.5
19
6.2
38

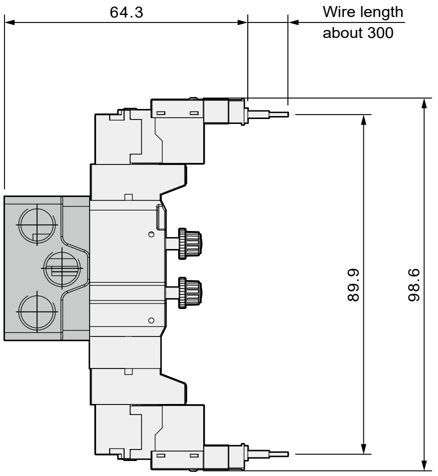
# SZBC series Flow Control Type Base Mounted Solenoid Valve

## Dimensions/ Single sub-plate

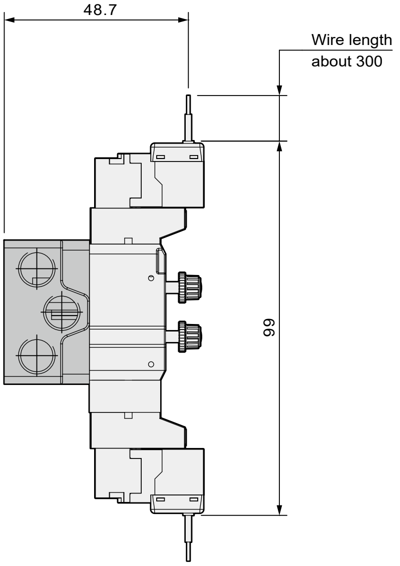
### L wire type - L


42
Wire length
about 300
122.4

### T wire type - T


64.3
Wire length
about 300
89.9
98.6

### W wire type - W

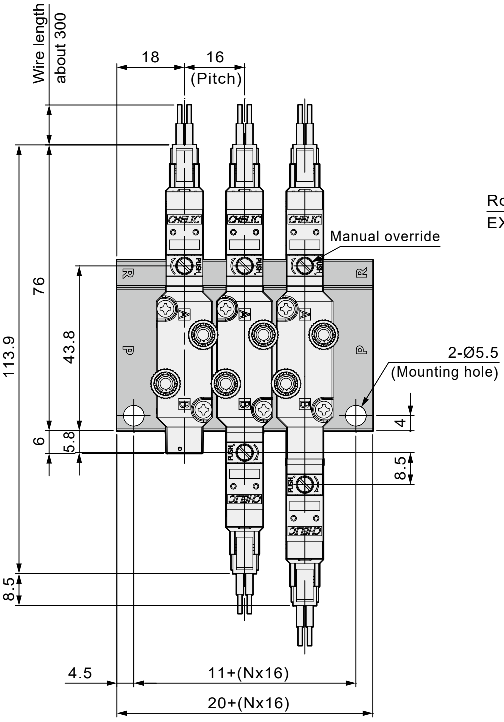

48.7
Wire length
about 300
99

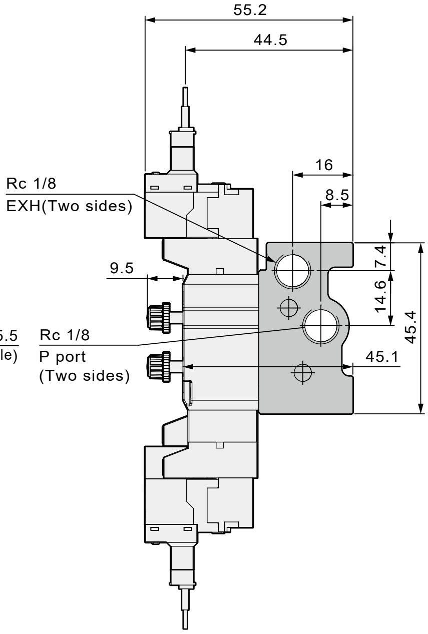
# SZBC series Flow Control Type Base Mounted Solenoid Valve

## Dimensions/ Manifold type

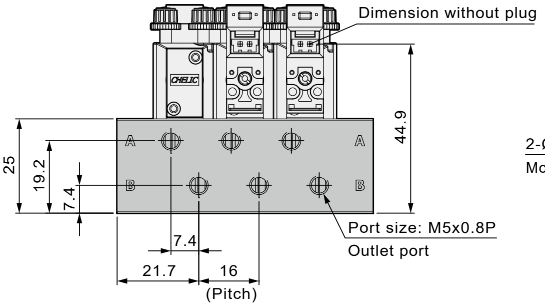
### SZBC 2000 series

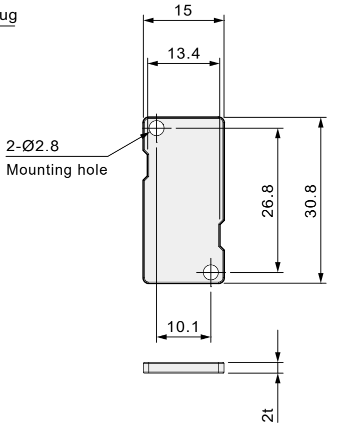
Manifold dimension


Wire length
about 300
18
16
(Pitch)
Manual override
76
113.9
43.8
2-Ø5.5
(Mounting hole)
6
5.8
4
8.5
8.5
4.5
11+(Nx16)
20+(Nx16)
R
P
A
B
PUSH
CHELIC


55.2
44.5
16
8.5
Rc 1/8
EXH(Two sides)
9.5
7.4
14.6
45.4
Rc 1/8
P port
(Two sides)
45.1

### SZBC 2000 series
### Blank plate size


Dimension without plug
44.9
25
19.2
7.4
A
B
A
B
CHELIC
Port size: M5x0.8P
Outlet port
7.4
21.7
16
(Pitch)


15
13.4
2-Ø2.8
Mounting hole
26.8
30.8
10.1
2t

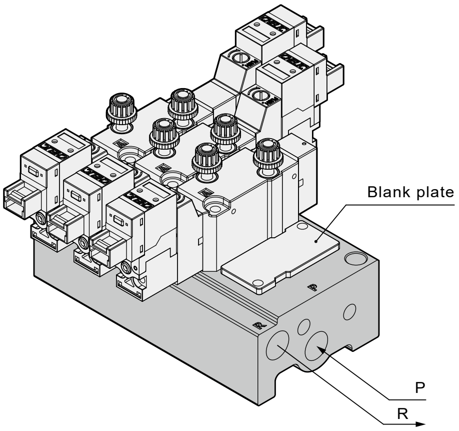
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

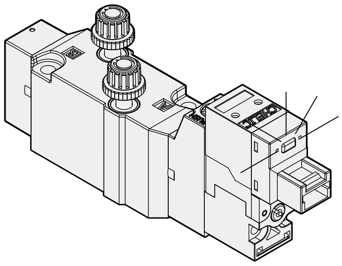
# SZBC series Flow Control Type Base Mounted Solenoid Valve

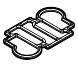
## Accessories/ Installation

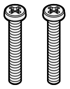
### Manifold

**SZBC - 2000 series**









**Gasket**

NBR 90°
Thickness: 2.0t

Standard component for single sub-plate

**Mounting screw**

Round head screw
M2.6x0.45Px22.5L (Nickel plating)

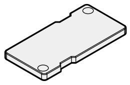
Standard component for single sub-plate

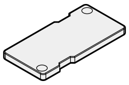
---

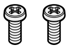
### Manifold accessory

**SZBC - 2000 series**

※ The accessories of blank plate.







**Blank plate**

Stainless steel
(SUS304)

Optional component for manifold

**Gasket**

NBR 90°
Thickness: 2.0t

Optional component for manifold

**Mounting screw**

Round head screw
M2.6x0.45Px8L (Nickel plating)

Optional component for manifold

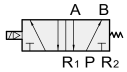
# SZB series Base Mounted Solenoid Valve

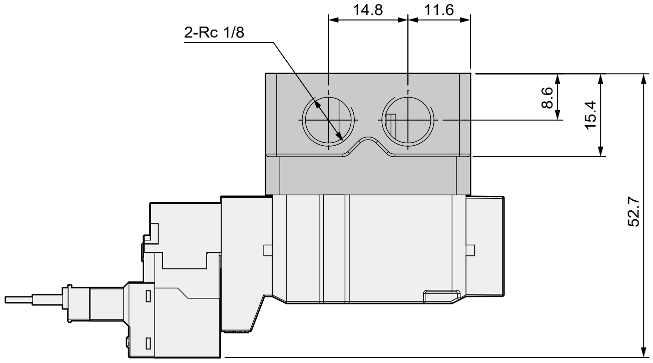
## Dimensions/ Single sub-plate

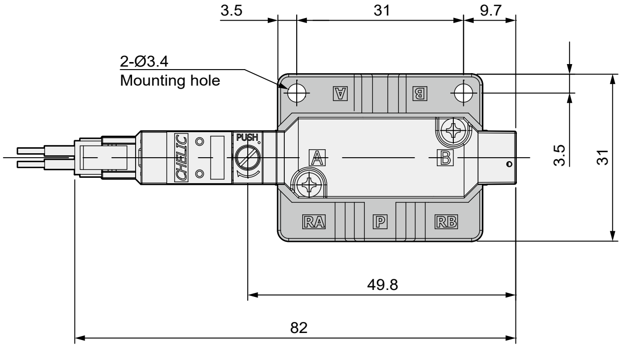
### SZB 2101

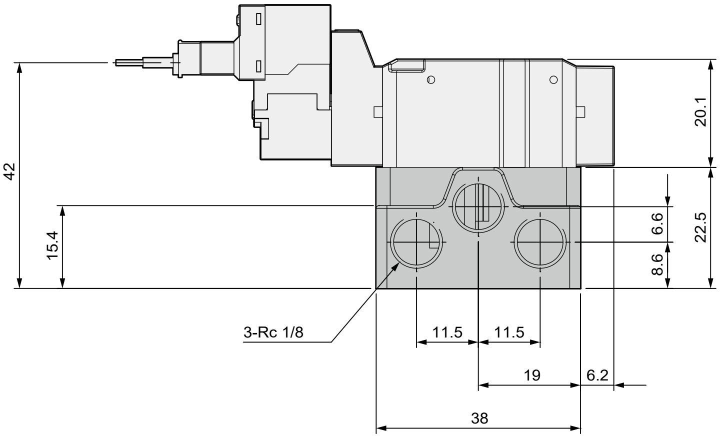
Single exhausting sub-plate

- 5 port 2-position single




2-Rc 1/8
14.8
11.6
8.6
15.4
52.7

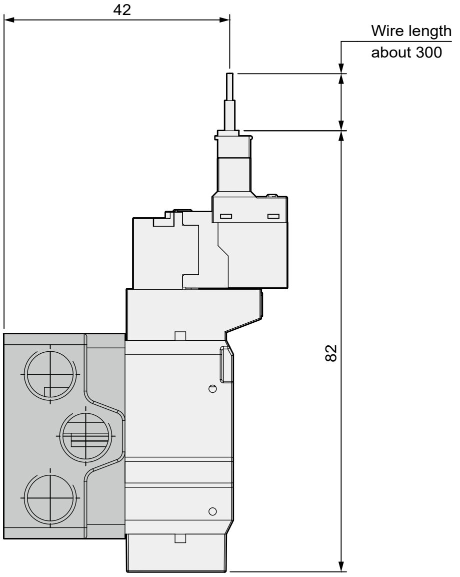

3.5
31
9.7
2-Ø3.4
Mounting hole
A
B
PUSH
CHELIC
A
B
RA
P
RB
3.5
31
49.8
82


42
15.4
20.1
6.6
8.6
22.5
3-Rc 1/8
11.5
11.5
19
6.2
38

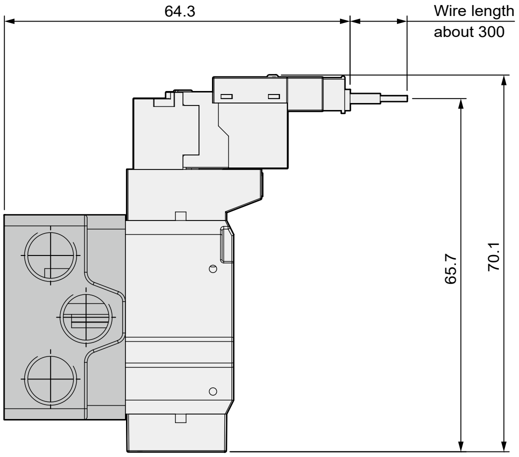
# SZB series Base Mounted Solenoid Valve

## Dimensions/ Single sub-plate

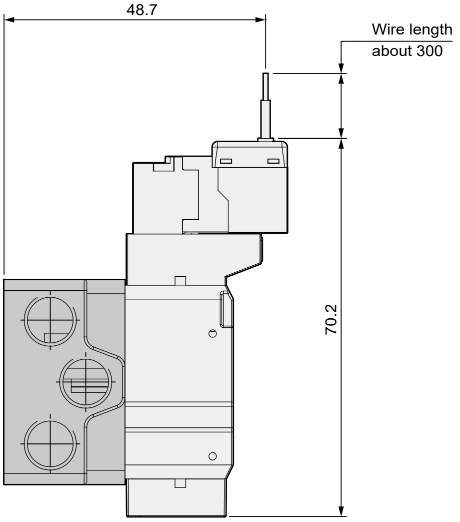
### L wire type - L


42
Wire length
about 300
82

### T wire type - T


64.3
Wire length
about 300
65.7
70.1

### W wire type - W


48.7
Wire length
about 300
70.2

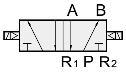
# SZB series Base Mounted Solenoid Valve

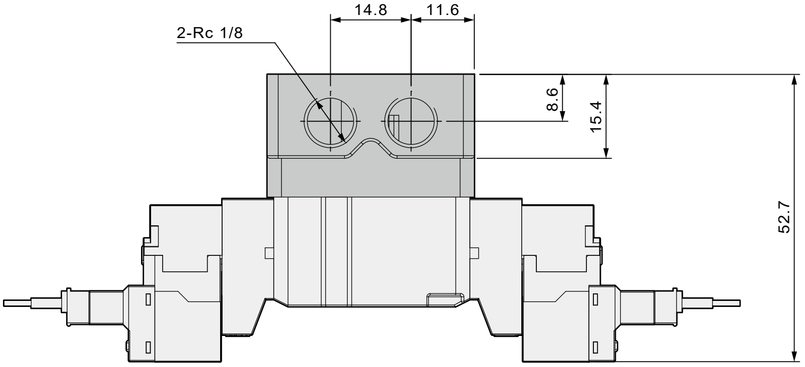
## Dimensions/ Single sub-plate

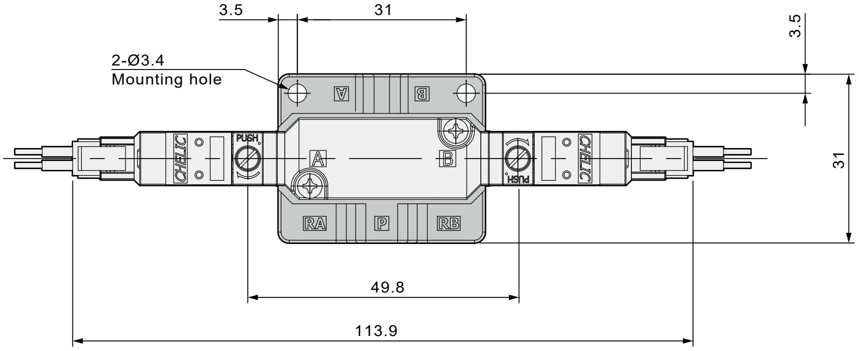
### SZB 2201

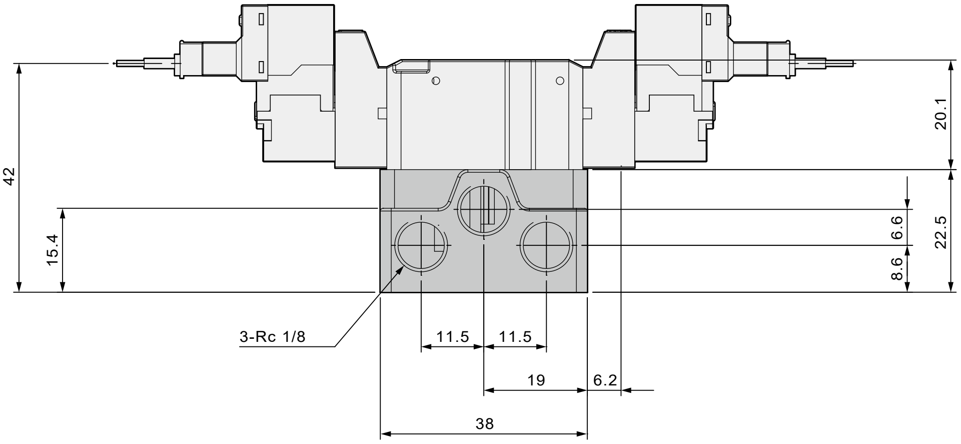
Single exhausting sub-plate

- 5 port 2-position double




14.8
11.6
2-Rc 1/8
8.6
15.4
52.7

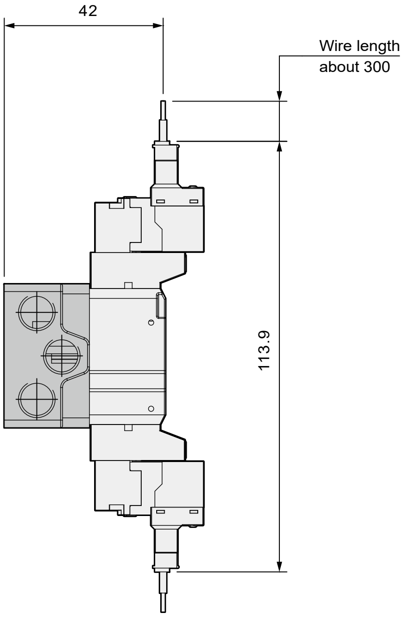

3.5
31
3.5
2-Ø3.4
Mounting hole
A
B
PUSH
CHELIC
RA
P
RB
31
49.8
113.9


42
15.4
20.1
6.6
22.5
8.6
3-Rc 1/8
11.5
11.5
19
6.2
38

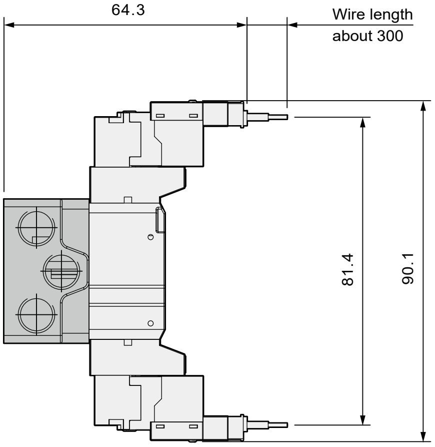
# SZB series Base Mounted Solenoid Valve

## Dimensions/ Single sub-plate

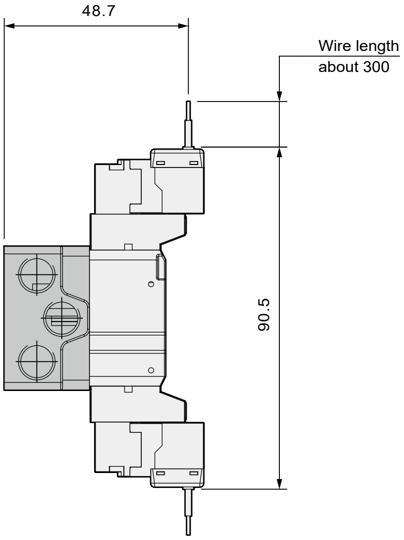
### L wire type - L


42
Wire length
about 300
113.9

### T wire type - T


64.3
Wire length
about 300
81.4
90.1

### W wire type - W


48.7
Wire length
about 300
90.5

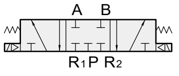
# SZB series Base Mounted Solenoid Valve

## Dimensions/ Single sub-plate

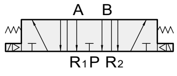
### SZB 2301

Single exhausting sub-plate

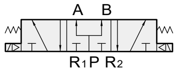
- 5 port 3-position double



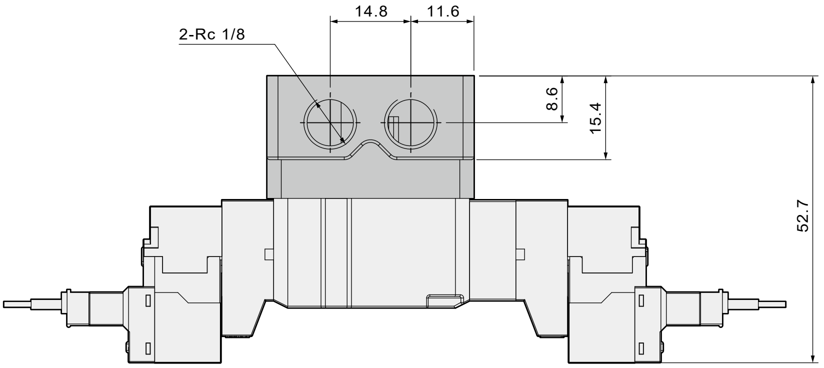
SZB 2(3)01 (Closed center) N.C.

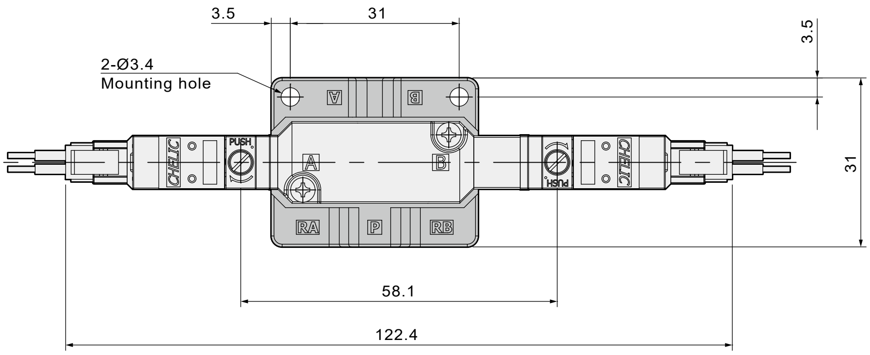


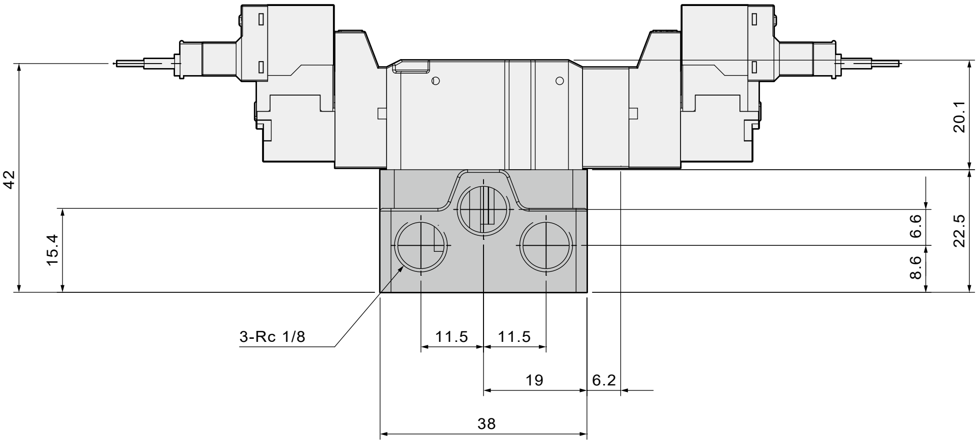
SZB 2(4)01 (Exhaust center) N.F.



SZB 2(5)01 (Pressure center) N.O.


14.8
11.6
2-Rc 1/8
8.6
15.4
52.7

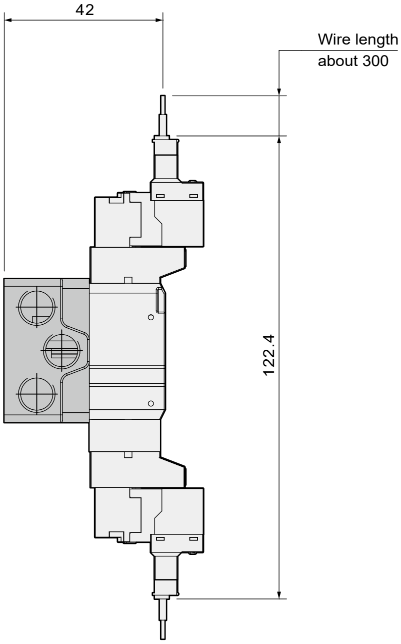

3.5
31
3.5
2-Ø3.4
Mounting hole
A
B
PUSH
CHELIC
A
B
RA
P
RB
31
58.1
122.4


42
15.4
20.1
6.6
22.5
8.6
3-Rc 1/8
11.5
11.5
19
6.2
38

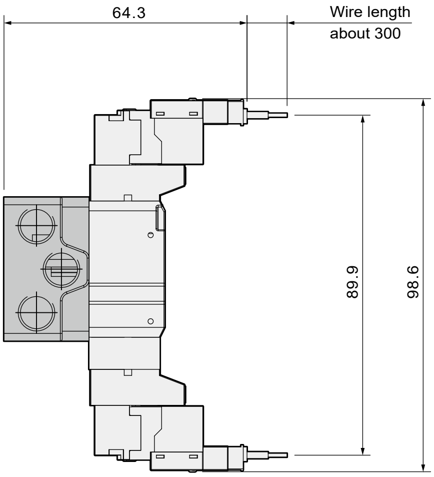
# SZB series Base Mounted Solenoid Valve

## Dimensions/ Single sub-plate

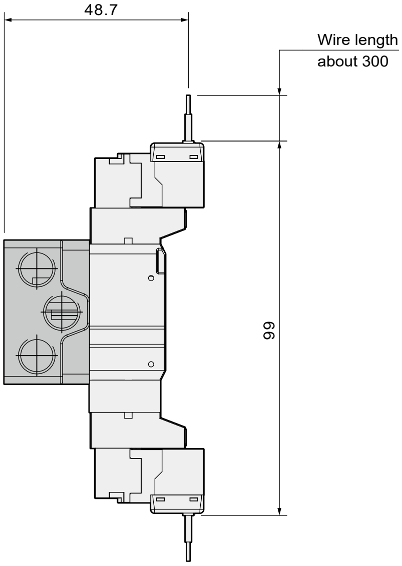
### L wire type - L


42
Wire length
about 300
122.4

### T wire type - T


64.3
Wire length
about 300
89.9
98.6

### W wire type - W

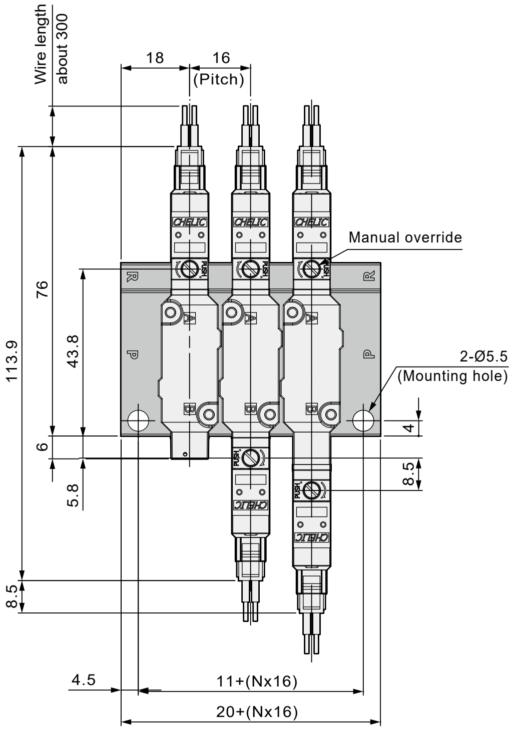

48.7
Wire length
about 300
99

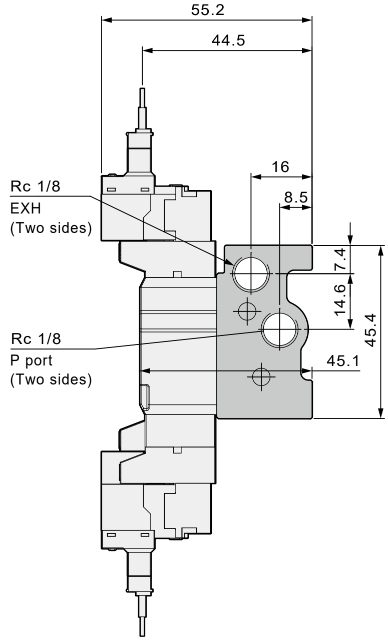
# SZB series Base Mounted Solenoid Valve

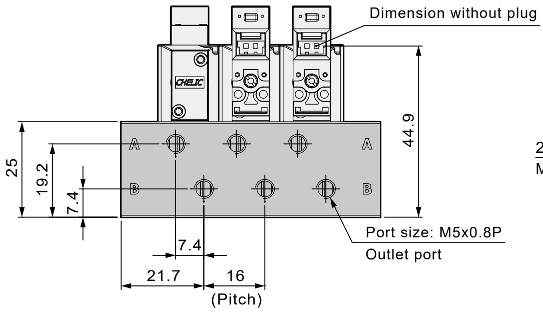
## Dimensions/ Manifold type

### SZB 2000 series

Manifold dimension

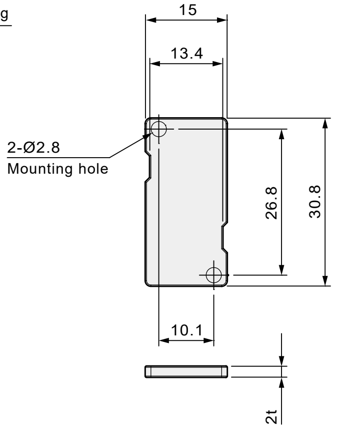

Wire length
about 300
18
16
(Pitch)
Manual override
76
113.9
43.8
2-Ø5.5
(Mounting hole)
4
6
5.8
8.5
8.5
4.5
11+(Nx16)
20+(Nx16)
R
P
A
B
PUSH
CHELIC


55.2
44.5
16
8.5
Rc 1/8
EXH
(Two sides)
7.4
14.6
45.4
Rc 1/8
P port
(Two sides)
45.1


Dimension without plug
44.9
25
19.2
7.4
A
B
Port size: M5x0.8P
Outlet port
7.4
21.7
16
(Pitch)
CHELIC

### SZB 2000 series

Blank plate size


15
13.4
2-Ø2.8
Mounting hole
26.8
30.8
10.1
2t

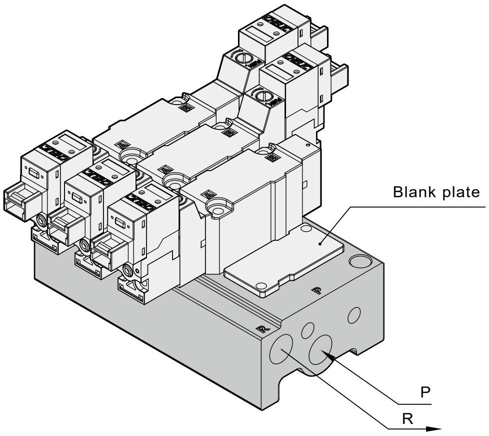
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SZB series Base Mounted Solenoid Valve

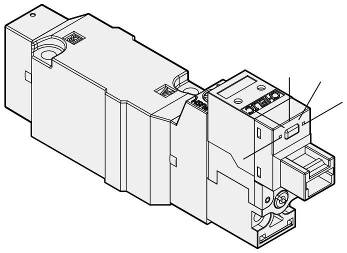
## Accessories/ Installation

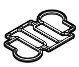
### Manifold

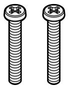
**SZB - 2000 series**



### With indicator light : The product with indicator light and surge voltage protection.







**Gasket**

NBR 90°
Thickness: 2.0t

Standard component
for single sub-plate

**Mounting screw**

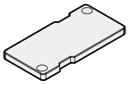
Round head screw
M2.6x0.45Px22.5L (Nickel plating)

Standard component
for single sub-plate

### Manifold accessory

**SZB - 2000 series**

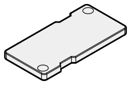
※ The accessories of blank plate.



**Blank plate**

Stainless steel
(SUS304)

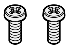
Optional component
for manifold



**Gasket**

NBR 90°
Thickness: 2.0t

Optional component
for manifold



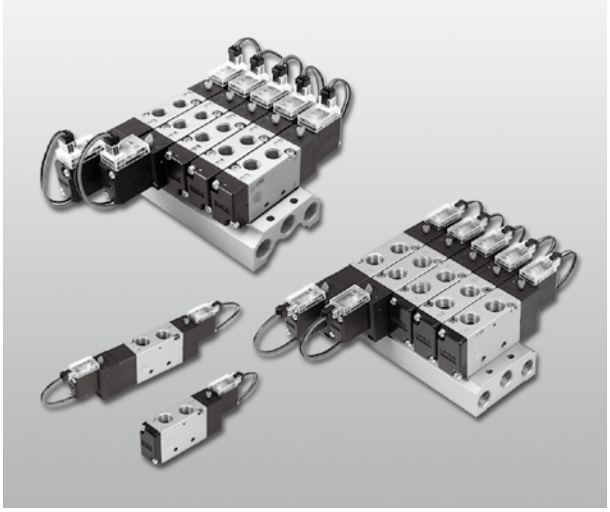
**Mounting screw**

Round head screw
M2.6x0.45Px8L (Nickel plating)

Optional component
for manifold

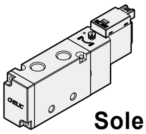
# Directional control－SK series Body Ported Solenoid Valve

## SK500, SK600, SK800 Solenoid valve

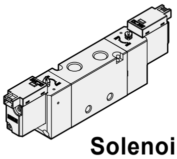


Provide CAD external dimension.

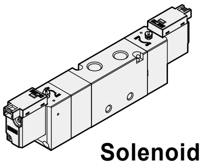
With indicator light and voltage protection circuit.



**Solenoid valve single coil** ----- **SK - 500 series** --- **Rc 1/8** ------------- **P.2-1.188**
( 5 port 2-position )
**SK - 600 series** --- **Rc 1/8, Rc 1/4** ------- **P.2-1.192**
**SK - 800 series** --- **Rc 1/4, Rc 3/8** ------- **P.2-1.196**



**Solenoid valve double coils** ----- **SK - 500 series** --- **Rc 1/8** ------------- **P.2-1.189**
( 5 port 2-position )
**SK - 600 series** --- **Rc 1/8, Rc 1/4** ------ **P.2-1.193**
**SK - 800 series** --- **Rc 1/4, Rc 3/8** ------ **P.2-1.197**



**Solenoid valve double coils** ----- **SK - 500 series** --- **Rc 1/8** ------------- **P.2-1.190**
( 5 port 3-position )
**SK - 600 series** --- **Rc 1/8, Rc 1/4** ------- **P.2-1.194**
**SK - 800 series** --- **Rc 1/4, Rc 3/8** ------- **P.2-1.198**

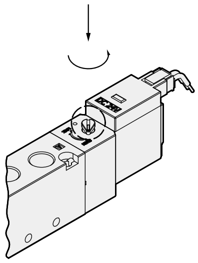
# ⚠ General Cautions for SK Solenoid Valve series

**CHELIC**

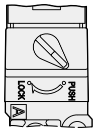
Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Operation and Instruction for manual for manual override

- Press down manual button to rotate the switching position so that solenoid valve on the lock status.



- The purpose of pressing the manual button is to provide manual test or test run adjustment. It is not for normal use.
- Must be check the lock status if it has been lifted. Manually button must be at **Push** position that it can be normal used for electronic control.



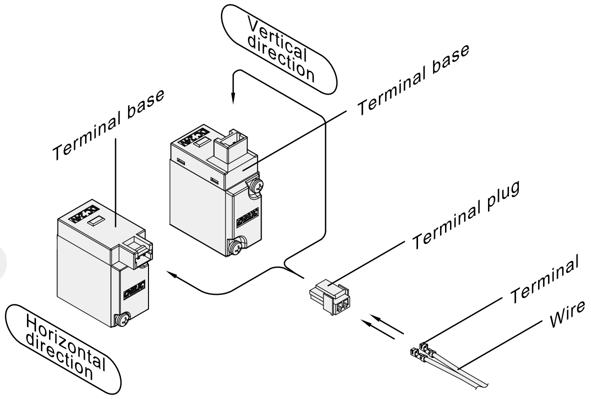
## AV220V Solenoid Coil

⚠ **WARNING:** Electrification, High temperature and Instruction

- SK solenoid coil with built-in rectifying circuit and electrified indicator light, with specification of AC220V, the built-in circuit is heated when electrified with high surface temperature (It is within safety range, Don’t worry ), Please avoid touching it.

## Sage surge voltage protection circuit

| | |
|---|---|
| DC 12V | Below ±0.1 mA |
| DC 24V | Below ±0.1 mA |
| AC 110V | Below ±0.1 mA |
| AC 220V | Below ±0.1 mA |

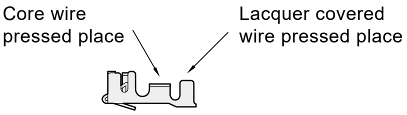

Vertical direction
Terminal base
Terminal base
Terminal plug
Terminal
Wire
Horizontal direction

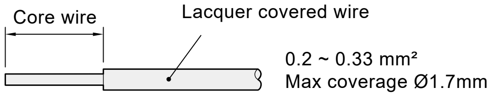
## Method and description of the selection of terminal board

(1) Direction ( Horizontal& Vertical )

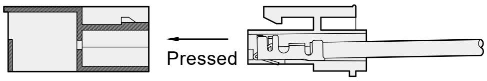
(2) Terminal and Wire ( Pressed )

(3) Terminal and Press chain ( Device positioning )

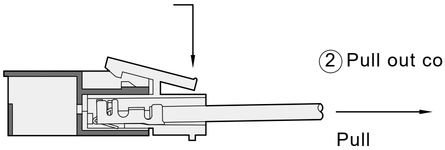

Core wire pressed place
Lacquer covered wire pressed place


Core wire
Lacquer covered wire
0.2 ~ 0.33 mm²
Max coverage Ø1.7mm

(4) Press chain and Socket ( Pressed and Pulled )



① Press down the hook to make it detach



② Pull out connector

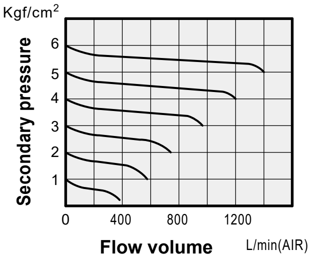
- Note: It will cause connector and coil damaged because of pulling out connector by wrong way.

# SK series Body Ported Solenoid Valve

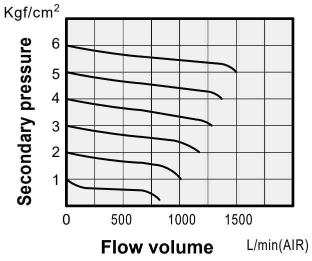
## Flow rate and applicable cylinder

### Flow rate characteristics

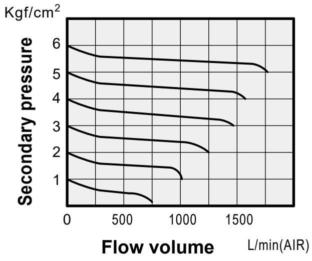
#### SK 500 series



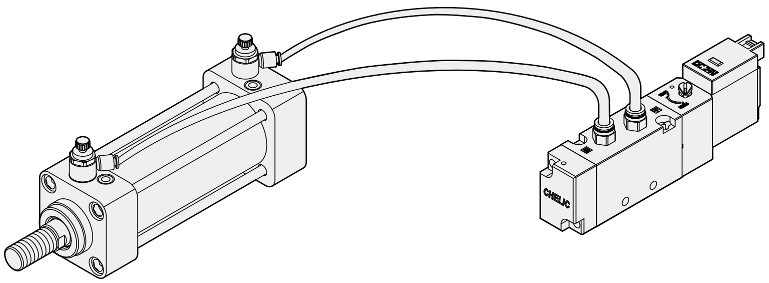
#### SK 600 series



#### SK 800 series



### Applicable cylinder ( Reference )

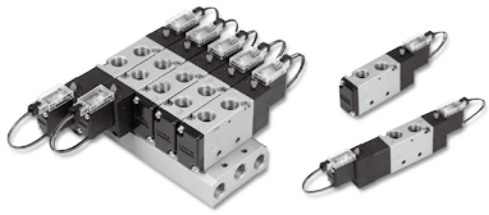


Max. driving speed of the cylinder ( Length of piping: 1m, Port size: Ø8 ) ( Port size : Ø10 )

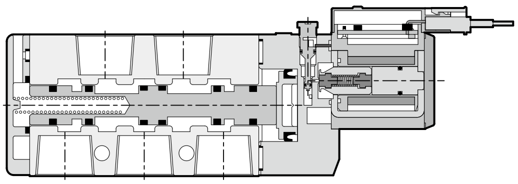
| Model | CV value | Cylinder speed mm/s | SDA • DB • FDA series | | | | | | DMB • DN • DU series | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ø12 | Ø16 | Ø20 | Ø25 | Ø32 | Ø40 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 | Ø125 |
| SK500 | 0.67 | 150 | | | | | | | | | ● | | | |
| | | 300 | | | | | | | | ● | | | | |
| | | 450 | | | | | ● | ● | ● | | | | | |
| | | 600 | | | | ● | | | | | | | | |
| | | 750 | | | ● | | | | | | | | | |
| | | 900 | ● | ● | | | | | | | | | | |
| SK600 | 0.78 | 150 | | | | | | | | | | | ● | |
| | | 300 | | | | | | | | | | ● | | |
| | | 450 | | | | | | ● | | | ● | | | |
| | | 600 | | | | | ● | | | ● | | | | |
| | | 750 | | | | ● | | | ● | | | | | |
| | | 900 | | | ● | | | | | | | | | |
| SK800 | 1.0 | 150 | | | | | | | | | | | ● | |
| | | 300 | | | | | | | | | | ● | | |
| | | 450 | | | | | | ● | | | ● | | | |
| | | 600 | | | | | ● | | | ● | | | | |
| | | 750 | | | | ● | | | ● | | | | | |
| | | 900 | | | ● | | | | | | | | | |

# SK 500, 600, 800 series Body Ported Solenoid Valve

## Product features/ Code of order



### Internal structure



### Specification

| Item \ Model | SK-5101<br>SK-5201 | SK-5231 | SK-6101(2)<br>SK-6202(2) | SK-6231<br>SK-6232 | SK-8102(3)<br>SK-8202(3) | SK-8232<br>SK-8233 |
|---|---|---|---|---|---|---|
| Fluid | Air | | | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | | | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | | | | |
| Pilot type | Air operated | | | | | |
| Number of positions | 5/2-position | 5/3-position | 5/2-position | 5/3-position | 5/2-position | 5/3-position |
| Type of actuation | Normally closed | | | | | |
| Effective orifice mm²(CV) | 12 ( 0.67 ) | | 14 ( 0.78 ) | | 25 ( 1.4 ) | |
| Manual override | Push and lock | | | | | |
| Port size | Rc 1/8 | | Rc 1/8, Rc 1/4 | | Rc 1/4, Rc 3/8 | |
| Lubrication | Lubrication free type | | | | | |

※ We can accept order NPT products.

### Code of order

**SK** – **5** – **1** – **0** – **1** – **110V AC** – **L** – **NC** – **M 2**

**Model**

SK:
Solenoid valve

**Model number**

5: 500 series
6: 600 series
8: 800 series

**Coil q'ty**

1: Single
2: Double

**Position**

0: 2 ports
3: 3 ports

**Port size**

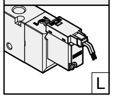
| Thread type (Standard) | | |
|---|---|---|
| Mark | Thread | Model |
| 1 | Rc 1/8 | SK500 |
| 1 | Rc 1/8 | SK600 |
| 2 | Rc 1/4 | |
| 2 | Rc 1/4 | SK800 |
| 3 | Rc 3/8 | |

**Voltage**

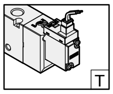
| Standard voltage |
|---|
| 12V DC 1.5W |
| 24V DC 1.5W |
| 110V AC 0.9VA |
| 220V AC 1.8VA |

**Electrical entry**

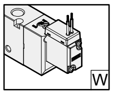
Standard



With wire length 300mm

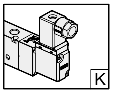


With wire length 300mm



Grommet

With wire length 300mm



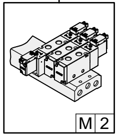
DIN Terminal

**Valve type**

NC: Closed center
NF: Exhaust center
NO: Pressure center

※ 5/3-position double coils only

**Manifold**



None:
Without manifol

M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M12 = 12 sets

※ SK500 series:
Up to M10 only

※ SK600 series:
Up to M12 only

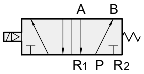
# SK 500, 600, 800 series Body Ported Solenoid Valve

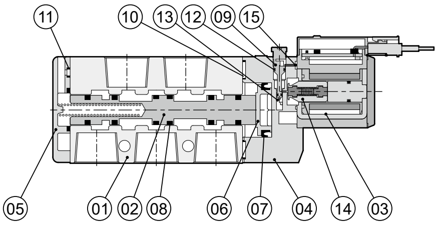
## Product features

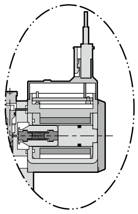
**CHELIC**

### Internal structure

- 5 port 2-position single

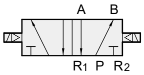


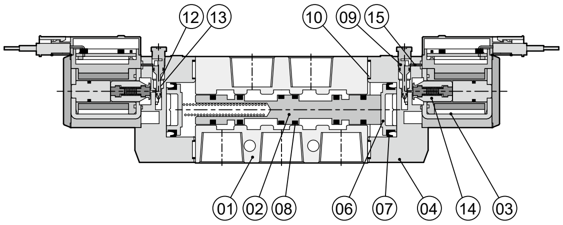

11
10
13
12
09
15
05
01
02
08
06
07
04
14
03



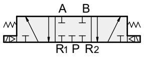
- T wire type - T

- 5 port 2-position double

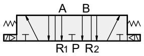



12
13
10
09
15
01
02
08
06
07
04
14
03

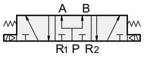
- 5 port 3-position double



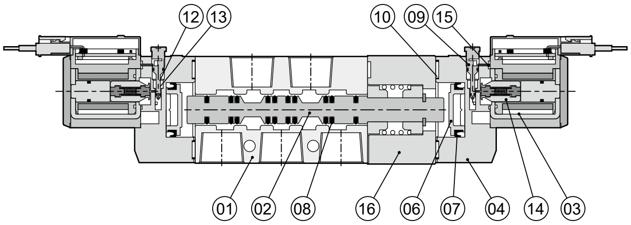
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


12
13
10
09
15
01
02
08
16
06
07
04
14
03

### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 09 | Manual override | POM |
| 02 | Shaft | Aluminum alloy | 10 | Holder O-ring | NBR |
| 03 | Coil | Copper | 11 | Rear cover O-Ring | NBR |
| 04 | Holder | POM | 12 | Manual override O-ring | NBR |
| 05 | Rear cover | POM | 13 | Manual override spring | Stainless steel |
| 06 | Holder piston | POM | 14 | Spring bushing | Stainless steel |
| 07 | Holder piston packing | NBR | 15 | Position iron plate | Iron |
| 08 | Spool packing | NBR | 16 | Mechanical holder | Aluminum alloy |

Note : The main body treated with painting.

### Packing and O-ring material list

| Item | Holder piston packing | Rear cover packing | Manual rod O-Ring | Coil insert bushing O-ring |
|---|---|---|---|---|
| Quantity<br>Model | 1 | 1 | 1 | 1 |
| SK 500 | — | — | Ø2.4x0.8、Ø0.5x0.6 | — |
| SK 600 | MYA-14 | Ø2×Ø1.5 | Ø2.4x0.8、Ø0.5x0.6 | Ø17.5xØ1.5 |
| SK 800 | MYA-18 | Ø2×Ø1.5 | Ø2.4x0.8、Ø0.5x0.6 | Ø19.5xØ1.5 |

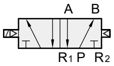
Note: Piston packing and rod packing all adopt import parts (MITSUBISH, SAKAGAHI, and same grade)

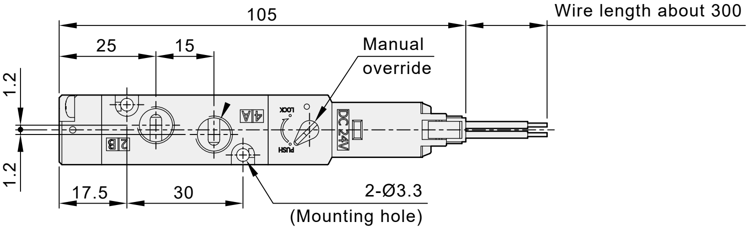
# SK 500 series Body Ported Solenoid Valve

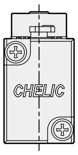
## Dimensions

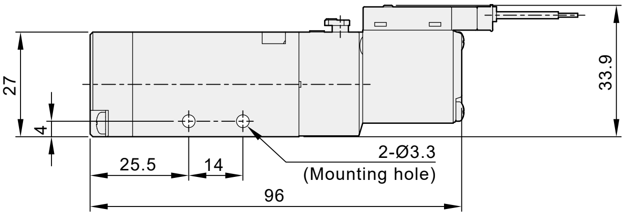
### SK-5101

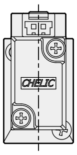
5 port 2-position single

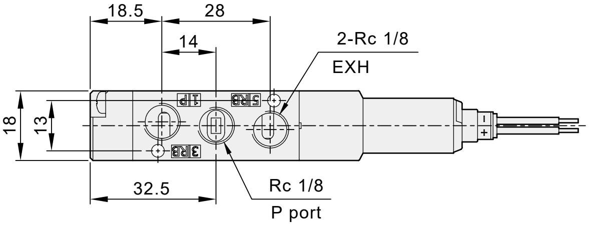



105
Wire length about 300
25
15
Manual
override
1.2
1.2
17.5
30
2-Ø3.3
(Mounting hole)
4A
2B
DC 24V
LOCK
PUSH



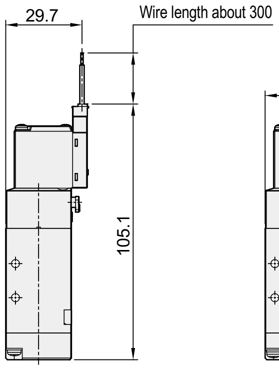

27
4
33.9
25.5
14
2-Ø3.3
(Mounting hole)
96

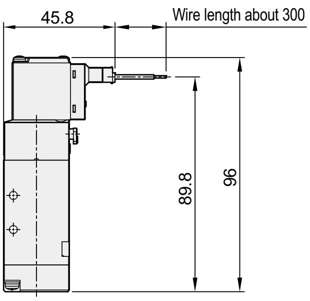


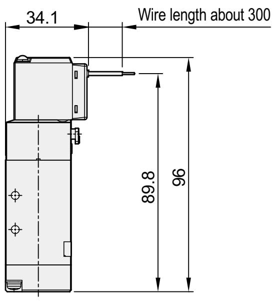

18.5
28
14
2-Rc 1/8
EXH
18
13
32.5
Rc 1/8
P port
1P
5RB
3RB
-
+

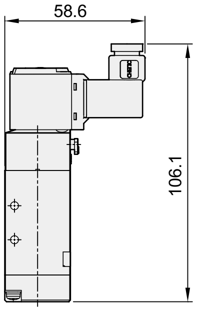
---

**L wire type - L** **T wire type - T** **W wire type - W** **K wire type - K**


29.7
Wire length about 300
105.1


45.8
Wire length about 300
89.8
96


34.1
Wire length about 300
89.8
96

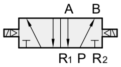


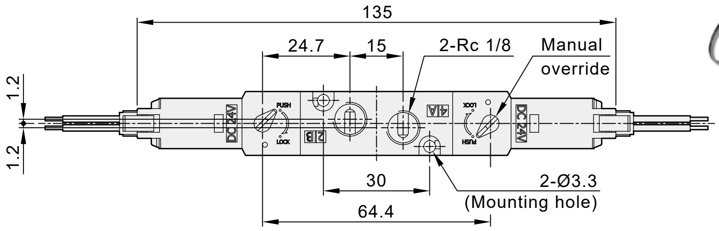
# SK 500 series Body Ported Solenoid Valve

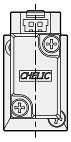
## Dimensions

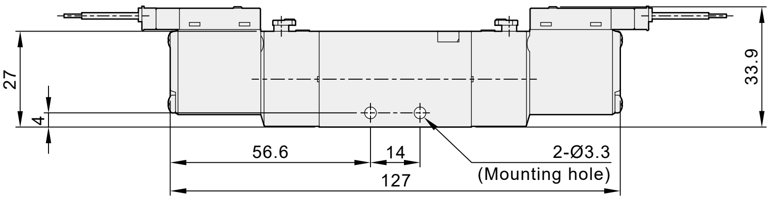
### SK-5201

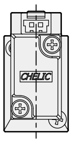
5 port 2-position double

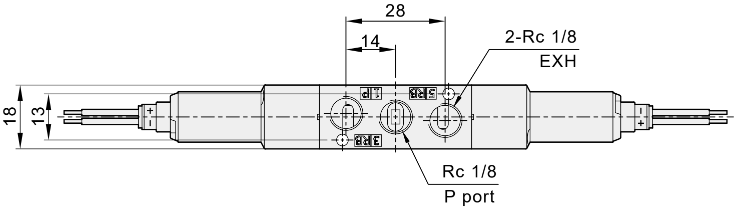



135
24.7
15
2-Rc 1/8
Manual override
1.2
1.2
30
64.4
2-Ø3.3
(Mounting hole)
DC 24V
PUSH
LOCK
2B
4A

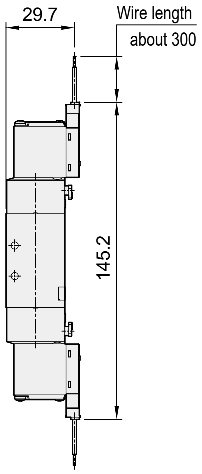



27
4
33.9
56.6
14
127
2-Ø3.3
(Mounting hole)

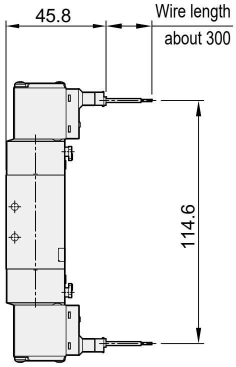



28
14
2-Rc 1/8
EXH
18
13
1P
5R2
3R1
Rc 1/8
P port

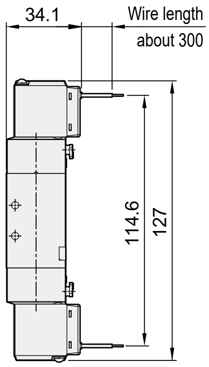
### L wire type - L


29.7
Wire length
about 300
145.2

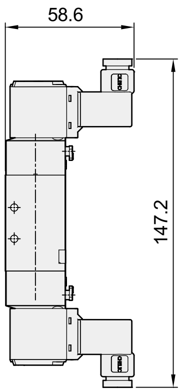
### T wire type - T


45.8
Wire length
about 300
114.6

### W wire type - W


34.1
Wire length
about 300
114.6
127

### K wire type - K



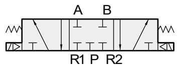
# SK 500 series Body Ported Solenoid Valve

## Dimensions

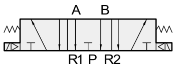
CHELIC

### SK-5231 – ☐

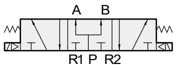
5 port 3-position double



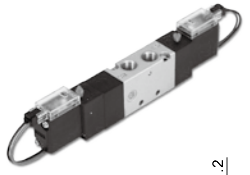
SK-5231- NC (Closed center) N.C.

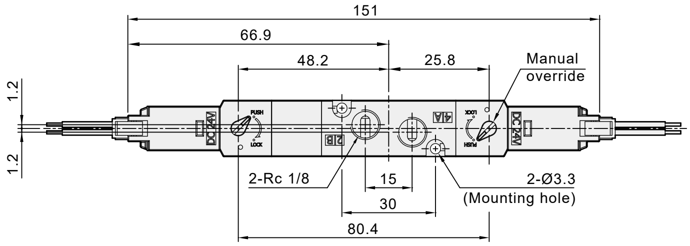


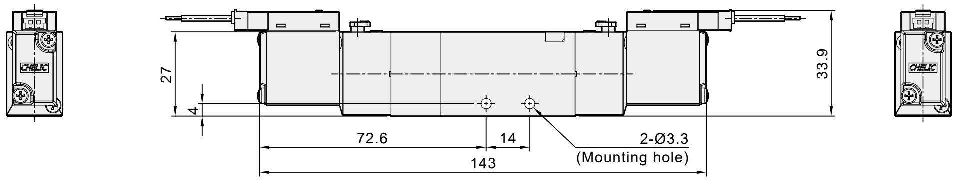
SK-5231- NF (Exhaust center) N.F.

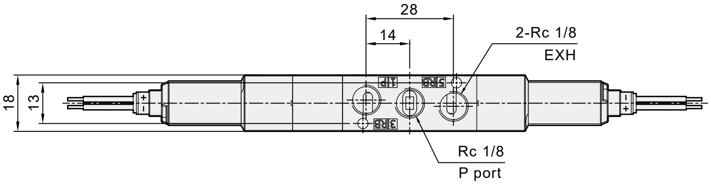


SK-5231- NO (Pressure center) N.O.

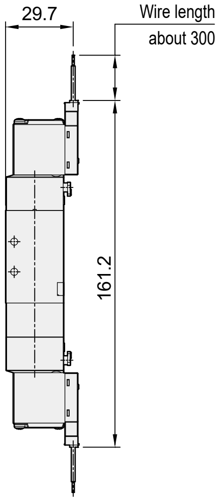



151
66.9
48.2
25.8
Manual override
1.2
1.2
PUSH
LOCK
DC 24V
2B
4A
2-Rc 1/8
15
30
80.4
2-Ø3.3
(Mounting hole)

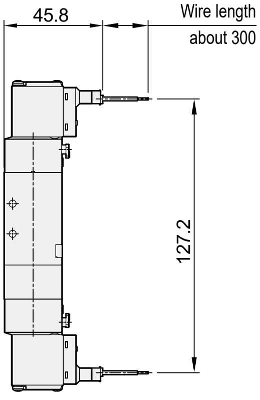

27
4
33.9
CHELIC
72.6
14
143
2-Ø3.3
(Mounting hole)


28
14
2-Rc 1/8
EXH
18
13
1P
5R
3R
Rc 1/8
P port

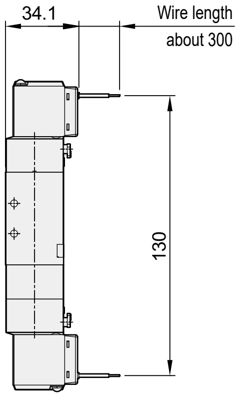
### L wire type - L


29.7
Wire length
about 300
161.2

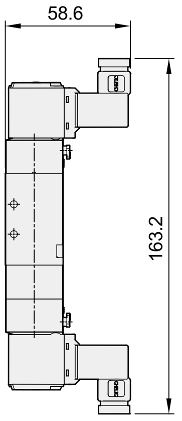
### T wire type - T


45.8
Wire length
about 300
127.2

### W wire type - W


34.1
Wire length
about 300
130

### K wire type - K

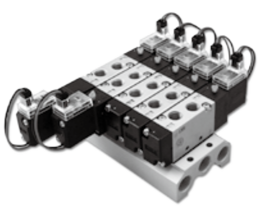


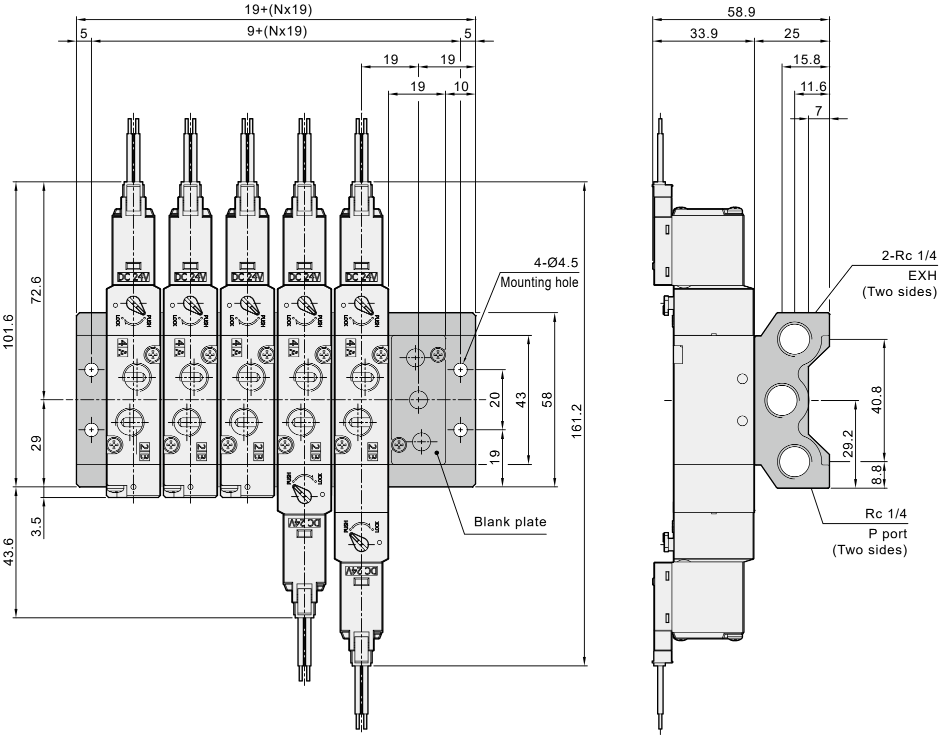
# SK 500 series Body Ported Solenoid Valve

## Dimensions

### SK - 500 series

Manifold dimension




19+(Nx19)
5
9+(Nx19)
5
19
19
19
10
101.6
72.6
29
3.5
43.6
DC 24V
41A
21B
PUSH
LOCK
4-Ø4.5
Mounting hole
20
43
58
19
161.2
Blank plate
58.9
33.9
25
15.8
11.6
7
2-Rc 1/4
EXH
(Two sides)
40.8
29.2
8.8
Rc 1/4
P port
(Two sides)

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

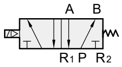
# SK 600 series Body Ported Solenoid Valve

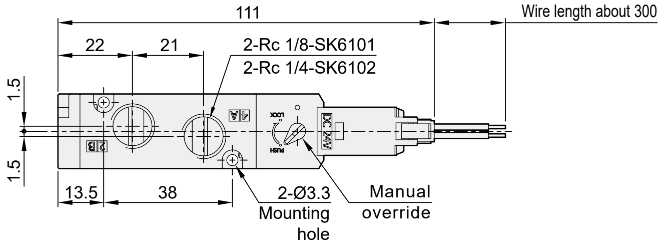
## Dimensions

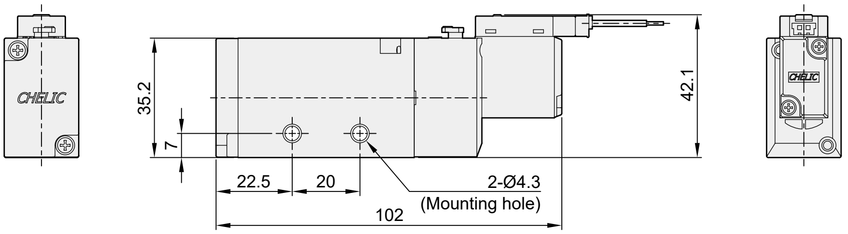
**CHELIC**

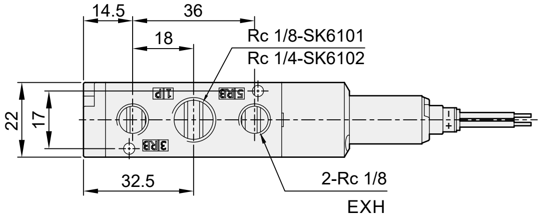
### SK - 6101 • 6102

5 port 2-position single



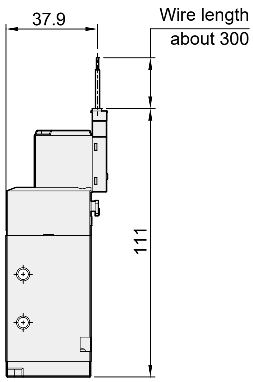

111
Wire length about 300
22
21
2-Rc 1/8-SK6101
2-Rc 1/4-SK6102
1.5
1.5
4A
2B
LOCK
PUSH
DC24V
13.5
38
2-Ø3.3
Mounting
hole
Manual
override


CHELIC
35.2
7
42.1
22.5
20
2-Ø4.3
(Mounting hole)
102
CHELIC

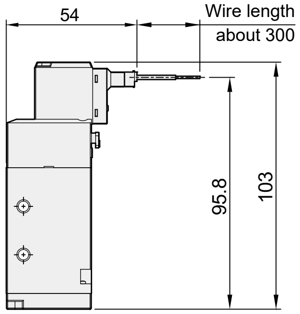

14.5
36
18
Rc 1/8-SK6101
Rc 1/4-SK6102
1P
5R2
3R1
22
17
32.5
2-Rc 1/8
EXH

---

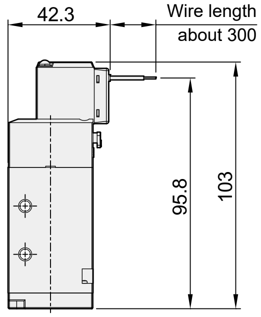
### L wire type - L


37.9
Wire length
about 300
111

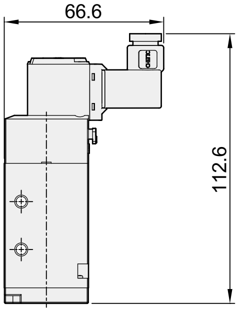
### T wire type - T


54
Wire length
about 300
95.8
103

### W wire type - W


42.3
Wire length
about 300
95.8
103

### K wire type - K

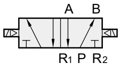


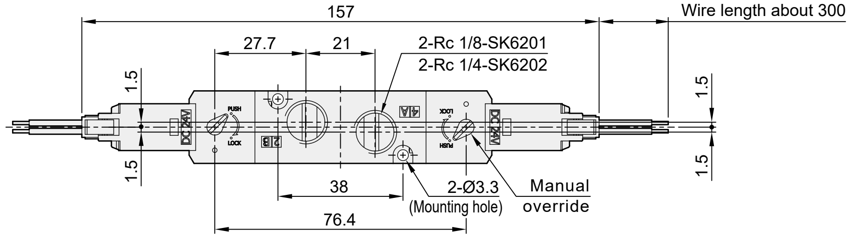
# SK 600 series Body Ported Solenoid Valve

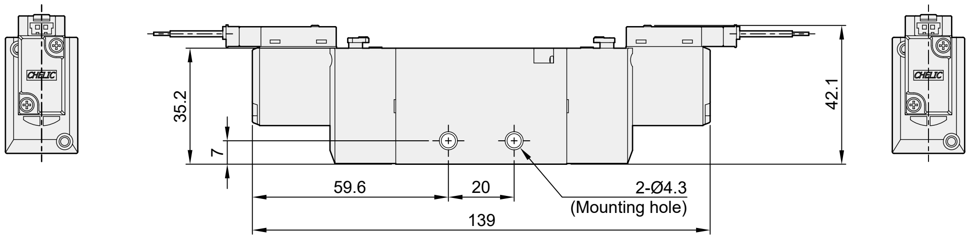
## Dimensions

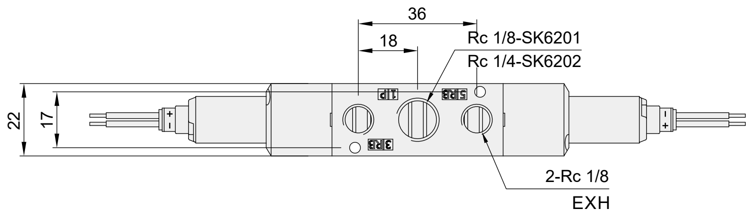
### SK - 6201 • 6202

5 port 2-position double



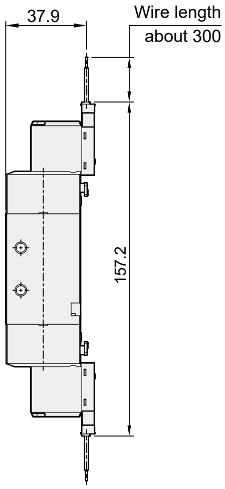

157
Wire length about 300
27.7
21
2-Rc 1/8-SK6201
2-Rc 1/4-SK6202
1.5
1.5
1.5
1.5
DC24V
PUSH
LOCK
2B
4A
38
2-Ø3.3
(Mounting hole)
Manual
override
76.4


CHELIC
35.2
7
42.1
59.6
20
2-Ø4.3
(Mounting hole)
139

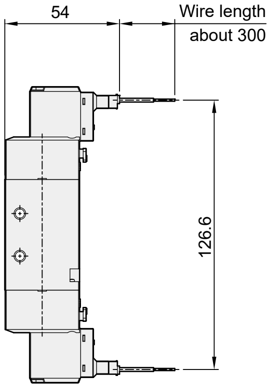

36
18
Rc 1/8-SK6201
Rc 1/4-SK6202
22
17
1P
5R3
3R3
2-Rc 1/8
EXH

---

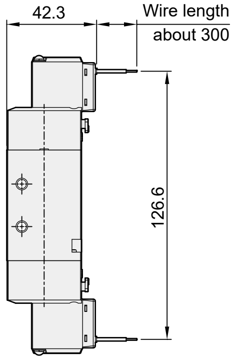
**L wire type -** L


37.9
Wire length
about 300
157.2

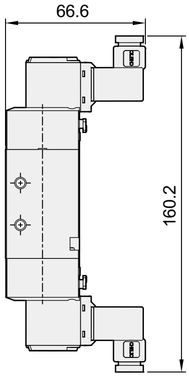
**T wire type -** T


54
Wire length
about 300
126.6

**W wire type -** W

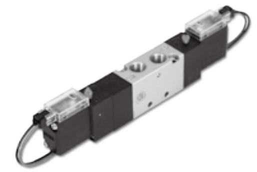

42.3
Wire length
about 300
126.6

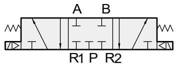
**K wire type -** K



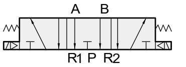
## SK-6232-☐

5 port 3-position double

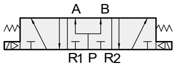




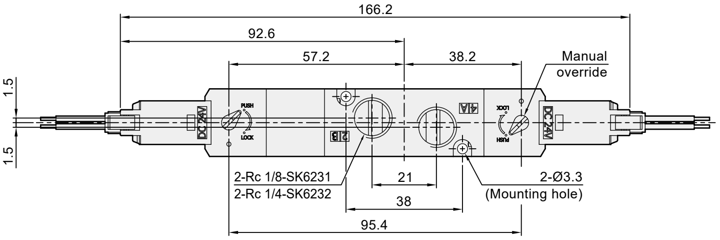
SK-6232- NC (Closed center) N.C.

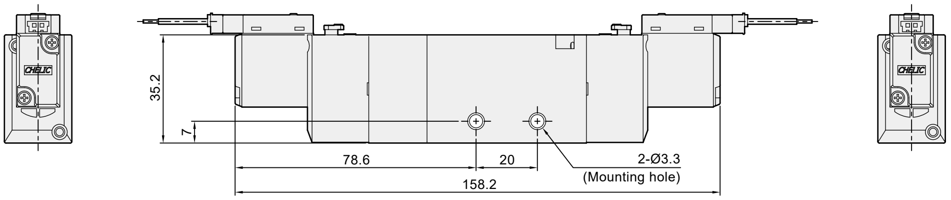


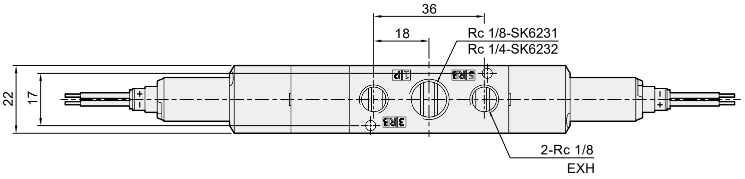
SK-6232- NF (Exhaust center) N.F.



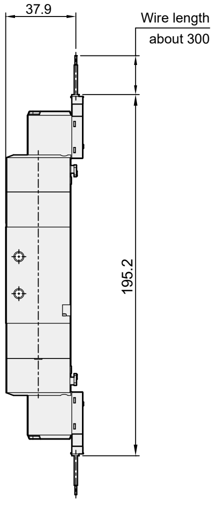
SK-6232- NO (Pressure center) N.O.


166.2
92.6
57.2
38.2
Manual override
1.5
1.5
PUSH
LOCK
DC24V
2 B
4 A
2-Rc 1/8-SK6231
2-Rc 1/4-SK6232
21
38
95.4
2-Ø3.3
(Mounting hole)

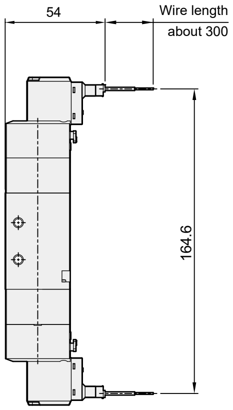

CHELIC
35.2
7
78.6
20
158.2
2-Ø3.3
(Mounting hole)


36
18
Rc 1/8-SK6231
Rc 1/4-SK6232
22
17
1 P
5 R2
3 R1
2-Rc 1/8
EXH

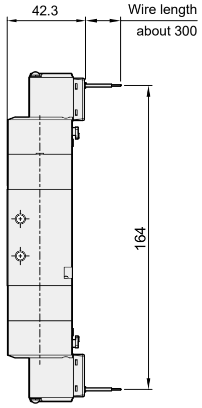
### L wire type - L


37.9
Wire length
about 300
195.2

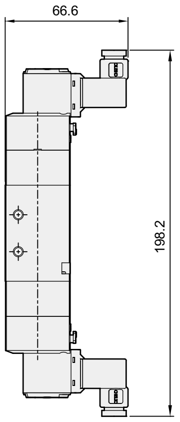
### T wire type - T


54
Wire length
about 300
164.6

### W wire type - W


42.3
Wire length
about 300
164

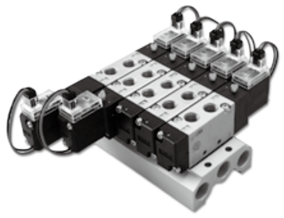
### K wire type - K

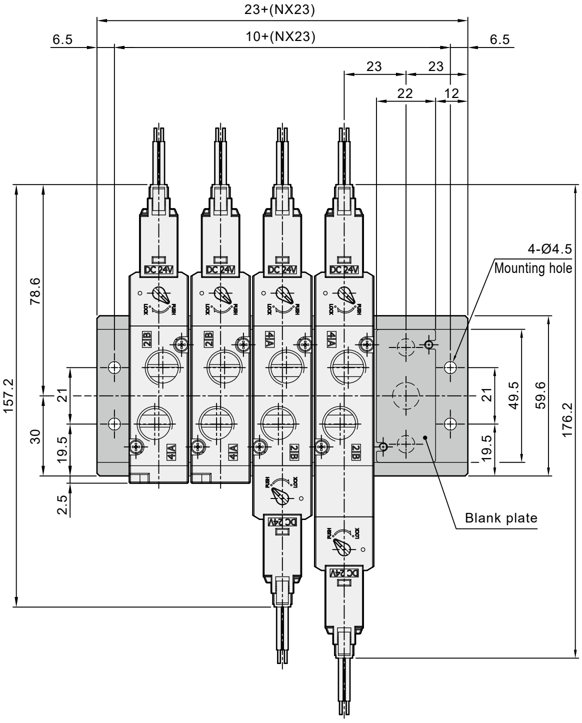


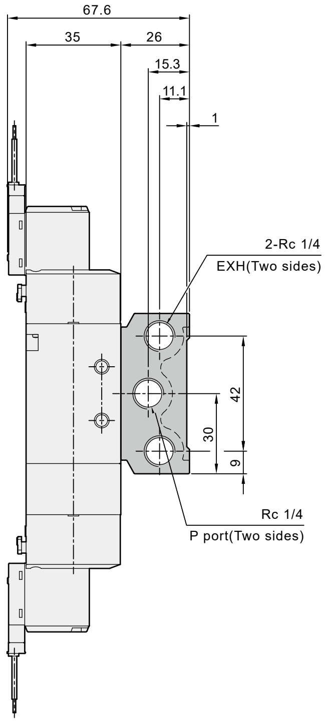
# SK 600 series Body Ported Solenoid Valve

## SK-600 series

Manifold dimension




23+(NX23)
6.5
10+(NX23)
6.5
23
23
22
12
4-Ø4.5
Mounting hole
78.6
157.2
21
30
19.5
2.5
21
49.5
59.6
176.2
19.5
Blank plate
DC 24V
2B
4A
PUSH
LOCK


67.6
35
26
15.3
11.1
1
2-Rc 1/4
EXH(Two sides)
42
30
9
Rc 1/4
P port(Two sides)

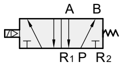
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

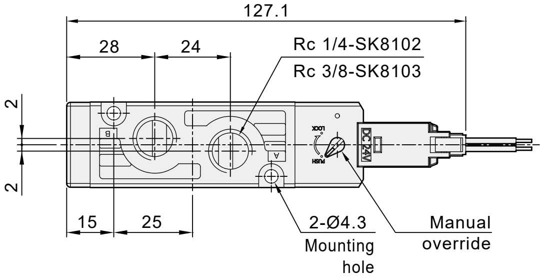
# SK 800 series Body Ported Solenoid Valve

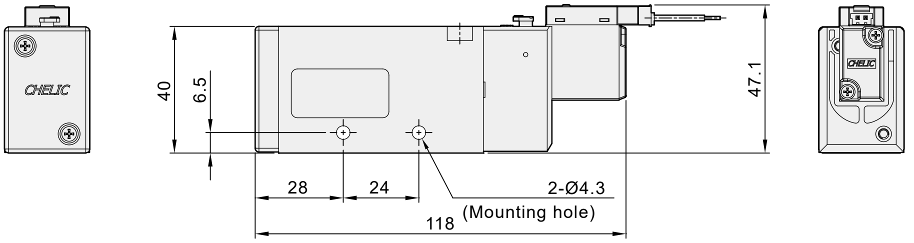
## Dimensions

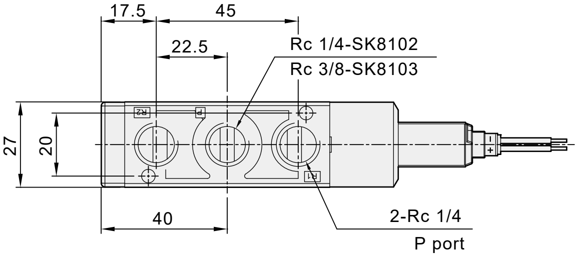
### SK-8102 • 8103

5 port 2-position single



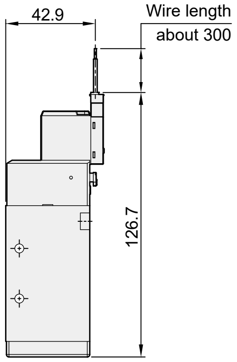

127.1
28
24
Rc 1/4-SK8102
Rc 3/8-SK8103
2
2
15
25
2-Ø4.3
Mounting
hole
Manual
override
DC24V
LOCK
PUSH
B
A


CHELIC
40
6.5
47.1
28
24
2-Ø4.3
(Mounting hole)
118
CHELIC

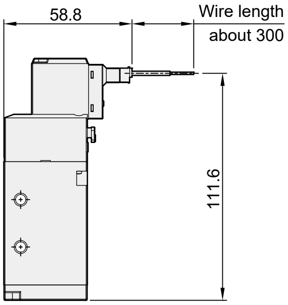

17.5
45
22.5
Rc 1/4-SK8102
Rc 3/8-SK8103
27
20
40
2-Rc 1/4
P port
R2
P
R1

---

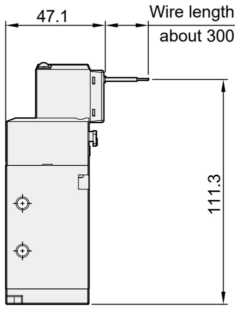
### L wire type - L


42.9
Wire length
about 300
126.7

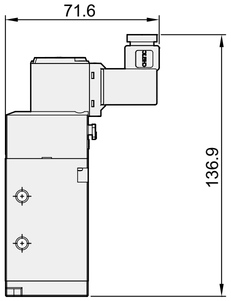
### T wire type - T


58.8
Wire length
about 300
111.6

### W wire type - W


47.1
Wire length
about 300
111.3

### K wire type - K

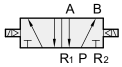


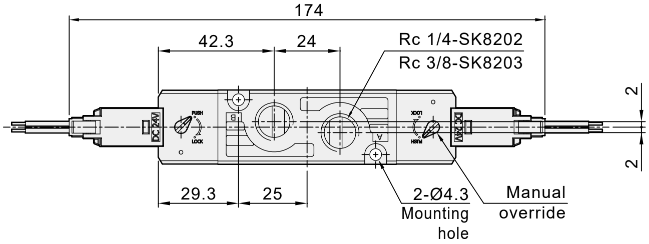
# SK 800 series Body Ported Solenoid Valve

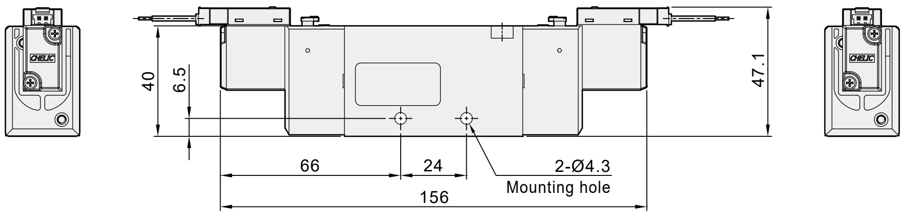
## Dimensions

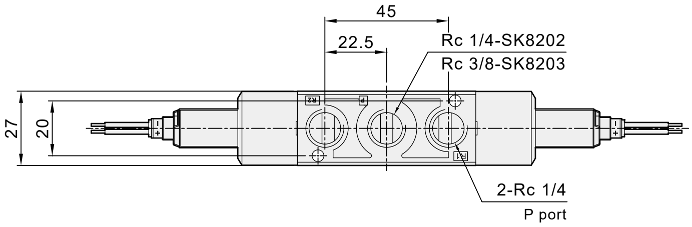
### SK-8202 • 8203

5 port 2-position double

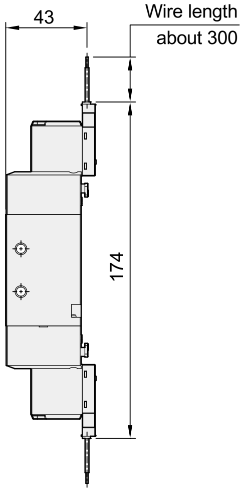



174
42.3
24
Rc 1/4-SK8202
Rc 3/8-SK8203
2
2
29.3
25
2-Ø4.3
Mounting hole
Manual override

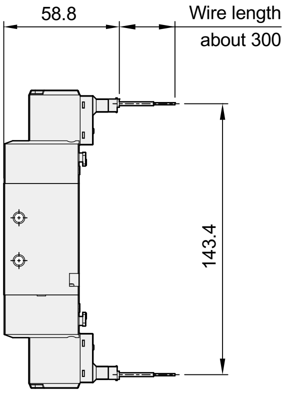

40
6.5
47.1
66
24
2-Ø4.3
Mounting hole
156


45
22.5
Rc 1/4-SK8202
Rc 3/8-SK8203
27
20
2-Rc 1/4
P port

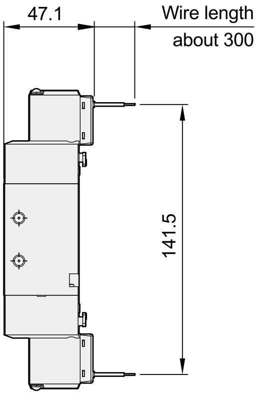
### L wire type - L


43
Wire length
about 300
174

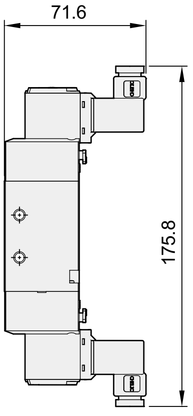
### T wire type - T


58.8
Wire length
about 300
143.4

### W wire type - W


47.1
Wire length
about 300
141.5

### K wire type - K

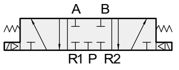


# SK 800 series Body Ported Solenoid Valve

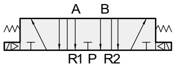
## Dimensions

### SK-8232-☐

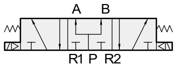
5 port 3-position double



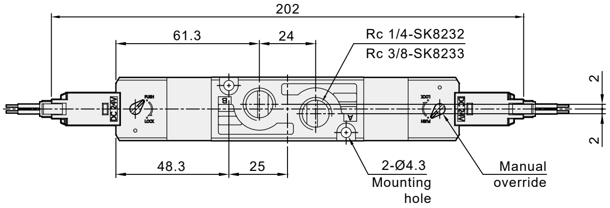
SK-8232- NC (Closed center) N.C.

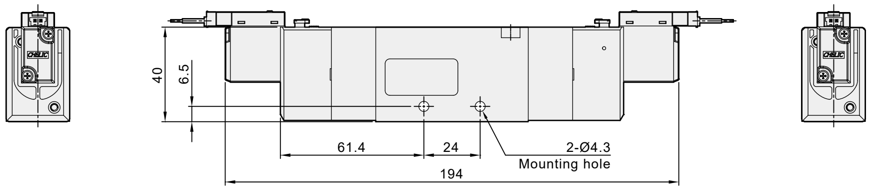


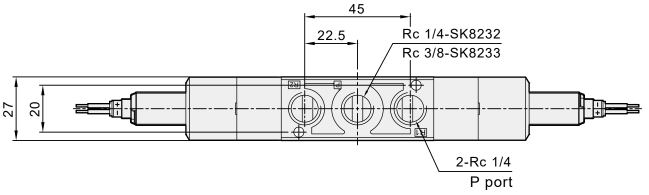
SK-8232- NF (Exhaust center) N.F.



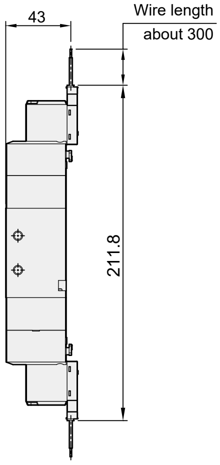
SK-8232- NO (Pressure center) N.O.


202
61.3
24
Rc 1/4-SK8232
Rc 3/8-SK8233
2
2
48.3
25
2-Ø4.3
Mounting
hole
Manual
override

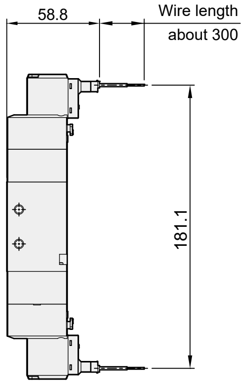

40
6.5
61.4
24
2-Ø4.3
Mounting hole
194


45
22.5
Rc 1/4-SK8232
Rc 3/8-SK8233
27
20
2-Rc 1/4
P port

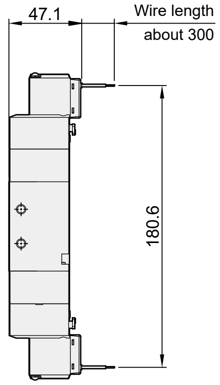
### L wire type - L


43
Wire length
about 300
211.8

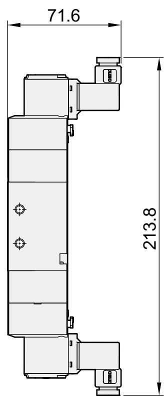
### T wire type - T


58.8
Wire length
about 300
181.1

### W wire type - W


47.1
Wire length
about 300
180.6

### K wire type - K



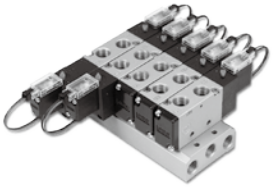
# SK 800 series Body Ported Solenoid Valve

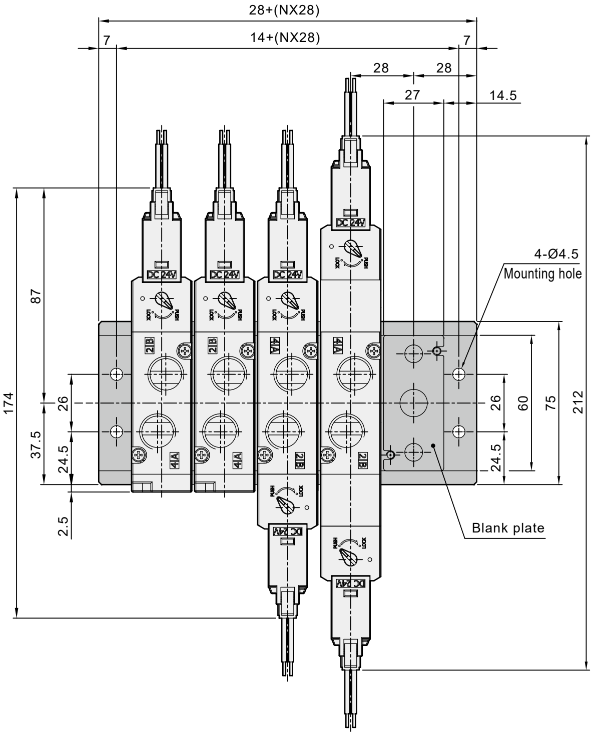
## Dimensions

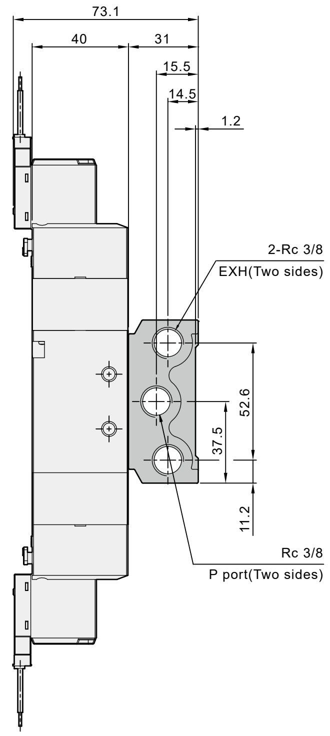
SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

### SK - 800 series

Manifold dimension




28+(NX28)
7
14+(NX28)
7
28
28
27
14.5
4-Ø4.5
Mounting hole
DC 24V
PUSH
LOCK
2(B)
4(A)
87
174
26
37.5
24.5
2.5
26
60
75
212
24.5
Blank plate


73.1
40
31
15.5
14.5
1.2
2-Rc 3/8
EXH(Two sides)
52.6
37.5
11.2
Rc 3/8
P port(Two sides)

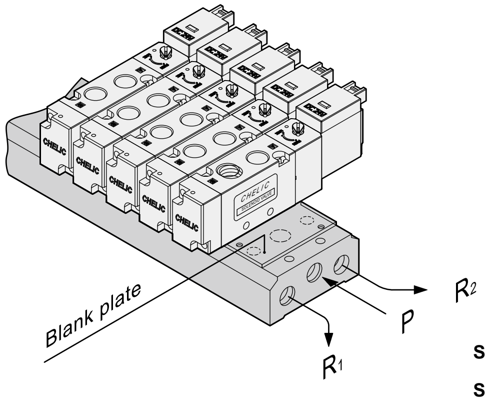
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SK series Body Ported Solenoid Valve

## Accessories/ Installation

### Manifold

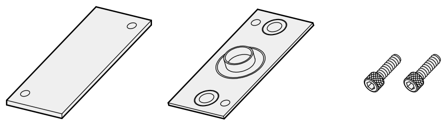
**SK-500 • 600 • 800 series**


Blank plate
R2
P
R1

### Manifold accessory

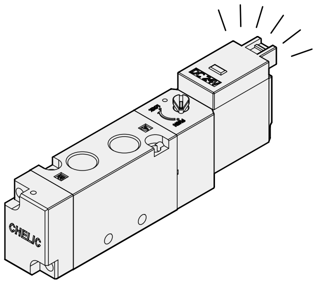
**SK-500 • 600 • 800 series**

※ The accessories of blank plate.



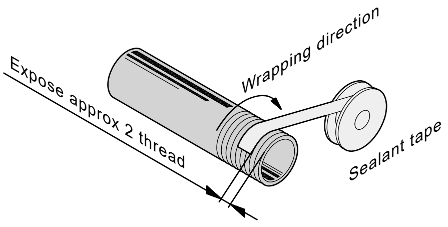
| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| **SK-500 series** | MSV-5056 | MSV-5051 | M3×8L |
| **SK-600 series** | MSV-6056 | MSV-6051 | M3×10L |
| **SK-800 series** | MSV-8056 | MSV-8051 | M4×9L |

### With indicator light



### Handling details and precaution

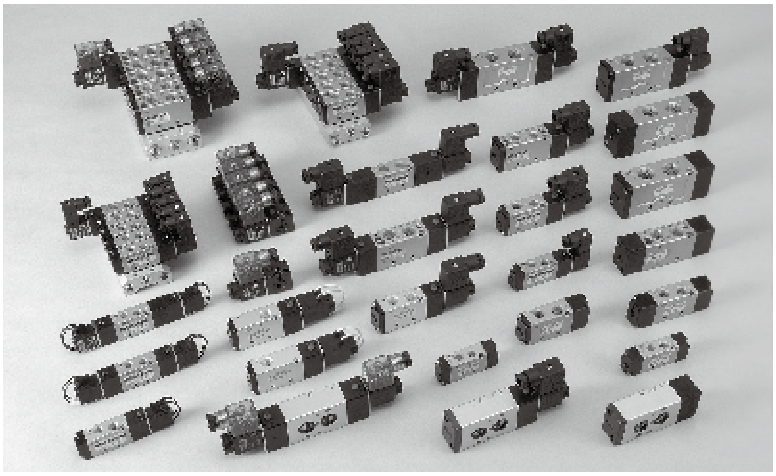
1. Please keep the tube fitting clean.
2. Please wrap the thread by tape seal and leave about 2 pitches Unwrapped at the end to as avoid clogging in the air line.


Wrapping direction
Expose approx 2 thread
Sealant tape

# Directional control — SV series Body Ported Solenoid Valve

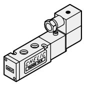
## SV500, SV600, SV800, SV900 Solenoid Valve

CHELIC



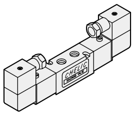
Provide CAD external dimension.

**Solenoid valve single coil**
( 5 port 2-position )



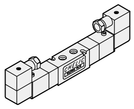
| | | |
|---|---|---|
| **SV - 500 series** | **1/8** | **P.2-1.207** |
| **SV - 600 series** | **1/8, 1/4** | **P.2-1.209** |
| **SV - 800 series** | **1/8, 3/8** | **P.2-1.211** |
| **SV - 900 series** | **1/2** | **P.2-1.213** |

**Solenoid valve double coils**
( 5 port 2-position )



| | | |
|---|---|---|
| **SV - 500 series** | **1/8** | **P.2-1.207** |
| **SV - 600 series** | **1/8, 1/4** | **P.2-1.209** |
| **SV - 800 series** | **1/8, 3/8** | **P.2-1.211** |
| **SV - 900 series** | **1/2** | **P.2-1.213** |

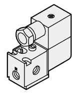
**Solenoid valve double coils 3 positions**
( 5 port 3-position )



| | | |
|---|---|---|
| **SV - 500 series** | **1/8** | **P.2-1.208** |
| **SV - 600 series** | **1/8, 1/4** | **P.2-1.210** |
| **SV - 800 series** | **1/8, 3/8** | **P.2-1.212** |
| **SV - 900 series** | **1/2** | **P.2-1.214** |

**Direct operated solenoid valve**
( 3 port 2-position )

| | | |
|---|---|---|
| **SV - 310 series** | **1/8** | **P.2-1.294** |

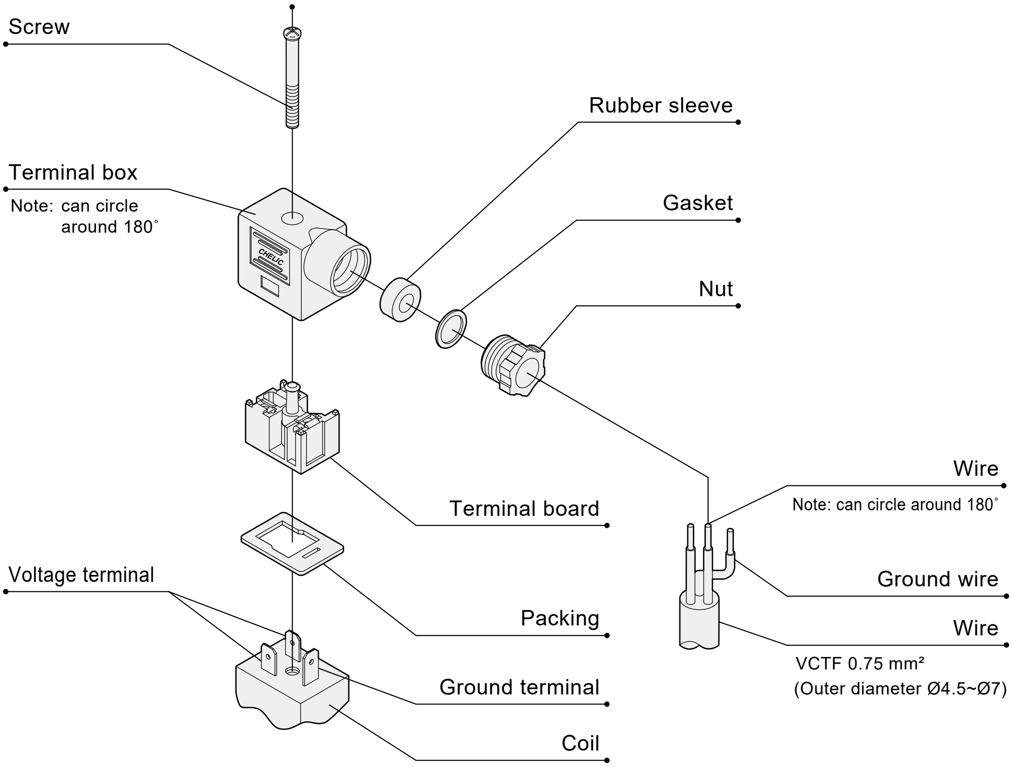


# ⚠ General Cautions for SV Solenoid Valve series

## ⚠ CAUTION

- **Connection of DIN terminal box**

  DIN terminal box is class IP65 water proof; please positioned and slot firmly when installing, there is no screw for tighten.


Screw
Rubber sleeve
Terminal box
Note: can circle around 180˚
Gasket
Nut
Wire
Note: can circle around 180˚
Terminal board
Ground wire
Voltage terminal
Packing
Wire
VCTF 0.75 mm²
(Outer diameter Ø4.5~Ø7)
Ground terminal
Coil

## Caution for application

## ⚠ WARNING

- Do not switch the solenoid valve with manual override while the solenoid valve is energized; resume to normal position after the manual override is operated.
- Never apply incorrect voltage to the coil of solenoid valve to prevent from damage.
- The energizing of the compound movement solenoid valve, the energizing time at least 0.1 second.
- Provide voltage stabilization to power supply, rate voltage supply within 10%, avoid surge.

## ⚠ CAUTION

- Heat dissipation should be taken into consideration after long period energizing.
- Take special attention to intermittent air tight solenoid valve for leakage between solenoid valve and cylinder and cause error action and displacement.

# ⚠ General Cautions for SV Solenoid Valve series

Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Caution for service and maintenance

### ⚠ WARNING

- Shut off the power switch and air source properly before service and maintenance, confirm that there is no residue pressure in the pipeline and start work after confirming the status is safe.
- The manual device ( Series 3, 6, 8, 9 ) of solenoid valve must be resumed to home ( initial position ) and confirm that all are reset and then start the normal operation is allowed. ( There is no such concern for it is auto reset type ), because if the power is turning on before confirming for reset to home will cause abnormal action and led to hazard.
- The assemble and disassemble of solenoid valve should be carried by personnel who is familiar with structure of the product who know well the internal structure and principle, avoid error disassemble and cause safety concern on operation and application.

### ⚠ CAUTION

- Keep the air source dry without moisture and debris, and pay attention for normal the front filter of the solenoid valve and strainer.
- Not oil is required for the solenoid valve as it is lubricated at assembly. In case of oiling is necessary, use ISO VG32 lubricant, consequent poor action if stop oiling ( there is minor moisture in the air; lubrication is required at fast moving condition )
- Service and maintenance should be perform regularly as schedule, and confirm the normal operation of following:

**(1)** Is the compressed air supplied stably ?

**(2)** Is the front filter of the solenoid valve and strainer normal ?

**(3)** Is the connection portion or piping loosen accompany moving of object ?
Is the pipe connection portion normal ?

**(4)** Is the action condition of the solenoid valve normal ?
Is there any delay and exhaust phenomena ?
Any strange noise ?

**(5)** Whether the piping system connected to activator ( or cylinder ) normal ?
Terminal start and stop movement normal ?
Is the load system normal ?

**(6)** Is the lubricant feeding system normal ?
Is the oil amount adjusted properly ?

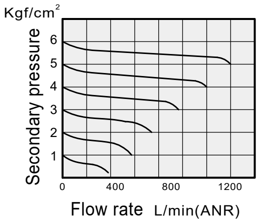
**(7)** Is the exhaust smooth ?
Any blockage ?
Are exhaust and speed normal ?

# SV series Body Ported Solenoid Valve

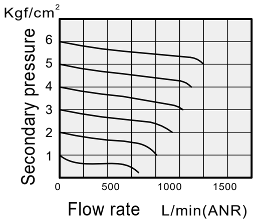
## Flow rate and applicable cylinder

### Flow rate characteristics

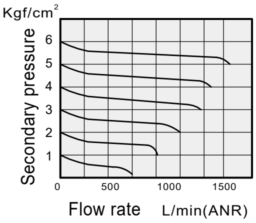
**SV 500 series**



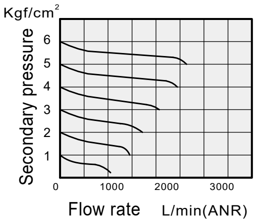
**SV 600 series**



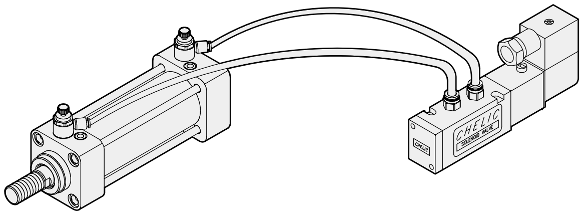
**SV 800 series**



**SV 900 series**



### Applicable cylinder ( Reference )



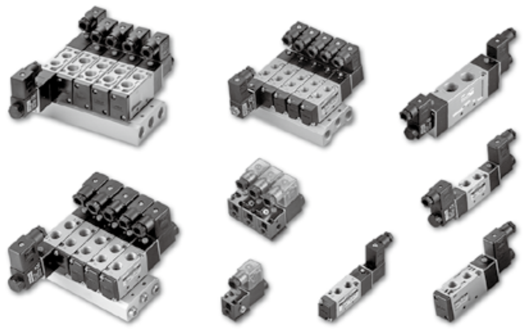
● Max. driving speed of the cylinder ( Length of piping: 1m, Port size: Ø8 )  ( Port size: Ø10 )

| Model | CV value | Cylinder speed M/S | SDA • DB • FDA series | | | | | | DMB • DN • DU series | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ø12 | Ø16 | Ø20 | Ø25 | Ø32 | Ø40 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 | Ø125 |
| SV500 | 0.67 | 150 | | | | | | | | | ● | | | |
| | | 300 | | | | | | | | ● | | | | |
| | | 450 | | | | | ● | ● | ● | | | | | |
| | | 600 | | | | ● | | | | | | | | |
| | | 750 | | | ● | | | | | | | | | |
| | | 900 | ● | ● | | | | | | | | | | |
| SV600 | 0.78 | 150 | | | | | | | | | | | ● | |
| | | 300 | | | | | | | | | | ● | | |
| | | 450 | | | | | | ● | | | ● | | | |
| | | 600 | | | | | ● | | | ● | | | | |
| | | 750 | | | | ● | | | ● | | | | | |
| | | 900 | | | ● | | | | | | | | | |
| SV800 | 1.4 | 150 | | | | | | | | | | | | |
| | | 300 | | | | | | | | | | ● | | |
| | | 450 | | | | | | ● | | | ● | | | |
| | | 600 | | | | | ● | | | ● | | | | |
| | | 750 | | | | ● | | | ● | | | | | |
| | | 900 | | | ● | | | | | | | | | |
| SV900 | 2.78 | 100 | | | | | | | | | | | | ● |
| | | 150 | | | | | | | | | | | ● | |
| | | 300 | | | | | | | | | | ● | | |
| | | 450 | | | | | | ● | | | ● | | | |
| | | 600 | | | | | ● | | | ● | | | | |
| | | 750 | | | | ● | | | ● | | | | | |
| | | 900 | | | ● | | | | | | | | | |

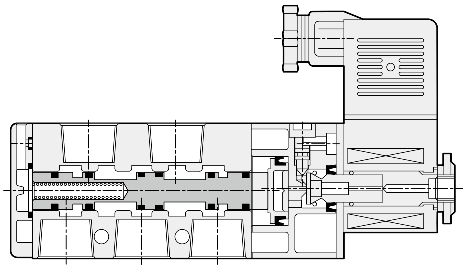
# SV 500, 600, 800, 900 series Body Ported Solenoid Valve

## Product features

**CHELIC**



### Internal structure



### Specification

| Item \ Model | SV-5101<br>SV-5201 | SV-5231 | SV-6101(2)<br>SV-6201(2) | SV-6231<br>SV-6232 | SV-8102(3)<br>SV-8202(3) | SV-8232<br>SV-8233 | SV-9104<br>SV-9204 |
|---|---|---|---|---|---|---|---|
| Fluid | Air | | | | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 (150 ~ 700) | | | | | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | | | | | |
| Pilot type | Air operated | | | | | | |
| Number of positions | 5/2-position | 5/3-position | 5/2-position | 5/3-position | 5/2-position | 5/3-position | 5/2-position 5/3-position |
| Type of actuation | Normally closed | | | | | | |
| Effective orifice mm²(CV) | 12(0.67) | | 14(0.78) | | 25(1.4) | | 50(2.78) |
| Manual override | Push and lock ( SV-500 Push type only ) | | | | | | |
| Port size | Rc 1/8 | | Rc 1/8, 1/4 | | Rc 1/4, 3/8 | | Rc 1/2 |
| Lubrication | Lubrication free type | | | | | | |

Note: Custom made for NPT thread type.

### Code of order

SV 6 1 0 1 – 110 VAC – K – L – NC – M 2

SV series Solenoid Valve

**Model**
5: 500 series
6: 600 series
8: 800 series
9: 900 series

**Coil q'ty**
1: Single
2: Double

**Position**
0: 2ports
3: 3ports

**Port size**

Thread type (standard)

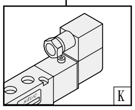
| Mark | Thread | Thread |
|---|---|---|
| 1 | Rc 1/8 | SV500 |
| 1 | Rc 1/8 | SV600 |
| 2 | Rc 1/4 | |
| 2 | Rc 1/4 | SV800 |
| 3 | Rc 3/8 | |
| 4 | Rc 1/2 | SV900 |

**Voltage type**

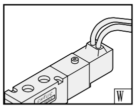
Standard:
24VDC / 3W
110VAC / 5VA
220VAC / 5VA

Special voltage:
12VDC / 2.5W
24VAC / 8.5VA
220VAC / 8.5VA
Suitable for 190~250V
( For hight pressure range)

**Electrical entry**

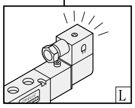


ISO Socket solenoid type (ISO standard applicable for special voltage)



Solenoid with wire (500mm)
(W type for standard voltage only)

**With light**



None(Standard) : without light
(Black outer shell)

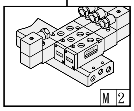
L
with indicator light
(Clear outer shell)

ISO standard socket with AC and DC indicator light
(clear case)

**Valve type**
NC: Closed center
NF: Exhaust center
NO: Pressure center

5/3-position double coils only

**Manifold**



None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M12 = 12 sets

※SV500 series Max. manifolds: M10
※SV600 series Max. manifolds: M12
※SV800 series Max. manifolds: M12
※SV900 series Max. manifolds: M5

Note:
1. If special voltage needed, please contact sales representative.
2. 500 series has W type only; 600, 800 and 900 series applicable with ISO socket K and L option.

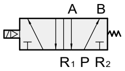
# SV 500, 600, 800, 900 series Body Ported Solenoid Valve

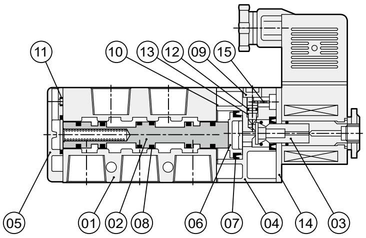
## Product features

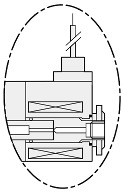
CHELIC

### Internal structure

- 5 port 2-position single

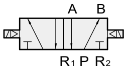


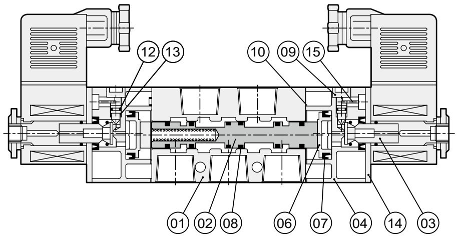

11
10
13
12
09
15
05
01
02
08
06
07
04
14
03



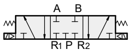
— W With wire type

- 5 port 2-position double

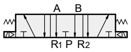



12
13
10
09
15
01
02
08
06
07
04
14
03

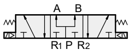
- 5 port 3-position double



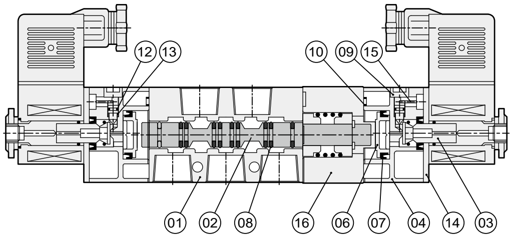
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


12
13
10
09
15
01
02
08
16
06
07
04
14
03

### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **09** | Manual override | POM |
| **02** | Shaft | Aluminum alloy | **10** | Holder O-Ring | NBR |
| **03** | Copper tube | Copper | **11** | Rear cover O-Ring | NBR |
| **04** | Holder | POM | **12** | Manual override O-Ring | NBR |
| **05** | Rear cover | POM | **13** | Manual override spring | Stainless steel |
| **06** | Holder piston | POM | **14** | Holder fixing piece | Iron |
| **07** | Holder piston packing | NBR | **15** | Position iron plate | Iron |
| **08** | Spool packing | NBR | **16** | Mechanical holder | POM |

Note: The main body has been treated with painting.

### Packing and O-ring material list

| Item | Piston packing | Holder O-ring | Manual rod O-Ring | Rear cover O-Ring |
|---|---|---|---|---|
| Model \ Quantity | 1 | 1 | 1 | 1 |
| **SV 500** | — | — | Ø2XØ1 | — |
| **SV 600** | MYA-14 | Ø2XØ1.5 | Ø2XØ1 | Ø17.5XØ1.5 |
| **SV 800** | MYA-18 | Ø2XØ1.5 | Ø2XØ1 | Ø19.5XØ1.5 |
| **SV 900** | Z8-2822 | Ø3.5XØ1.5 | Ø2XØ1 | Ø22.8XØ1.58 |

Note: Piston packing and Rod packing are imported. ( MITSUBISHI, SAKAGAMI and so on )

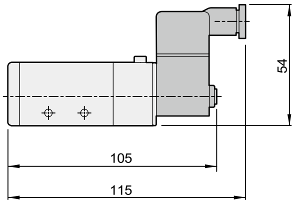
# SV 500 series Body Ported Solenoid Valve

## Dimensions

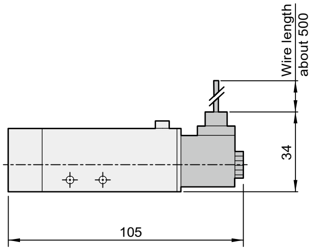
### 500 series Coil operated type

— **K** DIN terminal

— **K** – **L** With light

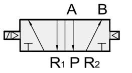


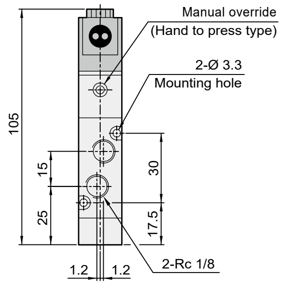
— **W** Wire type

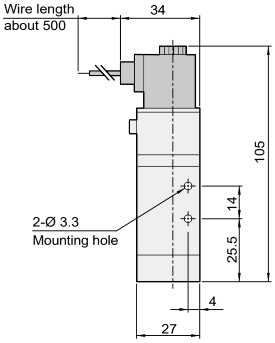

Wire length
about 500
34
105

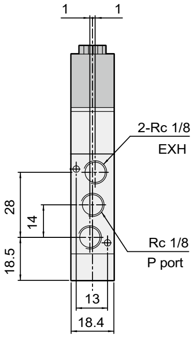
### SV - 5101 series

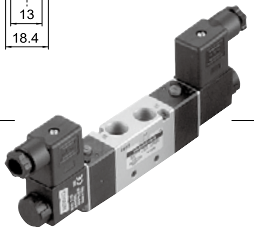
5 port 2-position single




Manual override
(Hand to press type)
2-Ø 3.3
Mounting hole
105
15
30
25
17.5
2-Rc 1/8
1.2
1.2

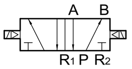

Wire length
about 500
34
105
2-Ø 3.3
Mounting hole
14
25.5
4
27

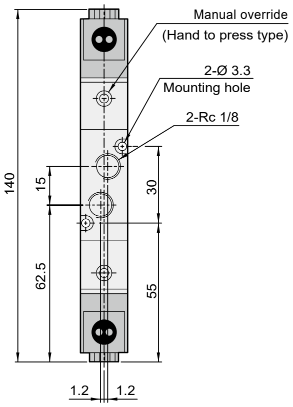

1
1
2-Rc 1/8
EXH
28
14
18.5
Rc 1/8
P port
13
18.4

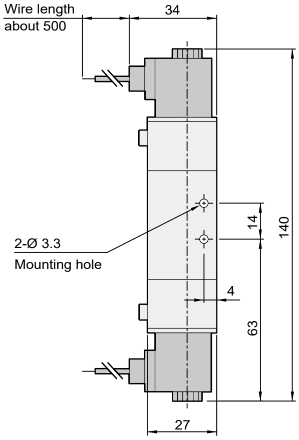


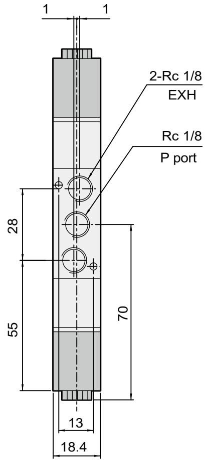
### SV - 5201 series

5 port 2-position double




Manual override
(Hand to press type)
2-Ø 3.3
Mounting hole
2-Rc 1/8
140
15
30
62.5
55
1.2
1.2


Wire length
about 500
34
2-Ø 3.3
Mounting hole
14
140
4
63
27

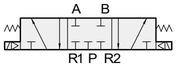

1
1
2-Rc 1/8
EXH
Rc 1/8
P port
28
70
55
13
18.4

# SV 500 series Body Ported Solenoid Valve

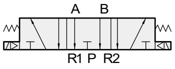
## Dimensions

### SV-5231 - ☐ series

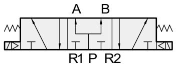
5 port 3-position double



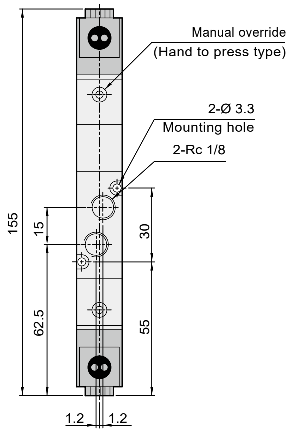
SV-5231- NC (Closed center) N.C.

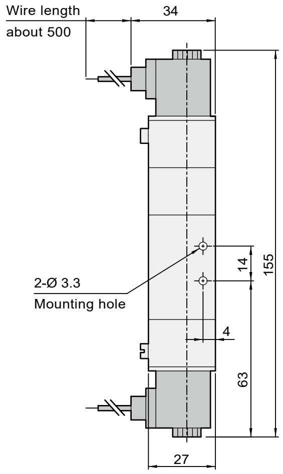


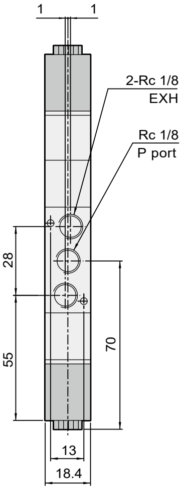
SV-5231- NF (Exhaust center) N.F.

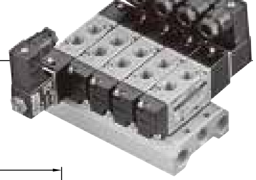


SV-5231- NO (Pressure center) N.O.


Manual override
(Hand to press type)
2-Ø 3.3
Mounting hole
2-Rc 1/8
155
15
30
62.5
55
1.2
1.2

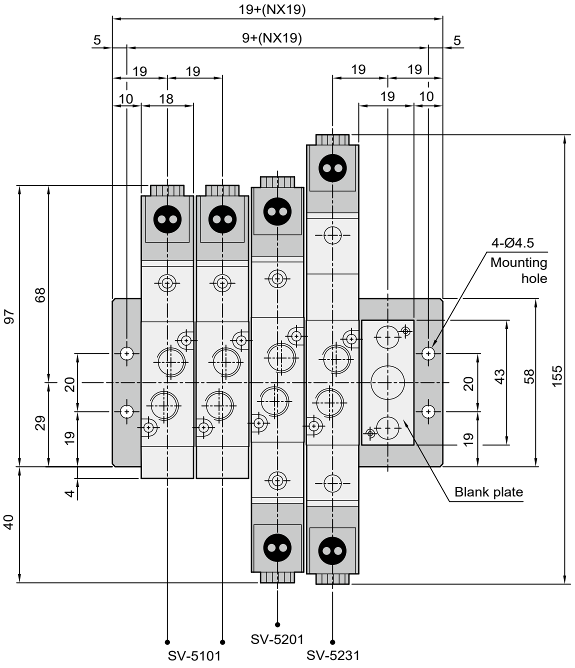

Wire length
about 500
34
2-Ø 3.3
Mounting hole
14
155
4
63
27

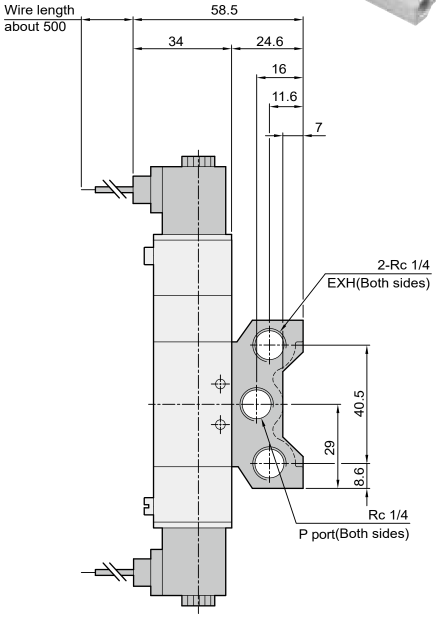

1
1
2-Rc 1/8
EXH
Rc 1/8
P port
28
55
70
13
18.4



### SV 500 series

Manifold dimension


19+(NX19)
5
9+(NX19)
5
19
19
10
18
19
19
19
10
4-Ø4.5
Mounting
hole
97
68
20
29
19
4
40
20
43
58
155
19
Blank plate
SV-5101
SV-5201
SV-5231


Wire length
about 500
58.5
34
24.6
16
11.6
7
2-Rc 1/4
EXH(Both sides)
40.5
29
8.6
Rc 1/4
P port(Both sides)

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

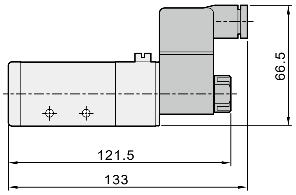
# SV 600 series Body Ported Solenoid Valve

## Dimensions

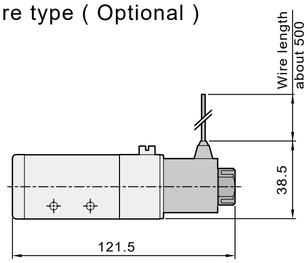
### 600 series Coil operated type

—L DIN terminal ( Standard )

● With light ( Optional )

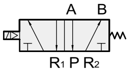

66.5
121.5
133

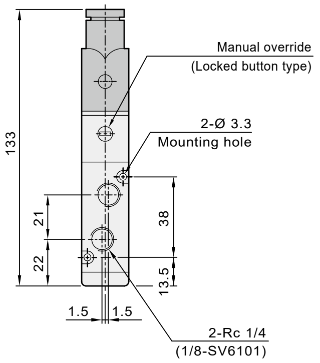
—W Wire type ( Optional )

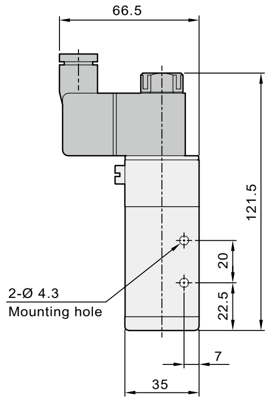

Wire length
about 500
38.5
121.5

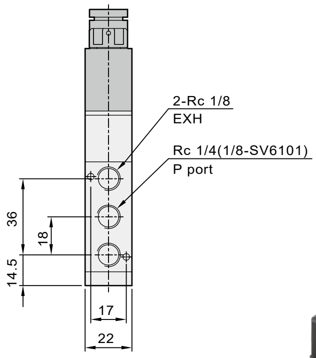
### SV - 6102 series

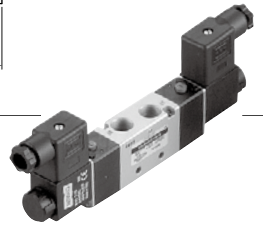
5 port 2-position single




Manual override
(Locked button type)
2-Ø 3.3
Mounting hole
133
21
22
38
13.5
1.5
1.5
2-Rc 1/4
(1/8-SV6101)

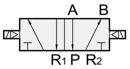

66.5
121.5
2-Ø 4.3
Mounting hole
20
22.5
7
35

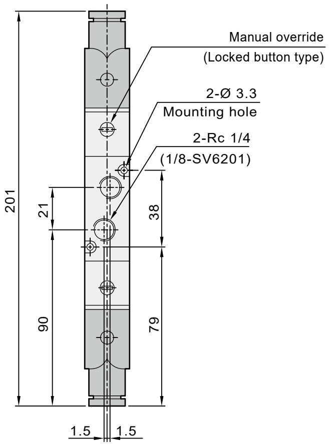

2-Rc 1/8
EXH
Rc 1/4(1/8-SV6101)
P port
36
18
14.5
17
22

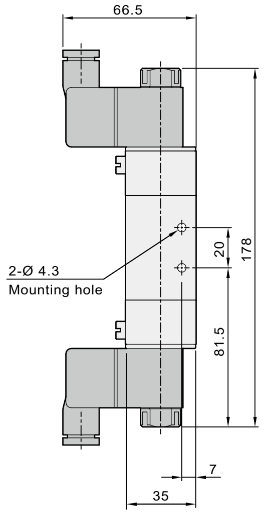


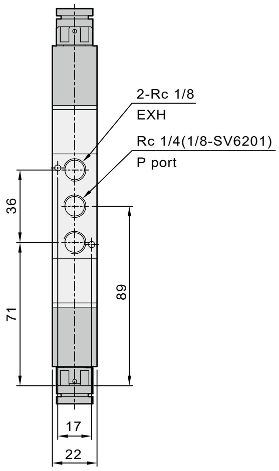
### SV - 6202 series

5 port 2-position double




Manual override
(Locked button type)
2-Ø 3.3
Mounting hole
2-Rc 1/4
(1/8-SV6201)
201
21
38
90
79
1.5
1.5


66.5
2-Ø 4.3
Mounting hole
20
178
81.5
7
35

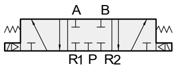

2-Rc 1/8
EXH
Rc 1/4(1/8-SV6201)
P port
36
71
89
17
22

# SV 600 series Body Ported Solenoid Valve

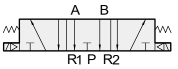
## Dimensions

### SV-6232 - ☐ series

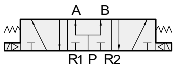
5 port 3-position double



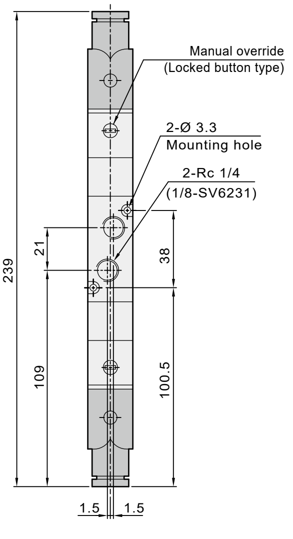
SV-6232- NC (Closed center) N.C.

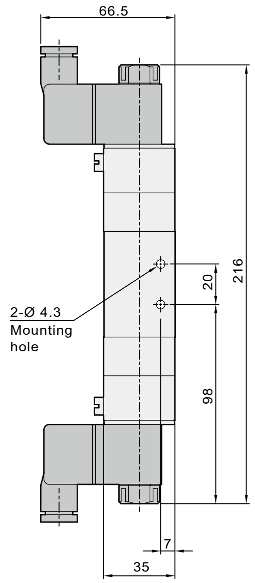


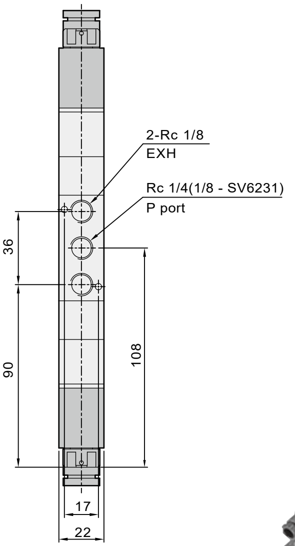
SV-6232- NF (Exhaust center) N.F.



SV-6232- NO (Pressure center) N.O.

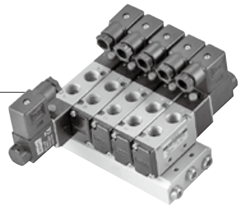

Manual override
(Locked button type)
2-Ø 3.3
Mounting hole
2-Rc 1/4
(1/8-SV6231)
239
21
109
38
100.5
1.5
1.5

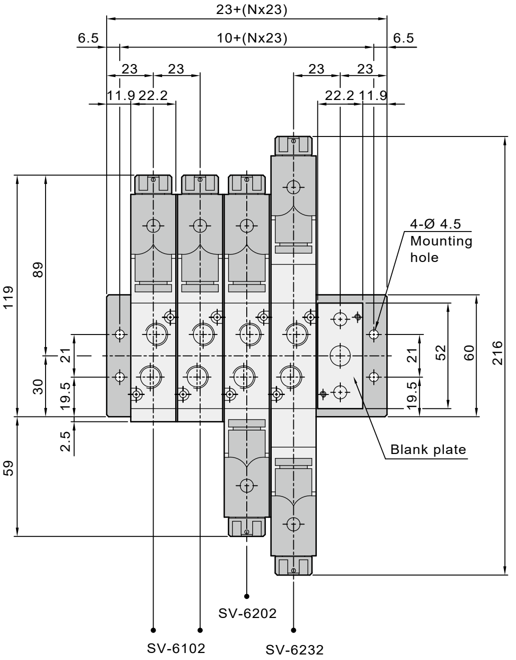

66.5
2-Ø 4.3
Mounting
hole
20
216
98
7
35

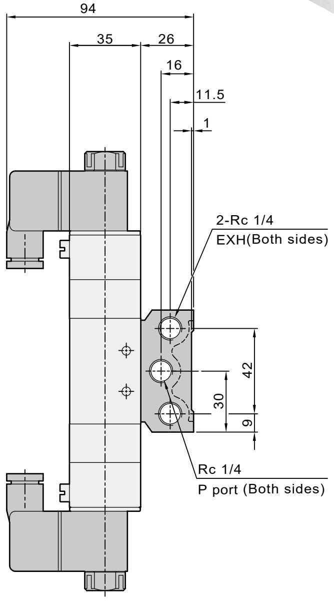

2-Rc 1/8
EXH
Rc 1/4(1/8 - SV6231)
P port
36
90
108
17
22

### SV 600 series

Manifold dimension




23+(Nx23)
6.5
10+(Nx23)
6.5
23
23
23
23
11.9
22.2
22.2
11.9
4-Ø 4.5
Mounting
hole
119
89
21
30
19.5
2.5
59
21
19.5
52
60
216
Blank plate
SV-6202
SV-6102
SV-6232


94
35
26
16
11.5
1
2-Rc 1/4
EXH(Both sides)
42
30
9
Rc 1/4
P port (Both sides)

- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SV 800 series Body Ported Solenoid Valve

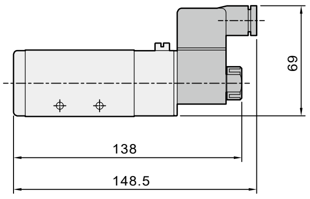
## Dimensions

SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

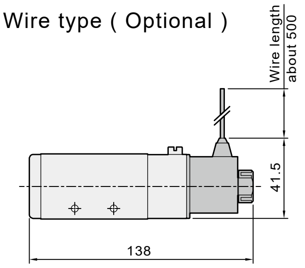
### 800 series Coil operated type

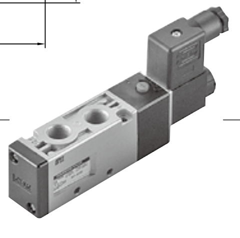
— L DIN terminal ( Standard )

- With light ( Optional )



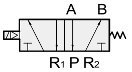
— W Wire type ( Optional )

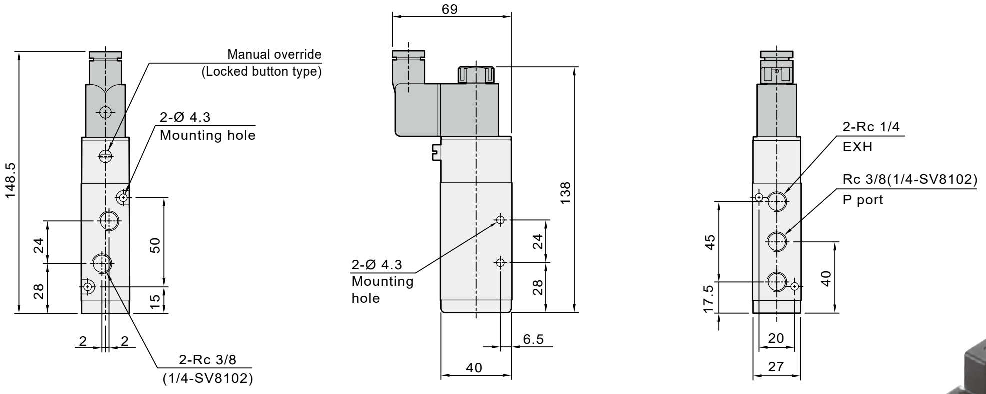

Wire length
about 500
41.5
138

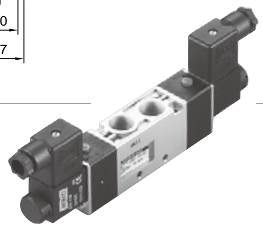


### SV - 8103 series

5 port 2-position single

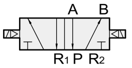


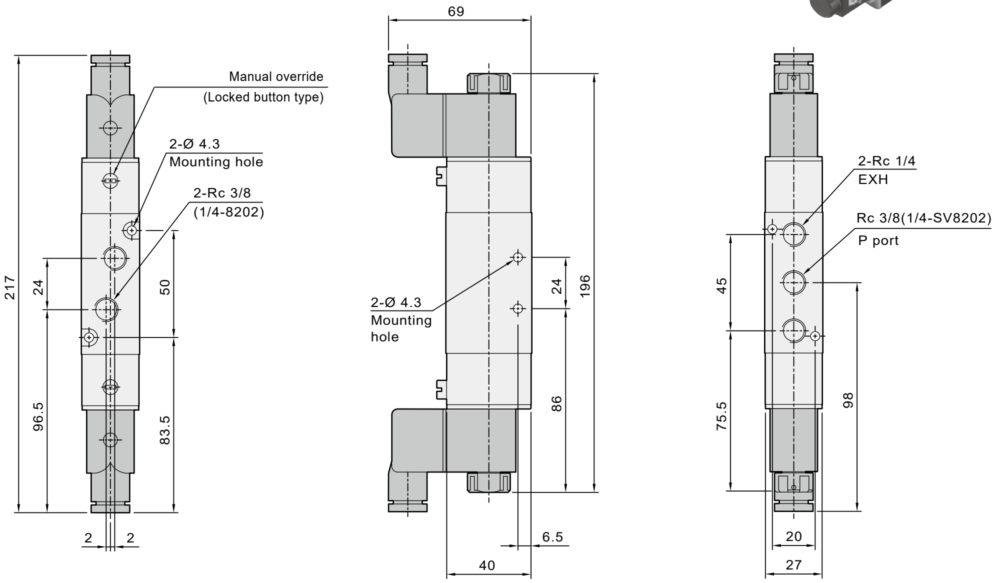

Manual override
(Locked button type)
2-Ø 4.3
Mounting hole
148.5
24
28
50
15
2
2
2-Rc 3/8
(1/4-SV8102)
69
138
2-Ø 4.3
Mounting
hole
24
28
6.5
40
2-Rc 1/4
EXH
Rc 3/8(1/4-SV8102)
P port
45
17.5
40
20
27



### SV - 8203 series

5 port 2-position double

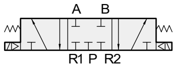



Manual override
(Locked button type)
2-Ø 4.3
Mounting hole
2-Rc 3/8
(1/4-8202)
217
24
50
96.5
83.5
2
2
69
2-Ø 4.3
Mounting
hole
24
196
86
6.5
40
2-Rc 1/4
EXH
Rc 3/8(1/4-SV8202)
P port
45
75.5
98
20
27

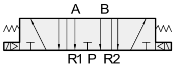
# SV 800 series Body Ported Solenoid Valve

## Dimensions

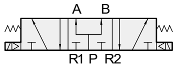
### SV-8233 - ☐ series
5 port 3-position double



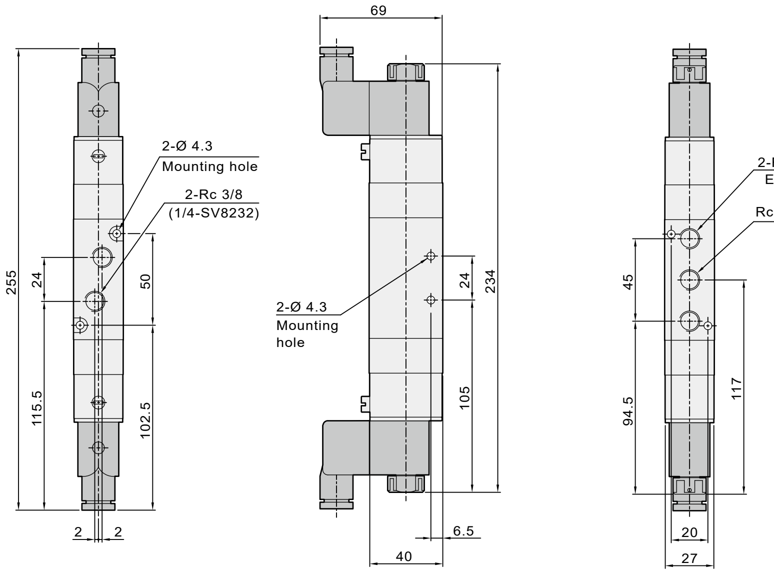
SV-8233- NC (Closed center) N.C.

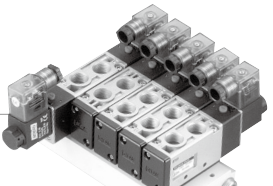


SV-8233- NF (Exhaust center) N.F.

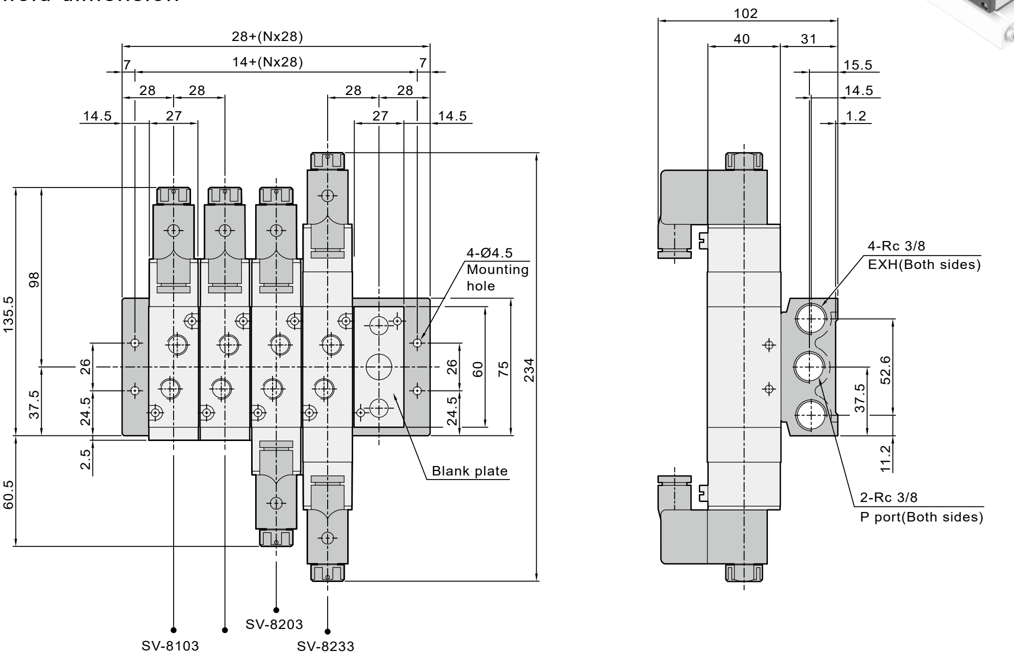


SV-8233- NO (Pressure center) N.O.


2-Ø 4.3
Mounting hole
2-Rc 3/8
(1/4-SV8232)
255
24
50
115.5
102.5
2
2
69
2-Ø 4.3
Mounting
hole
24
234
105
6.5
40
2-Rc 1/4
EXH
Rc3/8(1/4-SV8232)
P port
45
94.5
117
20
27



### SV 800 series
Manifold dimension


28+(Nx28)
7
14+(Nx28)
7
28
28
28
28
14.5
27
27
14.5
135.5
98
26
37.5
24.5
2.5
60.5
4-Ø4.5
Mounting
hole
26
24.5
60
75
234
Blank plate
SV-8103
SV-8203
SV-8233
102
40
31
15.5
14.5
1.2
4-Rc 3/8
EXH(Both sides)
52.6
37.5
11.2
2-Rc 3/8
P port(Both sides)

Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

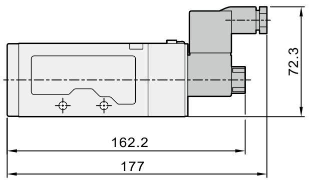
# SV 900 series Body Ported Solenoid Valve

## Dimensions

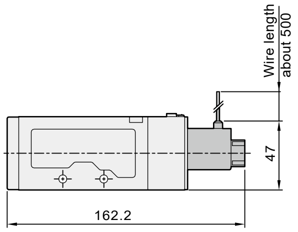
### 900 series Coil operated type

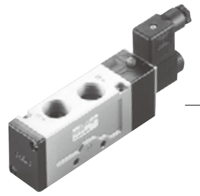
—L DIN terminal (Standard)

● With light ( Optional )


72.3
162.2
177

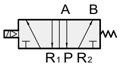
—W Wire type ( Optional )

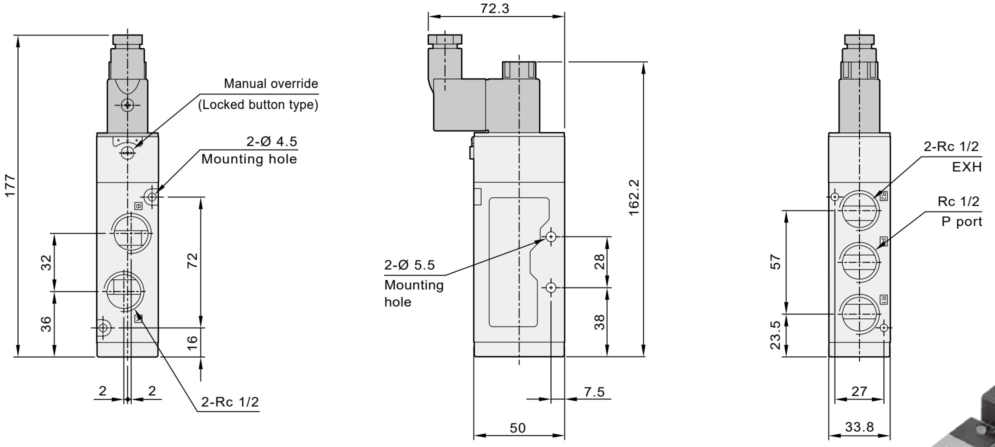

Wire length about 500
47
162.2

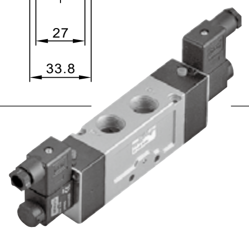


### SV - 9104 series

5 port 2-position single

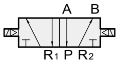


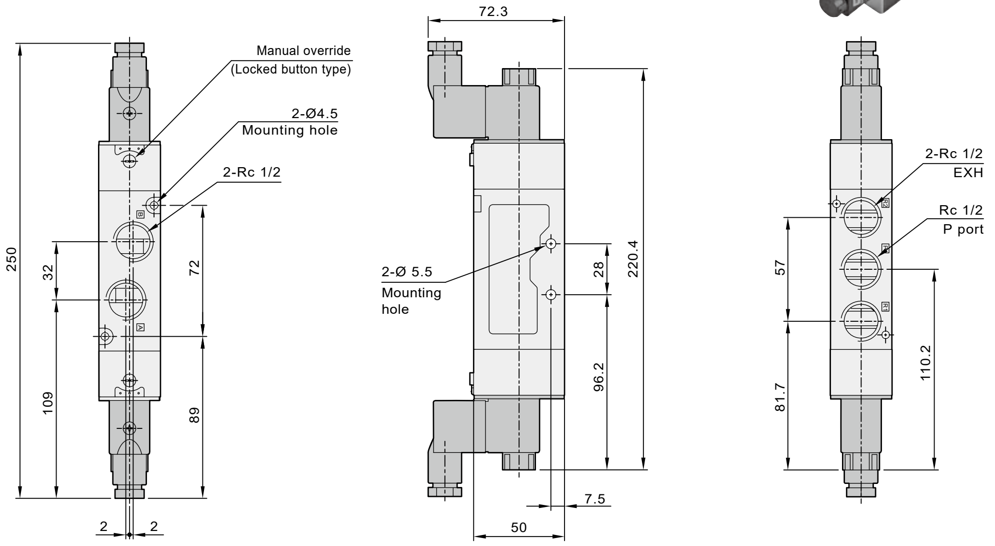

Manual override
(Locked button type)
2-Ø 4.5
Mounting hole
177
32
36
72
16
2
2
2-Rc 1/2
72.3
162.2
2-Ø 5.5
Mounting hole
28
38
7.5
50
2-Rc 1/2
EXH
Rc 1/2
P port
57
23.5
27
33.8



### SV - 9204 series

5 port 2-position double




Manual override
(Locked button type)
2-Ø4.5
Mounting hole
2-Rc 1/2
250
32
72
109
89
2
2
72.3
2-Ø 5.5
Mounting hole
28
220.4
96.2
7.5
50
2-Rc 1/2
EXH
Rc 1/2
P port
57
81.7
110.2

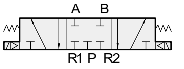
# SV 900 series Body Ported Solenoid Valve

## Dimensions

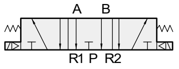
**CHELIC**

### SV-9234 - ☐ series

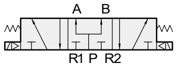
5 port 3-position double



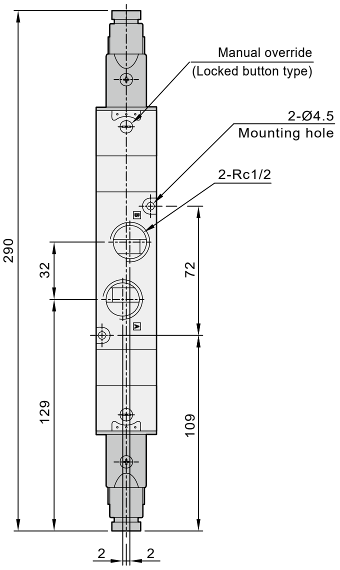
SV-9234- NC (Closed center) N.C.

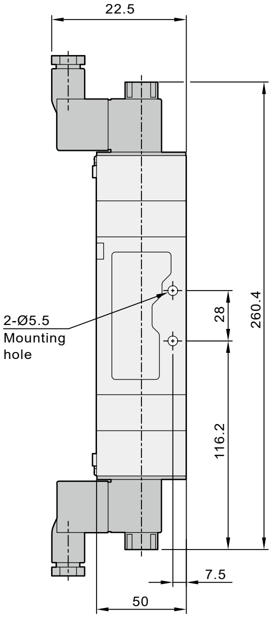


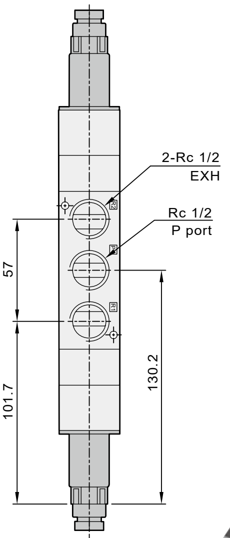
SV-9234- NF (Exhaust center) N.F.

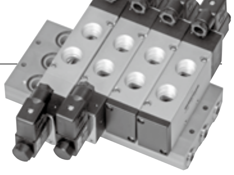


SV-9234- NO (Pressure center) N.O.


Manual override
(Locked button type)
2-Ø4.5
Mounting hole
2-Rc1/2
290
32
72
129
109
2
2

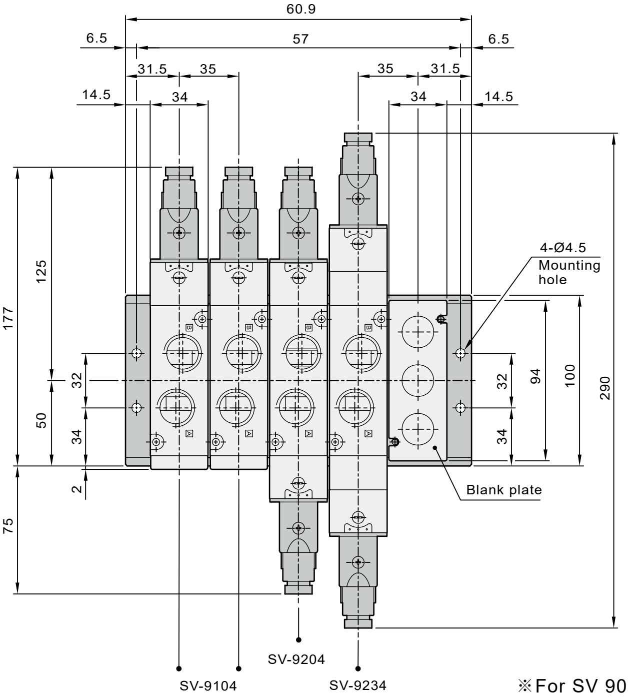

22.5
2-Ø5.5
Mounting
hole
28
260.4
116.2
7.5
50

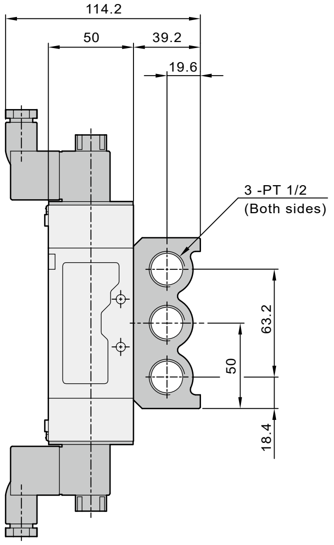

2-Rc 1/2
EXH
Rc 1/2
P port
57
101.7
130.2



### SV 900 series

Manifold dimension


60.9
6.5
57
6.5
31.5
35
35
31.5
14.5
34
34
14.5
4-Ø4.5
Mounting
hole
177
125
50
32
34
2
75
32
34
94
100
290
Blank plate
SV-9204
SV-9104
SV-9234


114.2
50
39.2
19.6
3 -PT 1/2
(Both sides)
63.2
50
18.4

※For SV 900 Series Max. Manifold is 5.

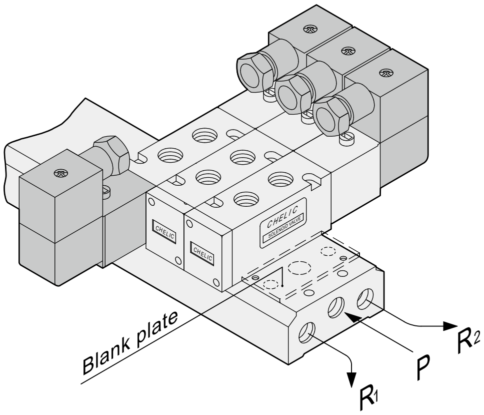
- Note : Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SV series Body Ported Solenoid Valve

## Accessories/ Installation

### Manifold

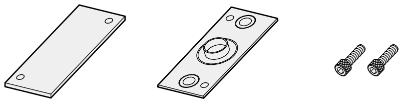
**SV-500 • 600 • 800 • 900 series**



### Manifold accessory

**SV-500 • 600 • 800 • 900 series**

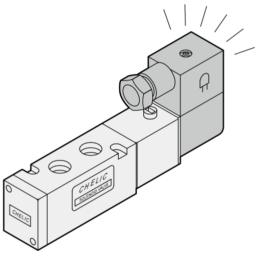
※ Blank plate accessory



| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| SV-500 series | MSV-5056 | MSV-5051 | M3 X 8L |
| SV-600 series | MSV-6056 | MSV-6051 | M3 X 10L |
| SV-800 series | MSV-8056 | MSV-8051 | M4 X 9L |
| SV-900 series | MSV-9050 | MSV-9051 | M4 X 9L |

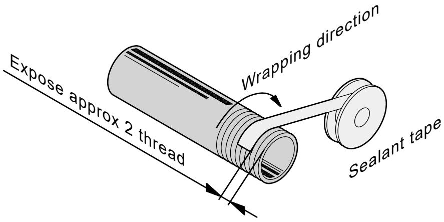
### With indicator light - L

There is no protection from surge voltage for this product.



### Handling details and precaution

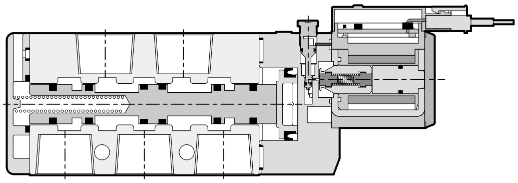
1. Please keep the tube fitting clean.
2. Please wrap the thread by tape seal and leave about 2 pitches Unwrapped at the end to as avoid clogging in the air line.



# SNK 600, 800 series Wire connector Type Solenoid Valve

## Product features

### Internal structure



### Specification

| Item \ Model | SNK-6102 | SNK-6202 | SNK-8103 | SNK-8203 |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | | |
| Pilot type | Air operated | | | |
| Number of positions | 5/2-position | | | |
| Type of actuation | Normally closed | | | |
| Effective orifice mm²(CV) | 12 ( 0.67 ) | | 14 ( 0.78 ) | |
| Manual override | Push and lock | | | |
| Port size | Rc 1/4 | | Rc 3/8 | |
| Lubrication | Lubrication free type | | | |

※ We can accept order NPT products.

### Code of order

**SNK** – **5** – **10** – **2** – **110V AC** – **L**

**Model**

SNK:
Solenoid valve
side hole

**Model number**

6: 600 series
8: 800 series

**Coil q'ty**

10: Single
20: Double

**Port size**

| | | |
|---|---|---|
| 1 | Rc 1/8 | SNK600 |
| 2 | Rc 1/4 | SNK600 |
| 2 | Rc 1/4 | SNK800 |
| 3 | Rc 3/8 | SNK800 |

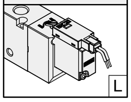
※ For P port connection

**Voltage**

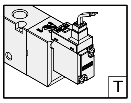
| Standard voltage | |
|---|---|
| 12V DC | 1.5W |
| 24V DC | 1.5W |
| 110V AC | 0.9W |
| 220V AC | 1.8W |

**Electrical entry**

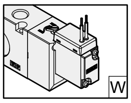
Standard


L

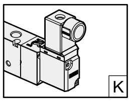
With wire length 300mm


T

With wire length 300mm


W

Grommet
With wire length 300mm


K

DIN Terminal

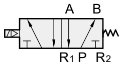
# SNK 600 series Wire connector Type Solenoid Valve

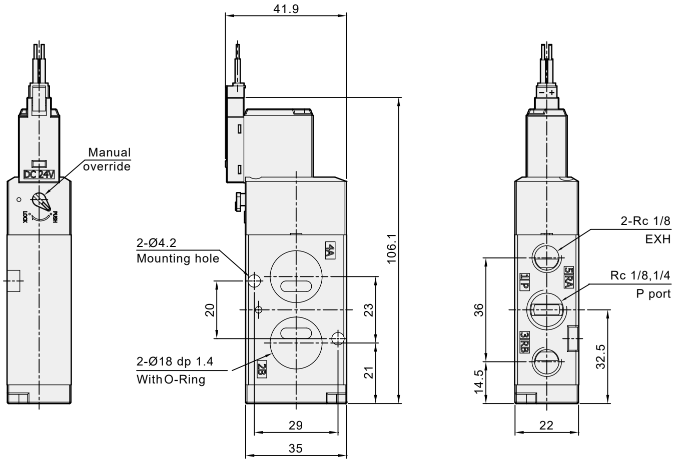
## Dimensions

SRM
SRVB
SF
SR
SRB
SM
SMB
SRK
SZBC
SK
SV
SNK
SN

### SNK-6102 series

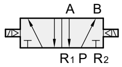
5 port 2-position single

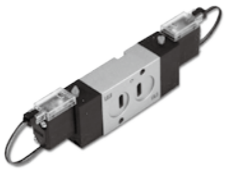


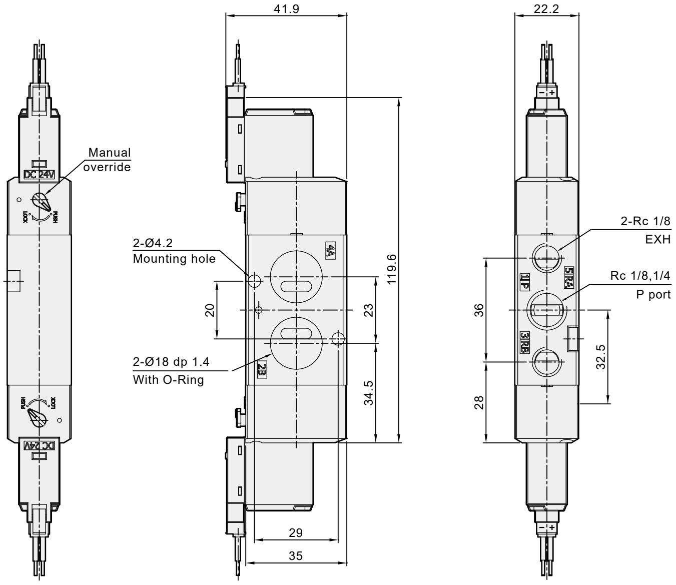

41.9
Manual override
DC 24V
PUSH
LOCK
2-Ø4.2
Mounting hole
2-Ø18 dp 1.4
With O-Ring
4A
2B
106.1
20
23
21
29
35
2-Rc 1/8
EXH
Rc 1/8,1/4
P port
5RA
1P
3RB
36
14.5
32.5
22

### SNK-6202 series

5 port 2-position double





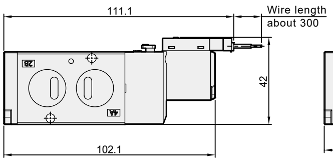

41.9
22.2
Manual override
DC 24V
PUSH
LOCK
2-Ø4.2
Mounting hole
2-Ø18 dp 1.4
With O-Ring
4A
2B
119.6
20
23
34.5
29
35
2-Rc 1/8
EXH
Rc 1/8,1/4
P port
5RA
1P
3RB
36
28
32.5

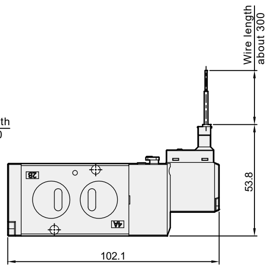
### L wire type - L

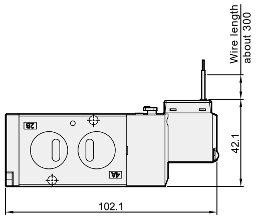
### T wire type - T

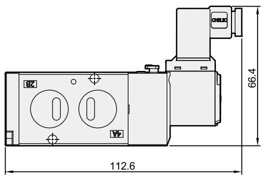
### W wire type - W

### K wire type - K


111.1
Wire length
about 300
42
102.1
2B
4A


Wire length
about 300
53.8
102.1
2B
4A


Wire length
about 300
42.1
102.1
2B
4A

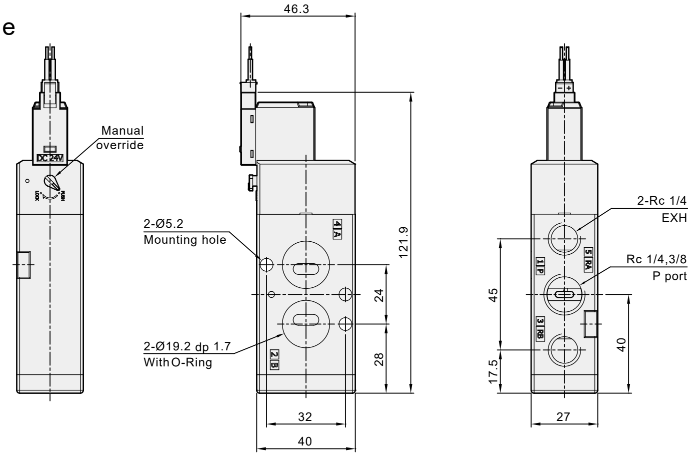

CHELIC
66.4
112.6
2B
4A

# SNK 800 series Wire connector Type Solenoid Valve

## Dimensions

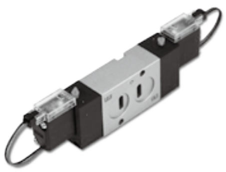
### SNK-8103 series

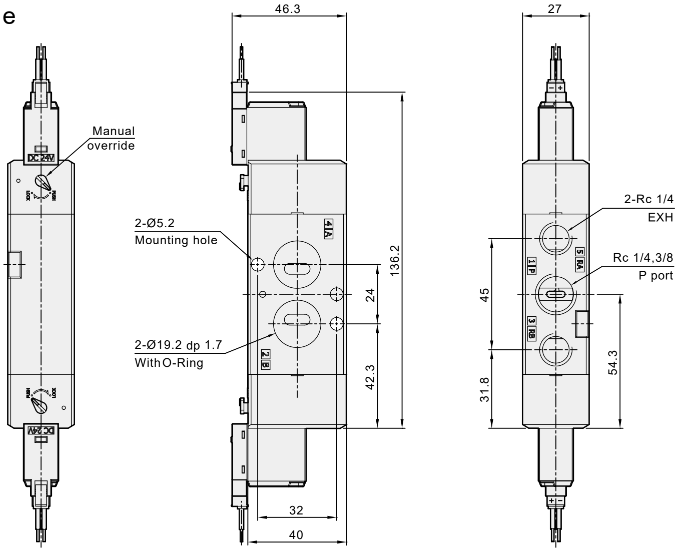
5 port 2-position single


46.3
Manual
override
DC 24V
2-Ø5.2
Mounting hole
2-Ø19.2 dp 1.7
With O-Ring
4 A
2 B
121.9
24
28
32
40
2-Rc 1/4
EXH
Rc 1/4,3/8
P port
5 RA
1 P
3 RB
45
17.5
40
27

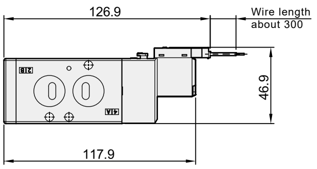
### SNK-8203 series

5 port 2-position double

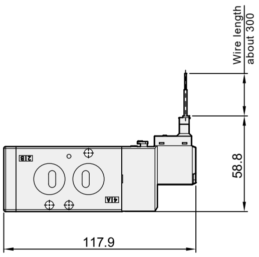



46.3
27
Manual
override
DC 24V
2-Ø5.2
Mounting hole
2-Ø19.2 dp 1.7
With O-Ring
4 A
2 B
136.2
24
42.3
32
40
2-Rc 1/4
EXH
Rc 1/4,3/8
P port
5 RA
1 P
3 RB
45
31.8
54.3

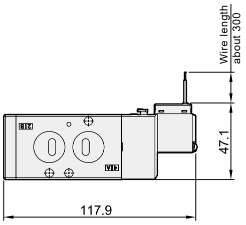
### L wire type - L


126.9
Wire length
about 300
46.9
117.9

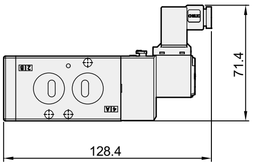
### T wire type - T


Wire length
about 300
58.8
117.9

### W wire type - W


Wire length
about 300
47.1
117.9

### K wire type - K

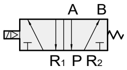


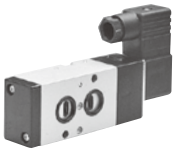
# SN 800 series Namur Solenoid Valve

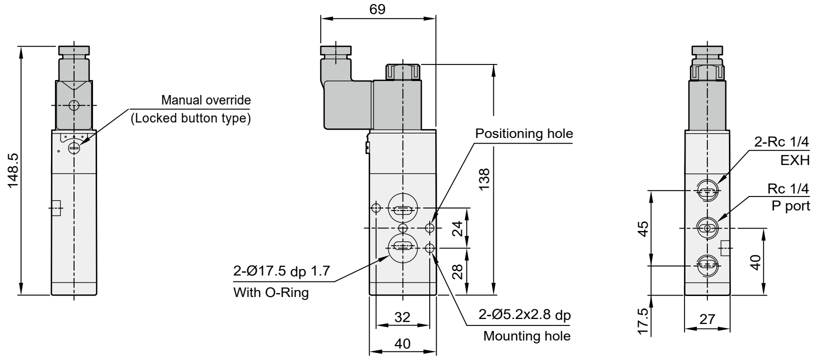
## Dimensions/ Code of order/ NAMUR

### SN - 810

5 port 2-position single

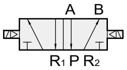


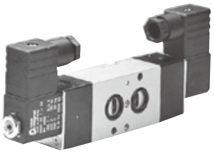


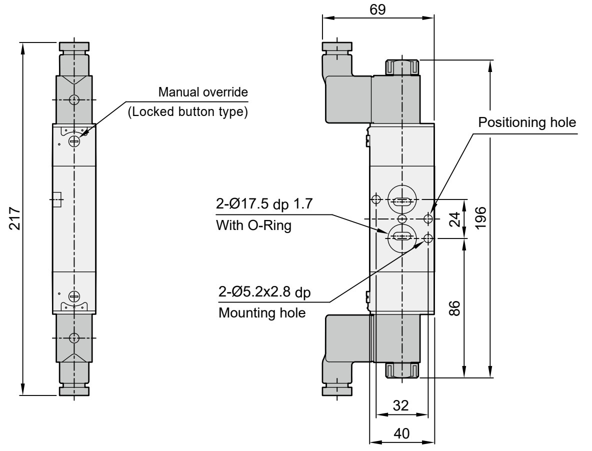

148.5
Manual override
(Locked button type)
69
Positioning hole
138
24
28
2-Ø17.5 dp 1.7
With O-Ring
32
40
2-Ø5.2x2.8 dp
Mounting hole
2-Rc 1/4
EXH
Rc 1/4
P port
45
40
17.5
27

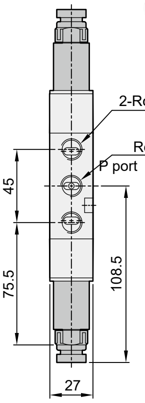
### SN - 820

5 port 2-position double






217
Manual override
(Locked button type)
69
Positioning hole
2-Ø17.5 dp 1.7
With O-Ring
2-Ø5.2x2.8 dp
Mounting hole
24
196
86
32
40


45
75.5
108.5
27

2-Rc 1/4
EXH

Rc 1/4
P port

### Code of order

SN — 8 — 1 — 0 — 110 VAC — K — L

**SN**
SN series
Solenoid valve

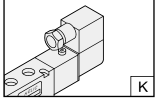
**Model**
8: 800 series

**Coil q'ty**
1: Single
2: Double

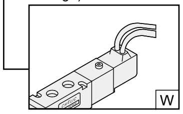
**Position**
0: 2 ports

**Voltage type**
Standard:
24 VDC / 3W
110 VAC / 5VA
220 VAC / 5VA
Special voltage:
12 VDC / 2.5W
24 VAC / 8.5VA
220 VAC / 8.5VA
Suitable for 190~250V
( For hight pressure range)

**Electrical entry**

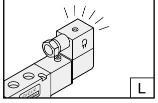


ISO Socket solenoid type (ISO standard applicable for special voltage)



Solenoid with wire (500mm)
(W type for standard voltage only)

**With light**



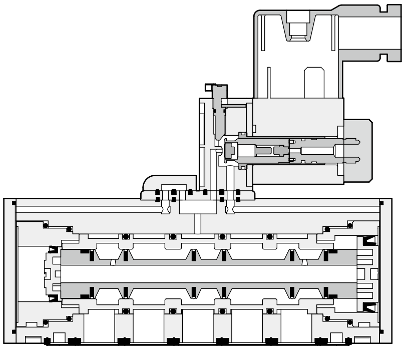
None (Standard)
Without indicator light
(Black case)

ISO Socket
solenoid type
with indicator light
for AC, DC
(Transparent case)

# ISO 2/ 3/ 4 series ISO Standard Solenoid Valve

## Product features

### Internal structure



### Specification

| Item \ Model | ISO 200 | ISO 300 | ISO 400 |
|---|---|---|---|
| Fluid | Air | | |
| Pressure range kgf/cm² (kPa) | 2 ~ 7 (200~700) | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | |
| Pilot type | Air operated | | |
| Number of positions | 5/2-position, 5/3-position | | |
| 5/3-position type of actuation | Closed center, Exhaust center, Pressure center | | |
| Effective orifice mm² (CV) | 30(Cv=1.66) | 40(Cv=2.22) | 68(Cv=3.8) |
| Manual override | Press and turn | | |
| Port size | Rc 1/4 | Rc 3/8 | Rc 1/2 |
| Lubrication | Lubrication free type | | |
| Sub-plate size | Compliance to ISO-5599-1 | | |

### Code of order

ISO – 4 – 10 – 4 – 110VAC – K – L – M1

**ISO**
ISO series Solenoid valve

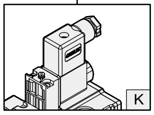
**Model**
2: 2 series
3: 3 series
4: 4 series

**Coil q'ty**
10 : Single
20 : Double
30 : Closed center
40 : Exhaust center
50 : Pressure center
5/3-position double coils only

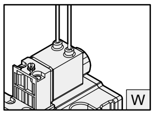
**Port size**
0 : None
2 : Sub-plate port size Rc 1/4
3 : Sub-plate port size Rc 3/8
4 : Sub-plate port size Rc 1/2

**Voltage**
Standard:
12VDC 3W
24VDC 3W
110VAC 5VA
220VAC 5VA

**Electrical entry**

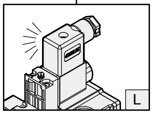


DIN terminal box
( ISO Standard wiring )



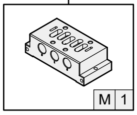
Grommet
( Wire length about 500mm )

**With light**



None(Standard) : without light (Black outer shell)
L with indicator light (Clear outer shell)
ISO standard socket with AC and DC indicator light (clear case)

**Sub-plate**



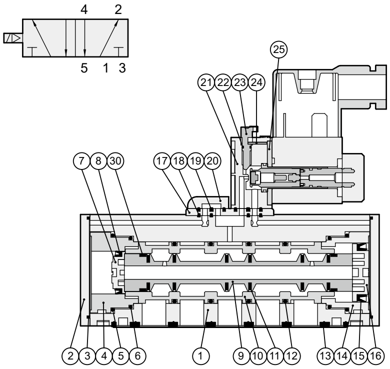
☐ None : No sub-plate
M1 : Sub-plate

# ISO 2/ 3/ 4 series ISO Standard Solenoid Valve

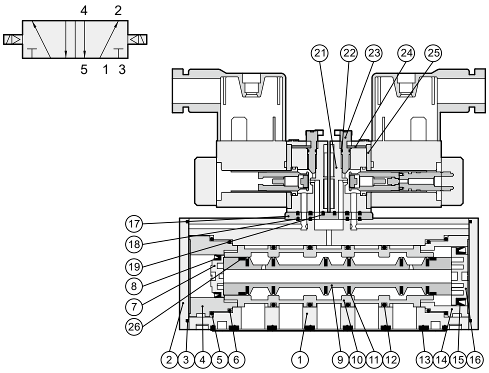
## Product features

## Internal structure

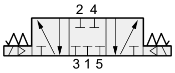
### 5 port 2-position single


4
2
5
1
3
25
21 22 23 24
7 8 30
17 18 19 20
2 3 4 5 6
1
9 10 11 12
13 14 15 16

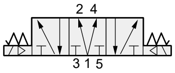
### 5 port 2-position double


4
2
5
1
3
21 22 23 24 25
17
18
19
8
7
26
2 3 4 5 6
1
9 10 11 12
13 14 15 16

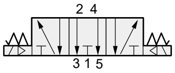
### 5 port 3-position double



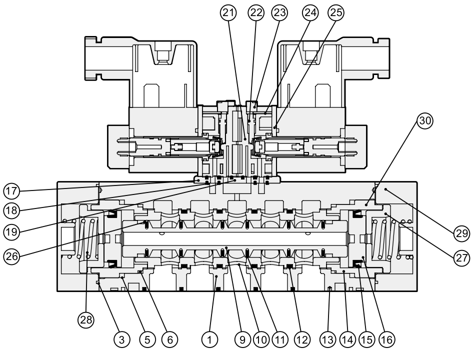
( Closed center N.C. )



( Pressure center N.O. )



( Exhaust center N.F. )


21 22 23 24 25
30
17
18
19
26
29
27
28
3 5 6
1
9 10 11
12
13 14 15 16

## Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 16 | Piston (Big) | POM |
| 02 | Body cover | Aluminum alloy | 17 | Middle cover plate | Saturated polyester |
| 03 | Body cover O-ring | NBR | 18 | Body rubber | NBR |
| 04 | Rad cover (Small) | Aluminum alloy | 19 | Middle cover rubber | NBR |
| 05 | O-ring 29.7*1.9 | NBR | 20 | Blank plate | Saturated polyester |
| 06 | O-ring 26*2 | NBR | 21 | Holder | Saturated polyester |
| 07 | Piston (Small) | POM | 22 | O-ring 2.4*0.8 | NBR |
| 08 | Piston packing | NBR | 23 | Manual override | POM |
| 09 | Shaft | Aluminum alloy | 24 | Mounting plate | SPCC |
| 10 | Shaft shell | Aluminum alloy | 25 | Fixing plate | SPCC |
| 11 | Packing | NBR | 26 | Wear ring | POM |
| 12 | O-ring 21.5*2 | NBR | 27 | Spring baffle | Aluminum alloy |
| 13 | O-ring | NBR | 28 | Spring | Stainless steel |
| 14 | Shaft cover (Big) | Aluminum alloy | 29 | 3 ports body cap | Aluminum alloy |
| 15 | Piston packing | NBR | 30 | 3 ports rod cap | Aluminum alloy |

※ Note: The main body surface coated with white paint.

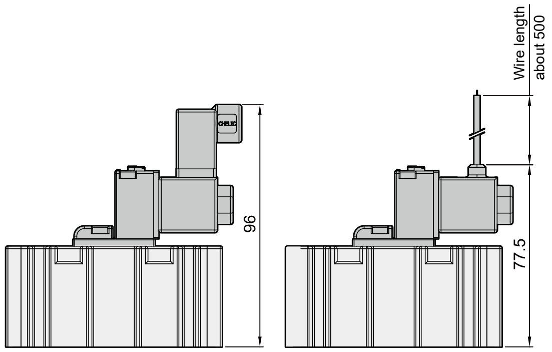
# ISO 2 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single Manifold Standard Type

CHELIC

### ISO - 2100 series Electrical entry

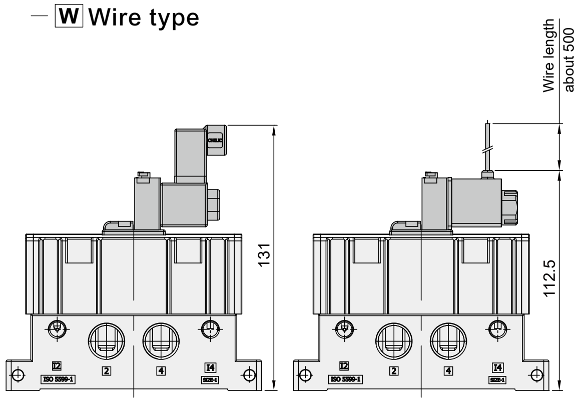
- K DIN terminal
- K - L With light
- W Wire type



96
Wire length about 500
77.5
CHELIC

### ISO - 2102 - ☐ - M1 series

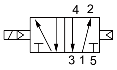
- K DIN terminal
- K - L With light
- W Wire type

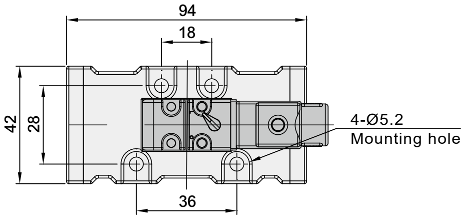


131
Wire length about 500
112.5
12
2
4
14
ISO 5599-1
SIZE-1
CHELIC

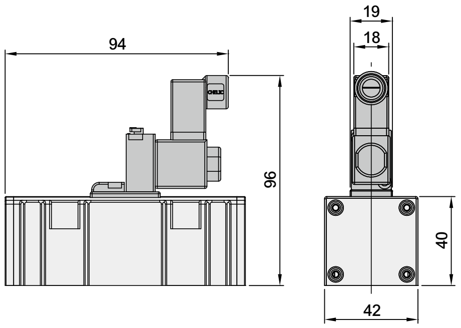
### ISO - 2100 series

5 port 2-position single





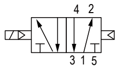
94
18
42
28
4-Ø5.2
Mounting hole
36

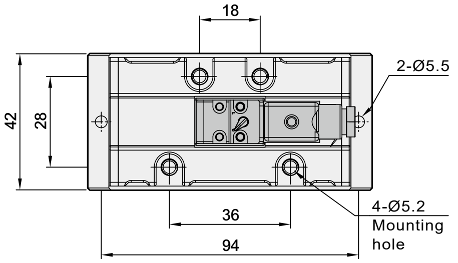


94
96
19
18
40
42
CHELIC

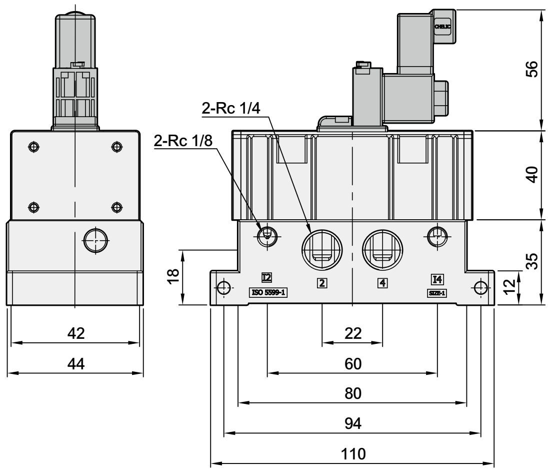
### ISO - 2102 - ☐ - M1 series

5 port 2-position single





18
2-Ø5.5
42
28
36
94
4-Ø5.2
Mounting hole



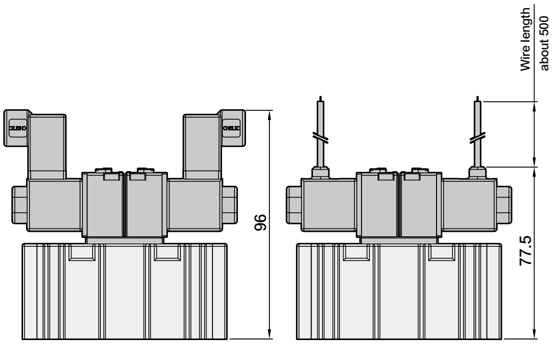
56
2-Rc 1/4
2-Rc 1/8
40
18
35
12
42
44
22
60
80
94
110
12
2
4
14
ISO 5599-1
SIZE-1
CHELIC

# ISO 2 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single unit sub-plate standard type

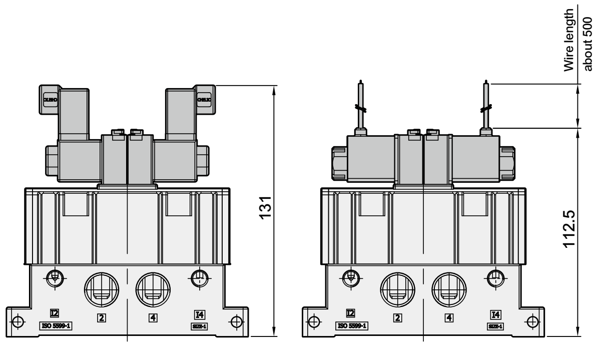
### ISO - 2200 series Electrical entry

- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)


Wire length
about 500
96
77.5

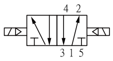
### ISO - 2202 - □ - M1 series 5 port 2-position double

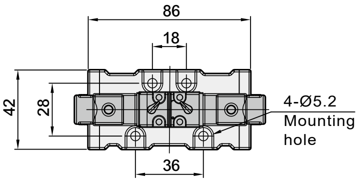
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

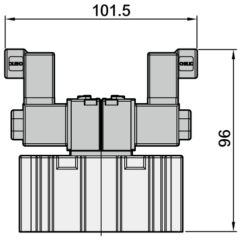

Wire length
about 500
131
112.5
12
2
4
14
ISO 5599-1

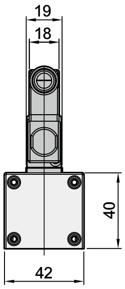
### ISO - 2200 series

5 port 2-position double



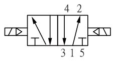

86
18
42
28
36
4-Ø5.2
Mounting
hole

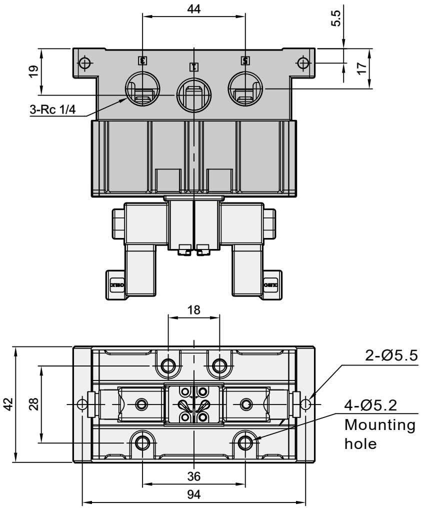
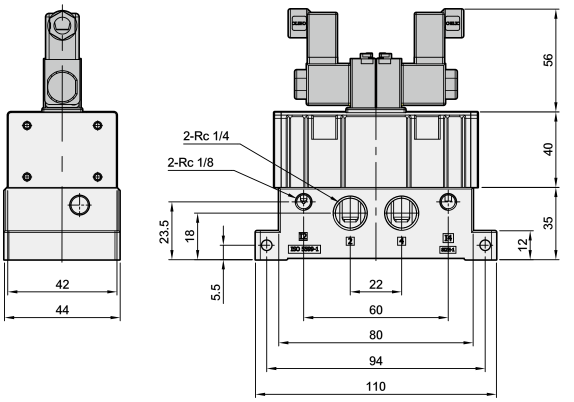




### ISO - 2202 - □ - M1 series

5 port 2-position double

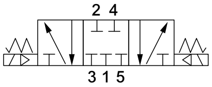




44
5.5
19
17
3-Rc 1/4
18
2-Ø5.5
42
28
4-Ø5.2
Mounting
hole
36
94
56
40
35
12
2-Rc 1/4
2-Rc 1/8
23.5
18
5.5
22
60
80
94
110
42
44

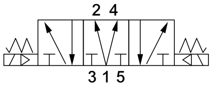
# ISO 2 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single unit sub-plate standard type

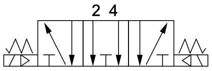
**ISO - 2302 - □**
**ISO - 2402 - □**
**ISO - 2502 - □**
5 port 3-position double
— K DIN terminal(Standard)
— L With light(option)
— W Wire type(option)



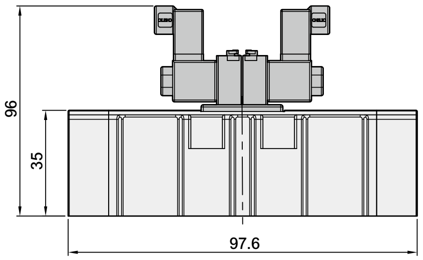
(Closed center) N.C.

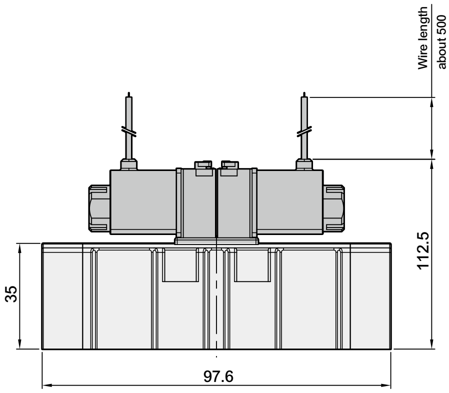


(Pressure center) N.O.



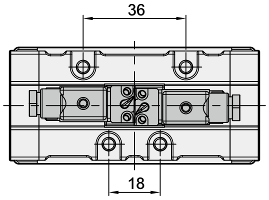
(Exhaust center) N.F.

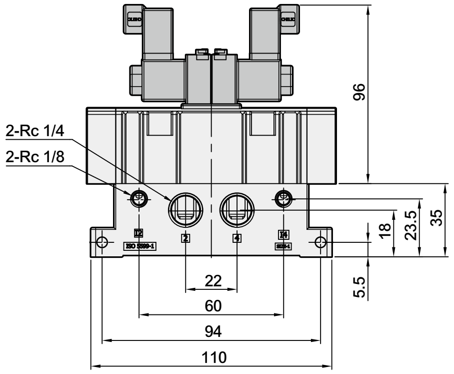


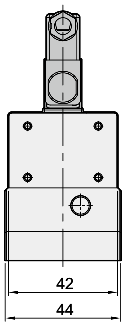

Wire length about 500
112.5
35
97.6

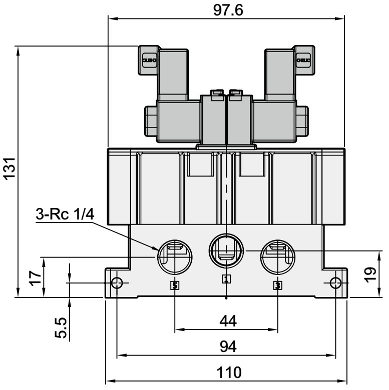
---

**ISO - 2302 - □- M1**
**ISO - 2402 - □- M1**
**ISO - 2502 - □- M1**
5 port 3-position double
— K DIN terminal(Standard)
— L With light(option)
— W Wire type(option)




2-Rc 1/4
2-Rc 1/8
96
18
23.5
35
5.5
22
60
94
110

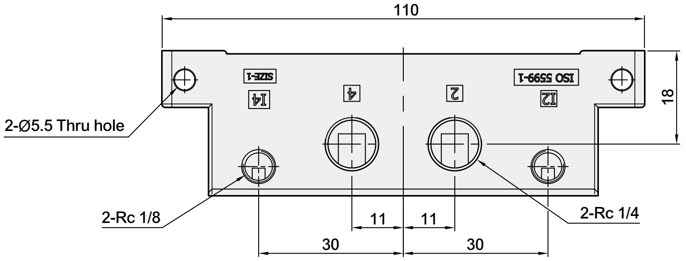


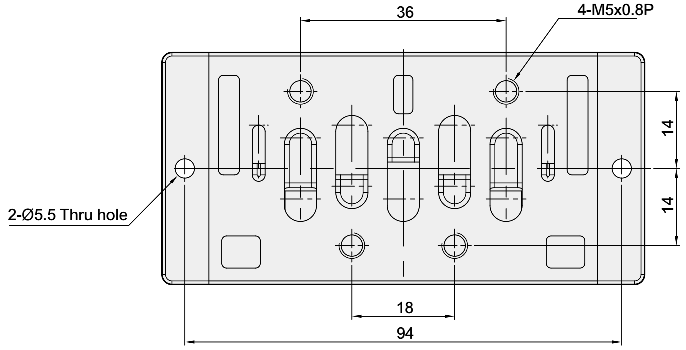

97.6
131
3-Rc 1/4
17
19
5.5
44
94
110

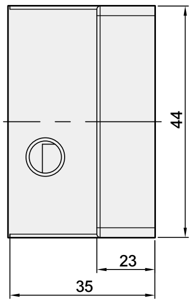
# ISO 2 series ISO Standard Solenoid Valve

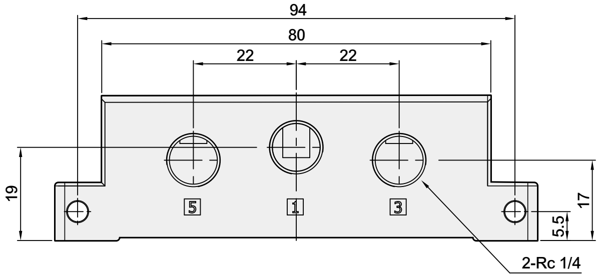
## Dimensions/ Single unit sub-plate standard type

### M1 : Single manifold type


110
2-Ø5.5 Thru hole
SIZE-1
14
4
2
ISO 5599-1
12
18
2-Rc 1/8
2-Rc 1/4
11
11
30
30


36
4-M5x0.8P
14
14
2-Ø5.5 Thru hole
18
94



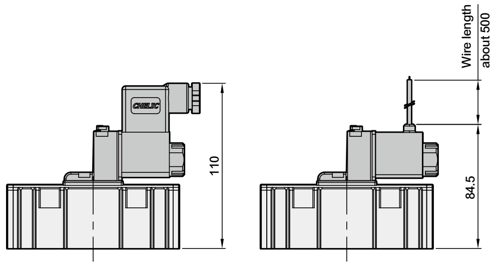

94
80
22
22
19
5
1
3
17
5.5
2-Rc 1/4

# ISO 3 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single unit sub-plate standard type

### ISO - 3100 series Electrical entry

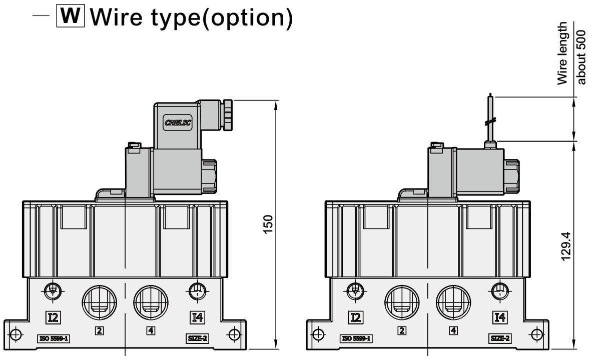
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)



CHELIC
110
Wire length about 500
84.5

### ISO - 3103 - ☐ - M1 series

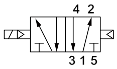
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

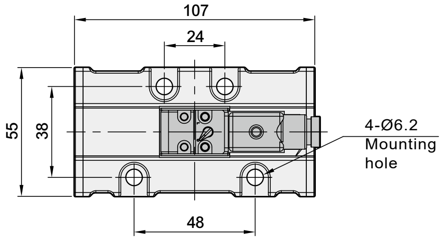


CHELIC
150
12
14
2
4
ISO 5599-1
SIZE-2
Wire length about 500
129.4

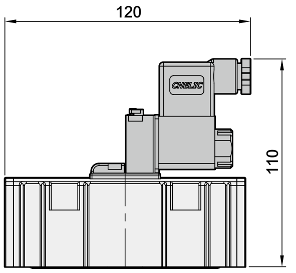
### ISO - 3100 series

5 port 2-position single

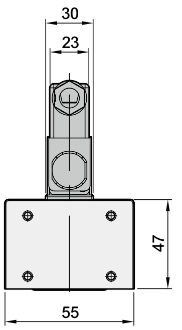




107
24
55
38
4-Ø6.2
Mounting
hole
48

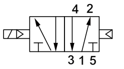


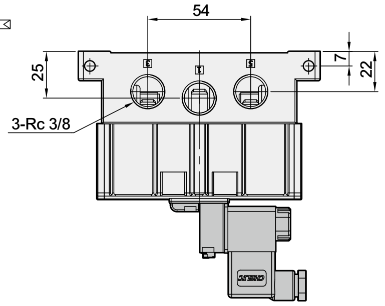
120
CHELIC
110



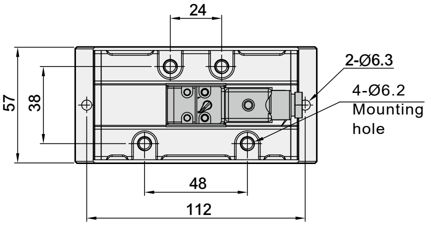
### ISO - 3103 - ☐ - M1 series

5 port 2-position single

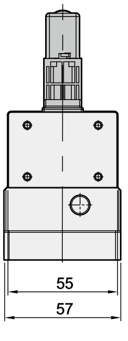


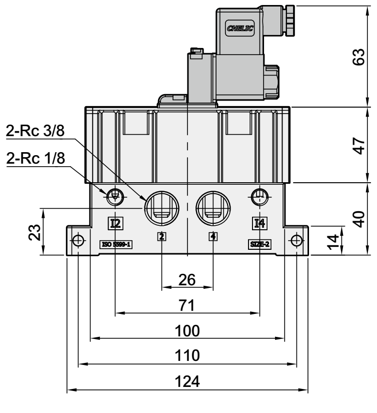


54
25
7
22
3-Rc 3/8
CHELIC



24
2-Ø6.3
4-Ø6.2
Mounting
hole
57
38
48
112





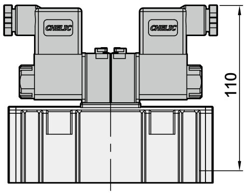
CHELIC
63
47
40
2-Rc 3/8
2-Rc 1/8
23
14
12
14
2
4
ISO 5599-1
SIZE-2
26
71
100
110
124

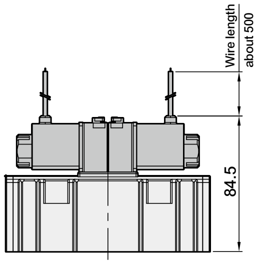
# ISO 3 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single unit sub-plate standard type

### ISO - 3200 series Electrical entry

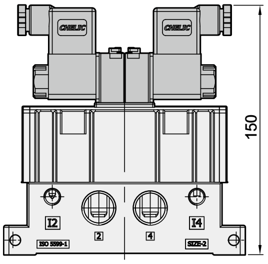
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

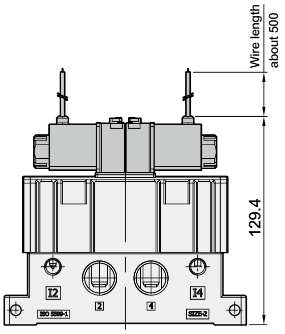



Wire length about 500
84.5

### ISO - 3203-□- M1 series 5 port 2-position double

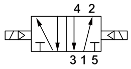
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

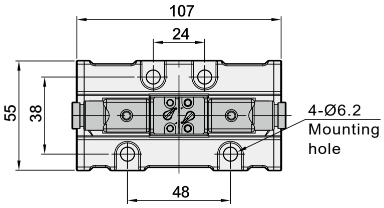

150
12
2
4
14
ISO 5599-1
SIZE-2

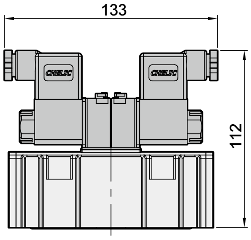

Wire length about 500
129.4
12
2
4
14
ISO 5599-1
SIZE-2

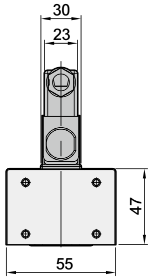
### ISO - 3200 series

5 port 2-position double



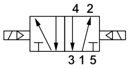

107
24
55
38
4-Ø6.2
Mounting
hole
48

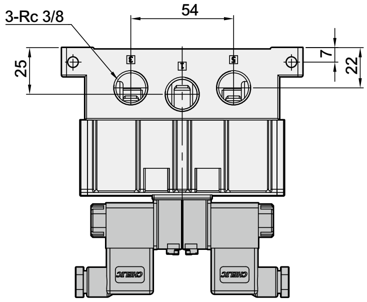


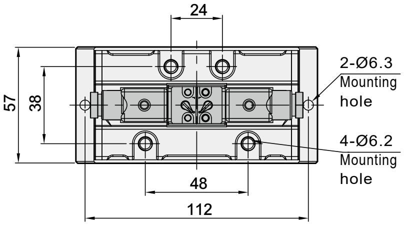


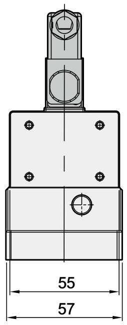
### ISO - 3203 -□- M1 series

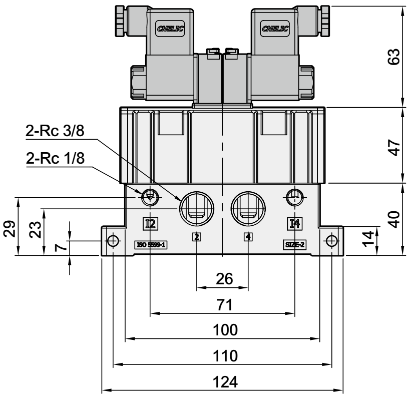
5 port 2-position double




3-Rc 3/8
54
25
7
22


24
57
38
2-Ø6.3
Mounting
hole
4-Ø6.2
Mounting
hole
48
112




63
47
40
14
2-Rc 3/8
2-Rc 1/8
29
23
7
12
2
4
14
ISO 5599-1
SIZE-2
26
71
100
110
124

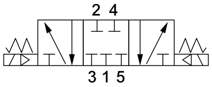
# ISO 3 series ISO Standard Solenoid Valve

## Dimensions/ Standard

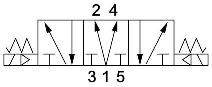
### ISO - 3303 - ☐
### ISO - 3403 - ☐
### ISO - 3503 - ☐

5 port 3-position double

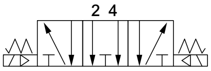
— K DIN terminal(Standard)
— L With light(option)
— W Wire type(option)



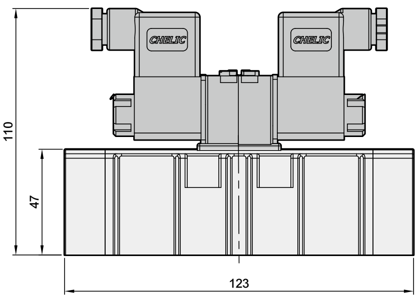
(Closed center) N.C.

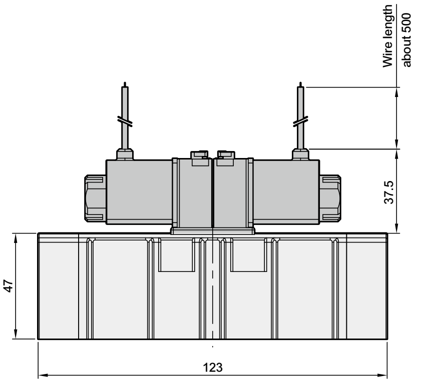


(Pressure center) N.O.



(Exhaust center) N.F.

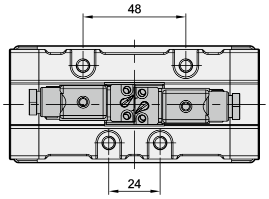

CHELIC
CHELIC
110
47
123

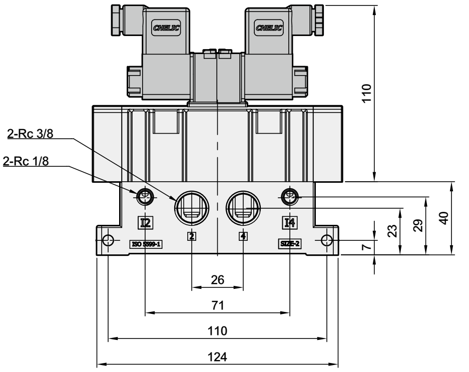

Wire length about 500
37.5
47
123

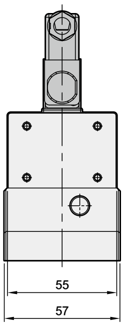
---

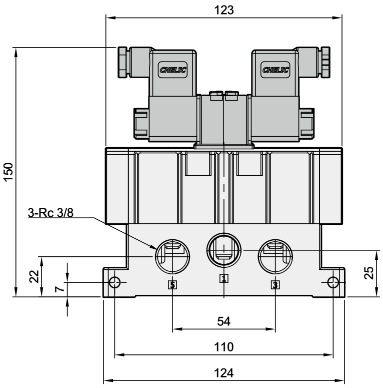
### ISO - 3303 - ☐- M1
### ISO - 3403 - ☐- M1
### ISO - 3503 - ☐- M1

5 port 3-position double




CHELIC
CHELIC
2-Rc 3/8
2-Rc 1/8
110
12
14
2
4
ISO 5599-1
SIZE-2
7
23
29
40
26
71
110
124

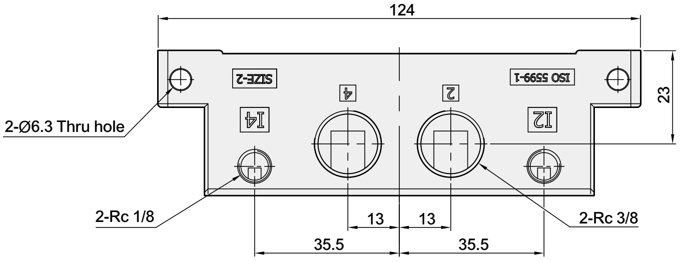


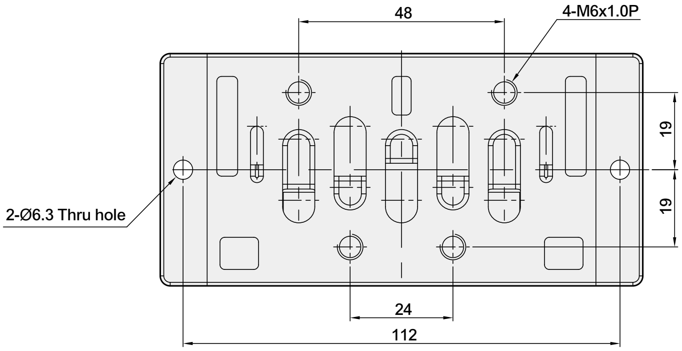

123
CHELIC
CHELIC
150
3-Rc 3/8
5
1
3
22
7
25
54
110
124

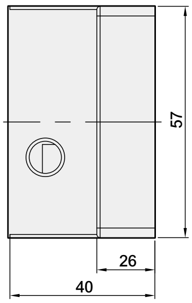
# ISO 3 series ISO Standard Solenoid Valve

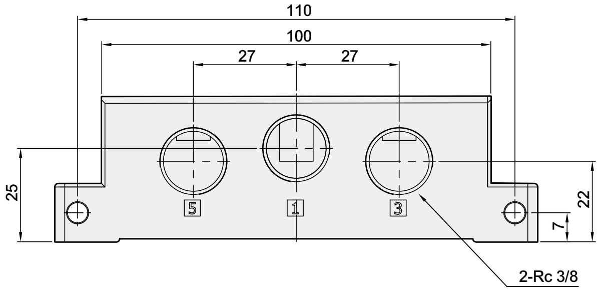
## Dimensions/ Single unit sub-plate standard type

### M1 : Single manifold type


124
SIZE-2
ISO 5599-1
4
2
14
12
23
2-Ø6.3 Thru hole
2-Rc 1/8
2-Rc 3/8
13
13
35.5
35.5


48
4-M6x1.0P
19
19
2-Ø6.3 Thru hole
24
112



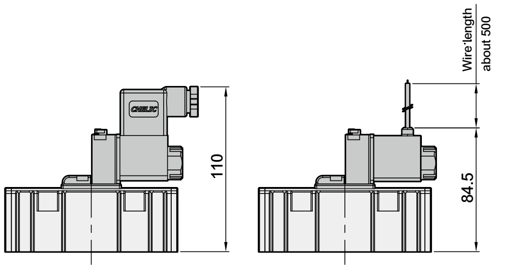

110
100
27
27
25
5
1
3
22
7
2-Rc 3/8

# ISO 4 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single unit sub-plate standard type

### ISO - 4100 series Electrical entry

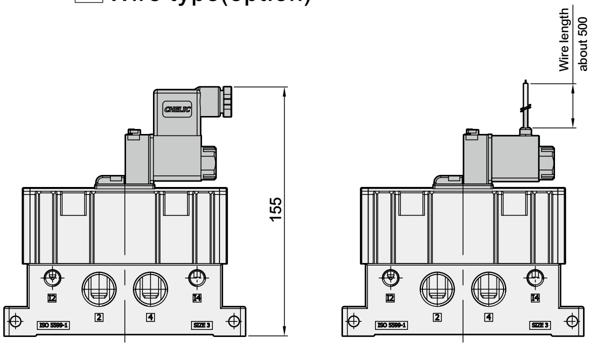
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)



CHELIC
110
Wire length
about 500
84.5

### ISO - 4104 - ☐ - M1 series

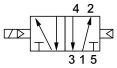
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

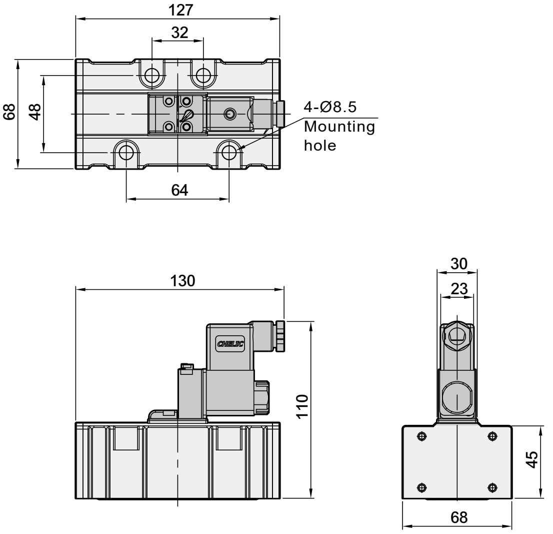


CHELIC
155
Wire length
about 500
12
2
4
14
ISO 5599-1
SIZE 3

### ISO - 4100 series

5 port 2-position single

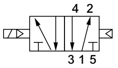


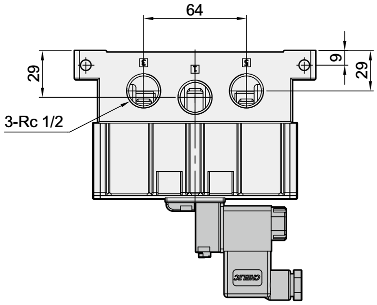


127
32
68
48
4-Ø8.5
Mounting
hole
64
130
110
30
23
45
68

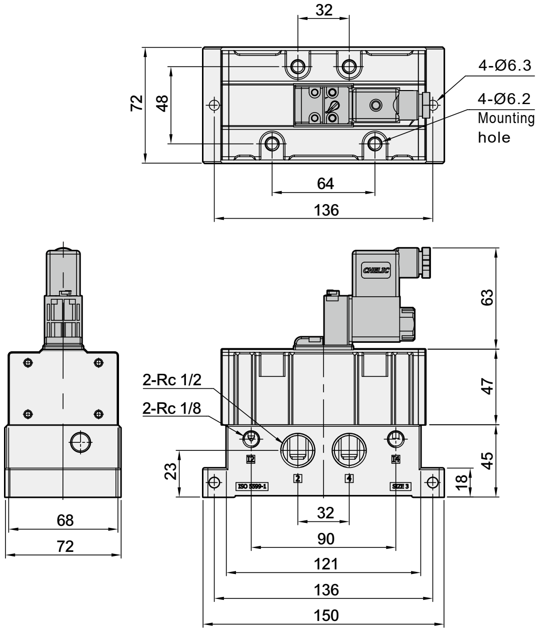
### ISO - 4104 - ☐ - M1 series

5 port 2-position single





64
29
9
29
3-Rc 1/2
CHELIC



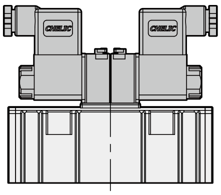
32
72
48
4-Ø6.3
4-Ø6.2
Mounting
hole
64
136
68
72
CHELIC
63
47
2-Rc 1/2
2-Rc 1/8
23
18
45
12
2
4
14
ISO 5599-1
SIZE 3
32
90
121
136
150

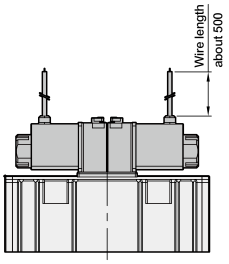
# ISO 4 series ISO Standard Solenoid Valve

## Dimensions/ Standard/ Single unit sub-plate standard type

### ISO - 4200 series Electrical entry

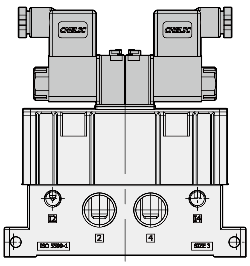
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

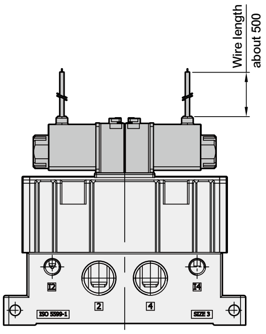

CHELIC
CHELIC


Wire length
about 500

### ISO - 4204 -□- M1 series 5 port 2-position double

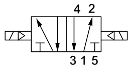
- **K** DIN terminal(Standard)
- **L** With light(option)
- **W** Wire type(option)

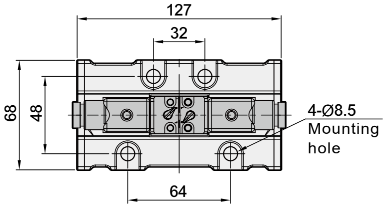

CHELIC
CHELIC
12
2
4
14
ISO 5599-1
SIZE 3

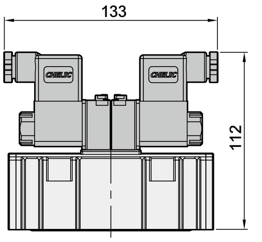

Wire length
about 500
12
2
4
14
ISO 5599-1
SIZE 3

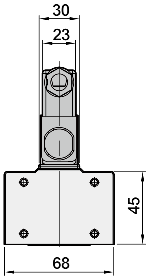
### ISO - 4200 series

5 port 2-position double



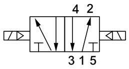

127
32
68
48
4-Ø8.5
Mounting
hole
64

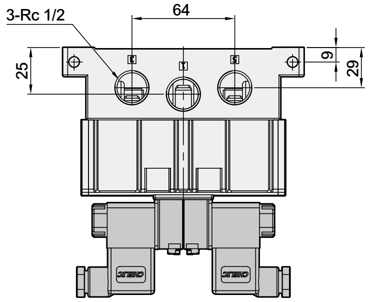


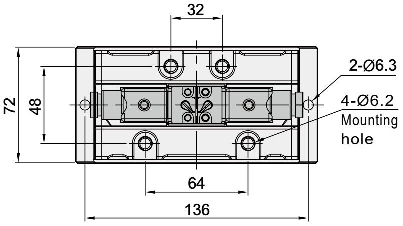


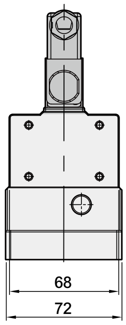
### ISO - 4204 -□- M1 series

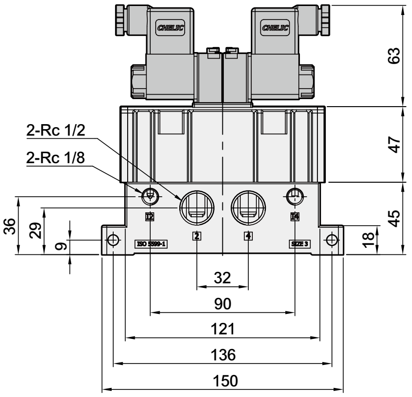
5 port 2-position double




3-Rc 1/2
64
25
9
29


32
2-Ø6.3
4-Ø6.2
Mounting
hole
72
48
64
136




63
47
45
18
2-Rc 1/2
2-Rc 1/8
36
29
9
12
2
4
14
ISO 5599-1
SIZE 3
32
90
121
136
150

# ISO 4 series ISO Standard Solenoid Valve

## Dimensions/ Standard

CHELIC.

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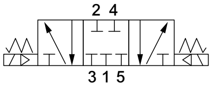
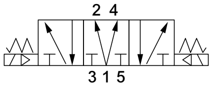
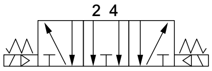
**ISO - 4304 - ☐**
**ISO - 4404 - ☐**
**ISO - 4504 - ☐**
5 port 3-position double
— **K** DIN terminal(Standard)
— **L** With light(option)
— **W** Wire type(option)



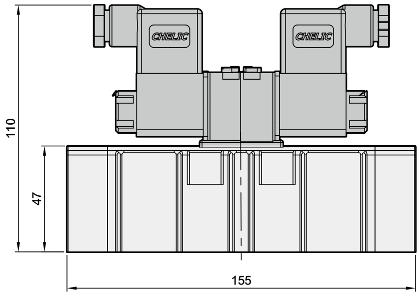
(Closed center) N.C.

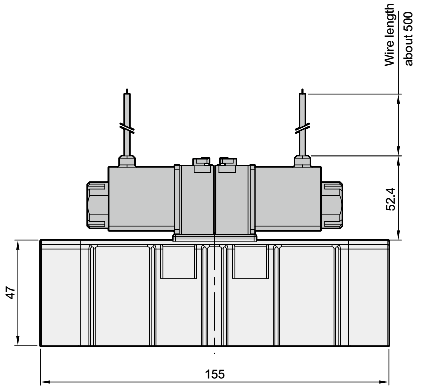


(Pressure center) N.O.



(Exhaust center) N.F.


CHELIC
CHELIC
110
47
155


Wire length about 500
52.4
47
155

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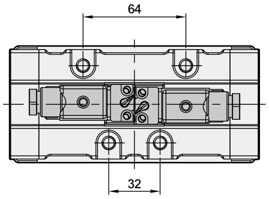
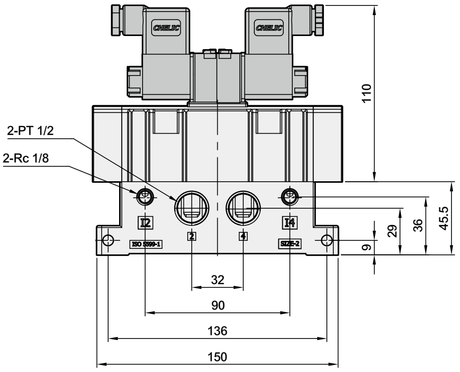
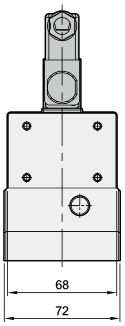
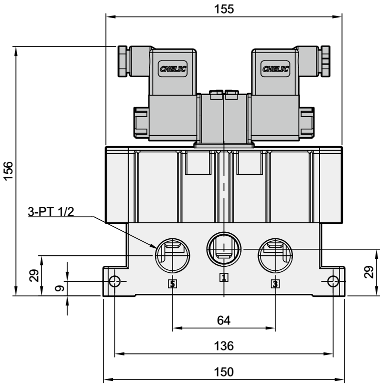
**ISO - 4304 - ☐- M1**
**ISO - 4404 - ☐- M1**
**ISO - 4504 - ☐- M1**
5 port 3-position double




CHELIC
CHELIC
2-PT 1/2
2-Rc 1/8
110
12
2
4
14
ISO 5599-1
SIZE-2
9
29
36
45.5
32
90
136
150

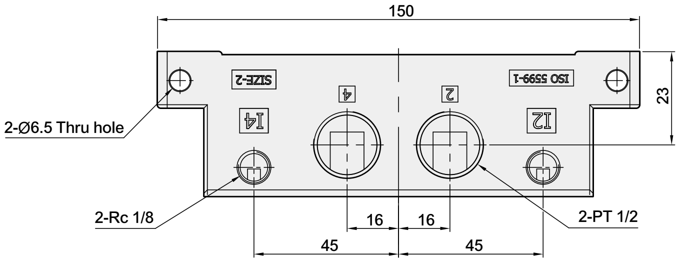


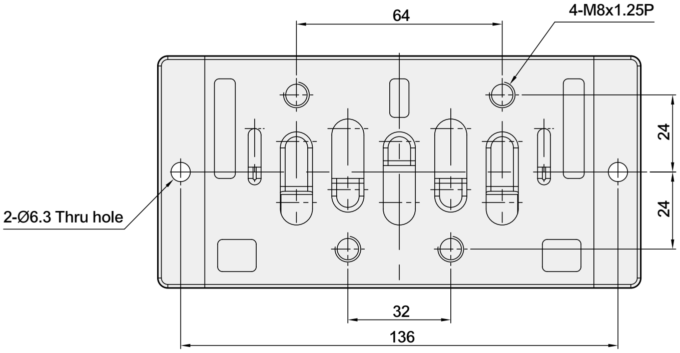

155
CHELIC
CHELIC
156
3-PT 1/2
29
9
5
1
3
29
64
136
150

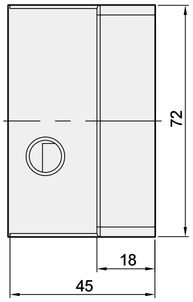
# ISO 4 series ISO Standard Solenoid Valve

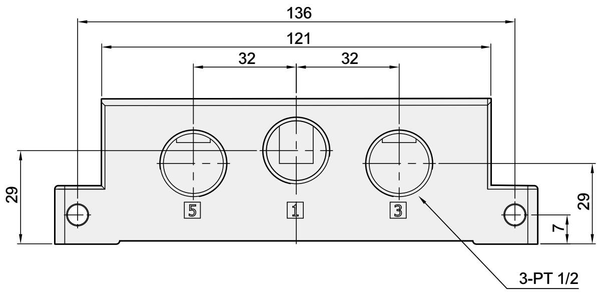
## Dimensions/ Single unit sub-plate standard type

### M1 : Single manifold type


150
SIZE-2
ISO 5599-1
23
4
2
14
12
2-Ø6.5 Thru hole
2-Rc 1/8
2-PT 1/2
16
16
45
45


64
4-M8x1.25P
24
24
2-Ø6.3 Thru hole
32
136



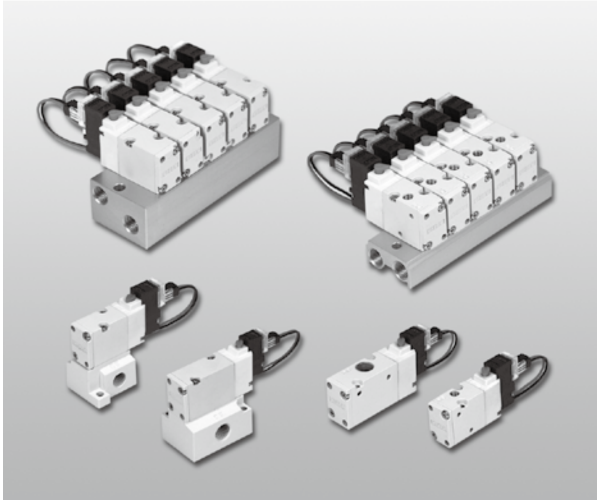

136
121
32
32
29
5
1
3
7
29
3-PT 1/2

# MEMO

# Directional control—SRU series 3/2 Solenoid Valve

## SRU500, SRU700, SRUB500, SRUB700 Solenoid Valve

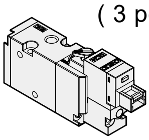
**CHELIC**

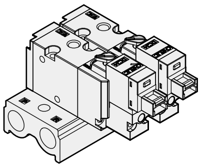


Provide CAD external dimension.

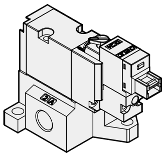
Small size, big flow rate!
High responding time below 10ms
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.

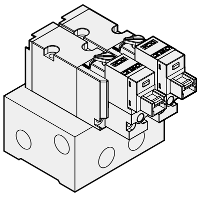
**Solenoid valve single coil** - - - - - - - - - **SRU - 500 series** - - - - **M5** - - - - - - - - - - - - - - **P.2-1.238**
( 3 port 2-position )
**SRU - 700 series** - - - - **Rc 1/8** - - - - - - - - - - - **P.2-1.239**





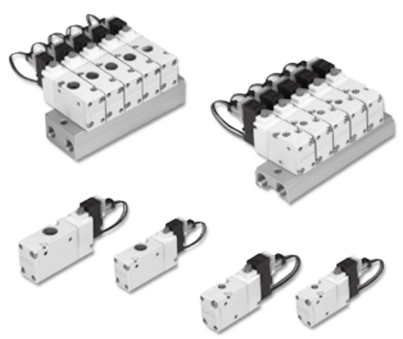
**Solenoid valve mounting single coil** - - - **SRUB - 500 series** - - - **Rc 1/8** - - - - - - - - - - - **P.2-1.244**
( 3 port 2-position )
**SRUB - 700 series** - - - **Rc 1/4** - - - - - - - - - - - **P.2-1.245**



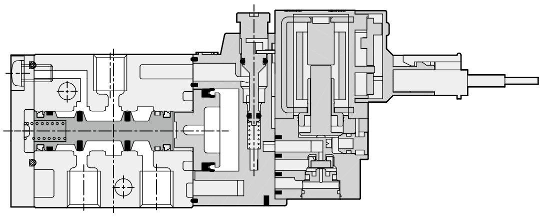


# SRU series 3/2 Solenoid Valve

## Product features



### Internal structure



### Specification

| Item Model | SRU 500 | SRU 700 |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | |
| Pilot type | Air operated | |
| Number of positions | 3/2-position | |
| Type of actuation | Normally closed/ Normally open | |
| Effective orifice mm²(CV) | 2.16(0.12) | 12.6(0.7) |
| Manual override | Push and lock | |
| Port size | M5 | Rc1/8 |
| Lubrication | Lubrication free type | |

### Code of order

**SRU** – **5** – **10** – **M5** – **NC** – **24VDC** – **L** – **M 2**

**Model**

SRU:
3 port 2-position
Solenoid valve

**Model number**

5: 500 series
7: 700 series

**Coil q'ty**

10: Single

**Port size**

| Mark | Thread | Model |
|---|---|---|
| M5 | M5x0.8p | SRU500 |
| 1 | Rc 1/8 | SRU700 |

For A port connection

**Valve type**

| Mark | Model |
|---|---|
| NC | Normally closed |
| NO | Normally open |

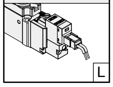
**Voltage**

Standard

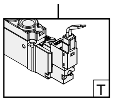
12V DC 1.2W
24V DC 1.2W

**Electrical entry**

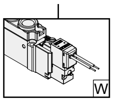
Standard



(With wire length 300mm)

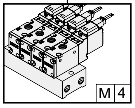


(With wire length 300mm)



Grommet
(With wire length 300mm)

**Manifold**



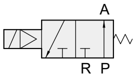
None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets

# SRU series 3/2 Solenoid Valve

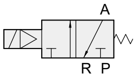
## Product features

### Internal structure

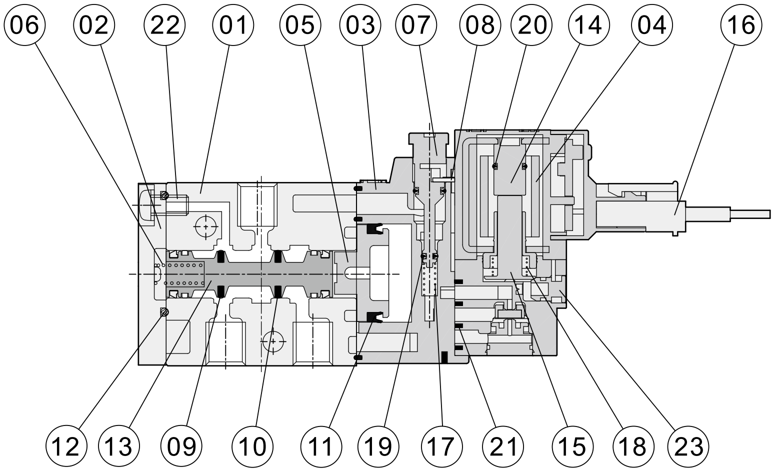
- 3 port 2-position single



-N.O.



-N.C.



### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Main body | Aluminum alloy | **13** | Shaft | Aluminum alloy |
| **02** | Rear cover | Aluminum alloy | **14** | Coil insert bushing | Stainless steel |
| **03** | Holder | Resin | **15** | Spring bushing | Stainless steel |
| **04** | Coil | — | **16** | Wire plug | Resin |
| **05** | Holder piston | POM | **17** | Manual override spring | Stainless steel |
| **06** | Rear cover spring | Stainless steel | **18** | Spring bushing spring | Stainless steel |
| **07** | Manual override | POM | **19** | Manual override O-Ring | NBR |
| **08** | Position iron plate | Iron | **20** | Coil insert bushing O-ring | NBR |
| **09** | Spool packing | NBR | **21** | Rubber Lining | NBR |
| **10** | Spool packing | NBR | **22** | Rear screw | Alloy steel |
| **11** | Holder piston packing | NBR | **23** | Switch | Cooper alloy |
| **12** | Rear cover O-ring | NBR | | | |

Note: The main body treated with painting.

### Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing | Manual rod O-Ring | Coil insert bushing O-ring |
|---|---|---|---|---|
| Quantity<br>Model | 1 | 1 | 1 | 1 |
| **SRUB 500** | MYA-10 | MYA-7 | Ø2.4xØ0.8 | Ø2.4xØ0.8 |
| **SRUB 700** | MYA-11 | MYA-7 | Ø2.4xØ0.8 | Ø2.4xØ0.8 |

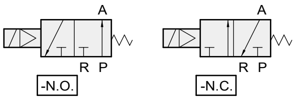
Note: Piston packing and rod packing all adopt import parts (MITSUBISH, SAKAGAHI, and same grade)

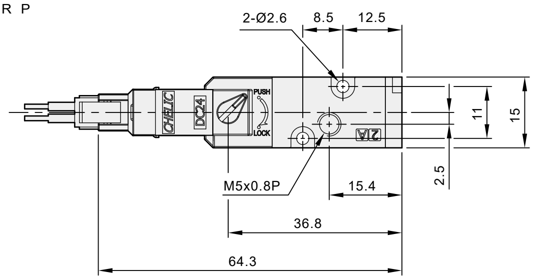
# SRU 500 series 3/2 Solenoid Valve

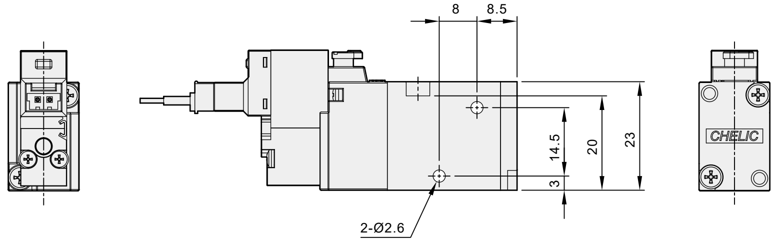
## Dimensions/ Standard

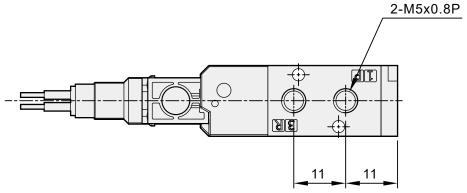
### SRU 510M5-☐

3 port 2-position single

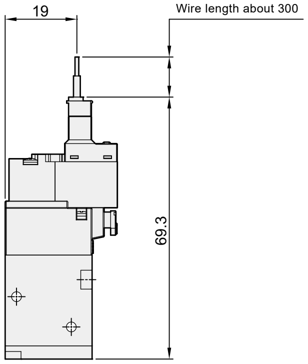

A
R P
-N.O.
A
R P
-N.C.


2-Ø2.6
8.5
12.5
PUSH
LOCK
CHELIC
DC24
2A
11
15
M5x0.8P
15.4
2.5
36.8
64.3

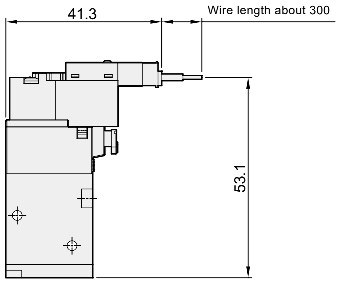

8
8.5
CHELIC
14.5
20
23
3
2-Ø2.6


2-M5x0.8P
1P
3R
11
11

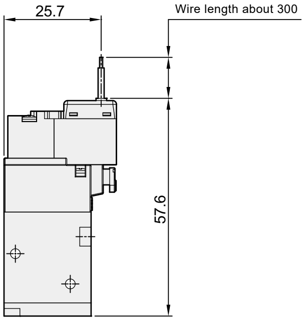
### L wire type - L


19
Wire length about 300
69.3

### T wire type - T


41.3
Wire length about 300
53.1

### W wire type - W

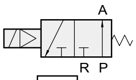

25.7
Wire length about 300
57.6

# SRU series 3/2 Solenoid Valve

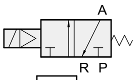
## Dimensions/ Standard

### SRU 7101 − ☐

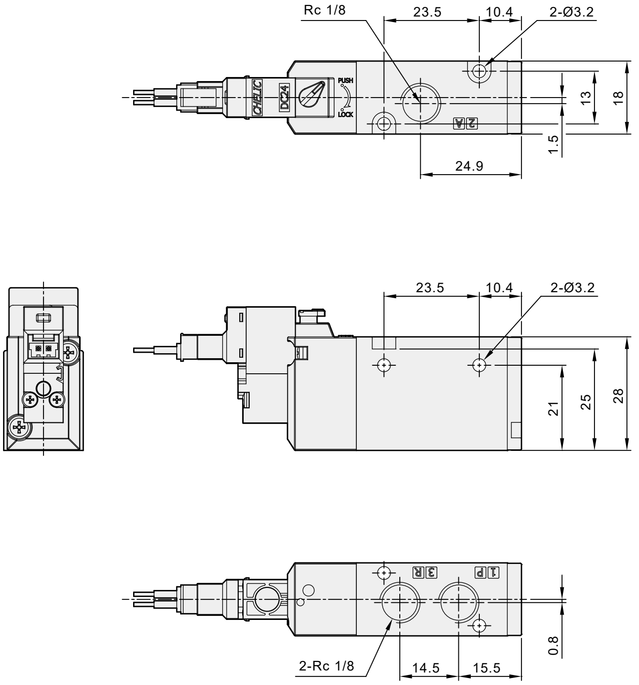
3 port 2-position single



-N.O.

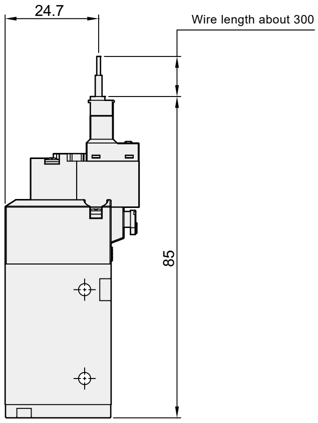


-N.C.

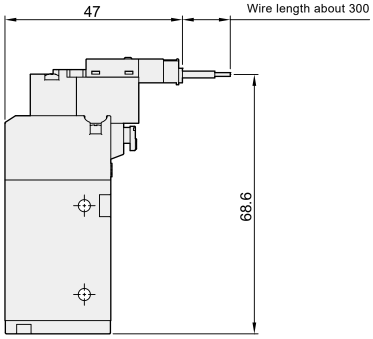

Rc 1/8
23.5
10.4
2-Ø3.2
CHELIC
DC24
PUSH
LOCK
2A
13
18
1.5
24.9
23.5
10.4
2-Ø3.2
21
25
28
CHELIC
3R
1P
2-Rc 1/8
14.5
15.5
0.8

---

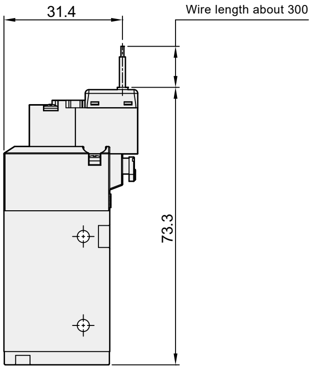
### L wire type - L


24.7
Wire length about 300
85

### T wire type - T


47
Wire length about 300
68.6

### W wire type - W

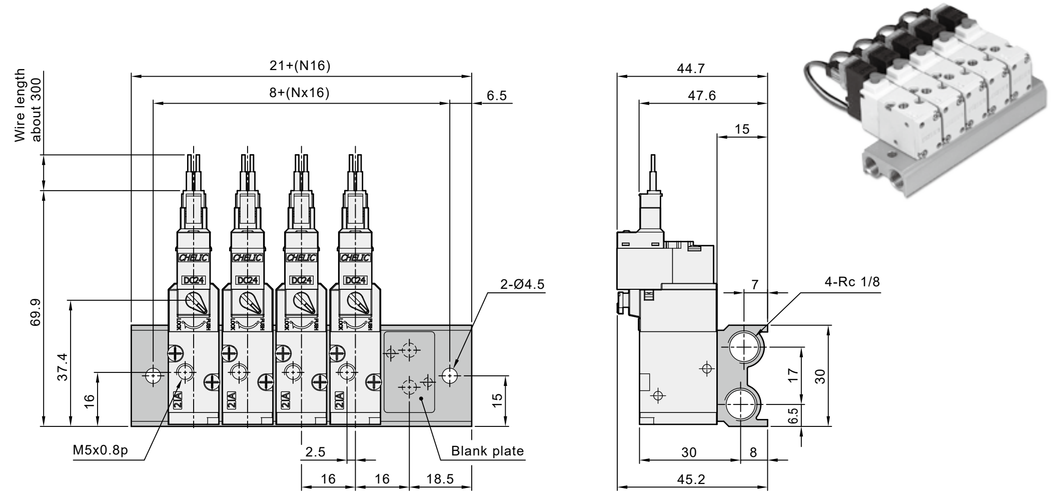

31.4
Wire length about 300
73.3

# SRU series 3/2 Solenoid Valve

## Dimensions/ Manifold type

### SRU 500 series - standard

Manifold dimension


Wire length about 300
21+(N16)
8+(Nx16)
6.5
2-Ø4.5
69.9
37.4
16
15
M5x0.8p
2.5
16
16
18.5
Blank plate
CHELIC
DC24
44.7
47.6
15
7
4-Rc 1/8
17
30
6.5
30
8
45.2

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

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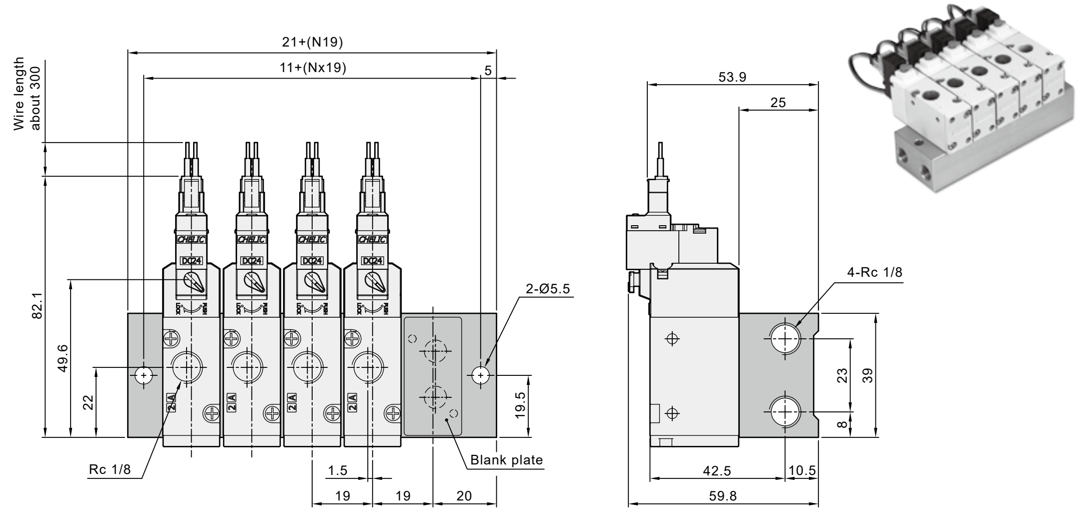
### SRU 700 series - standard

Manifold dimension


Wire length about 300
21+(N19)
11+(Nx19)
5
2-Ø5.5
82.1
49.6
22
19.5
Rc 1/8
1.5
19
19
20
Blank plate
CHELIC
DC24
53.9
25
4-Rc 1/8
23
39
8
42.5
10.5
59.8

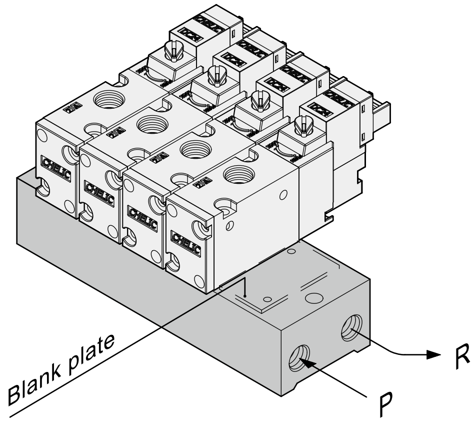
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SRU series 3/2 Solenoid Valve

## Accessories/ Installation

### Manifold

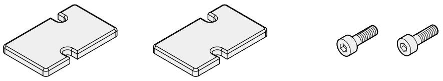
**SRU - 500 • 700 series**



### Manifold accessory

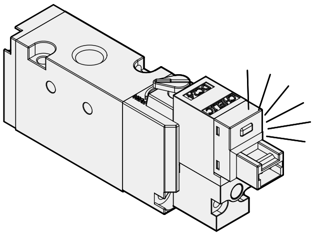
**SRU - 500 • 700 series**

※ The accessories of blank plate.



| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| SRU-500 series | MSMU05041 | MSMU05039 | M2.6X6.5L MSMU05040 |
| SRU-700 series | MSMU07041 | MSMU07039 | M3X8L MSMU07040 |

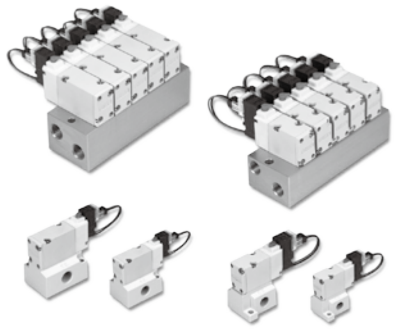
### With indicator light: all this series with indicator light and voltage protection circuit



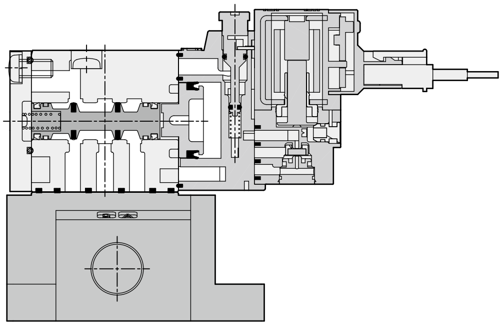
# SRUB series 3/2 Base Mounted Solenoid Valve

## Product features

CHELIC



### Internal structure



### Specification

| Item \ Model | SRUB 500 | SRUB 700 |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 1.5~7(150~700) | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | |
| Pilot type | Air operated | |
| Number of positions | 3/2-position | |
| Type of actuation | Normally closed/ Normally open | |
| Effective orifice mm²(CV) | 3.06(0.17) | 11.7(0.65) |
| Manual override | Push and Lock | |
| Port size | Rc1/8 | Rc1/4 |
| Lubrication | Lubrication free type | |

### Code of order

SRUB — 5 — 10 — 1 — NC — 24VDC — L — M 2

**Model**

SRUB:
3 port 2-position
Solenoid valve

**Model number**

5: 500 series
7: 700 series

**Coil q'ty**

10: Single

**Port size**

| Thread type | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8p | SRUB 500 |
| 1 | Rc 1/8 | |
| 1 | Rc 1/8 | SRUB 700 |
| 2 | Rc 1/4 | |

For A and B port

| Single manifold mounting type | | |
|---|---|---|
| 1 | Rc 1/8 | SRUB 500 |
| 2 | Rc 1/4 | SRUB 700 |

**Valve type**

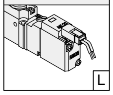
| Mark | Model |
|---|---|
| NC | Normally closed |
| NO | Normally open |

**Voltage**

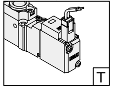
| Standard | |
|---|---|
| 12V DC | 1.2W |
| 24V DC | 1.2W |

**Electrical entry**

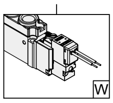
Standard



(With wire length 300mm)

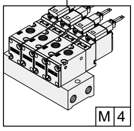


(With wire length 300mm)



Grommet
(With wire length 300mm)

**Manifold**



None:
Without manifold

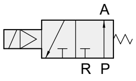
M1 = 1set
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets

# SRUB series 3/2 Base Mounted Solenoid Valve

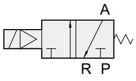
## Product features

### Internal structure

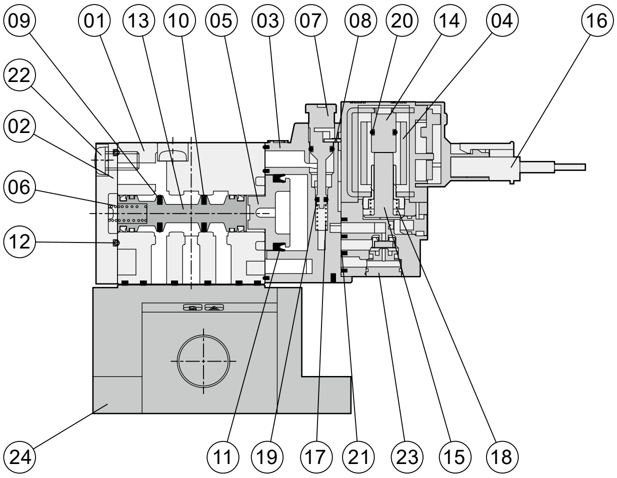
- 3 port 2-position single



-N.O.



-N.C.



### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Main body | Aluminum alloy | 13 | Shaft | Aluminum alloy |
| 02 | Rear cover | Aluminum alloy | 14 | Coil insert bushing | Stainless steel |
| 03 | Holder | Resin | 15 | Spring bushing | Stainless steel |
| 04 | Coil | — | 16 | Wire plug | Resin |
| 05 | Holder piston | POM | 17 | Manual override spring | Stainless steel |
| 06 | Rear cover spring | Stainless steel | 18 | Spring bushing spring | Stainless steel |
| 07 | Manual override | POM | 19 | Manual override O-Ring | NBR |
| 08 | Position iron plate | Iron | 20 | Coil insert bushing O-ring | NBR |
| 09 | Spool packing | NBR | 21 | Rubber lining | NBR |
| 10 | Spool packing | NBR | 22 | Rear screw | Alloy steel |
| 11 | Holder piston packing | NBR | 23 | Switch | Cooper alloy |
| 12 | Rear cover O-ring | NBR | 24 | Single sub-plate | Aluminum alloy |

Note: The main body treated with painting.

### Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing | Manual rod O-Ring | Coil insert bushing O-ring |
|---|---|---|---|---|
| Model / Quantity | 1 | 1 | 1 | 1 |
| **SRUB 500** | MYA-10 | MYA-7 | Ø2.4xØ0.8 | Ø2.4xØ0.8 |
| **SRUB 700** | MYA-11 | MYA-7 | Ø2.4xØ0.8 | Ø2.4xØ0.8 |

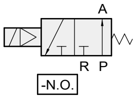
Note: Piston packing and rod packing all adopt import parts (MITSUBISH, SAKAGAHI, and same grade)

# SRUB 500 series 3/2 Base Mounted Solenoid Valve

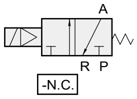
## Dimensions/ Base mount type

### SRUB 5101 – ☐

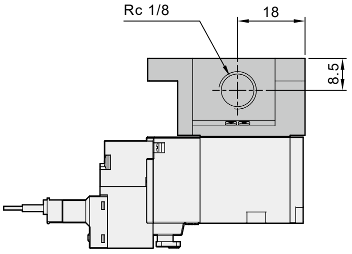
3 port 2-position single

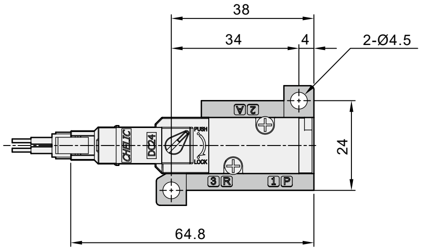


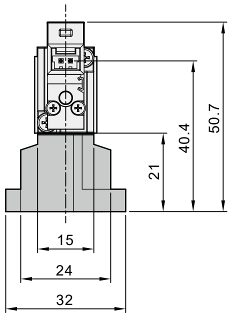
-N.O.

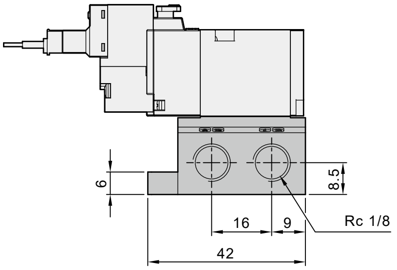


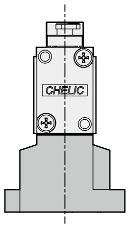
-N.C.




38
34
4
2-Ø4.5
24
64.8
CHELIC
DC24
PUSH
LOCK
2A
3R
1P


50.7
40.4
21
15
24
32

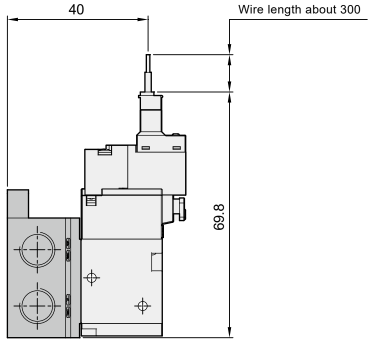

6
8.5
16
9
Rc 1/8
42

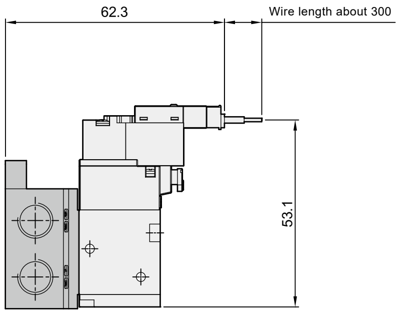


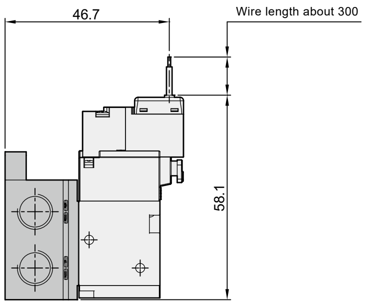
### L wire type - L

### T wire type - T

### W wire type - W


40
Wire length about 300
69.8


62.3
Wire length about 300
53.1

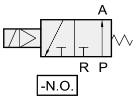

46.7
Wire length about 300
58.1

# SRUB 700 series 3/2 Base Mounted Solenoid Valve

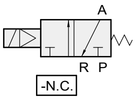
## Dimensions/ Base mount type

### SRUB 7102 – ☐

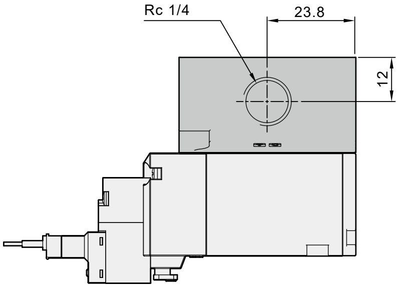
3 port 2-position single

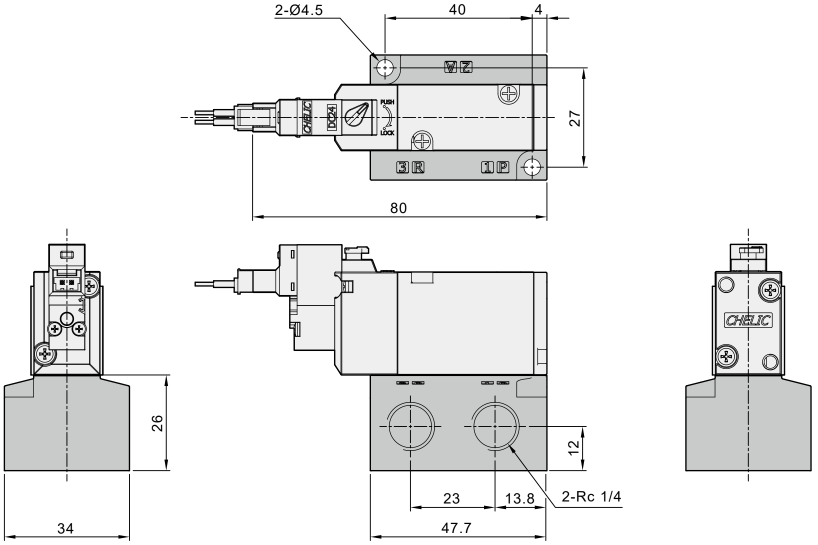


-N.O.



-N.C.



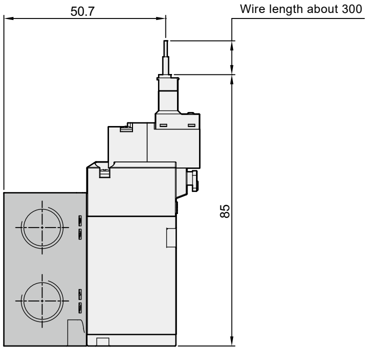

2-Ø4.5
40
4
27
80
CHELIC
DC24
PUSH
LOCK
2A
3R
1P
26
34
12
23
13.8
2-Rc 1/4
47.7
CHELIC

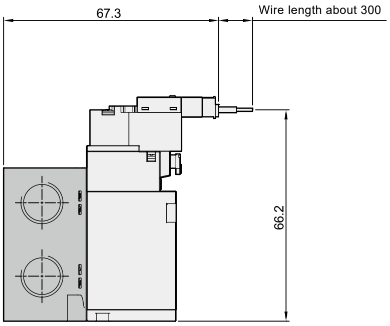
---

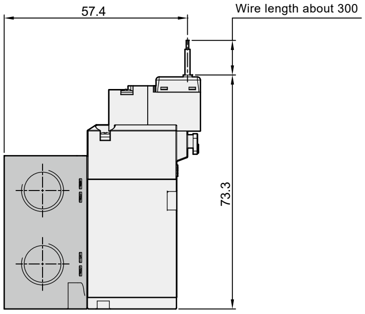
### L wire type - L

### T wire type - T

### W wire type - W


50.7
Wire length about 300
85


67.3
Wire length about 300
66.2

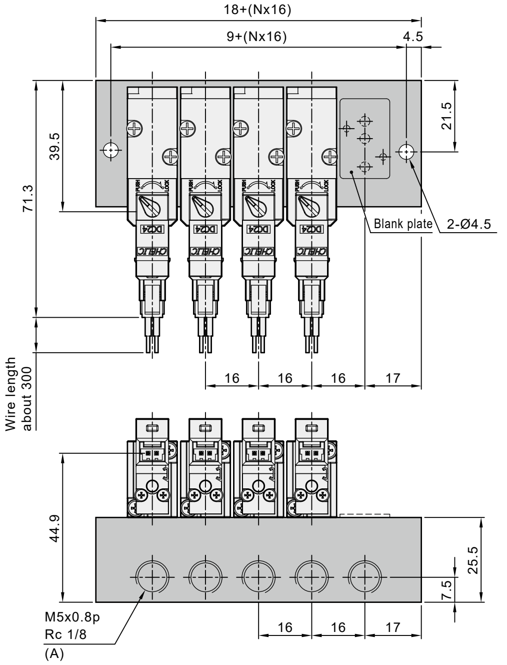

57.4
Wire length about 300
73.3

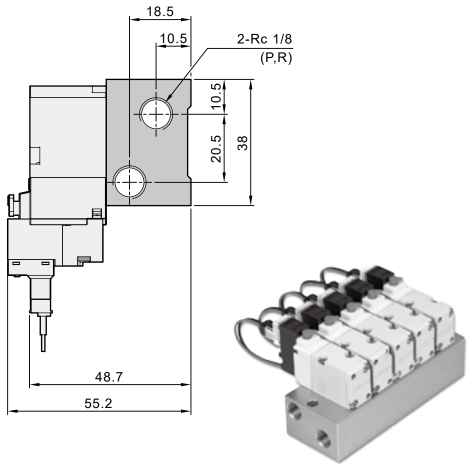
# SRUB series 3/2 Base Mounted Solenoid Valve

## Dimensions/ Manifold type

### SRUB 500 series - Base mount type

Manifold dimension

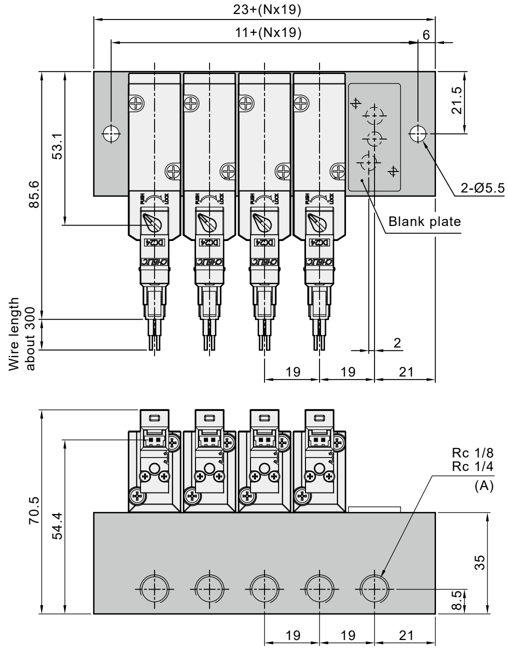

18+(Nx16)
9+(Nx16)
4.5
21.5
39.5
71.3
Blank plate
2-Ø4.5
Wire length about 300
16
16
16
17
44.9
25.5
7.5
M5x0.8p
Rc 1/8
(A)
16
16
17

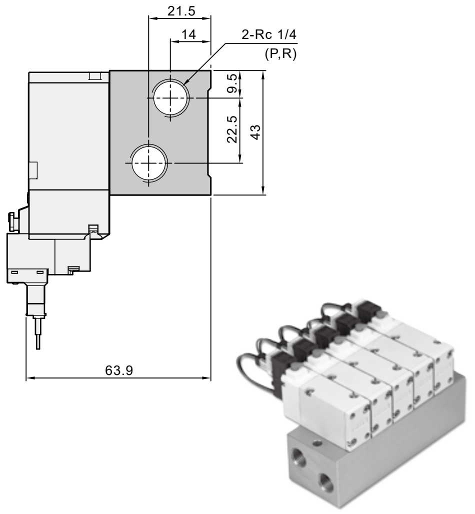

18.5
10.5
2-Rc 1/8
(P,R)
10.5
20.5
38
48.7
55.2

● Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SRUB 700 series - Base mount type

Manifold dimension


23+(Nx19)
11+(Nx19)
6
21.5
53.1
85.6
2-Ø5.5
Blank plate
Wire length about 300
2
19
19
21
Rc 1/8
Rc 1/4
(A)
70.5
54.4
35
8.5
19
19
21


21.5
14
2-Rc 1/4
(P,R)
9.5
22.5
43
63.9

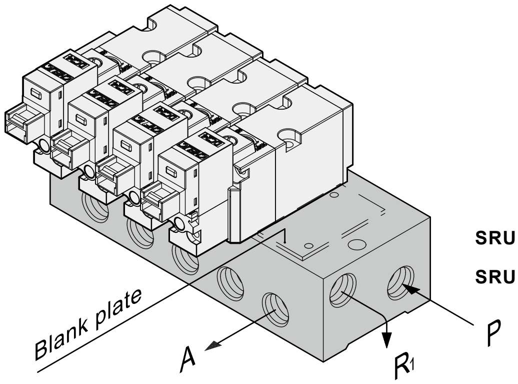
● Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SRUB series 3/2 Base Mounted Solenoid Valve

## Accessories/ Installation

### Manifold

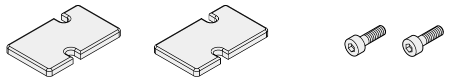
**SRUB - 500 • 700 series**



### Manifold accessory

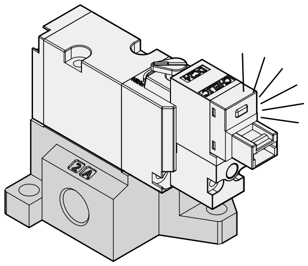
**SRUB - 500 • 700 series**

※ The accessories of blank plate.



| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| **SRUB-500 series** | MSMUB05041 | MSMUB05039 | M2.6X6.5L MSMUB05040 |
| **SRUB-700 series** | MSMUB07041 | MSMUB07039 | M3X8L MSMUB07040 |

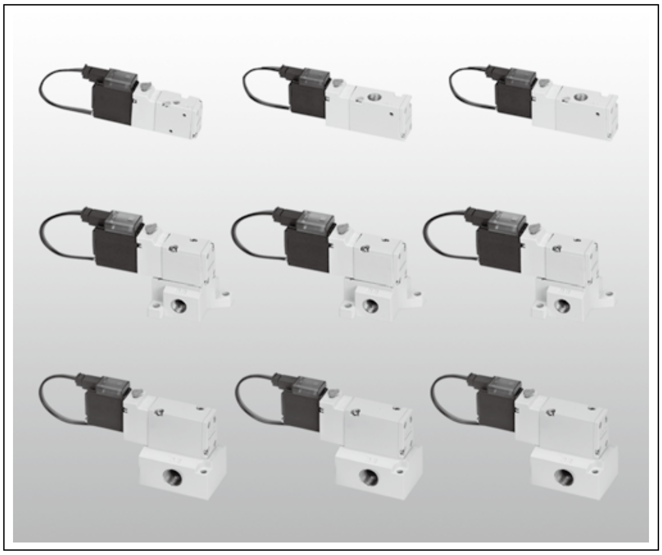
### With indicator light: all this series with indicator light and voltage protection circuit



# MEMO

# Directional control—SMU series 3/2 Body Ported Solenoid Valve

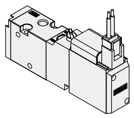
## SMU5000, SMU7000, SMUB5000, SMUB7000 Solenoid Valve

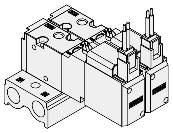


Provide CAD external dimension.

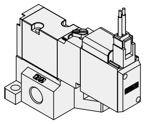
Small size, big flow rate!
High responding time below 10ms.
With indicator light and voltage protection circuit;
Air hole can be changed and be added connector.

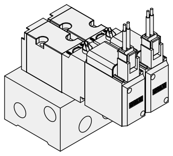
**Solenoid valve single coil** - - - - - - - - - - - **SMU - 5000 series** - - - - - **M5** - - - - - - - - - - - **P.2-1.252**
( 3 port 2-position )
**SMU - 7000 series** - - - - - **Rc1/8** - - - - - - - - - **P.2-1.253**





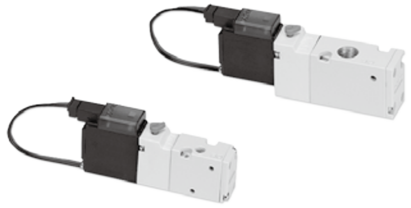
**Solenoid valve mounting single coil** - - - - **SMUB - 5000 series** - - - - **Rc1/8** - - - - - - - - - **P.2-1.258**
( 3 port 2-position )
**SMUB - 7000 series** - - - - **Rc1/4** - - - - - - - - - **P.2-1.259**



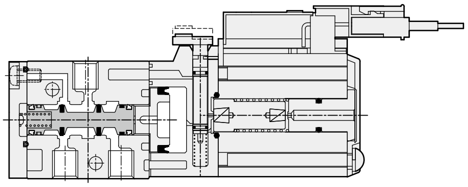


# SMU series 3/2 Body Ported Solenoid Valve

## Product features



### Internal structure



### Specification

| Item / Model | | SMU5000 | SMU7000 |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range | kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature | ℃ | 5 ~ 60 | |
| Pilot type | | Air operated | |
| Number of positions | | 3/2-position | |
| Type of actuation | | Normally closed/ Normally open | |
| Effective orifice | mm²(CV) | 2.16(0.12) | 12.6(0.7) |
| Manual override | | Push and lock | |
| Port size | | M5 | Rc1/8 |
| Lubrication | | Lubrication free type | |

### Code of order

SMU — 5 — 10 — 1 — NC — 110 — L — M 2

**Model**

SMU:
3 port 2-position
Solenoid valve

**Model number**

5: 5000 series
7: 7000 series

**Coil q'ty**

10: Single

**Port size**

| Mark | Thread | Model |
|---|---|---|
| M5 | M5x0.8p | SMU5000 |
| 1 | Rc 1/8 | SMU7000 |

For A port connection

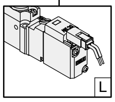
**Valve type**

| Mark | Model |
|---|---|
| NC | Normally closed |
| NO | Normally open |

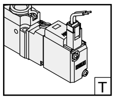
**Voltage**

Standard :
12V DC 1.5W
24V DC 1.5W
110V AC 0.9VA
220V AC 1.8VA

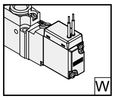
**Electrical entry**



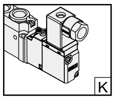
(With wire length 300mm)



(With wire length 300mm)

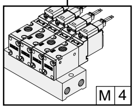


Grommet
(With wire length 300mm)



DIN Terminal

**Manifold**



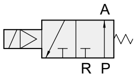
None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets

# SMU series 3/2 Body Ported Solenoid Valve

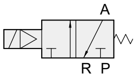
## Product features

### Internal structure

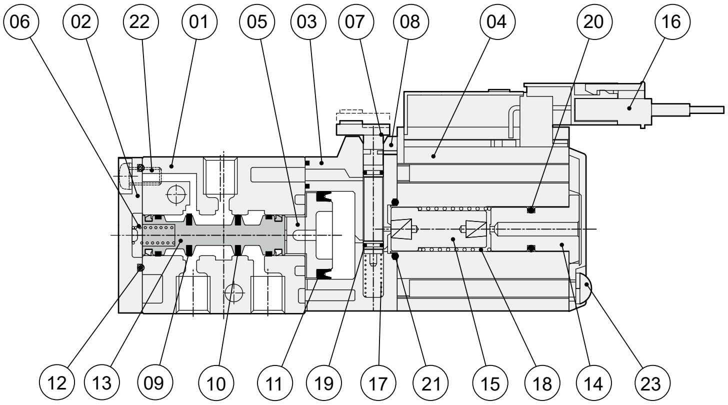
- 3 port 2-position single



-N.O.



-N.C.



### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Main body | Aluminum alloy | **13** | Shaft | Aluminum alloy |
| **02** | Rear cover | Resin | **14** | Coil insert bushing | Stainless steel |
| **03** | Holder | Resin | **15** | Spring bushing | Stainless steel |
| **04** | Coil | — | **16** | Wire plug | Resin |
| **05** | Holder piston | POM | **17** | Manual override spring | Stainless steel |
| **06** | Rear cover spring | Stainless steel | **18** | Spring bushing spring | Stainless steel |
| **07** | Manual override | POM | **19** | Manual override O-Ring | NBR |
| **08** | Position iron plate | Iron | **20** | Coil insert bushing O-ring | NBR |
| **09** | Spool packing | NBR | **21** | O-Ring | NBR |
| **10** | Spool packing | NBR | **22** | Rear screw | Alloy steel |
| **11** | Holder piston packing | NBR | **23** | Coil cover screw | Alloy steel |
| **12** | Rear cover O-ring | NBR | | | |

Note: The main body has been treated with painting.

### Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing | Manual rod O-Ring | Coil insert bushing O-ring |
|---|---|---|---|---|
| Model / Quantity | 1 | 1 | 1 | 1 |
| **SMU 5000** | MYA-10 | MYA-7 | Ø2xØ0.6 | Ø4.6xØ1 |
| **SMU 7000** | MYA-11 | MYA-7 | Ø2xØ0.6 | Ø4.6xØ1 |

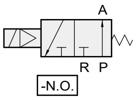
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

# SMU 500 series 3/2 Body Ported Solenoid Valve

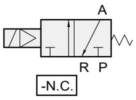
## Dimensions/ Standard

### SMU 510M5 – ☐

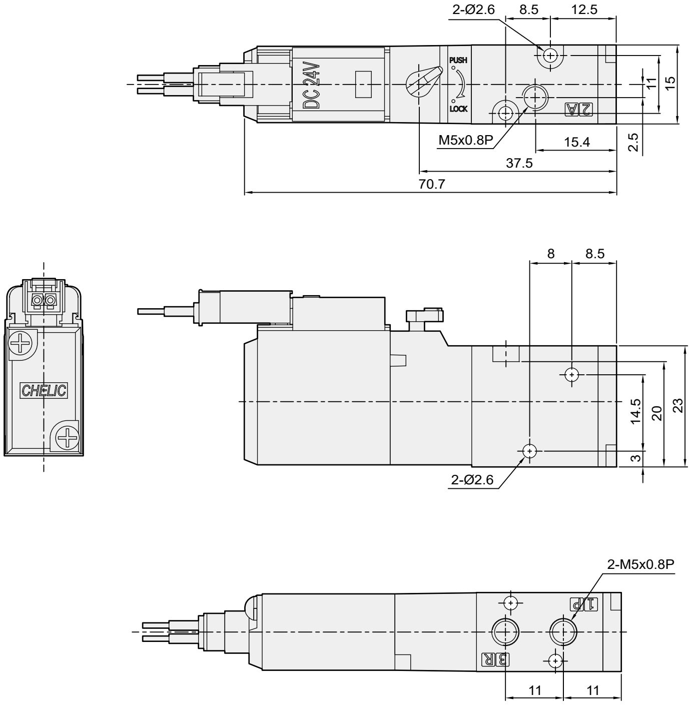
3 port 2-position single



-N.O.



-N.C.

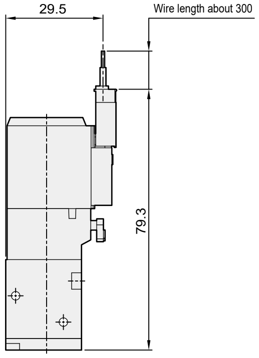

2-Ø2.6
8.5
12.5
DC 24V
PUSH
LOCK
2A
11
15
M5x0.8P
15.4
2.5
37.5
70.7
8
8.5
CHELIC
14.5
20
23
3
2-Ø2.6
CHELIC
2-M5x0.8P
1P
3R
11
11

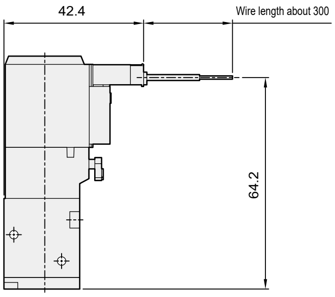
### L wire type - L

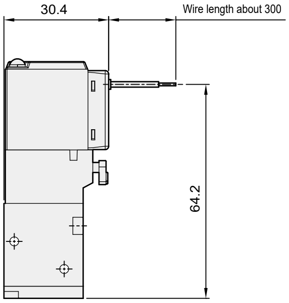
### T wire type - T

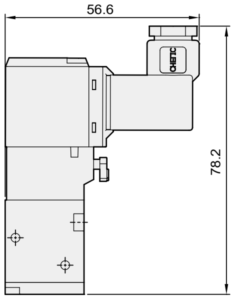
### W wire type - W

### K wire type - K


29.5
Wire length about 300
79.3


42.4
Wire length about 300
64.2


30.4
Wire length about 300
64.2


56.6
CHELIC
78.2

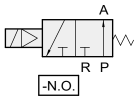
# SMU 700 series 3/2 Body Ported Solenoid Valve

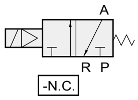
## Dimensions/ Standard

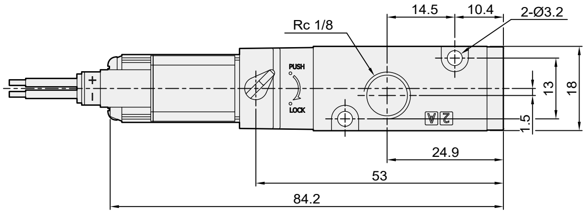
ISO
SRU
SRUB
SMU
SMUB
SKU
SKB
SKV
SV310
SWB

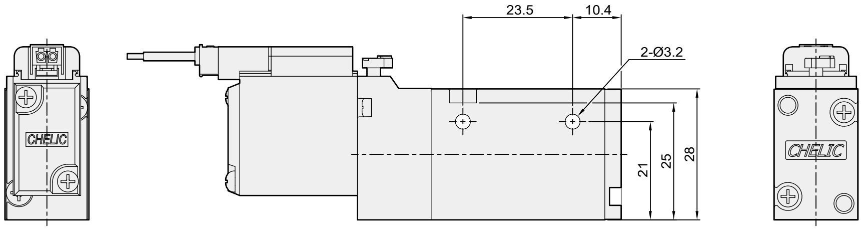
### SMU 7101 – ☐

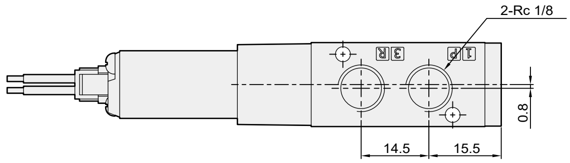
3 port 2-position single



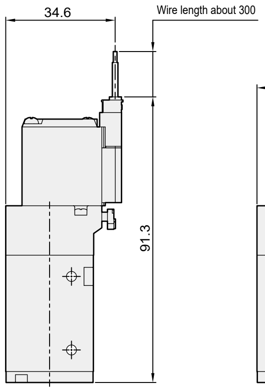



14.5
10.4
2-Ø3.2
Rc 1/8
PUSH
LOCK
2A
13
18
1.5
24.9
53
84.2

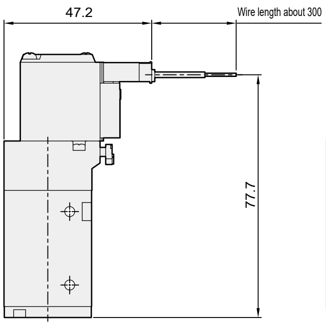

23.5
10.4
2-Ø3.2
CHELIC
21
25
28
CHELIC


2-Rc 1/8
3R
1P
0.8
14.5
15.5

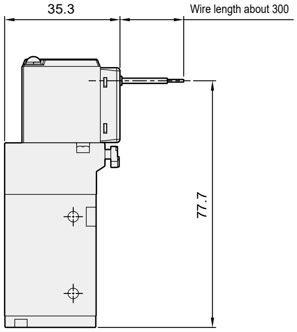
### L wire type - L


34.6
Wire length about 300
91.3

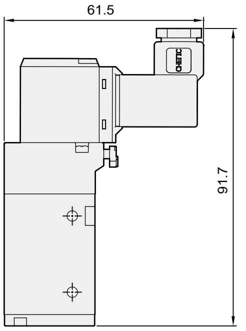
### T wire type - T


47.2
Wire length about 300
77.7

### W wire type - W


35.3
Wire length about 300
77.7

### K wire type - K


61.5
CHELIC
91.7

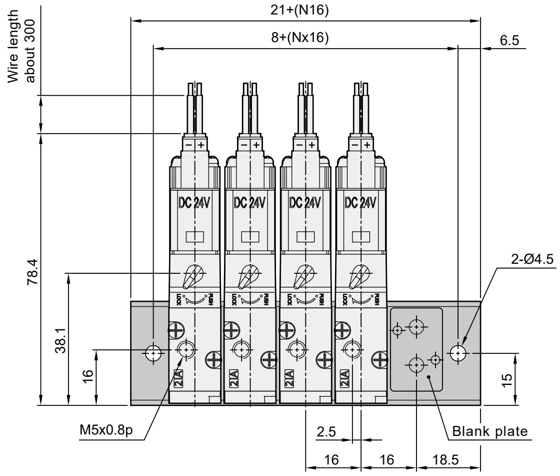
# SMU series 3/2 Body Ported Solenoid Valve

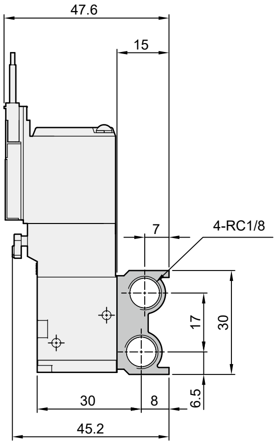
## Dimensions/ Manifold type

---

### SMU 5000 series - standard

Manifold dimension


Wire length about 300
21+(N16)
8+(Nx16)
6.5
DC 24V
2-Ø4.5
78.4
38.1
16
15
M5x0.8p
2.5
Blank plate
16
16
18.5

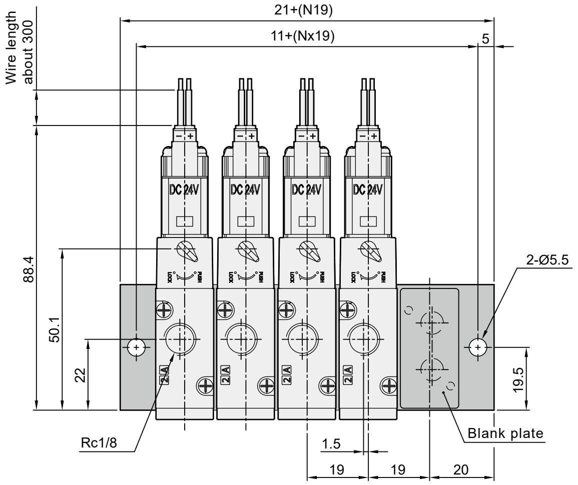

47.6
15
7
4-RC1/8
17
30
30
8
6.5
45.2

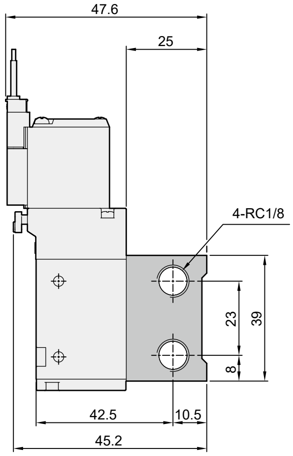
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

---

### SMU 7000 series - standard

Manifold dimension


Wire length about 300
21+(N19)
11+(Nx19)
5
DC 24V
2-Ø5.5
88.4
50.1
22
19.5
Rc1/8
1.5
Blank plate
19
19
20


47.6
25
4-RC1/8
23
39
8
42.5
10.5
45.2

- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

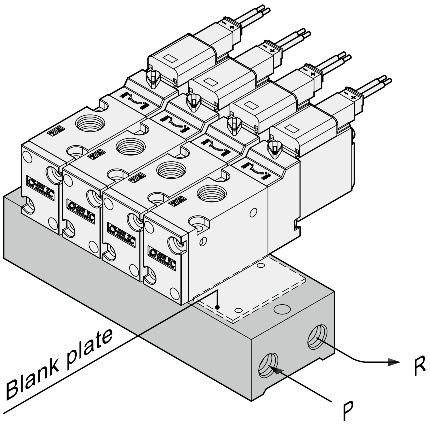
# SMU series 3/2 Body Ported Solenoid Valve

## Accessories/ Installation

CHELIC

### Manifold

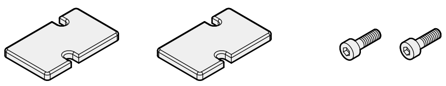
**SMU - 5000 • 7000 series**



### Manifold accessory

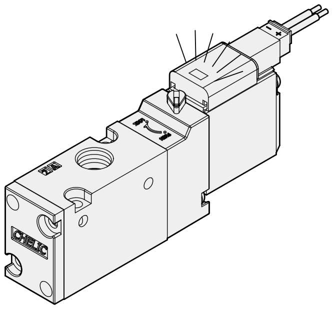
**SMU - 5000 • 7000 series**

※ The accessories of blank plate.



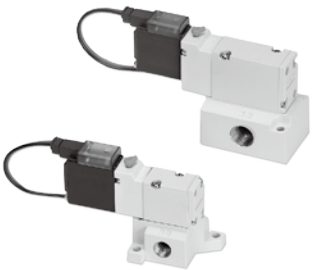
| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| **SMU-5000 series** | MSMU05041 | MSMU05039 | M2.6X6.5L MSMU05040 |
| **SMU-7000 series** | MSMU07041 | MSMU07039 | M3X8L MSMU07040 |

### With indicator light: all this series with indicator light and voltage protection circuit

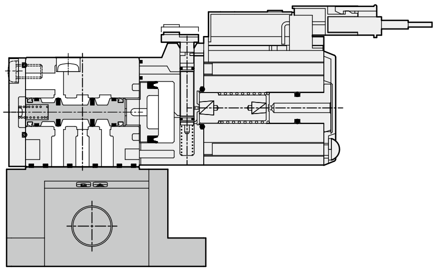


# SMUB series 3/2 Base Mounted Solenoid Valve

## Product features



### Internal structure



### Specification

| Item \ Model | SMUB5000 | SMUB7000 |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | |
| Pilot type | Pilot operated | |
| Number of positions | 3/2-position | |
| Type of actuation | Normally closed/ Normally open | |
| Effective orifice mm²(CV) | 3.06 (0.17) | 11.7 (0.65) |
| Manual override | Push and lock | |
| Port size | M5, Rc 1/8 | Rc 1/8, Rc 1/4 |
| Lubrication | Lubrication free type | |

### Code of order

**SMUB** – **5** – **10** – **1** – **NC** – **110** – **L** – **M 2**

**Model**

SMUB :
3 port 2-position
Solenoid valve

**Model number**

5: 5000 series
7: 7000 series

**Coil q'ty**

10 : Single

**Port size**

| Thread type | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8p | SMUB5000 |
| 1 | Rc 1/8 | |
| 1 | Rc 1/8" | SMUB7000 |
| 2 | Rc 1/4 | |

For A port connection

| | | |
|---|---|---|
| 1 | Rc 1/8 | SMUB5000 |
| 2 | Rc 1/4 | SMUB7000 |

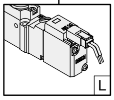
**Valve type**

| Mark | Model |
|---|---|
| NC | Normally closed |
| NO | Normally open |

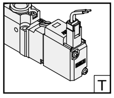
**Voltage**

Standard :
12V DC 1.5W
24V DC 1.5W
110V AC 0.9VA
220V AC 1.8VA

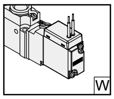
**Electrical entry**



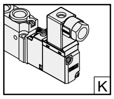
(With wire length 300mm)



(With wire length 300mm)

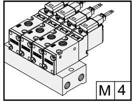


Grommet
(With wire length 300mm)



DIN Terminal

**Manifold**



None :
Without manifold

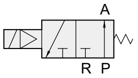
M1 = 1 set
M2 = 2 sets
M3 = 3 sets
⋮
M20 = 20 sets

# SMUB series 3/2 Base Mounted Solenoid Valve

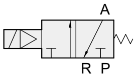
## Product features

### Internal structure

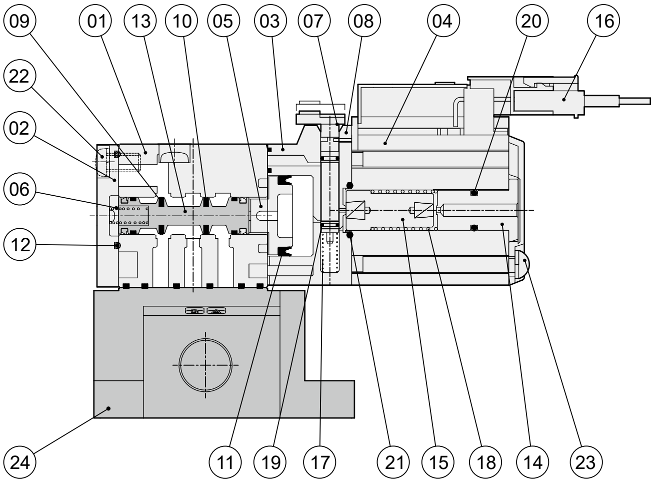
- 3 port 2-position single



-N.O.



-N.C.



### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Main body | Aluminum alloy | **13** | Shaft | Aluminum alloy |
| **02** | Rear cover | Resin | **14** | Coil insert bushing | Stainless steel |
| **03** | Holder | Resin | **15** | Spring bushing | Stainless steel |
| **04** | Coil | — | **16** | Wire plug | Resin |
| **05** | Holder piston | POM | **17** | Manual override spring | Stainless steel |
| **06** | Rear cover spring | Stainless steel | **18** | Spring bushing spring | Stainless steel |
| **07** | Manual override | POM | **19** | Manual override O-Ring | NBR |
| **08** | Position iron plate | Iron | **20** | Coil insert bushing O-ring | NBR |
| **09** | Spool packing | NBR | **21** | O-Ring | NBR |
| **10** | Spool packing | NBR | **22** | Rear screw | Alloy steel |
| **11** | Holder piston packing | NBR | **23** | Coil cover screw | Alloy steel |
| **12** | Rear cover O-ring | NBR | **24** | Single sub-plate | Aluminum alloy |

Note: The main body has been treated with painting.

### Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing | Manual rod O-Ring | Coil insert bushing O-ring |
|---|---|---|---|---|
| Model / Quantity | 1 | 1 | 1 | 1 |
| **SMUB 5000** | MYA-10 | MYA-7 | Ø2xØ0.6 | Ø4.6xØ1 |
| **SMUB 7000** | MYA-11 | MYA-7 | Ø2xØ0.6 | Ø4.6xØ1 |

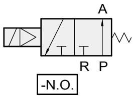
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

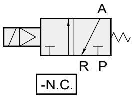
# SMUB 500 series 3/2 Base Mounted Solenoid Valve

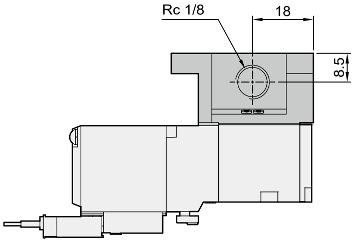
## Dimensions/ Base mount type

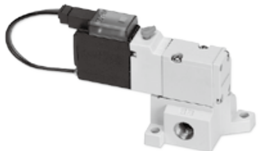
### SMUB 5101 – ☐

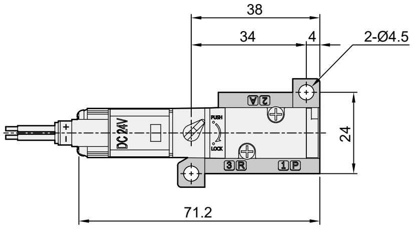
Single exhausting sub-plate
3 port 2-position single

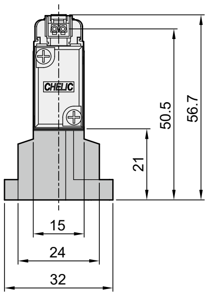


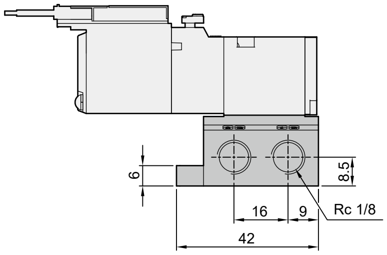


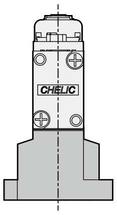





38
34
4
2-Ø4.5
24
71.2
DC24V
PUSH
LOCK
2A
3R
1P


CHELIC
50.5
56.7
21
15
24
32


6
8.5
16
9
Rc 1/8
42

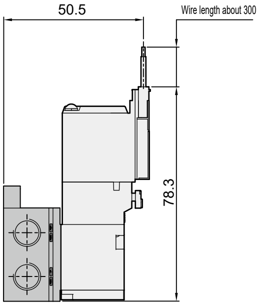


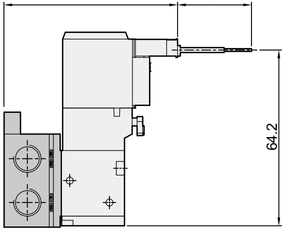
### L wire type - L

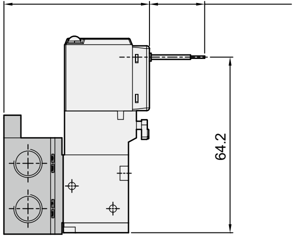
### T wire type - T

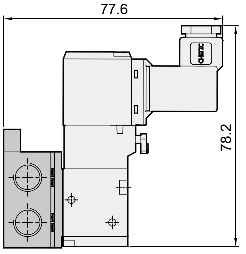
### W wire type - W

### K wire type - K


50.5
Wire length about 300
78.3


63.4
Wire length about 300
64.2


51.4
Wire length about 300
64.2

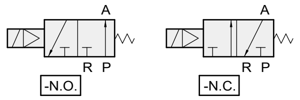


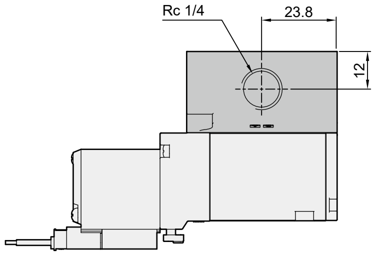
# SMUB 700 series 3/2 Base Mounted Solenoid Valve

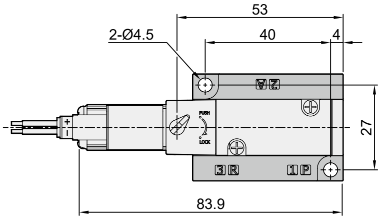
## Dimensions/ Base mount type

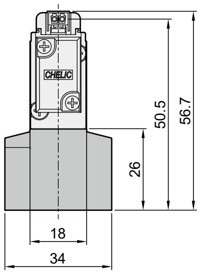
### SMUB 7102 −☐

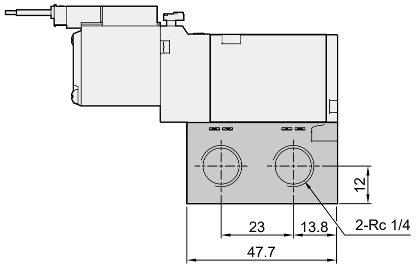
Single exhausting sub-plate
3 port 2-position single

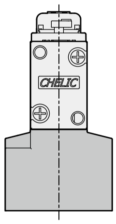

A
R P
-N.O.
A
R P
-N.C.



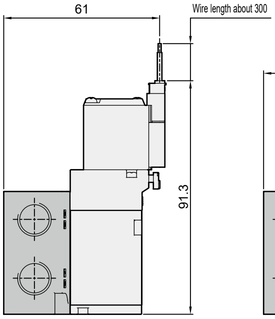

53
2-Ø4.5
40
4
27
83.9
PUSH
LOCK
3R
1P


CHELIC
50.5
56.7
26
18
34

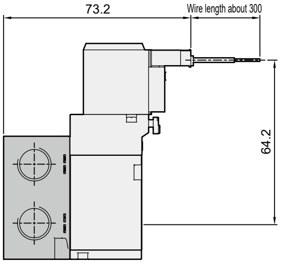

12
23
13.8
2-Rc 1/4
47.7



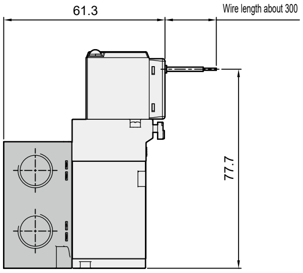
### L wire type - L


61
Wire length about 300
91.3

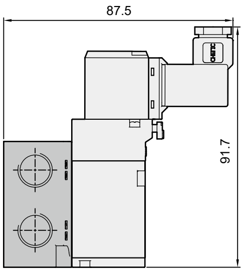
### T wire type - T


73.2
Wire length about 300
64.2

### W wire type - W


61.3
Wire length about 300
77.7

### K wire type - K

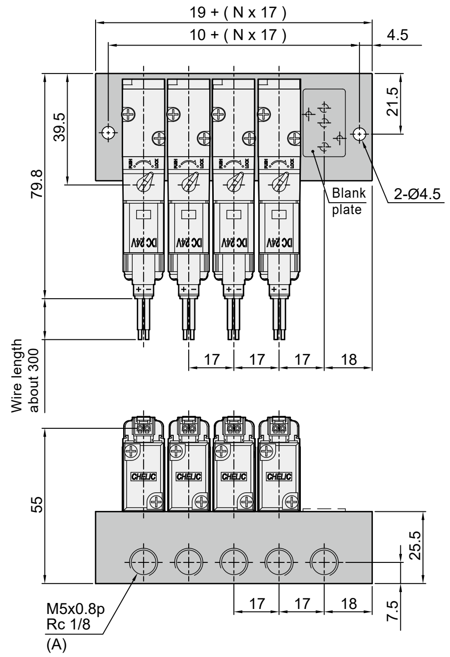


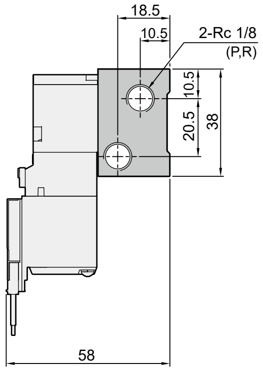
# SMUB series 3/2 Base Mounted Solenoid Valve

## Dimensions/ Manifold type

### SMUB 5000 series

Exhaust manifold dimension

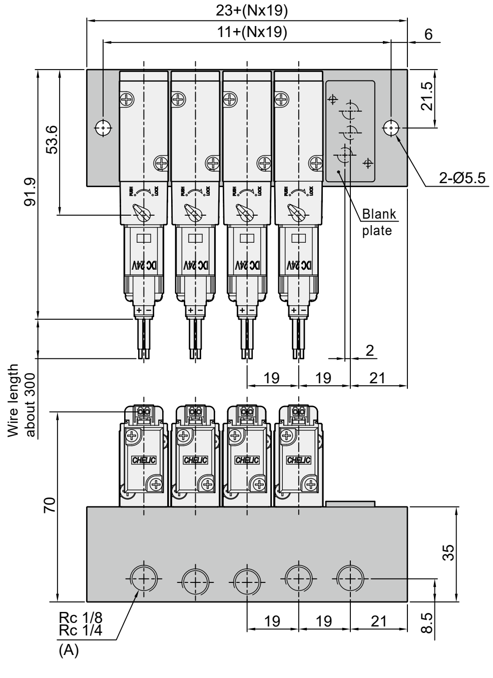

19 + ( N x 17 )
10 + ( N x 17 )
4.5
21.5
39.5
79.8
Blank plate
2-Ø4.5
DC24V
17
17
17
18
Wire length about 300
CHELIC
55
25.5
17
17
18
7.5
M5x0.8p
Rc 1/8
(A)

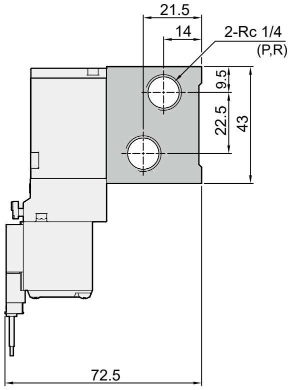

18.5
10.5
2-Rc 1/8
(P,R)
10.5
20.5
38
58

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### SMUB 7000 series

Exhaust manifold dimension


23+(Nx19)
11+(Nx19)
6
21.5
53.6
91.9
2-Ø5.5
Blank plate
DC24V
2
19
19
21
Wire length about 300
CHELIC
70
35
19
19
21
8.5
Rc 1/8
Rc 1/4
(A)


21.5
14
2-Rc 1/4
(P,R)
9.5
22.5
43
72.5

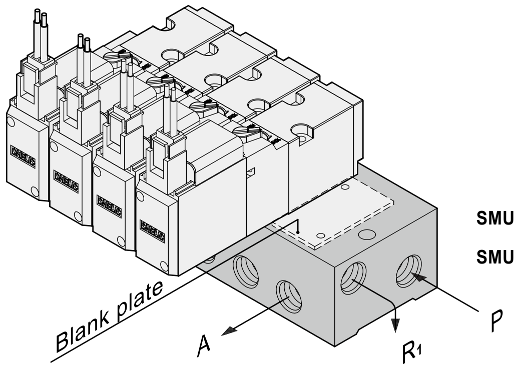
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

# SMUB series 3/2 Base Mounted Solenoid Valve

## Accessories/ Installation

### Manifold

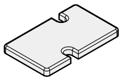
**SMUB - 5000 • 7000 series**

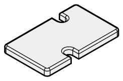


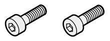
### Manifold accessory

**SMUB - 5000 • 7000 series**

※ The accessories of blank plate.

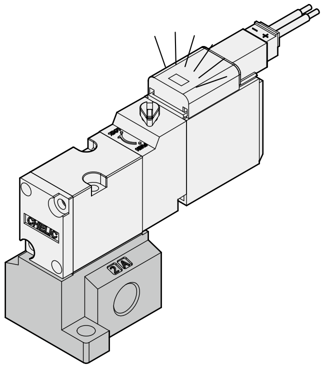






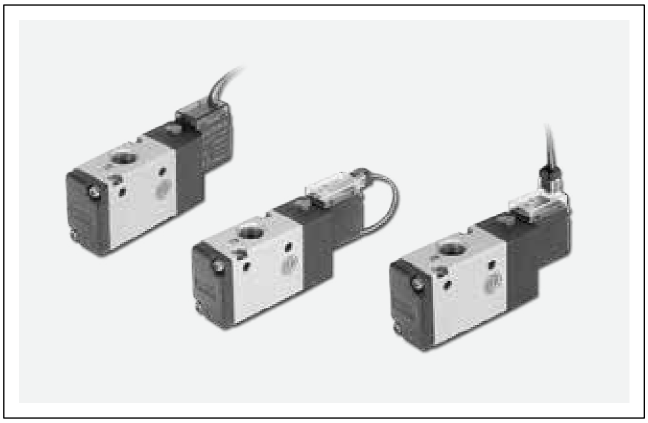
| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| **SMUB-5000 series** | MSMUB05041 | MSMUB05039 | M2.6X6.5L MSMUB05040 |
| **SMUB-7000 series** | MSMUB07041 | MSMUB07039 | M3X8L MSMUB07040 |

### With indicator light: all this series with indicator light and voltage protection circuit



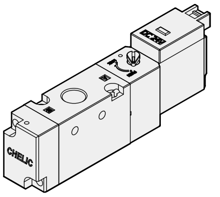
# MEMO

ISO
SRU
SRUB
SMU
SMUB
SKU
SKB
SKV
SV310
SWB



Provide CAD external dimension.

With indicator light and voltage protection circuit

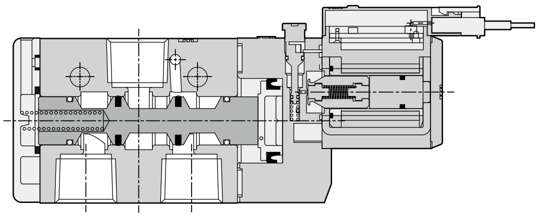


| | | | |
|---|---|---|---|
| **Solenoid valve single coil**<br>( 3 port 2-position ) | **SKU - 500 series** | **Rc 1/8** | **P.2-1.266** |
| | **SKU - 600 series** | **Rc 1/8, Rc 1/4** | **P.2-1.268** |
| | **SKU - 800 series** | **Rc 1/4, Rc 3/8** | **P.2-1.270** |

# SKU series 3/2 Body Ported Solenoid Valve

## Product features

### Internal structure



### Specification

| Item \ Model | SKU 500 | SKU 600 | SKU 800 |
|---|---|---|---|
| Fluid | Air | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | |
| Pilot type | Air operated | | |
| Number of positions | 3/2-position | | |
| Type of actuation | Normally closed/ Normally open | | |
| Effective orifice mm²(CV) | 12 (0.67) | 14 (0.78) | 25 (1.4) |
| Manual override | Push and lock | | |
| Port size | Rc1/8 | Rc1/8, 1/4 | Rc1/4, 3/8 |
| Lubrication | Lubrication free type | | |

### Code of order

SKU – 5 – 10 – M5 – NC – 24VDC – L – M 2

**Model**

SKU:
3 port 2-position
Solenoid valve

**Model number**

5: 500 series
6: 600 series
8: 800 series

**Coil q'ty**

10: Single

**Port size**

| Mark | Thread | Model |
|---|---|---|
| 1 | Rc1/8 | SKU500 |
| 1 | Rc1/8 | SKU600 |
| 2 | Rc1/4 | |
| 2 | Rc1/4 | SKU800 |
| 3 | Rc3/8 | |

For A port connection

**Valve type**

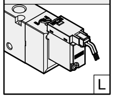
| Mark | Model |
|---|---|
| NC | Normally closed |
| NO | Normally open |

**Voltage**

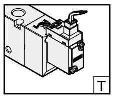
| Standard: |
|---|
| 12V DC/1.5W |
| 24V DC/1.5W |
| 110V DC/0.9W |
| 220V DC/1.8W |

**Electrical entry**

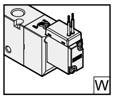
Standard:



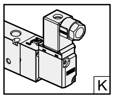
With wire length 300mm



With wire length 300mm

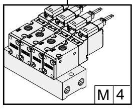


Grommet
With wire length 300mm



DIN Terminal

**Manifold**



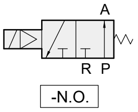
None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets

# SKU series 3/2 Body Ported Solenoid Valve

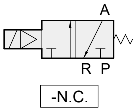
## Product features

### Internal structure

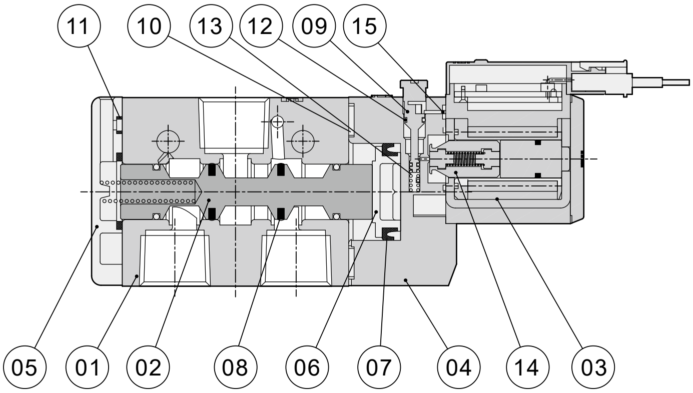
- 3 port 2-position single

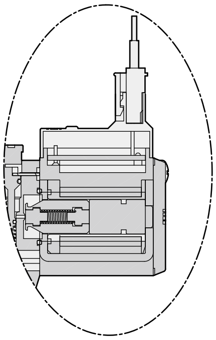


-N.O.



-N.C.





- T  T wire type

### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **09** | Manual override | POM |
| **02** | Shaft | Aluminum alloy | **10** | Holder O-ring | NBR |
| **03** | Coil | Cooper | **11** | Rear cover O-ring | NBR |
| **04** | Holder | POM | **12** | Manual override O-ring | NBR |
| **05** | Rear cover | POM | **13** | Manual override spring | Stainless steel |
| **06** | Holder piston | POM | **14** | Spring bushing | Stainless steel |
| **07** | Holder piston packing | NBR | **15** | Position iron plate | Iron |
| **08** | Spool packing | NBR | **16** | Single manifold | Aluminum alloy |

Note: The main body treated with painting.

### Packing and O-ring material list

| Item | Piston packing | Holder O-ring | Manual rod O-ring | Rear cover O-ring |
|---|---|---|---|---|
| Model / Quantity | 1 | 1 | 1 | 1 |
| **SKU 500** | — | — | Ø2.4x0.8, Ø0.5x0.6 | — |
| **SKU 600** | MYA-14 | Ø2xØ1.5 | Ø2.4x0.8, Ø0.5x0.6 | Ø17.5xØ1.5 |
| **SKU 800** | MYA-18 | Ø2xØ1.5 | Ø2.4x0.8, Ø0.5x0.6 | Ø19.5xØ1.5 |

Note: Piston packing and rod packing all adopt import parts (MITSUBISH, SAKAGAHI, and same grade)

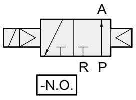
# SKU 500 series 3/2 Body Ported Solenoid Valve

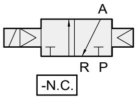
## Dimensions

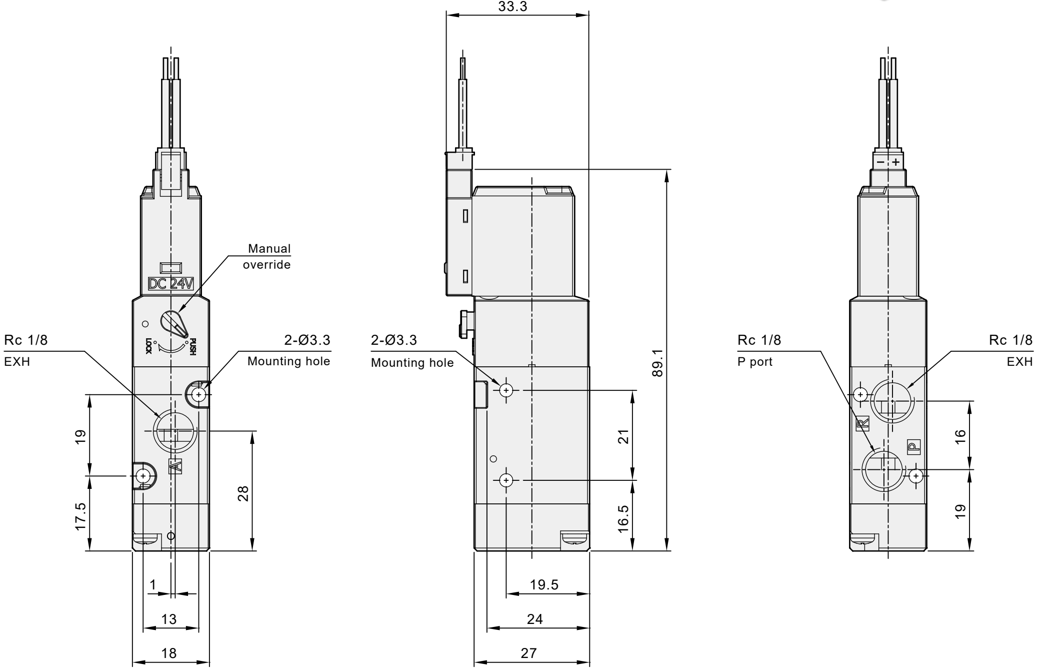
CHELIC

### SKU-5101 - ☐ series

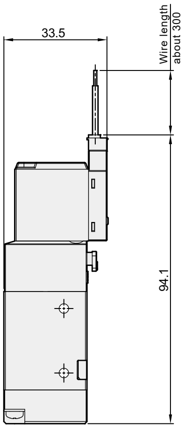
3 port 2-position single



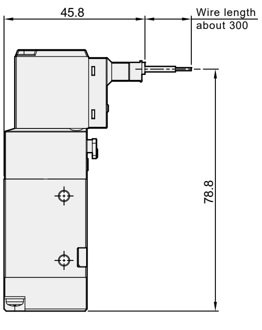



33.3
Manual override
DC 24V
PUSH
LOCK
Rc 1/8
EXH
2-Ø3.3
Mounting hole
2-Ø3.3
Mounting hole
19
17.5
28
1
13
18
89.1
21
16.5
19.5
24
27
Rc 1/8
P port
Rc 1/8
EXH
16
19
R
P
− +

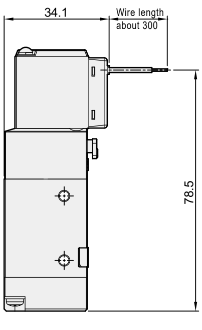
### L wire type - L


33.5
Wire length about 300
94.1

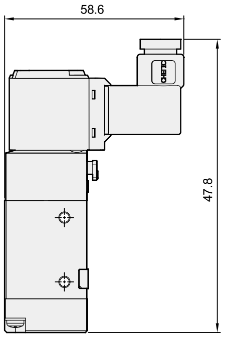
### T wire type - T


45.8
Wire length about 300
78.8

### W wire type - W


34.1
Wire length about 300
78.5

### K wire type - K

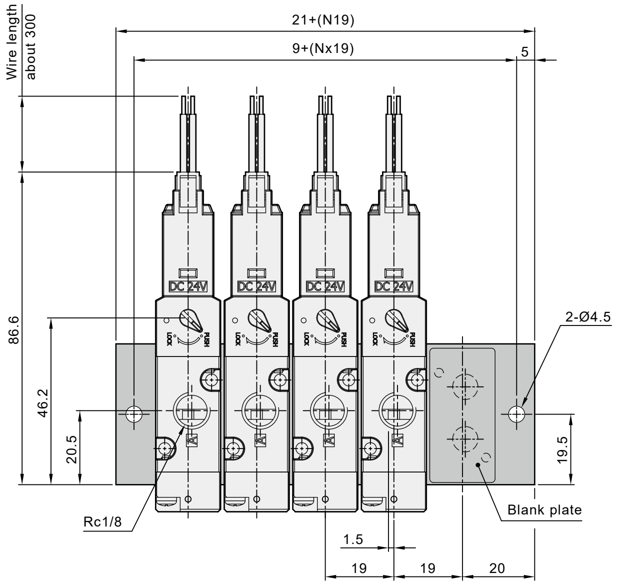


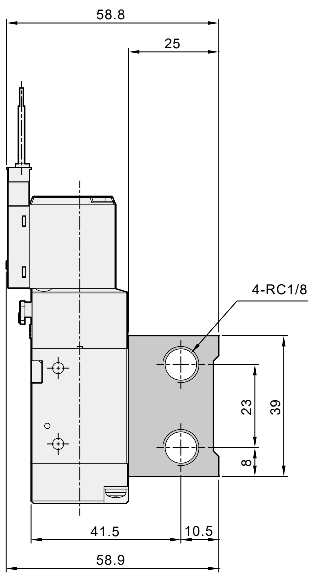
# SKU 500 series 3/2 Body Ported Solenoid Valve

## Dimensions

### SKU 500 series

Manifold dimension


Wire length
about 300
21+(N19)
9+(Nx19)
5
DC 24V
DC 24V
DC 24V
DC 24V
LOCK
PUSH
2-Ø4.5
86.6
46.2
20.5
19.5
Rc1/8
Blank plate
1.5
19
19
20

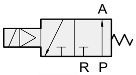

58.8
25
4-RC1/8
23
39
8
41.5
10.5
58.9

# SKU 600 series 3/2 Body Ported Solenoid Valve

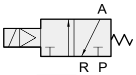
## Dimensions

### SKU-6101 - ☐ series
### SKU-6102 - ☐ series

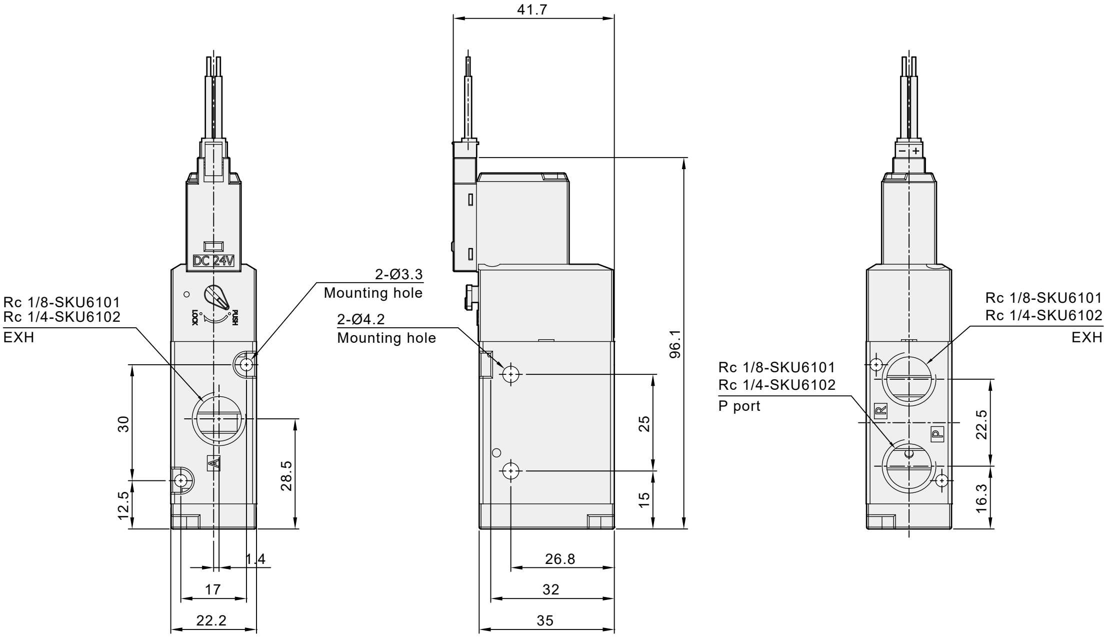
3 port 2-position single



-N.O.

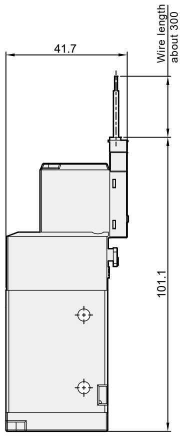


-N.C.

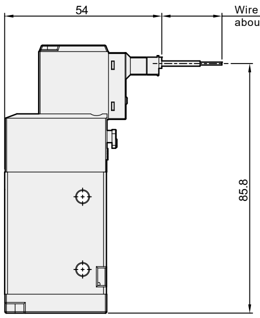

41.7
DC 24V
PUSH
LOCK
2-Ø3.3
Mounting hole
2-Ø4.2
Mounting hole
Rc 1/8-SKU6101
Rc 1/4-SKU6102
EXH
30
12.5
28.5
1.4
17
22.2
96.1
25
15
26.8
32
35
Rc 1/8-SKU6101
Rc 1/4-SKU6102
EXH
Rc 1/8-SKU6101
Rc 1/4-SKU6102
P port
22.5
16.3
R
P

---

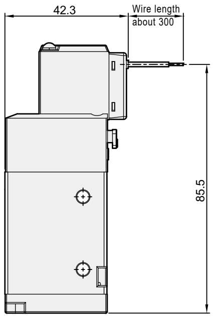
### L wire type - L


41.7
Wire length
about 300
101.1

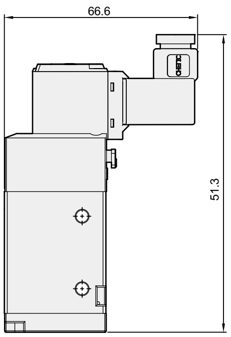
### T wire type - T


54
Wire length
about 300
85.8

### W wire type - W

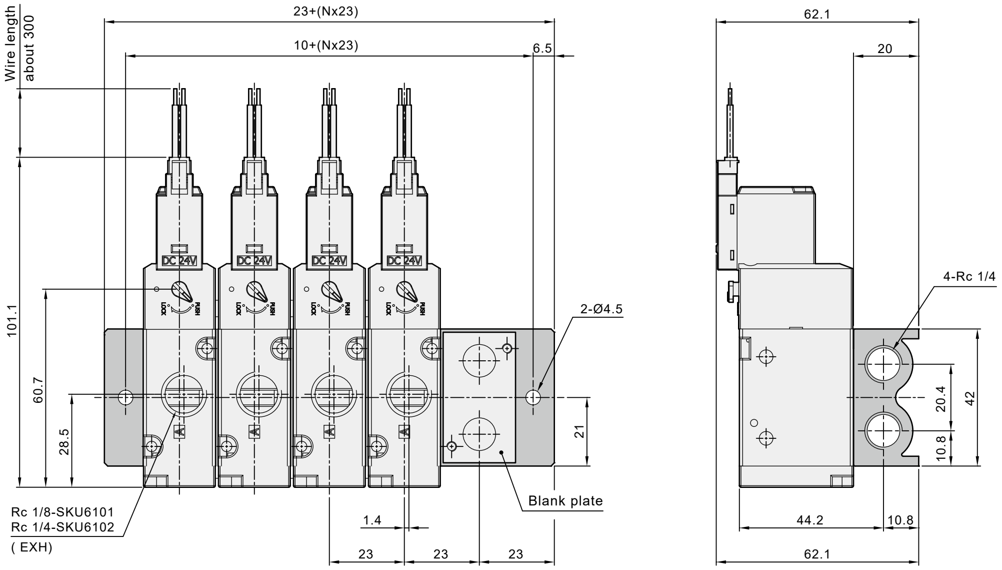

42.3
Wire length
about 300
85.5

### K wire type - K


66.6
51.3
CHELIC

### SKU 600 series

Manifold dimension



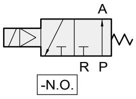
Wire length about 300
23+(Nx23)
10+(Nx23)
6.5
101.1
60.7
28.5
DC 24V
PUSH
LOCK
2-Ø4.5
21
Rc 1/8-SKU6101
Rc 1/4-SKU6102
( EXH)
1.4
23
23
23
Blank plate
62.1
20
4-Rc 1/4
20.4
42
10.8
44.2
10.8
62.1

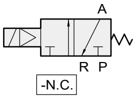
# SKU 800 series 3/2 Body Ported Solenoid Valve

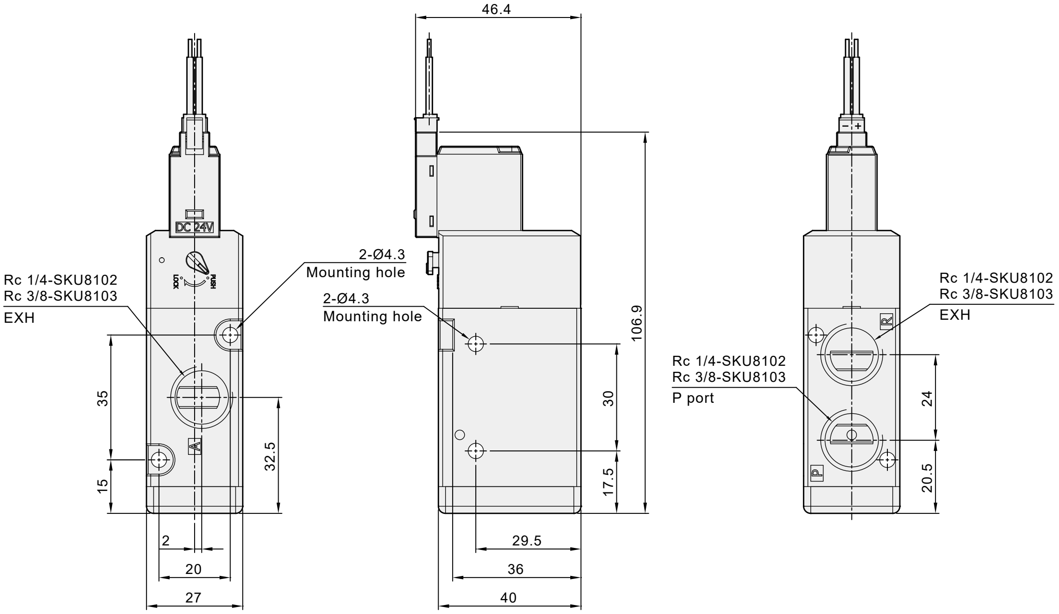
## Dimensions

### SKU-8102 - ☐ series
### SKU-8103 - ☐ series

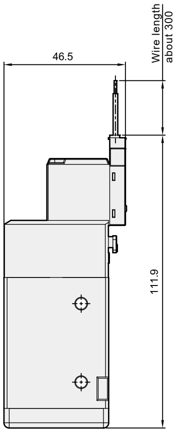
3 port 2-position single



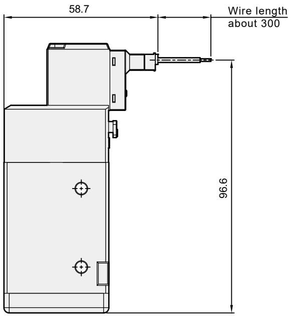



46.4
DC 24V
LOCK
PUSH
Rc 1/4-SKU8102
Rc 3/8-SKU8103
EXH
2-Ø4.3
Mounting hole
2-Ø4.3
Mounting hole
A
35
15
32.5
2
20
27
106.9
30
17.5
29.5
36
40
Rc 1/4-SKU8102
Rc 3/8-SKU8103
EXH
Rc 1/4-SKU8102
Rc 3/8-SKU8103
P port
R
P
24
20.5

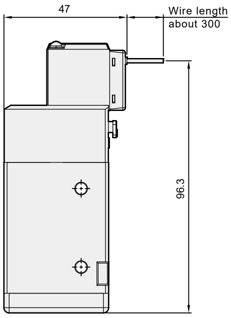
### L wire type - L


46.5
Wire length
about 300
111.9

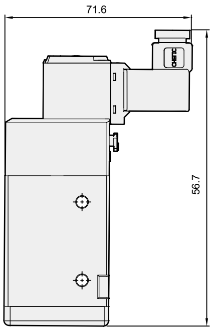
### T wire type - T


58.7
Wire length
about 300
96.6

### W wire type - W


47
Wire length
about 300
96.3

### K wire type - K

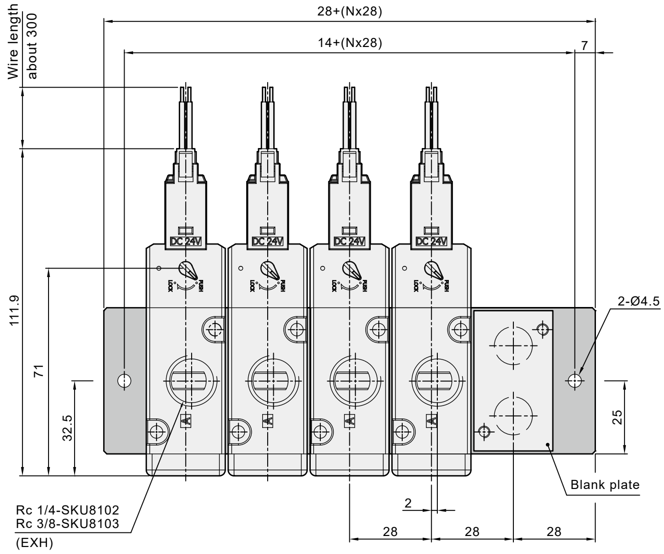


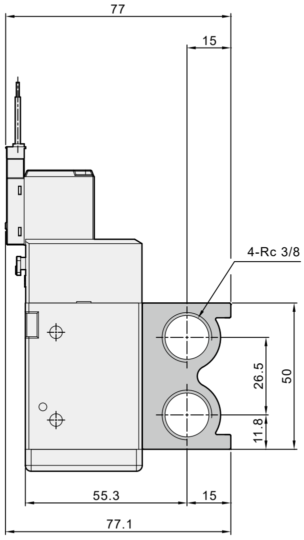
# SKU 800 series 3/2 Body Ported Solenoid Valve

## Dimensions

### SKU 800 series

Manifold dimension


Wire length
about 300
28+(Nx28)
14+(Nx28)
7
DC 24V
LOCK
PUSH
111.9
71
32.5
2-Ø4.5
25
Blank plate
2
28
28
28
Rc 1/4-SKU8102
Rc 3/8-SKU8103
(EXH)

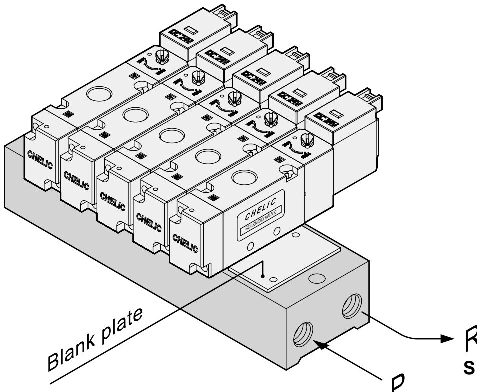

77
15
4-Rc 3/8
26.5
50
11.8
55.3
15
77.1

# SKU series 3/2 Body Ported Solenoid Valve

## Accessories/ Installation

### Manifold

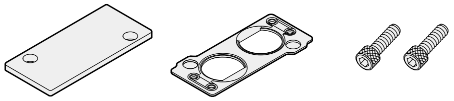
**SKU-500 • 600 • 800 series**


Blank plate
R
P

### Manifold accessory

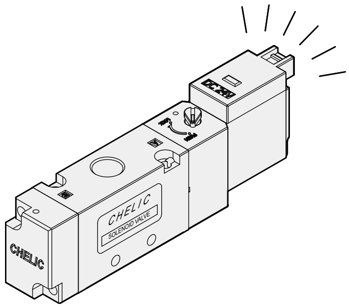
**SKU-500 • 600 • 800 series**

※ The accessories of blank plate.



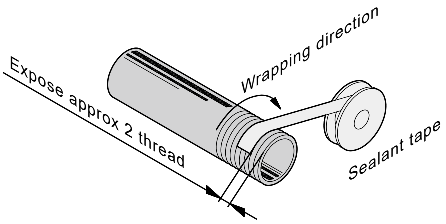
| | Blank plate | Rubber lining | Mounting screw |
|---|---|---|---|
| **SKU-500 series** | MSKU-5056 | MSKU-5051 | M3×8L |
| **SKU-600 series** | MSKU-6056 | MSKU-6051 | M3×10L |
| **SKU-800 series** | MSKU-8056 | MSKU-8051 | M4×9L |

### With indicator light



### Handling details and precaution

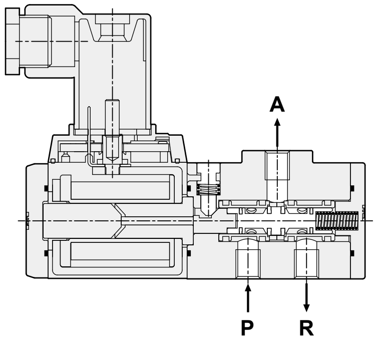
1. Please keep the tube fitting clean.
2. Please wrap the thread by tape seal and leave about 2 pitches Unwrapped at the end to as avoid clogging in the air line.


Wrapping direction
Expose approx 2 thread
Sealant tape

# SKB series 3/2 Direct Operated Solenoid Valve

## Product features

### Internal structure



※ Applicable to the direct operation with vacuum and low pressure.

### Specification

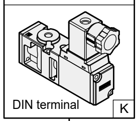
| Item / Model | SKB 300 |
|---|---|
| Fluid | Air |
| Pressure range kgf/cm²(kPa) | 0 ~ 7.0 ( 0 ~ 700 ) |
| Ambient and fluid temperature ℃ | 5 ~ 60 |
| Pilot type | Direct operated |
| Number of positions | 3/2-position |
| Type of actuation | Normally closed |
| Effective orifice mm²(CV) | 27(0.15) |
| Manual override | Press |
| Port size | M5, Rc 1/8 |
| Lubrication | Lubrication free type |

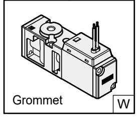
### Code of order

SKB 3 10 – M5 (Pressure) – DC24 – K – M 2

| Code | Item | Options |
|---|---|---|
| SKB | SKB series Solenoid valve | |
| 3 | Model | 3: 300 series |
| 10 | Coil q'ty | 10: Single |
| M5 | Port size | M5: M5x0.8P<br>1: Rc 1/8 |
| | Pressure | None: positive pressure<br>V: Vaccum |
| DC24 | Voltage | Standard:<br>24 VDC / 5.9W |
| K | Electrical entry | Standard: DIN terminal (K)<br>Grommet (W) (Wire length about 300mm) |
| M 2 | Manifold | None: Without manifold<br>M2 = 2 sets<br>M3 = 3 sets<br>⋮<br>M15 = 15 sets |
| | Vertical mounting bracket | C1<br>Single unit:<br>Vertical mounting for single unit only |

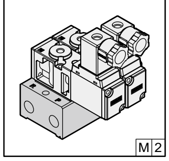
Electrical entry — Standard:



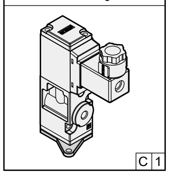


( Wire length about 300mm )

Manifold:



Vertical mounting bracket



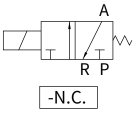
Single unit:
Vertical mounting for single unit only

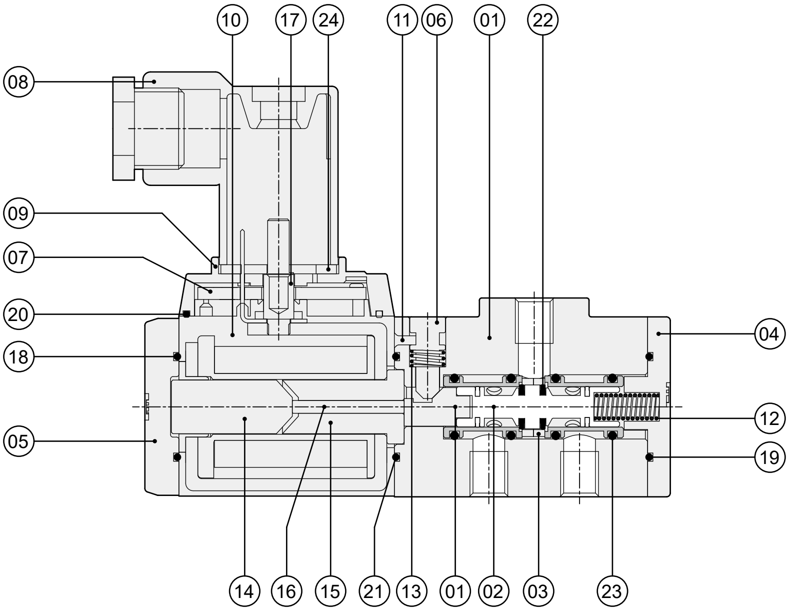
# SKB series 3/2 Direct Operated Solenoid Valve

## Product features

### Internal structure

- 3 port 2-position single





### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 13 | Manual override spring | Stainless steel |
| 02 | Inner shaft | Aluminum alloy | 14 | Spring bushing | Stainless steel |
| 03 | Outer shaft | Aluminum alloy | 15 | Coil insert bushing | Stainless steel |
| 04 | Rear cover | Polyester | 16 | Acting rod | Stainless steel |
| 05 | Coil cover | Polyester | 17 | Fixed cooper nail | Cooper |
| 06 | Manual override | Cooper | 18 | Coil cover O-ring | NBR |
| 07 | PCB board | — | 19 | Rear cover O-ring | NBR |
| 08 | DIN box | — | 20 | PCB shell gasket | NBR |
| 09 | PCB shell | Polycarbonate | 21 | O-ring | NBR |
| 10 | Coil | Polyester | 22 | Inner shaft packing | NBR |
| 11 | Position iron plate | Stainless steel | 23 | Outer shaft O-ring | NBR |
| 12 | Rear cover spring | Stainless steel | 24 | Connector gasket | NBR |

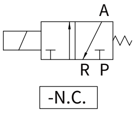
# SKB series 3/2 Direct Operated Solenoid Valve

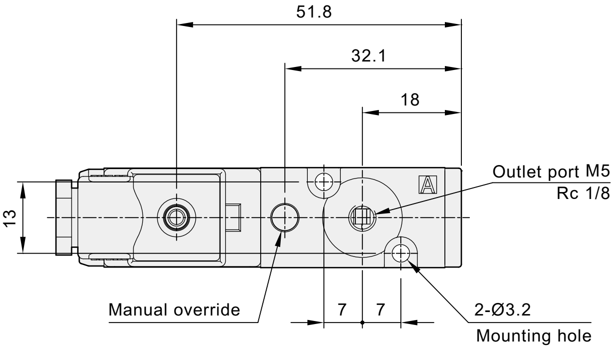
## Dimensions/ Single unit type

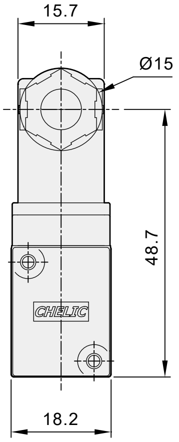
CHELIC.

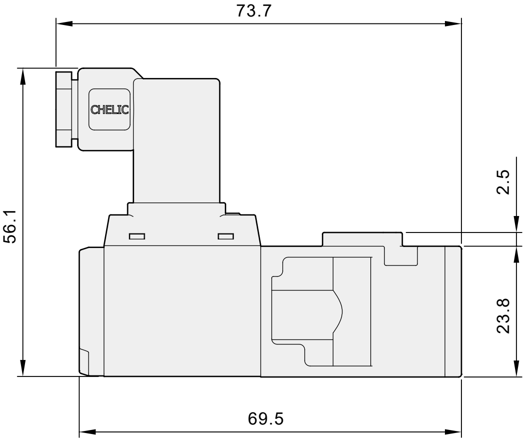
### SKB 310M5(01)

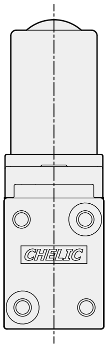
- 3 port 2-position single

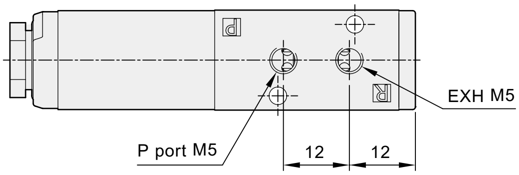



51.8
32.1
18
13
A
Outlet port M5
Rc 1/8
Manual override
7
7
2-Ø3.2
Mounting hole


15.7
Ø15
CHELIC
48.7
18.2


73.7
CHELIC
56.1
2.5
23.8
69.5

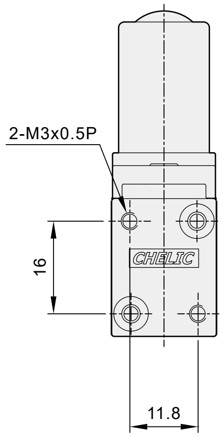



P
R
EXH M5
P port M5
12
12

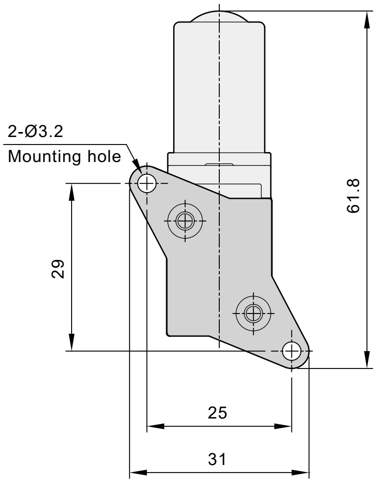
# SKB series 3/2 Direct Operated Solenoid Valve

## Dimensions/ Single unit type

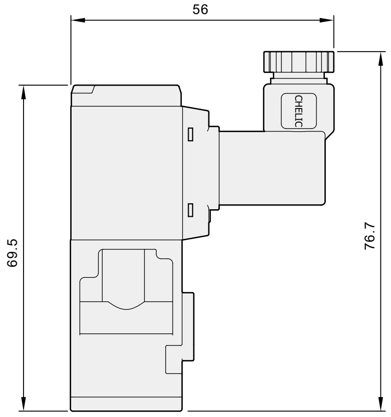
### Standard -


2-M3x0.5P
16
CHELIC
11.8

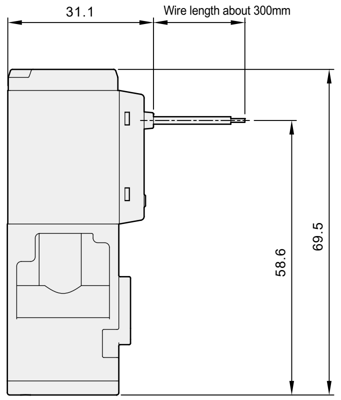
### Vertical fixing bracket type - C1


2-Ø3.2
Mounting hole
29
61.8
25
31

### Standard - K


56
69.5
76.7
CHELIC

### Grommet - W

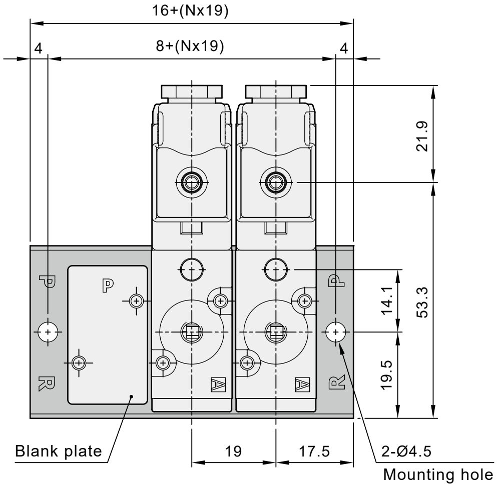

31.1
Wire length about 300mm
58.6
69.5

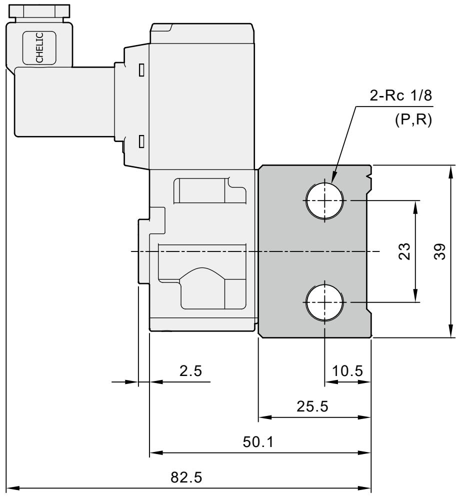
# SKB series 3/2 Direct Operated Solenoid Valve

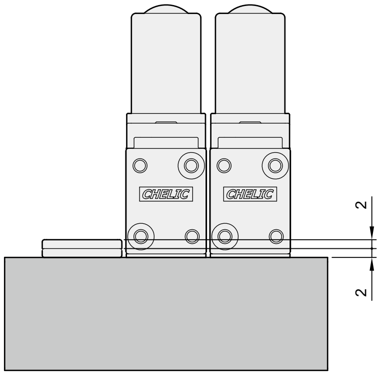
## Dimensions/ Manifold type

### SKB 300 series

Manifold dimension


16+(Nx19)
4
8+(Nx19)
4
21.9
53.3
14.1
19.5
P
R
P
R
P
Blank plate
19
17.5
2-Ø4.5
Mounting hole


CHELIC
2-Rc 1/8
(P,R)
23
39
2.5
10.5
25.5
50.1
82.5


CHELIC
CHELIC
2
2

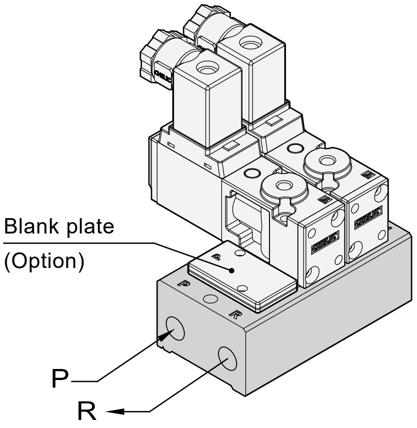
● Note: blank plate is reserved for solenoid valve. Leakproof rubber gasket is attached.

# SKB series 3/2 Direct Operated Solenoid Valve

## Accessories/ Installation

### Manifold

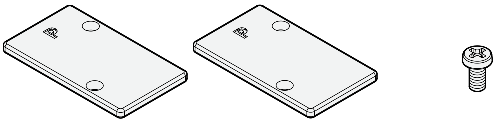
**SKB - 300 series**



### Manifold accessory

**SKB - 300 series**

※ The accessories of blank plate.

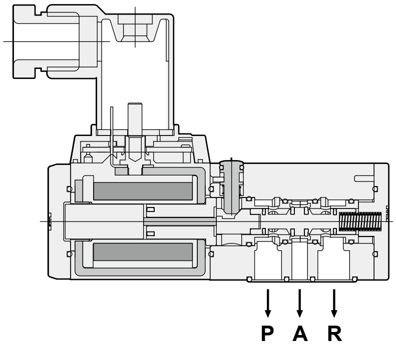


| | Blank plate | Gasket | Mounting screw |
|---|---|---|---|
| **SKB-300 series** | 3F50200273 | 20210233 | M3x8L：20320049 |

# SKB-U series 3/2 Direct Operated Manifold Solenoid Valve

## Product features

### Internal structure



※ Applicable to the direct operation with vacuum and low pressure.

### Specification

| Item \ Model | SKB 300U |
|---|---|
| Fluid | Air |
| Pressure range kgf/cm²(kPa) | 0 ~ 7.0 ( 0 ~ 700 ) |
| Ambient and fluid temperature ℃ | 5 ~ 60 |
| Pilot type | Direct operated |
| Number of positions | 3/2-position |
| Type of actuation | Normally closed |
| Effective orifice mm²(CV) | 4.14(0.23) |
| Manual override | Press: No Lock |
| Port size | Rc 1/8 |
| Lubrication | Lubrication free type |

### Code of order

**SKB** – **3** **10** **U** – **V** – **DC24** – **W** – **M 3**

SKB series
Solenoid valve

**Model**

3: 300 series

**Manifold type**

| Mark | Thread | Note |
|---|---|---|
| 00 | - | Single |
| 10 | Rc 1/8 | Manifold |

**Valve type**

| Mark | Type |
|---|---|
| U | Base mount type |

**Pressure**

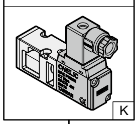
| None | positive pressure |
|---|---|
| V | Vaccum |

**Voltage**

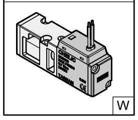
Standard :
24V DC/5.9W

**Electrical entry**

DIN terminal :

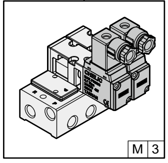


Grommet :



( Wire length about 300mm )

**Manifold**



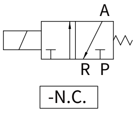
None :
Without manifold
M1 = 1 sets
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M15 = 15 sets

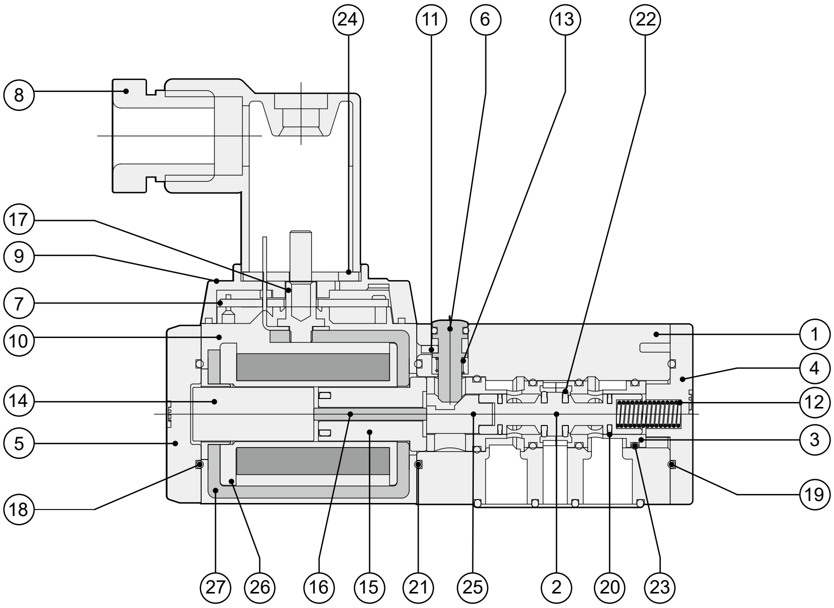
# SKB-U series 3/2 Direct Operated Manifold Solenoid Valve

## Product features

### Internal structure

- 3 port 2-position single





### Components and Material list

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **15** | Coil insert bushing | Stainless steel |
| **02** | Inner shaft | Aluminum alloy | **16** | Acting rod | Stainless steel |
| **03** | Outer shaft | Aluminum alloy | **17** | Fixed cooper nail | Cooper |
| **04** | Rear cover | Polyester | **18** | Coil cover O-ring | NBR |
| **05** | Coil cover | Polyester | **19** | Rear cover O-ring | NBR |
| **06** | Manual override | Cooper | **20** | Inner shaft packing | NBR |
| **07** | PCB board | — | **21** | O-ring | NBR |
| **08** | DIN box | — | **22** | PCB shell gasket | NBR |
| **09** | PCB shell | Polycarbonate | **23** | Inner shaft packing | NBR |
| **10** | Coil | Polyester | **24** | Connector gasket | NBR |
| **11** | Position iron plate | Stainless steel | **25** | Drive shaft | POM |
| **12** | Rear cover spring | Stainless steel | **26** | Bobbin | Polyester |
| **13** | Manual override spring | Stainless steel | **27** | U plate | Iron |
| **14** | Spring bushing | Stainless steel | | | |

# SKB-U series 3/2 Direct Operated Manifold Solenoid Valve

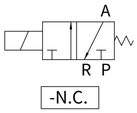
## Dimensions/ Single unit type

CHELIC

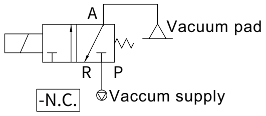
### SKB 310U - M1

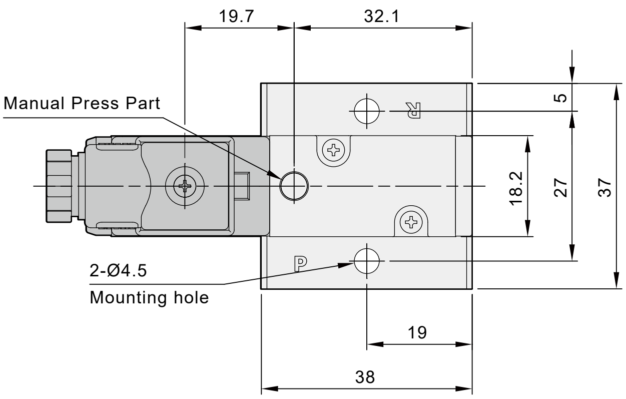
3 port 2-position single

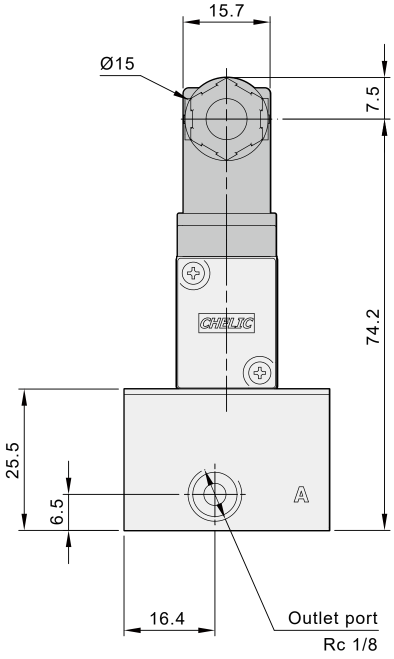
- The symbol of under positive condition

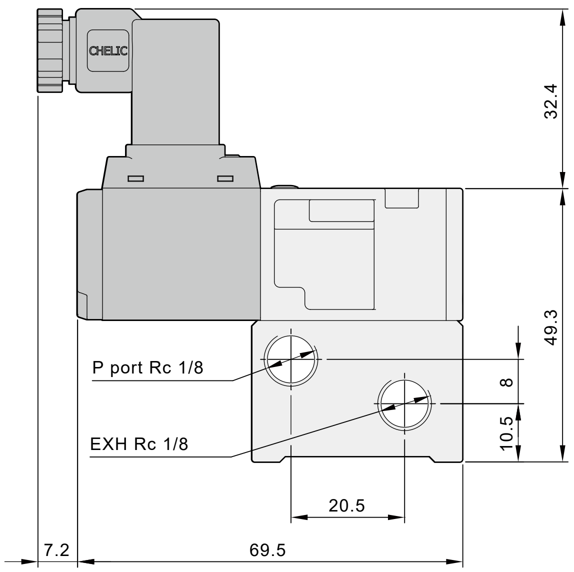


- The symbol of under negative condition


A
Vacuum pad
R
P
-N.C.
Vaccum supply


19.7
32.1
Manual Press Part
R
5
18.2
27
37
2-Ø4.5
Mounting hole
P
19
38


15.7
Ø15
7.5
CHELIC
74.2
25.5
6.5
A
16.4
Outlet port
Rc 1/8

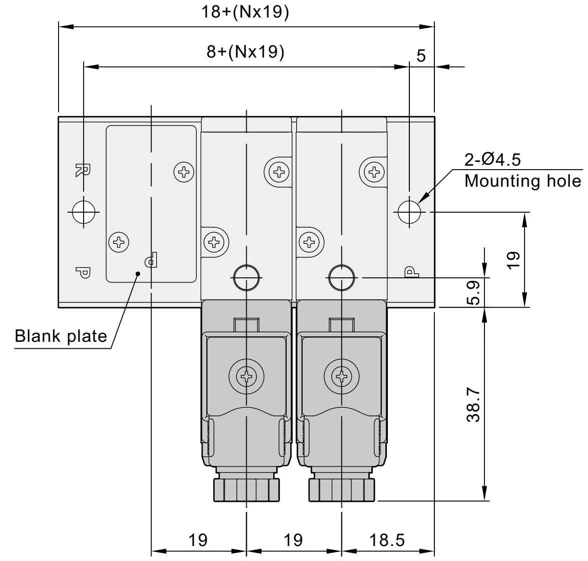

CHELIC
32.4
49.3
P port Rc 1/8
EXH Rc 1/8
8
10.5
20.5
7.2
69.5

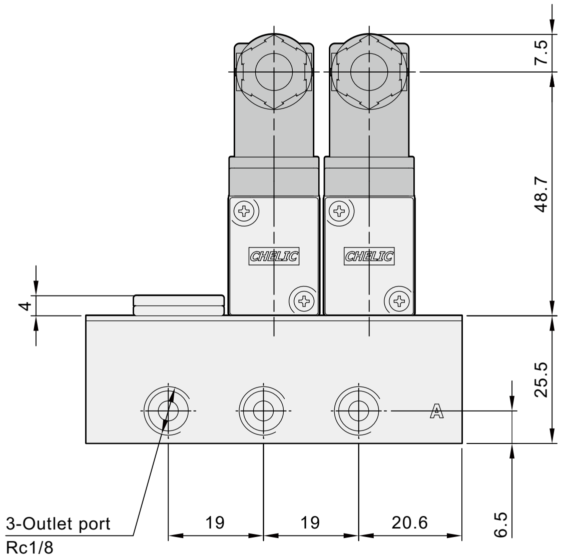
# SKB-U series 3/2 Direct Operated Manifold Solenoid Valve

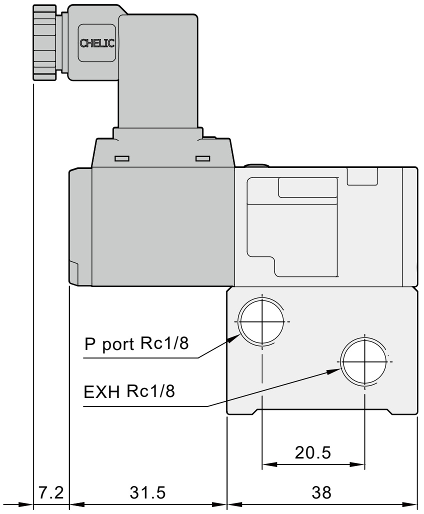
## Dimensions/ Manifold type

### SKB 300U series

Manifold dimension


18+(Nx19)
8+(Nx19)
5
2-Ø4.5
Mounting hole
R
P
P
P
19
5.9
38.7
Blank plate
19
19
18.5


7.5
48.7
CHELIC
CHELIC
4
25.5
A
6.5
3-Outlet port
Rc1/8
19
19
20.6

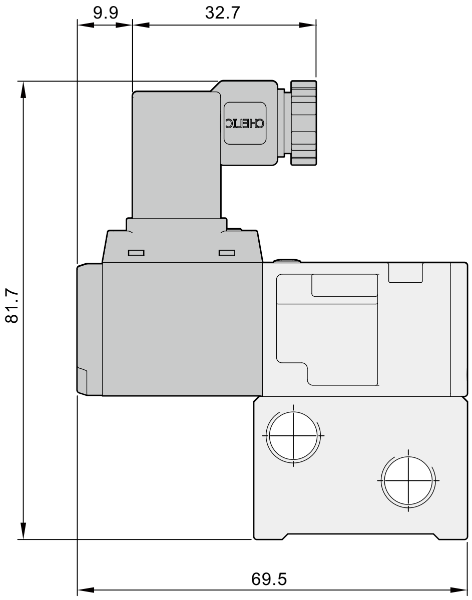

CHELIC
P port Rc1/8
EXH Rc1/8
20.5
7.2
31.5
38

● Note: blank plate is reserved for solenoid valve. Leakproof rubber gasket is attached.

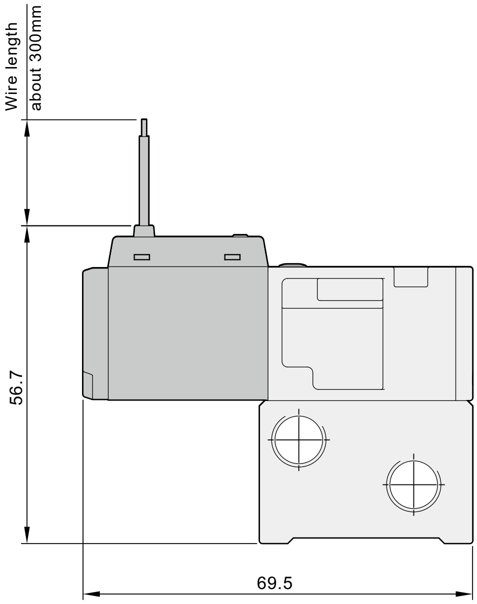
# SKB-U series 3/2 Direct Operated Manifold Solenoid Valve

## Dimensions/ Electrical entry

**Standard - K**


9.9
32.7
CHELIC
81.7
69.5

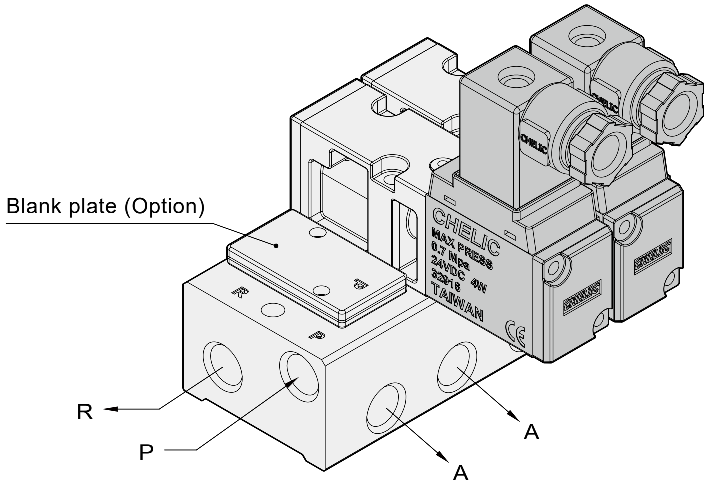
**Grommet - W**


Wire length about 300mm
56.7
69.5

● Note: coil can be turned 360°

## Manifold

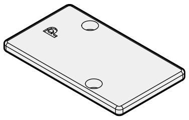
**SKB - 300U series**


Blank plate (Option)
R
P
A
A
CHELIC
MAX PRESS
0.7 Mpa
24VDC 4W
32916
TAIWAN

## Manifold accessory

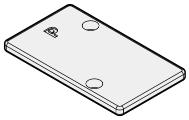
**SKB - 300U series**

※ The accessories of blank plate.



**Blank plate**

3F50200273



**Gasket**

20210233

**Mounting screw**

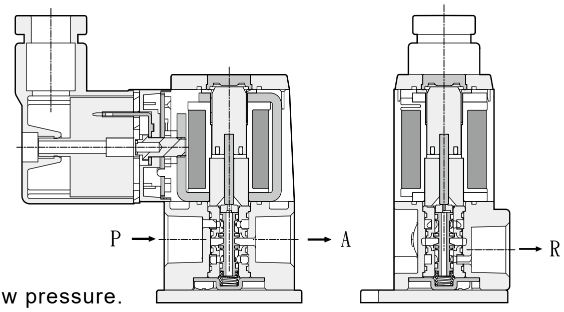
M3x8L：20320049

# SKV series 3/2 Single Unit Solenoid Valve

## Product features

※ Applicable to the direct operation with vacuum and low pressure.

### Internal structure



### Specification

| Item / Model | | SKV 507 |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm²(kPa) | 0~7.0 (0~700) |
| Ambient and fluid temperature | ℃ | 5~60 |
| Pilot type | | Direct operated |
| Number of positions | | 3/2-position |
| Type of actuation | | Normally closed |
| Effective orifice | mm²(CV) | 3.8(0.21) |
| Manual override | | Press: No Lock |
| Port size | | Rc 1/8, Rc1/4 |
| Lubrication | | Lubrication free type |

### Code of order

**SKV** – **507** – **01** – – **DC24** – **K** – **C1**

SKV series
Solenoid valve

Model
507 series

Port size
01：Rc 1/8
02：Rc 1/4

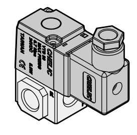
Pressure

| | |
|---|---|
| None | positive pressure |
| V | Vaccum |

Voltage
Standard:
24 VDC/5.5W

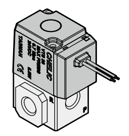
Electrical entry

DIN terminal：



K

Grommet ：

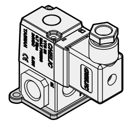


W

( Wire length about 300mm )

Bracket type

Vertical mounting bracket



C 1

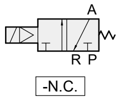
※ None: no bracket

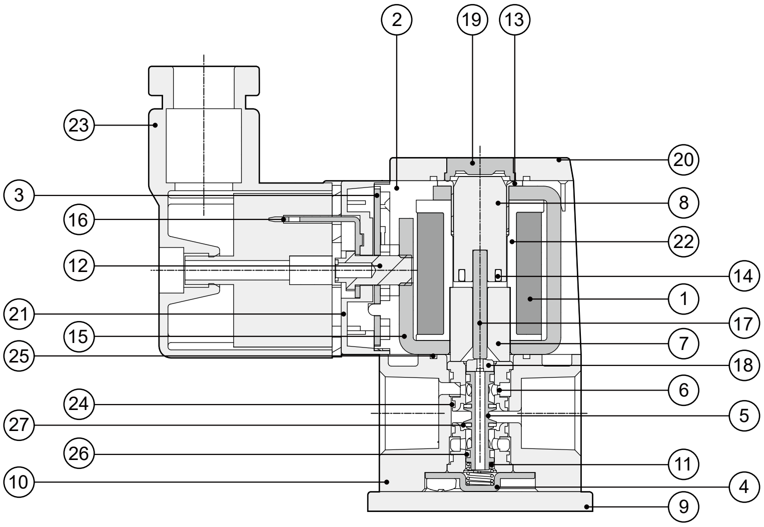
# SKV series 3/2 Single Unit Solenoid Valve

## Product features

### Internal structure

- 3 port 2-position single





### Components and Material list

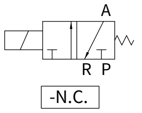
| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| **01** | Wire | Cooper | **15** | U plate | Iron |
| **02** | Coil | Polyester | **16** | DIN pin | Iron |
| **03** | PCB board | - | **17** | Spring bushing | Stainless steel |
| **04** | Rear cover | Iron | **18** | Drive shaft | POM |
| **05** | Inner shaft | Aluminum alloy | **19** | Push bottom | Rubber |
| **06** | Outer shaft | Aluminum alloy | **20** | Coil cover | Polyester |
| **07** | Coil insert bushing | Stainless steel | **21** | PCB LED cover | Polycarbonate |
| **08** | Spring bushing | Stainless steel | **22** | Bobbin | Polyester |
| **09** | Body plate | Iron | **23** | DIN box | - |
| **10** | Body | Aluminum alloy | **24** | Outer shaft O-ring | NBR |
| **11** | Shaft spring | Stainless steel | **25** | O-ring | NBR |
| **12** | Cooper pin | Cooper | **26** | Inner shaft O-ring | NBR |
| **13** | Bush | Cooper | **27** | Inner shaft packing | NBR |
| **14** | Cooper wire | Cooper | | | |

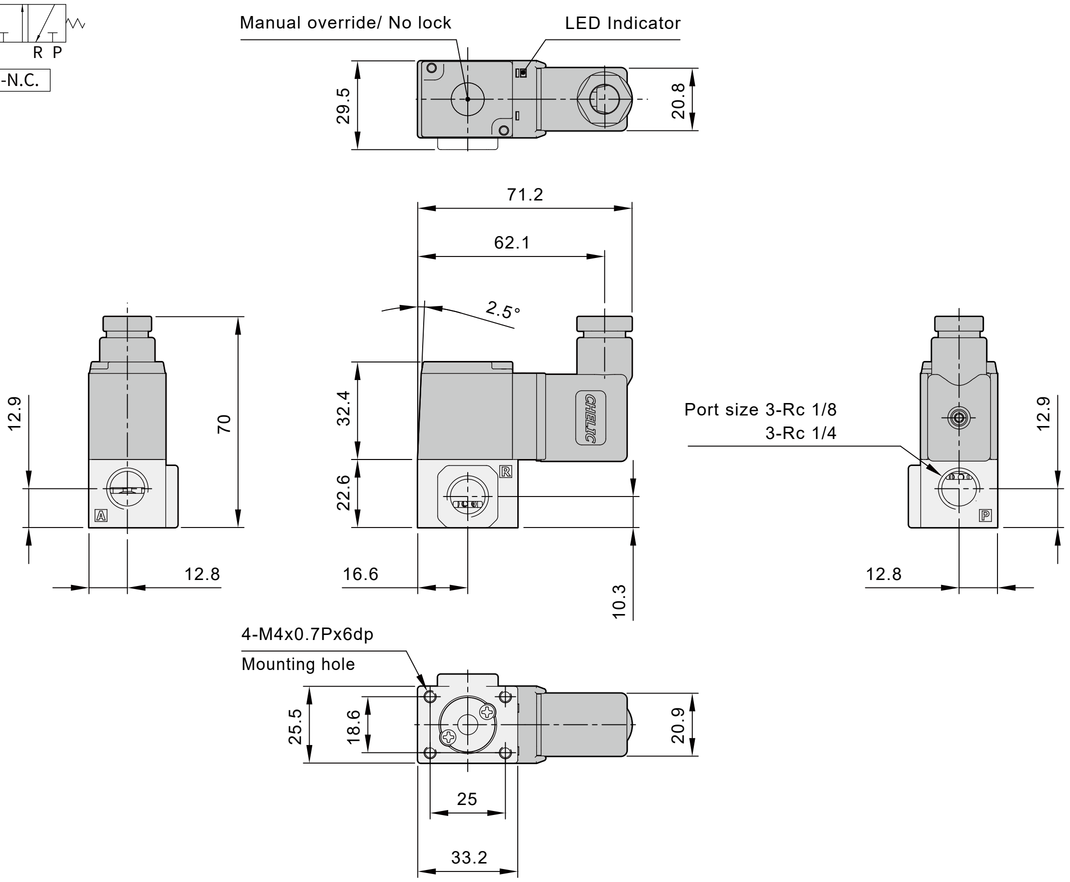
# SKV series 3/2 Single Unit Solenoid Valve

## Dimensions/ Single unit type

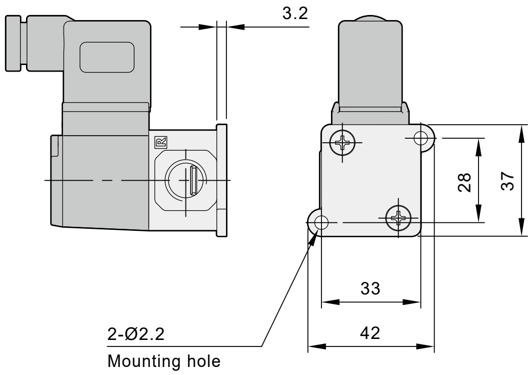
### SKV 507(01)

3 port 2-position single

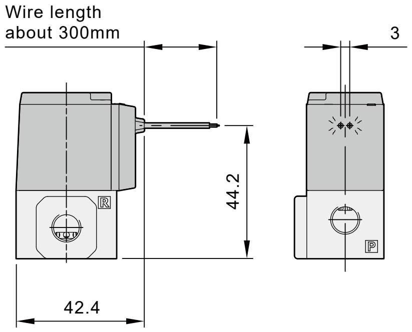



Manual override/ No lock
LED Indicator
29.5
20.8
71.2
62.1
2.5°
12.9
70
32.4
22.6
12.9
Port size 3-Rc 1/8
3-Rc 1/4
12.8
16.6
10.3
12.8
4-M4x0.7Px6dp
Mounting hole
25.5
18.6
20.9
25
33.2

### Vertical fixing bracket type - C1

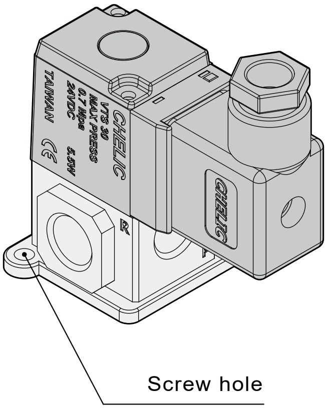

3.2
28
37
33
42
2-Ø2.2
Mounting hole

### Grommet - W


Wire length
about 300mm
3
44.2
42.4

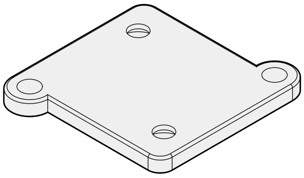
## Vertical mounting (C1)

**SKV 507 series**


CHELIC
VTS 30
MAX PRESS
0.7 Mpa
24VDC 5.5W
TAIWAN
CE
CHELIC
Screw hole

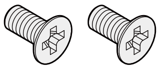
## Manifold accessory

**SKV 507 series**



**Mounting plate**

3F50200286



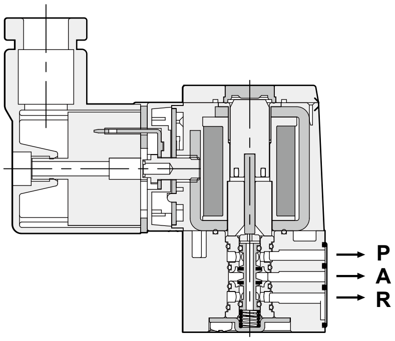
**Mounting screw**

M4x5L：20320075

# SKV-U series 3/2 Base Mounted Manifold Solenoid Valve

※ Applicable to the direct operation with vacuum and low pressure.

## Internal structure



## Specification

| Item / Model | SKV 507U |
|---|---|
| Fluid | Air |
| Pressure range kgf/cm²(kPa) | 0 ~ 7.0 ( 0 ~ 700 ) |
| Ambient and fluid temperature ℃ | 5 ~ 60 |
| Pilot type | Direct operated |
| Number of positions | 3/2-position |
| Type of actuation | Normally closed |
| Effective orifice mm²(CV) | 3.06(0.17) |
| Manual override | Press: No Lock |
| Port size | Rc 1/8 |
| Lubrication | Lubrication free type |

## Code of order

**SKV** — **507** **U** — **( )** — **( )** — **DC24** — **K** — **M** **3**

**SKV**: SKV series Solenoid valve

**Model**: 507 series

**Valve type**

| Mark | Type |
|---|---|
| U | Base mount type |

**Manifold type**

| Mark | Thread | Note |
|---|---|---|
| None | - | Single |
| 01 | Rc 1/8 | Manifold |

**Pressure**

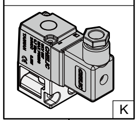
| None | Positive pressure |
|---|---|
| V | Vaccum |

**Voltage**

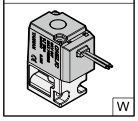
Standard:
24V DC/5.5W

**Electrical entry**

DIN terminal:

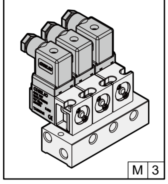


Grommet:



( Wire length about 300mm )

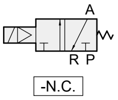
**Manifold**

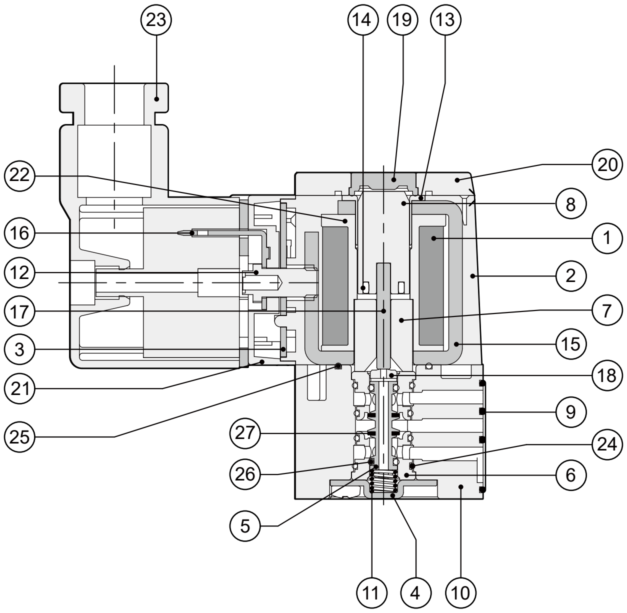


None:
Without manifold
M1 = 1 sets
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M10 = 10 sets

### Internal structure

- 3 port 2-position single





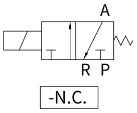
| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Wire | Cooper | 15 | U plate | Iron |
| 02 | Coil | Polyester | 16 | DIN pin | Iron |
| 03 | PCB board | – | 17 | Spring bushing | Stainless steel |
| 04 | Rear cover | Iron | 18 | Drive shaft | POM |
| 05 | Inner shaft | Aluminum alloy | 19 | Push bottom | Rubber |
| 06 | Outer shaft | Aluminum alloy | 20 | Coil cover | Polyester |
| 07 | Coil insert bushing | Stainless steel | 21 | PCB LED cover | Polycarbonate |
| 08 | Moveable plate | Stainless steel | 22 | Bobbin | Polyester |
| 09 | Manifold gasket | Rubber | 23 | DIN box | – |
| 10 | Body | Aluminum alloy | 24 | Outer shaft O-ring | NBR |
| 11 | Shaft spring | Stainless steel | 25 | Body O-ring | NBR |
| 12 | Cooper pin | Cooper | 26 | Inner shaft O-ring | NBR |
| 13 | Bush | Cooper | 27 | Inner shaft Packing | NBR |
| 14 | Cooper wire | Cooper | | | |

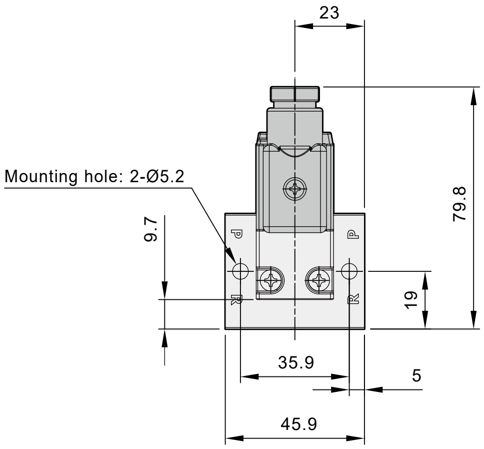
# SKV-U series 3/2 Base Mounted Manifold Solenoid Valve

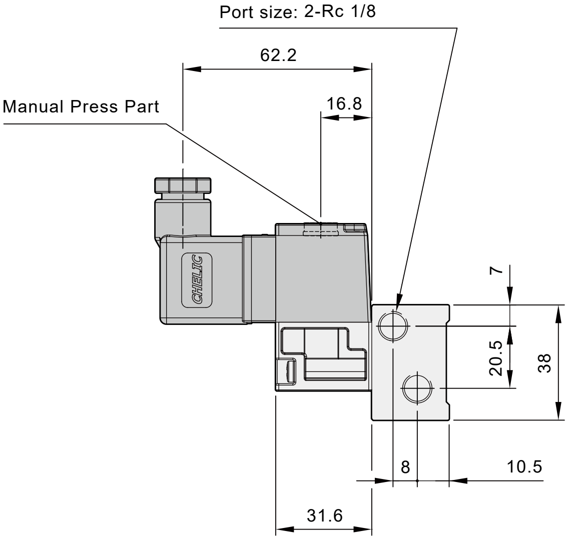
## Dimensions/ Single unit type

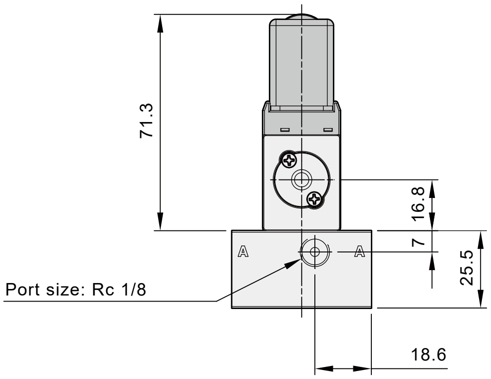
### SKV 507U - M1

- 3 port 2-position single

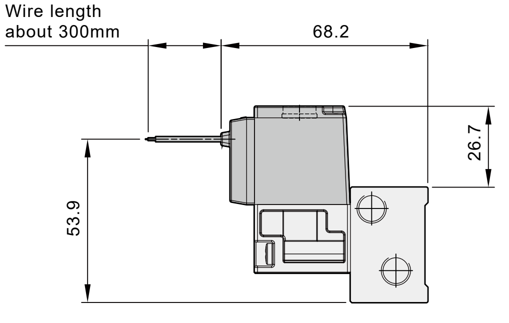



23
Mounting hole: 2-Ø5.2
9.7
79.8
19
35.9
5
45.9
P
R


Port size: 2-Rc 1/8
62.2
Manual Press Part
16.8
CHELIC
7
20.5
38
8
10.5
31.6


71.3
16.8
7
25.5
A
Port size: Rc 1/8
18.6

### Grommet - W

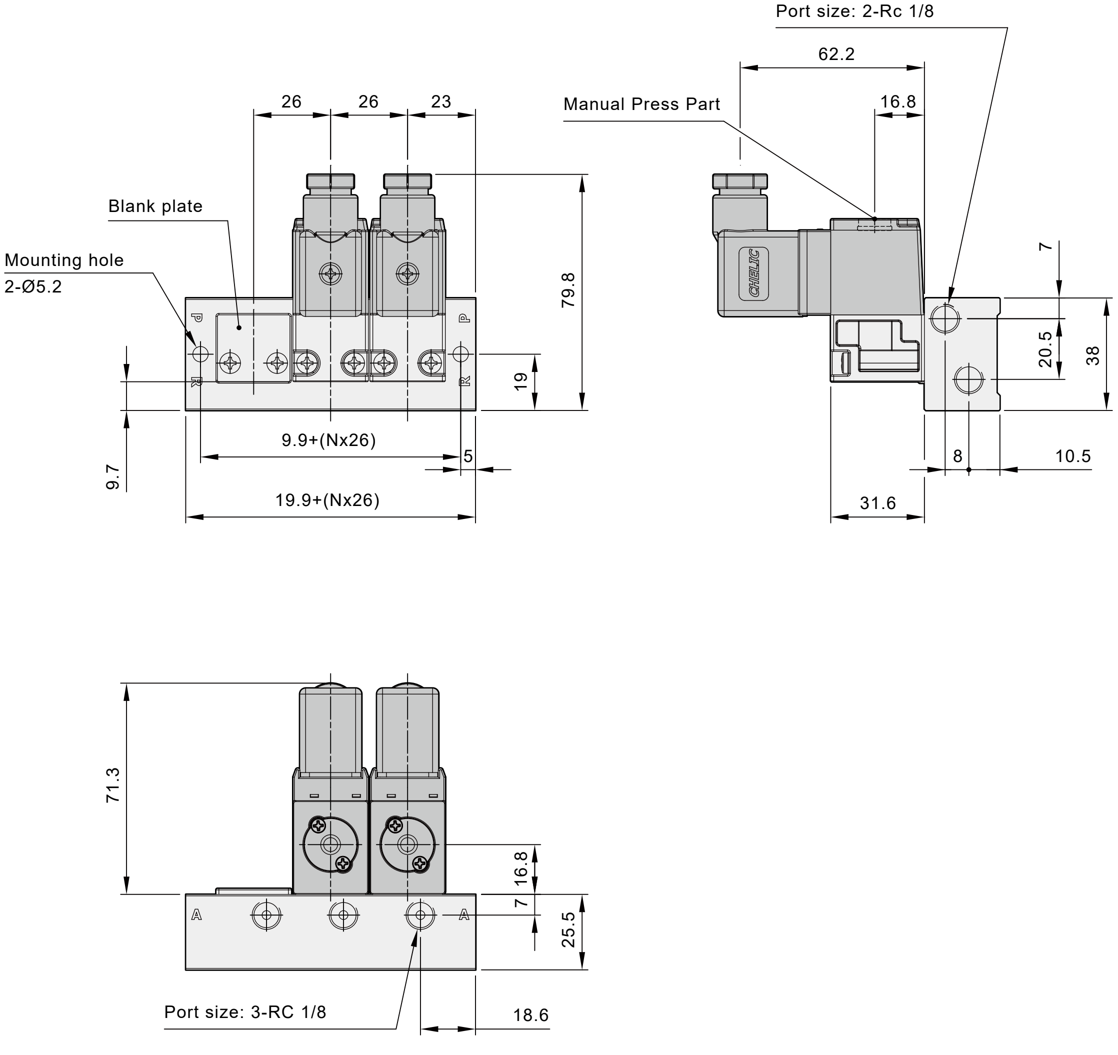

Wire length
about 300mm
68.2
26.7
53.9

# SKV-U series 3/2 Base Mounted Manifold Solenoid Valve

## Dimensions/ Manifold type

### SKV 507U series

Manifold dimension


Port size: 2-Rc 1/8
62.2
Manual Press Part
16.8
26
26
23
Blank plate
Mounting hole
2-Ø5.2
P
R
P
R
79.8
19
9.9+(Nx26)
5
9.7
19.9+(Nx26)
CHELIC
7
20.5
38
8
10.5
31.6
71.3
A
A
16.8
7
25.5
Port size: 3-RC 1/8
18.6

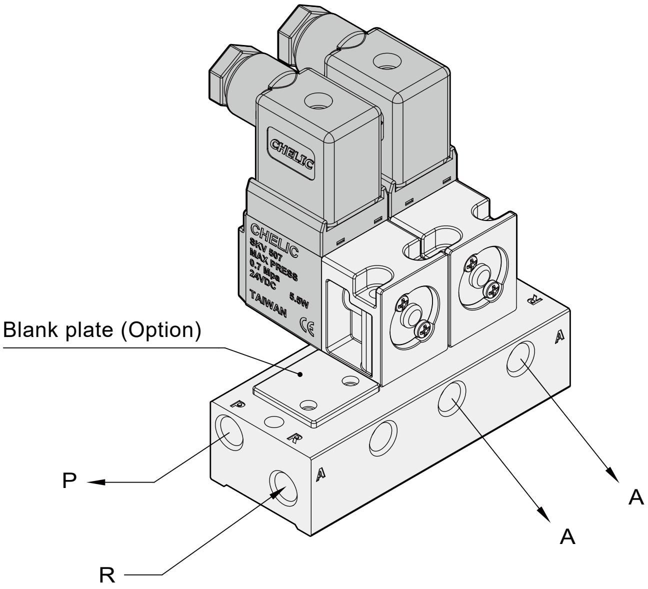
Note: blank plate is reserved for solenoid valve. Leakproof rubber gasket is attached.

# SKV-U series 3/2 Base Mounted Manifold Solenoid Valve

## Accessories/ Installation

### Manifold

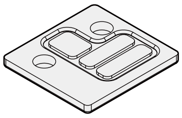
**SKV 507U series**

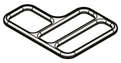

Blank plate (Option)
P
R
A
A
CHELIC
SKV 507
MAX PRESS
0.7 Mpa
24VDC
5.5W
TAIWAN

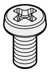
### Manifold accessory

**SKV 507U series**

※ The accessories of blank plate.

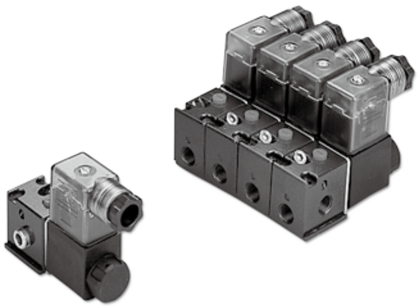

Blank plate
3F50200317


Gasket
20210258

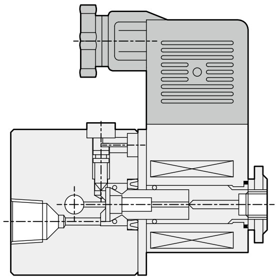

Mounting screw
M4x5L: 20320075

# SV 310 series Body Ported Solenoid Valve

## Product features



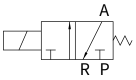
### Internal structure



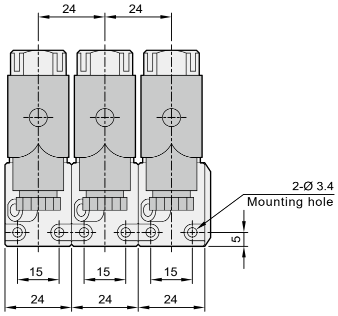
### Code of order

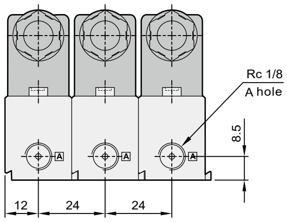
| SV | 3 | 1 | 0 | 110VAC | K | L | M 2 |
|---|---|---|---|---|---|---|---|
| | Model | Port size | Position | Voltage type | Electrical entry | With light | Manifold |
| SV series Solenoid Valve | 3: 300 series | 1: Rc 1/8 | 0: 2 ports | 24 VDC / 6.5W<br>110 VAC / 8.5VA<br>220 VAC / 8.5VA | K: With wire Without indicator light<br>W: Solenoid with wire (500mm) | None (Standard)<br>L: With indicator light | 2 = 2 sets<br>3 = 3 sets<br>⋮ |

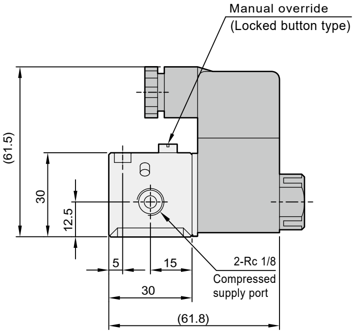
### 3 port 2-position single



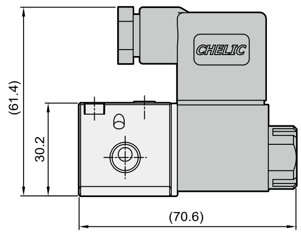
-N.C.


24
24
2-Ø 3.4
Mounting hole
5
15
15
15
24
24
24

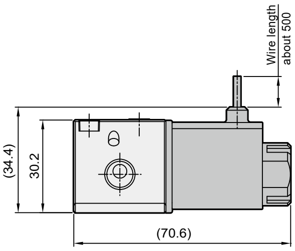

Rc 1/8
A hole
8.5
A
A
A
12
24
24


Manual override
(Locked button type)
(61.5)
30
12.5
5
15
30
(61.8)
2-Rc 1/8
Compressed
supply port

### K wire type - K


CHELIC
(61.4)
30.2
(70.6)

### W wire type - W

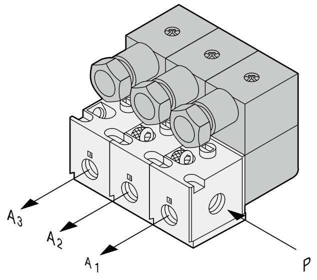

Wire length
about 500
(34.4)
30.2
(70.6)

# SV 310 series Body Ported Solenoid Valve

## Accessories/ Installation

### Manifold

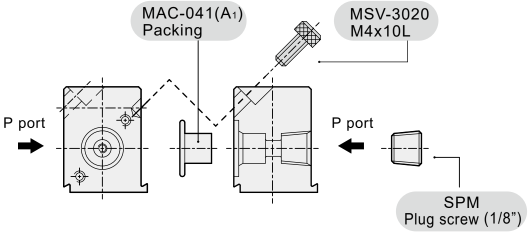
**SV-310 series**



### Manifold accessory

**SV-310 series**

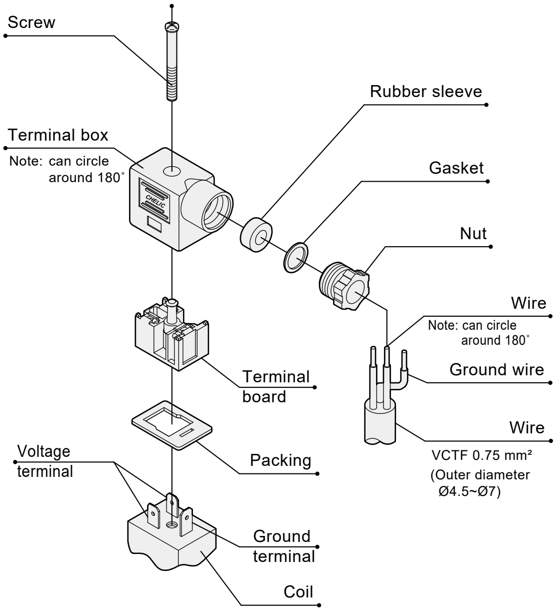
※ Accessory for connection purpose, 1 set of accessory applied to each space.


MAC-041(A1)
Packing
MSV-3020
M4x10L
P port
P port
SPM
Plug screw (1/8")

### ⚠ CAUTION

#### Connection of DIN terminal box

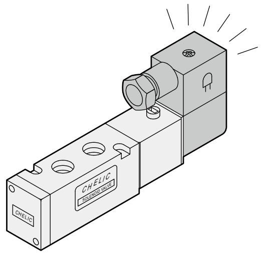
DIN terminal box is class IP65 water proof; please positioned and slot firmly when installing, there is no screw for tighten.


Screw
Rubber sleeve
Terminal box
Note: can circle around 180˚
Gasket
Nut
Wire
Note: can circle around 180˚
Ground wire
Terminal board
Wire
VCTF 0.75 mm²
(Outer diameter Ø4.5~Ø7)
Voltage terminal
Packing
Ground terminal
Coil

---

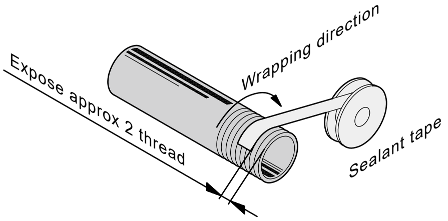
### With indicator light - L

There is no protection from surge voltage for this product.



### Handling details and precaution

1. Please keep the tube fitting clean.
2. Please wrap the thread by tape seal and leave about 2 pitches Unwrapped at the end to as avoid clogging in the air line.

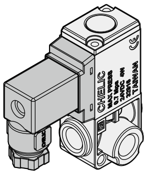
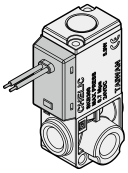
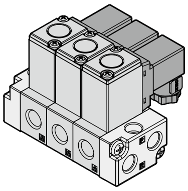
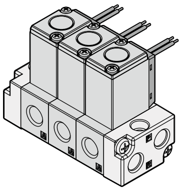

Expose approx 2 thread
Wrapping direction
Sealant tape

# SWB series 3/2 High Frequency Solenoid Valve

## SWB series index

CHELIC

## Index

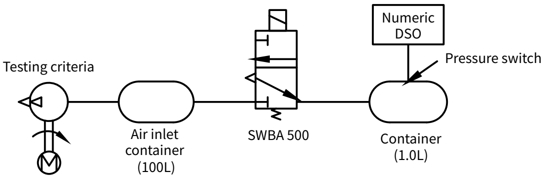
| | Image | SWB □ series | Pressure range | Port size | Voltage | Page |
|---|---|---|---|---|---|---|
| Single unit type | SWBA-K |  | Positive pressure<br>0~0.7 (0~700)<br>MPa(kPa) | Rc1/ 8 | DC24V/ 5.8W | P.2-1.300 |
| | SWBA-W |  | Vacuum<br>0~-0.1 (0~-100)<br>MPa(kPa) | | | |
| Modularize | SWBB-K |  | Positive pressure<br>0~0.7 (0~700)<br>MPa(kPa) | Rc1/ 8 | DC24V/ 5.8W | P.2-1.301 |
| | SWBB-W |  | Vacuum<br>0~-0.1 (0~-100)<br>MPa(kPa) | | | |

## Vacuum testing circuit

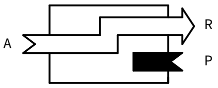
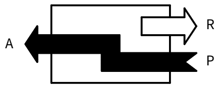
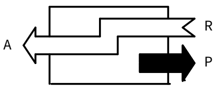
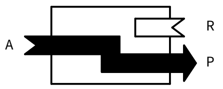
How to read:

Exhaust time: it's the time needed when air flow into container under vacuum condition.

Inlet time: it's the time when a container has -100kPa vacuum that release out to air.


Numeric DSO
Pressure switch
Testing criteria
Air inlet container (100L)
SWBA 500
Container (1.0L)

## Coil excitation and flow direction

| | Off-state | On-state |
|---|---|---|
| Positive pressure (Normal close) |  |  |
| Vacuum (Normal close) |  |  |

# SWB series 3/2 High Frequency Solenoid Valve

## Product features

**CHELIC**

### Feature

- High speed response
- Large flow
- Patented design

### Specification

| Item \ Model | | SWBA 500 | | SWBB 500 | |
|---|---|---|---|---|---|
| Electrical entry | | K | W | K | W |
| Pressure range MPa | Positive pressure | 0 ~ 0.7 | | | |
| | Vacuum | -0.1 ~ 0 | | | |
| Fluid | | Air | | | |
| Ambient and fluid temperature °C | | 0 ~ 50 | | | |
| Type of actuation | | Direct operated | | | |
| Number of positions | | 3/ 2 ( Normally closed ) | | | |
| Effective orifice mm$^2$ | | 0.15 | | | |
| Voltage % range | | DC24V±10% | | | |
| Manual override | | Press: No Lock | | | |
| Port size Rc(PT/PF/NPT) | | 1/ 8 | | | |
| Max. actuation speed Hz | | 125 | | | |
| Max. response time ms | | ON: < 6, OFF: < 2 | | | |

### Model selection

**Sequence 1**

#### Pressure range selection

Unit: MPa

| Item \ Model | SWBA(B) 501 |
|---|---|
| Min. pressure | 0.05 |
| Max. pressure | 0.75 |
| Pressure range setting | 0.05 ～ 0.7 |

- Please do must select proper code before using and pay attention to maximum pressure supply and pressure setting range.

**Sequence 2**

#### Rated voltage

Unit: W

| | | |
|---|---|---|
| Power | Voltage | DC24V±10% |
| | Power consumption | Power supply voltage DC24V type: 5.8W or less |

- SWB applies DC power only. Please make sure applying proper voltage to prevent harzadous to the product.

**Sequence 3**

#### Fluid

| | | |
|---|---|---|
| Fluid | Air | Positive pressure/ Vacuum |

- Neutral air only. Do not apply fluid contains chemical or any appropriate fluid.

# SWB series 3/2 High Frequency Solenoid Valve

## Code of order

### Code of order - Single unit

**SWBA 501 - V - D2 - K**

① ② ③ ④

①

| Mark | Image |
|---|---|
| 501 | 500 type |

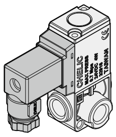
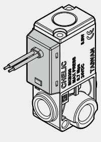
②

| Mark | Pressure |
|---|---|
| None | Positive pressure |
| V | Vacuum |

③

| Mark | Voltage |
|---|---|
| D2 | DC24V / 5.8W |

④

| Mark | Electrical entry |
|---|---|
| K |  |
| W |  |

● W: With wire length 300mm

### Code of order - Manifold

**SWBB 501 - V - D2 - K - M3**

① ② ③ ④ ⑤

①

| Mark | Image |
|---|---|
| 501 | 500 type |

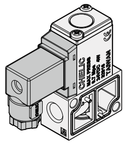
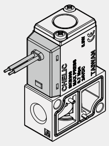
②

| Mark | Pressure |
|---|---|
| None | Positive pressure |
| V | Vacuum |

③

| Mark | Voltage |
|---|---|
| D2 | DC24V / 5.8W |

④

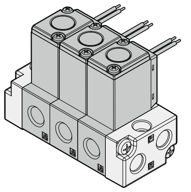
| Mark | Electrical entry |
|---|---|
| K |  |
| W |  |

● W: With wire length 300mm

⑤

| Mark | Manifold quantity |
|---|---|
| M1 | 1 sets |
| M2 | 2 sets |
| ⋮ | ⋮ |
| M8 | 8 sets |

● Image



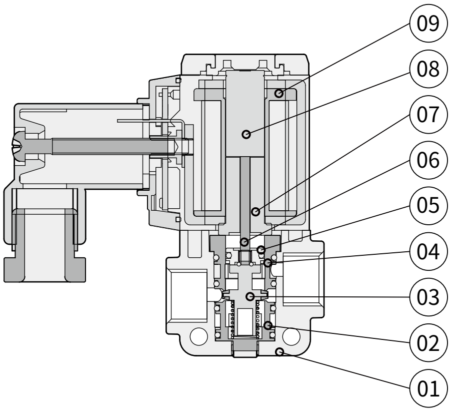
M3

# SWB series 3/2 High Frequency Solenoid Valve

## Product features

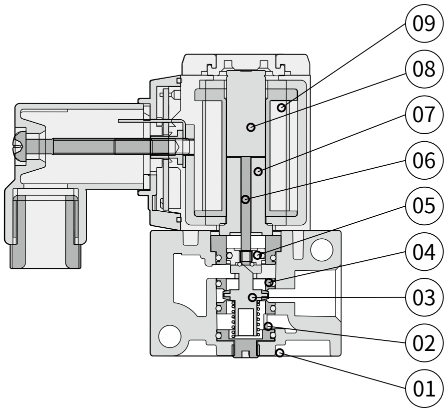
### SWBA 500 Components and material list

| No. | Item | Material | Weight(g) |
|---|---|---|---|
| 01 | Body | Aluminum alloy | 15.71 |
| 02 | Outer shaft B | Stainless steel | 2.27 |
| 03 | Shaft | Aluminum alloy | 1.32 |
| 04 | Outer shaft A | Stainless steel | 3.8 |
| 05 | Upper spool | Stainless steel | 0.47 |
| 06 | Lever | Stainless steel | 0.52 |
| 07 | Coil insert bushing | Stainless steel | 4.32 |
| 08 | Spring bushing | Stainless steel | 4.9 |
| 09 | Coil | Polyester | 38.76 |



### SWBB 500 Components and material list

| No. | Item | Material | Weight(g) |
|---|---|---|---|
| 01 | Body | Aluminum alloy | 19.84 |
| 02 | Outer shaft B | Stainless steel | 2.27 |
| 03 | Shaft | Aluminum alloy | 1.32 |
| 04 | Outer shaft A | Stainless steel | 3.8 |
| 05 | Upper spool | Stainless steel | 0.47 |
| 06 | Lever | Stainless steel | 0.52 |
| 07 | Coil insert bushing | Stainless steel | 4.32 |
| 08 | Spring bushing | Stainless steel | 4.9 |
| 09 | Coil | Polyester | 38.76 |



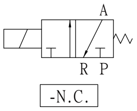
### Product weight

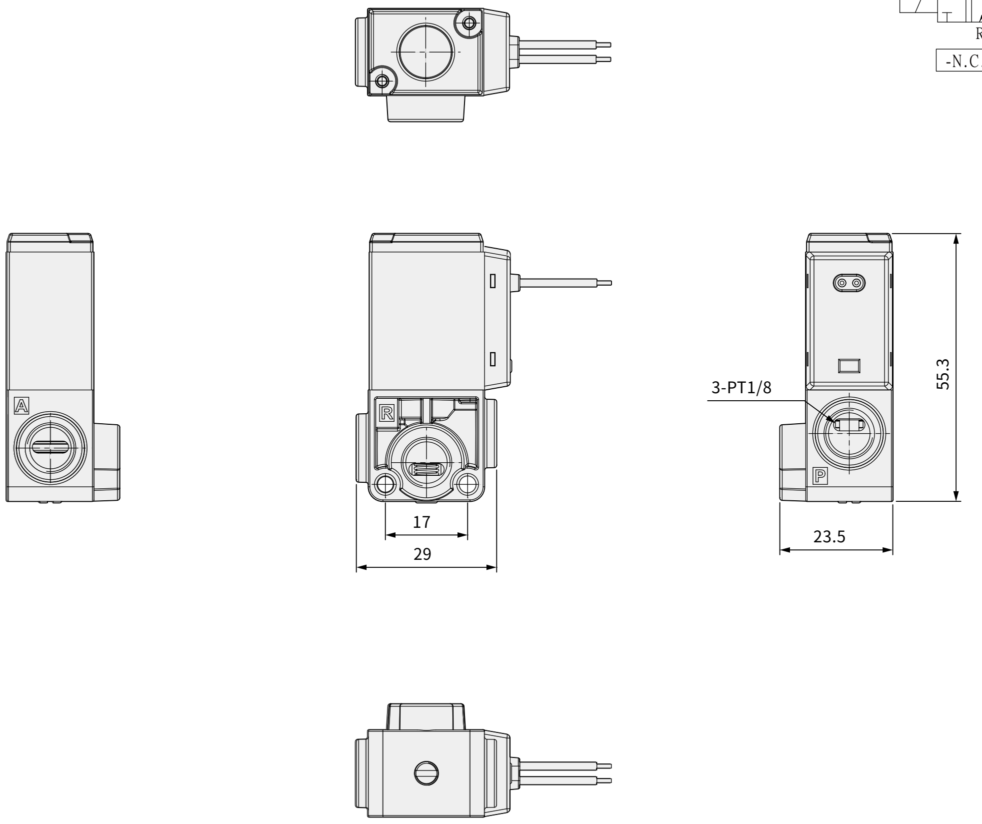
| Image | Electrical entry | Weight(g) |
|---|---|---|
| SWBA | K | 90 |
|  | W | 81 |
| SWBB | K | (93*Manifold quantity) + 35 |
|  | W | (86*Manifold quantity) + 35 |

# SWB series 3/2 High Frequency Solenoid Valve

## Dimensions

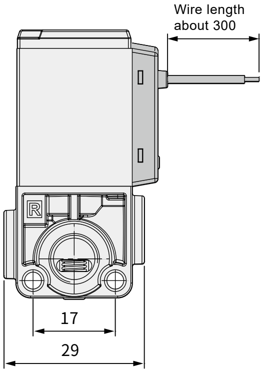
### SWBA 500 - W



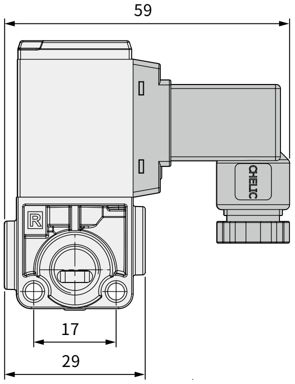

A
R
17
29
3-PT1/8
P
55.3
23.5

---

### - W - Wire type


Wire length
about 300
R
17
29

### - K - Wire type

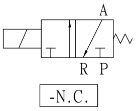

59
CHELIC
R
17
29

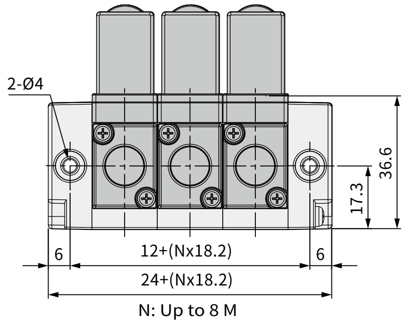
# SWB series 3/2 High Frequency Solenoid Valve

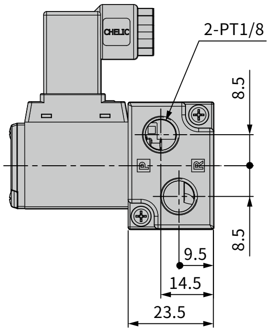
## Dimensions

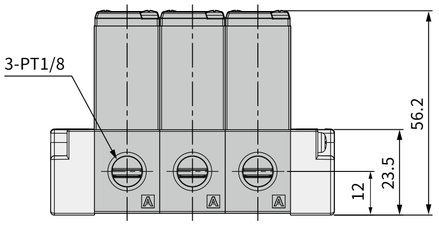
CHELIC

### SWBB 500 - K

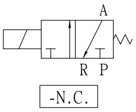


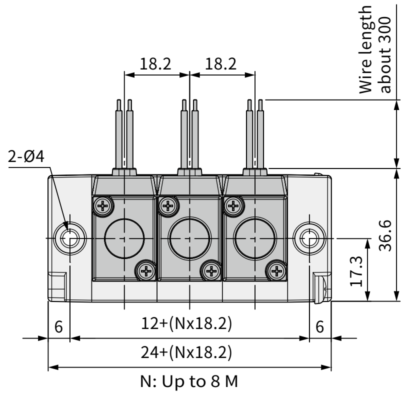

2-Ø4
36.6
17.3
6
12+(Nx18.2)
6
24+(Nx18.2)
N: Up to 8 M

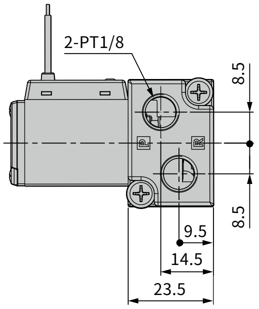

CHELIC
2-PT1/8
8.5
8.5
9.5
14.5
23.5

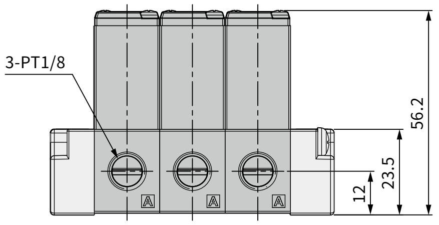

3-PT1/8
56.2
23.5
12
A
A
A

### SWBB 500 - W

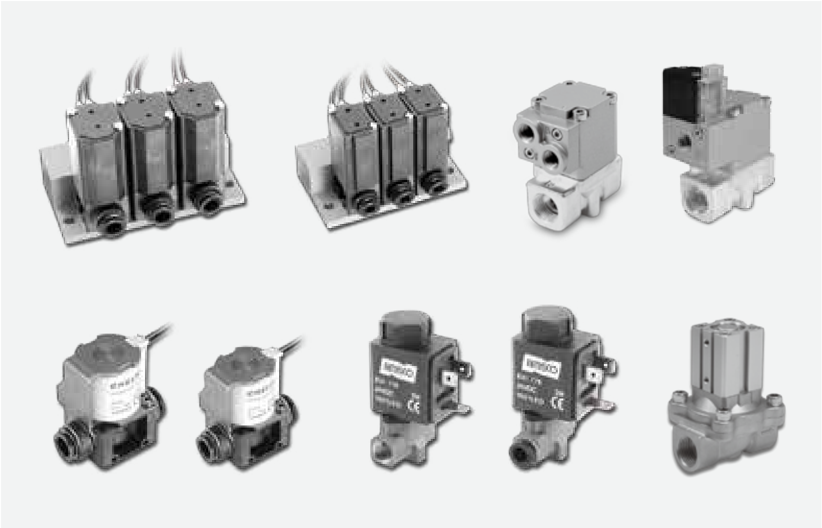



18.2
18.2
Wire length about 300
2-Ø4
36.6
17.3
6
12+(Nx18.2)
6
24+(Nx18.2)
N: Up to 8 M

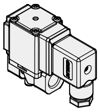

2-PT1/8
8.5
8.5
9.5
14.5
23.5


3-PT1/8
56.2
23.5
12
A
A
A

# MEMO

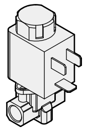


Provide CAD external dimension.



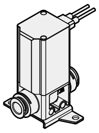
**CX series** ----- **Direct operated** ---------------------- **( 1/4, 1/8 )** -- **P.2-2.2**

Applicable to air, water, vacuum



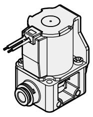
**SBS series** --- **Direct operated (General)** -------------- **( Ø6, 1/8 )** -- **P.2-2.5**

Applicable to air, water



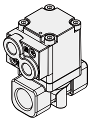
**SU series** ----- **Direct operated** ----------------------- **( 12, 22 )** -- **P.2-2.6**

Applicable to air, water and vacuum fluid



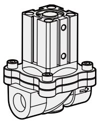
**SFW series** --- **Direct operated** ----------------------- **( 30, 40)** -- **P.2-2.11**

Applicable to air, water and vacuum fluid



**SUB series** --- **Direct operated** ---------------- **( 1/4, 3/8, 1/2, 3/4 )** -- **P.2-2.13**

Applicable to air



**SUG series** --- **Direct operated** -------- **( 1/4, 3/8, 1/2, 3/4, 1, 1¼, 1½, 2 )** -- **P.2-2.21**

Applicable to air, water and oil

CX
SBS
SU
SFW
SUB
SUG
SUD2
SUW2
SUS
SAS
SDC

# CX series 2/2 Direct-operated Solenoid Valve

## Product features/ Code of order

**CHELIC**

## Feature

- The body material in Brass, Aluminum, stainless options.
- Unique coil design adequate to differential pressure range up to 0.9Mpa required.
- Water-proof protection class IP 65 cut-off fluid and particles.
- DIN terminal and direct wiring in electrical entry options.

Aluminum

Copper

304
Stainless steel

## Specification

| Item \ Model | | CX |
|---|---|---|
| Fluid | | Air, Water, Vacuum |
| Pressure range | kgf / cm² (kPa) | 1.5 ~ 7 ( 150 ~ 700 ) |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Pilot type | | Air operated |
| Number of positions | | 2/2-position |
| Type of actuation | | Normally closed |
| Effective orifice | CV | 0.23 |
| Port size | | PT 1/8, PT 1/4 |
| Lubrication | | Lubrication free type |
| Voltage | | DC 24V / AC 220V |

## Code of order

**CX A 2 – 01 – DC24 – K**

① ② ③ ④ ⑤

①

| Mark | Body material |
|---|---|
| A | Aluminum |
| C | Copper |
| S | 304 Stainless steel |

②

| Mark | Valve port size (mm) |
|---|---|
| 2 | 2 |

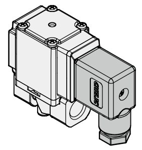
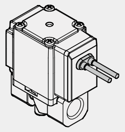
③

| Mark | Port size |
|---|---|
| 01 | PT 1/8 |
| 02 | PT 1/4 |

④

| Mark | Voltage |
|---|---|
| DC 24 | 24 V DC |
| AC 220V | 220 V |

⑤

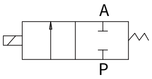
| Electrical entry |
|---|
|  |
| K: DIN Terminal |
|  |
| W: Grommet |

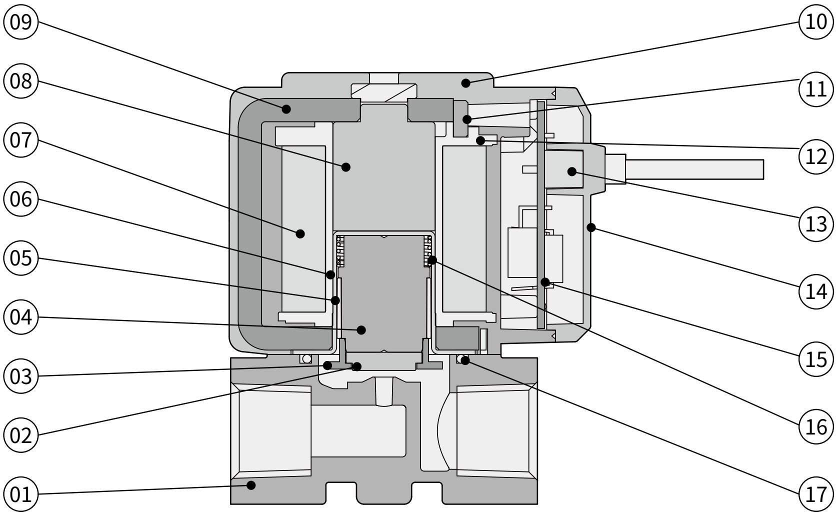
● W: With wire length 300mm

# CX series 2/2 Direct-operated Solenoid Valve

## Product features

### Internal structure





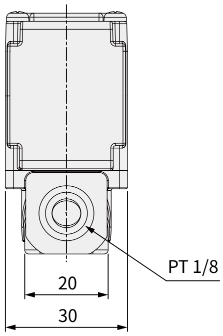
### Components and material list

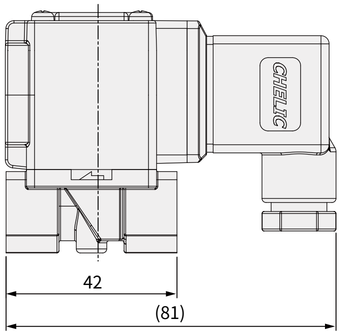
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 10 | Coil | PBT |
| 02 | Valve port rubber ring | NBR | 11 | U-shaped iron plate | Iron |
| 03 | Valve port rubber ring base | Copper alloy | 12 | Wire rack | LCP |
| 04 | Spring bushing | Stainless steel | 13 | Wire sleeve | NBR |
| 05 | Wear ring | Teflon | 14 | W-shaped light housing | PBT |
| 06 | Casing | Stainless steel | 15 | Circuit board | Fiberglass |
| 07 | Copper wire | Copper | 16 | Spring bushing spring | Stainless steel |
| 08 | Coil insert bushing | Stainless steel | 17 | O-ring | NBR |
| 09 | U-shaped iron | Iron | | | |

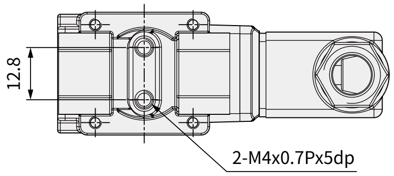
# CX series 2/2 Direct-operated Solenoid Valve

## Dimensions

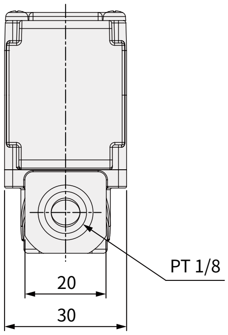
### CX 2 series -K

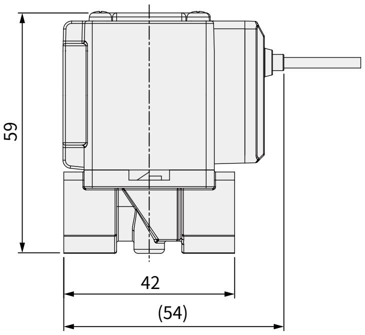


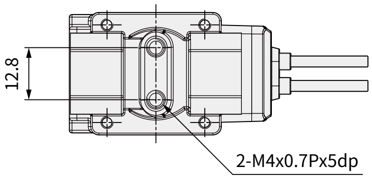

CHELIC
42
(81)


12.8
2-M4x0.7Px5dp

### CX 2 series -W






12.8
2-M4x0.7Px5dp

# SBS series 2/2 Stainless Body Solenoid Valve

## Product features/ Code of order

AMISCO
EVI 7/9
24VDC
100%ED
CE

### Code of order

| SBS | 01 | 240VDC | K | L |
|---|---|---|---|---|
| 2/2 Solenoid valve<br>**SBS:**<br>Direct operated<br>(General) | Dimensions:<br>01: 1/8"<br>C6:<br>Fitting type C6<br>(Please refer to specification) | Voltage:<br>24 VDC / 6.5W<br>110 VAC / 8.5VA<br>220 VAC / 8.5VA | Electrical entry<br>K: With wire Without light<br>W: With wire length 500mm | None:<br>Standard type<br>L: With light<br>* For K type only |

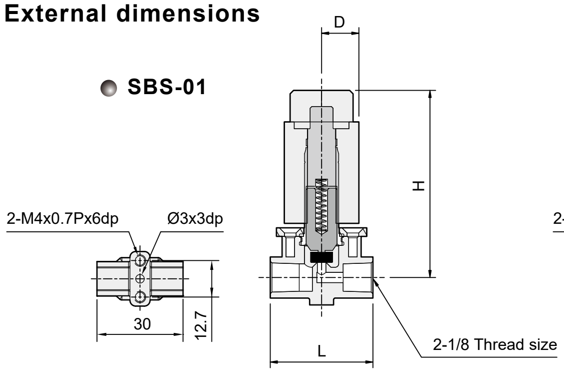
### Specification

<table>
<tr><th colspan="2">Item / Model</th><th>SBS-01</th><th>SBS-C6</th></tr>
<tr><td colspan="2">Fluid</td><td colspan="2">Applicable to air and water</td></tr>
<tr><td colspan="2">Ambient and fluid temperature ℃</td><td colspan="2">5 ~ 60</td></tr>
<tr><td colspan="2">Number of position ports</td><td colspan="2">2/2 solenoid valve</td></tr>
<tr><td colspan="2">Type of actuation</td><td colspan="2">Normally closed</td></tr>
<tr><td colspan="2">Pilot type</td><td colspan="2">Direct operated(General)</td></tr>
<tr><td colspan="2">Port size</td><td>1/8</td><td>Ø6</td></tr>
<tr><td colspan="2">Effective orifice(Cv factor) mm²</td><td colspan="2">4.9</td></tr>
<tr><td rowspan="2">Pressure range (Max. range) kgf/cm² ( kPa )</td><td>Air</td><td colspan="2" rowspan="2">0 ~ 7 ( 0 ~ 70 )</td></tr>
<tr><td>Water (Normal)</td></tr>
<tr><td rowspan="3">Material</td><td>Body</td><td colspan="2">Gast the stainless steel accurately # 316</td></tr>
<tr><td>Diaphragm</td><td colspan="2">NBR</td></tr>
<tr><td>Spring</td><td colspan="2">Stainless steel</td></tr>
<tr><td colspan="2">Weight kg</td><td>0.11</td><td>0.11</td></tr>
</table>

Note: This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST.

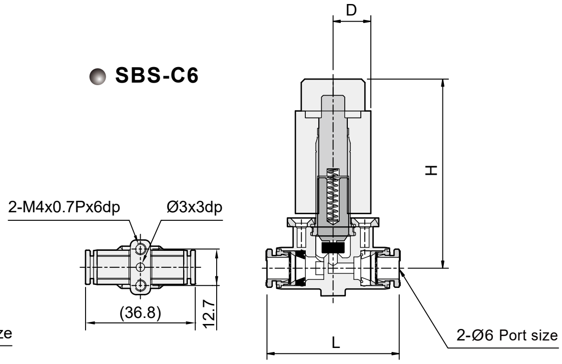
### External dimensions

**SBS-01**



Base mounting hole size

**SBS-C6**



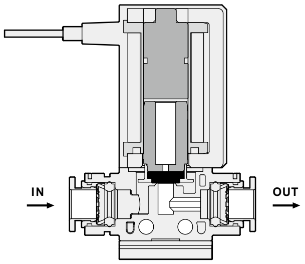
Base mounting hole size

| Item / Model | SBS-01 | SBS-C6 |
|---|---|---|
| **D** | 11 | 11 |
| **H** | 54.6 | 54.6 |
| **L** | 30 | 32.6 |

# SU series 2/2 Solenoid Valve

## Product features/ Code of order

### Internal structure



- Applicable to air, water and vacuum fluid.

### Specification

| Item | | Model | SU12 | SU22 |
|---|---|---|---|---|
| Fluid | | | Applicable to air, water and vacuum | |
| Ambient and fluid temperature | | ℃ | 5 ~ 60 | |
| Number of position ports | | | 2/2 Solenoid valve | |
| Type of actuation | | | Normally closed | |
| Pilot type | | | Direct operated (General) | |
| Pressure range | | kgf/cm² (kPa) | 0 ~ 9.0 ( 0 ~ 900 ) | |
| Withstand pressure | | kgf/cm² (kPa) | 10 ( 1000 ) | |
| Port size | | | Ø4 | Ø6 |
| Orifice | | mm Ø | 1.6 | 3.3 |
| Effective orifice(Cv factor) | | mm² | 1.26 (0.07) | 5.4 (0.3) |
| The max. operating pressure differential* | | kgf/cm² (kPa) | 4 (400) | 2 (200) |
| Pressure range (Max. range) | Air | | 0 ~ 9 ( 0 ~ 900 ) | |
| | Water (Normal) | | | |
| | Vacuum | | -1 ~ 0 ( -100 ~ 0 ) | |
| Material | Body | | PPS | |
| | Coil | | PBT-G30 | |
| Weight | | kg | 0.05 | 0.08 |

*Note: The max. operating pressure differential is while supply port pressure over exhaust pressure value.

### Code of order

**SU** – **12** – **C4** – **DC24** – **W** – **C** **1**

SU Series :
2/2 Solenoid valve

**Model number**

12: 12 Series
22: 22 Series

**With fitting port**

| Mark | Port | Model |
|---|---|---|
| C4 | Ø4 | SU12 |
| C6 | Ø6 | SU22 |

※Port fitting type

**Voltage**

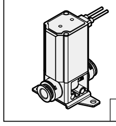
| Mark | Model |
|---|---|
| SU12 | 24V DC / 2.3W |
| SU22 | 24V DC / 4.6W |

**Electrical entry**

Grommet

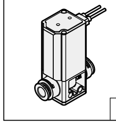
*With wire length 300mm

**Bracket type**



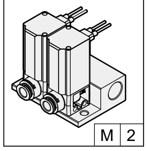
C1

**Body mounting type**



C2

**Manifold quantity**



M 2

None :
without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M10 = 10 sets
※Bracket not included in manifold type

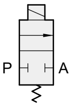
# SU12 series 2/2 Solenoid Valve

## Dimensions/ Single unit/ With bracket

### SU12-W-C1

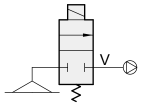
Fluid assembly despcription:

For positive pressure working environment :

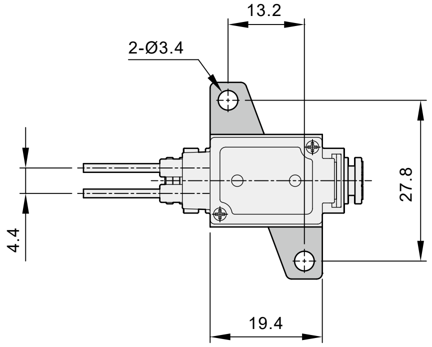


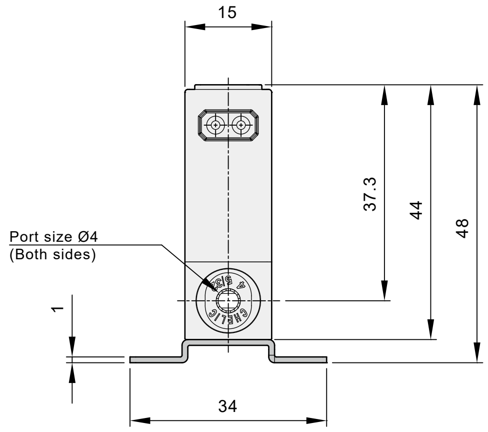
Note: Air supply setting at "IN" port

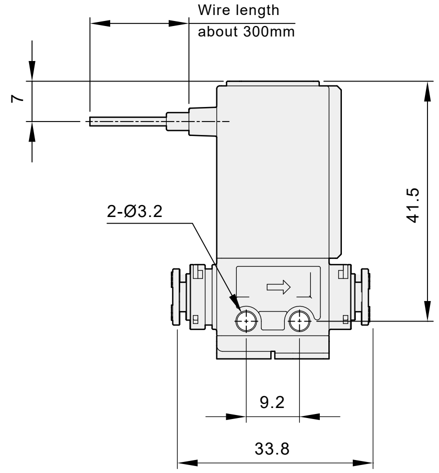
Under negative pressure working environment :



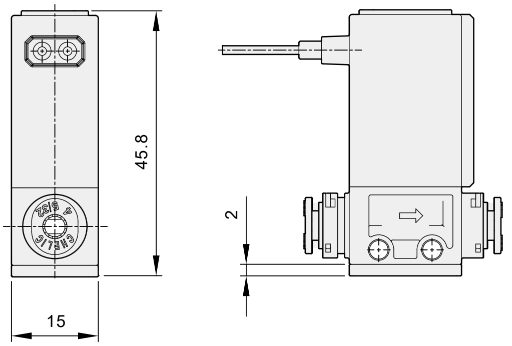
Note: Vaccum supply setting "OUT" port


13.2
2-Ø3.4
4.4
27.8
19.4

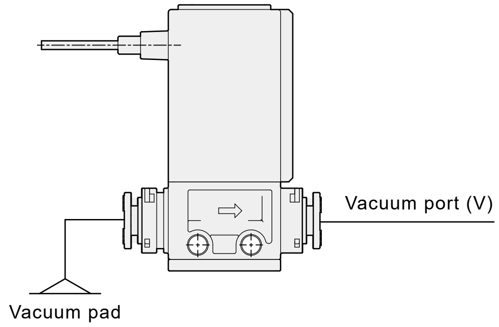

15
37.3
44
48
Port size Ø4
(Both sides)
1
34


Wire length
about 300mm
7
2-Ø3.2
41.5
9.2
33.8

### SU12-W-C2



### Under vacuum working environment - How to Assembly


Vacuum port (V)
Vacuum pad

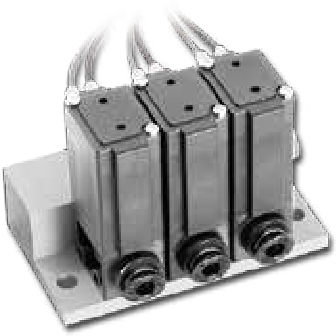
※ Note: The product with arrow indicates positive pressure, otherwise nagetive pressure.

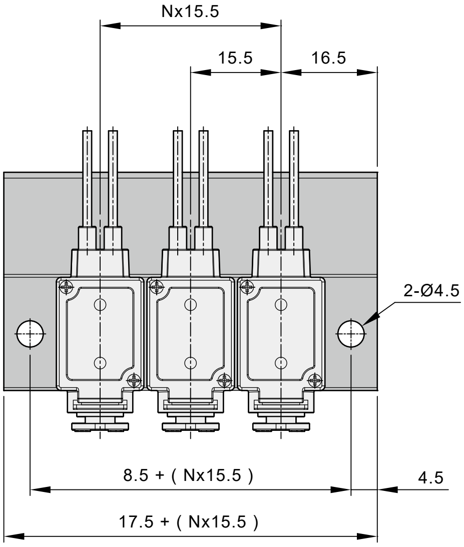
# SU12 series 2/2 Solenoid Valve

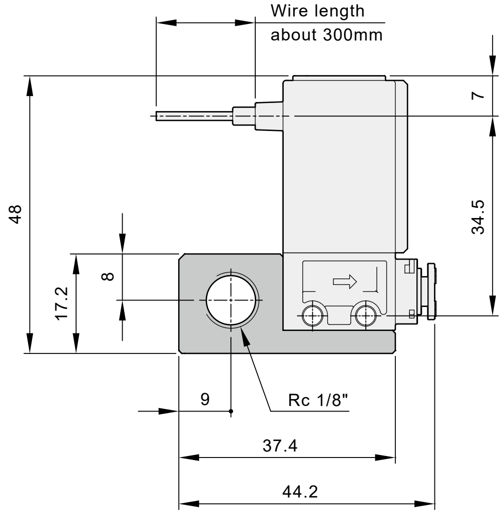
## Dimensions/ Manifold type

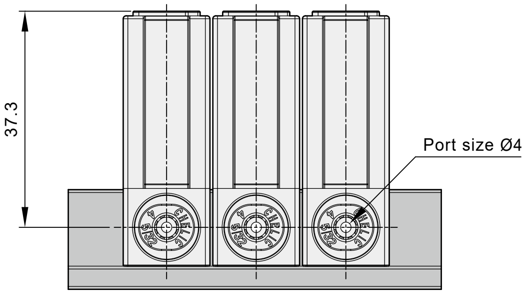
### SU-12

**Manifold size**




Nx15.5
15.5
16.5
2-Ø4.5
8.5 + ( Nx15.5 )
4.5
17.5 + ( Nx15.5 )


Wire length
about 300mm
7
34.5
48
17.2
8
9
Rc 1/8"
37.4
44.2


37.3
Port size Ø4

Manifold type not available to vacuum working requirement

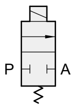
# SU22 series 2/2 Solenoid Valve

## Dimensions/ Single unit/ With bracket

### SU22-W-C1

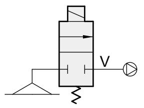
Fluid assembly despcription:

- For positive pressure working environment:

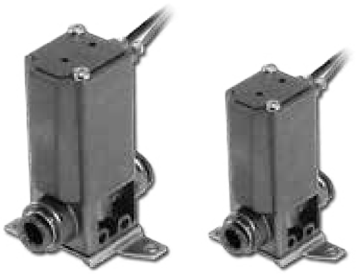


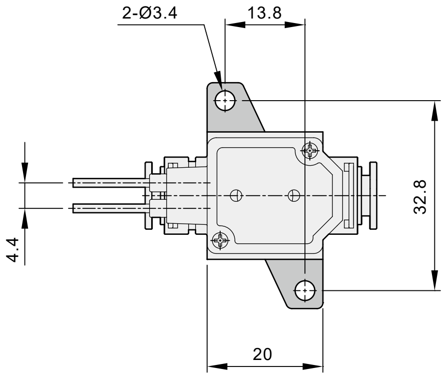
Note: Air supply setting at "IN" port

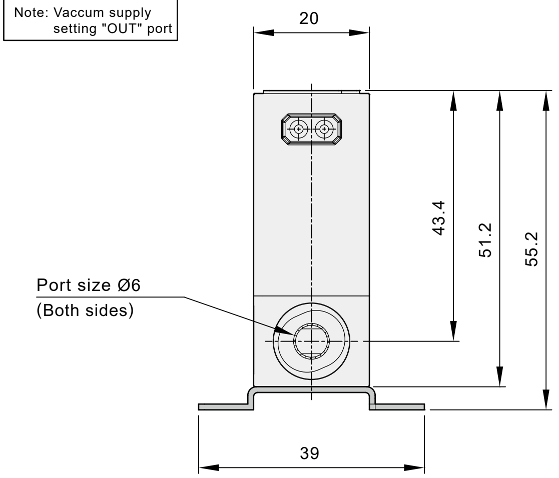
- Under negative pressure working environment:

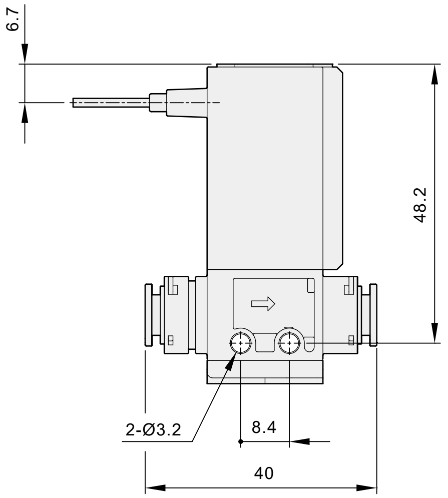


Note: Vaccum supply setting "OUT" port

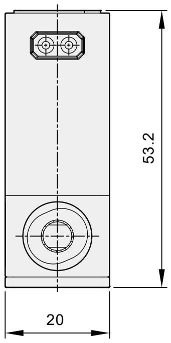


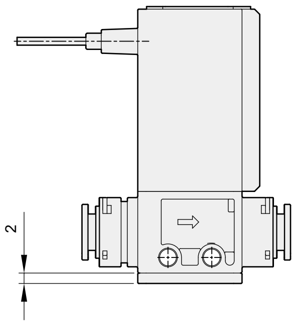

2-Ø3.4
13.8
4.4
32.8
20


20
43.4
51.2
55.2
Port size Ø6
(Both sides)
39

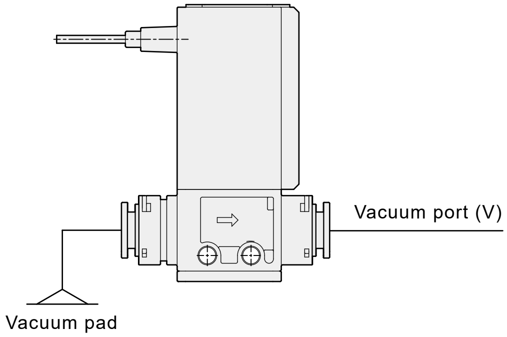

6.7
48.2
2-Ø3.2
8.4
40

### SU22-W-C2





### Under vacuum working environment - How to Assembly


Vacuum port (V)
Vacuum pad

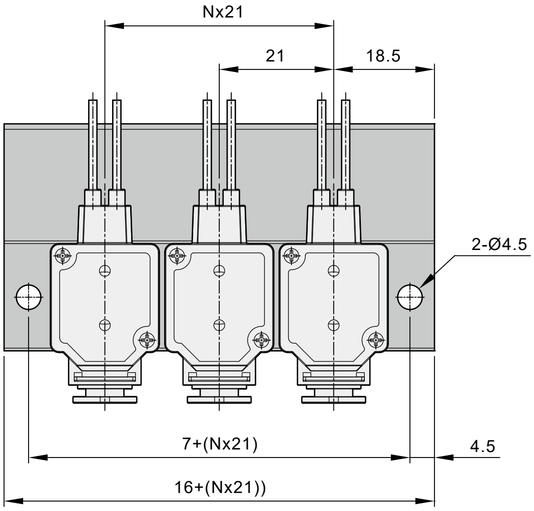
※ Note: The product with arrow indicates positive pressure, otherwise nagetive pressure.

# SU22 series 2/2 Solenoid Valve

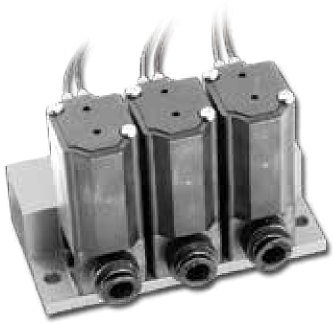
## Dimensions/ Manifold type

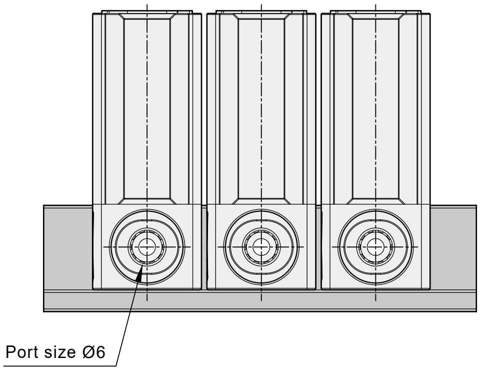
CHELIC

### SU-22
### Manifold size

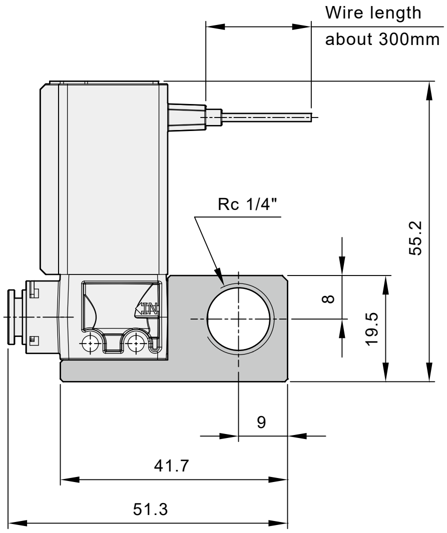


Nx21
21
18.5
2-Ø4.5
7+(Nx21)
4.5
16+(Nx21))





Port size Ø6



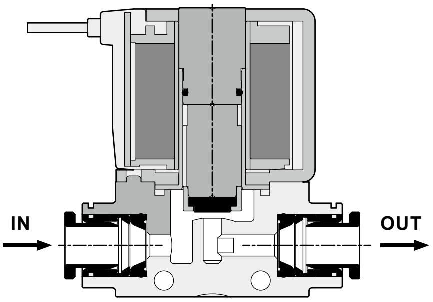
Wire length
about 300mm
Rc 1/4"
55.2
8
19.5
9
41.7
51.3

Manifold type not available to vacuum working requirement

# SFW series 2/2 Solenoid Valve

## Product features/ Code of order

### Internal structure



- Applicable to air, water and vacuum fluid.

### Specification

| Item \ Model | | SFW30 | SFW40 |
|---|---|---|---|
| Fluid | | Applicable to air, water and vacuum | |
| Ambient and fluid temperature ℃ | | 5 ~ 60 | |
| Number of position ports | | 2/2 Solenoid valve | |
| Type of actuation | | Normally closed | |
| Pilot type | | Direct operated | |
| Withstand pressure kgf/cm²(kPa) | | 10 ( 1000 ) | |
| Port size | | Ø4, Ø6 | Ø8, Ø10 |
| Effective orifice(Cv factor) mm² | | 5.4 ( 0.3 ) | 19.8 ( 1.1 ) |
| The max. operating pressure differential* kgf/cm²(kPa) | | 1 (100) | 0.2 (20) |
| Pressure range (Max. range) | Air | 0 ~ 9 (0 ~ 900 ) | |
| | Water (Normal) | | |
| | Vacuum | -1 ~ 0 ( -100 ~ 0 ) | |
| Manual override | | No | |

*Note: The max. operating pressure differential is while supply port pressure over exhaust pressure value.

### Code of order

**SFW** — **30** — **C4** — **DC24** — **W**

SFW Series:
2/2 Solenoid valve

Model number

30 - 30 Series
40 - 40 Series

With fitting port

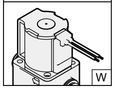
| Mark | Port | Model |
|---|---|---|
| C4 | Ø4 | SFW30 |
| C6 | Ø6 | |
| C8 | Ø8 | SFW40 |
| C10 | Ø10 | |

Voltage

| Mark | Wattage | Model |
|---|---|---|
| DC12 | 3.3W | SFW30 |
| | 7.5W | SFW40 |
| DC24 | 3.1W | SFW30 |
| | 8.1W | SFW40 |

Electrical entry

Grommet



*With wire length 300mm

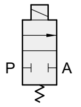
# SFW series 2/2 Solenoid Valve

## Dimensions/ Single unit

### SFW - 30

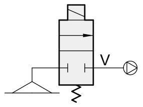
Fluid assembly despcription:

● For positive pressure working environment:

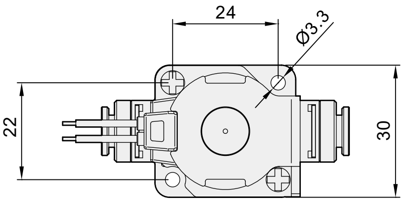


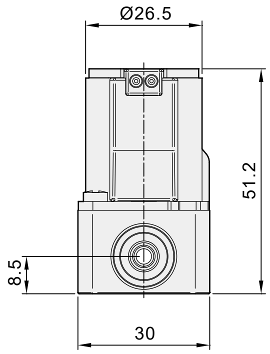
Note: Air supply setting at "IN" port

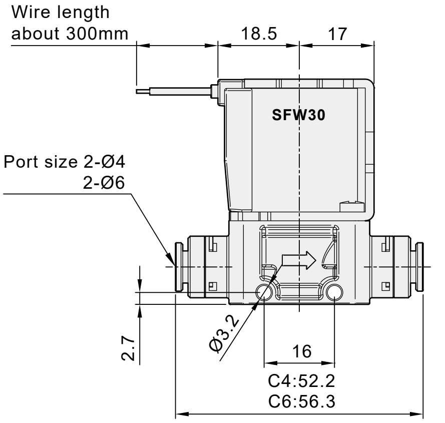
● Under negative pressure working environment:



Note: Vaccum supply setting "OUT" port




Ø26.5
51.2
8.5
30

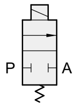

Wire length
about 300mm
18.5
17
SFW30
Port size 2-Ø4
2-Ø6
Ø3.2
2.7
16
C4:52.2
C6:56.3

---

### SFW - 40

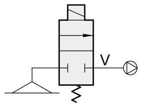
Fluid assembly despcription:

● For positive pressure working environment:

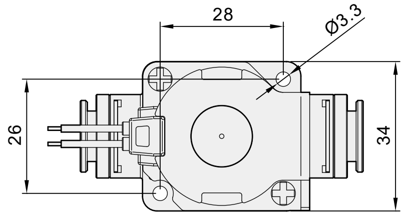


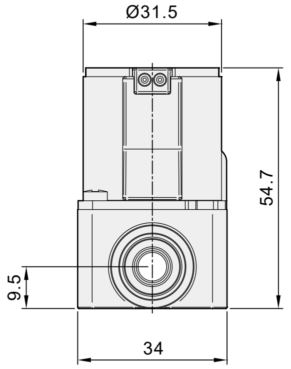
Note: Air supply setting at "IN" port

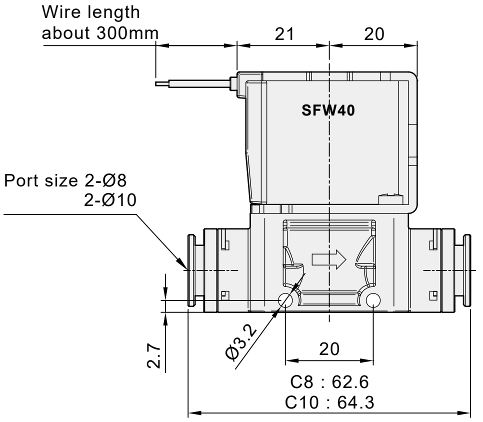
● Under negative pressure working environment:



Note: Vaccum supply setting "OUT" port

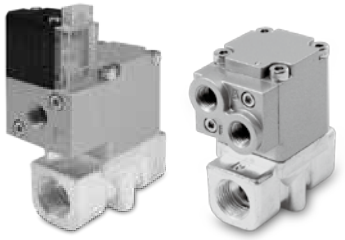



Ø31.5
54.7
9.5
34

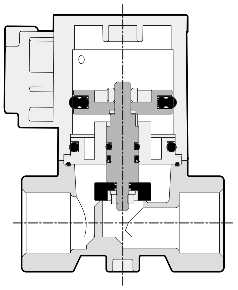

Wire length
about 300mm
21
20
SFW40
Port size 2-Ø8
2-Ø10
Ø3.2
2.7
20
C8 : 62.6
C10 : 64.3

# SUBシリーズ 2/2 シリンダーバルブ

## Product features/ Code of order



### 内部構造



## Specification

| Item | | Model | SUB 8 | SUB 10 | SUB 15 | SUB 20 |
|---|---|---|---|---|---|---|
| Pressure range | | kgf/cm²(kPa) | 0~9 (0~900) | | 0~10 (0~1000) | |
| Fluid | | | Air | | | |
| Ambient and fluid temperature | | ℃ | 5 ~ 60 | | | |
| Pilot type | | | Air operated | | | |
| Air Guidance Pressure Range | | kgf/cm² | (Normally closed) 3.5 ~ 7, (Normally open & Double acting) *See instruction manual - Chart (1) | | | |
| Number of position ports | | | 2/2 Solenoid valve | | | |
| Valve leakage | | Cm³/min | 0.12 Below | | | |
| Type of actuation | | | Normally closed | Normally open | Double acting | |
| Valve Port Size | | mm² | 10 | 10 | 15 | 16 |
| Port size | | (Rc/G/NPT) | 1/4 | 3/8 | 1/2 | 3/4 |
| Material | Body | | Brass forging | | Brass casting | |
| | Diaphragm | | NBR | | | |
| | Spring | | Piano wire | | | |
| Weight | | kg | 0.31 | 0.24 | 0.57 | 16 |

## Code of order

**SUB** – **10** – **01** – **S** – **110VAC** – **L** – **B**

**SUB**

SUB series
2 ports 2 positions
Solenoid valve

**10** — Model

| Mark | Thread |
|---|---|
| 08 | 1/4 |
| 10 | 3/8 |
| 15 | 1/2 |
| 20 | 3/4 |

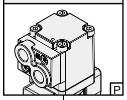
**01** — Valve function

| Mark | Type |
|---|---|
| 01 | Normally closed |
| 02 | Normally open |
| 03 | Double acting |

*No Coil Types for Double Acting

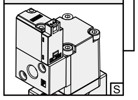
**S** — Wair type

Air pilot type



P

Coil type



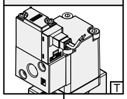
S

**110VAC** — Voltage

Standard :
12VDC 1.5W
24VDC 1.5W
110VAC 0.9VA
220VAC 1.8VA

**L** — Electrical entry

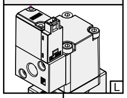
T type



T

( Wire length about 300mm )

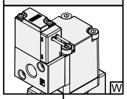
L type



L

( Wire length about 300mm )

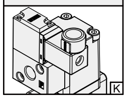
Grommet



W

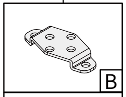
( Wire length about 300mm )

DIN terminal

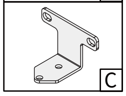


K

**B** — Bracket



B



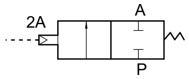
C

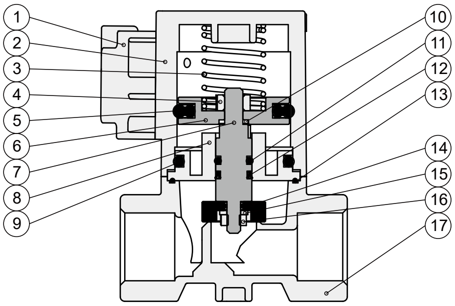
# SUB series 2/2 Cylinder Valve

## Product features

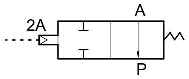
### Internal structure

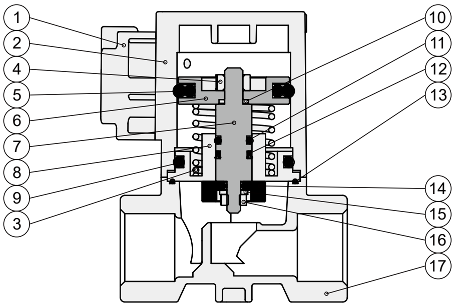
**NC: 2/2 Solenoid valve**



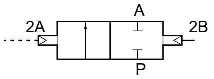

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

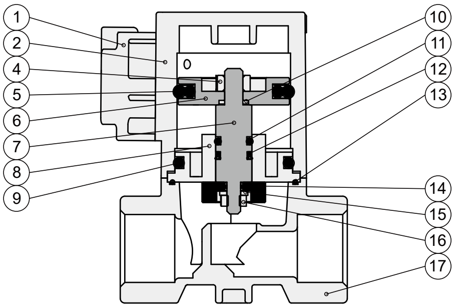
**NO: 2/2 Solenoid valve**




1
2
4
5
6
7
8
9
3
10
11
12
13
14
15
16
17

**Double acting: 2/2 Solenoid valve**




1
2
4
5
6
7
8
9
10
11
12
13
14
15
16
17

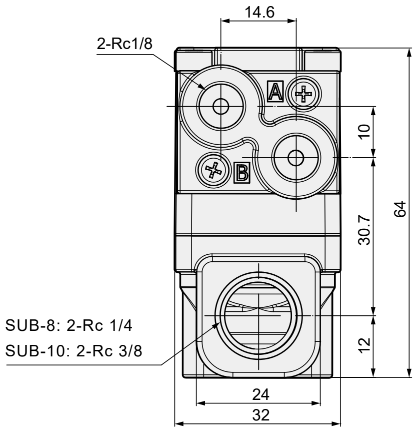
### Components and material list

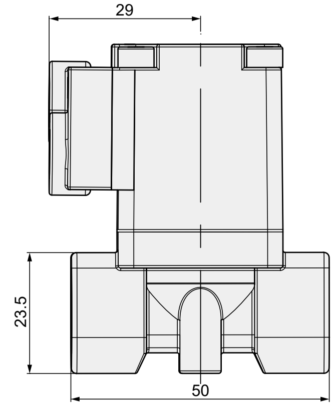
| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 01 | Port cap/ Coil cap | Aluminum alloy | 09 | O-ring | NBR |
| 02 | Body | Aluminum alloy | 10 | O-ring | NBR |
| 03 | NC Spring, NO Spring | Piano wire | 11 | O-ring | NBR |
| 04 | Nut | Stainless steel | 12 | Entrace packing | NBR |
| 05 | PSD Packing | NBR | 13 | O-ring | NBR |
| 06 | Piston | Aluminum alloy | 14 | Valve rubber | NBR |
| 07 | Rod | Brass | 16 | Nut spring washer | Stainless steel |
| 08 | Bulkhead | Brass | 17 | Body (Bottom) | Brass |

# SUB series 2/2 Cylinder Valve

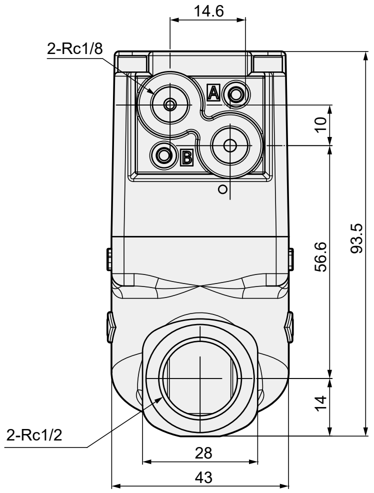
## Dimensions/ Fitting type

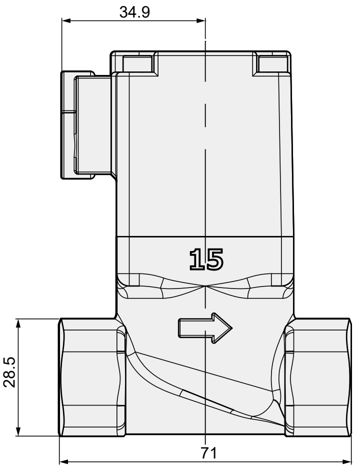
### SUB 8 & 10 - P


14.6
2-Rc1/8
A
B
10
30.7
64
12
SUB-8: 2-Rc 1/4
SUB-10: 2-Rc 3/8
24
32



### SUB 15 - P

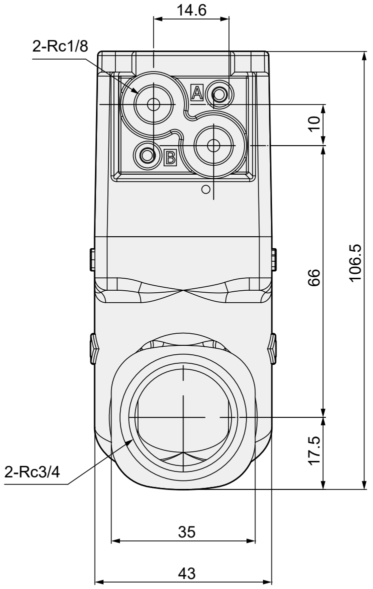

14.6
2-Rc1/8
A
B
10
56.6
93.5
14
2-Rc1/2
28
43

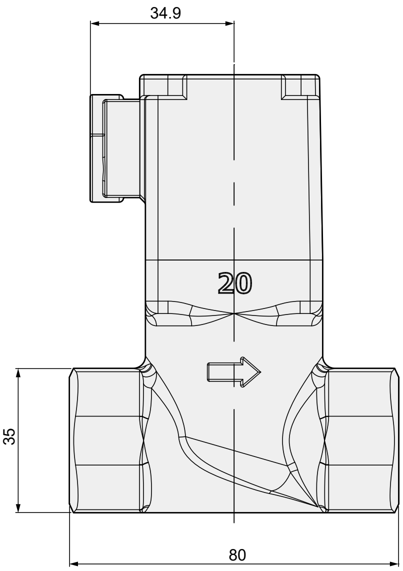

34.9
15
28.5
71

# SUB series 2/2 Cylinder Valve

## Dimensions/ Standard

**SUB 20 - P**


14.6
2-Rc1/8
A
B
10
66
106.5
17.5
2-Rc3/4
35
43

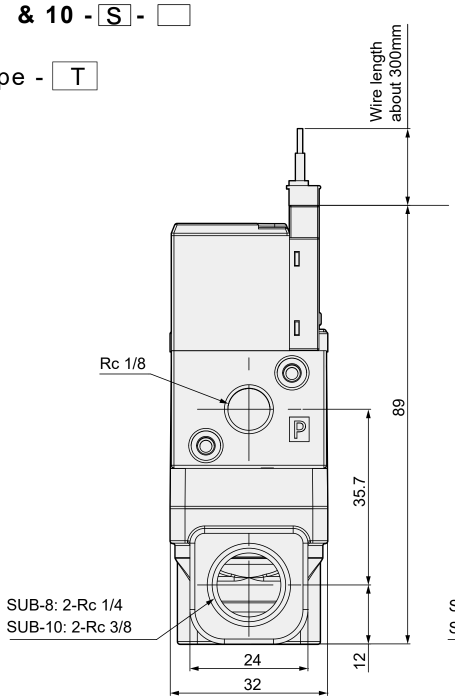


# SUB series 2/2 Cylinder Valve

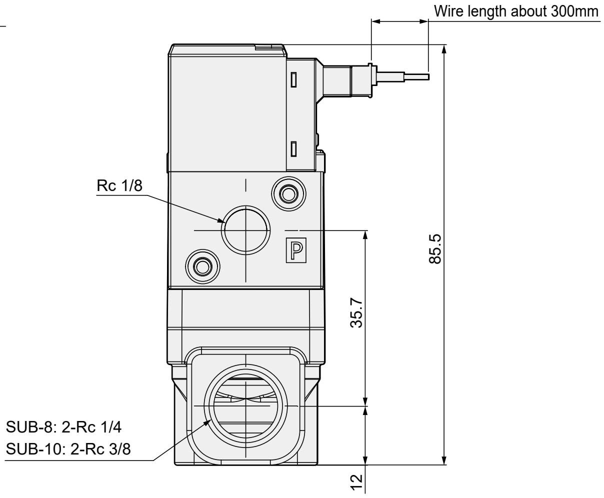
## Dimensions/ Coils type

### SUB 8 & 10 - S -

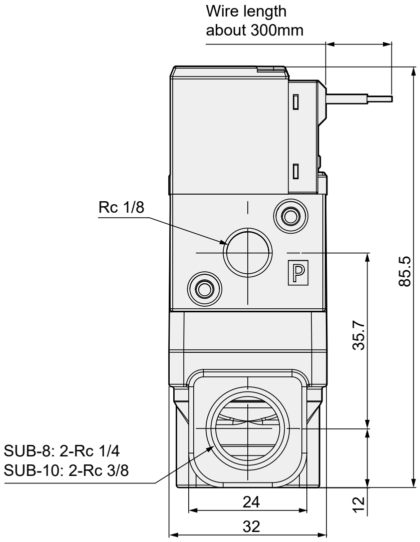
● T type - T


Wire length about 300mm
Rc 1/8
89
35.7
SUB-8: 2-Rc 1/4
SUB-10: 2-Rc 3/8
24
32
12

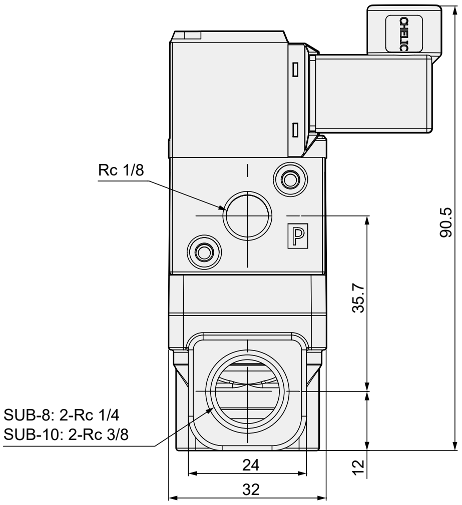
● L type - L


Wire length about 300mm
Rc 1/8
85.5
35.7
SUB-8: 2-Rc 1/4
SUB-10: 2-Rc 3/8
12

● Grommet - W


Wire length
about 300mm
Rc 1/8
85.5
35.7
SUB-8: 2-Rc 1/4
SUB-10: 2-Rc 3/8
24
32
12

● DIN terminal - K


CHELIC
Rc 1/8
90.5
35.7
SUB-8: 2-Rc 1/4
SUB-10: 2-Rc 3/8
24
32
12

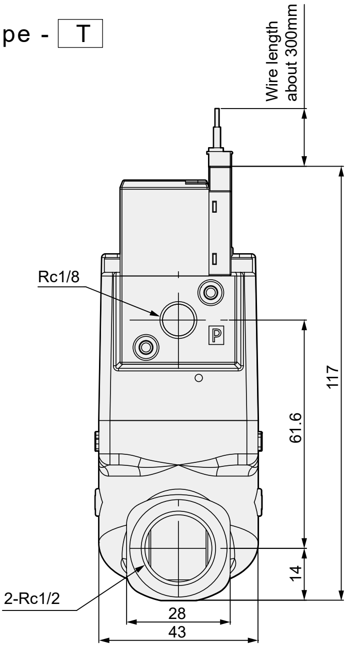
# SUB series 2/2 Cylinder Valve

## Dimensions/ Coils type

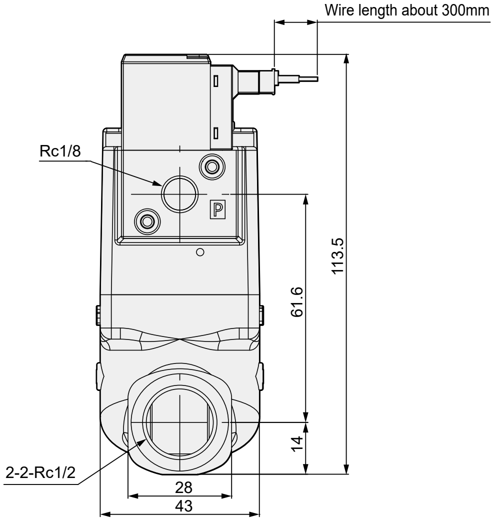
CHELIC

### SUB 15 - S -

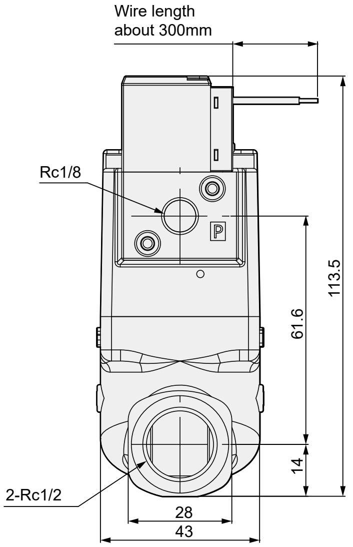
**T type - T**


Wire length
about 300mm
Rc1/8
P
117
61.6
14
2-Rc1/2
28
43

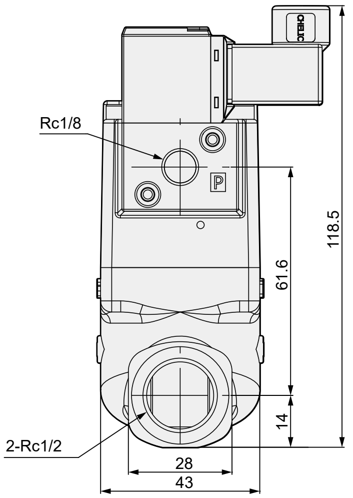
**L type - L**


Wire length about 300mm
Rc1/8
P
113.5
61.6
14
2-2-Rc1/2
28
43

**Grommet - W**


Wire length
about 300mm
Rc1/8
P
113.5
61.6
14
2-Rc1/2
28
43

**DIN terminal - K**

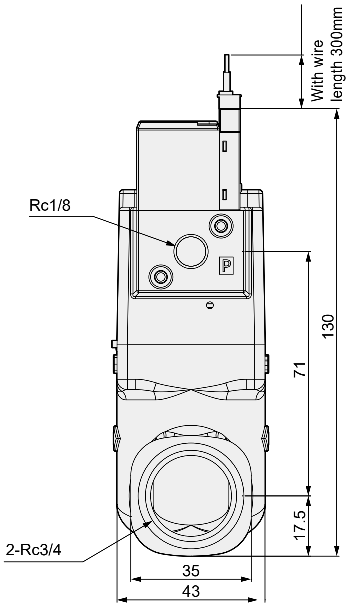

CHELIC
Rc1/8
P
118.5
61.6
14
2-Rc1/2
28
43

# SUB series 2/2 Cylinder Valve

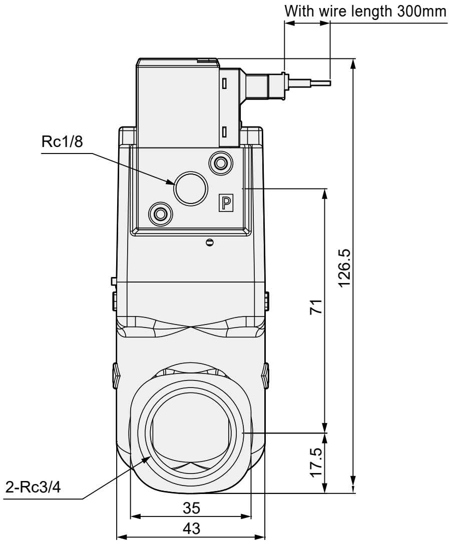
## Dimensions/ Coils type

### SUB 20 - S - ☐

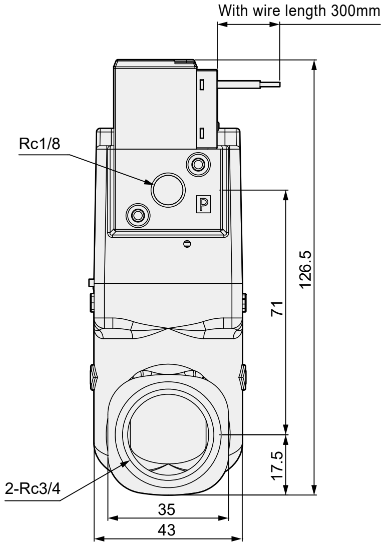
**T type - T**


With wire length 300mm
Rc1/8
P
130
71
17.5
2-Rc3/4
35
43

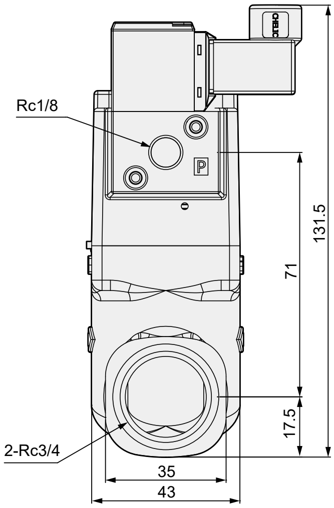
**L type - L**


With wire length 300mm
Rc1/8
P
126.5
71
17.5
2-Rc3/4
35
43

**Grommet - W**

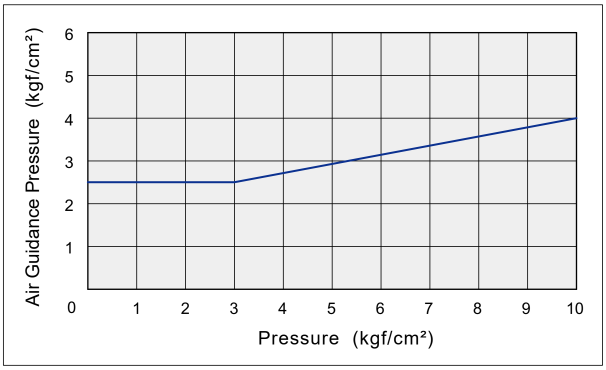

With wire length 300mm
Rc1/8
P
126.5
71
17.5
2-Rc3/4
35
43

**DIN terminal - K**


CHELIC
Rc1/8
P
131.5
71
17.5
2-Rc3/4
35
43

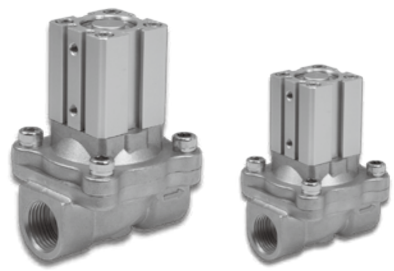
## Air Guidance Pressure Range (Normal open & Double Acting)

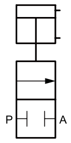
### Chart (1)



# SUG series 2/2 Solenoid Valve

## Product features/ Code of order





### Code of order

SUG — 25

| Model | Port size |
|---|---|
| SUG<br>2/2 Solenoid valve | |

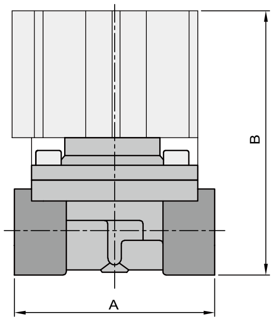
| Mark | Size |
|---|---|
| 10 | 3/8 |
| 15 | 1/2 |
| 20 | 3/4 |
| 25 | 1 |
| 35 | 1 1/4 |
| 40 | 1 1/2 |
| 50 | 2 |

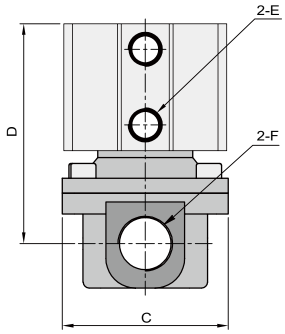
### Specification

| Item \ Model | | SUG-10 | SUG-15 | SUG-20 | SUG-25 | SUG-35 | SUG-40 | SUG-50 |
|---|---|---|---|---|---|---|---|---|
| Fluid | | Applicable to air, water and oil | | | | | | |
| Ambient and fluid temperature ℃ | | -5 ~ 100 | | | | | | |
| Pilot type | | Direct operated | | | | | | |
| Applicable medium viscosity | | 50 CST or below | | | | | | |
| Bore size (mm) | | 20 | 20 | 20 | 32 | 50 | 50 | 63 |
| Port size | | PT 3/8 | PT 1/2 | PT 3/4 | PT 1 | G 1 1/4 | G 1 1/2 | G 2 |
| Orifice (mm) | | 16 | 16 | 20 | 25 | 35 | 40 | 50 |
| Cv factor | | 4.8 | 4.8 | 12 | 7.6 | 24 | 29 | 48 |
| Pressure range kgf/cm²(kPa) | | 0 ~ 7 ( 0 ~ 700 ) | | | | | | |
| Withstand pressure kgf/cm²(kPa) | | 10.5 ( 1050 ) | | | | | | |
| Control pressure range kgf/cm²(kPa) | | 3 ~ 6 ( 300~600 ) | | | | | | |
| Material | Body | Brass | | | | | | |
| | Grease seal | PTFE | | | | | | |
| Main port size | | 2-M5 x 0.8P | | | 2-G 1/8 | 2-G 1/4 | 2-G 1/4 | 2-G 1/4 |

Note: The product is not applicable to certain fluid such as in high temperature as luquid but being solid after cooling, or the corrosive liquid that viscosity over 20 CST.

### External dimensions



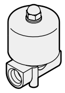


| Model | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| SUG-10 | 66 | 84 | 57.5 | 72 | M5 x 0.8P | PT 3/8 |
| SUG-15 | 66 | 89 | 57.5 | 77 | M5 x 0.8P | PT 1/2 |
| SUG-20 | 70 | 94 | 57.5 | 79.5 | M5 x 0.8P | PT 3/4 |
| SUG-25 | 92 | 108 | 77 | 87.5 | G 1/8 | PT 1 |
| SUG-35 | 120 | 125 | 88 | 100.5 | G 1/4 | G 1 1/4 |
| SUG-40 | 125 | 130 | 93 | 102.5 | G 1/4 | G 1 1/2 |
| SUG-50 | 168 | 152 | 120 | 117 | G 1/4 | G 2 |

# Directional Control - Solenoid Valve ( 2 Port ) Series

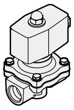
## SUD, SUW, SUS, SAS, SDC

Provide CAD external dimension.



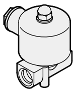
**SUD2 series** - - **Direct operated (General)** - - - - - **( 6, 8, 10; 6K, 8K, 10K )** - - - - **P.2-2.23**

Applicable to air, water, light oil and steam〔Brass body〕



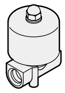
**SUW2 series** - - **Direct diaphragm** - - - - - - - - **( 10, 15, 20, 25, 35, 40, 50 )** - - - - **P.2-2.24**
**( High flow )**

Applicable to air, water and light oil〔Brass body〕



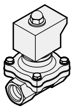
**SUS series** - - - **Direct operated** - - - - - - - - - - - - **( 15, 20, 25, 35, 40, 50 )** - - - - **P.2-2.25**
**(High temperature steam)**

Applicable to air, water, light oil and steam〔Brass body〕



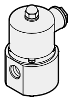
**SAS series** - - - **Direct operated (General)** - - - - - - - - - - - **( 6A, 8A, 10A )** - - - - **P.2-2.26**

Applicable to air, water and steam〔Stainless steel body〕



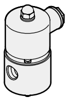
**SAS series** - - - **Direct diaphragm** - - - - - **( 15A, 20A, 25A, 35A, 40A, 50A )** - - - - **P.2-2.27**
**( High flow )**

Applicable to air and water〔Stainless steel body〕



**SDC series** - - - **Direct diaphragm type** - - - - - - - - - - - - - - - - **( 8, 10, 15 )** - - - - **P.2-2.28**
**(Able to bear the strong acid to use)**

Applicable to the fluid of acid, alkali and corrodive〔Plastic steel body〕



**SDC series** - - - **Direct diaphragm type** - - - **( 8-TF, 10-TF, 15-TF, 20-TF )** - - - - **P. 2-2.29**
**(Teflon niumenon can able to bear the strong acid to use)**

Applicable to the fluid of acid, alkali and corrodive〔Teflon body〕

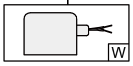
# SUD2 series 2/2 Solenoid Valve

## Product features/ Code of order

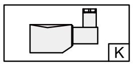
### Code of order

**SUD2** — **10** — **110VAC** — **K**

| SUD2 | 10 | 110VAC | K |
|---|---|---|---|
| 2/2<br>Solenoid valve<br>SUD2:<br>Direct operated<br>(General) | Model:<br>SUD2-6<br>SUD2-8<br>SUD2-10 | Voltage<br>Standard voltage<br>110V AC<br>220V AC<br>24V DC | Electrical entry<br>W Grommet<br>K DIN Terminal |



Grommet



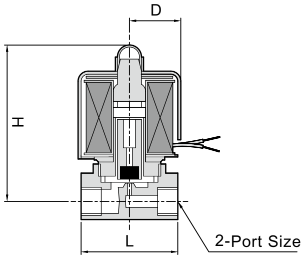
DIN Terminal

### Specification

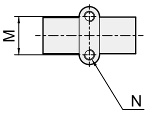
| Item | | SUD2-6 | SUD2-8 | SUD2-10 |
|---|---|---|---|---|
| Fluid | | Suitable for air, water, light oil and steam | | |
| Ambient and fluid temperature ℃ | | -5 ~ 80 | | |
| Number of position ports | | 2/2 Solenoid valve | | |
| Type of actuation | | Normally closed (Custom made for normally open type) | | |
| Pilot type | | Direct operated (General) | | |
| Port size Rc | | 1/8 | 1/4 | 3/8 |
| Orifice mm Ø | | 2.5 | | 4 |
| Effective orifice(Cv factor) mm² | | 0.23 | | 0.6 |
| Pressure range (Max. range) kgf/cm² ( kPa ) | Air | 0 ~ 7<br>( 0 ~ 700 ) | | 0 ~ 10<br>( 0 ~ 1000 ) |
| | Water (Normal) | | | |
| | Oil (Circulate) | | | |
| | Steam | | | |
| Material | Body | Forge brass | | |
| | Diaphragm | NBR, Viton, Silicon | | |
| | Spring | Stainless steel | | |
| Weight kg | | 0.3 | | 0.6 |

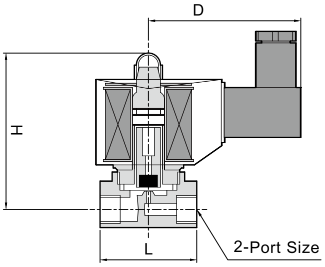
Note : This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST

### External dimensions



Standard



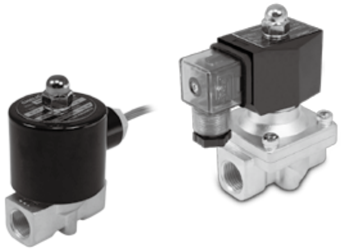


K type

| Item | SUD2-6-W | SUD2-6-K | SUD2-8-W | SUD2-8-K | SUD2-10-W | SUD2-10-K |
|---|---|---|---|---|---|---|
| D | 21 | 56 | 21 | 56 | 48 | 58 |
| H | 62 | | | | 75 | |
| L | 42 | | | | 53 | |
| M | 18 | | | | 21 | |
| N | M5 x 0.8P | | | | M5 x 0.8P | |

# SUW2 series 2/2 Solenoid Valve

## Product features/ Code of order



### Code of order

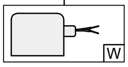
**SUW2** — **20** — **110VAC** — **K**

2/2 Solenoid valve
SUW2:
Direct diaphragm type (High flow)

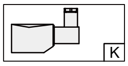
Model:
SUW2 10
SUW2 15
SUW2 20
SUW2 25
SUW2 35
SUW2 40
SUW2 50

Voltage:
110V AC
220V AC
24V DC

Electrical entry



Grommet



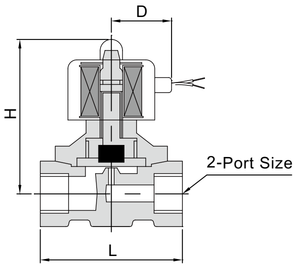
DIN Terminal

### Specification

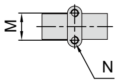
| Item | | SUW2-10 | SUW2-15 | SUW2-20 | SUW2-25 | SUW2-35 | SUW2-40 | SUW2-50 |
|---|---|---|---|---|---|---|---|---|
| Fluid | | Suitable for air, water and light oil | | | | | | |
| Ambient and fluid temperature ℃ | | -5 ~ 80 | | | | | | |
| Number of position ports | | 2/2 Solenoid valve | | | | | | |
| Type of actuation | | Normally closed (Custom made for normally open type) | | | | | | |
| Pilot type | | Direct diaphragm type (High flow) | | | | | | |
| Port size | | Rc 3/8 | Rc 1/2 | Rc 3/4 | Rc 1 | G1 1/4 | G1 1/2 | G2 |
| Orifice mm Ø | | 10 | 15 | 20 | 25 | 35 | 40 | 50 |
| Effective orifice(Cv factor) mm² | | 2.4 | 4.5 | 8.6 | 12 | 24 | 28 | 48 |
| Pressure range (Max. range) kgf/cm² (kPa) | Air | 0 ~ 7 ( 0 ~ 700 ) | | | | | | |
| | Water (Normal) | 0 ~ 5 ( 0 ~ 500 ) | | | | | | |
| | Oil (Circulate) | | | | | | | |
| Material | Body | Forge brass | | | | | | |
| | Diaphragm | NBR, Viton, Silicon | | | | | | |
| | Spring | Stainless steel | | | | | | |
| Weight kg | | 0.9 | | 1.0 / 0.9 | 1.8 / 1.2 | 3.2 / 2.7 | 3.5 / 2.7 | 5.4 / 4.4 |

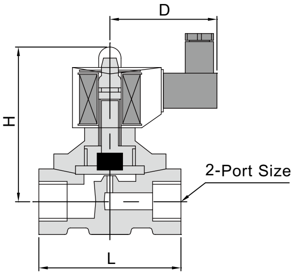
Note : This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST

### External dimensions

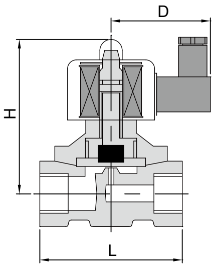


Standard





K type



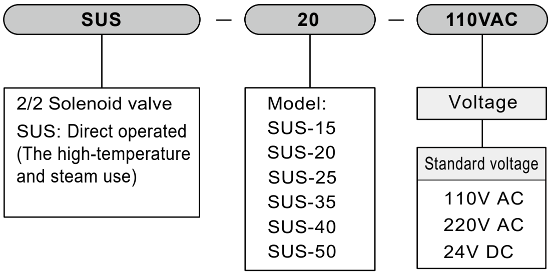
Universal type

| Item | SUW2-10 | SUW2-15 | SUW2-20 | SUW2-25 | SUW2-35 | SUW2-40 | SUW2-50 |
|---|---|---|---|---|---|---|---|
| D | W type 48, K type 58 | | | | W type 58, K type69, Universal type 68 | | |
| H | 97 | 97 | 99 | 103 | 135 | 138 | 155 |
| L | 67 | 67 | 71 | 92 | 108.5 | 115 | 155 |
| M | 30 | 30 | 27 | – | | | |
| N | M6x1.0P | M6x1.0P | M6x1.0P | – | | | |

# SUS series 2/2 Solenoid Valve

## Product features/ Code of order

### Code of order



SUS — 20 — 110VAC

SUS:
2/2 Solenoid valve
SUS: Direct operated
(The high-temperature and steam use)

20:
Model:
SUS-15
SUS-20
SUS-25
SUS-35
SUS-40
SUS-50

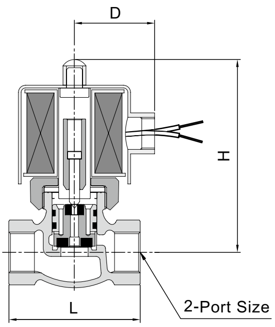
110VAC:
Voltage
Standard voltage
110V AC
220V AC
24V DC

### Specification

| Item / Model | | SUS-15 | SUS-20 | SUS-25 | SUS-35 | SUS-40 | SUS-50 |
|---|---|---|---|---|---|---|---|
| Fluid | | Suitable for the place of steam, light oil, the high pressure water and air | | | | | |
| Ambient and fluid temperature | °C | -5 ~ 185 | | | | | |
| Number of position ports | | 2/2 Solenoid valve | | | | | |
| Type of actuation | | Normally closed (Custom made for normally open type) | | | | | |
| Pilot type | | Direct operated (High temperature steam) | | | | | |
| Port size | Rc | 1/2 | 3/4 | 1 | 1¼ | 1½ | 2 |
| Orifice | mm Ø | 17 | | 22 | 30 | 32 | 50 |
| Effective orifice(Cv factor) | mm² | 4.0 | 6.0 | 12 | 18 | 22 | 48 |
| Pressure range (Max. range) kgf/cm² (kPa) | Air | 0.5 ~ 15 ( 5 ~ 150 ) | | | | | |
| | Water(Normal) | 0.5 ~ 15 ( 50 ~ 1500 ) | | | 1.0 ~ 10 ( 100 ~ 1000 ) | | |
| | Oil (Circulate) | 0.5 ~ 10 ( 50 ~ 1000 ) | | | 1.0 ~ 10 ( 10 ~ 1000 ) | | |
| | Steam | 0.5 ~ 10 ( 5 ~ 100 ) | | | | | |
| Material | Body | Forge brass | | | | | |
| | Piston | Brass | | | | | |
| | Inner tube | Stainless steel | | | | | |
| | Spring | Stainless steel | | | | | |
| Weight | Kg | 1.7 | | 2.0 | 3.1 | 3.3 | 7.2 |

Note: This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST

### External dimensions



| Item / Model | SUS-15 | SUS-20 | SUS-25 | SUS-35 | SUS-40 | SUS-50 |
|---|---|---|---|---|---|---|
| **D** | 58 | | | | | |
| **H** | 125 | 125 | 133 | 141 | | 175 |
| **L** | 82 | | 91 | 110 | | 163 |

CX
SBS
SU
SFW
SUB
SUG
SUD2
SUW2
SUS
SAS
SDC

# SAS series 2/2 Solenoid Valve

## Product features/ Code of order〔Stainless steel body〕

### Code of order

SAS — 6A — 110VAC

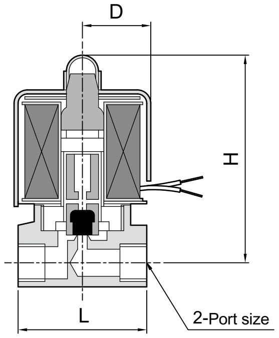
| SAS | 6A | 110VAC |
|---|---|---|
| 2/2 Solenoid valve<br>SAS:<br>Direct operated<br>(General) | Model:<br>SAS-6A<br>SAS-8A<br>SAS-10A | Voltage<br>Standard voltage<br>110V AC<br>220V AC<br>24V DC |

### Specification

| Item \ Model | | SAS-6A | SAS-8A | SAS-10A |
|---|---|---|---|---|
| Fluid | | Suitable for the place of steam, the water and air. | | |
| Ambient and fluid temperature °C | | -5 ~ 185 | | |
| Number of position ports | | 2/2 Solenoid valve | | |
| Type of actuation | | Normally closed (Custom made for normally open type) | | |
| Pilot type | | Direct operated (General) | | |
| Port size Rc | | 1/8 | 1/4 | 3/8 |
| Orifice mm Ø | | 2.5 | 2.5 | 4 |
| Effective orifice(Cv factor) mm² | | 0.23 | 0.23 | 0.58 |
| Pressure range (Max. range) kgf/cm² (kPa) | Air | 0 ~ 7 ( 0 ~ 700 ) | | 0 ~ 10 ( 0 ~ 1000 ) |
| | Water (Normal) | | | |
| | Steam | | | |
| Material | Body | Gast the stainless steel accurately #316 | | |
| | Diaphragm | NBR, Viton, Silicon, PTFE | | |
| | Spring | Stainless steel | | |
| Weight Kg | | 0.3 | 0.3 | 0.6 |

Note: This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 50CST

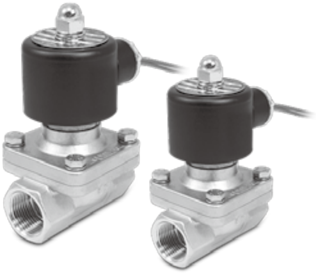
### External dimensions



| Item \ Model | SAS-6A | SAS-8A | SAS-10A |
|---|---|---|---|
| **D** | 21 | 21 | 48 |
| **H** | 63 | 63 | 75 |
| **L** | 41 | 41 | 54 |

# SAS series 2/2 Solenoid Valve

## Product features/ Code of order〔Stainless steel body〕



### Code of order

SAS — 15A — 110VAC

2/2 Solenoid valve
SAS:
Direct diaphragm
type( Big flow rate)

Model:
SAS-15A
SAS-20A
SAS-25A
SAS-35A
SAS-40A
SAS-50A

Voltage

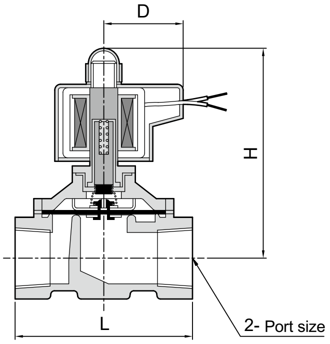
| Standard voltage |
|---|
| 110V AC |
| 220V AC |
| 24V DC |

### Specification

| Item \ Model | | SAS-15A | SAS-20A | SAS-25A | SAS-35 | SAS-40A | SAS-50A |
|---|---|---|---|---|---|---|---|
| Fluid | | Suitable for the place of water and air | | | | | |
| Ambient and fluid temperature °C | | -5 ~ 80 | | | | | |
| Number of position ports | | 2/2 Solenoid valve | | | | | |
| Type of actuation | | Normally closed(Custom made for normally open type) | | | | | |
| Pilot type | | Direct diaphragm type(High flow) | | | | | |
| Port size Rc | | 1/2 | 3/4 | 1 | 1 ¼ | 1½ | 2 |
| Orifice mm Ø | | 15 | 20 | 25 | 35 | 40 | 50 |
| Effective orifice(Cv factor) mm² | | 4.5 | 8.6 | 12 | 24 | 28 | 48 |
| Pressure range (Max. range) kgf/cm² (kPa) | Air | 0 ~ 7 ( 0 ~ 700 ) | | | | | |
| | Water (Normal) | 0 ~ 5 ( 0 ~ 500 ) | | | | | |
| Material | Body | Gast the stainless steel accurately #316 | | | | | |
| | Diaphragm | NBR, Viton, Silicon | | | | | |
| | Inner tube | Stainless steel | | | | | |
| | Spring | Stainless steel | | | | | |
| Weight Kg | | 0.9 | 1.0 | 1.6 | 3.2 | 3.4 | 5.8 |

Note: This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST.

### External dimensions



| Item \ Model | SAS-15A | SAS-20A | SAS-25A | SAS-35A | SAS-40A | SAS-50A |
|---|---|---|---|---|---|---|
| **D** | 50 | | | 58 | | |
| **H** | 100 | 102 | 106 | 140 | | 170 |
| **L** | 70 | 73 | 93 | 125 | | 167 |

# SDC series 2/2 Solenoid Valve

## Product features/ Code of order

### Code of order

SDC — 8 — 110VAC

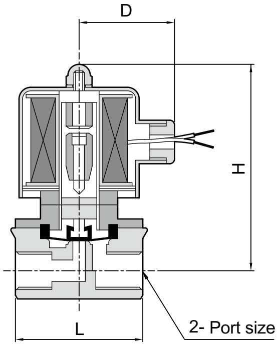
| SDC | 8 | 110VAC |
|---|---|---|
| 2/2<br>Solenoid valve<br>SDC:<br>Direct diaphragm type<br>(Able to bear the strong acid to use) | Model:<br>SDC-8<br>SDC-10<br>SDC-15 | Voltage:<br>110V AC<br>220V AC<br>24V DC |

### Specification

| Item \ Model | | SDC-8 | SDC-10 | SDC-15 |
|---|---|---|---|---|
| Fluid | | Suitable for the fluid of acid, alkali and corrodive | | |
| Ambient and fluid temperature °C | | -5 ~ 80 | | |
| Number of position ports | | 2/2 Solenoid valve | | |
| Type of actuation | | Normally closed(Custom made for normally open type) | | |
| Pilot type | | Direct diaphragm type (Able to bear the strong acid) | | |
| Port size Rc | | 1/4 | 3/8 | 1/2 |
| Orifice mm Ø | | 6.5 | | |
| Effective orifice(Cv factor) mm² | | 0.28 | | |
| Pressure range (Max. range) kgf/cm² (kPa) | Air | 0 ~ 1 ( 0 ~ 100 ) | | |
| | Water (Normal) | | | |
| Material | Body | PVC | | |
| | Diaphragm | PTFE | | |
| | Spring | Stainless steel | | |
| Weight Kg | | 0.6 | | |

Note: This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST.

### External dimensions



| Item \ Model | SDC-8 | SDC-10 | SDC-15 |
|---|---|---|---|
| D | 48 | 48 | 48 |
| H | 90 | 90 | 93 |
| L | 54 | 54 | 54 |

# SDC series 2/2 Solenoid Valve

## Product features/ Code of order

CHELIC

### Code of order

SDC — 8-TF — 110VAC

2/2 Solenoid valve
SDC:
Direct diaphragm type
(Teflon niumenon can bear the strong acid and alkai)

Model:
SDC-8-TF
SDC-10-TF
SDC-15-TF
SDC-20-TF

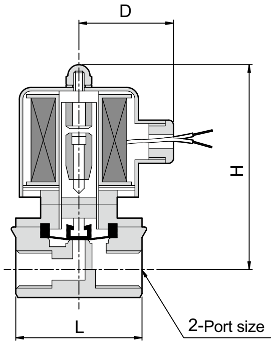
Voltage:
110V AC
220V AC
24V DC

### Specification

| Item / Model | | SDC-8-TF | SDC-10-TF | SDC-15-TF | SDC-20-TF |
|---|---|---|---|---|---|
| Fluid | | Suitable for the fluid of acid, alkali and corrodive | | | |
| Ambient and fluid temperature °C | | -5 ~ 80 | | | |
| Number of position ports | | 2/2 Solenoid valve | | | |
| Type of actuation | | Normally closed(Custom made for normally open type) | | | |
| Pilot type | | Direct diaphragm type (Teflon niumenon can able to bear the strong acid to use) | | | |
| Port size Rc | | 1/4 | 3/8 | 1/2 | 3/4 |
| Orifice mm Ø | | 6.5 | | | 13 |
| Effective orifice(Cv factor) mm² | | 0.28 | | | 4 |
| Pressure range (Max. range) kgf/cm² (kPa) | Air | 0 ~ 1 ( 0 ~ 100 ) | | | 0 ~ 0.5 ( 0 ~ 50 ) |
| | Water (Normal) | | | | |
| Material | Body | PTFE | | | |
| | Diaphragm | PTFE | | | |
| | Spring | Stainless steel | | | |
| Weight Kg | | 0.58 | 0.57 | 0.65 | 1.8 |

Note: This product is not suitable for the liquid of high temperature, the fluid of solid while cooling and the fluid of corrosive and viscosity exceed 20CST.

### External dimensions



| Item / Model | SDC-8-TF | SDC-10-TF | SDC-15-TF | SDC-20-TF |
|---|---|---|---|---|
| D | 48 | | | 54 |
| H | 90 | | 93 | 115 |
| L | 51 | | 54 | 76 |

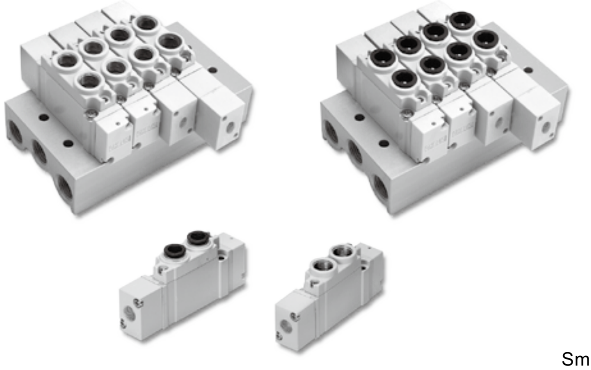
CX
SBS
SU
SFW
SUB
SUG
SUD2
SUW2
SUS
SAS
SDC

# MEMO

# Directional control — PM series Air Operated Valve

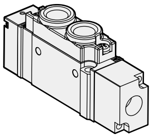
## PM3000, PM5000, PM7000, PM9000 Air operated valve

Provide CAD external dimension.



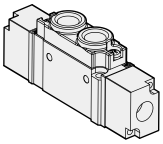
Small size, big flow rate!
Air hole can be changed and be added connector.

**Single air pilot valve**
( 5 port 2-position )



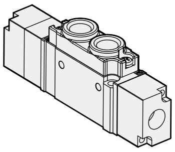
| | | |
|---|---|---|
| **PM - 3000 series** | **M5** | **P.2-3.4** |
| **PM - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-3.6** |
| **PM - 7000 series** | **Rc1/8 1/4 Ø6, Ø8, Ø10** | **P.2-3.13** |
| **PM - 9000 series** | **Rc1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-3.20** |

**Double air pilot valve**
( 5 port 2-position )



| | | |
|---|---|---|
| **PM - 3000 series** | **M5** | **P.2-3.4** |
| **PM - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-3.6** |
| **PM - 7000 series** | **Rc1/8, 1/4，Ø6, Ø8, Ø10** | **P.2-3.13** |
| **PM - 9000 series** | **Rc1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-3.20** |

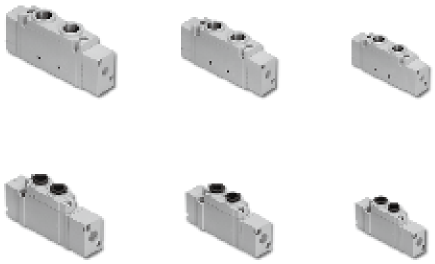
**Double air pilot valve**
( 5 port 3-position )



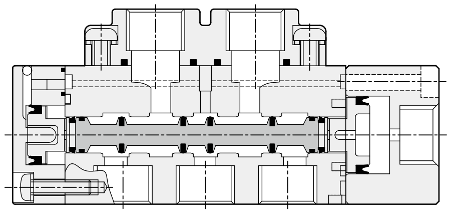
| | | |
|---|---|---|
| **PM - 3000 series** | **M5** | **P.2-3.5** |
| **PM - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-3.7** |
| **PM - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-3.14** |
| **PM - 9000 series** | **Rc1/4, 3/8, Ø8, Ø10, Ø12** | **P.2-3.22** |

# PM series Air Operated Valve

## Product features/ Code of order



### Internal structure



### Specification

| Item \ Model | PM3000 | PM5000 | PM7000 | PM9000 |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) | | | |
| Pilot pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | | |
| Pilot type | Air operated | | | |
| Number of positions | 5/2-position, 5/3-position | | | |
| Type of actuation | Normally open, Normally closed | | | |
| Effective orifice mm²(CV) | 3.6 (0.2) | 9 (0.5) | 16.2 (0.9) | 30.6 (1.7) |
| Port size | M5, Rc 1/8, Ø4, Ø6, Ø8 | | Rc1/8, Rc 1/4, Rc 3/8, Ø6, Ø8, Ø10, Ø12 | |
| Lubrication | Lubrication free type | | | |

### Code of order

**PM** – **5** – **10** – **1** – – **M 2**

**Model**

PM:
Pilot valve

**Model number**

3: 3000 series
5: 5000 series
7: 7000 series
9: 9000 series

**Coil q'ty**

10: Single
20: Double

30: Closed center
40: Exhaust center
50: Pressure center

5/3-position double coils only

**Port size**

| Thread type | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8p | PM3000 |
| 1 | Rc 1/8 | PM5000 |
| 1 | Rc 1/8 | PM7000 |
| 2 | Rc 1/4 | |
| 3 | Rc 3/8 | PM9000 |
| 4 | Rc 1/2 | |

For A and B port

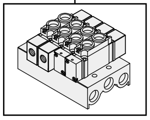
| | |
|---|---|
| 0 | With fitting port |

**With fitting port**

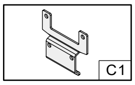
| Mark | Port size | Model |
|---|---|---|
| C4 | Ø4 | PM5000 |
| C6 | Ø6 | |
| C8 | Ø8 | |
| C6 | Ø6 | PM7000 |
| C8 | Ø8 | |
| C10 | Ø10 | |
| C8 | Ø8 | PM9000 |
| C10 | Ø10 | |
| C12 | Ø12 | |

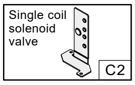
None: Stanard

**Manifold**



None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets



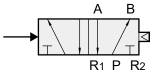


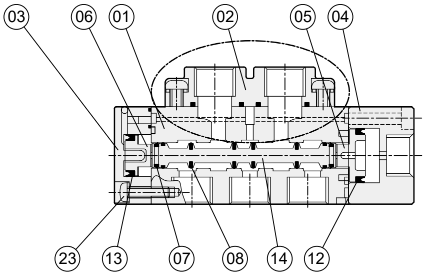
None: Without bracket
C1 : Side fixing bracket
C2 : Vertical fixing bracket
PM9000 without bracket option

# PM series Air Operated Valve

## Product features

### 5 port 2-position single




03
06
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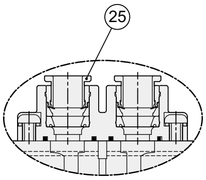
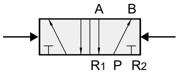
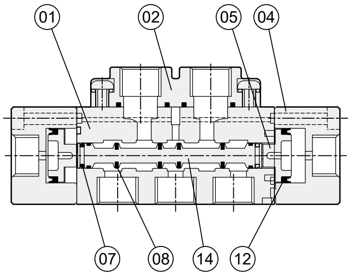


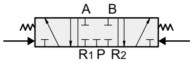
- With fitting port

### 5 port 2-position double

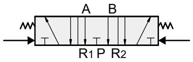



01
02
05
04
07
08
14
12

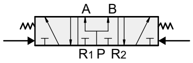
### 5 port 3-position double



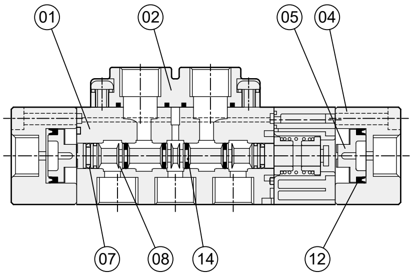
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
02
05
04
07
08
14
12

## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 07 | Spool packing | NBR |
| 02 | Top cover | Aluminum alloy | 08 | Spool packing | NBR |
| 03 | Rear cover | Resin | 09 | Holder piston packing | NBR |
| 04 | Air pilot holder | Aluminum alloy | 10 | Rear cover packing | NBR |
| 05 | Holder piston | POM | 11 | Shaft | Aluminum alloy |
| 06 | Rear cover piston | POM | 12 | Rear screw | Alloy steel |

Note: The main body has been treated with painting.

## Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing |
|---|---|---|
| Model / Quantity | 1 | 1 |
| PM 5000 | MYA-10 | MYA-7 |
| PM 7000 | MYA-11 | MYA-7 |

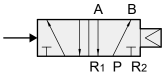
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

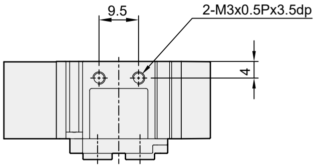
# PM 3000 series Air Operated Valve

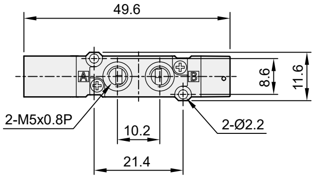
## Dimensions/ Standard

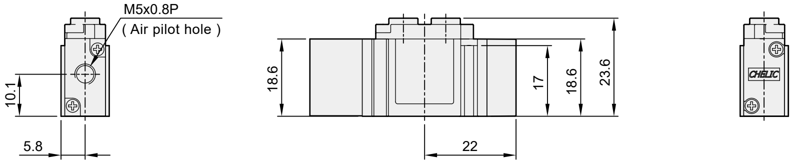
### PM 310M5

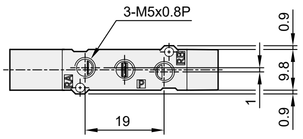
5 port 2-position single




9.5
2-M3x0.5Px3.5dp
4

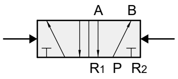

49.6
A
B
8.6
11.6
2-M5x0.8P
10.2
2-Ø2.2
21.4

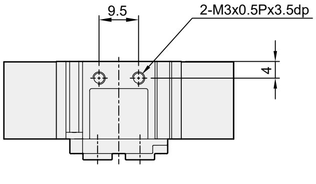

M5x0.8P
( Air pilot hole )
10.1
5.8
18.6
17
18.6
23.6
22
CHELIC

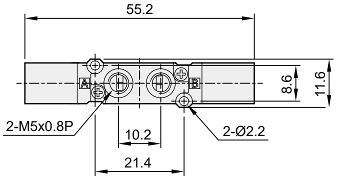

3-M5x0.8P
R2
RA
P
0.9
9.8
1
0.9
19

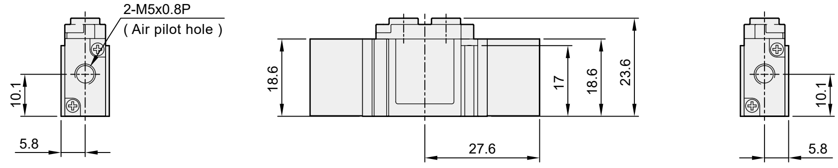
### PM 320M5

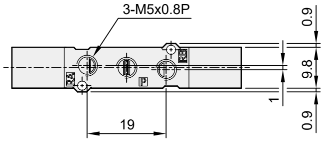
5 port 2-position double




9.5
2-M3x0.5Px3.5dp
4


55.2
A
B
8.6
11.6
2-M5x0.8P
10.2
2-Ø2.2
21.4


2-M5x0.8P
( Air pilot hole )
10.1
5.8
18.6
17
18.6
23.6
27.6
10.1
5.8


3-M5x0.8P
R2
RA
P
0.9
9.8
1
0.9
19

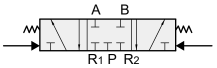
# PM 3000 series Air Operated Valve

## Dimensions/ Standard

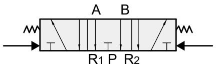
PM
PMB
PMU
PMUB
PV
PN

### PM 3(3)0M5
### PM 3(4)0M5
### PM 3(5)0M5

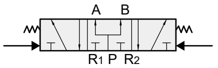
5 port 3-position double



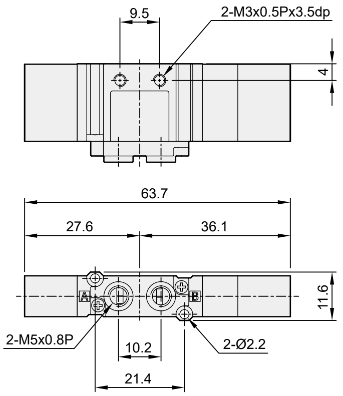
PM 3(3)0M5 (Closed center) N.C.

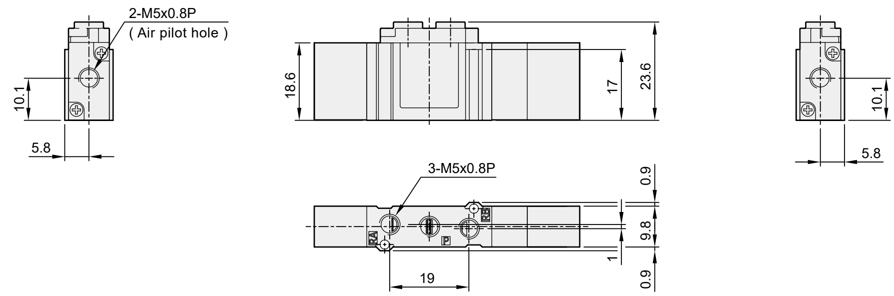


PM 3(4)0M5 (Exhaust center) N.F.



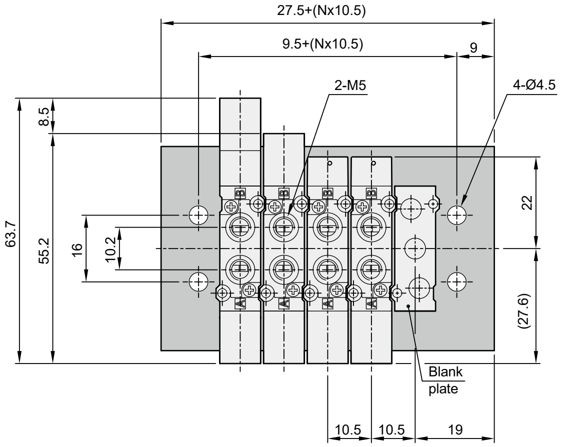
PM 3(5)0M5 (Pressure center) N.O.

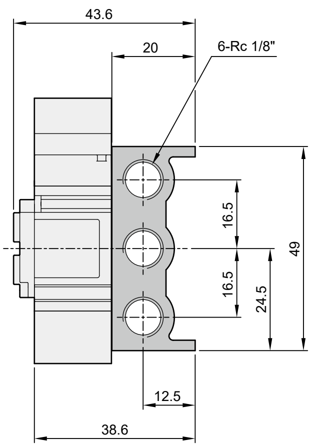

9.5
2-M3x0.5Px3.5dp
4
63.7
27.6
36.1
A
B
11.6
2-M5x0.8P
10.2
2-Ø2.2
21.4


2-M5x0.8P
( Air pilot hole )
10.1
5.8
18.6
17
23.6
10.1
5.8
3-M5x0.8P
0.9
9.8
1
0.9
RA
P
RB
19

### PM 3000 series - Standard

Manifold dimension


27.5+(Nx10.5)
9.5+(Nx10.5)
9
2-M5
4-Ø4.5
8.5
63.7
55.2
16
10.2
22
(27.6)
B
A
Blank plate
10.5
10.5
19


43.6
20
6-Rc 1/8"
16.5
16.5
24.5
49
12.5
38.6

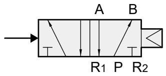
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

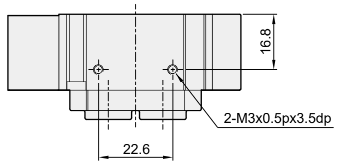
# PM 5000 series Air Operated Valve

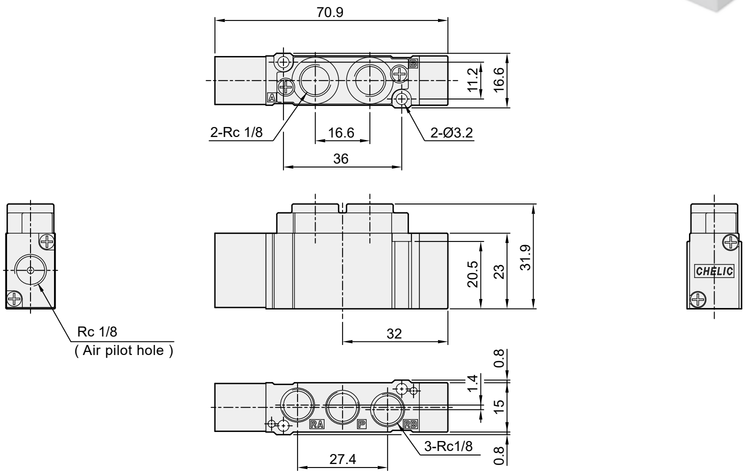
## Dimensions/ Standard

### PM 5101

5 port 2-position single

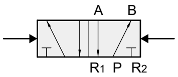


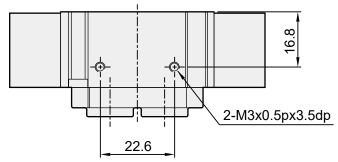

16.8
2-M3x0.5px3.5dp
22.6

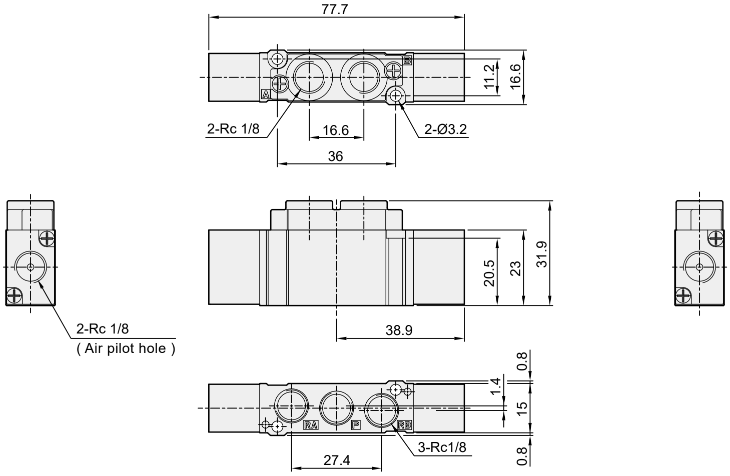

70.9
11.2
16.6
A
B
2-Rc 1/8
16.6
2-Ø3.2
36
Rc 1/8
( Air pilot hole )
20.5
23
31.9
32
CHELIC
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

### PM 5201

5 port 2-position double




16.8
2-M3x0.5px3.5dp
22.6

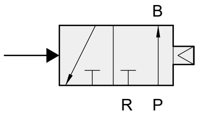

77.7
11.2
16.6
A
B
2-Rc 1/8
16.6
2-Ø3.2
36
2-Rc 1/8
( Air pilot hole )
20.5
23
31.9
38.9
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

# PM 5000 series Air Operated Valve

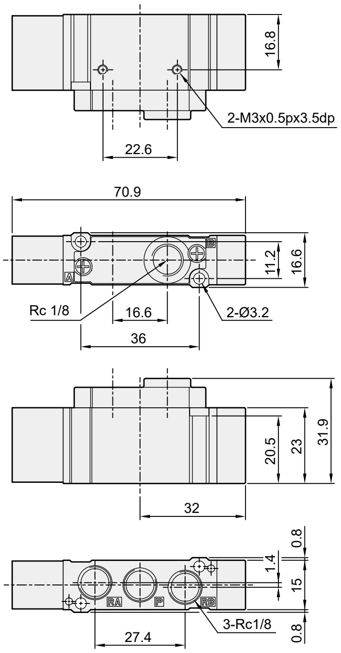
## Dimensions/ Standard/ 3 port 2 position

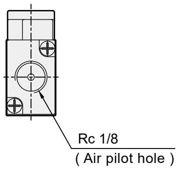
### PM 5101 - TA

3 port 2-position single



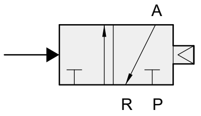
**-TA (N.O.)**


16.8
2-M3x0.5px3.5dp
22.6
70.9
11.2
16.6
Rc 1/8
16.6
2-Ø3.2
36
20.5
23
31.9
32
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

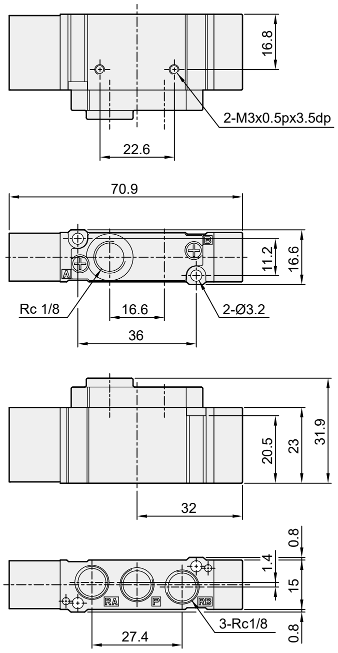

Rc 1/8
( Air pilot hole )

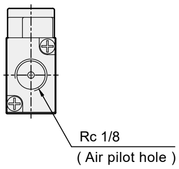
### PM 5101 - TB

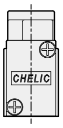
3 port 2-position single



**-TB (N.C.)**


16.8
2-M3x0.5px3.5dp
22.6
70.9
11.2
16.6
Rc 1/8
16.6
2-Ø3.2
36
20.5
23
31.9
32
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4


Rc 1/8
( Air pilot hole )

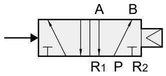


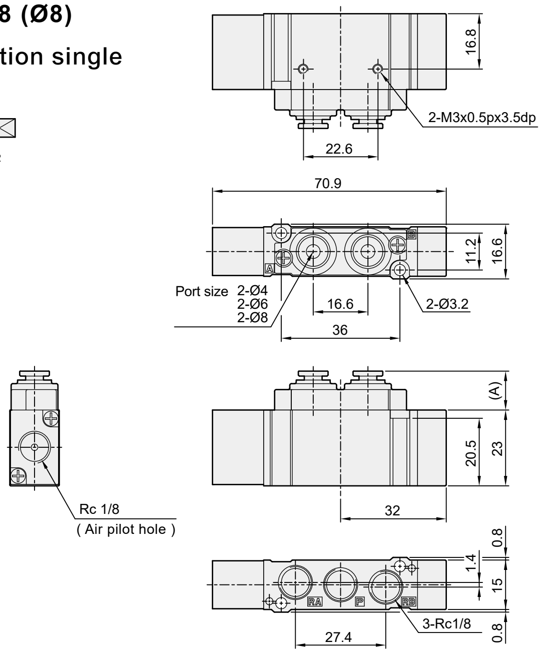
# PM 5000 series Air Operated Valve

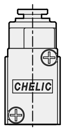
## Dimensions/ With fitting

### PM 5100 - C4 (Ø4)
### PM 5100 - C6 (Ø6)
### PM 5100 - C8 (Ø8)

5 port 2-position single



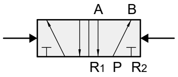

16.8
2-M3x0.5px3.5dp
22.6
70.9
11.2
16.6
Port size 2-Ø4
2-Ø6
2-Ø8
16.6
36
2-Ø3.2
(A)
20.5
23
32
Rc 1/8
( Air pilot hole )
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4

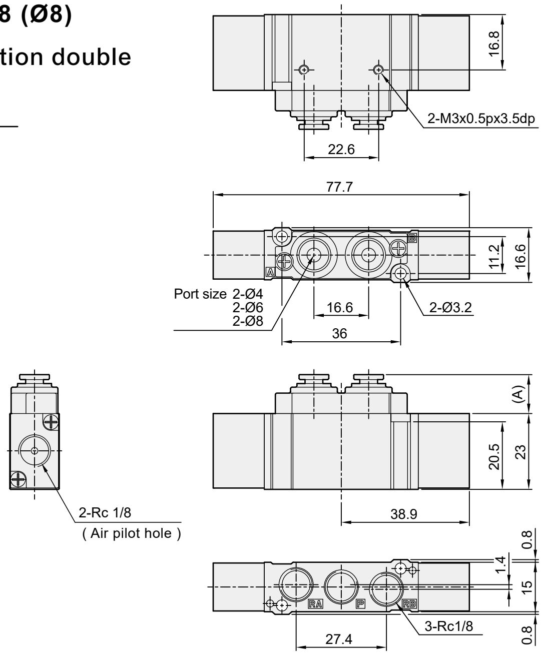


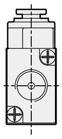
| Model | A |
|---|---|
| PM5100-C4 | 11.6 |
| PM5100-C6 | 12.2 |
| PM5100-C8 | 13.5 |

### PM 5200 - C4 (Ø4)
### PM 5200 - C6 (Ø6)
### PM 5200 - C8 (Ø8)

5 port 2-position double




16.8
2-M3x0.5px3.5dp
22.6
77.7
11.2
16.6
Port size 2-Ø4
2-Ø6
2-Ø8
16.6
36
2-Ø3.2
(A)
20.5
23
38.9
2-Rc 1/8
( Air pilot hole )
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4



| Model | A |
|---|---|
| PM5200-C4 | 11.6 |
| PM5200-C6 | 12.2 |
| PM5200-C8 | 13.5 |

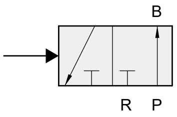
# PM 5000 series Air Operated Valve

## Dimensions/ With fitting/ 3 port 2 position

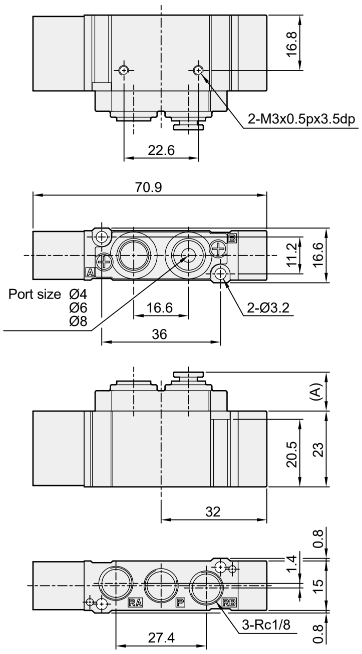
PM
PMB
PMU
PMUB
PV
PN

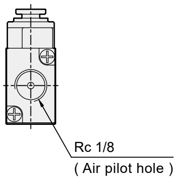
### PM 5100 - C4 - TA (Ø4)
### PM 5100 - C6 - TA (Ø6)
### PM 5100 - C8 - TA (Ø8)

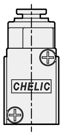
3 port 2-position single



**-TA (N.O.)**


16.8
2-M3x0.5px3.5dp
22.6
70.9
11.2
16.6
Port size Ø4
Ø6
Ø8
16.6
2-Ø3.2
36
(A)
20.5
23
32
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4


Rc 1/8
( Air pilot hole )

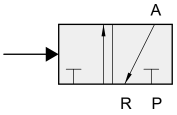


| Model | A |
|---|---|
| PM5100-C4-TA | 11.6 |
| PM5100-C6-TA | 12.2 |
| PM5100-C8-TA | 13.5 |

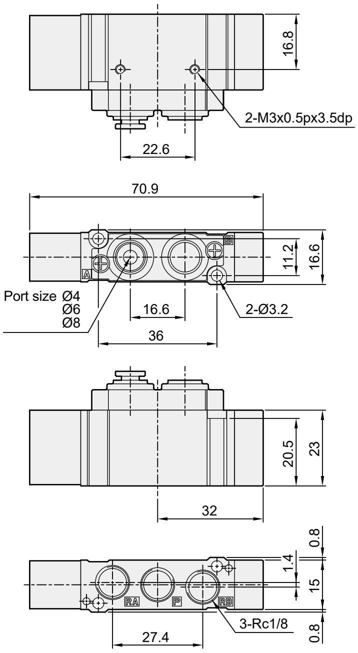
---

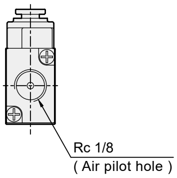
### PM 5100 - C4 - TB (Ø4)
### PM 5100 - C6 - TB (Ø6)
### PM 5100 - C8 - TB (Ø8)

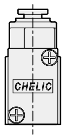
3 port 2-position single



**-TB (N.C.)**


16.8
2-M3x0.5px3.5dp
22.6
70.9
11.2
16.6
Port size Ø4
Ø6
Ø8
16.6
2-Ø3.2
36
20.5
23
32
0.8
1.4
15
0.8
RA
P
RB
3-Rc1/8
27.4


Rc 1/8
( Air pilot hole )



| Model | A |
|---|---|
| PM5100-C4-TB | 11.6 |
| PM5100-C6-TB | 12.2 |
| PM5100-C8-TB | 13.5 |

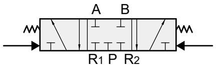
# PM 5000 series Air Operated Valve

## Dimensions/ Standard

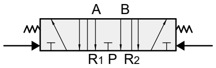
**CHELIC.**

### PM 5(3)01
### PM 5(4)01
### PM 5(5)01

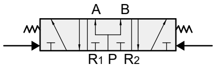
5 port 3-position double



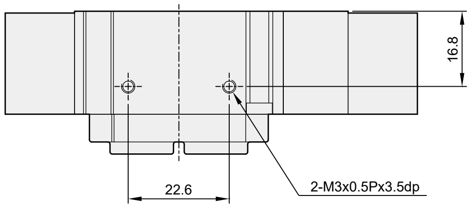
PM 5(3)01 (Closed center) N.C.

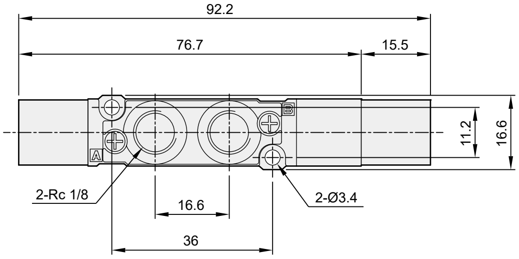


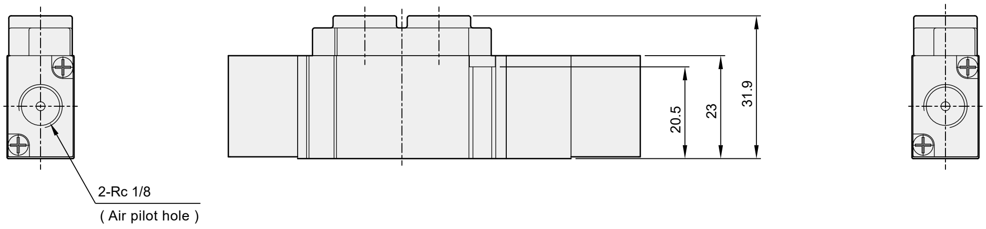
PM 5(4)01 (Exhaust center) N.F.

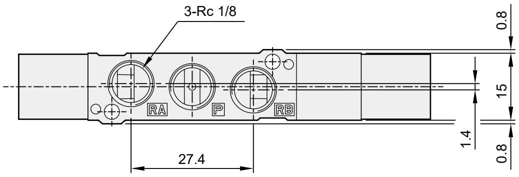


PM 5(5)01 (Pressure center) N.O.


16.8
22.6
2-M3x0.5Px3.5dp


92.2
76.7
15.5
B
A
11.2
16.6
2-Rc 1/8
16.6
2-Ø3.4
36


2-Rc 1/8
( Air pilot hole )
20.5
23
31.9

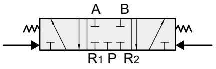

3-Rc 1/8
RA
P
RB
27.4
0.8
15
1.4
0.8

# PM 5000 series Air Operated Valve

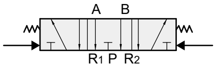
## Dimensions/ With fitting

### PM 5(3)00 - C4(Ø4), C6(Ø6), C8(Ø8)
### PM 5(4)00 - C4(Ø4), C6(Ø6), C8(Ø8)
### PM 5(5)00 - C4(Ø4), C6(Ø6), C8(Ø8)

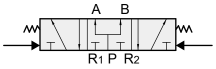
5 port 3-position double



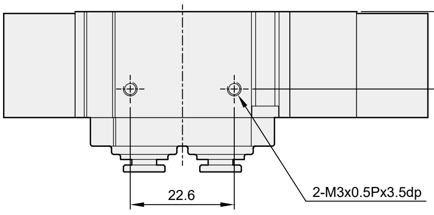
PM 5(3)00 (Closed center) N.C.

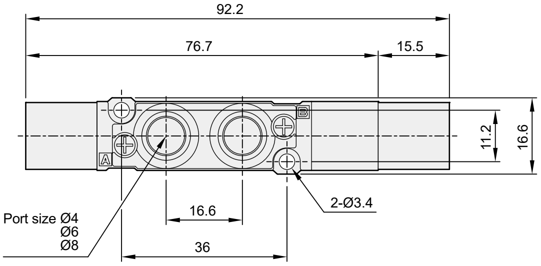


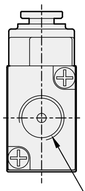
PM 5(4)00 (Exhaust center) N.F.

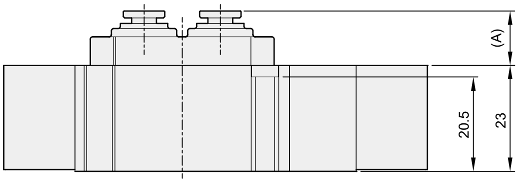


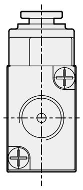
PM 5(5)00 (Pressure center) N.O.

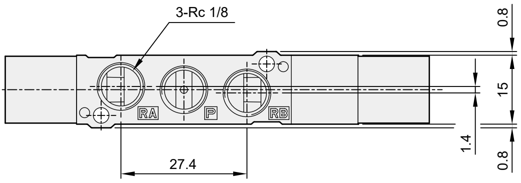

16.8
22.6
2-M3x0.5Px3.5dp


92.2
76.7
15.5
B
A
11.2
16.6
Port size Ø4
Ø6
Ø8
16.6
36
2-Ø3.4


2-Rc 1/8
( Air pilot hole )






3-Rc 1/8
RA
P
RB
27.4
0.8
15
1.4
0.8

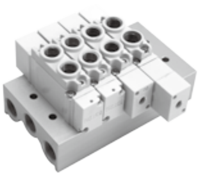
| Model | A |
|---|---|
| PM5100-C4 | 11.6 |
| PM5100-C6 | 12.2 |
| PM5100-C8 | 13.5 |

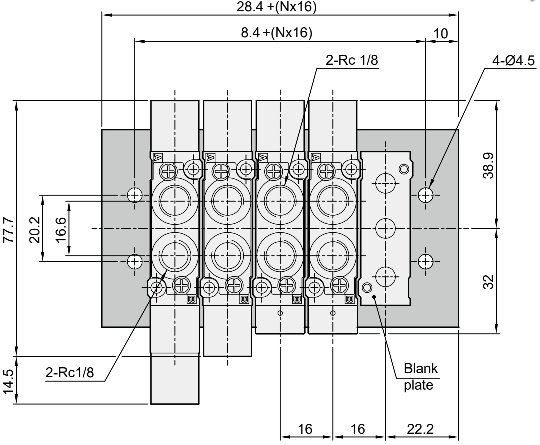
# PM 5000 series Air Operated Valve

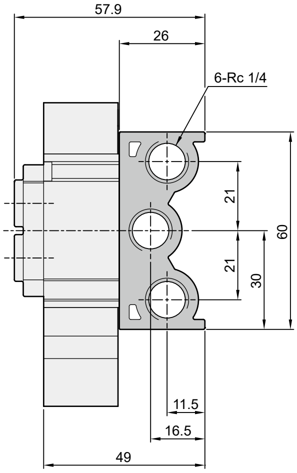
## Dimensions/ Manifold type

### PM 5000 series - standard

Manifold dimension



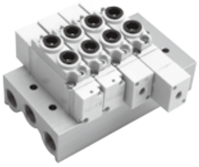

28.4 +(Nx16)
8.4 +(Nx16)
10
2-Rc 1/8
4-Ø4.5
38.9
32
77.7
20.2
16.6
14.5
2-Rc1/8
Blank plate
16
16
22.2

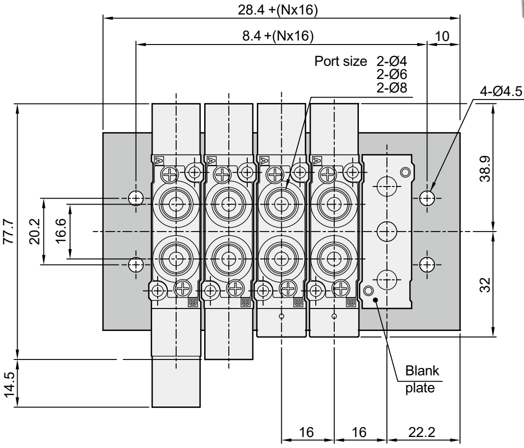

57.9
26
6-Rc 1/4
21
21
60
30
11.5
16.5
49

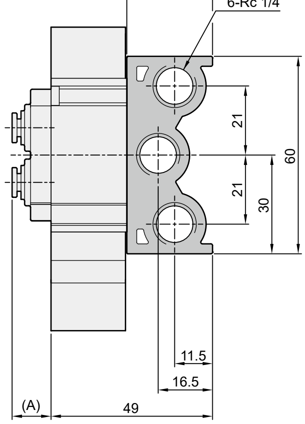
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

### PM 5000 series - With fitting port

Manifold dimension




28.4 +(Nx16)
8.4 +(Nx16)
10
Port size 2-Ø4
2-Ø6
2-Ø8
4-Ø4.5
38.9
32
77.7
20.2
16.6
14.5
Blank plate
16
16
22.2


26
6-Rc 1/4
21
21
60
30
11.5
16.5
(A)
49

| Model | A |
|---|---|
| PM5100-C4 | 11.6 |
| PM5100-C6 | 12.2 |
| PM5100-C8 | 13.5 |

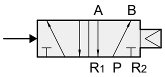
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

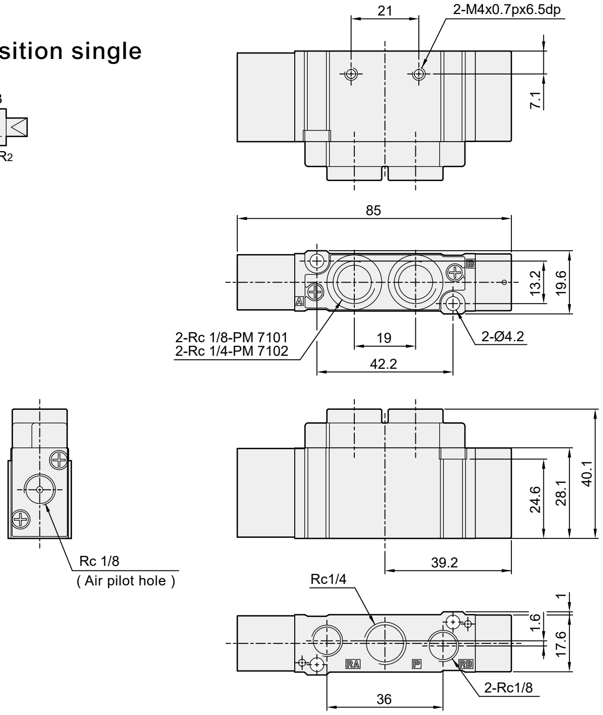
# PM 7000 series Air Operated Valve

## Dimensions/ Standard

### PM 7101
### PM 7102

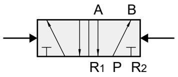
5 port 2-position single

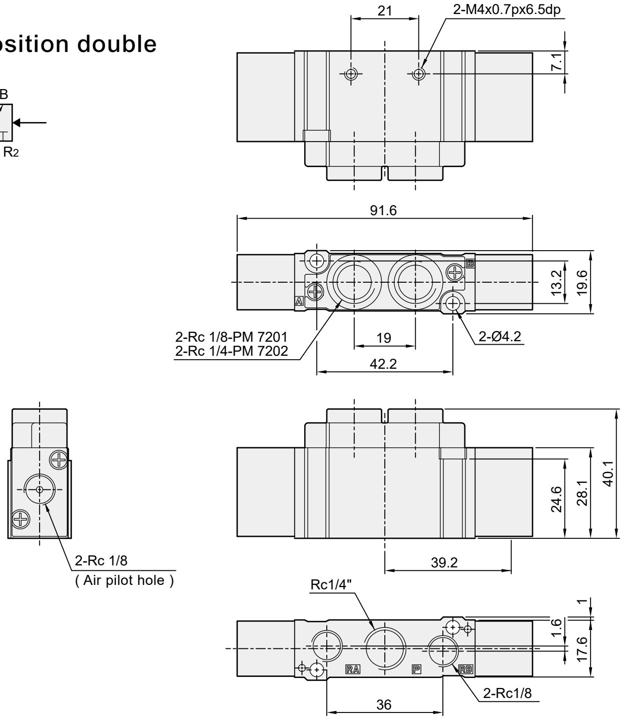



21
2-M4x0.7px6.5dp
7.1
85
13.2
19.6
2-Rc 1/8-PM 7101
2-Rc 1/4-PM 7102
19
2-Ø4.2
42.2
A
B
24.6
28.1
40.1
39.2
Rc 1/8
( Air pilot hole )
CHELIC
Rc1/4
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

### PM 7201
### PM 7202

5 port 2-position double



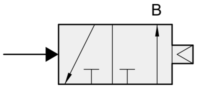

21
2-M4x0.7px6.5dp
7.1
91.6
13.2
19.6
2-Rc 1/8-PM 7201
2-Rc 1/4-PM 7202
19
2-Ø4.2
42.2
A
B
24.6
28.1
40.1
39.2
2-Rc 1/8
( Air pilot hole )
Rc1/4"
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

# PM 7000 series Air Operated Valve

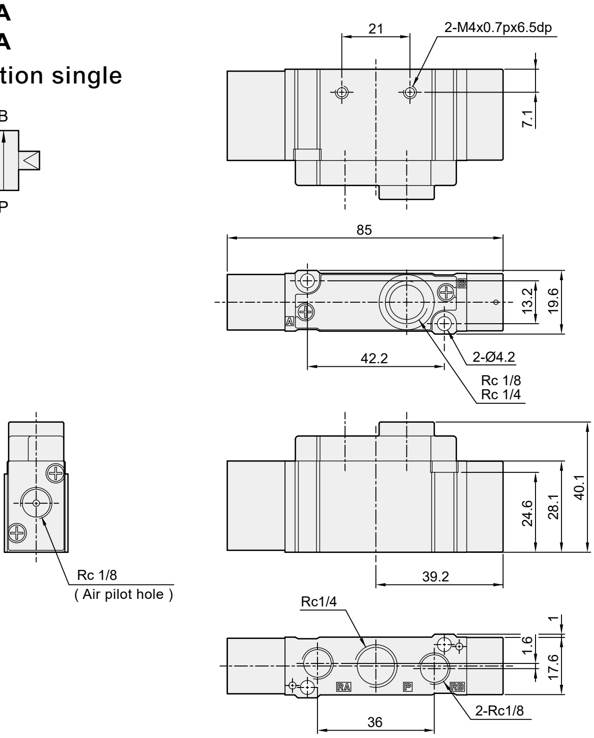
## Dimensions/ Standard/ 3 port 2 position

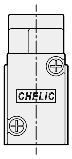
### PM 7101 - TA
### PM 7102 - TA

3 port 2-position single



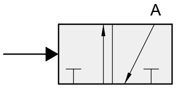
**-TA (N.O.)**


21
2-M4x0.7px6.5dp
7.1
85
B
A
13.2
19.6
42.2
2-Ø4.2
Rc 1/8
Rc 1/4
Rc 1/8
( Air pilot hole )
24.6
28.1
40.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

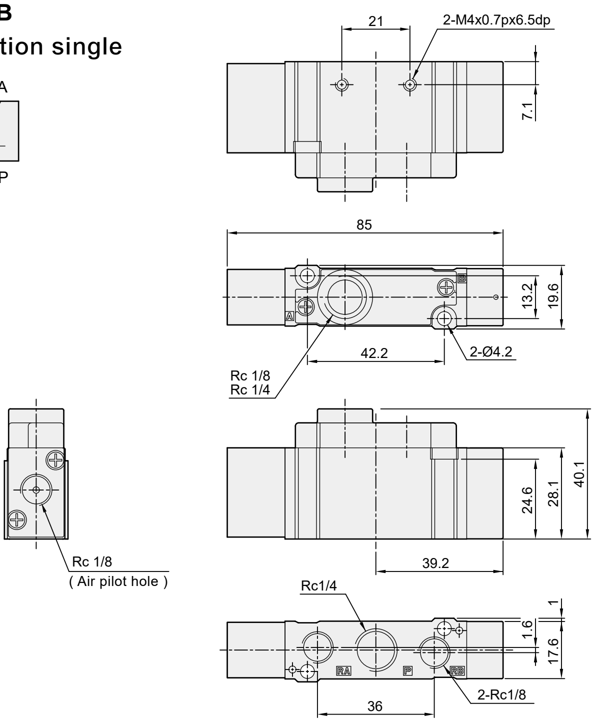


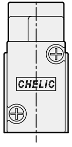
### PM 7101 - TB
### PM 7102 - TB

3 port 2-position single



**-TB (N.C.)**


21
2-M4x0.7px6.5dp
7.1
85
B
A
13.2
19.6
42.2
2-Ø4.2
Rc 1/8
Rc 1/4
Rc 1/8
( Air pilot hole )
24.6
28.1
40.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
36
2-Rc1/8

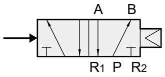


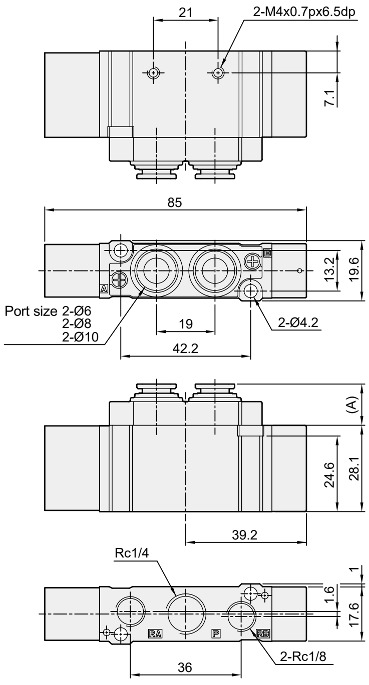
# PM 7000 series Air Operated Valve

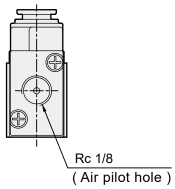
## Dimensions/ With fitting

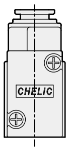
### PM 7100 - C6 (Ø6)
### PM 7100 - C8 (Ø8)
### PM 7100 - C10 (Ø10)

5 port 2-position single




21
2-M4x0.7px6.5dp
7.1
85
13.2
19.6
Port size 2-Ø6
2-Ø8
2-Ø10
19
42.2
2-Ø4.2
(A)
24.6
28.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36

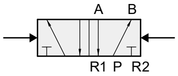

Rc 1/8
( Air pilot hole )

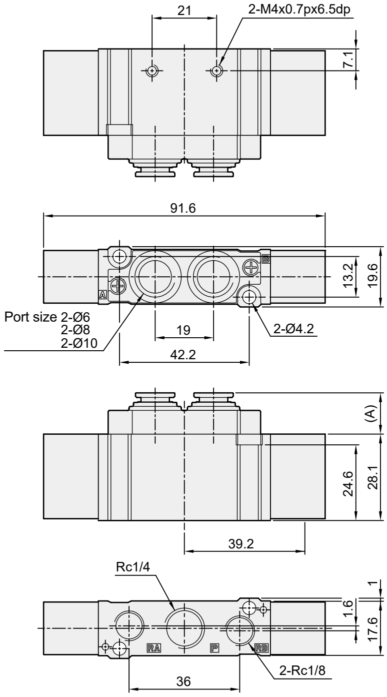


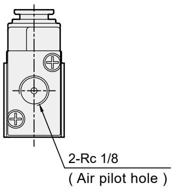
| Model | A |
|---|---|
| PM7100-C6 | 12.9 |
| PM7100-C8 | 13.3 |
| PM7100-C10 | 18.6 |

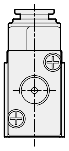
### PM 7200 - C6 (Ø6)
### PM 7200 - C8 (Ø8)
### PM 7200 - C10 (Ø10)

5 port 2-position double




21
2-M4x0.7px6.5dp
7.1
91.6
13.2
19.6
Port size 2-Ø6
2-Ø8
2-Ø10
19
42.2
2-Ø4.2
(A)
24.6
28.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36


2-Rc 1/8
( Air pilot hole )



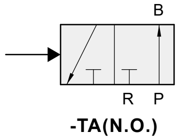
| Model | A |
|---|---|
| PM7100-C6 | 12.9 |
| PM7100-C8 | 13.3 |
| PM7100-C10 | 18.6 |

# PM 7000 series Air Operated Valve

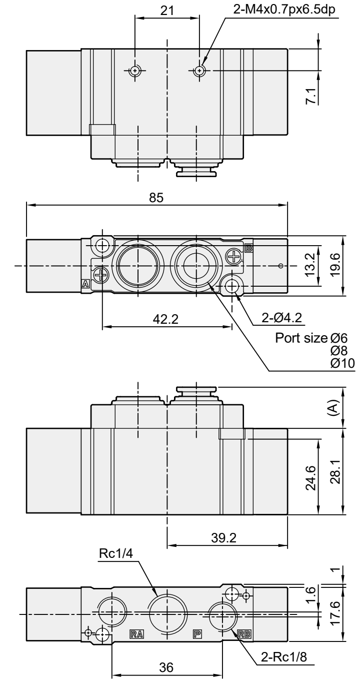
## Dimensions/ With fitting/ 3 port 2 position

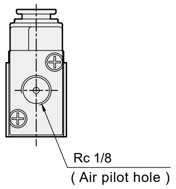
### PM 7100 - C6 - TA (Ø6)
### PM 7100 - C8 - TA (Ø8)
### PM 7100 - C10 - TA (Ø10)

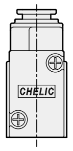
3 port 2-position single



**-TA(N.O.)**


21
2-M4x0.7px6.5dp
7.1
85
13.2
19.6
42.2
2-Ø4.2
Port size Ø6
Ø8
Ø10
(A)
24.6
28.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36

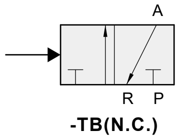

Rc 1/8
( Air pilot hole )



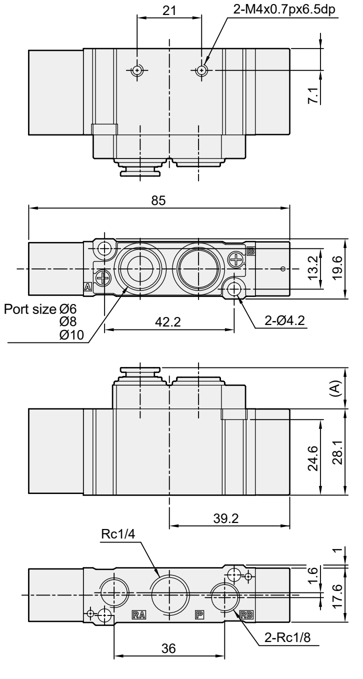
| Model | A |
|---|---|
| PM7100-C6-TA | 12.9 |
| PM7100-C8-TA | 13.3 |
| PM7100-C10-TA | 18.6 |

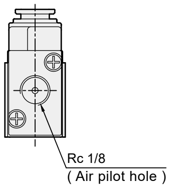
### PM 7100 - C6 - TB (Ø6)
### PM 7100 - C8 - TB (Ø8)
### PM 7100 - C10 - TB (Ø10)

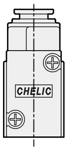
3 port 2-position single



**-TB(N.C.)**


21
2-M4x0.7px6.5dp
7.1
85
13.2
19.6
Port size Ø6
Ø8
Ø10
42.2
2-Ø4.2
(A)
24.6
28.1
39.2
Rc1/4
1
1.6
17.6
RA
P
RB
2-Rc1/8
36


Rc 1/8
( Air pilot hole )



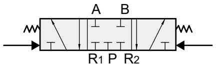
| Model | A |
|---|---|
| PM7100-C6-TB | 12.9 |
| PM7100-C8-TB | 13.3 |
| PM7100-C10-TB | 18.6 |

# PM 7000 series Air Operated Valve

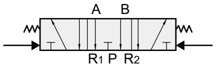
## Dimensions/ Standard

**PM 7(3)01, 02**
**PM 7(4)01, 02**
**PM 7(5)01, 02**

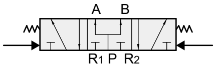
5 port 2-position double



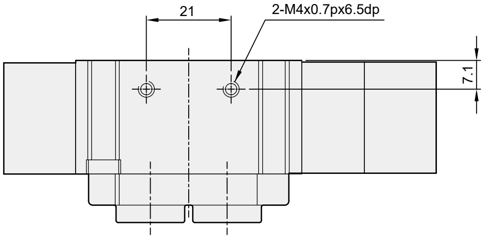
PM 7(3)01 (Closed center) N.C.

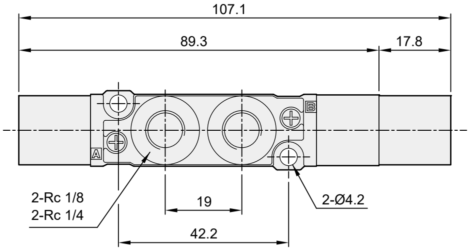


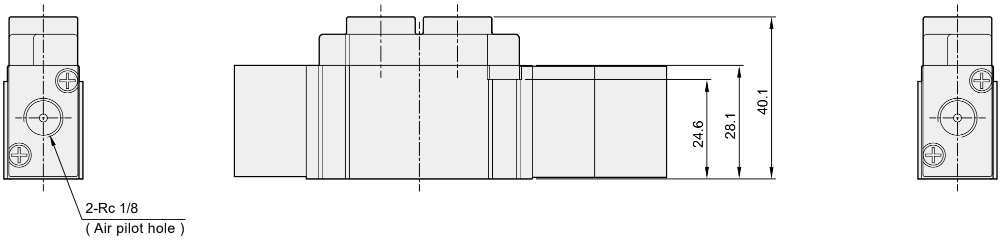
PM 7(4)01 (Exhaust center) N.F.

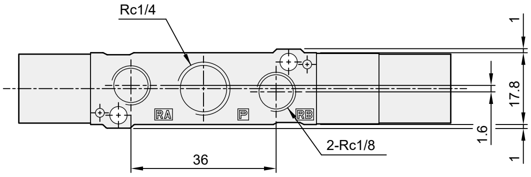


PM 7(5)01 (Pressure center) N.O.


21
2-M4x0.7px6.5dp
7.1


107.1
89.3
17.8
B
A
2-Rc 1/8
2-Rc 1/4
19
2-Ø4.2
42.2


2-Rc 1/8
( Air pilot hole )
24.6
28.1
40.1

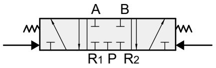

Rc1/4
1
17.8
1.6
1
RA
P
RB
2-Rc1/8
36

# PM 7000 series Air Operated Valve

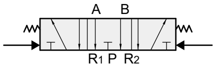
## Dimensions/ With fitting

### PM 7(3)00 - C6 (Ø6), C8 (Ø8), C10 (Ø10)
### PM 7(4)00 - C6 (Ø6), C8 (Ø8), C10 (Ø10)
### PM 7(5)00 - C6 (Ø6), C8 (Ø8), C10 (Ø10)

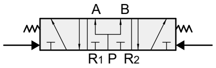
5 port 3-position double



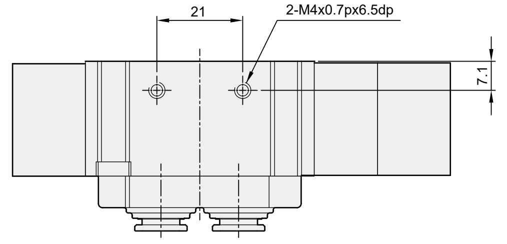
PM 7(3)00 (Closed center) N.C.

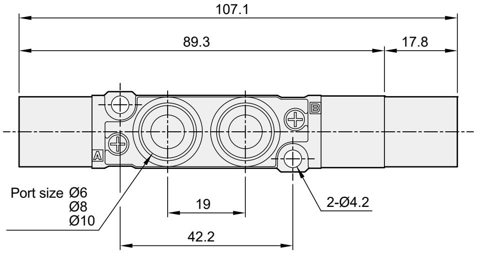


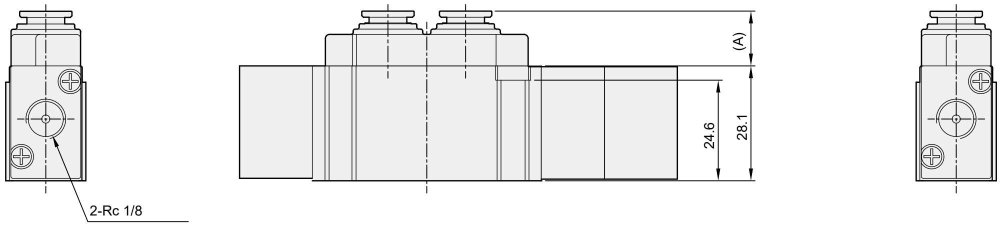
PM 7(4)00 (Exhaust center) N.F.

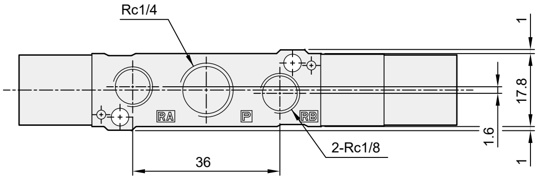


PM 7(5)00 (Pressure center) N.O.


21
2-M4x0.7px6.5dp
7.1


107.1
89.3
17.8
B
A
Port size Ø6
Ø8
Ø10
19
2-Ø4.2
42.2


(A)
24.6
28.1
2-Rc 1/8
( Air pilot hole )


Rc1/4
1
17.8
1.6
1
RA
P
RB
2-Rc1/8
36

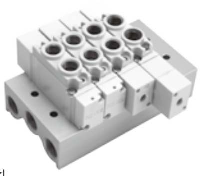
| Model | A |
|---|---|
| PM7100-C6 | 12.9 |
| PM7100-C8 | 13.3 |
| PM7100-C10 | 18.6 |

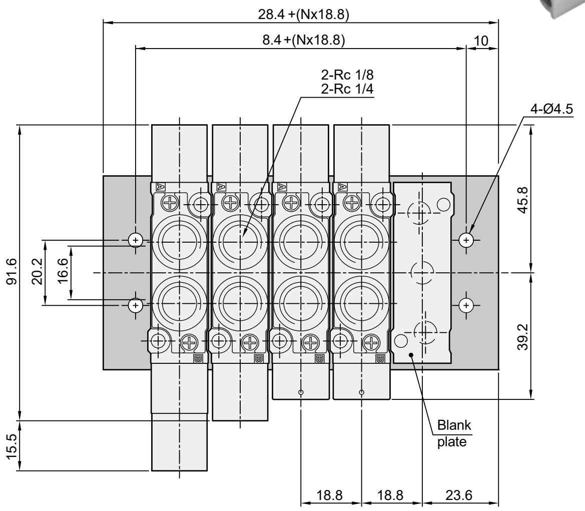
# PM 7000 series Air Operated Valve

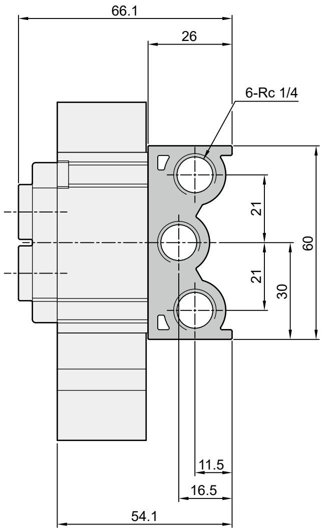
## Dimensions/ Manifold type

### PM 7000 series - standard

Manifold dimension

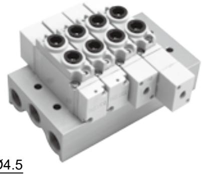


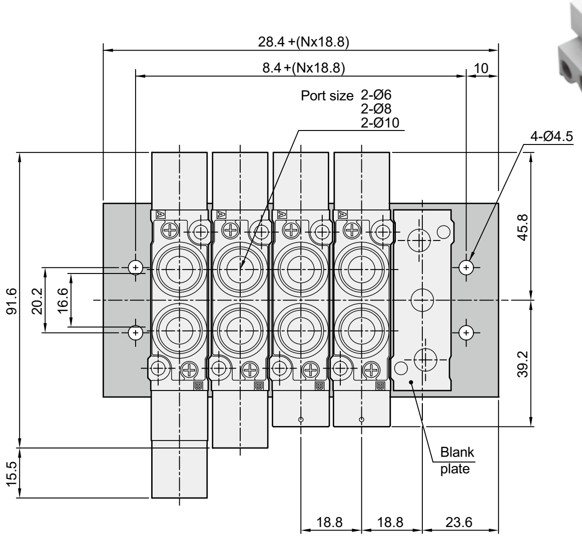

28.4+(Nx18.8)
8.4+(Nx18.8)
10
2-Rc 1/8
2-Rc 1/4
4-Ø4.5
45.8
39.2
91.6
20.2
16.6
15.5
Blank plate
18.8
18.8
23.6

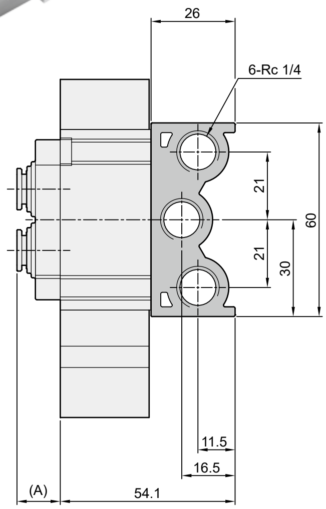

66.1
26
6-Rc 1/4
21
21
30
60
11.5
16.5
54.1

### PM 7000 series - With fitting port

Manifold dimension




28.4+(Nx18.8)
8.4+(Nx18.8)
10
Port size 2-Ø6
2-Ø8
2-Ø10
4-Ø4.5
45.8
39.2
91.6
20.2
16.6
15.5
Blank plate
18.8
18.8
23.6


26
6-Rc 1/4
21
21
30
60
11.5
16.5
(A)
54.1

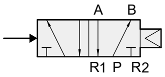
| Model | A |
|---|---|
| PM7100-C6 | 12.9 |
| PM7100-C8 | 13.3 |
| PM7100-C10 | 18.6 |

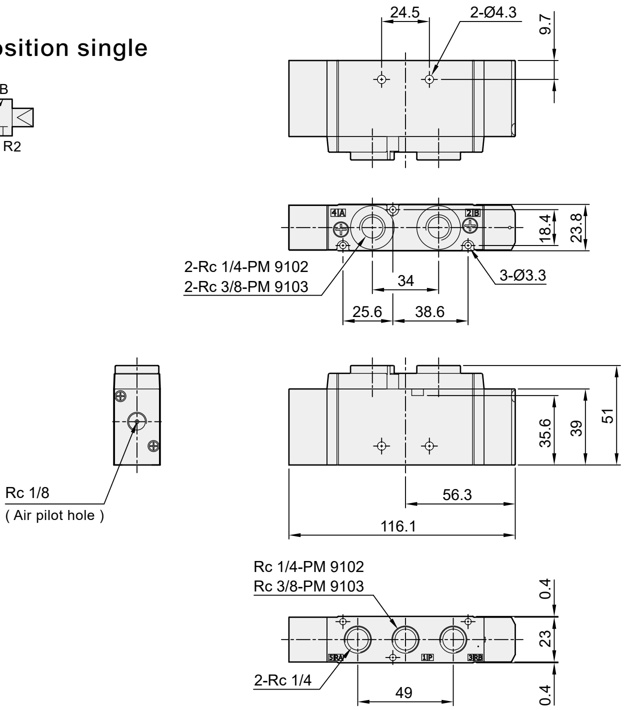
# PM 9000 series Air Operated Valve

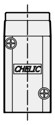
## Dimensions/ Standard

### PM 9102
### PM 9103

5 port 2-position single

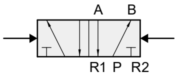


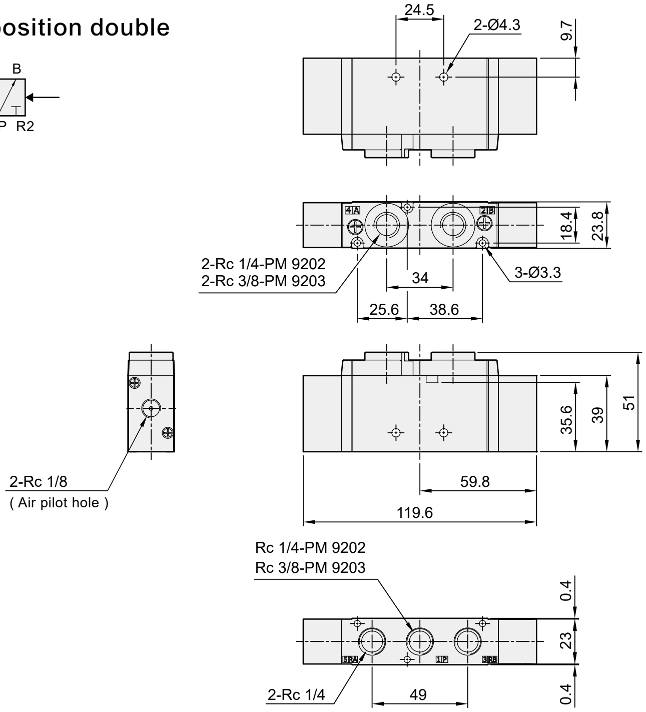

24.5
2-Ø4.3
9.7
4A
2B
18.4
23.8
2-Rc 1/4-PM 9102
2-Rc 3/8-PM 9103
34
3-Ø3.3
25.6
38.6
Rc 1/8
( Air pilot hole )
35.6
39
51
56.3
116.1
Rc 1/4-PM 9102
Rc 3/8-PM 9103
0.4
23
5RA
1P
3RB
2-Rc 1/4
49
0.4

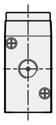


### PM 9202
### PM 9203

5 port 2-position double




24.5
2-Ø4.3
9.7
4A
2B
18.4
23.8
2-Rc 1/4-PM 9202
2-Rc 3/8-PM 9203
34
3-Ø3.3
25.6
38.6
2-Rc 1/8
( Air pilot hole )
35.6
39
51
59.8
119.6
Rc 1/4-PM 9202
Rc 3/8-PM 9203
0.4
23
5RA
1P
3RB
2-Rc 1/4
49
0.4

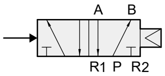


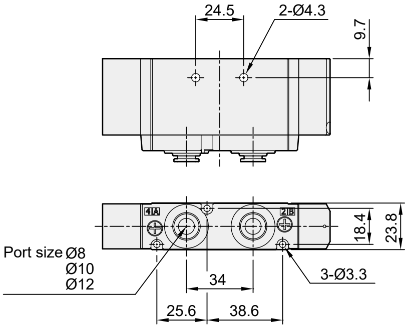
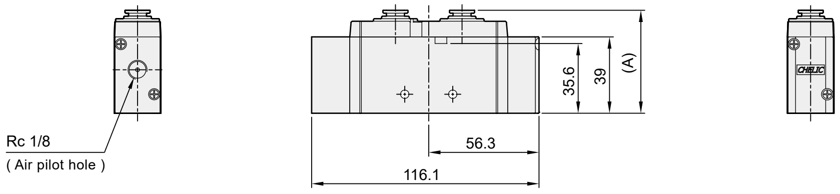
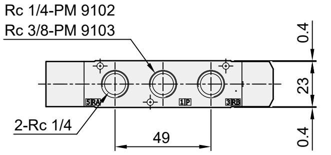
# PM 9000 series Air Operated Valve

## Dimensions/ With fitting

### PM 9100 - C8 (Ø8)
### PM 9100 - C10 (Ø10)
### PM 9100 - C12 (Ø12)

5 port 2-position single

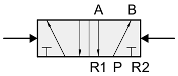


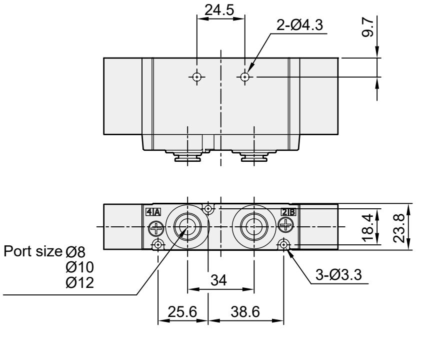
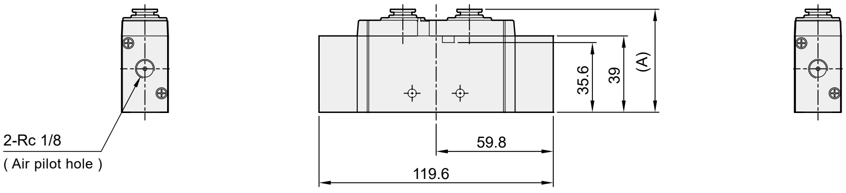
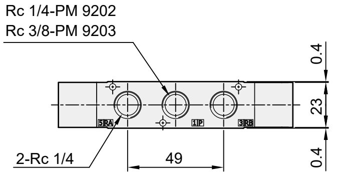



24.5
2-Ø4.3
9.7
4A
2B
18.4
23.8
Port size Ø8
Ø10
Ø12
34
3-Ø3.3
25.6
38.6
Rc 1/8
( Air pilot hole )
35.6
39
(A)
56.3
116.1
CHELIC
Rc 1/4-PM 9102
Rc 3/8-PM 9103
0.4
23
0.4
5RA
1P
3RB
2-Rc 1/4
49

| Model | A |
|---|---|
| PM9102-C8 | 52.5 |
| PM9102-C10 | 57.6 |
| PM9102-C12 | 60.6 |

### PM 9200 - C8 (Ø8)
### PM 9200 - C10 (Ø10)
### PM 9200 - C12 (Ø12)

5 port 2-position double






24.5
2-Ø4.3
9.7
4A
2B
18.4
23.8
Port size Ø8
Ø10
Ø12
34
3-Ø3.3
25.6
38.6
2-Rc 1/8
( Air pilot hole )
35.6
39
(A)
59.8
119.6
Rc 1/4-PM 9202
Rc 3/8-PM 9203
0.4
23
0.4
5RA
1P
3RB
2-Rc 1/4
49

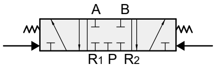
| Model | A |
|---|---|
| PM9102-C8 | 52.5 |
| PM9102-C10 | 57.6 |
| PM9102-C12 | 60.6 |

# PM 9000 series Air Operated Valve

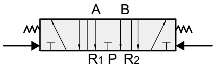
## Dimensions/ Standard

### PM 9(3)02, 03
### PM 9(4)02, 03
### PM 9(5)02, 03

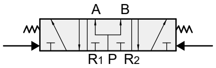
5 port 3-position double



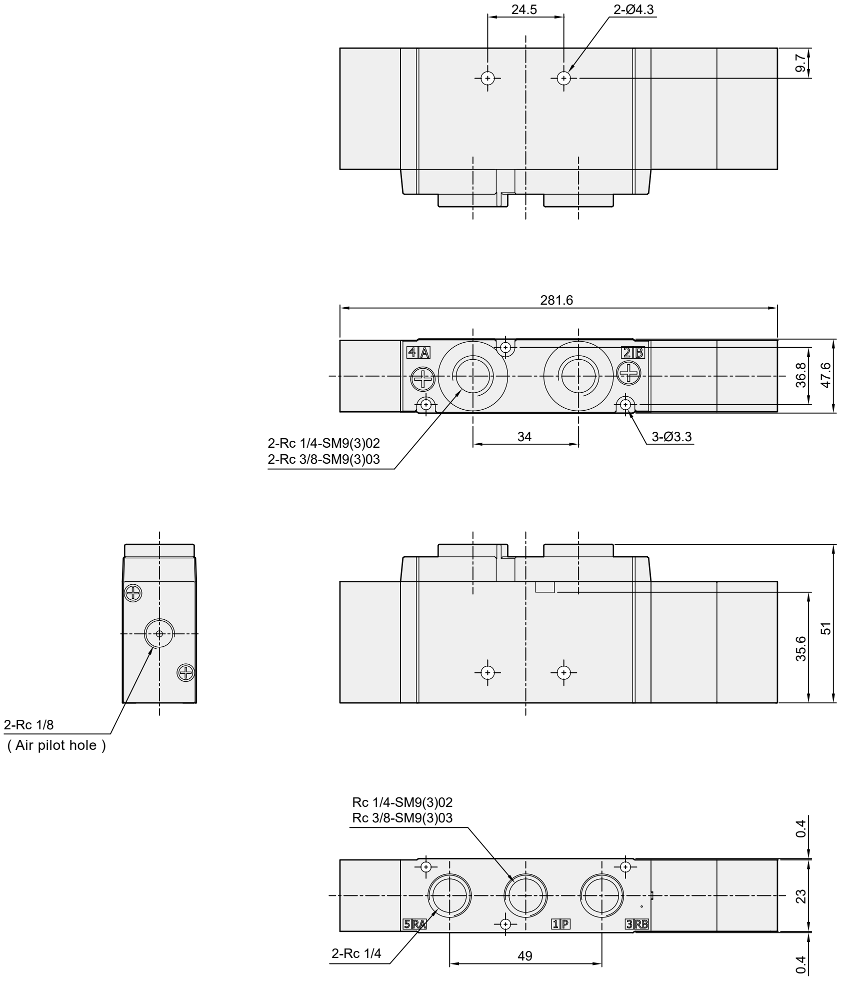
PM 9(3)02 (Closed center) N.C.



PM 9(4)02 (Exhaust center) N.F.



PM 9(5)02 (Pressure center) N.O.

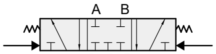

24.5
2-Ø4.3
9.7
281.6
4A
2B
36.8
47.6
34
3-Ø3.3
2-Rc 1/4-SM9(3)02
2-Rc 3/8-SM9(3)03
51
35.6
2-Rc 1/8
( Air pilot hole )
Rc 1/4-SM9(3)02
Rc 3/8-SM9(3)03
0.4
23
0.4
5RA
1P
3RB
49
2-Rc 1/4

# PM 9000 series Air Operated Valve

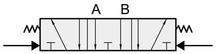
## Dimensions/ With fitting

### PM 9(3)00-C8(Ø8), C10(Ø10), C12(Ø12)
### PM 9(4)00-C8(Ø8), C10(Ø10), C12(Ø12)
### PM 9(5)00-C8(Ø8), C10(Ø10), C12(Ø12)

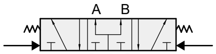
5 port 3-position double



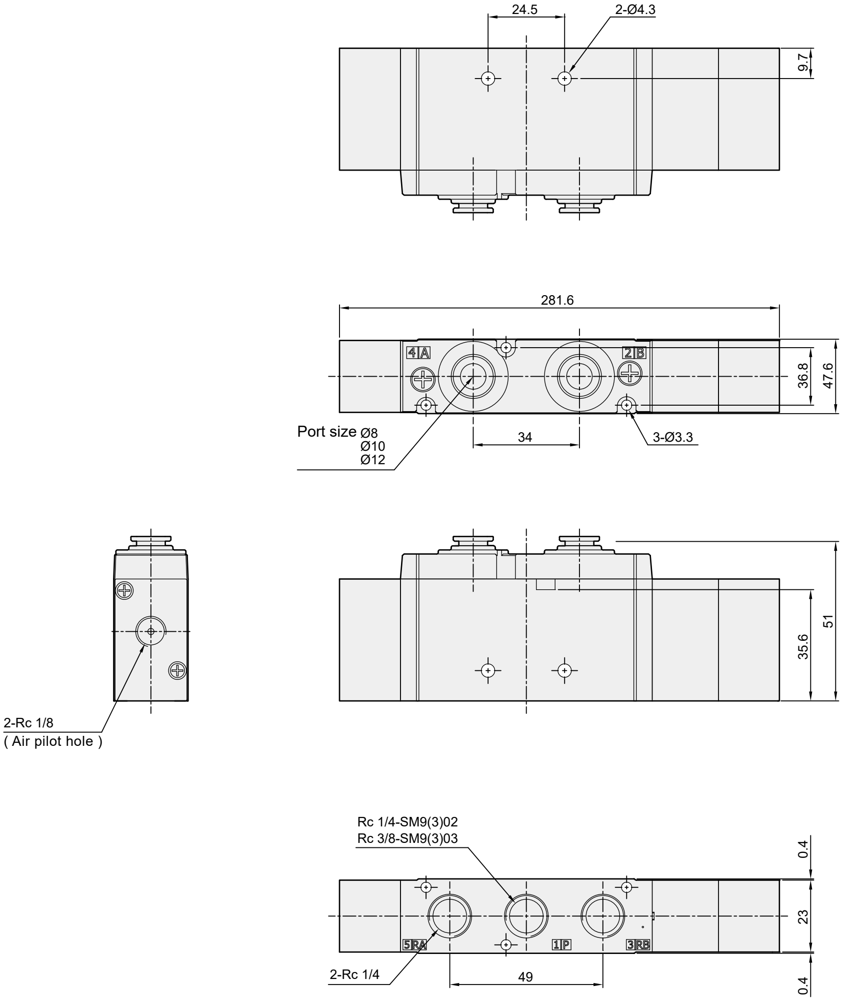
PM 9(3)00 (Closed center) N.C.



PM 9(4)00 (Exhaust center) N.F.



PM 9(5)00 (Pressure center) N.O.


24.5
2-Ø4.3
9.7
281.6
4A
2B
36.8
47.6
Port size Ø8
Ø10
Ø12
34
3-Ø3.3
51
35.6
2-Rc 1/8
( Air pilot hole )
Rc 1/4-SM9(3)02
Rc 3/8-SM9(3)03
0.4
23
0.4
5RA
1P
3RB
2-Rc 1/4
49

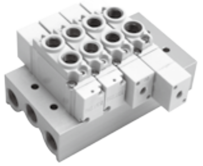
| Model | A |
|---|---|
| PM9102-C8 | 52.5 |
| PM9102-C10 | 57.6 |
| PM9102-C12 | 60.6 |

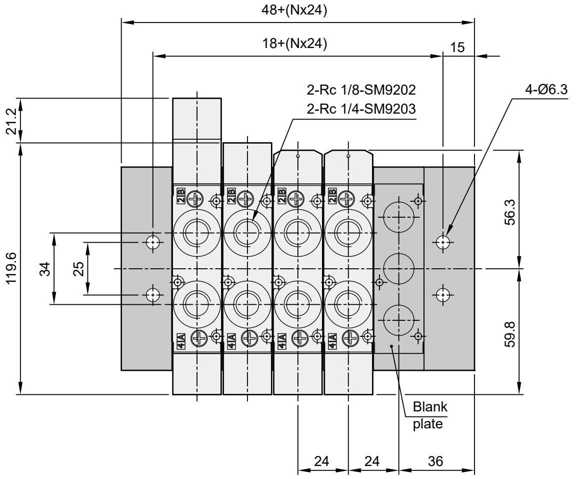
# PM 9000 series Air Operated Valve

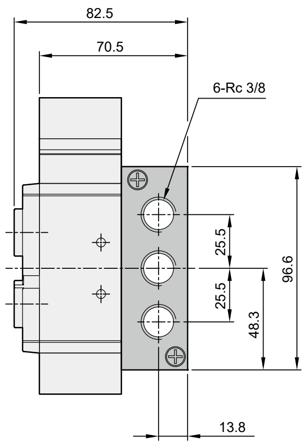
## Dimensions/ Manifold type

### PM 9000 series - standard

Manifold dimension

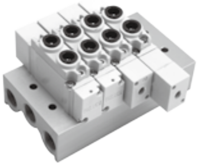


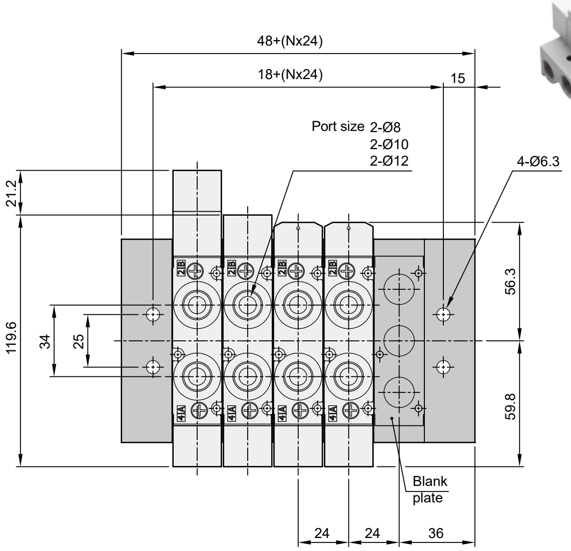

48+(Nx24)
18+(Nx24)
15
2-Rc 1/8-SM9202
2-Rc 1/4-SM9203
4-Ø6.3
21.2
119.6
34
25
56.3
59.8
2B
4A
Blank plate
24
24
36

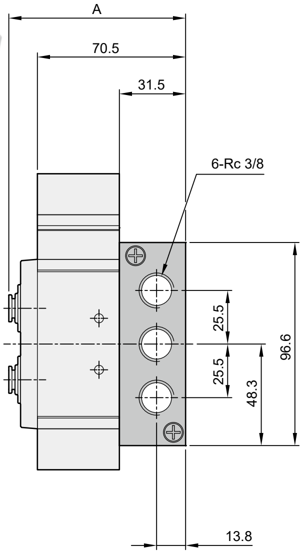

82.5
70.5
6-Rc 3/8
25.5
25.5
48.3
96.6
13.8

### PM 9000 series - With fitting port

Manifold dimension




48+(Nx24)
18+(Nx24)
15
Port size 2-Ø8
2-Ø10
2-Ø12
4-Ø6.3
21.2
119.6
34
25
56.3
59.8
2B
4A
Blank plate
24
24
36

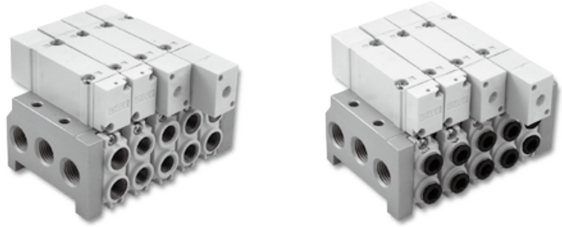

A
70.5
31.5
6-Rc 3/8
25.5
25.5
48.3
96.6
13.8

| Model | A |
|---|---|
| PM9102-C8 | 84 |
| PM9102-C10 | 89.1 |
| PM9102-C12 | 92.1 |

# Directional control — PMB Air Operated Valve

## PMB3000, PMB5000, PMB7000, PMB9000 Air operated valve

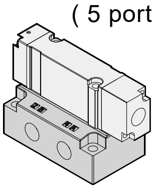
CHELIC



Provide CAD external dimension.

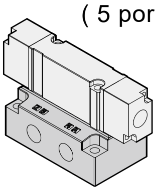
Small size, big flow rate!
Air hole can be changed and be added connector.

**Single air pilot valve**
( 5 port 2-position )



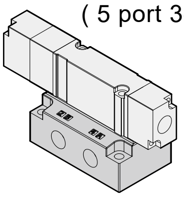
| | | |
|---|---|---|
| **PMB - 3000 series** | **M5** | **P.2-3.28** |
| **PMB - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-3.30** |
| **PMB - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-3.33** |
| **PMB - 9000 series** | **Rc3/8** | **P.2-3.36** |

**Double air pilot valve**
( 5 port 2-position )



| | | |
|---|---|---|
| **PMB - 3000 series** | **M5** | **P.2-3.28** |
| **PMB - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-3.30** |
| **PMB - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-3.33** |
| **PMB - 9000 series** | **Rc3/8** | **P.2-3.36** |

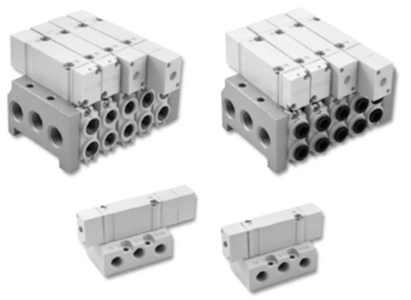
**Double air pilot valve**
( 5 port 3-position )



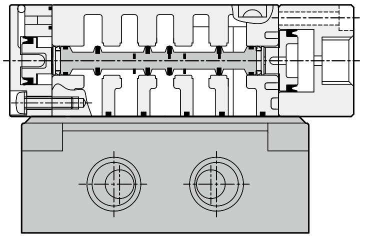
| | | |
|---|---|---|
| **PMB - 3000 series** | **M5** | **P.2-3.29** |
| **PMB - 5000 series** | **Rc1/8, Ø4, Ø6, Ø8** | **P.2-3.31** |
| **PMB - 7000 series** | **Rc1/8, 1/4, Ø6, Ø8, Ø10** | **P.2-3.34** |
| **PMB - 9000 series** | **Rc3/8** | **P.2.3.37** |

# PMB series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

## Product features/ Code of order



### Internal structure



### Specification

| Item \ Model | | PMB3000 | PMB5000 | PMB5000 | PM5000 |
|---|---|---|---|---|---|
| Fluid | | Air | | | |
| Pressure range | kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) | | | |
| Pilot pressure range | kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | | |
| Ambient and fluid temperature | °C | 5 ~ 60 | | | |
| Pilot type | | Air operated | | | |
| Number of positions | | 5/2-position, 5/3-position | | | |
| Type of actuation | | Normally closed | | | |
| Effective orifice | mm²(CV) | 3.6 (0.2) | 10.8(0.6) | 18.2(1.0) | 36(2.0) |
| Port size | | M5, Rc 1/8, Ø4, Ø6, Ø8 | | Rc1/8, Rc 1/4, Ø6, Ø8, Ø10 | Rc 3/8 |
| Lubrication | | Lubrication free type | | | |

### Code of order

**PMB** — **5** — **10** — **1** — — **M 2**

**Model**

PMB:
Pilot valve
Base mounting type

**Model number**

3: 3000 series
5: 5000 series
7: 7000 series
9: 9000 series

**Coil q'ty**

10:
Single air pilot
20:
Double air pilot

30:
Closed center
40:
Exhaust center
50:
Pressure center

5/3-position double coils only

**Port size**

Thread type

| Mark | Thread | Model |
|---|---|---|
| M5 | M5x0.8p | PMB3000 |
| 1 | Rc 1/8 | PMB5000 |
| 1 | Rc 1/8 | PMB7000 |
| 2 | Rc 1/4 | |

For A and B port

| 0 | With fitting port |
|---|---|

Single base type

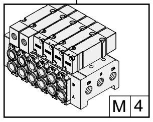
| | | |
|---|---|---|
| 1 | Rc 1/8 | PMB3000 |
| 1 | Rc 1/8 | PMB5000 |
| 2 | Rc 1/4 | PMB7000 |
| 3 | Rc 3/8 | PMB9000 |

**With fitting port**

| Mark | Tube size | Model |
|---|---|---|
| C4 | Ø4 | PMB5000 |
| C6 | Ø6 | |
| C8 | Ø8 | |
| C6 | Ø6 | PMB7000 |
| C8 | Ø8 | |
| C10 | Ø10 | |
| C8 | Ø8 | PMB9000 |
| C10 | Ø10 | |
| C12 | Ø12 | |

None: Standard type

**Manifold**



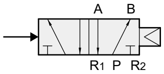
None:
Without manifold
M1 = 1 set
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M15 = 15 sets

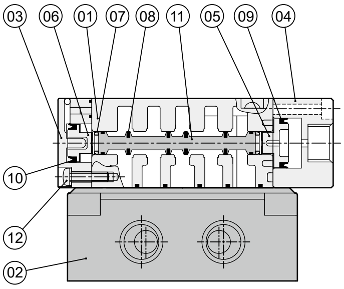
※ PMB9000
Without manifolds.

# **PMB series Air Operated Valve** ( Base Mounting Type with One-Touch Fitting )

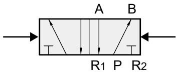
## Product features

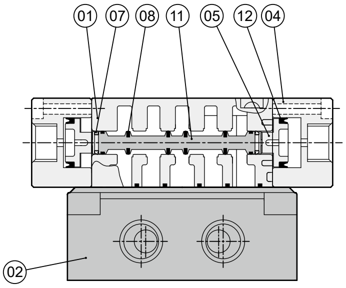
- 5 port 2-position single



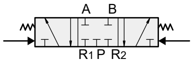

03
06
01
07
08
11
05
09
04
10
12
02

- 5 port 2-position double

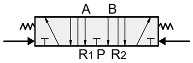



01
07
08
11
05
12
04
02

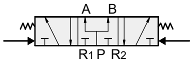
- 5 port 3-position double



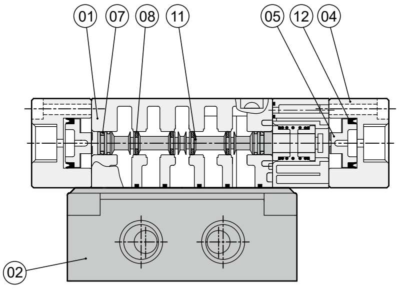
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )


01
07
08
11
05
12
04
02

## Components and material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **07** | Spool packing | NBR |
| **02** | Single sub-plate | Aluminum alloy | **08** | Spool packing | NBR |
| **03** | Rear cover | Resin | **09** | Holder piston packing | NBR |
| **04** | Air pilot holder | Aluminum alloy | **10** | Rear cover packing | NBR |
| **05** | Holder piston | POM | **11** | Shaft | Aluminum alloy |
| **06** | Rear cover piston | POM | **12** | Rear screw | Alloy steel |

Note: The main body has been treated with painting.

## Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing |
|---|---|---|
| Model / Quantity | 1 | 1 |
| **PMB 5000** | MYA-10 | MYA-7 |
| **PMB 7000** | MYA-11 | MYA-7 |

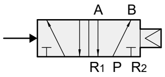
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

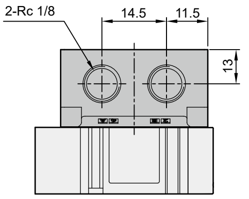
# PMB 3000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

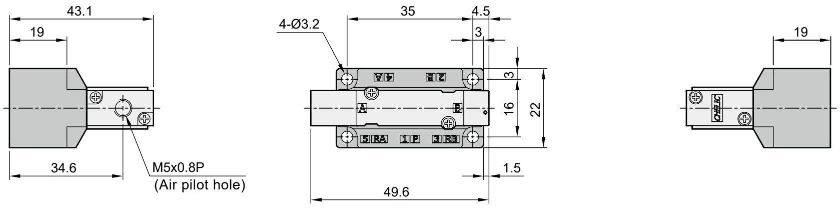
## Dimensions/ Standard

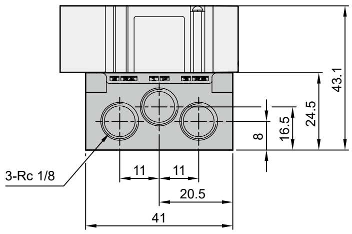
### PMB 3101

Single exhausting sub-plate
5 port 2-position single




2-Rc 1/8
14.5
11.5
13

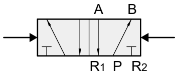

43.1
19
34.6
M5x0.8P
(Air pilot hole)
4-Ø3.2
35
4.5
3
3
16
22
A
B
4A
2B
5RA
1P
3RB
1.5
49.6
19

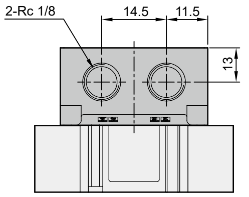

43.1
24.5
16.5
8
3-Rc 1/8
11
11
20.5
41

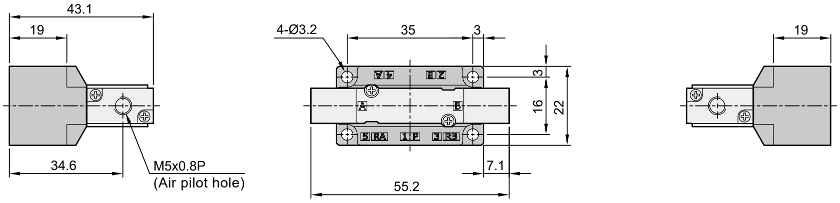
---

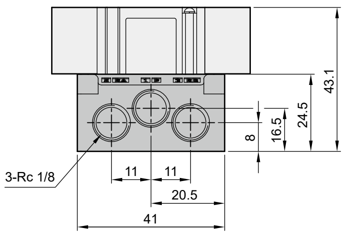
### PMB 3201

Single exhausting sub-plate
5 port 2-position double




2-Rc 1/8
14.5
11.5
13


43.1
19
34.6
M5x0.8P
(Air pilot hole)
4-Ø3.2
35
3
3
16
22
A
B
4A
2B
5RA
1P
3RB
7.1
55.2
19

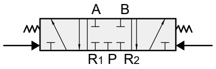

43.1
24.5
16.5
8
3-Rc 1/8
11
11
20.5
41

# PMB 3000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

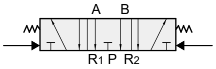
## Dimensions/ Standard

### PMB 3(3)01
### PMB 3(4)01
### PMB 3(5)01

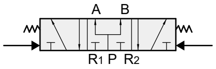
Single exhausting sub-plate
5 port 3-position double



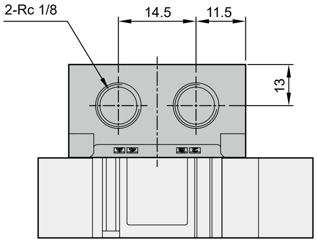
PMB 3(3)01 (Closed center) N.C.

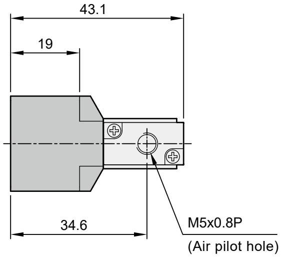


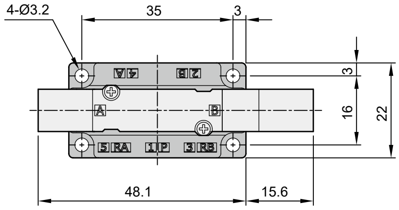
PMB 3(4)01 (Exhaust center) N.F.

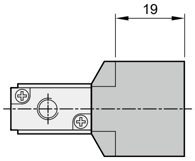


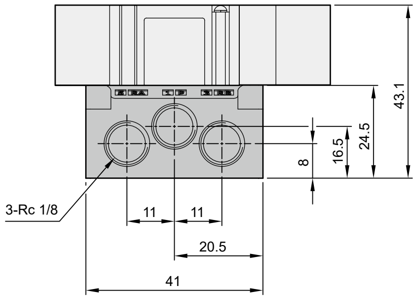
PMB 3(5)01 (Pressure center) N.O.


2-Rc 1/8
14.5
11.5
13


43.1
19
34.6
M5x0.8P
(Air pilot hole)

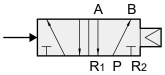

4-Ø3.2
35
3
4A
2B
A
B
5 RA
1 P
3 RB
3
16
22
48.1
15.6

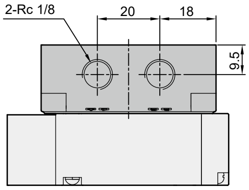


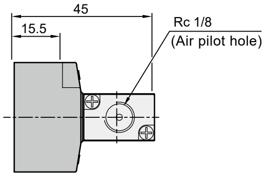

43.1
24.5
16.5
8
3-Rc 1/8
11
11
20.5
41

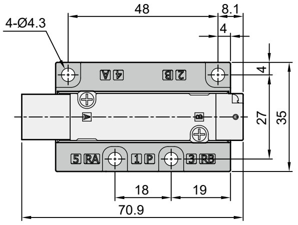
## PMB 5101

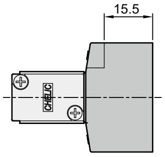
Single exhausting sub-plate
5 port 2-position single

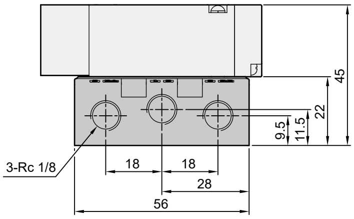



2-Rc 1/8
20
18
9.5


45
15.5
Rc 1/8
(Air pilot hole)

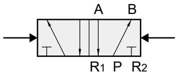

4-Ø4.3
48
8.1
4
4
27
35
4A
2B
5 RA
1 P
3 RB
18
19
70.9

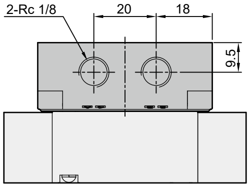


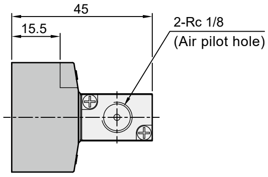

45
22
11.5
9.5
3-Rc 1/8
18
18
28
56

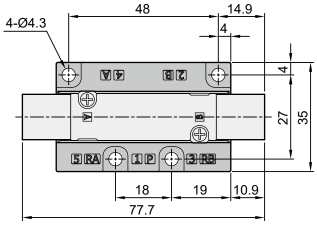
## PMB 5201

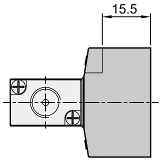
Single exhausting sub-plate
5 port 2-position double

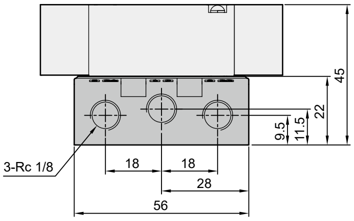



2-Rc 1/8
20
18
9.5


45
15.5
2-Rc 1/8
(Air pilot hole)


4-Ø4.3
48
14.9
4
4
27
35
4A
2B
5 RA
1 P
3 RB
18
19
10.9
77.7



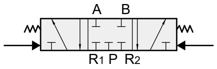

45
22
11.5
9.5
3-Rc 1/8
18
18
28
56

# PMB 5000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

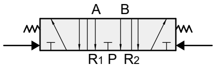
## Dimensions/ Standard

### PMB 5(3)01
### PMB 5(4)01
### PMB 5(5)01

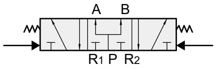
Single exhausting sub-plate
5 port 3-position double



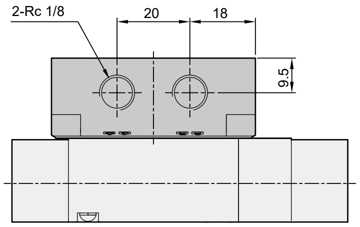
PMB 5(3)01 (Closed center) N.C.

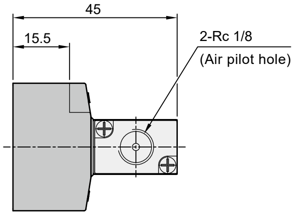


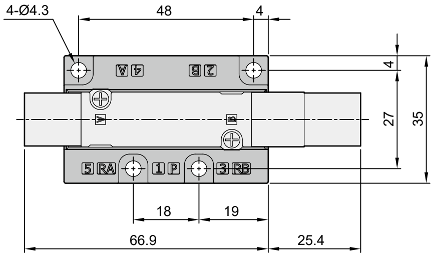
PMB 5(4)01 (Exhaust center) N.F.

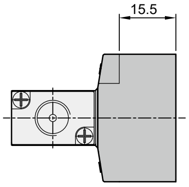


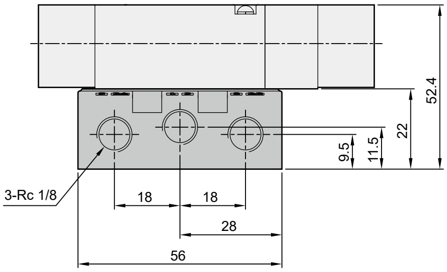
PMB 5(5)01 (Pressure center) N.O.


2-Rc 1/8
20
18
9.5


45
15.5
2-Rc 1/8
(Air pilot hole)


4-Ø4.3
48
4
4A
2B
A
B
4
27
35
5 RA
1 P
3 RB
18
19
66.9
25.4




52.4
22
11.5
9.5
3-Rc 1/8
18
18
28
56

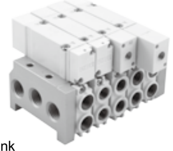
# PMB 5000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

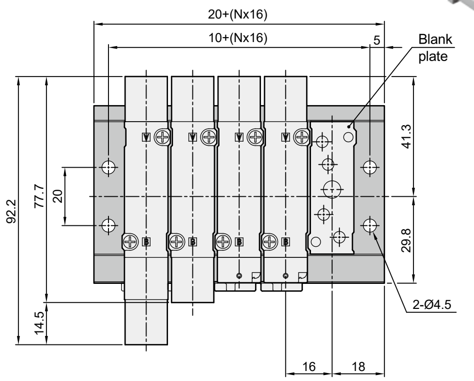
## Dimensions/ Manifold type

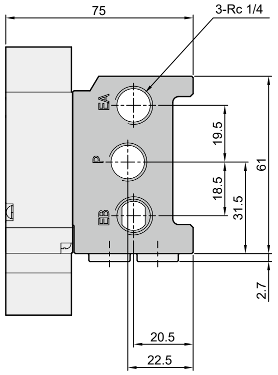
CHELIC.

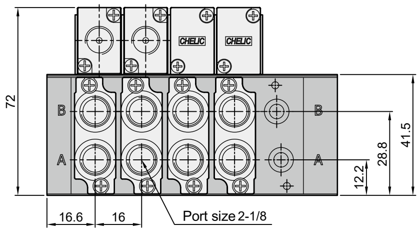
### PMB - 5000 series - standard

Manifold dimension



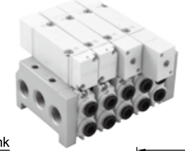

20+(Nx16)
10+(Nx16)
5
Blank plate
41.3
29.8
92.2
77.7
20
14.5
2-Ø4.5
16
18

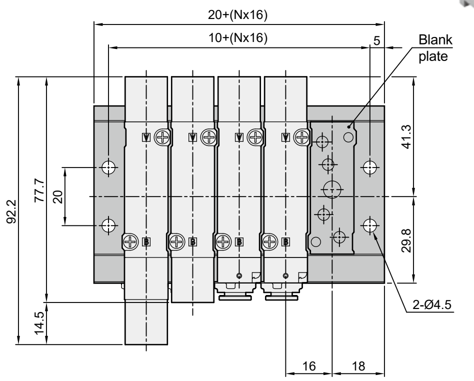

75
3-Rc 1/4
EA
P
EB
19.5
18.5
31.5
61
2.7
20.5
22.5

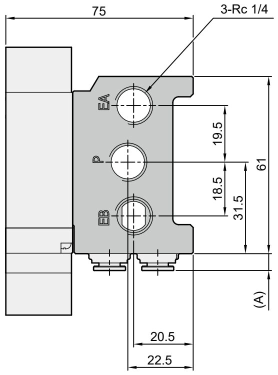

72
B
A
41.5
28.8
12.2
16.6
16
Port size 2-1/8

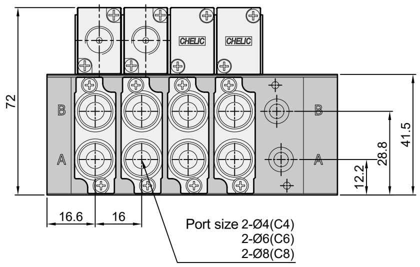
### PMB - 5000 series - With fitting port

Manifold dimension




20+(Nx16)
10+(Nx16)
5
Blank plate
41.3
29.8
92.2
77.7
20
14.5
2-Ø4.5
16
18


75
3-Rc 1/4
EA
P
EB
19.5
18.5
31.5
61
(A)
20.5
22.5


72
B
A
41.5
28.8
12.2
16.6
16
Port size 2-Ø4(C4)
2-Ø6(C6)
2-Ø8(C8)

| Model | A |
|---|---|
| PMB5100-C4 | 5.4 |
| PMB5100-C6 | 6 |
| PMB5100-C8 | 7.3 |

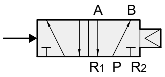
# PMB 7000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

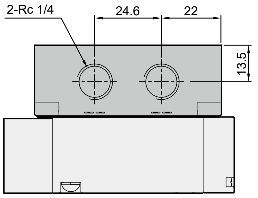
## Dimensions/ Standard

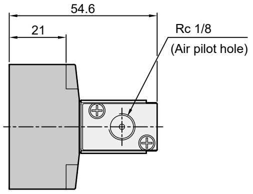
CHELIC

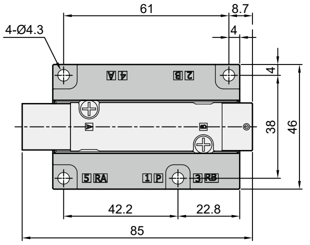
### PMB 7102

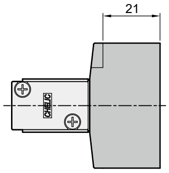
Single exhausting sub-plate
5 port 2-position single

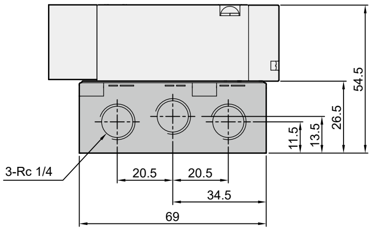



2-Rc 1/4
24.6
22
13.5


54.6
21
Rc 1/8
(Air pilot hole)

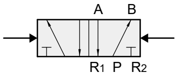

61
8.7
4-Ø4.3
4
4
38
46
4A
2B
5 RA
1 P
3 RB
42.2
22.8
85

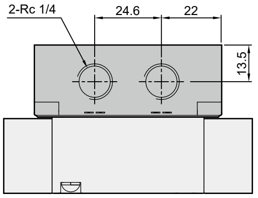


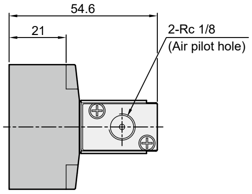

54.5
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

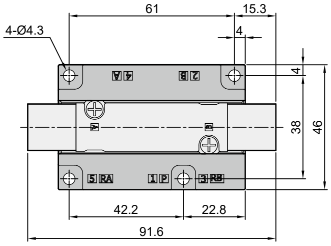
### PMB 7202

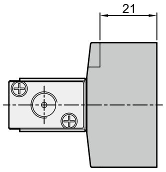
Single exhausting sub-plate
5 port 2-position double

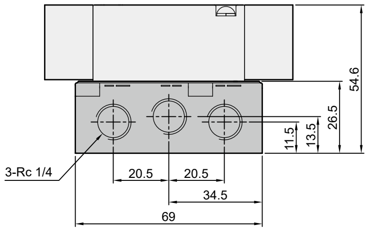



2-Rc 1/4
24.6
22
13.5


54.6
21
2-Rc 1/8
(Air pilot hole)


61
15.3
4-Ø4.3
4
4
38
46
4A
2B
5 RA
1 P
3 RB
42.2
22.8
91.6




54.6
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

# PMB 7000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

## Dimensions/ Standard

CHELIC

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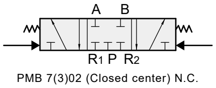
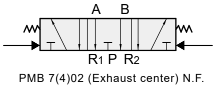
### PMB 7(3)02
### PMB 7(4)02
### PMB 7(5)02

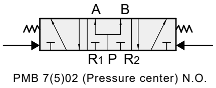
Single exhausting sub-plate
5 port 3-position double



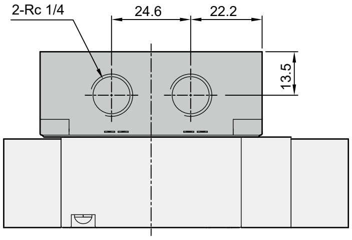
PMB 7(3)02 (Closed center) N.C.

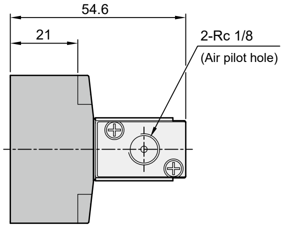


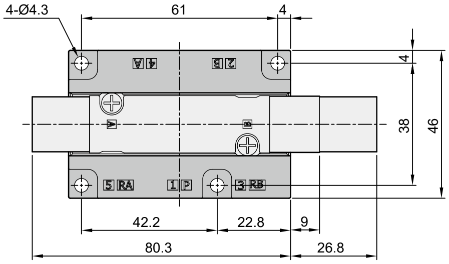
PMB 7(4)02 (Exhaust center) N.F.

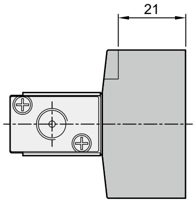


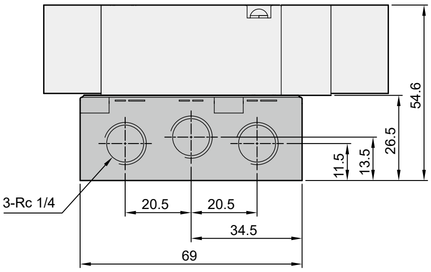
PMB 7(5)02 (Pressure center) N.O.


2-Rc 1/4
24.6
22.2
13.5


54.6
21
2-Rc 1/8
(Air pilot hole)


4-Ø4.3
61
4
4A
2B
4
38
46
5RA
1P
3RB
42.2
22.8
9
80.3
26.8



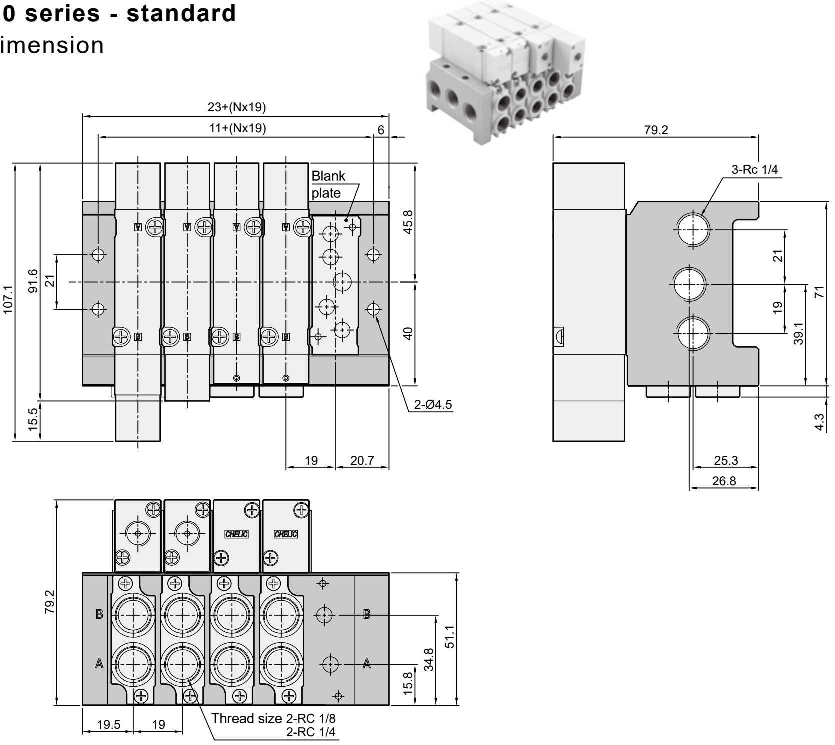

54.6
26.5
13.5
11.5
3-Rc 1/4
20.5
20.5
34.5
69

# PMB 7000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

## Dimensions/ Manifold type

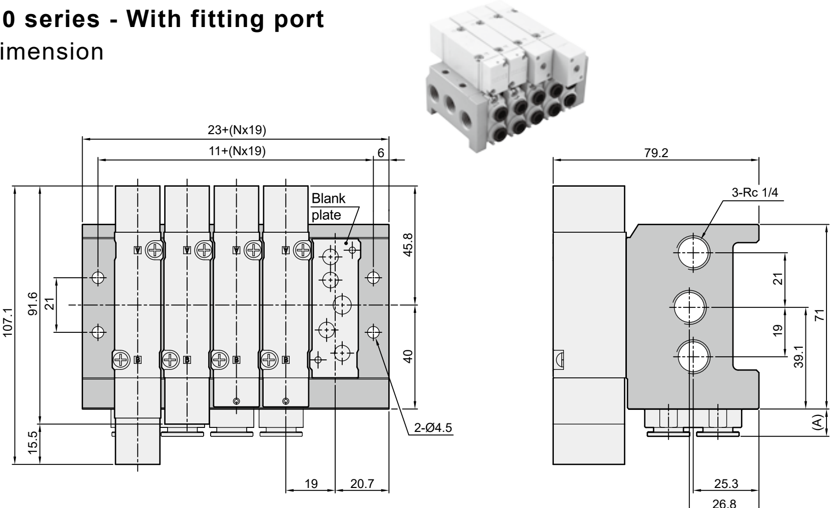
### PMB - 7000 series - standard

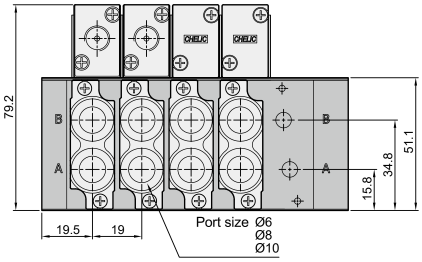
Manifold dimension


23+(Nx19)
11+(Nx19)
6
Blank plate
107.1
91.6
21
15.5
45.8
40
2-Ø4.5
19
20.7
79.2
3-Rc 1/4
21
19
71
39.1
4.3
25.3
26.8
79.2
CHELIC
B
A
51.1
34.8
15.8
19.5
19
Thread size 2-RC 1/8
2-RC 1/4

### PMB - 7000 series - With fitting port

Manifold dimension

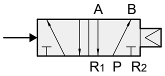

23+(Nx19)
11+(Nx19)
6
Blank plate
107.1
91.6
21
15.5
45.8
40
2-Ø4.5
19
20.7
79.2
3-Rc 1/4
21
19
71
39.1
(A)
25.3
26.8

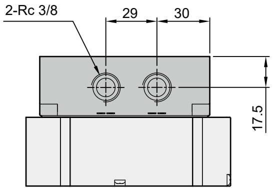

79.2
CHELIC
B
A
51.1
34.8
15.8
19.5
19
Port size Ø6
Ø8
Ø10

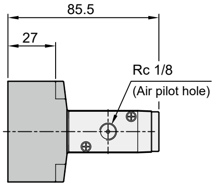
| Model | A |
|---|---|
| PMB7100-C6 | 5.4 |
| PMB7100-C8 | 5.6 |
| PMB7100-C10 | 10.9 |

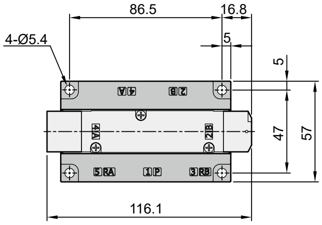
## PMB 9103

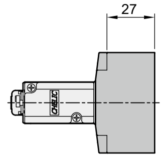
Single exhausting sub-plate
5 port 2-position single

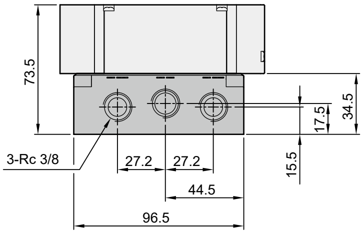



2-Rc 3/8
29
30
17.5


85.5
27
Rc 1/8
(Air pilot hole)

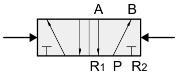

86.5
16.8
4-Ø5.4
5
5
47
57
4A
2B
5RA
1P
3RB
116.1

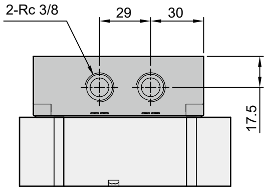


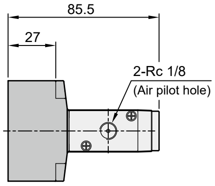

73.5
3-Rc 3/8
27.2
27.2
44.5
96.5
17.5
34.5
15.5

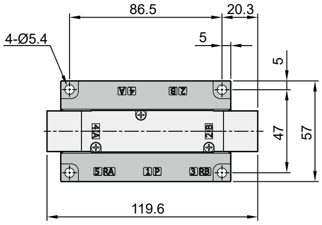
## PMB 9203

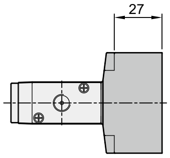
Single exhausting sub-plate
5 port 2-position double

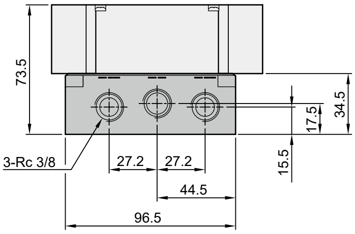



2-Rc 3/8
29
30
17.5


85.5
27
2-Rc 1/8
(Air pilot hole)


86.5
20.3
4-Ø5.4
5
5
47
57
4A
2B
5RA
1P
3RB
119.6



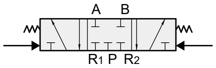

73.5
3-Rc 3/8
27.2
27.2
44.5
96.5
17.5
34.5
15.5

# PMB 9000 series Air Operated Valve ( Base Mounting Type with One-Touch Fitting )

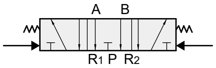
## Dimensions/ Standard

### PMB 9(3)03
### PMB 9(4)03
### PMB 9(5)03

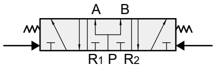
Single exhausting sub-plate
5 port 3-position double



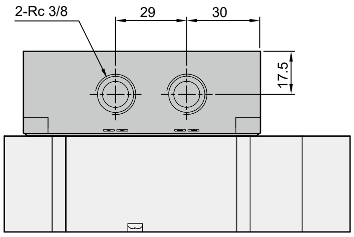
PMB 9(3)03 (Closed center) N.C.

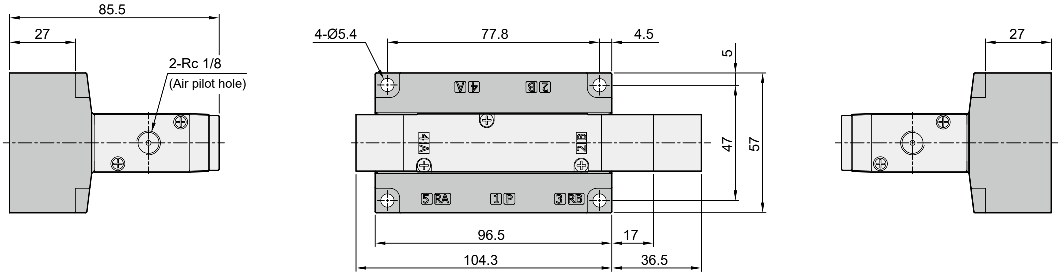


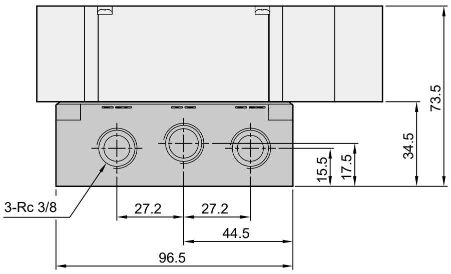
PMB 9(4)03 (Exhaust center) N.F.



PMB 9(5)03 (Pressure center) N.O.


2-Rc 3/8
29
30
17.5


85.5
27
2-Rc 1/8
(Air pilot hole)
4-Ø5.4
77.8
4.5
5
47
57
4A
2B
5 RA
1 P
3 RB
96.5
17
104.3
36.5
27

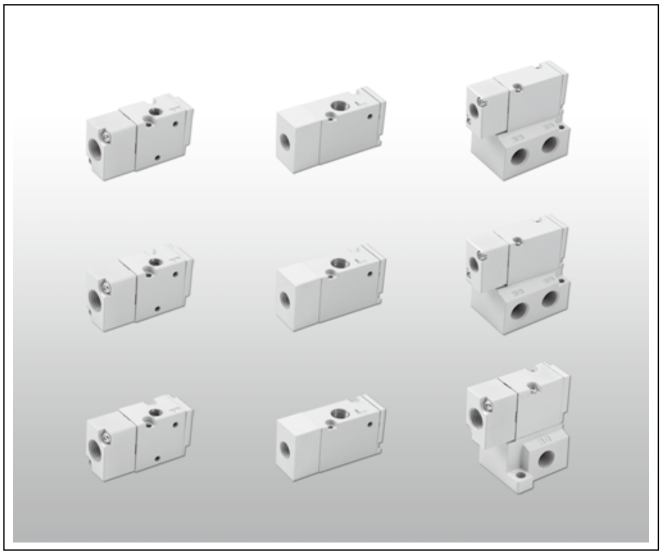

73.5
34.5
15.5
17.5
3-Rc 3/8
27.2
27.2
44.5
96.5

# MEMO

# Directional control — PMU Air Operated Valve

## PMU5000, PMU7000/ PMUB5000, PMUB7000 Air operated valve

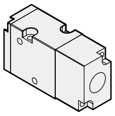
CHELIC.

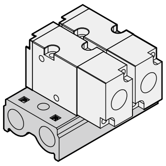


Provide CAD external dimension.

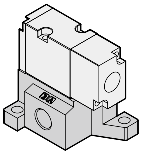
Small size, big flow rate!
Air hole can be changed and be added connector.

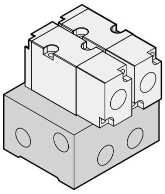
**Single air pilot valve** ---- **PMU - 5000 series** ------ **M5** -------------------- **P.2-3.42**
( 3 port 2-position )
**PMU - 7000 series** ------ **Rc1/8** ----------------- **P.2-3.43**





**Double air base type pilot valve** ---- **PMUB - 5000 series** ---- **Rc1/8** ----------------- **P.2-3.46**
( 3 port 2-position )
**PMUB - 7000 series** ---- **Rc1/4** ----------------- **P.2-3.47**

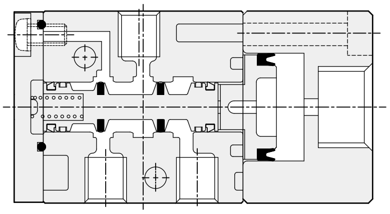




# PMU series Air Operated Valve

## Product features/ Code of order

### Internal structure



### Specification

| Item \ Model | | PMU5000 | PMU7000 |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range | kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) | |
| Pilot pressure range | kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature | °C | 5 ~ 60 | |
| Pilot type | | Air operated | |
| Number of positions | | 3/2-position | |
| Type of actuation | | Normally open, Normally closed | |
| Effective orifice | mm²(CV) | 2.16 (0.12) | 12.6 (0.7) |
| Port size | | M5 | Rc1/8 |
| Lubrication | | Lubrication free type | |

### Code of order

**PMU** — **5** — **10** — **1** — **NC** — **M 2**

**Model**

PMU:
3/2-position
Pilot valve

**Model number**

5: 5000 series
7: 7000 series

**Coil q'ty**

10: Single

**Port size**

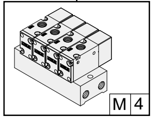
| Mark | Thread | Model |
|---|---|---|
| M5 | M5x0.8p | PMU5000 |
| 1 | Rc 1/8 | PMU7000 |

For A port

**Type of actuation**

| Mark | Type |
|---|---|
| NC | Normally open |
| NO | Normally closed |

**Manifolds**

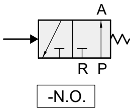


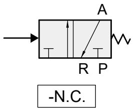
None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮ ⋮
M20 = 20 sets

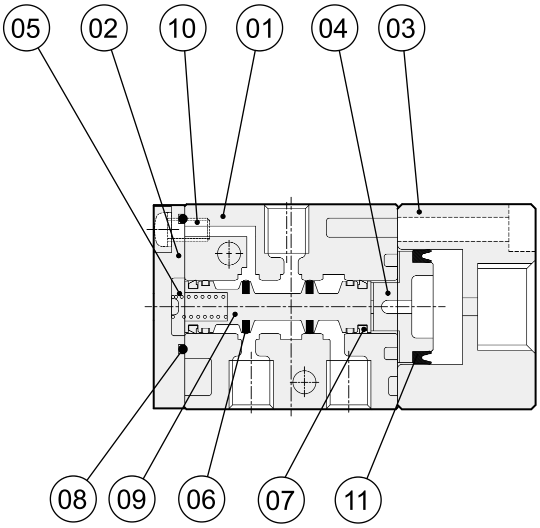
# PMU series Air Operated Valve

## Product features

- 3 port 2-position single







## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **07** | Spool packing | NBR |
| **02** | Rear cover | Aluminum alloy | **08** | Rear cover O-ring | NBR |
| **03** | Air pilot holder | Aluminum alloy | **09** | Shaft | Aluminum alloy |
| **04** | Holder piston | POM | **10** | Rear screw | Alloy steel |
| **05** | Rear cover spring | Stainless steel | **11** | Holder piston packing | NBR |
| **06** | Spool packing | NBR | | | |

Note: The main body has been treated with painting.

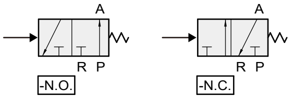
## Packing and O-Ring material list

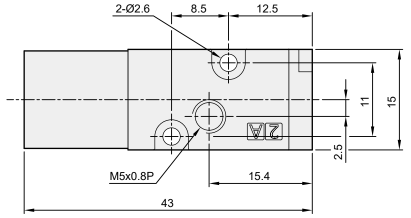
| Item | Holder piston packing | Rear cover packing |
|---|---|---|
| **Model** / **Quantity** | **1** | **1** |
| **PMU 5000** | MYA-10 | MYA-7 |
| **PMU 7000** | MYA-11 | MYA-7 |

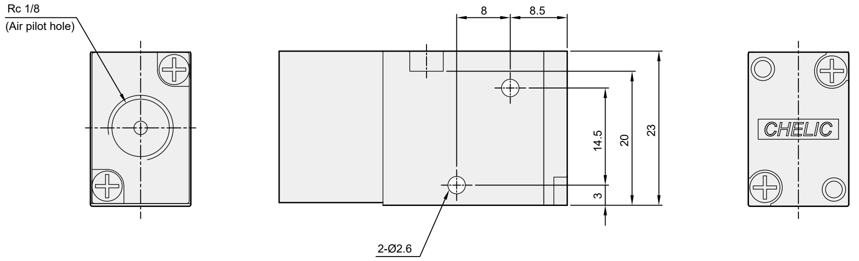
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

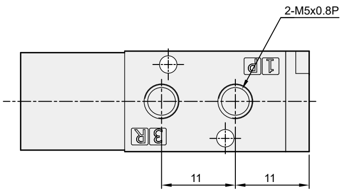
## PMU 510M5 – ☐

3 port 2-position single


A
R P
-N.O.
A
R P
-N.C.

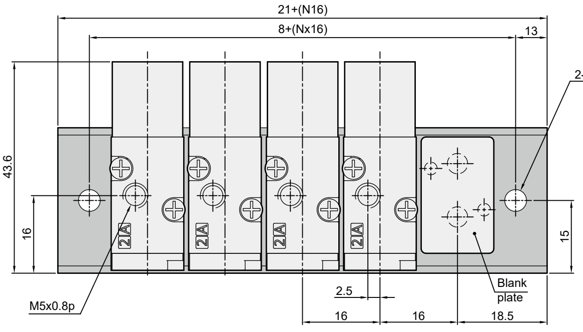

2-Ø2.6
8.5
12.5
2A
11
15
2.5
M5x0.8P
15.4
43

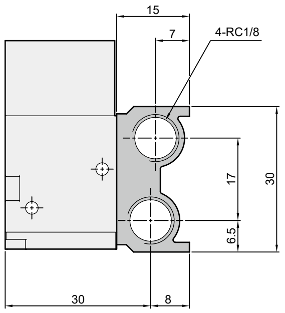

Rc 1/8
(Air pilot hole)
8
8.5
14.5
20
23
3
2-Ø2.6
CHELIC


2-M5x0.8P
1P
3R
11
11

## PMU 5000 series - standard

Manifold dimension


21+(N16)
8+(Nx16)
13
2-Ø4.5
43.6
16
2A
2A
2A
2A
15
2.5
Blank plate
M5x0.8p
16
16
18.5

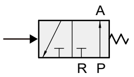

15
7
4-RC1/8
17
30
6.5
30
8

# PMU 7000 series Air Operated Valve

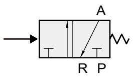
## Dimensions/ Standard

### PMU 7101 – ☐

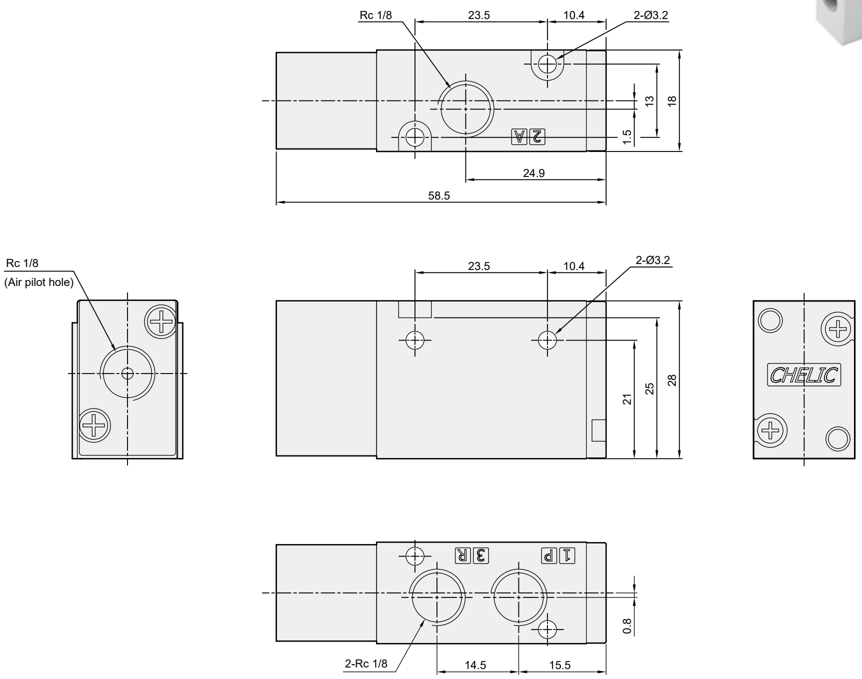
3 port 2-position single



-N.O.



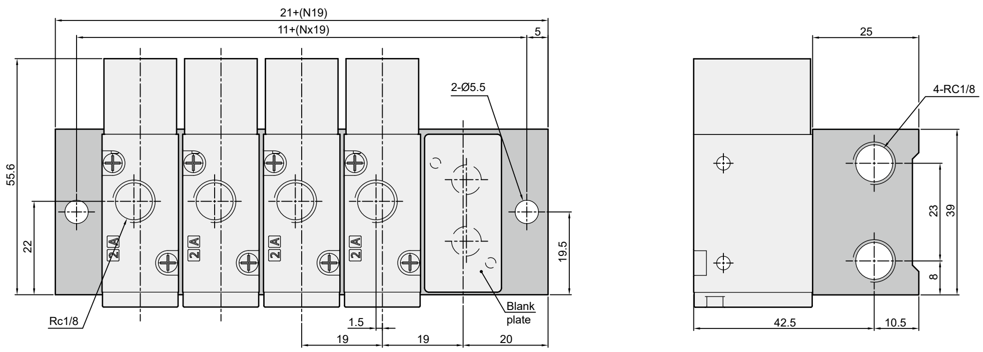
-N.C.


Rc 1/8
23.5
10.4
2-Ø3.2
13
18
1.5
2A
24.9
58.5
Rc 1/8
(Air pilot hole)
23.5
10.4
2-Ø3.2
21
25
28
CHELIC
3R
1P
0.8
2-Rc 1/8
14.5
15.5

---

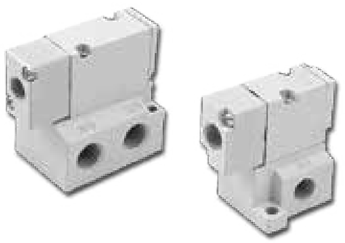
### PMU 7000 series - standard

Manifold dimension

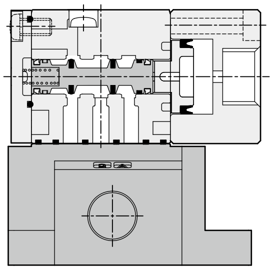

21+(N19)
11+(Nx19)
5
2-Ø5.5
55.6
22
19.5
2A
Rc1/8
1.5
19
19
20
Blank plate
25
4-RC1/8
23
39
8
42.5
10.5

# PMUB series Air Operated Valve ( Base Mounting Type )

## Product features/ Code of order



### Internal structure



### Specification

| Item \ Model | PMUB5000 | PMUB7000 |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) | |
| Guidance Pressure Range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | |
| Ambient and fluid temperature °C | 5 ~ 60 | |
| Pilot type | Air operated | |
| Number of positions | 3/2 Solenoid valve | |
| Type of actuation | Normally open, Normally closed | |
| Effective orifice mm²(CV) | 3.06 (0.17) | 11.7 (0.65) |
| Port size | M5, Rc1/8 | Rc1/8, Rc1/4 |
| Lubrication | Lubrication free type | |

### Code of order

**PMUB** — **5** — **10** — **1** — **NC** — **M** **2**

Model

PMUB :
3/2 Solenoid
valve

Model number

5: 5000 series
7: 7000 series

Type of actuation

10: Single

Port size

| Thread type | | |
|---|---|---|
| Mark | Thread | Model |
| M5 | M5x0.8p | PMUB5000 |
| 1 | Rc 1/8 | |
| 1 | Rc 1/8 | PMUB7000 |
| 2 | Rc 1/4 | |

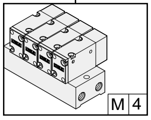
For A port

| Single manifold mounting type | | |
|---|---|---|
| 1 | Rc 1/8 | PMUB5000 |
| 2 | Rc 1/4 | PMUB7000 |

Valve function

| Mark | Model |
|---|---|
| NC | Normally closed |
| NO | Normally open |

Manifold



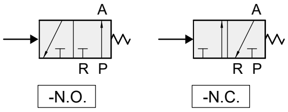
None:
without manifold

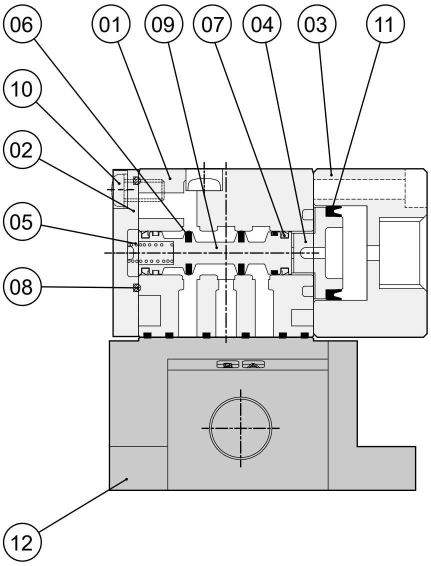
M1 = 1set
M2 = 2sets
M3 = 3sets
⋮ ⋮
M20 = 20sets

# PMUB series Air Operated Valve ( Base Mounting Type )

## Product features

- 3 port 2-position single





### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Body | Aluminum alloy | **07** | Spool packing | NBR |
| **02** | Rear cover | Aluminum alloy | **08** | Rear cover O-ring | NBR |
| **03** | Air pilot holder | Aluminum alloy | **09** | Shaft | Aluminum alloy |
| **04** | Holder piston | POM | **10** | Rear screw | Alloy steel |
| **05** | Rear cover spring | Stainless steel | **11** | Holder piston packing | NBR |
| **06** | Spool packing | NBR | **12** | Single sub-plate | Aluminum alloy |

Note: The main body has been treated with painting.

### Packing and O-Ring material list

| Item | Holder piston packing | Rear cover packing |
|---|---|---|
| Model / Quantity | 1 | 1 |
| **PMUB 5000** | MYA-10 | MYA-7 |
| **PMUB 7000** | MYA-11 | MYA-7 |

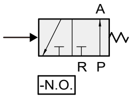
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

# PMUB 5000 series Air Operated Valve ( Base Mounting Type )

## Dimensions/ Base mount type

### PMUB 5101 – ☐

Single exhausting sub-plate
3 port 2-position single



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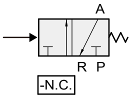
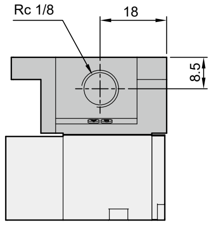
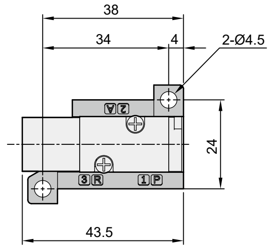
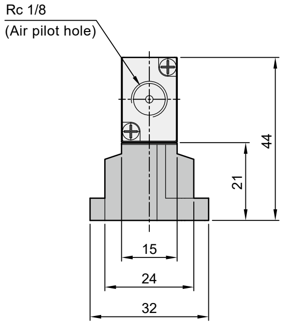
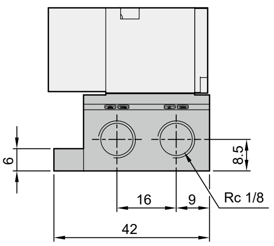


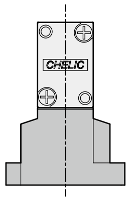
-N.C.




38
34
4
2-Ø4.5
24
43.5
2A
3R
1P


Rc 1/8
(Air pilot hole)
44
21
15
24
32


6
8.5
16
9
Rc 1/8
42



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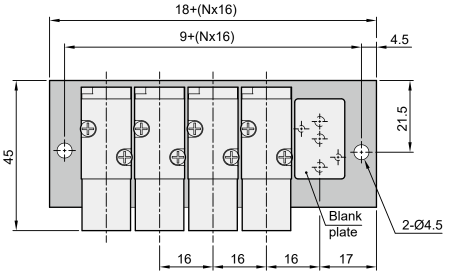
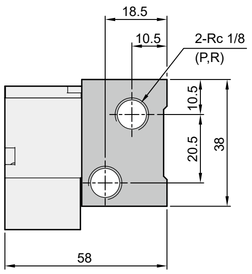
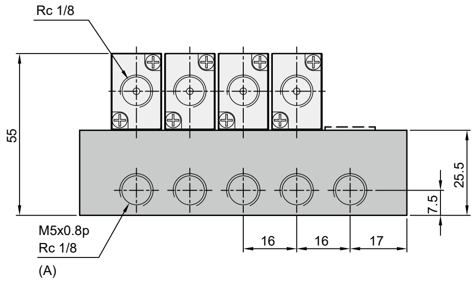
### PMUB 5000 series - standard

Exhaust manifold dimensions


18+(Nx16)
9+(Nx16)
4.5
45
21.5
Blank plate
2-Ø4.5
16
16
16
17


18.5
10.5
2-Rc 1/8
(P,R)
10.5
20.5
38
58


Rc 1/8
55
25.5
7.5
M5x0.8p
Rc 1/8
(A)
16
16
17

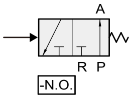
# PMUB 7000 series Air Operated Valve ( Base Mounting Type )

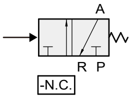
## Dimensions/ Base mount type

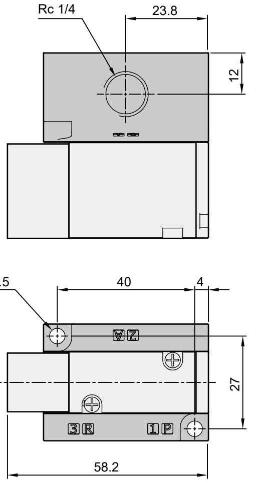
PM
PMB
PMU
PMUB
PV
PN

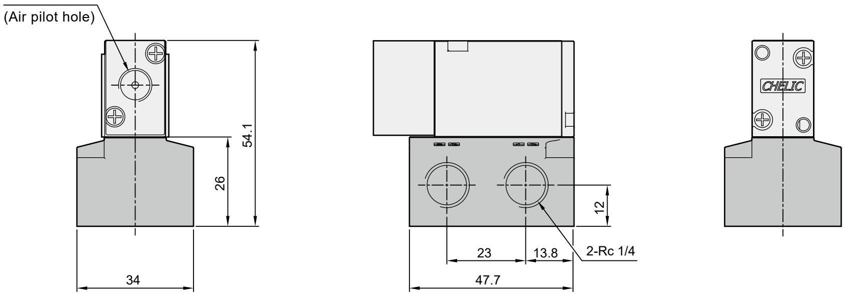
### PMUB 7102 – ☐

Single exhausting sub-plate
3 port 2-position single



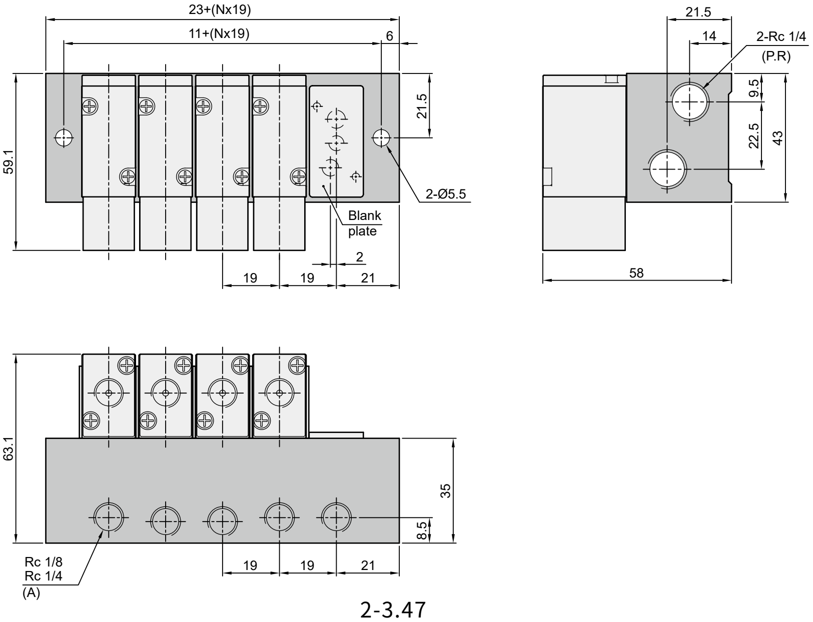



Rc 1/4
23.8
12
2-Ø4.5
40
4
27
2 A
3 R
1 P
58.2


Rc 1/8
(Air pilot hole)
54.1
26
34
12
23
13.8
2-Rc 1/4
47.7
CHELIC

### PMUB 7000 series - standard

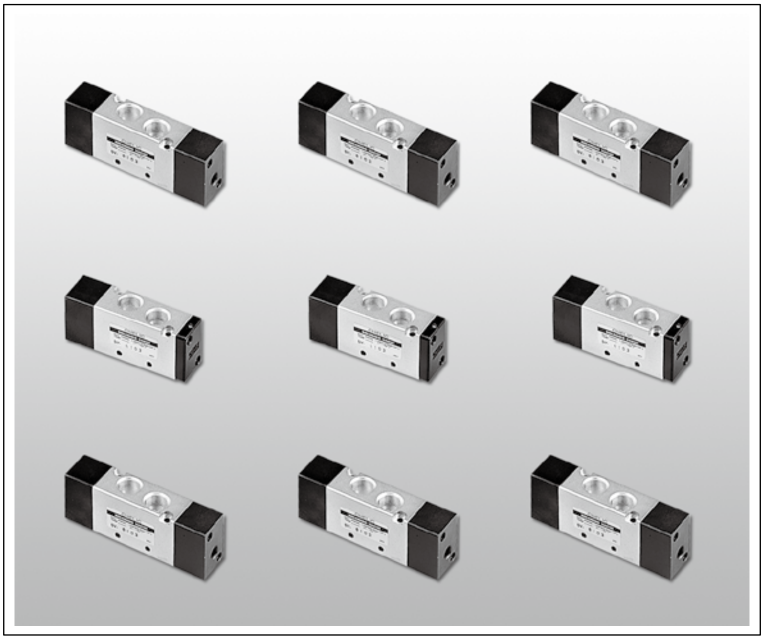
Exhaust manifold dimensions


23+(Nx19)
11+(Nx19)
6
21.5
59.1
2-Ø5.5
Blank plate
2
19
19
21
21.5
14
2-Rc 1/4
(P.R)
9.5
22.5
43
58
63.1
35
8.5
Rc 1/8
Rc 1/4
(A)
19
19
21

# MEMO

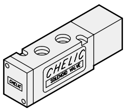
# Directional control — Air Operated Valve

## PV500, PV600, PV800, PV900 Air operated valve

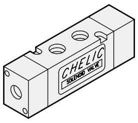


Provide CAD external dimension.

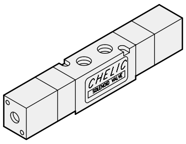
**Single air pilot valve** -------- **PV - 500 series** ----- **( 1/8)** -------------------- **P.2-3.52**
( 5 port 2-position )
**PV - 600 series** ----- **( 1/8, 1/4 )** ---------------- **P.2-3.54**
**PV - 800 series** ----- **( 1/8, 3/8 )** ---------------- **P.2-3.56**
**PV - 900 series** ----- **( 1/2 )** ------------------- **P.2-3.58**


CHELIC
SOLENOID VALVE

**Double air pilot valve** ------- **PV - 500 series** ----- **( 1/8 )** ------------------- **P.2-3.52**
( 5 port 2-position )
**PV - 600 series** ----- **( 1/8, 1/4 )** ---------------- **P.2-3.54**
**PV - 800 series** ----- **( 1/8, 3/8 )** ---------------- **P.2-3.56**
**PV - 900 series** ----- **( 1/2 )** ------------------- **P.2-3.58**

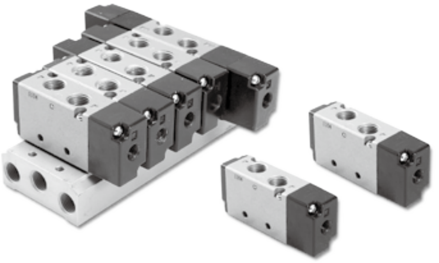

CHELIC
SOLENOID VALVE

**3 Positions pilot valve** ------ **PV - 500 series** ----- **( 1/8 )** ------------------- **P.2-3.52**
( 5 port 3-position )
**PV - 600 series** ----- **( 1/8, 1/4 )** ---------------- **P.2-3.54**
**PV - 800 series** ----- **( 1/8, 3/8 )** ---------------- **P.2-3.56**
**PV - 900 series** ----- **( 1/2 )** ------------------- **P.2-3.58**

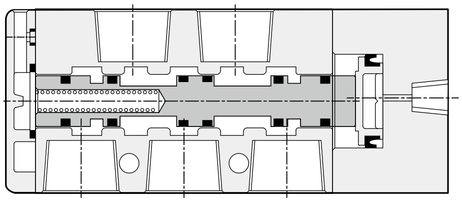

CHELIC
SOLENOID VALVE

# PV series Air Operated Valve

## Product features/ Code of order



### Internal structure



### Specification

| Item \ Model | PV-500 | PV-600 | PV-800 | PV-900 |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) | | | |
| Pilot pressure range kgf/cm²(kPa) | 1.5 ~ 7 ( 150 ~ 700 ) | | | |
| Ambient and fluid temperature °C | 5 ~ 50 | | | |
| Pilot type | Air operated | | | |
| Number of positions | 5/2-position, 5/3-position | | | |
| Type of actuation | Single/double; Closed/Exhaust/Pressure center for 5/3-position only | | | |
| Effective orifice mm²(CV) | 12 (0.67) | 14 (0.78) | 18 (1.0) | 50 (2.78) |
| Port size | Rc 1/8 | Rc 1/8, 1/4 | Rc 1/4, 3/8 | Rc 1/2 |
| Lubrication | Lubrication free type | | | |

### Code of order

**PV** — **6** — **1** — **0** — **02** — **NC** — **M** **2**

PV series:
Pilot valve

**Model**

5: 500 series
6: 600 series
8: 800 series
9: 900 series

**Coil q'ty**

1: Single
2: Double

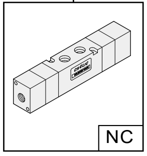
**Positions**

0: 2 Pos.
3: 3 Pos.

**Port size**

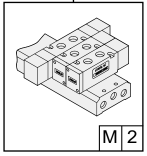
| Mark | Thread | Model 500 | 600 | 800 | 900 |
|---|---|---|---|---|---|
| 01 | 1/8 | ● | ● | — | — |
| 02 | 1/4 | — | ● | ● | — |
| 03 | 3/8 | — | — | ● | — |
| 04 | 1/2 | — | — | — | ● |

**Type of actuation**



None: 5/2-position
NC: Closed center
NF: Exhaust center
NO: Pressure center

**Manifold**



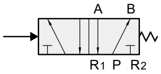
None:
Without manifold
M2 = 2 sets
M3 = 3 sets
⋮
M12 = 12 sets

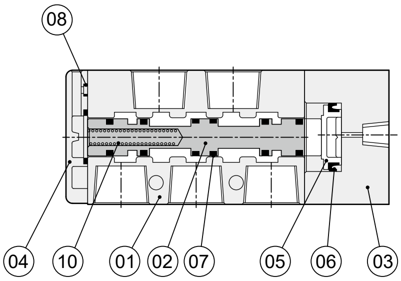
- PV 500 series
  Max. Manifolds: M10
- PV 600 series
  Max. Manifolds: M12
- PV 800 series
  Max. Manifolds: M12
- PV 900 series
  Max. Manifolds: M5

# PV series Air Operated Valve

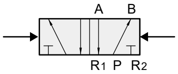
## Product features

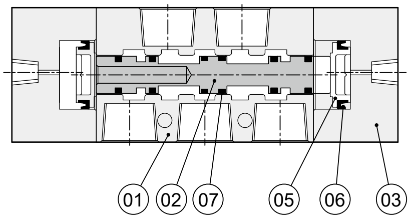
- 5 port 2-position single



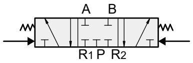


- 5 port 2-position double

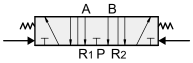




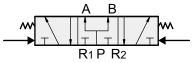
- 5 port 3-position double



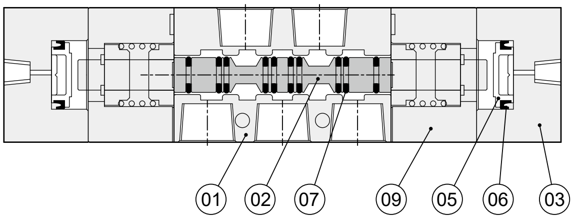
( Closed center N.C. )



( Exhaust center N.F. )



( Pressure center N.O. )



## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 06 | Holder piston packing | NBR |
| 02 | Shaft | Aluminum alloy | 07 | Spool packing | NBR |
| 03 | Holder | POM | 08 | Rear cover O-ring | NBR |
| 04 | Rear cover | POM | 09 | Mechanical holder | Aluminum alloy |
| 05 | Holder piston | POM | 10 | Spool packing | NBR |

Note: The main body has been treated with painting.

## Packing and O-Ring material list

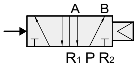
| Item | Piston packing | Holder O-ring | Manual rod O-Ring | Rear cover O-Ring |
|---|---|---|---|---|
| Model Quantity | 1 | 1 | 1 | 1 |
| PV 500 | — | — | Ø2XØ1 | — |
| PV 600 | MYA-14 | Ø2XØ1.5 | Ø2XØ1 | Ø17.5XØ1.5 |
| PV 800 | MYA-18 | Ø2XØ1.5 | Ø2XØ1 | Ø19.5XØ1.5 |
| PV 900 | Z8-2822 | Ø3.5XØ1.5 | Ø2XØ1 | Ø22.8XØ1.58 |

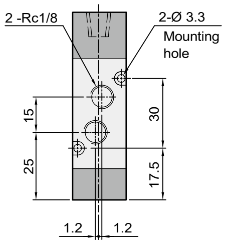
Note: Piston packing and rod packing all adopt import parts ( MITSUBISH, SAKAGAHI, and same grade ).

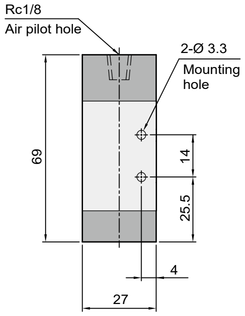
# PV 500 series Air Operated Valve

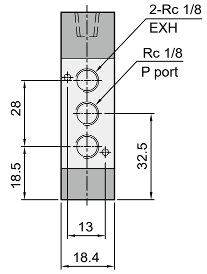
## Dimensions

### PV - **5101** series
5 port 2-position single

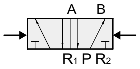


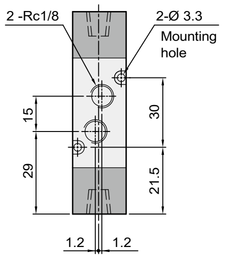

2 -Rc1/8
2-Ø 3.3
Mounting
hole
15
25
30
17.5
1.2
1.2

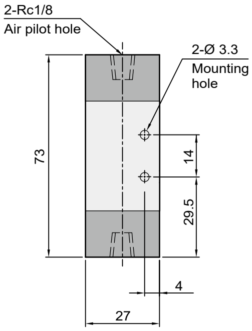

Rc1/8
Air pilot hole
2-Ø 3.3
Mounting
hole
69
14
25.5
4
27

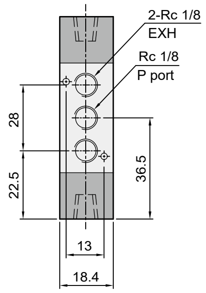

2-Rc 1/8
EXH
Rc 1/8
P port
28
18.5
32.5
13
18.4

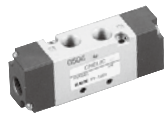
### PV - **5201** series
5 port 2-position double



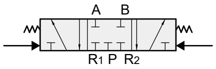

2 -Rc1/8
2-Ø 3.3
Mounting
hole
15
29
30
21.5
1.2
1.2


2-Rc1/8
Air pilot hole
2-Ø 3.3
Mounting
hole
73
14
29.5
4
27

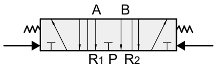

2-Rc 1/8
EXH
Rc 1/8
P port
28
22.5
36.5
13
18.4



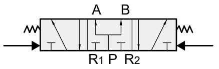
### PV - **5231** series
5 port 3-position double



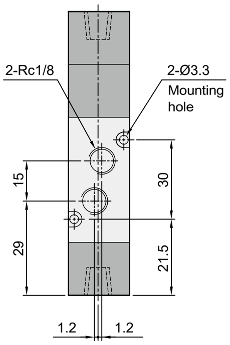
PV-5231- NC (Closed center) N.C.

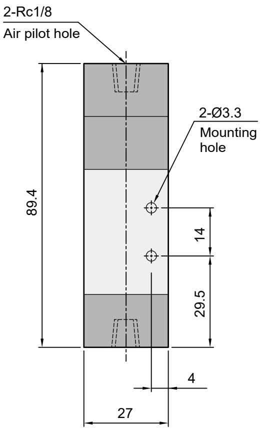


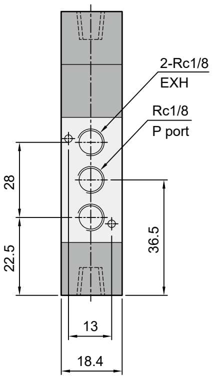
PV-5231- NF (Exhaust center) N.F.



PV-5231- NO (Pressure center) N.O.


2-Rc1/8
2-Ø3.3
Mounting
hole
15
29
30
21.5
1.2
1.2


2-Rc1/8
Air pilot hole
2-Ø3.3
Mounting
hole
89.4
14
29.5
4
27

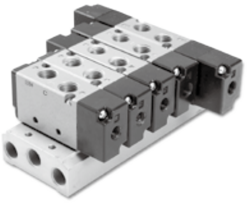

2-Rc1/8
EXH
Rc1/8
P port
28
22.5
36.5
13
18.4

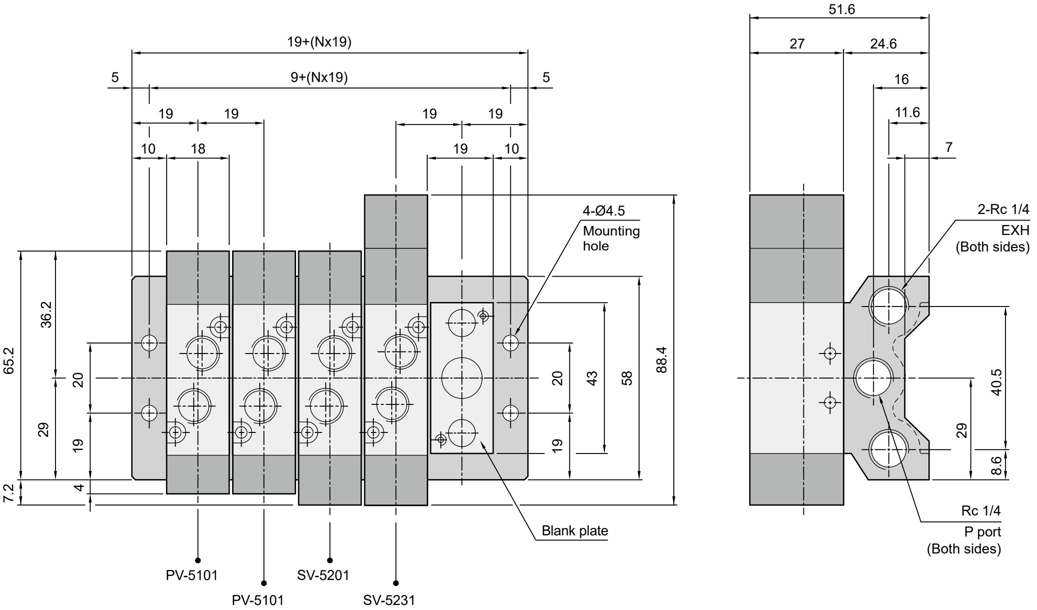
# PV 500 series Air Operated Valve

## Dimensions

### **PV - 500** series

Manifold dimension




19+(Nx19)
5
9+(Nx19)
5
19
19
19
19
10
18
19
10
4-Ø4.5
Mounting
hole
65.2
36.2
20
29
19
7.2
4
20
43
58
88.4
19
Blank plate
PV-5101
PV-5101
SV-5201
SV-5231
51.6
27
24.6
16
11.6
7
2-Rc 1/4
EXH
(Both sides)
40.5
29
8.6
Rc 1/4
P port
(Both sides)

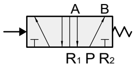
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

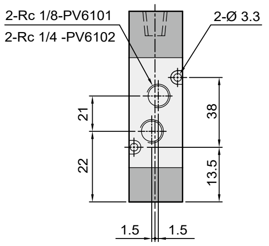
# PV 600 series Air Operated Valve

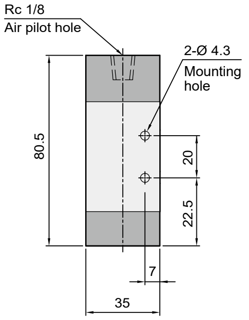
## Dimensions

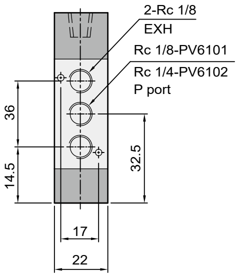
CHELIC

### PV - 6101 series
### PV - 6102 series
5 port 2-position single



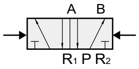

2-Rc 1/8-PV6101
2-Rc 1/4 -PV6102
2-Ø 3.3
21
22
38
13.5
1.5
1.5

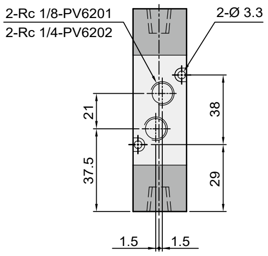

Rc 1/8
Air pilot hole
2-Ø 4.3
Mounting hole
80.5
20
22.5
7
35

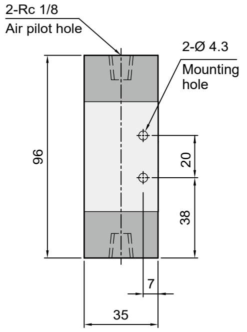

2-Rc 1/8
EXH
Rc 1/8-PV6101
Rc 1/4-PV6102
P port
36
14.5
32.5
17
22

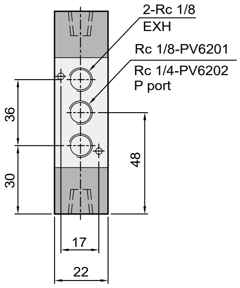
---

### PV - 6201 series
### PV - 6202 series
5 port 2-position double



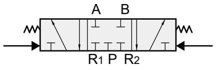

2-Rc 1/8-PV6201
2-Rc 1/4-PV6202
2-Ø 3.3
21
37.5
38
29
1.5
1.5


2-Rc 1/8
Air pilot hole
2-Ø 4.3
Mounting hole
96
20
38
7
35

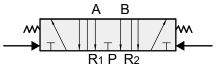

2-Rc 1/8
EXH
Rc 1/8-PV6201
Rc 1/4-PV6202
P port
36
30
48
17
22

---

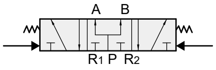
### PV - 6231 series
### PV - 6232 series
5 port 3-position double



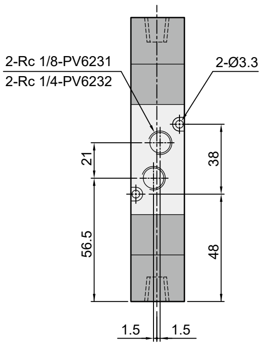
PV-6232- NC (Closed center) N.C.

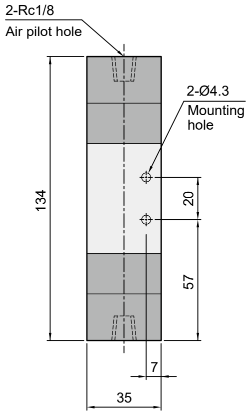


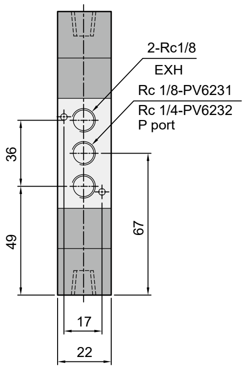
PV-6232- NF (Exhaust center) N.F.



PV-6232- NO (Pressure center) N.O.


2-Rc 1/8-PV6231
2-Rc 1/4-PV6232
2-Ø3.3
21
56.5
38
48
1.5
1.5


2-Rc1/8
Air pilot hole
2-Ø4.3
Mounting hole
134
20
57
7
35

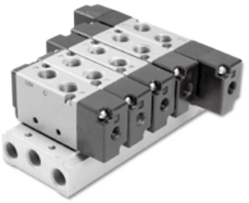

2-Rc1/8
EXH
Rc 1/8-PV6231
Rc 1/4-PV6232
P port
36
49
67
17
22

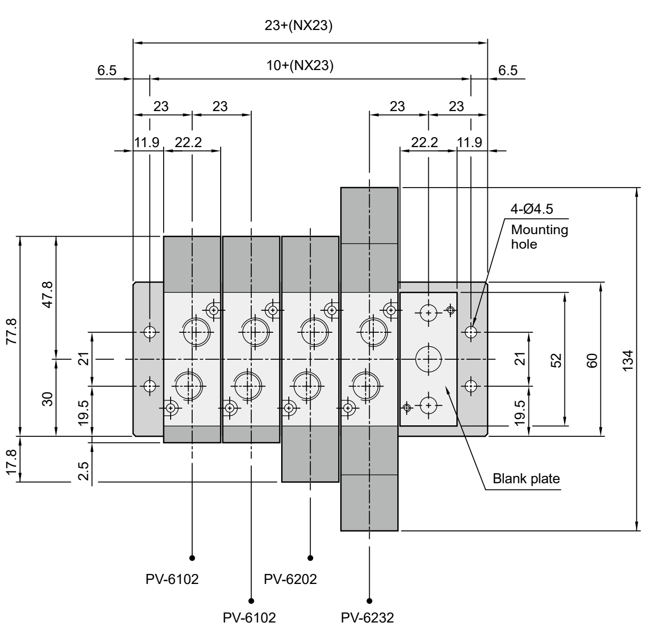
# PV 600 series Air Operated Valve

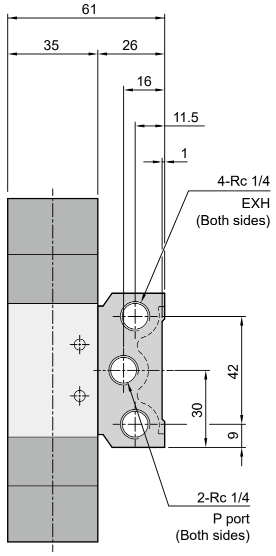
## Dimensions

### **PV - 600** series

Manifold dimension




23+(NX23)
6.5
10+(NX23)
6.5
23
23
23
23
11.9
22.2
22.2
11.9
4-Ø4.5
Mounting hole
77.8
47.8
30
17.8
21
19.5
2.5
21
19.5
52
60
134
Blank plate
PV-6102
PV-6202
PV-6102
PV-6232

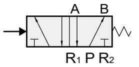

61
35
26
16
11.5
1
4-Rc 1/4
EXH
(Both sides)
42
30
9
2-Rc 1/4
P port
(Both sides)

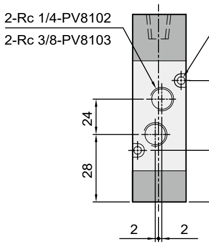
Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

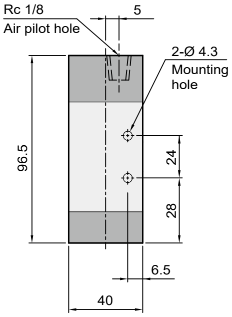
# PV 800 series Air Operated Valve

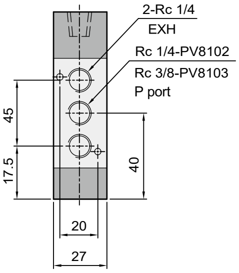
## Dimensions

### PV - 8102 series
### PV - 8103 series
### 5 port 2-position single

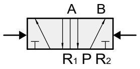


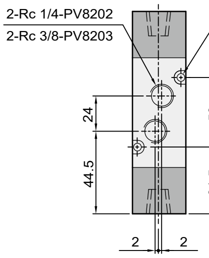

2-Rc 1/4-PV8102
2-Rc 3/8-PV8103
2-Ø 3.3
24
28
50
15
2
2

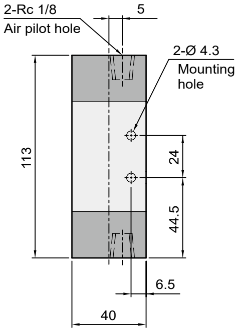

Rc 1/8
Air pilot hole
5
2-Ø 4.3
Mounting hole
96.5
24
28
6.5
40

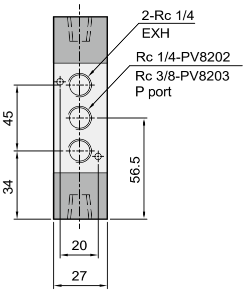

2-Rc 1/4
EXH
Rc 1/4-PV8102
Rc 3/8-PV8103
P port
45
17.5
40
20
27

### PV - 8202 series
### PV - 8203 series
### 5 port 2-position double

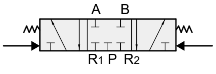



2-Rc 1/4-PV8202
2-Rc 3/8-PV8203
2-Ø 3.3
24
44.5
50
31.5
2
2

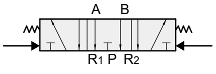

2-Rc 1/8
Air pilot hole
5
2-Ø 4.3
Mounting hole
113
24
44.5
6.5
40


2-Rc 1/4
EXH
Rc 1/4-PV8202
Rc 3/8-PV8203
P port
45
34
56.5
20
27

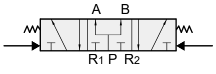
### PV - 8232 series
### PV - 8233 series
### 5 port 3-position double



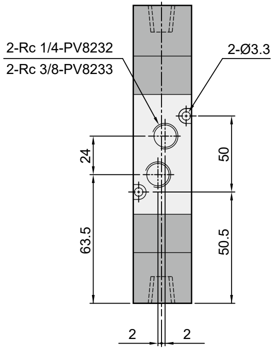
PV-8232- NC (Closed center) N.C.

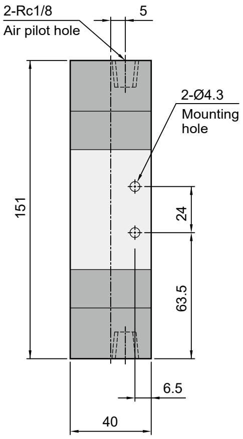


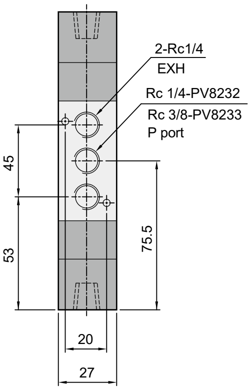
PV-8232- NF (Exhaust center) N.F.



PV-8232- NO (Pressure center) N.O.


2-Rc 1/4-PV8232
2-Rc 3/8-PV8233
2-Ø3.3
24
63.5
50
50.5
2
2


2-Rc1/8
Air pilot hole
5
2-Ø4.3
Mounting hole
151
24
63.5
6.5
40

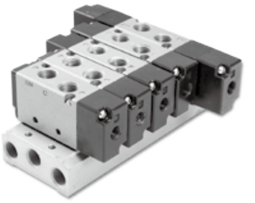

2-Rc1/4
EXH
Rc 1/4-PV8232
Rc 3/8-PV8233
P port
45
53
75.5
20
27

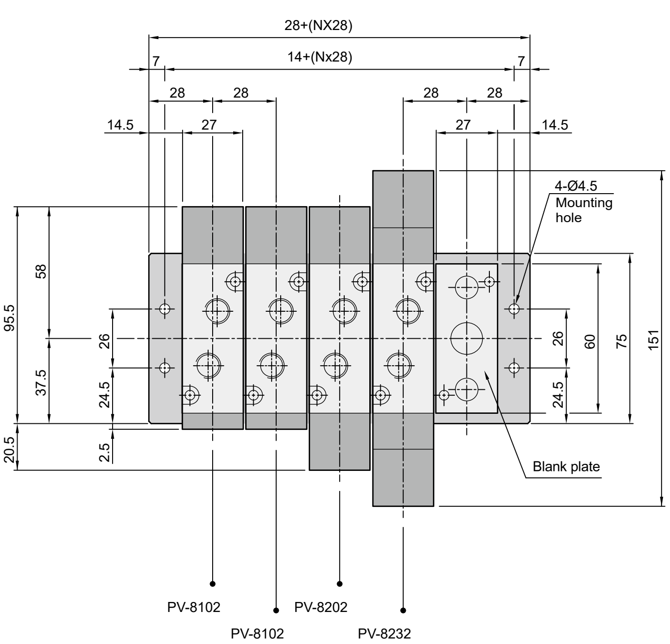
# PV 800 series Air Operated Valve

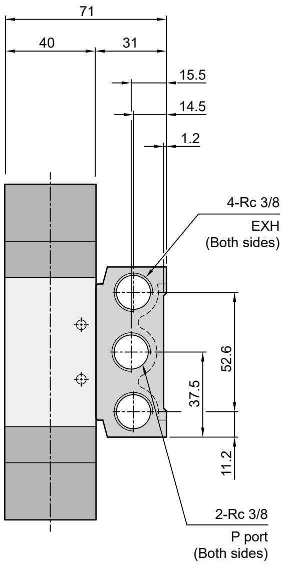
## Dimensions

### PV - 800 series

Manifold dimension




28+(NX28)
7
14+(Nx28)
7
28
28
28
28
14.5
27
27
14.5
4-Ø4.5
Mounting hole
95.5
58
37.5
20.5
26
24.5
2.5
26
24.5
60
75
151
Blank plate
PV-8102
PV-8102
PV-8202
PV-8232


71
40
31
15.5
14.5
1.2
4-Rc 3/8
EXH
(Both sides)
52.6
37.5
11.2
2-Rc 3/8
P port
(Both sides)

Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.

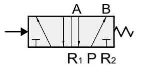
# PV 900 series Air Operated Valve

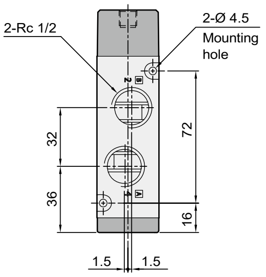
## Dimensions

CHELIC

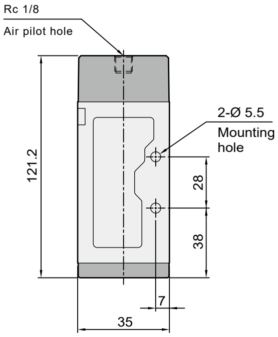
### PV - **9104** series

5 port 2-position single

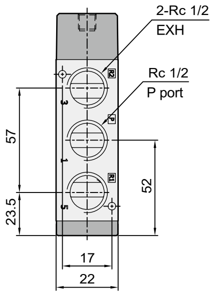




2-Rc 1/2
2-Ø 4.5
Mounting hole
32
36
72
16
1.5
1.5



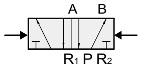
Rc 1/8
Air pilot hole
121.2
2-Ø 5.5
Mounting hole
28
38
7
35

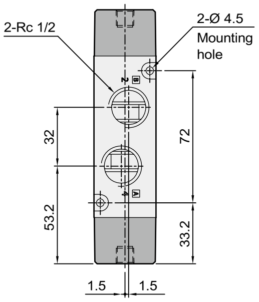


2-Rc 1/2
EXH
Rc 1/2
P port
57
23.5
52
17
22

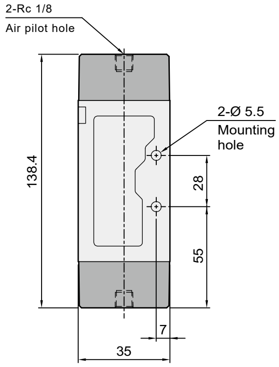
### PV - **9204** series

5 port 2-position double

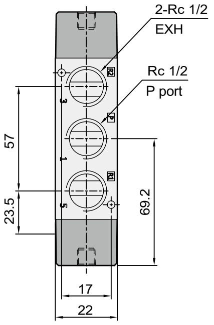




2-Rc 1/2
2-Ø 4.5
Mounting hole
32
53.2
72
33.2
1.5
1.5



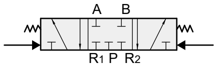
2-Rc 1/8
Air pilot hole
138.4
2-Ø 5.5
Mounting hole
28
55
7
35



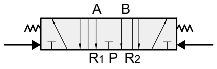
2-Rc 1/2
EXH
Rc 1/2
P port
57
23.5
69.2
17
22

### PV - **9234** series

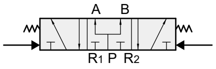
5 port 3-position double



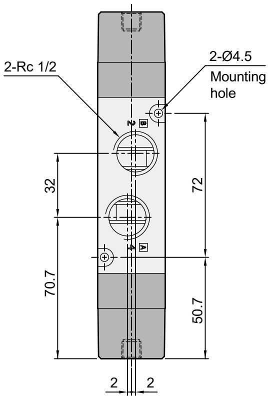
PV-9234- NC (Closed center) N.C.



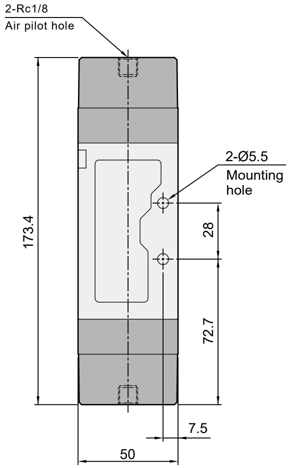
PV-9234- NF (Exhaust center) N.F.



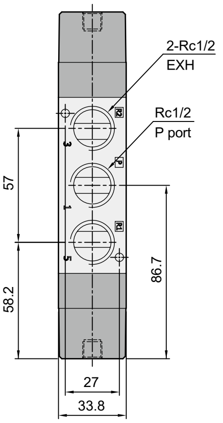
PV-9234- NO (Pressure center) N.O.



2-Rc 1/2
2-Ø4.5
Mounting hole
32
70.7
72
50.7
2
2



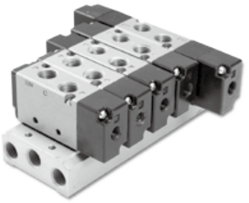
2-Rc1/8
Air pilot hole
173.4
2-Ø5.5
Mounting hole
28
72.7
7.5
50

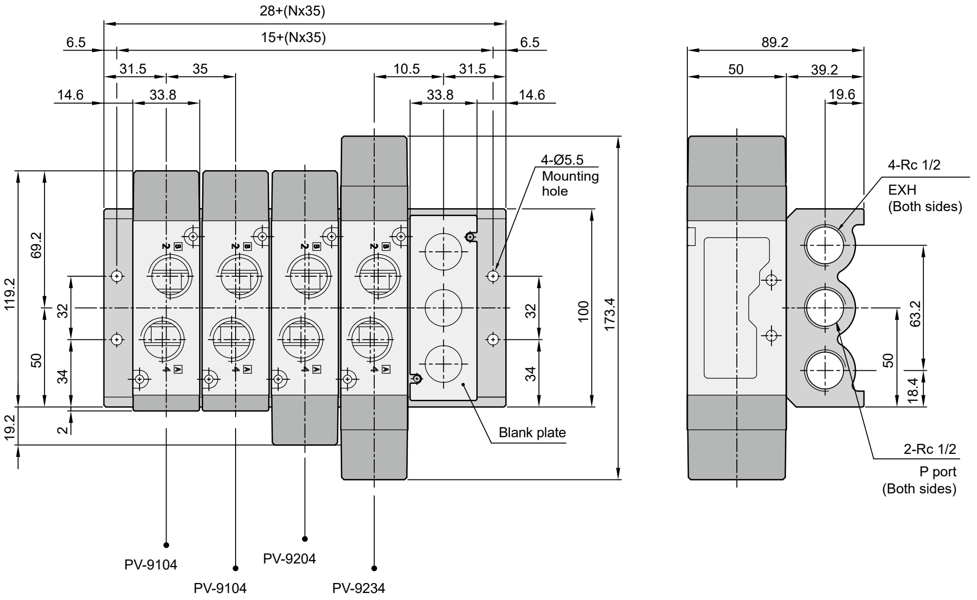


2-Rc1/2
EXH
Rc1/2
P port
57
58.2
86.7
27
33.8

## PV - 900 series

Manifold dimension




28+(Nx35)
6.5
15+(Nx35)
6.5
31.5
35
10.5
31.5
14.6
33.8
33.8
14.6
4-Ø5.5
Mounting hole
119.2
69.2
32
50
34
19.2
2
32
34
100
173.4
Blank plate
PV-9104
PV-9104
PV-9204
PV-9234
89.2
50
39.2
19.6
4-Rc 1/2
EXH
(Both sides)
63.2
50
18.4
2-Rc 1/2
P port
(Both sides)

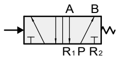
- Note: Blank plate with rubber lining is reserved for temporary storage space of solenoid valves.
- PV900 series, Max. Manifolds: M5

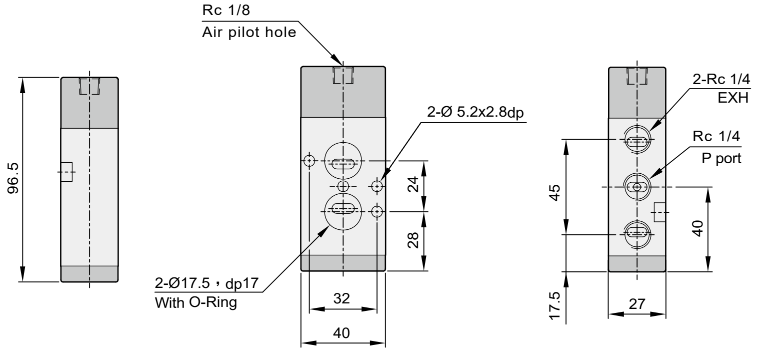
# PN series Air Operated Valve ( "NAMUR" Type )

## Dimensions/ Code of order

### PN - 810 – ☐

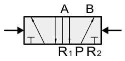
5 port 2-position single

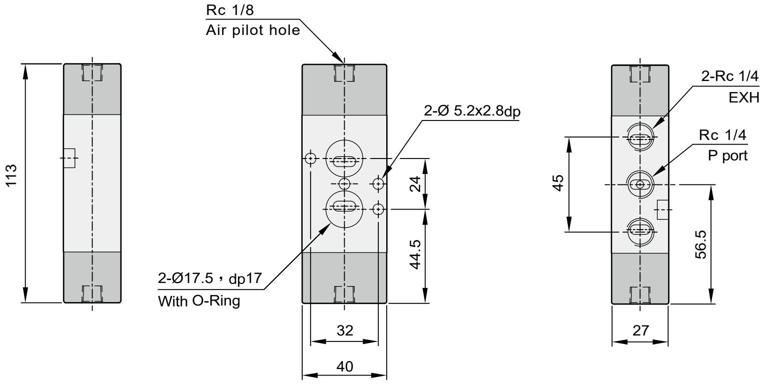



Rc 1/8
Air pilot hole
96.5
2-Ø 5.2x2.8dp
24
28
2-Ø17.5，dp17
With O-Ring
32
40
2-Rc 1/4
EXH
Rc 1/4
P port
45
40
17.5
27

### PN - 820 – ☐

5 port 2-position double




Rc 1/8
Air pilot hole
113
2-Ø 5.2x2.8dp
24
44.5
2-Ø17.5，dp17
With O-Ring
32
40
2-Rc 1/4
EXH
Rc 1/4
P port
45
56.5
27

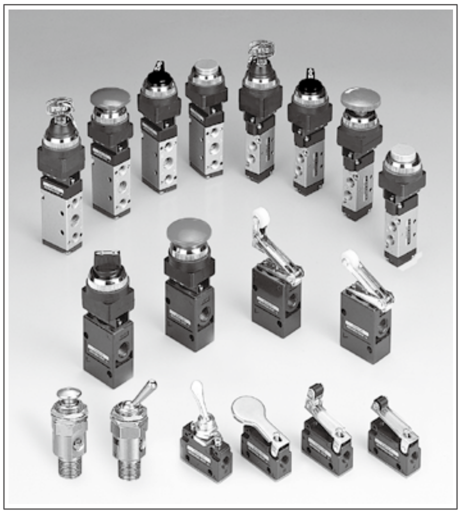
※ This model is only for air pilot ball valve without manifolds.

### Code of order

| PN | 8 | 1 | 0 |
|---|---|---|---|
| | Model | Coil q'ty | Position |
| PN series<br>Flank port<br>Pilot valv | 8 : 800 series | 1: Single air pilot<br>2: Double air pilot | 0: 2 Position |

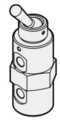
# Directional control — Control valve series

## Thread type/ Round-head/ Square type hand valve, Mechanical valve

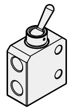


provide CAD external dimension.

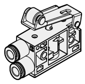
**Thread type hand valve** ------ **MV - 100 series** --- **M5** --------- **P.2-4.2**



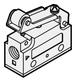
**Round-head hand valve** ------ **MV - 110 series** --- **M5** --------- **P.2-4.4**



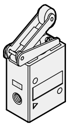
**Square type hand valve** ------ **MV - 130 series** --- **1/8** -------- **P.2-4.7**



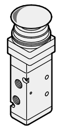
**Mechanical valve** ----------- **MV - 140 series** --- **Ø4, Ø6** ------ **P.2-4.11**
(Plastic Body)



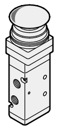
**Mechanical valve** ----------- **MV - 150 series** --- **M5, 1/8** ------ **P.2-4.16**
(Metal body)



**Mechanical valve** ----------- **MV - 200 series** --- **1/4** -------- **P.2-4.20**



**Mechanical valve** ----------- **MV - 230 series** --- **1/8** -------- **P.2-4.24**

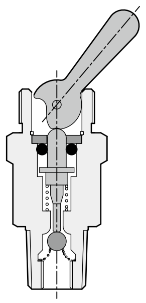


**Mechanical valve** ----------- **MV - 250 series** --- **1/4** -------- **P.2-4.28**

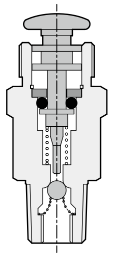
# MV 100 series Thread type hand valve

## Product features/ Code of order

### Internal structure



V : Toggle lever type



P : Push button

### Specification

| Item \ Model | MV-100-□-V | MV-100-□-P |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 0 ~ 9 ( 0 ~ 900 ) | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | |
| Number of positions | 2 positions | |
| Number of ports | 2 ports or 3 ports | |
| Effective orifice mm²(CV) | 1.8 ( 0.1 ) | |
| Port Size mm | M5 | |
| Weight g | 30 | |

### Code of order

**MV** — **100** — **2** — **V**

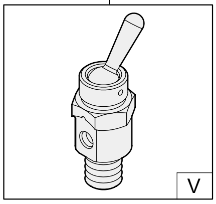
MV: Hand valve

100: Model

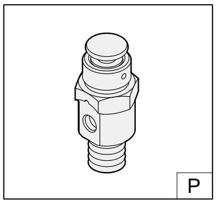
2: Number of ports

2 : 2 ports
3 : 3 ports

V: Switching type



V : Toggle lever type



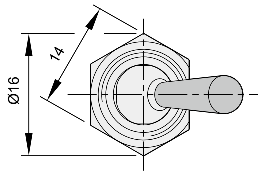
P : Push button

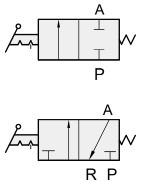
# MV 100 series Thread type hand valve

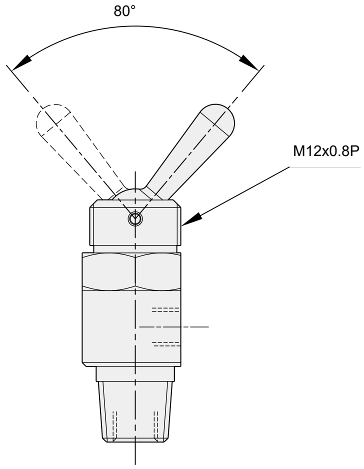
## Dimensions

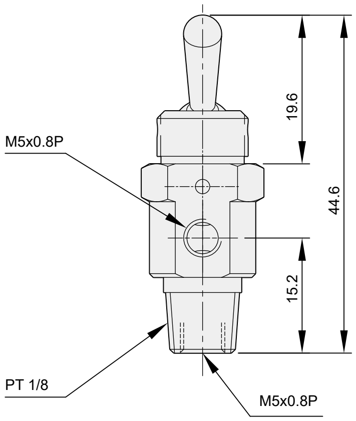
### MV-100-☐-V

Toggle lever type



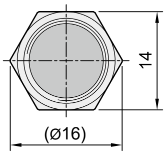


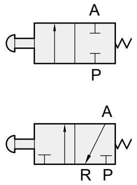


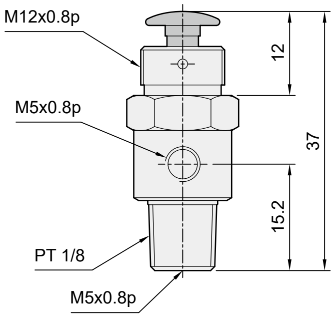

M5x0.8P
19.6
44.6
15.2
PT 1/8
M5x0.8P

### MV-100-☐-P

Push button



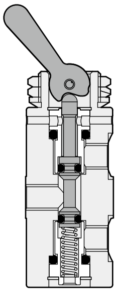



M12x0.8p
M5x0.8p
12
37
15.2
PT 1/8
M5x0.8p

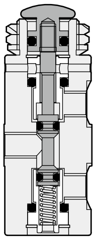
# MV 110 series Round-head hand valve

## Product features/ Code of order

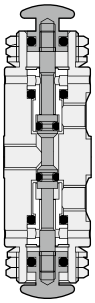
### Internal structure



01 : Lever type



02 : Push button



03 :Double buttons

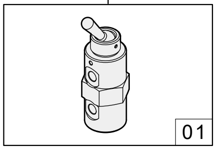
### Specification

| Item / Model | | MV-110-4-01 | MV-110-4-02 | MV-110-4-03 |
|---|---|---|---|---|
| Fluid | | Air | | |
| Pressure range | kgf/cm²(kPa) | 0 ~ 9 ( 0 ~ 900 ) | | |
| Ambient and fluid temperature | ℃ | 5 ~ 60 | | |
| Number of positions | | 2 positions | | |
| Number of ports | | 4 ports | | |
| Effective orifice | mm²(CV) | 1.8 (0.1) | | |
| Port size | mm | M5 | | |
| Weight | g | 61 | | 66 |

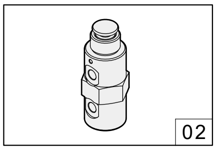
### Code of order

**MV** — **110** — **4** — **01**

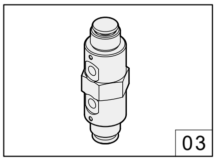
| MV | 110 | 4 | 01 |
|---|---|---|---|
| Hand valve | Model | Number of ports | Switching type |



01 : Lever type



02 : Push button



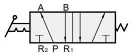
03 : Two-side buttons

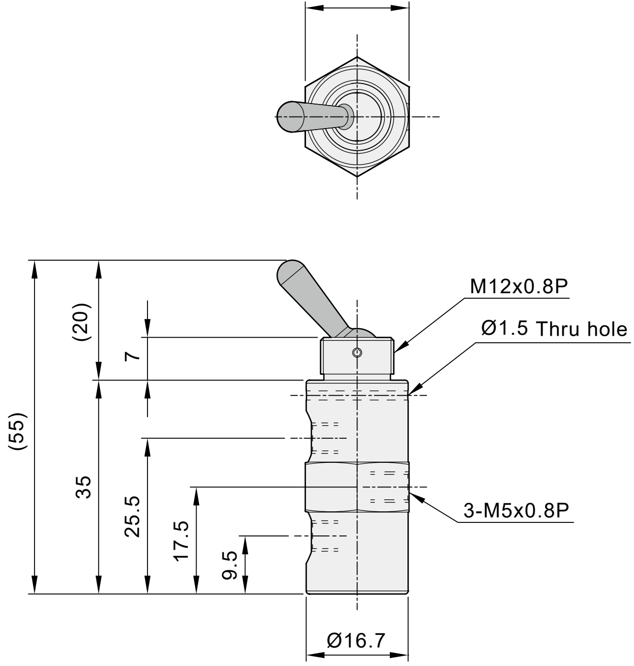
# MV 110 series Round-head hand valve

## Dimensions

### MV-110 series

Round-head hand valve (Lever type)

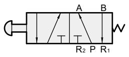


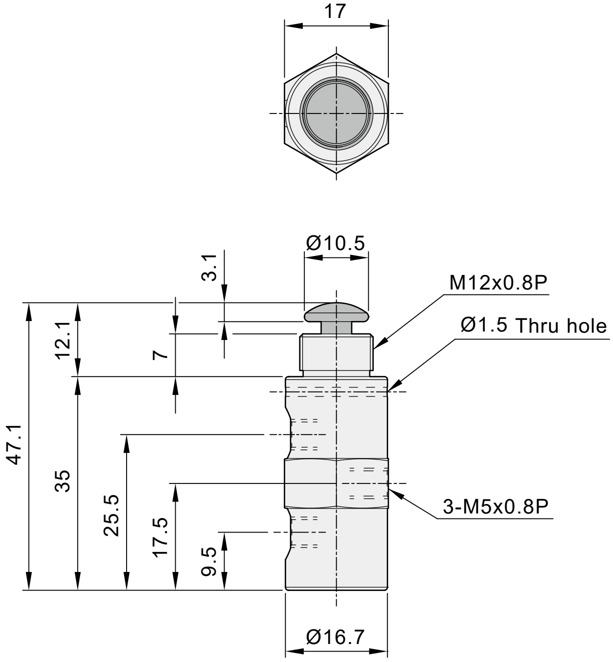

17
M12x0.8P
Ø1.5 Thru hole
3-M5x0.8P
(55)
(20)
7
35
25.5
17.5
9.5
Ø16.7

---

### MV-110 series

Round-head hand valve (Push button)



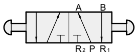

17
Ø10.5
3.1
M12x0.8P
Ø1.5 Thru hole
3-M5x0.8P
47.1
12.1
7
35
25.5
17.5
9.5
Ø16.7

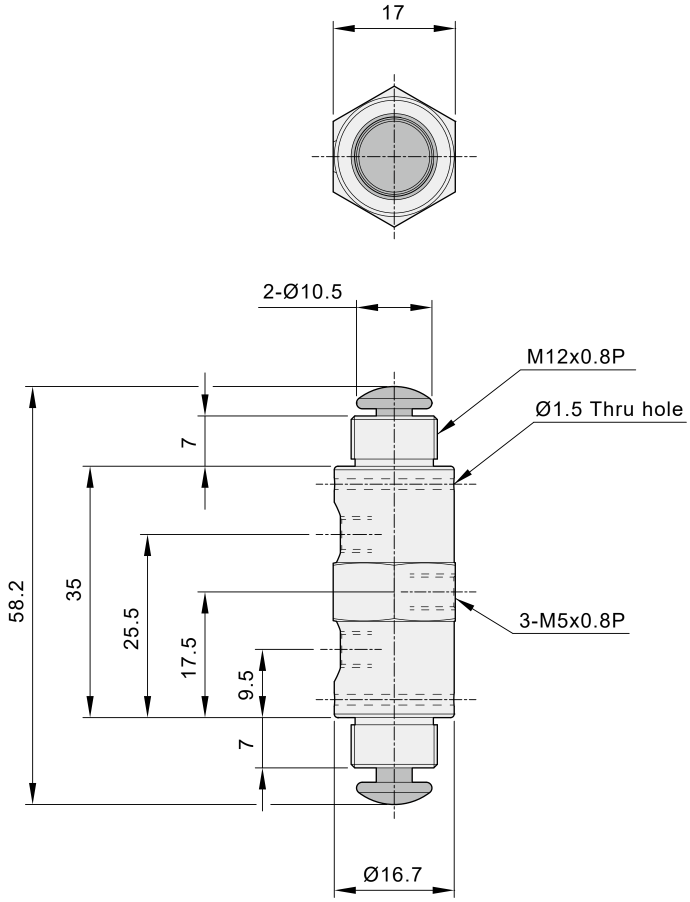
# MV 110 series Round-head hand valve

## Dimensions

### MV-110 series

Round-head hand valve (Two-side buttons)



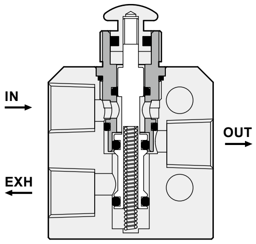

17
2-Ø10.5
M12x0.8P
Ø1.5 Thru hole
3-M5x0.8P
58.2
35
25.5
17.5
9.5
7
7
Ø16.7

# MV 130 series Square type hand valve

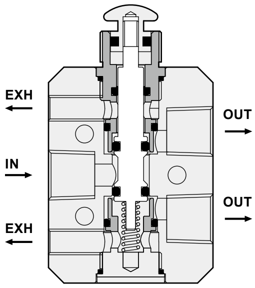
## Product features/ Code of order

### Internal structure

**MV-130-03-02**
( Push button/ 3/2-position )



**MV-130-05-02**
( Push button/ 5/2-position )



### Specification

| Item \ Model | MV-130-3-01 | MV-130-3-02 | MV-130-5-01 | MV-130-5-02 | MV-130-5-03 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Pressure range kgf/cm²(kPa) | 0 ~ 9 ( 0 ~ 900 ) | | | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | | | |
| Number of positions | 2 positions | | | | |
| Number of ports | 3 ports | | 5 ports | | |
| Effective orifice mm²(CV) | 4.5(0.25) | | 5.5(0.3) | | |
| Port size mm | PT 1/8 | | | | |
| Weight g | 130 | 128 | 160 | 158 | 168 |

### Code of order

**MV** — **130** — **3** — **01**

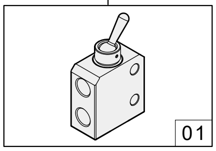
MV: Hand valve

130: Model

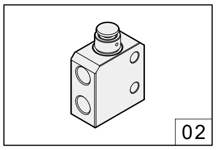
3: Number of ports

01: Switching type

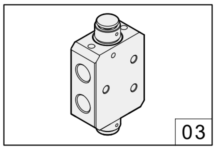
| Mark | Number of ports | Switching type | | |
|---|---|---|---|---|
| | | 01 | 02 | 03 |
| 3 | 3 ports | ● | ● | – |
| 5 | 5 ports | ● | ● | ● |



01 : Lever type



02 : Push button



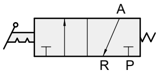
03 : Two-side buttons

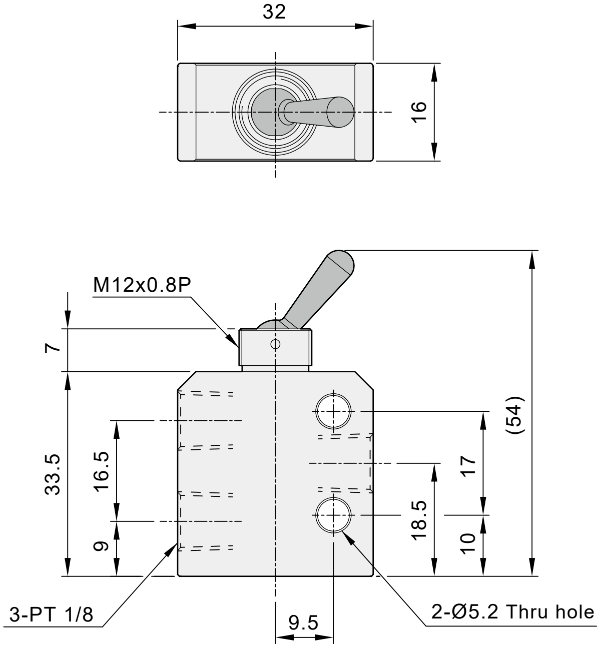
# MV 130 series Square type hand valve

## Dimensions

### MV - 130 - 3 - 01

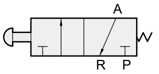
Square type hand valve (Lever type)

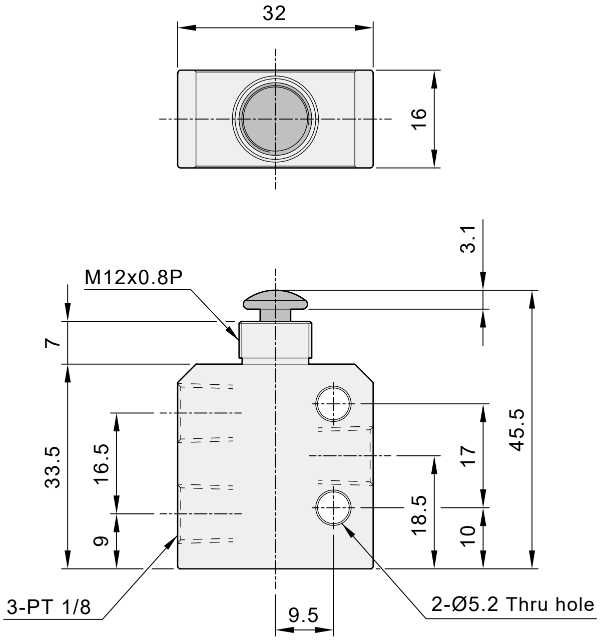



32
16
M12x0.8P
7
33.5
16.5
9
(54)
17
18.5
10
3-PT 1/8
9.5
2-Ø5.2 Thru hole

### MV - 130 - 3 - 02

Square type hand valve (Push button)



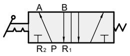

32
16
3.1
M12x0.8P
7
33.5
16.5
9
45.5
17
18.5
10
3-PT 1/8
9.5
2-Ø5.2 Thru hole

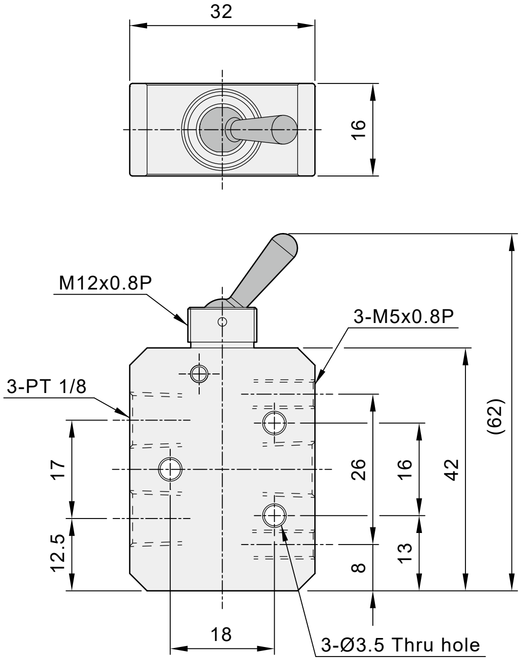
# MV 130 series Square type hand valve

## Dimensions

### MV - 130 - 5 - 01

Square type hand valve (Lever type)

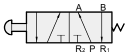


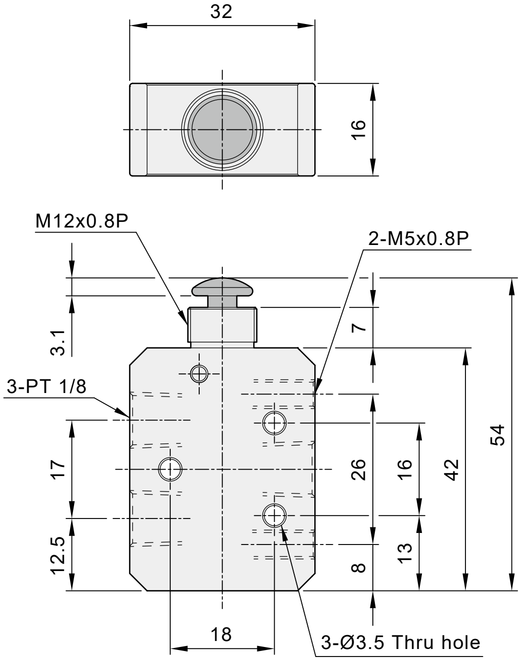

32
16
M12x0.8P
3-M5x0.8P
3-PT 1/8
(62)
17
12.5
26
16
42
8
13
18
3-Ø3.5 Thru hole

---

### MV - 130 - 5 - 02

Square type hand valve (Push button)



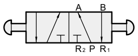

32
16
M12x0.8P
2-M5x0.8P
3.1
7
3-PT 1/8
54
17
12.5
26
16
42
8
13
18
3-Ø3.5 Thru hole

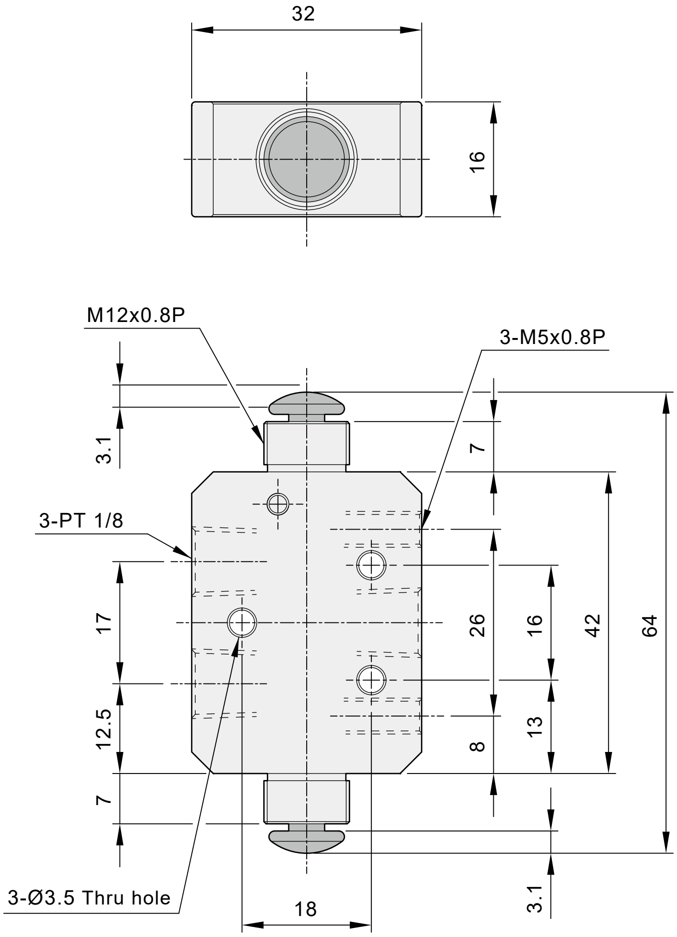
# MV 130 series Square type hand valve

## Dimensions

### MV - 130 - 5 - 03

Square type hand valve (Two-side buttons)



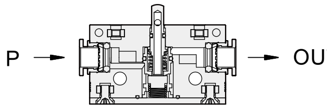

32
16
M12x0.8P
3-M5x0.8P
3.1
7
3-PT 1/8
17
26
16
42
64
12.5
8
13
7
3-Ø3.5 Thru hole
18
3.1

# MV140 series Mechanical Valve (Plastic Body)

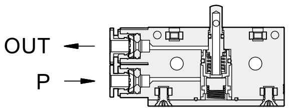
## Product features/ Code of order

### Internal structure

MV-14S ( Side connection/ Standard )



MV-14U ( One side piping )



### Specification

| Item / Model | MV-14S | MV-14U |
|---|---|---|
| Fluid | Air | |
| Body Material | PBT | |
| Pressure range Kgf/cm$^2$(KPa) | 0 ~ 7 ( 0 ~ 700 ) | |
| Ambient and fluid temperature ℃ | 0 ~ 60 | |
| Number of positions | 3/2-position | |
| Type of actuation | Normally closed | |
| Effective orifice mm$^2$(CV) | 7 (0.39) | |
| Port size mm | Ø4, Ø6 | |
| Lubrication | Lubrication free type | |

### Code of order

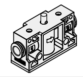
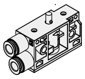
**MV - 14 S - 06 - F - 06 - R**

**MV** — Mechanical valve

**14** — Model

14:140 Series (Plastic Body) 3/2-position

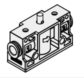
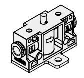
**S** — Connection port position

| Mark | Type | Image |
|---|---|---|
| S | Both sides piping |  |
| U | One side piping |  |

**06** — Port size

| Mark | Size |
|---|---|
| 04 | Ø4 |
| 06 | Ø6 |

**F** — Bracket

| Mark | Type | Image |
|---|---|---|
| None | Body mounting type |  |
| F | Front flange mounting |  |

**06** — Type

| Mark | Type |
|---|---|
| 01 | Basic |
| 02 | Roller lever |
| 03 | One way roller lever |
| 04 | Toggle lever type |
| 05 | Pressing |
| 06 | Push button (Flush) |
| 07 | Push button (Extended) |
| 08 | Push button (Mushroom) |
| 09 | Stop cock button |
| 10 | Twin selector |
| 11 | Key selector |

**R** — Button color

| Mark | Color |
|---|---|
| B | Black |
| G | Green |
| R | Red |

*For 06 - 10 button color option

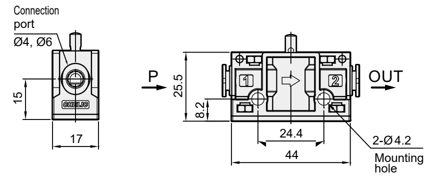
09 - Stop cock button type without black color

# MV140 series Mechanical Valve (Plastic Body)

## Dimensions

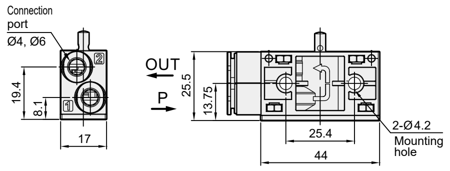
### MV - 14 S - 04 - 01

**S:** Both sides piping/ Standard

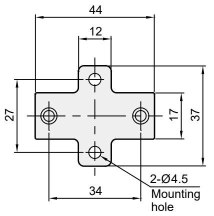

Connection port
Ø4, Ø6
15
17
P
25.5
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

### MV - 14 U - 04 - 01

**U:** One side piping

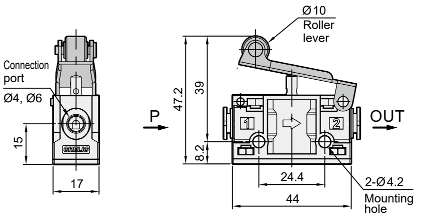

Connection port
Ø4, Ø6
2
1
19.4
8.1
17
OUT
P
25.5
13.75
25.4
44
2-Ø4.2
Mounting hole

### F: With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

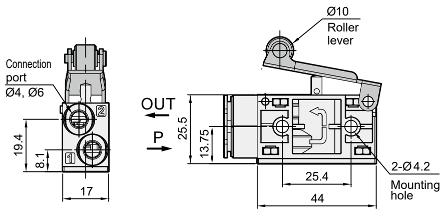
### MV - 14 S - 04 - 02 Roller lever

**S:** Both sides piping/ Standard

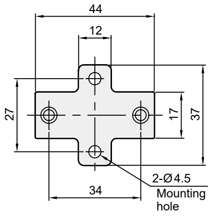

Ø10
Roller lever
Connection port
Ø4, Ø6
15
17
P
47.2
39
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

### MV - 14 U - 04 - 02 Roller lever

**U:** One side piping

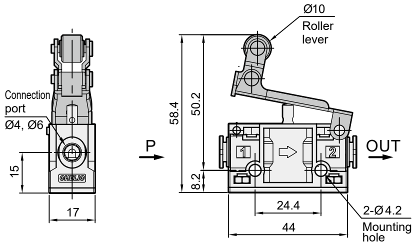

Ø10
Roller lever
Connection port
Ø4, Ø6
2
1
19.4
8.1
17
OUT
P
25.5
13.75
25.4
44
2-Ø4.2
Mounting hole

### F: With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

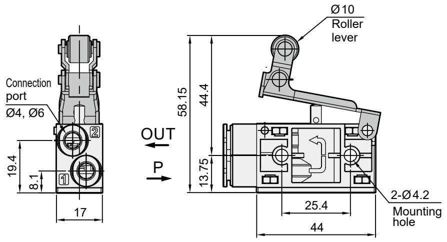
### MV - 14 S - 04 - 03 One-way roller lever

**S:** Both sides piping/ Standard

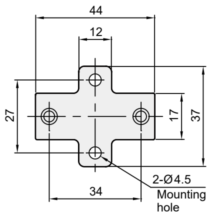

Ø10
Roller lever
Connection port
Ø4, Ø6
15
17
P
58.4
50.2
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

### MV - 14 U - 04 - 03 One-way roller lever

**U:** One side piping

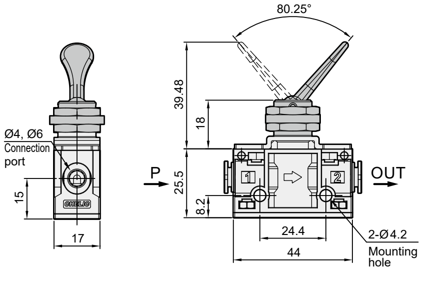

Ø10
Roller lever
Connection port
Ø4, Ø6
2
1
19.4
8.1
17
58.15
44.4
OUT
P
13.75
25.4
44
2-Ø4.2
Mounting hole

### F: With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

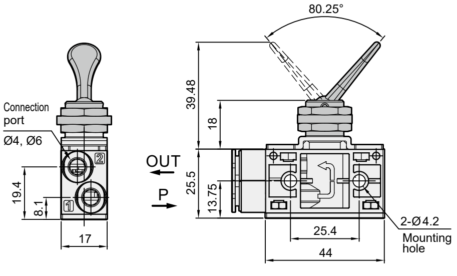
### MV - 14 S - 04 - 04 Toggle lever

**S:** Both sides piping/ Standard

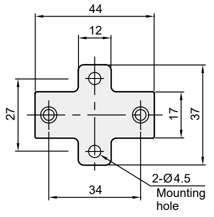

80.25°
Ø4, Ø6
Connection port
15
17
39.48
18
P
25.5
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

### MV - 14 U - 04 - 04 Toggle lever

**U:** One side piping


80.25°
Connection port
Ø4, Ø6
2
1
19.4
8.1
17
39.48
18
OUT
P
25.5
13.75
25.4
44
2-Ø4.2
Mounting hole

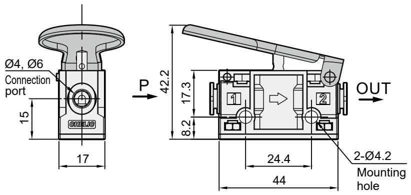
### F: With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

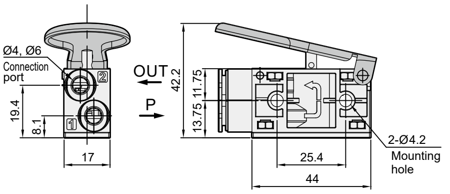
# MV140 series Mechanical Valve (Plastic Body)

## Dimensions

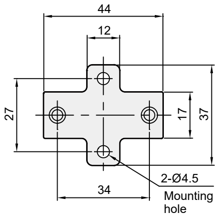
**MV - 14 S - 04 - 05 Thumb lever**
**S:** Both sides piping/ Standard


Ø4, Ø6
Connection port
15
17
P
42.2
17.3
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

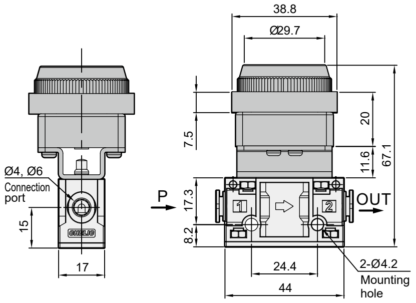
**MV - 14 U - 04 - 05 Thumb lever**
**U:** One side piping


Ø4, Ø6
Connection port
19.4
8.1
17
2
1
OUT
P
42.2
11.75
13.75
25.4
44
2-Ø4.2
Mounting hole

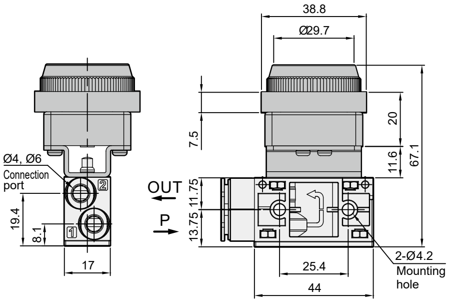
**F:** With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

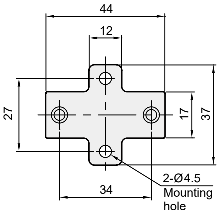
**MV - 14 S - 04 - 06 Push button (Flush)**
**S:** Both sides piping/ Standard


Ø4, Ø6
Connection port
15
17
38.8
Ø29.7
7.5
20
11.6
67.1
P
17.3
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

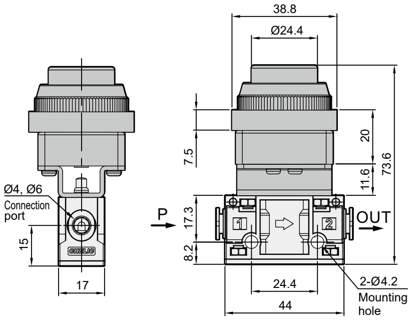
**MV - 14 U - 04 - 06 Push button (Flush)**
**U:** One side piping


Ø4, Ø6
Connection port
19.4
8.1
17
2
1
38.8
Ø29.7
7.5
20
11.6
67.1
OUT
P
11.75
13.75
25.4
44
2-Ø4.2
Mounting hole

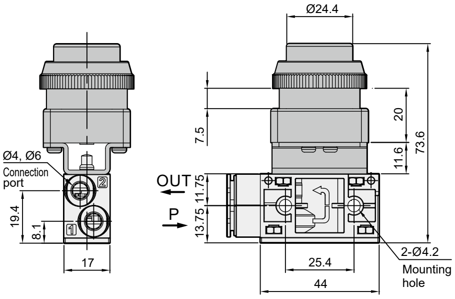
**F:** With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

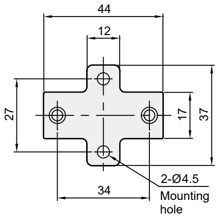
**MV - 14 S - 04 - 07 Push button (Extended)**
**S:** Both sides piping/ Standard


Ø4, Ø6
Connection port
15
17
38.8
Ø24.4
7.5
20
11.6
73.6
P
17.3
8.2
1
2
OUT
24.4
44
2-Ø4.2
Mounting hole

**MV - 14 U - 04 - 07 Push button (Extended)**
**U:** One side piping


Ø4, Ø6
Connection port
19.4
8.1
17
2
1
Ø24.4
7.5
20
11.6
73.6
OUT
P
11.75
13.75
25.4
44
2-Ø4.2
Mounting hole

**F:** With flange


44
12
27
17
37
34
2-Ø4.5
Mounting hole

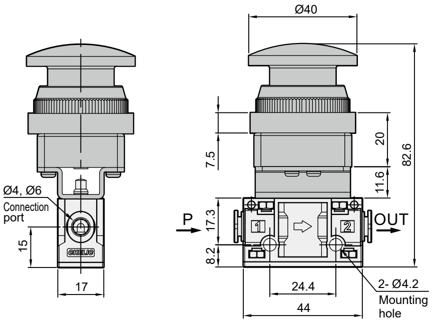
# MV140 series Mechanical Valve (Plastic Body)

## Dimensions

CHELIC

### MV - 14 S - 04 - 08 Push button (Mushroom)

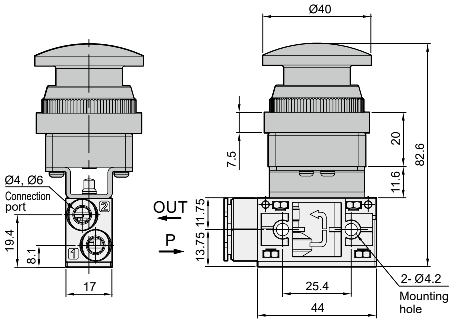
**S:** Both sides piping/ Standard



Ø40
Ø4, Ø6
Connection port
15
17
7.5
20
11.6
82.6
P
OUT
17.3
8.2
1
2
24.4
44
2- Ø4.2
Mounting hole

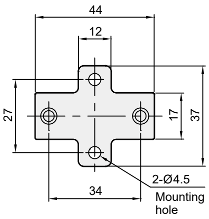
### MV - 14 U - 04 - 08 Push button (Mushroom)

**U:** One side piping



Ø40
Ø4, Ø6
Connection port
19.4
8.1
17
2
1
7.5
20
11.6
82.6
OUT
P
11.75
13.75
25.4
44
2- Ø4.2
Mounting hole

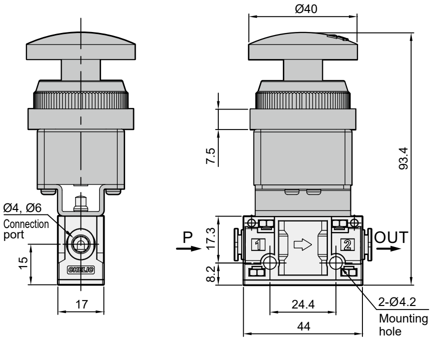
### F: With flange



44
12
27
17
37
34
2-Ø4.5
Mounting hole

### MV - 14 S - 04 - 09 Stop cock button

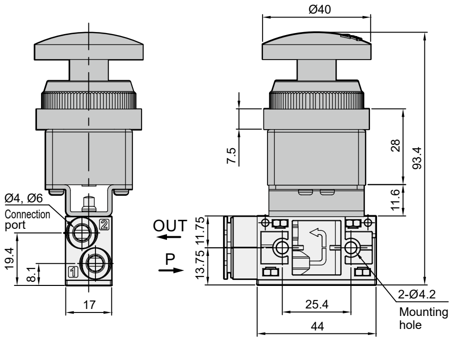
**S:** Both sides piping/ Standard



Ø40
Ø4, Ø6
Connection port
15
17
7.5
93.4
P
OUT
17.3
8.2
1
2
24.4
44
2-Ø4.2
Mounting hole

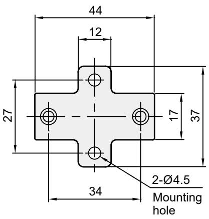
### MV - 14 U - 04 - 09 Stop cock button

**U:** One side piping



Ø40
Ø4, Ø6
Connection port
19.4
8.1
17
2
1
7.5
28
11.6
93.4
OUT
P
11.75
13.75
25.4
44
2-Ø4.2
Mounting hole

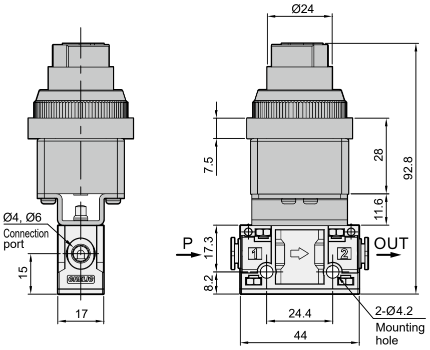
### F: With flange



44
12
27
17
37
34
2-Ø4.5
Mounting hole

### MV - 14 S - 04 - 10 Twist selector

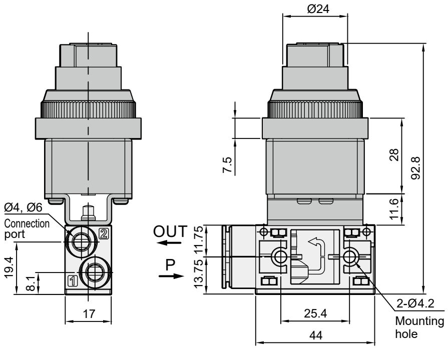
**S:** Both sides piping/ Standard



Ø24
Ø4, Ø6
Connection port
15
17
7.5
28
11.6
92.8
P
OUT
17.3
8.2
1
2
24.4
44
2-Ø4.2
Mounting hole

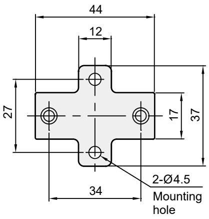
### MV - 14 U - 04 - 10 Twist selector

**U:** One side piping



Ø24
Ø4, Ø6
Connection port
19.4
8.1
17
2
1
7.5
28
11.6
92.8
OUT
P
11.75
13.75
25.4
44
2-Ø4.2
Mounting hole

### F: With flange



44
12
27
17
37
34
2-Ø4.5
Mounting hole

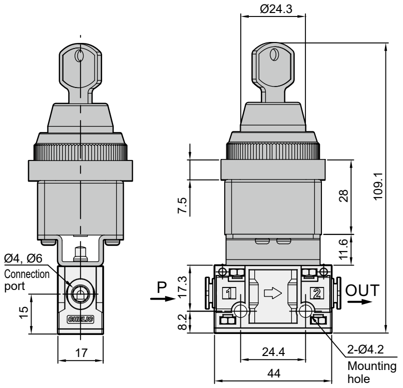
# MV140 series Mechanical Valve (Plastic Body)

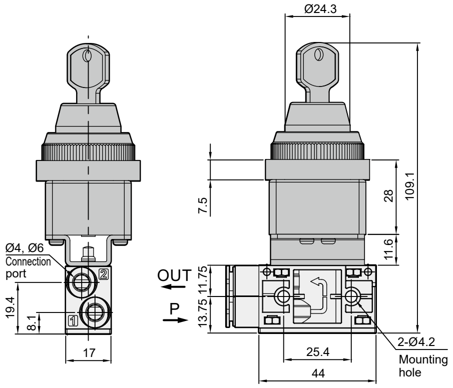
## Dimensions

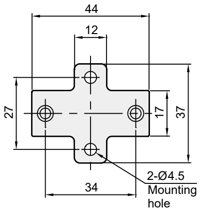
**MV - 14 S - 04 - 11 Key selector**
**S:** Both sides piping/ Standard

**MV - 14 U - 04 - 11 Key selector**
**U:** One side piping

**F:** With flange

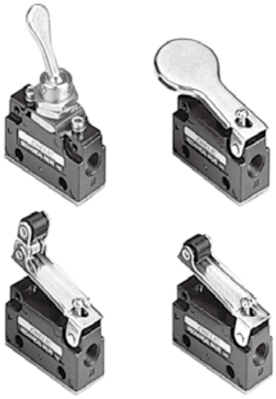

Ø24.3
Ø4, Ø6
Connection port
15
17
7.5
P
17.3
8.2
1
2
OUT
28
11.6
109.1
24.4
44
2-Ø4.2
Mounting hole


Ø24.3
Ø4, Ø6
Connection port
2
1
19.4
8.1
17
7.5
OUT
P
11.75
13.75
28
11.6
109.1
25.4
44
2-Ø4.2
Mounting hole


44
12
27
17
37
34
2-Ø4.5
Mounting hole

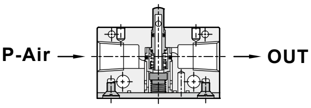
# MV150 series Mechanical Valve

## Product features/ Code of order

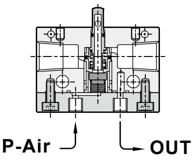


## Internal structure

- **MV-15S-01** (Both sides piping/ Basic)



- **MV-15B-01** (Bottom piping/ Basic)



## Specification

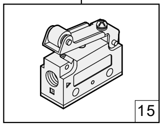
| Item / Model | MV-15S | MV-15B | MV-15F |
|---|---|---|---|
| Fluid | Air | | |
| Pressure range Kgf/cm²(KPa) | 1 ~ 9 ( 100 ~ 900 ) | | |
| Ambient and fluid temperature ℃ | 5 ~ 60 | | |
| Number of positions | 2 positions | | |
| Type of actuation | Normally closed | | |
| Effective orifice mm²(CV) | 7 ( 0.39 ) | | |
| Port size Rc | Rc 1/8 (Both sides piping/Basic) | M5x0.8p (Bottom piping/Basic) | Rc 1/8 (Both sides piping/Basic) |
| Lubrication | Lubrication free type | | |

## Code of order

**MV** **15** **S** – **03** – **R**

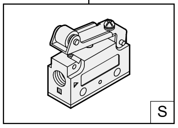
**MV**: Mechanical valve

**15**: Model

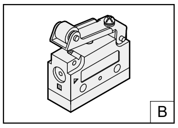


15 : 150 Series
3/2-position

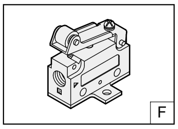
**S**: Connection port position



S:Both sides piping/Basic



B:Bottom piping/Basic



F:Both sides piping/With Flange

**03**: Type

- 01 - Basic
- 02 - Roller lever
- 03 - One way roller lever
- 04 - Toggle lever type
- 05 - Pressing
- 06 - Push button (Flush)
- 07 - Push button (Extended)
- 08 - Push button (Mushroom)
- 09 - Stop cock button
- 10 - Twin selector
- 11 - Key selector

**R**: Button color

- B - Black
- G - Green
- R - Red

09 - Stop cock button type without black color

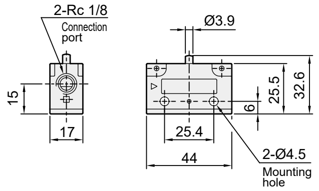
# MV150 series Mechanical Valve

## Dimensions

CHELIC

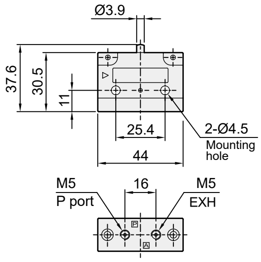
### MV-15-S-01 Basic

**S:** Both sides piping/ Standard


2-Rc 1/8
Connection port
15
17
Ø3.9
25.5
32.6
6
25.4
44
2-Ø4.5
Mounting hole

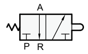
### MV-15-B-01 Basic

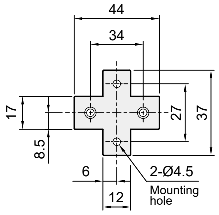
**B:** Bottom piping


Ø3.9
37.6
30.5
11
25.4
44
2-Ø4.5
Mounting hole
M5
P port
16
M5
EXH
P
A

### MV-15-F-01

**F:** With flange

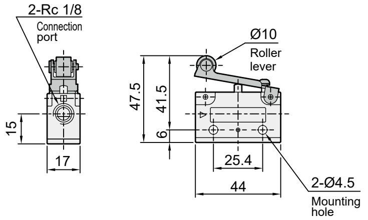



44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

---

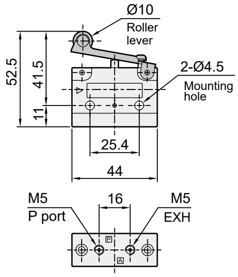
### MV-15-S-02 Roller lever

**S:** Both sides piping/ Standard


2-Rc 1/8
Connection port
15
17
Ø10
Roller lever
47.5
41.5
6
25.4
44
2-Ø4.5
Mounting hole

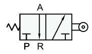
### MV-15-B-02 Roller lever

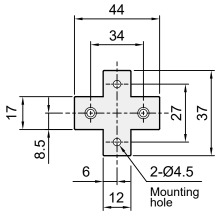
**B:** Bottom piping


Ø10
Roller lever
52.5
41.5
11
2-Ø4.5
Mounting hole
25.4
44
M5
P port
16
M5
EXH
P
A

### MV-15-F-02

**F:** With flange

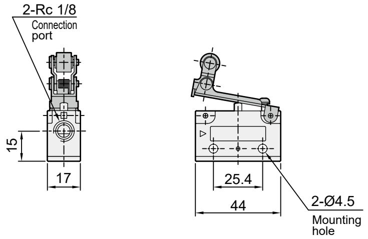



44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

---

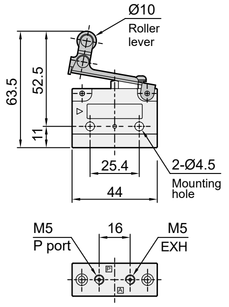
### MV-15-S-03 One-way roller lever

**S:** Both sides piping/ Standard


2-Rc 1/8
Connection port
15
17
25.4
44
2-Ø4.5
Mounting hole

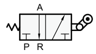
### MV-15-B-03 One-way roller lever

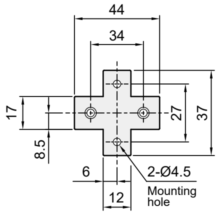
**B:** Bottom piping


Ø10
Roller lever
63.5
52.5
11
25.4
44
2-Ø4.5
Mounting hole
M5
P port
16
M5
EXH
P
A

### MV-15-F-03

**F:** With flange

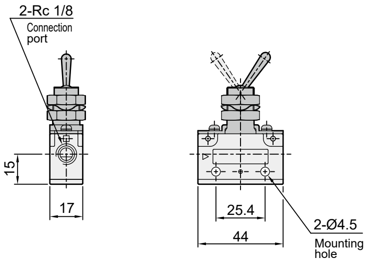



44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

---

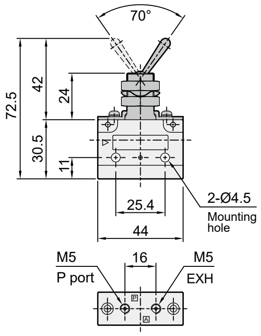
### MV-15-S-04 Toggle lever

**S:** Both sides piping/ Standard


2-Rc 1/8
Connection port
15
17
25.4
44
2-Ø4.5
Mounting hole

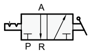
### MV-15-B-04 Toggle lever

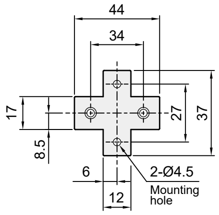
**B:** Bottom piping

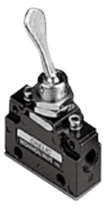

70°
72.5
42
24
30.5
11
25.4
44
2-Ø4.5
Mounting hole
M5
P port
16
M5
EXH
P
A

### MV-15-F-04

**F:** With flange




44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

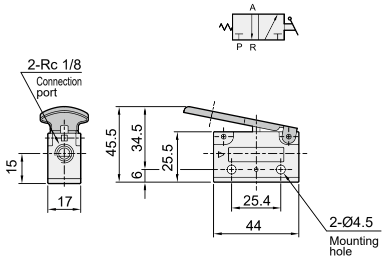


# MV150 series Mechanical Valve

## Dimensions

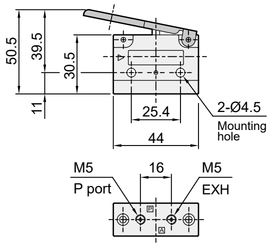
### MV-15-S-05 Thumb lever

**S:** Both sides piping/ Standard


A
P R
2-Rc 1/8
Connection port
15
17
45.5
34.5
25.5
6
25.4
44
2-Ø4.5
Mounting hole

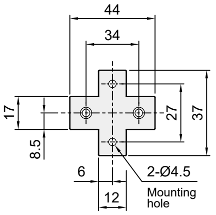
### MV-15-B-05 Thumb lever

**B:** Bottom piping


50.5
39.5
30.5
11
25.4
44
2-Ø4.5
Mounting hole
M5
P port
16
M5
EXH

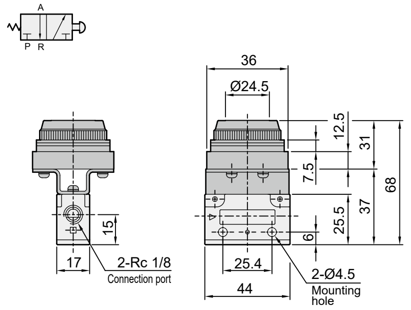
### MV-15-F-05

**F:** With flange


44
34
17
8.5
27
37
6
12
2-Ø4.5
Mounting hole

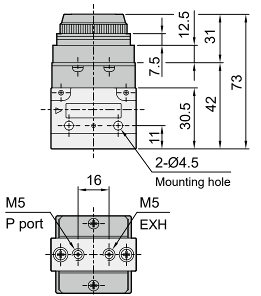
### MV-15-S-06 Push button (Flush)

**S:** Both sides piping/ Standard


A
P R
36
Ø24.5
12.5
31
7.5
68
37
25.5
6
15
17
2-Rc 1/8
Connection port
25.4
44
2-Ø4.5
Mounting hole

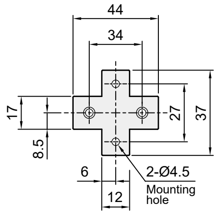
### MV-15-B-06 Push button (Flush)

**B:** Bottom piping

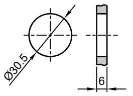

12.5
31
7.5
73
30.5
42
11
2-Ø4.5
Mounting hole
16
M5
P port
M5
EXH

### MV-15-F-06

**F:** With flange

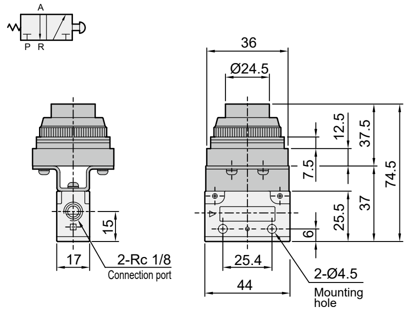

44
34
17
8.5
27
37
6
12
2-Ø4.5
Mounting hole

● Mounting hole size



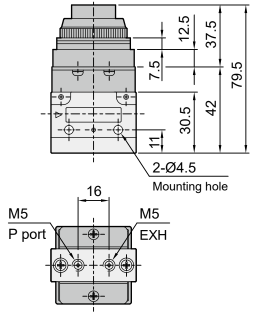
### MV-15-S-07 Push button (Extended)

**S:** Both sides piping/ Standard


A
P R
36
Ø24.5
12.5
37.5
7.5
74.5
37
25.5
6
15
17
2-Rc 1/8
Connection port
25.4
44
2-Ø4.5
Mounting hole

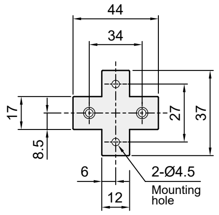
### MV-15-B-07 Push button (Extended)

**B:** Bottom piping

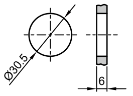

12.5
37.5
7.5
79.5
30.5
42
11
2-Ø4.5
Mounting hole
16
M5
P port
M5
EXH

### MV-15-F-07

**F:** With flange

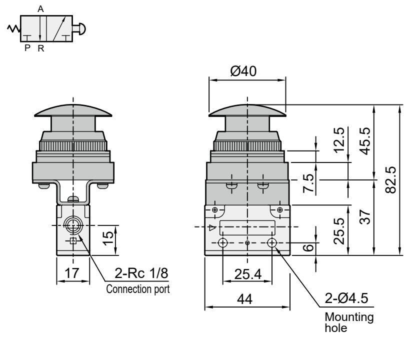

44
34
17
8.5
27
37
6
12
2-Ø4.5
Mounting hole

● Mounting hole size



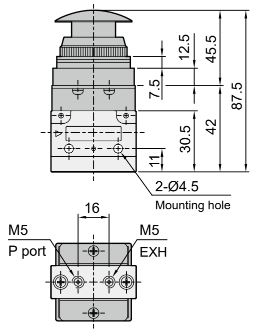
### MV-15-S-08 Push button (Mushroom)

**S:** Both sides piping/ Standard


A
P R
Ø40
12.5
45.5
7.5
82.5
37
25.5
6
15
17
2-Rc 1/8
Connection port
25.4
44
2-Ø4.5
Mounting hole

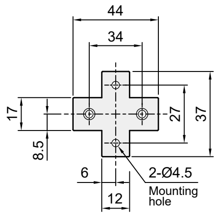
### MV-15-B-08 Push button (Mushroom)

**B:** Bottom piping

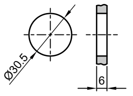

12.5
45.5
7.5
87.5
30.5
42
11
2-Ø4.5
Mounting hole
16
M5
P port
M5
EXH

### MV-15-F-08

**F:** With flange


44
34
17
8.5
27
37
6
12
2-Ø4.5
Mounting hole

● Mounting hole size

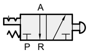


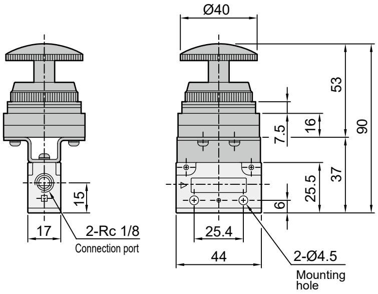
# MV150 series Mechanical Valve

## Dimensions

### MV-15-S-09 Stop cock button/ Emergency stop

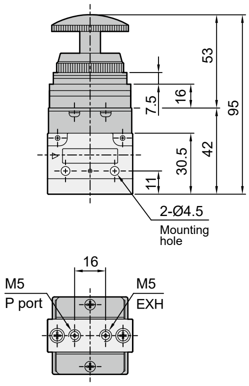
**S:** Both sides piping/ Standard




Ø40
53
16
7.5
90
37
25.5
6
15
17
2-Rc 1/8
Connection port
25.4
44
2-Ø4.5
Mounting hole

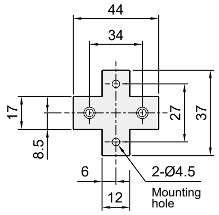
### MV-15-B-09 Stop cock button/ Emergency stop

**B:** Bottom piping

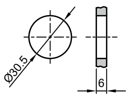

53
16
7.5
95
42
30.5
11
2-Ø4.5
Mounting hole
16
M5
P port
M5
EXH

### MV-15-F-09

**F:** With flange

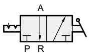

44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

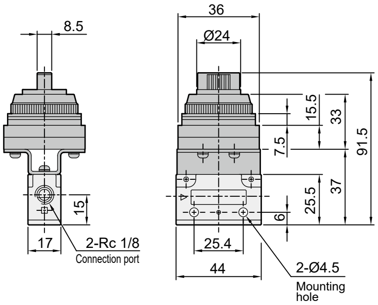
● Mounting hole size



### MV-15-S-10 Twist selector/ Rotary positioning

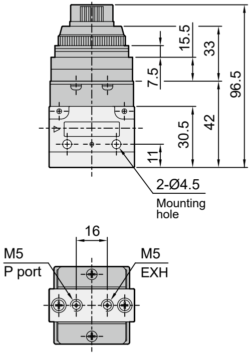
**S:** Both sides piping/ Standard




8.5
36
Ø24
15.5
33
7.5
91.5
37
25.5
6
15
17
2-Rc 1/8
Connection port
25.4
44
2-Ø4.5
Mounting hole

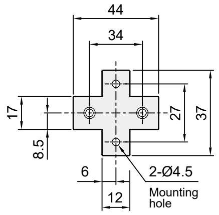
### MV-15-B-10 Twist selector/ Rotary positioning

**B:** Bottom piping

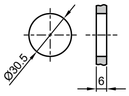

15.5
33
7.5
96.5
42
30.5
11
2-Ø4.5
Mounting hole
16
M5
P port
M5
EXH

### MV-15-F-10

**F:** With flange

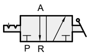

44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

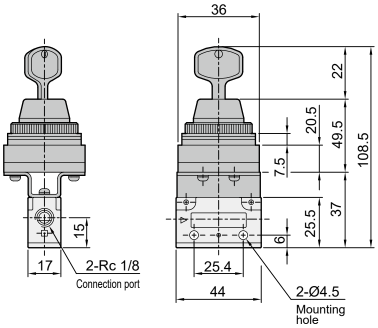
● Mounting hole size



### MV-15-S-11 Key selector/ Rotary positioning

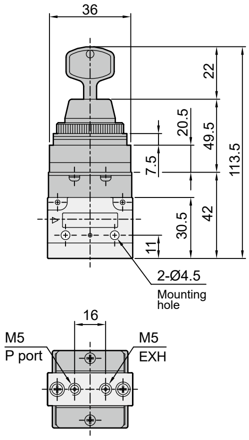
**S:** Both sides piping/ Standard




36
22
20.5
49.5
7.5
108.5
37
25.5
6
15
17
2-Rc 1/8
Connection port
25.4
44
2-Ø4.5
Mounting hole

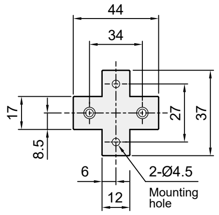
### MV-15-B-11 Key selector/ Rotary positioning

**B:** Bottom piping

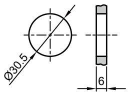

36
22
20.5
49.5
7.5
113.5
42
30.5
11
2-Ø4.5
Mounting hole
16
M5
P port
M5
EXH

### MV-15-F-11

**F:** With flange

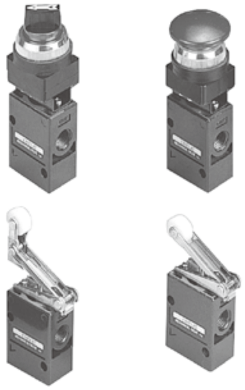

44
34
17
27
37
8.5
6
12
2-Ø4.5
Mounting hole

● Mounting hole size



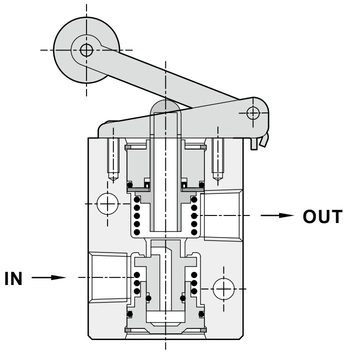
# MV 200 series Mechanical Valve

## Product features/ Code of order



### Internal structure

- **MV-20-02** (Side connection / Roller lever type)



### Specification

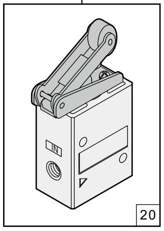
| Item / Model | MV-200 |
|---|---|
| Fluid | Air |
| Pressure range Kgf/cm²(KPa) | 1 ~ 9 ( 100 ~ 900 ) |
| Ambient and fluid temperature ℃ | 5 ~ 60 |
| Number of positions | 3/2-position |
| Type of actuation | Normally closed |
| Effective orifice mm²(CV) | 33 ( 1.84 ) |
| Port size Rc(PT) | Rc 1/4 ( Both sides piping ) |
| Lubrication | Lubrication free type |

### Code of order

**MV** – **20** – **03** – **R**

**MV**: Mechanical Valve

**20**: Model



20: 200 series
3/2-position

**03**: Type

- 01 - Basic type
- 02 - Roller lever
- 03 - One way roller lever
- 06 - Push button (Flush)
- 07 - Push button (Extended)
- 08 - Push button (Mushroom)
- 09 - Stop cock button ( No black color)
- 10 - Twin selector
- 11 - Key selector

**R**: Button color (for types 06–10)

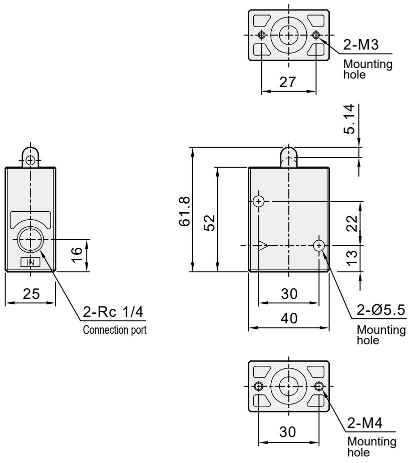
- B - Black
- G - Green
- R - Red

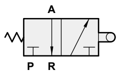
09 - Stop cock button type without black color

# MV 200 series Mechanical Valve

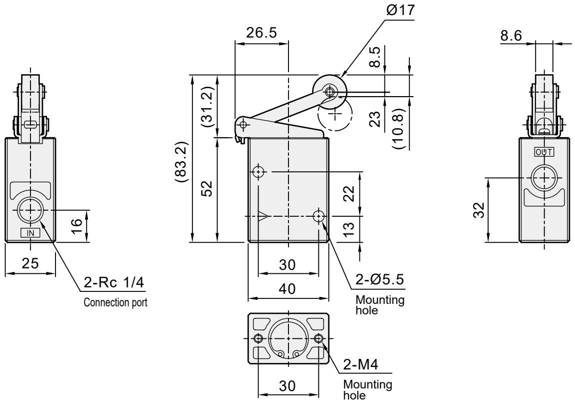
## Dimensions

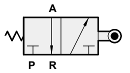
### MV -20- 01 BasicRoller lever


2-M3
Mounting hole
27
5.14
Ø8
61.8
52
22
13
16
32
IN
OUT
25
30
40
2-Rc 1/4
Connection port
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30

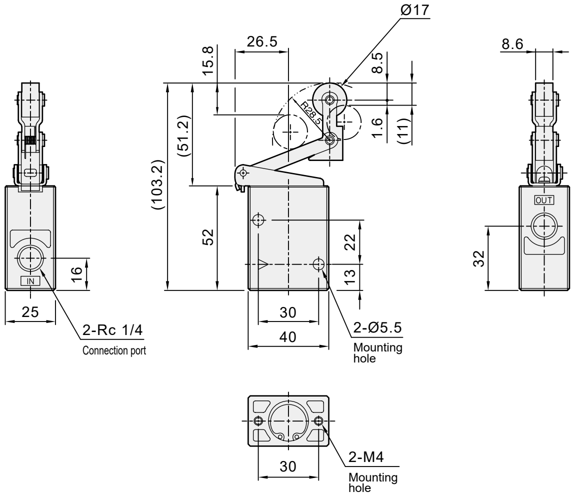


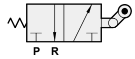
### MV -20- 02 Roller lever


Ø17
26.5
8.6
8.5
(31.2)
23
(10.8)
(83.2)
52
22
13
16
32
IN
OUT
25
30
40
2-Rc 1/4
Connection port
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30



### MV -20- 03 One-way roller lever

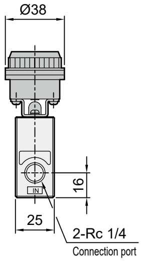

Ø17
26.5
15.8
8.6
8.5
R28.5
1.6
(11)
(51.2)
(103.2)
52
22
13
16
32
IN
OUT
25
30
40
2-Rc 1/4
Connection port
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30

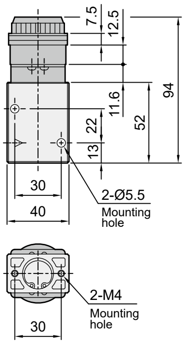


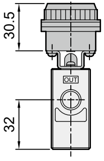
# MV 200 series Mechanical Valve

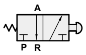
## Dimensions

### MV 20- 06 Push button (Flush)

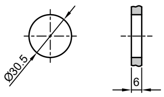

Ø38
16
25
2-Rc 1/4
Connection port
IN


7.5
12.5
11.6
22
13
52
94
30
40
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30

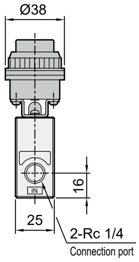


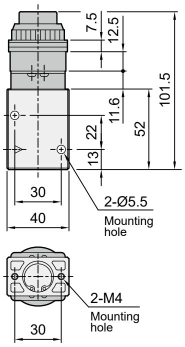


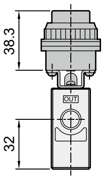
● Mounting hole size

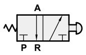


### MV 20 - 07 Push button (Extended)

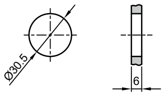

Ø38
16
25
2-Rc 1/4
Connection port
IN


7.5
12.5
11.6
22
13
52
101.5
30
40
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30

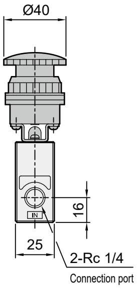


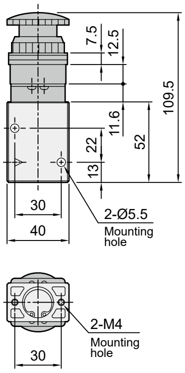


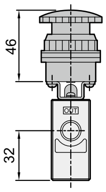
● Mounting hole size

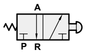


### MV 20 - 08 Push button (Mushroom)

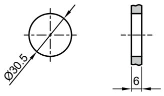

Ø40
16
25
2-Rc 1/4
Connection port
IN


7.5
12.5
11.6
22
13
52
109.5
30
40
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30





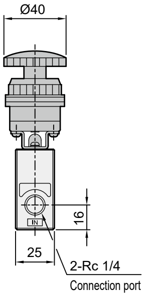
● Mounting hole size

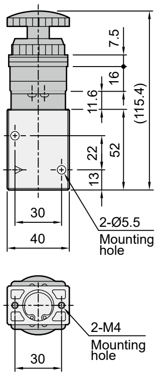


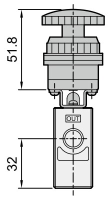
# MV 200 series Mechanical Valve

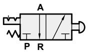
## Dimensions

### MV 20-09 Stop cock button/ Emergency stop

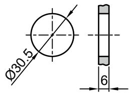

Ø40
IN
16
25
2-Rc 1/4
Connection port


7.5
16
11.6
22
13
52
(115.4)
30
40
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30

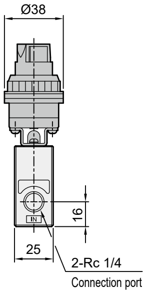


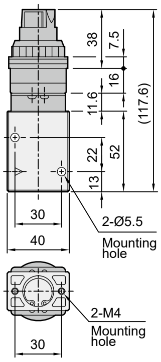


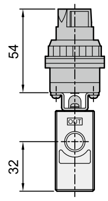
● Mounting hole size

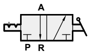


### MV 20-10 Twist selector/ Rotary positioning

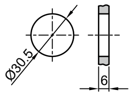

Ø38
IN
16
25
2-Rc 1/4
Connection port


38
7.5
16
11.6
22
13
52
(117.6)
30
40
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30

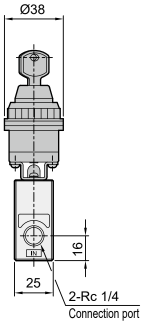


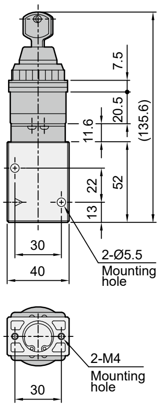


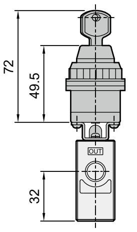
● Mounting hole size

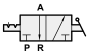


### MV 20-11 Key selector/ Rotary positioning

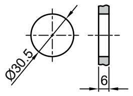

Ø38
IN
16
25
2-Rc 1/4
Connection port


7.5
20.5
11.6
22
13
52
(135.6)
30
40
2-Ø5.5
Mounting hole
2-M4
Mounting hole
30


72
49.5
OUT
32

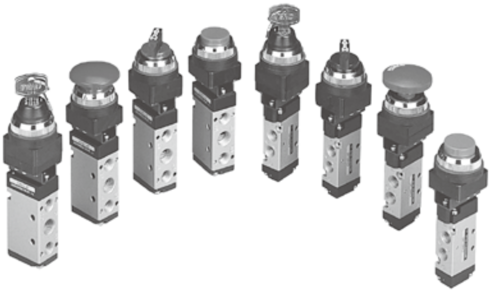


● Mounting hole size

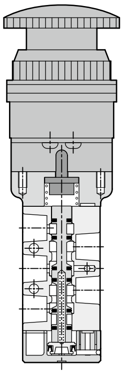


# MV 230/ MV250 series Mechanical Valve

## Product features/ Code of order



### Internal structure



### Specification

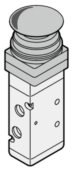
| Item \ Model | | MV-230 | MV-250 |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range | Kgf/cm$^2$(KPa) | 1 ~ 9 ( 100 ~ 900 ) | |
| Ambient and fluid temperature | ℃ | 0 ~ 60 | |
| Number of positions | | 5/2-position | |
| Type of actuation | | Normally closed | |
| Effective orifice | mm$^2$(CV) | 12 ( 0.67 ) | 14 ( 0.78 ) |
| Port size | Rc(PT) | Rc 1/8 ( Both sides piping ) | Rc 1/4 ( Both sides piping ) |
| Lubrication | | Lubrication free type | |

### Code of order

**MV** — **25** — **03** — **R**

**MV**: Mechanical Valve

**25**: Model



23 - 230 series
5/2-position Rc 1/8

25 - 250 series
5/2-position Rc 1/4

**03**: Type

- 01 - Basic
- 02 - Roller lever
- 03 - One way roller lever
- 06 - Push button (Flush)
- 07 - Push button (Extended)
- 08 - Push button (Mushroom)
- 09 - Stop cock button
- 10 - Twin selector
- 11 - Key selector

**R**: Button color

- B - Black
- G - Green
- R - Red

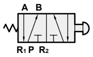
09 - Stop cock button type without black color

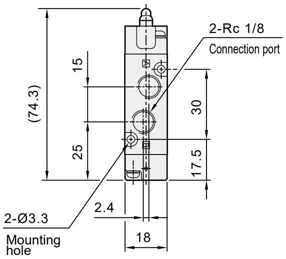
# MV 230 series Mechanical Valve

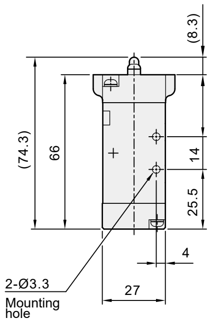
## Dimensions

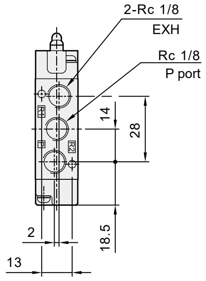
**CHELIC**

### MV 23 - 01 Basic

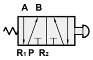


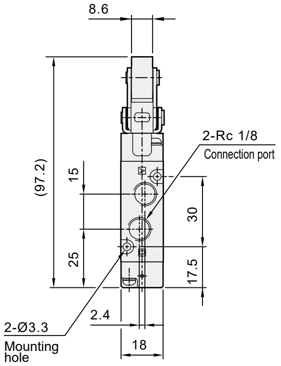

2-Rc 1/8
Connection port
15
30
25
17.5
(74.3)
2.4
2-Ø3.3
Mounting hole
18

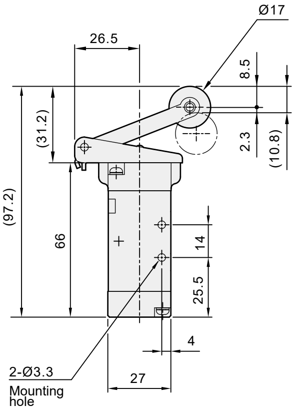

(8.3)
(74.3)
66
14
25.5
4
2-Ø3.3
Mounting hole
27

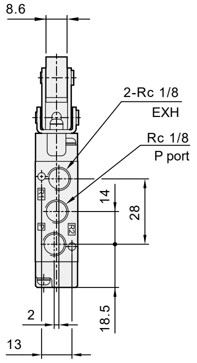

2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

### MV 23 - 02 Roller lever

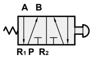


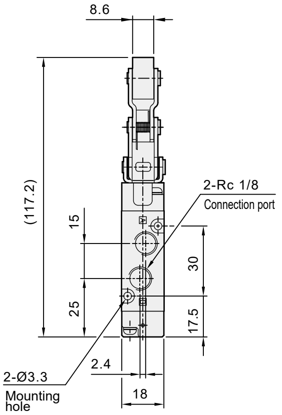

8.6
2-Rc 1/8
Connection port
(97.2)
15
30
25
17.5
2.4
2-Ø3.3
Mounting hole
18

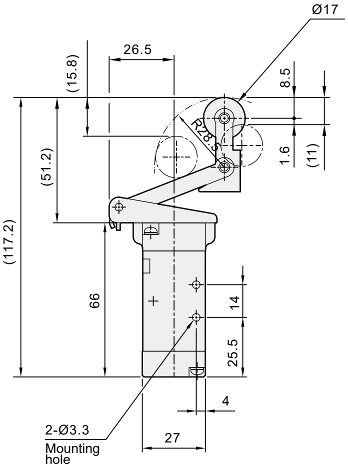

Ø17
26.5
8.5
(31.2)
2.3
(10.8)
(97.2)
66
14
25.5
4
2-Ø3.3
Mounting hole
27

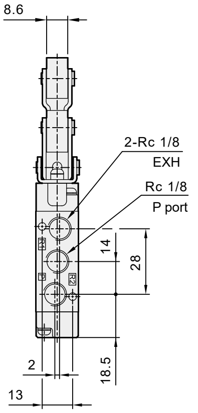

8.6
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

### MV 23 - 03 One-way roller lever




8.6
2-Rc 1/8
Connection port
(117.2)
15
30
25
17.5
2.4
2-Ø3.3
Mounting hole
18


Ø17
26.5
(15.8)
8.5
R28.5
(51.2)
1.6
(11)
(117.2)
66
14
25.5
4
2-Ø3.3
Mounting hole
27

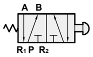

8.6
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

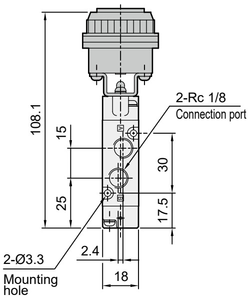
# MV 230 series Mechanical Valve

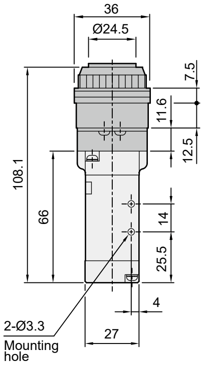
## Dimensions

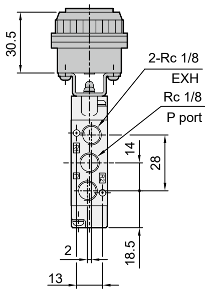
**CHELIC**

### MV 23 - 06 Push button (Flush)

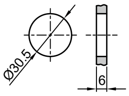



108.1
15
25
2-Rc 1/8
Connection port
30
17.5
2.4
2-Ø3.3
Mounting hole
18

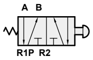

36
Ø24.5
7.5
11.6
12.5
108.1
66
14
25.5
4
2-Ø3.3
Mounting hole
27

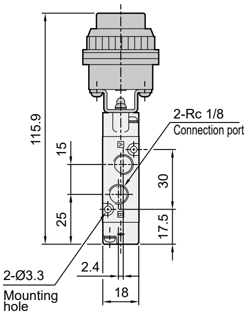

30.5
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

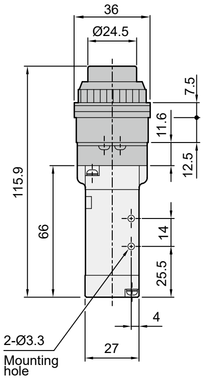
- Mounting hole size

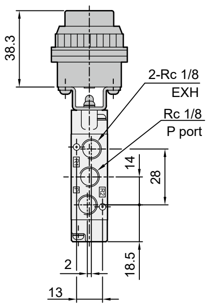


### MV 23 - 07 Push button (Extended)

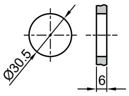



115.9
15
25
2-Rc 1/8
Connection port
30
17.5
2.4
2-Ø3.3
Mounting hole
18

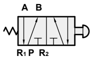

36
Ø24.5
7.5
11.6
12.5
115.9
66
14
25.5
4
2-Ø3.3
Mounting hole
27

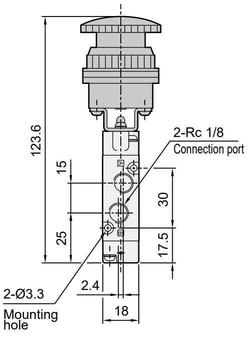

38.3
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

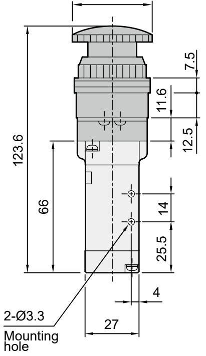
- Mounting hole size

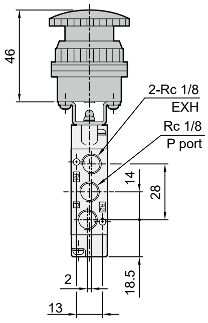


### MV 23 - 08 Push button (Mushroom)

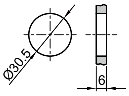



123.6
15
25
2-Rc 1/8
Connection port
30
17.5
2.4
2-Ø3.3
Mounting hole
18


Ø40
7.5
11.6
12.5
123.6
66
14
25.5
4
2-Ø3.3
Mounting hole
27


46
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

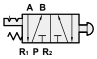
- Mounting hole size

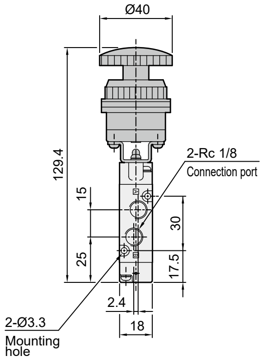


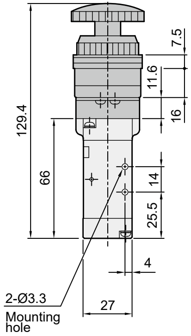
# MV 230 series Mechanical Valve

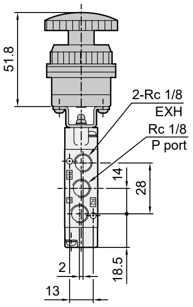
## Dimensions

### MV 23 - 09 Stop cock button/ Emergency stop

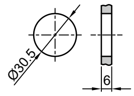



Ø40
129.4
15
25
30
17.5
2.4
18
2-Rc 1/8
Connection port
2-Ø3.3
Mounting hole

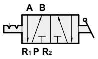

129.4
66
7.5
11.6
16
14
25.5
4
27
2-Ø3.3
Mounting hole

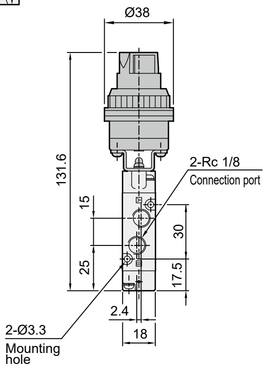

51.8
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

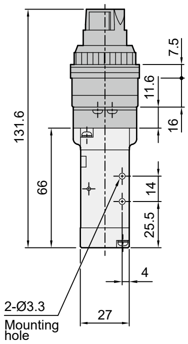
- Mounting hole size

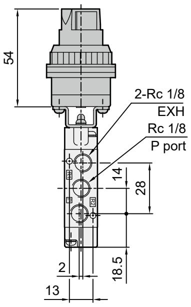


### MV 23 - 10 Twist selector/ Rotary positioning

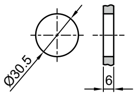



Ø38
131.6
15
25
30
17.5
2.4
18
2-Rc 1/8
Connection port
2-Ø3.3
Mounting hole

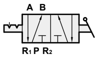

131.6
66
7.5
11.6
16
14
25.5
4
27
2-Ø3.3
Mounting hole

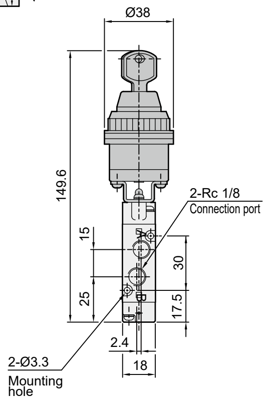

54
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

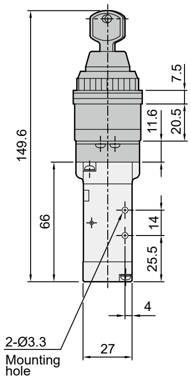
- Mounting hole size

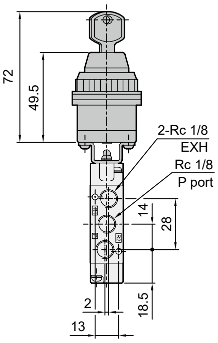


### MV 23 - 11 Key selector/ Rotary positioning

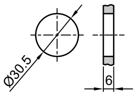



Ø38
149.6
15
25
30
17.5
2.4
18
2-Rc 1/8
Connection port
2-Ø3.3
Mounting hole


149.6
66
7.5
11.6
20.5
14
25.5
4
27
2-Ø3.3
Mounting hole


72
49.5
2-Rc 1/8
EXH
Rc 1/8
P port
14
28
2
18.5
13

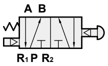
- Mounting hole size

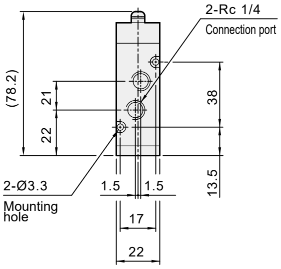


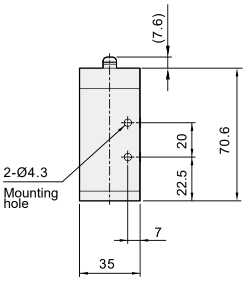
# MV 250 series Mechanical Valve

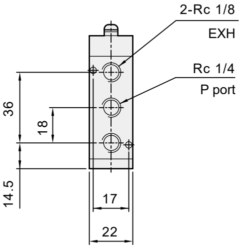
## Dimensions

### MV 25 - 01 Basic

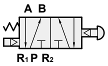


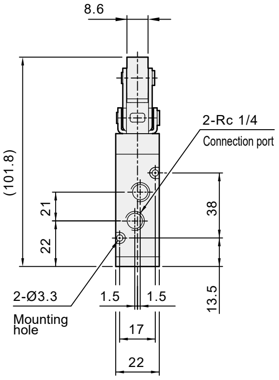

2-Rc 1/4
Connection port
(78.2)
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

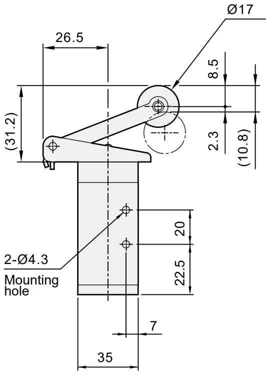

(7.6)
70.6
20
22.5
2-Ø4.3
Mounting hole
7
35

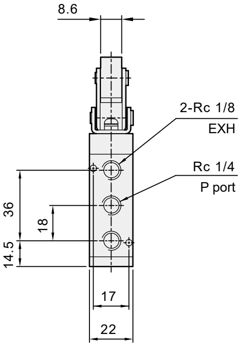

2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

### MV 25 - 02 Roller lever

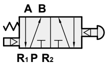


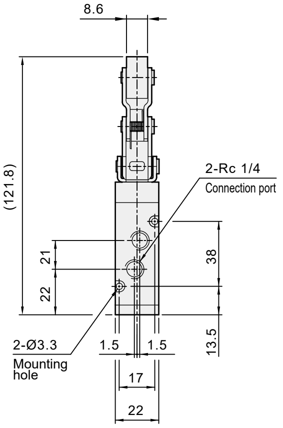

8.6
(101.8)
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

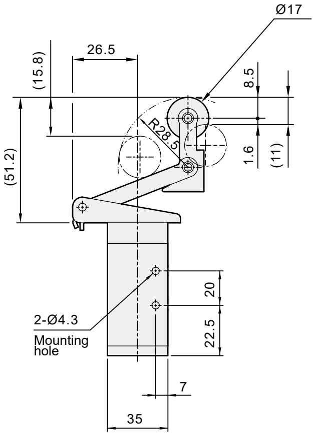

Ø17
26.5
(31.2)
8.5
2.3
(10.8)
20
22.5
2-Ø4.3
Mounting hole
7
35

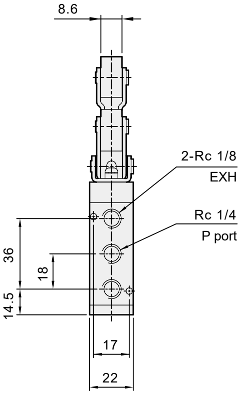

8.6
2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

### MV 25 - 03 One-way roller lever




8.6
(121.8)
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

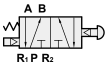

Ø17
26.5
(15.8)
(51.2)
R28.5
8.5
1.6
(11)
20
22.5
2-Ø4.3
Mounting hole
7
35

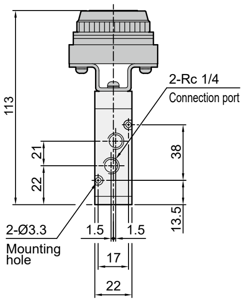

8.6
2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

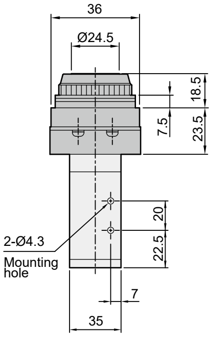
# MV 250 series Mechanical Valve

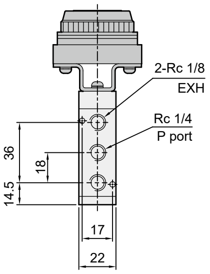
## Dimensions

### MV 25 - 06 Push button (Flush)

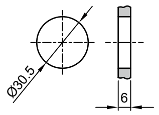



113
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

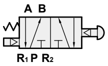

36
Ø24.5
18.5
7.5
23.5
20
22.5
2-Ø4.3
Mounting hole
7
35

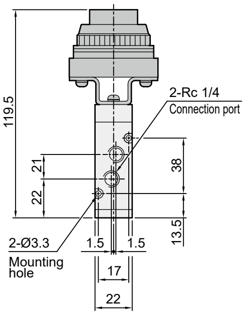

2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

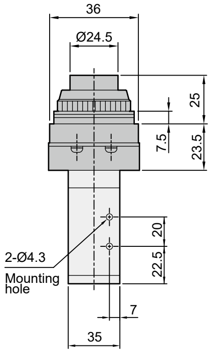
- Mounting hole size

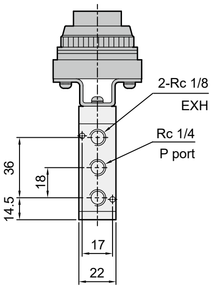


### MV 25 - 07 Push button (Extended)

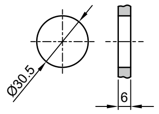



119.5
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

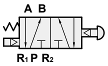

36
Ø24.5
25
7.5
23.5
20
22.5
2-Ø4.3
Mounting hole
7
35

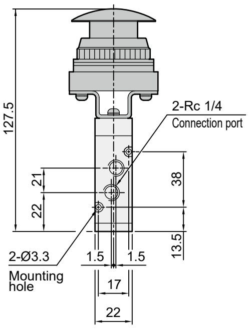

2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

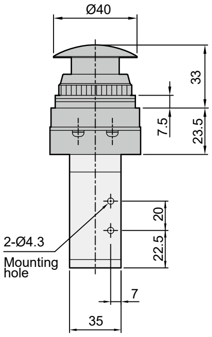
- Mounting hole size

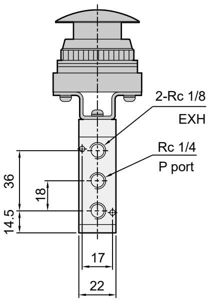


### MV 25 - 08 Push button (Mushroom)

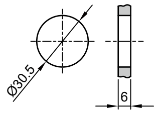



127.5
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22


Ø40
33
7.5
23.5
20
22.5
2-Ø4.3
Mounting hole
7
35


2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

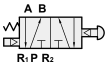
- Mounting hole size

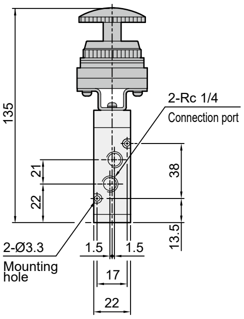


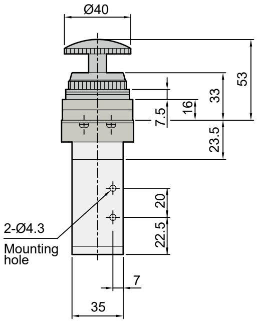
# MV 250 series Mechanical Valve

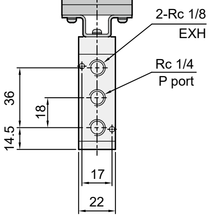
## Dimensions

### MV 25 - 09 Stop cock button/ Emergency stop

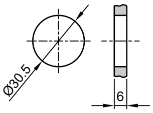



135
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

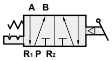

Ø40
53
33
16
7.5
23.5
20
22.5
2-Ø4.3
Mounting hole
7
35

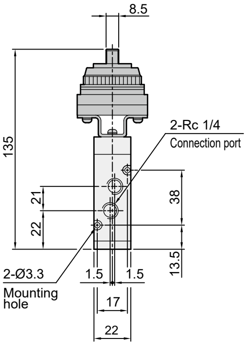

2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

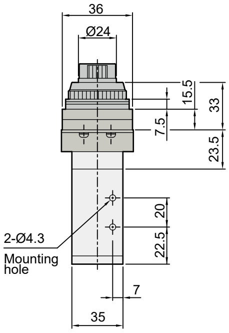
Mounting hole size

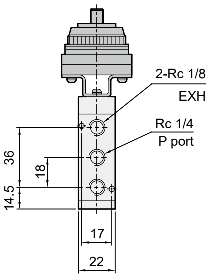


### MV 25 - 10 Twist selector/ Rotary positioning

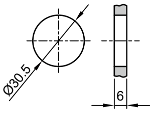



8.5
135
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

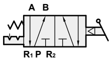

36
Ø24
15.5
33
7.5
23.5
20
22.5
2-Ø4.3
Mounting hole
7
35

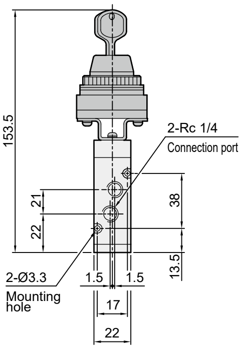

2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

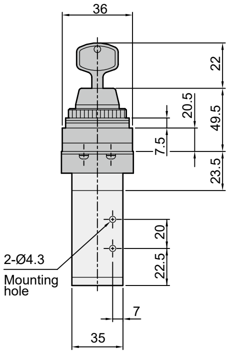
Mounting hole size

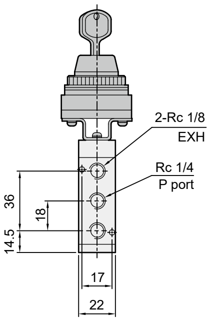


### MV 25 - 11 Key selector/ Rotary positioning

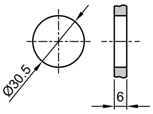



153.5
2-Rc 1/4
Connection port
21
22
38
13.5
2-Ø3.3
Mounting hole
1.5
1.5
17
22

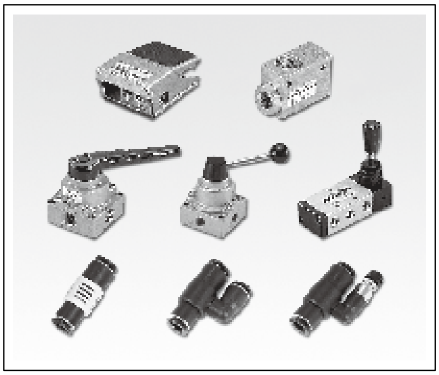

36
22
20.5
49.5
7.5
23.5
20
22.5
2-Ø4.3
Mounting hole
7
35


2-Rc 1/8
EXH
Rc 1/4
P port
36
18
14.5
17
22

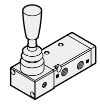
Mounting hole size



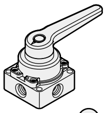
MV
HVL
HVM
HVT
QE
FVA



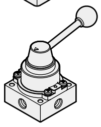
provide CAD external dimension.



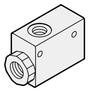
**Hand valve** ---------- HVL-601, HVL-602, HVL-631, HVL-632 ---------- P.2-4.32
HVL-802, HVL-803, HVL-832, HVL-833



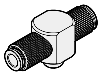
**Hand valve** ---------- HVM-402, HVM-403, HVM-404 ---------- P.2-4.34



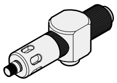
**Mini type hand valve** ---------- HVT-200-6A, HVT-200-8A ---------- P.2-4.35



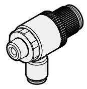
**Quick exhaust valve** ---------- QE-802, QE-803 ---------- P.2-4.36



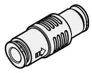
**Quick exhaust valve** ---------- QEB-01, QEB-02, QEB-03 ---------- P.2-4.37



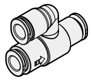
**Quick exhaust valve** ---------- QEBC-01, QEBC-02, QEBC-03 ---------- P.2-4.39



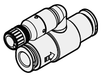
**Quick exhaust valve** ---------- QED-01, QED-02, QED-03 ---------- P.2-4.41



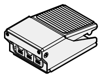
**Quick exhaust valve** ---------- QEH-4, QEH-6 ---------- P.2-4.43



**Quick exhaust valve** ---------- QEU-4, QEU-6 ---------- P.2-4.43



**Quick exhaust valve** ---------- QEUC-4, QEUC-6 ---------- P.2-4.43

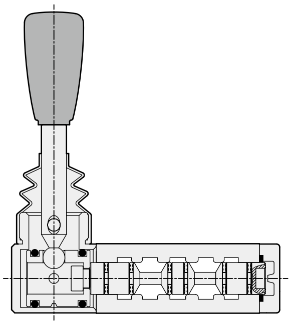


**Foot-Operated Valve** ---------- FVA-320, FVA-420 ---------- P.2-4.45

# HVL series Hand Valve

## Product features/ Code of order

### Internal structure



### Specification

| Item \ Model | HVL-601<br>HVL-631 | HVL-602<br>HVL-632 | HVL-802<br>HVL-832 | HVL-803<br>HVL-833 |
|---|---|---|---|---|
| Fluid | Air | | | |
| Pressure range kgf/cm²(kPa) | 1 ~ 7 ( 100 ~ 700 ) | | | |
| Ambient and fluid temperature ºC | 5 ~ 60 | | | |
| Number of positions | 5/2-position, 5/3-position | | | |
| Effective orifice mm²(CV) | 14 ( 0.78 ) | | 18 ( 1.0 ) | |
| Angle for operated shaft | 15° | | | |
| Port size Rc(PT) | 1/8 | 1/4 | | 3/8 |
| Lubrication | Lubrication free type | | | |

### Code of order

**HVL** – **6** – **0** – **1** – – **F**

Model
HVL series
Hand valve

Model
6: 600 series
8: 800 series

Position
0: 2 ports
3: 3 ports

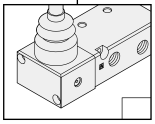
Port size

Thread type (standard)

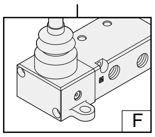
| Mark | Thread | Model |
|---|---|---|
| 1 | Rc 1/8 | HVL600 |
| 2 | Rc 1/4 | |
| 2 | Rc 1/4 | HVL800 |
| 3 | Rc 3/8 | |

Exchange type
None:
Standard type
NC : Closed center
NF : Exhaust center
NO : Pressure center

Mounting type



None:
Standard type

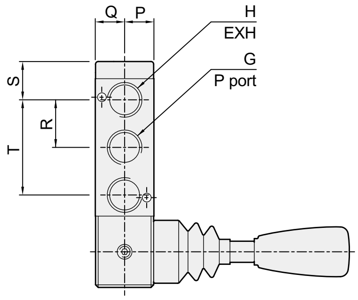


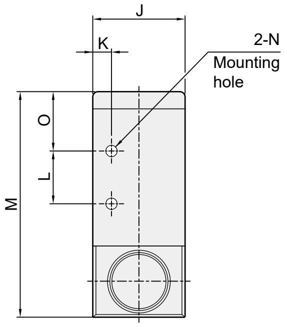
F : Flange type

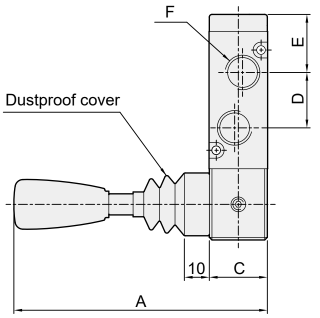
# HVL series Hand Valve

## Dimensions

### Standard type

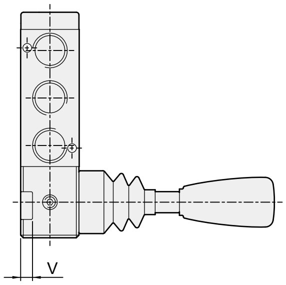

Q
P
H
EXH
G
P port
S
R
T

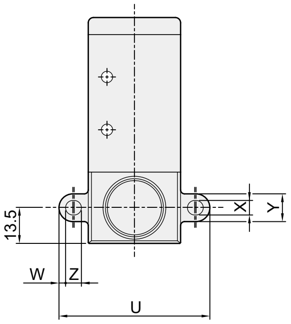

J
K
2-N
Mounting
hole
O
L
M

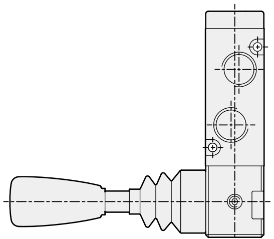

F
E
D
Dustproof cover
10
C
A

| Item / Model | A | C | D | E | F | G | H | J | K | L | M | N | O | P | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HVL-601**<br>**HVL-631** | (94) | 22 | 21 | 21.5 | 1/8 | 1/8 | 1/8 | 35 | 7 | 20 | 84 | Ø4.3 | 22 | 11 | 11 | 18 | 14 | 36 |
| **HVL-602**<br>**HVL-632** | (94) | 22 | 21 | 21.5 | 1/4 | 1/4 | 1/8 | 35 | 7 | 20 | 84 | Ø4.3 | 22 | 11 | 11 | 18 | 14 | 36 |
| **HVL-802**<br>**HVL-832** | (99) | 27 | 24 | 28 | 1/4 | 1/4 | 1/4 | 40 | 7 | 24 | 99 | Ø4.3 | 27.5 | 13.5 | 13.5 | 23 | 17 | 46 |
| **HVL-803**<br>**HVL-833** | (99) | 27 | 24 | 28 | 3/8 | 3/8 | 1/4 | 40 | 7 | 24 | 99 | Ø4.3 | 27.5 | 13.5 | 13.5 | 23 | 17 | 46 |

### Flange type - F







| Item / Model | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|
| **HVL-601**<br>**HVL-631** | 57.2 | 4.5 | 2.5 | 5.5 | 10.5 | 6 |
| **HVL-602**<br>**HVL-632** | 57.2 | 4.5 | 2.5 | 5.5 | 10.5 | 6 |
| **HVL-802**<br>**HVL-832** | 67.1 | 5.5 | 3 | 6.6 | 12.6 | 7.1 |
| **HVL-803**<br>**HVL-833** | 67.1 | 5.5 | 3 | 6.6 | 12.6 | 7.1 |

# HVM series Hand Valve

## Product features/ Code of order

### Code of order

HVM — 4 — 02

HVM: Oscillatory hand valve

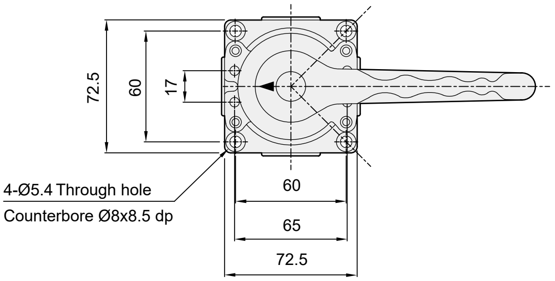
Model: 4: 400 series

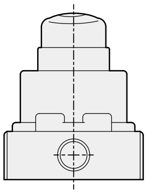
Port size:
02-1/4
03-3/8
04-1/2

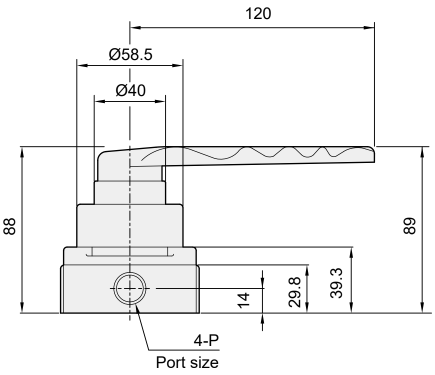
### Specification

| Item / Model | | HVM-402 | HVM-403 | HVM-404 |
|---|---|---|---|---|
| Fluid | | Air | | |
| Pressure range | kgf/cm²(kPa) | 1 ~ 7 ( 100 ~ 700 ) | | |
| Ambient and fluid temperature | ºC | 5 ~ 60 | | |
| Number of positions | | 4/3-position | | |
| Effective orifice | mm²(CV) | 17 ( 0.9 ) | | |
| Angle for operated shaft | | 45° Left and right | | |
| Port size | Rc(PT) | 1/4 | 3/8 | 1/2 |
| Lubrication | | Lubrication free type | | |

### External dimensions

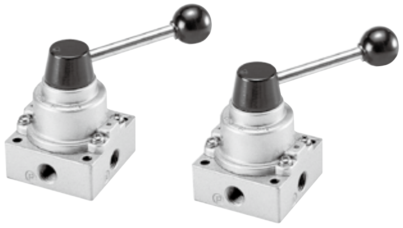

72.5
60
17
4-Ø5.4 Through hole
Counterbore Ø8x8.5 dp
60
65
72.5




120
Ø58.5
Ø40
88
89
14
29.8
39.3
4-P
Port size

# HVT series Mini Type Hand Valve

## Product features/ Code of order



### Code of order

HVT — 200 — 6A

HVT: Mini hand valve

200: Model

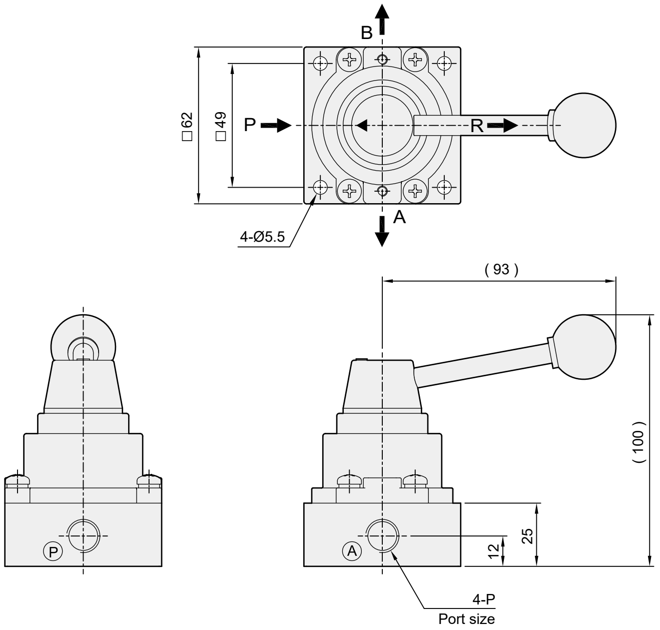
Operated type:
0: 3 positions
Closed center
2: 3 positions
Exhaust center
2: 2 positions

Port size
6A - 1/8
8A - 1/4

### Specification

| Item / Model | HVT - 200 | |
|---|---|---|
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 1 ~ 7 ( 100 ~ 700 ) | |
| Ambient and fluid temperature ℃ | 5~60 ( No freezing ) | |
| Number of ports | 4 ports | |
| Angle for operated shaft | 45° Left and right | |
| Port size Rc | 1/8 | 1/4 |
| Weight g | 280g | |

### External dimensions



# QE series Quick Exhaust Valve

## Product features/ Code of order

### Code of order

QE — 802

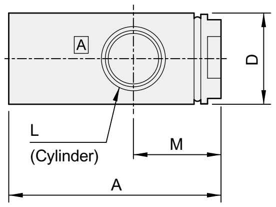
Quick exhaust valve

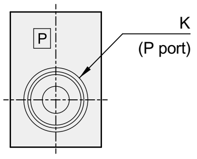
Port size
02 - 1/4
03 - 3/8

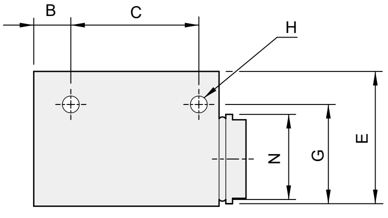
### Specification

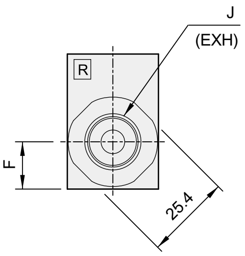
| Item \ Model | | QE - 802 | QE - 803 |
|---|---|---|---|
| Fluid | | Air | |
| Pressure range kgf/cm²(kPa) | | 1 ~ 7 ( 100 ~ 700 ) | |
| Ambient and fluid temperature ℃ | | 5 ~ 60 | |
| Flow Q L/ min | P→A | 1000 | 1000 |
| | A→R | 1500 | 1500 |
| Port size Rc | | 1/4 | 3/8 |
| Lubrication | | Lubrication free type | |

### External dimensions







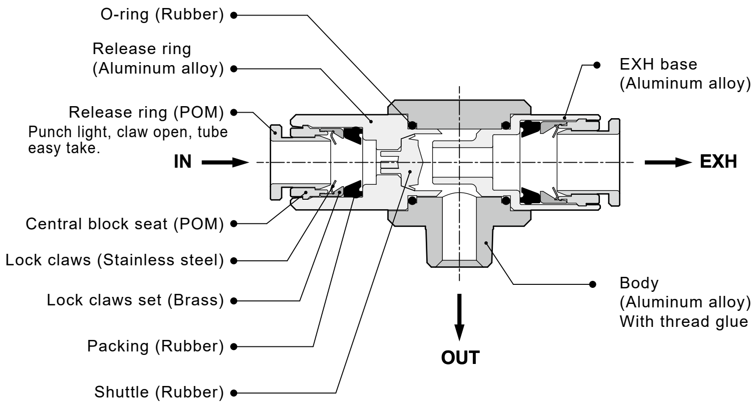


| Item \ Model | A | B | C | D | E | F | G | H | J Rc | K Rc | L Rc | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QE-802 | 63 | 11.5 | 38 | 27 | 40 | 14 | 30.2 | Ø5 | 3/8" | 1/4" | 1/4" | 26 | Ø27 |
| QE-803 | 63 | 11 | 38 | 27 | 40 | 14 | 30.2 | Ø5 | 3/8" | 3/8" | 3/8" | 26 | Ø27 |

# QEB series Quick Exhaust Valve

## Product features/ Code of order

### Internal structure


O-ring (Rubber)
Release ring
(Aluminum alloy)
Release ring (POM)
Punch light, claw open, tube easy take.
IN
Central block seat (POM)
Lock claws (Stainless steel)
Lock claws set (Brass)
Packing (Rubber)
Shuttle (Rubber)
EXH base
(Aluminum alloy)
EXH
Body
(Aluminum alloy)
With thread glue
OUT

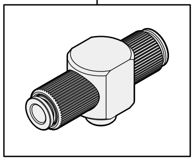
### Specification

<table>
<tr><th>Item Model</th><th colspan="2">QEB 01</th><th colspan="2">QEB 02</th><th colspan="6">QEB 03</th></tr>
<tr><td>Thread (OUT) Rc</td><td colspan="2">1/8</td><td>1/8</td><td>1/4</td><td colspan="2">1/4</td><td colspan="2">3/8</td><td colspan="2">1/2</td></tr>
<tr><td>Port size (IN)</td><td>Ø4</td><td>Ø6</td><td>Ø6</td><td>Ø8</td><td colspan="3">Ø10</td><td colspan="3">Ø12</td></tr>
<tr><td>Port size (EX)</td><td colspan="2">Ø8</td><td colspan="2">Ø10</td><td colspan="6">Ø12</td></tr>
<tr><td>Fluid</td><td colspan="10">Air</td></tr>
<tr><td>Pressure range kgf/cm²(kPa)</td><td colspan="10">1.5 ~ 8 (150 ~ 800)</td></tr>
<tr><td>Max. operating pressure kgf/cm²(kPa)</td><td colspan="10">10 (1000)</td></tr>
<tr><td>Ambient and fluid temperature °C</td><td colspan="10">5 ~ 60</td></tr>
<tr><td>Min. operated pressure kgf/cm²(kPa)</td><td colspan="10">0.5 (50)</td></tr>
<tr><td>Thread glue</td><td colspan="10">With thread glue</td></tr>
</table>

### Code of order

**QEB** — **01** — **01** — **04** — **08**

Quick exhaust valve



Effective orifice

| Mark | (mm²) |
|---|---|
| 01 | 08 |
| 02 | 16 |
| 03 | 30 |

Body

| Mark | | Model | | |
|---|---|---|---|---|
| Thread | | QEB01 | QEB02 | QEB03 |
| 01 | 1/8 | ● | ● | — |
| 02 | 1/4 | — | ● | ● |
| 03 | 3/8 | — | — | ● |
| 04 | 1/2 | — | — | ● |

IN-Port size

| Mark | Size | Model | | |
|---|---|---|---|---|
| | | QEB01 | QEB02 | QEB03 |
| 04 | Ø4 | ● | — | — |
| 06 | Ø6 | ● | ● | — |
| 08 | Ø8 | — | ● | — |
| 10 | Ø10 | — | — | ● |
| 12 | Ø12 | — | — | ● |

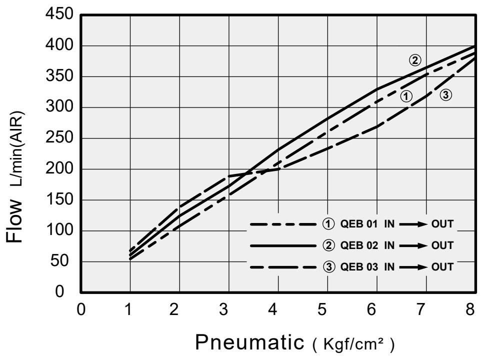
EX-Port size

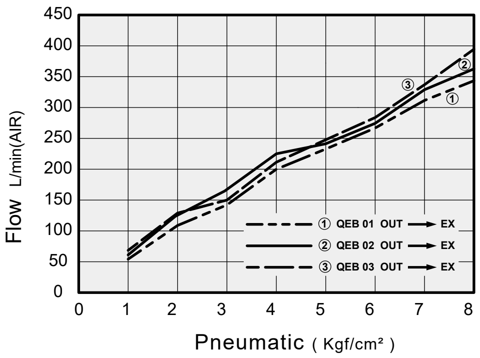
| Mark | Size | Model | | |
|---|---|---|---|---|
| | | QEB01 | QEB02 | QEB03 |
| 08 | Ø8 | ● | — | — |
| 10 | Ø10 | — | ● | — |
| 12 | Ø12 | — | — | ● |

# QEB series Quick Exhaust Valve

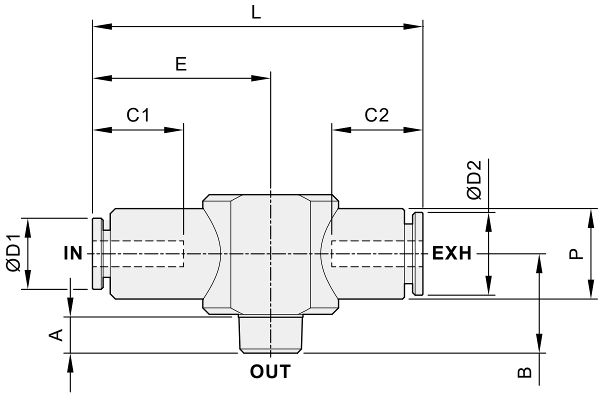
## Characteristics graph/ Dimensions

### Flow rate characteristic graph





### QEB series



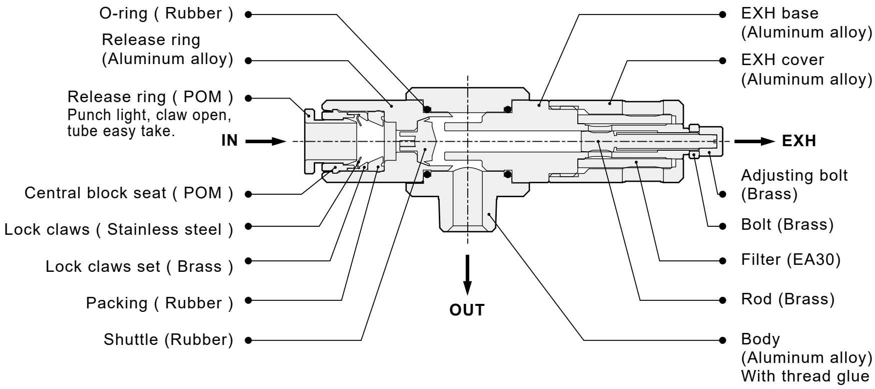
| Port size ØD | | Thread Rc | Model | A | B | C1 | C2 | E | L | P | Effective orifice | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | IN → OUT | OUT → EX | |
| Ø4 | Ø8 | 1/8 | QEB 01-01-04-08 | 5.5 | 15 | 14.5 | 18.6 | 26 | 50 | 14 | 5 | 9 | 18 |
| Ø6 | | | QEB 01-01-06-08 | | | 17.1 | | 27 | 51 | | 6 | | 19 |
| Ø6 | Ø10 | 1/8 | QEB 02-01-06-10 | 5.5 | 15 | 17.1 | 20.9 | 33 | 58 | 18 | 10 | 17 | 31 |
| | | 1/4 | QEB 02-01-08-10 | 8 | 18 | 17.1 | | | | | | | 32 |
| Ø8 | | 1/8 | QEB 02-02-06-10 | 5.5 | 15 | 18.6 | | 34 | 60 | | 14 | | |
| | | 1/4 | QEB 02-02-08-10 | 8 | 18 | 18.6 | | | | | | | 33 |
| Ø10 | Ø12 | 1/4 | QEB 03-02-10-12 | 8 | 22 | 20.9 | 24.3 | 37 | 69 | 22 | 23 | 33 | 61 |
| | | 3/8 | QEB 03-02-12-12 | 8 | 22 | 20.9 | | | | | 24 | 34 | 62 |
| | | 1/2 | QEB 03-03-10-12 | 10 | 24 | 20.9 | | | | | 28 | 38 | |
| Ø12 | | 1/4 | QEB 03-03-12-12 | 8 | 22 | 23.7 | | 37 | 73 | | 25 | 36 | 63 |
| | | 3/8 | QEB 03-04-10-12 | 8 | 22 | 23.7 | | | | | 26 | 36 | 64 |
| | | 1/2 | QEB 03-04-12-12 | 10 | 24 | 23.7 | | | | | 28 | 37 | |

# QEBC series Quick Exhaust Valve

## Product features/ Code of order

MV
HVL
HVM
HVT
QE
FVA

### Internal structure


O-ring ( Rubber )
Release ring (Aluminum alloy)
Release ring ( POM )
Punch light, claw open, tube easy take.
IN
Central block seat ( POM )
Lock claws ( Stainless steel )
Lock claws set ( Brass )
Packing ( Rubber )
Shuttle (Rubber)
OUT
EXH base (Aluminum alloy)
EXH cover (Aluminum alloy)
EXH
Adjusting bolt (Brass)
Bolt (Brass)
Filter (EA30)
Rod (Brass)
Body (Aluminum alloy) With thread glue

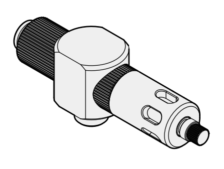
### Specification

| Item / Model | | QEBC 01 | QEBC 02 | QEBC 03 |
|---|---|---|---|---|
| Thread (OUT) | Rc | 1/8 | 1/8<br>1/4 | 1/4<br>3/8<br>1/2 |
| Port size (IN) | | Ø4<br>Ø6 | Ø6<br>Ø8 | Ø10<br>Ø12 |
| Port size (EX) | | — | — | — |
| Fluid | | Air | | |
| Pressure range | kgf/cm²(kPa) | 1.5~8 (150~800) | | |
| Max. operating pressure | kgf/cm²(kPa) | 10 (1000) | | |
| Ambient and fluid temperature | °C | 5 ~ 60 | | |
| Min. operated pressure | kgf/cm²(kPa) | 0.5 (50) | | |
| Thread glue | | With thread glue | | |

### Code of order

QEBC — 01 — 01 — 04

**QEBC**: Quick exhaust valve



**01**: Effective orifice

| Mark | (mm²) |
|---|---|
| 01 | 08 |
| 02 | 16 |
| 03 | 30 |

**01**: Body

| Mark | | Model | | |
|---|---|---|---|---|
| Thread | | QEBC01 | QEBC02 | QEBC03 |
| 01 | 1/8 | ● | ● | — |
| 02 | 1/4 | — | ● | ● |
| 03 | 3/8 | — | — | ● |
| 04 | 1/2 | — | — | ● |

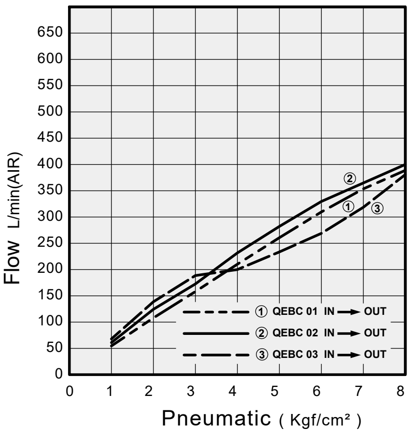
**04**: IN-Port size

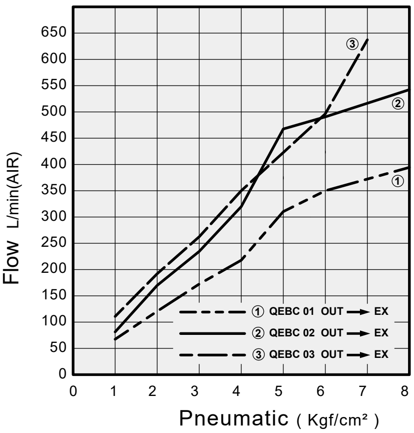
| Mark | Size | Model | | |
|---|---|---|---|---|
| | | QEBC01 | QEBC02 | QEBC03 |
| 04 | Ø4 | ● | — | — |
| 06 | Ø6 | ● | ● | — |
| 08 | Ø8 | — | ● | — |
| 10 | Ø10 | — | — | ● |
| 12 | Ø12 | — | — | ● |

# QEBC series Quick Exhaust Valve

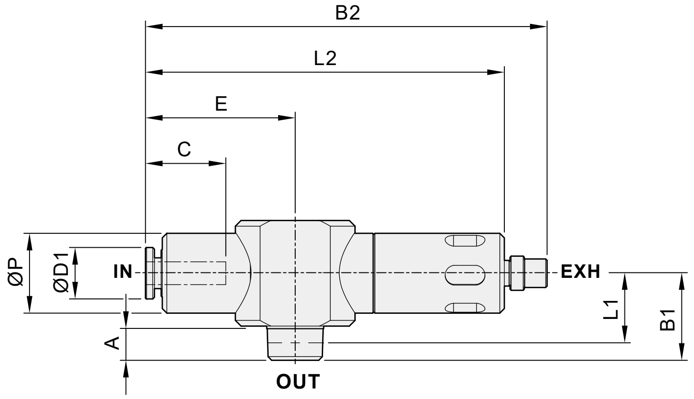
## Characteristics graph/ Dimensions

### Flow rate characteristic graph





### QEBC series

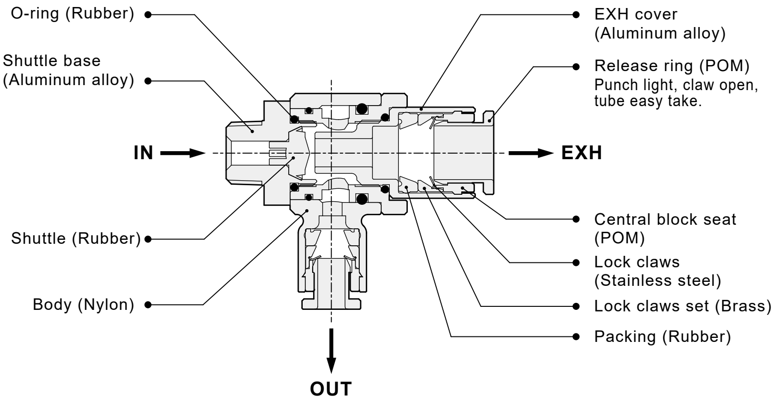


| Port size ØD | Thread Rc | Model | A | B1 | B2 | C | E | L1 | L2 | P | Effective orifice | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | | | | | | | | | | | IN → OUT | OUT → EX | |
| Ø4 | 1/8 | QEBC 01-01-04 | 5.5 | 15 | 70 | 14.5 | 26 | 12 | 63 | 14 | 5 | 9 | 28 |
| Ø6 | | QEBC 01-01-06 | | | 72.1 | 17.1 | 28 | | 64 | | 6 | | 27 |
| Ø6 | | QEBC 02-01-06 | 5.5 | 15 | 81 | 17.1 | 33 | 13 | 72 | 18 | 10 | 17 | 47 |
| Ø8 | | QEBC 02-01-08 | 8 | 18 | 81 | 17.1 | | 14 | | | | | 48 |
| Ø6 | 1/4 | QEBC 02-02-06 | 5.5 | 15 | 82 | 18.6 | 34 | 13 | 73 | | 14 | | 49 |
| Ø8 | | QEBC 02-02-08 | 8 | 18 | 82 | 18.6 | | 14 | | | | | 50 |
| Ø10 | | QEBC 03-02-10 | 8 | 22 | 104 | 20.9 | 37 | 17 | 95 | 22 | 23 | 33 | 95 |
| Ø12 | | QEBC 03-02-12 | 8 | 22 | 104 | 20.9 | | 18 | | | 24 | 34 | 96 |
| Ø10 | 3/8 | QEBC 03-03-10 | 10 | 24 | 104 | 20.9 | | 19 | | | 28 | 38 | 98 |
| Ø12 | | QEBC 03-03-12 | 8 | 22 | 108 | 23.7 | 40 | 17 | 98 | | 25 | 36 | 94 |
| Ø10 | 1/2 | QEBC 03-04-10 | 8 | 22 | 108 | 23.7 | | 18 | | | 26 | 36 | 95 |
| Ø12 | | QEBC 03-04-12 | 10 | 24 | 108 | 23.7 | | 19 | | | 28 | 37 | 98 |

# QED series Quick Exhaust Valve

## Product features/ Code of order

### Internal structure


O-ring (Rubber)
Shuttle base (Aluminum alloy)
IN
Shuttle (Rubber)
Body (Nylon)
OUT
EXH cover (Aluminum alloy)
Release ring (POM)
Punch light, claw open, tube easy take.
EXH
Central block seat (POM)
Lock claws (Stainless steel)
Lock claws set (Brass)
Packing (Rubber)

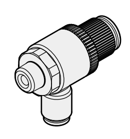
### Specification

| Item / Model | QED 01 | | QED 02 | | QED 03 | |
|---|---|---|---|---|---|---|
| Thread (IN) Rc | 1/8 | | 1/8 | 1/4 | 3/8 | 1/2 |
| Port size (OUT) | Ø4 | Ø6 | Ø6 | Ø8 | Ø10 | Ø12 |
| Port size (EX) | Ø8 | | Ø10 | | Ø12 | |
| Fluid | Air | | | | | |
| Pressure range kgf/cm²(kPa) | 1.5 ~ 8 (150 ~ 800) | | | | | |
| Max. operating pressure kgf/cm²(kPa) | 10 (1000) | | | | | |
| Ambient and fluid temperature °C | 5 ~ 60 | | | | | |
| Min. operated pressure kgf/cm²(kPa) | 0.5 (50) | | | | | |
| Thread glue | With thread glue | | | | | |

### Code of order

**QED** – **01** – **01** – **04** – **08**

QED: Quick exhaust valve



01: Effective orifice

| Mark | (mm²) |
|---|---|
| 01 | 08 |
| 02 | 16 |
| 03 | 30 |

01: IN-Shuttle base

| Mark | Thread | Model QED01 | QED02 | QED03 |
|---|---|---|---|---|
| 01 | 1/8 | ● | ● | — |
| 02 | 1/4 | — | ● | — |
| 03 | 3/8 | — | — | ● |
| 04 | 1/2 | — | — | ● |

04: OUT-Port size

| Mark | Size | Model QED01 | QED02 | QED03 |
|---|---|---|---|---|
| 04 | Ø4 | ● | — | — |
| 06 | Ø6 | ● | ● | — |
| 08 | Ø8 | — | ● | — |
| 10 | Ø10 | — | — | ● |
| 12 | Ø12 | — | — | ● |

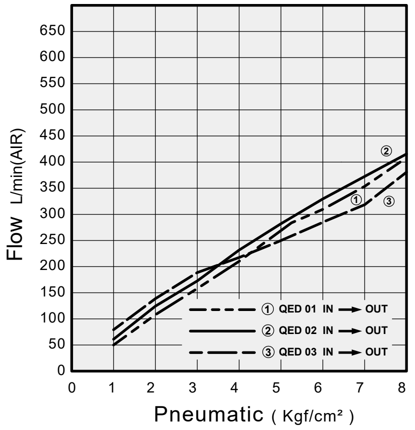
08: EX-Port size

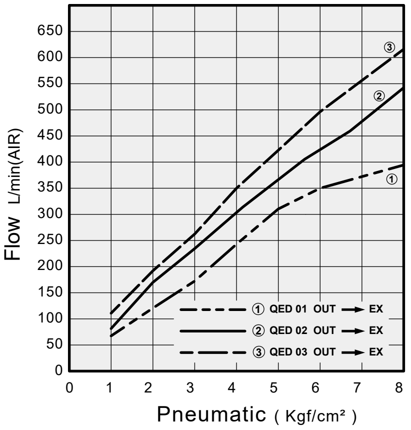
| Mark | Size | Model QED01 | QED02 | QED03 |
|---|---|---|---|---|
| 08 | Ø8 | ● | — | — |
| 10 | Ø10 | — | ● | — |
| 12 | Ø12 | — | — | ● |

# QED series Quick Exhaust Valve

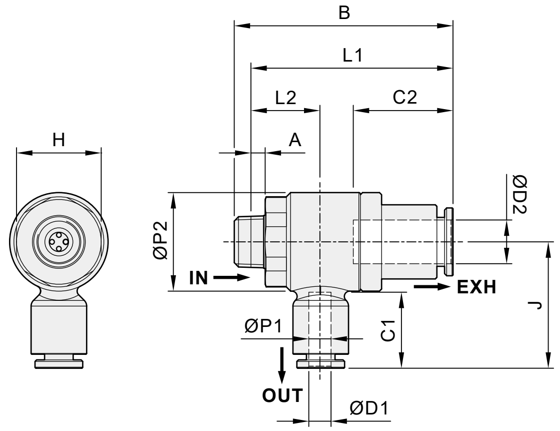
## Characteristics graph/ Dimensions

### Flow rate characteristic graph





### QED series

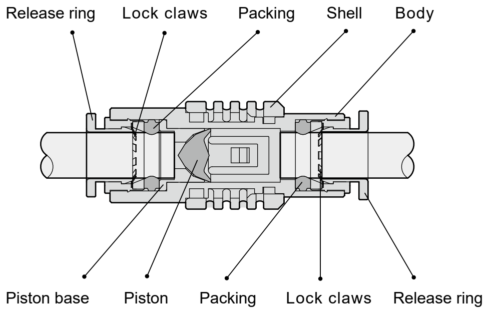


| Port size ØD | | Thread Rc | Model | A | B | L1 | L2 | ØP1 | ØP2 | C1 | C2 | J | Cross H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | | | | | | | | | | | | | | |
| Ø4 | Ø8 | 1/8 | QED 01-01-04-08 | 2.7 | 43 | 38 | 13 | 10.5 | 18.6 | 14.3 | 18.8 | 5 | 16 | 24 |
| Ø6 | | | QED 01-01-06-08 | | | | | | | | | 6 | | |
| Ø6 | Ø10 | 1/8 | QED 02-01-06-10 | 2.7 | 51 | 48 | 16.7 | 12.4 | 23 | 17 | 19.7 | 10 | 20 | 45 |
| | | 1/4 | QED 02-02-06-10 | 3.8 | 62 | 58 | 17.8 | | | | | | | |
| Ø8 | | 1/8 | QED 02-01-08-10 | 2.7 | 51 | 48 | 16.7 | 14.3 | | 19 | | 14 | | 46 |
| | | 1/4 | QED 02-02-08-10 | 3.8 | 62 | 58 | 17.8 | | | | | | | |
| Ø10 | Ø12 | 3/8 | QED 03-03-10-12 | 3.8 | 64 | 60 | 22.7 | 17.8 | 28.4 | 20.8 | 23.6 | 24 | 26 | 73 |
| | | 1/2 | QED 03-04-10-12 | 5 | 65 | 60 | 23.9 | | | | | 28 | | |
| Ø12 | | 3/8 | QED 03-03-12-12 | 3.8 | 64 | 60 | 22.7 | 21.2 | | 23.6 | | 26 | | 77 |
| | | 1/2 | QED 03-04-12-12 | 5 | 65 | 60 | 23.9 | | | | | 28 | | |

# QE series Quick Exhaust Valve

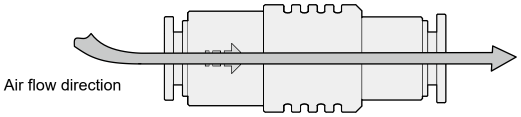
## Product features/ Code of order

### Internal structure

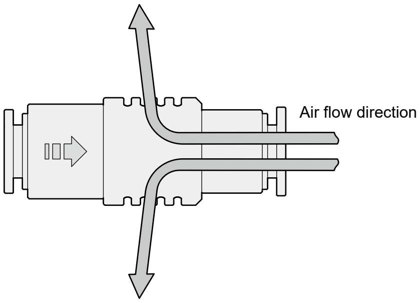

Release ring
Lock claws
Packing
Shell
Body
Piston base
Piston
Packing
Lock claws
Release ring

### How exhaust valve operate

When under the normal condition


Air flow direction

When under quick exhausting condition

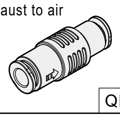

Air flow direction

### Code of order

**QEH** – **06**

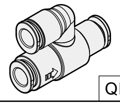
Model

Exhaust to air



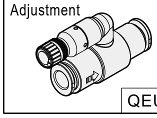
QEH

Concentrated exhaust



QEU

Adjustment



QEUC

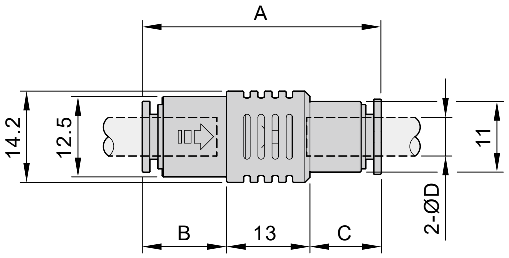
Port size

| Mark | Size |
|---|---|
| 04 | Ø4 mm |
| 06 | Ø6 mm |

# QE series Quick Exhaust Valve

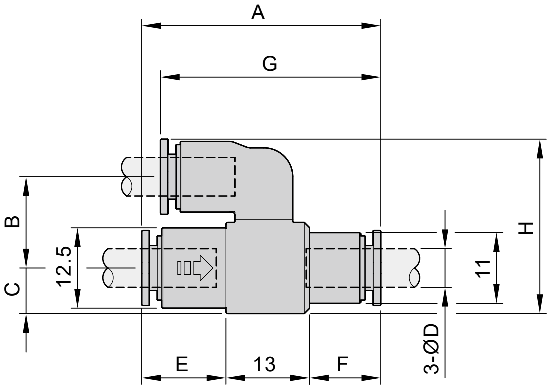
## Dimensions

### QEH series Quick exhaust valve (Exhaust to air)


A
14.2
12.5
11
2-ØD
B
13
C

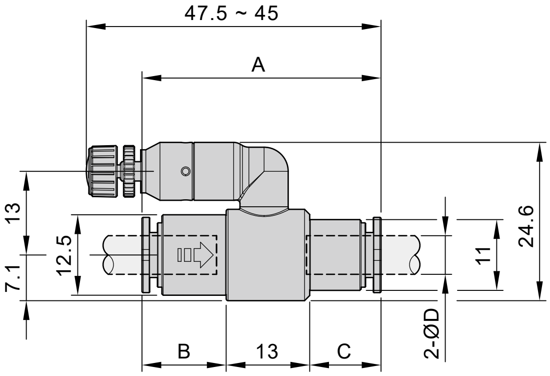
| Model | A | B | C | ØD | Effective orifice $mm^2$ | Weight (g) |
|---|---|---|---|---|---|---|
| QEH - 4 | 36 | 12.5 | 10.5 | Ø4 | 1.5 | 6 |
| QEH - 6 | 37.5 | 13 | 11.5 | Ø6 | 3.5 | 7 |

### QEU series Quick exhaust valve (Concentrated exhaust)


A
G
B
C
12.5
H
11
3-ØD
E
13
F

| Model | A | B | C | ØD | E | F | G | Effective orifice $mm^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| QEU - 4 | 36 | 13 | 7.1 | Ø4 | 12.5 | 10.5 | 35 | 1.5 | 8 |
| QEU - 6 | 37.5 | 14.2 | 7.1 | Ø6 | 13 | 11.5 | 32.5 | 3.5 | 9 |

### QEUC series Quick exhaust valve (Adjustable)


47.5 ~ 45
A
13
7.1
12.5
24.6
11
2-ØD
B
13
C

| Model | A | B | C | ØD | Effective orifice $mm^2$ | Weight (g) |
|---|---|---|---|---|---|---|
| QEUC - 4 | 36 | 12.5 | 10.5 | Ø4 | 1.5 | 12 |
| QEUC - 6 | 37.5 | 13 | 11.5 | Ø6 | 3.5 | 13 |

## Code of order

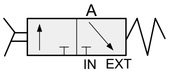
| FVA | 320 | T | B |
|---|---|---|---|
| Model | 320: 3/2-position Normally closed<br>420: 4/2-position Normally open | T : Lock<br>☐ : None<br>(Spring returned) | Tube thread type<br>None: Rc thread<br>B: BSP thread<br>N: NPT thread |

## Specification

| Item \ Model | FVA - 320 | FVA - 420 |
|---|---|---|
| Port size | PT 1/4 | |
| Number of ports | 3 ports | 4 ports |
| Number of positions | 2 positions | |
| Fluid | Air | |
| Pressure range kgf/cm²(kPa) | 0 ~ 7 ( 0 ~ 700 ) | |
| Withstand pressure kgf/cm² | 10 | |
| Effective orifice mm² | 8 | |
| Ambient and fluid temperature °C | -5 ~ 60 | |

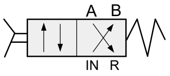
## External dimensions

- **FVA - 320 - (T)**

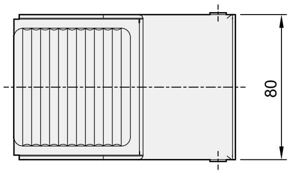


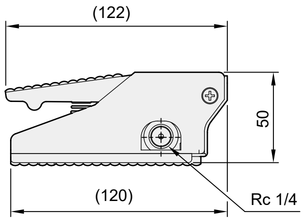
3 ports NC (FVA-320)

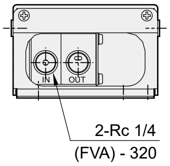
- **FVA - 420 - (T)**

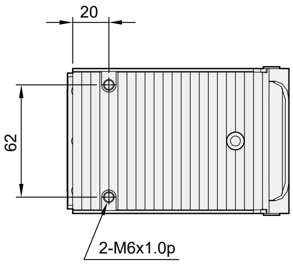


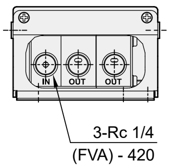
4 ports (FVA-420)




(122)
50
(120)
Rc 1/4


IN
OUT
2-Rc 1/4
(FVA) - 320


20
62
2-M6x1.0p


IN
OUT
OUT
3-Rc 1/4
(FVA) - 420

# Vacuum Ejector/ Filter/ Regulator/ Cylinder

## Single unit/ Modularize/ Filter/ Regulator/ Cylinder

CHELIC

## Vacuum ejector

### Single unit

**EV** series
Vacuum Ejector
16~40 P.3-1.10

**EVM** series
Control Valve Type
Vacuum Ejector
16~30 P.3-1.14

**VAB** series
Vacuum Ejector
13.4~18.8 P.3-1.18

**VAS** series
Vacuum
Pressure Switch
15~18.8 P.3-1.18

**VABS** series
Vacuum Ejector/
All-in-One
32~37.6 P.3-1.18

**VMB** series
Central Exhaust Type
Vacuum Ejector
17~21 P.3-1.22

**VMD** series
Air Release Type
Vacuum Ejector
17~21 P.3-1.22

**VMT** series
Central Exhaust Type
Vacuum Ejector/Union T
13~21 P.3-1.22

**VML** series
Central Exhaust Type
Vacuum Ejector/Direct-piping
14.5~22 P.3-1.22

**VMK** series
Air Release Type Vacuum
Ejector/Direct-mounting
13~21 P.3-1.22

**VMBU** series
Elbow Type Vacuum
Ejector/Direct-mounting
17~21 P.3-1.29

**VMDU** series
Elbow Type Vacuum
Ejector/Direct-mounting
17~21 P.3-1.29

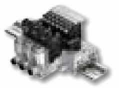
**VHS** series
Integrated Type
Vacuum Ejector
180 P.3-1.32

### Modularize

**VSL** series
Integrated Type
Vacuum Ejector
**Energy saving** P.3-1.39

**VKM** series
Module Type
Vacuum Ejector
**Energy saving** P.3-1.49

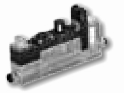
**VKMT** series
Module Type Energy-
saving Vacuum Ejector
**Energy-saving** P.3-1.64



**VCK** series
DIN Rail Type
Vacuum Ejector
20 P.3-1.77

**VK20** series
Filter Type
Vacuum Ejector
20 P.3-1.83

**VK30** series
Large Flow
Vacuum Ejector
30 P.3-1.93



**VQ20** series
Energy-saving
Vacuum Ejector
20 P.3-1.100

## Vacuum Filter
## Vacuum Regulator
## Vacuum Cylinder

### Filter

**VFD** series
In-line Air Filter
Ø4~ Ø12 P.3-113

**VFM** series
Vacuum Filter
1/8~ 1 P.3-1.116

**VFU** series
Air Suction Filter with
One-touch Fitting
Ø4~ Ø10 P.3-1.121

### Regulator

**ERV** series
Vacuum Regulator
1/8~1/4 P.3-124

**ERVL** series
Large Flow Vacuum
Regulator/Energy-saving
1/4~1/2 P.3-1.128

### Cylinder

**MVS** series
Miniateure
Vacuum Cylinder
Ø6~ Ø10 P.3-132

**DYC** series
Vacuum Cylinder
Ø25~ Ø40 P.3-1.139

# Vacuum Pad

## Pad, Parts

**Vacuum pad**

**Pad type**

**PA** series
Vacuum pad/
Single layer
2~50 P.3-2.6

**PB** series
Vacuum pad/
Double layers
6~50 P.3-2.23

**PC** series
Vacuum pad/
Three layers
5~40 P.3-2.37

**PD** series
Deep Type
Vacuum Pad
10~50 P.3-2.51

**PAD** series
Bellow Type
Vacuum Pad
10~40 P.3-2.56

**PAM** series
Micro Vacuum Pad
7~15 P.3-2.61

**PAG** series
Vacuum pad/
Film Type
10~50 P.3-2.64

**PAO** series
Vacuum pad/
Anti-slip Flat Type
10~50 P.3-2.71

**PAP** series
Vacuum pad/
Flat type
5~30 P.3-2.78

**PAQ** series
Vacuum pad/ Suction
mark prevention type
5~50 P.3-2.85

**PAW** series
Vacuum pad/
Oval type
2~8 P.3-2.92

**Pad bracket**

**F** series
Vertical entry

**K** series
Vertical entry
with fitting

**T** series
Side entry

**TS** series
Side entry with
spring

**FS** series
Vertical entry
with spring

**PAR** series
Vacuum pad
with ball joint
P.3-2.109

**P□L** series
Non-rotation
Vacuum Pad
P.3-2.101

**Other**

**PS** series
Non-contact
Gripper M3~M5
P.3-2.111

**Vacuum unit**

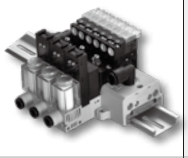
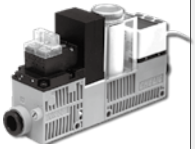
**VP** series
Vacuum Saving
Valve
Thread/ Port P.3-2.117

## Single unit vacuum ejector

| Series | Item | Single unit · Width (mm) | Single unit · Weight (g) | Guideline | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | With valve | With switch | With filter | With Silencer | Center exhaust | Atmospheric emissions |
| | | | | Vacuum generate | Mechanical type | | | | |
| EV | Vacuum ejector | 16~40 | 8~85 | | ● | | ● | | |
| EVM | Vacuum ejector | 16~30 | 11~38 | ● | ● | | ● | | |
| VAB | Vacuum ejector | 13.4~18.8 | 18~18.5 | | | ● | ● | | |
| VAS | Vacuum pressure switch | 15~18.8 | 29 | | ● | | | | |
| VABS | Vacuum ejector | 32~37.6 | 46~47.5 | | ● | ● | ● | | |
| VMB | Vacuum ejector | 17~21 | 45~53 | | | | ● | ● | |
| VMD | Vacuum ejector | 17~21 | 45~53 | | | | ● | | ● |
| VML | Vacuum ejector | 14.5~22 | 25~53 | | | | | | ● |
| VMK | Vacuum ejector | 13~21 | 20~53 | | | | | | |
| VMT | Vacuum ejector | 13~21 | 40~64 | | | | | ● | |
| VMBU | Vacuum ejector | 17~21 | 45~53 | | | | | ● | |
| VMDU | Vacuum ejector | 17~21 | 45~53 | | | | | | ● |
| VHS | Intergrated type Vacuum ejector | 180 | 226~960 | | | | ● | | |

| Nozzle diameter (mm) | | | | | | | | Vacuum pressure (-kPa) | Suction flow (L/min) | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| 05 (0.5) | 07 (0.7) | 10 (1.0) | 12 (1.2) | 15 (1.5) | 20 (2.0) | 25 (2.5) | 30 (3.0) | | | |
| ● | | ● | | ● | ● | ● | ● | 91.8 | 11 ~ 209 | P.3-1.10 |
| ● | ● | ● | ● | ● | ● | | | 91.8 | 11 ~ 86 | P.3-1.14 |
| | ● | | ● | ● | | | | 91.8 | 9 ~ 64 | P.3-1.18 |
| | | | | | | | | | | P.3-1.18 |
| | ● | | ● | ● | | | | 91.8 | 9 ~ 64 | P.3-1.18 |
| ● | ● | ● | | ● | | | | 91.8 | 11.5 ~ 52 | P.3-1.22 |
| | | | | ● | | | | 91.8 | 11.5 ~ 52 | P.3-1.22 |
| ● | | ● | | ● | ● | | | 91.8 | 15 ~ 64 | P.3-1.22 |
| ● | | ● | | ● | ● | | | 91.8 | 15 ~ 64 | P.3-1.22 |
| ● | | ● | | ● | ● | | | 91.8 | 15 ~ 64 | P.3-1.22 |
| ● | ● | ● | ● | ● | ● | | | 91.8 | 11.5 ~ 52 | P.3-1.29 |
| ● | ● | ● | ● | ● | | | | 91.8 | 11.5 ~ 52 | P.3-1.29 |
| | | | ● | | | | | 90 | 60 | P.3-1.32 |

## Modularized vacuum ejector

| Series | Item | Single unit · Width (mm) | Single unit · Weight (g) | Manifold | Guideline | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | With valve | | Pressure switch | | With filter | With Silencer |
| | | | | | Vacuum generate | Release valve | Mechanical type | Numeric type | | |
| VSL | Manifold type Vacuum ejector | 13 | 65 | ● | ● | ● | | ● | ● | ● |
| VKM | Manifold type Vacuum ejector | 15 | 142 | ● | ● | ● | | ● | ● | ● |
| VKMT | Manifold type Vacuum ejector | 15 | 143 | ● | ● | ● | | ● | ● | ● |
| VCK | Manifold type Vacuum ejector  | 20 | 120 | ● | ● | ● | | ● | ● | ● |
| VK20 | Vacuum ejector | 20 | 40 ≀ 170 | | ● | ● | ● | ● | ● | ● |
| VK30 | Vacuum ejector  | 30 | 180 ≀ 300 | | ● | ● | | ● | ● | ● |
| VQ20 | The Energy saving vacuum ejector | 20 | 110 ≀ 200 | | ● | ● | | ● | ● | ● |

| Nozzle diameter (mm) | | | | | Sensor switch introduction | | | Vacuum pressure (-kPa) | Suction flow (L/min) | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Single unit | Reduce wiring | | | | |
| 05 (0.5) | 07 (0.7) | 10 (1.0) | 15 (1.5) | 20 (2.0) | Terminal | D-SUB | M8 connector 5 PIN | | | |
| ● | ● | ● | | | | | ● | 90 | 6 ~ 15 | P.3-1.39 |
| | | ● | | | ● | ● | | 90 | 22 | P.3-1.49 |
| | | ● | | | | ● | ● | 90 | 45 | P.3-1.64 |
| | | ● | | | ● | | | 90 | 22 | P.3-1.77 |
| ● | ● | ● | | | | | | 91.8 | 22 | P.3-1.83 |
| | | | | ● | ● | | | 91.8 | 64 | P.3-1.93 |
| | | ● | | | ● | | | 91.8 | 22 | P.3-1.100 |

## Vacuum filter

| Item | Model | Port size | Port size | | | | | Nominal filtration rating(μm) | Page |
|---|---|---|---|---|---|---|---|---|---|
| | | | Ø4 | Ø6 | Ø8 | Ø10 | Ø12 | | |
| VFD series vacuum filter | VFD 01 | Ø4 | ● | | | | | 10 | P.3-1.113 |
| | VFD 02 | Ø4 | ● | | | | | | |
| | | Ø6 | | ● | | | | | |
| | VFD 03 | Ø6 | | ● | | | | | |
| | | Ø8 | | | ● | | | | |
| | | Ø10 | | | | ● | | | |
| | VFD 04 | Ø10 | | | | ● | | | |
| | | Ø12 | | | | | ● | | |

| Item | Model | Port size | | | | | | Nominal filtration rating(μm) | Page |
|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | |
| VFM series vacuum filter | 200 | ● | ● | | | | | 40 | P.3-1.116 |
| | 300 | | ● | ● | | | | | |
| | 400 | | ● | ● | ● | | | | |
| | 450 | | | | ● | ● | | | |
| | 500 | | | | | ● | ● | | |

| Item | Model | Port size | | | | Nominal filtration rating(μm) | Page |
|---|---|---|---|---|---|---|---|
| | | Ø4 | Ø6 | Ø8 | Ø10 | | |
| VFU series vacuum filter | VFU 01 | ● | ● | | | 30 | P.3-1.121 |
| | VFU 02 | | ● | ● | | | |
| | VFU 03 | | | ● | ● | | |

## Vacuum regulator

| Item | Model | Port size | | Page |
|---|---|---|---|---|
| | | 1/8 | 1/4 | |
| ERV series Vacuum Regulator | 200 | ● | ● | P.3-1.124 |

| Item | Model | Port size | | | Page |
|---|---|---|---|---|---|
| | | 1/4 | 3/8 | 1/2 | |
| ERVL series Vacuum Regulator | 400 | ● | ● | ● | P.3-1.128 |

## Vacuum cylinder

| Item | Bore size | Standard stroke | | Vacuum pad size | | | | | | | Vacuum pad material | | | Sensor switch | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 15 | 2 | 3.5 | 5 | 6 | 8 | 10 | 15 | Rubber | Silicone rubber | PU | | |
| | | | | | | | | | | | N | S | U | | |
| MVS series Vacuum cylinder | Ø6 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ※ | P.3-1.132 |
| | Ø10 | ● | ● | | | | | | | | | | | | |

※:Option

| Item | Bore size | Standard stroke | | | | | | | | Sensor switch | Type of operation | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | 50 | 75 | 100 | 120 | 150 | 200 | 300 | | | |
| DYC series Vacuum cylinder | Ø25 | ● | ● | ● | ● | ● | ● | ● | ● | ※ | Single acting | P.3-1.139 |
| | Ø40 | | | | | | | | | | | |

※:Option

# ⚠ Safety Notice/ Vacuum Ejector/ Caution For Application

Please read the safety notice carefully before using and pay attention to the safety caution for this series of products.

## Caution For design , selection and maintenance

### ⚠ WARNING

- Take the volume and weight of the sucked object while designing, prevent insuifficient vacuum and poor effect and induce hazard.
- Avoid sucking extra heavy and hazardous object, make the dropping prerention measure and safety managment work.
- If multiple linked sucker is applied in designing the vacuum circuit, note for the possibility of poor suction to cause drop of vacuum and affect the suction force of other sucker and induce dropping hazard.
- Please don't use fluid other than compressed air, never suck in fluid other than clean air.
- Avoid chemical, corrosive and inflammable gas; avoid sea water, steam high temperature place in surrounding.
- Avoid oil contain gas, don't oil mist in the pipeline, oil in pipeline will cause blockage resuliting in poor effect.
- Use air filter before air supply, the filter element of the vacuum generator should be replaced regularly, avoid blockage affect the vacuum effect of the vacuum generator.
- Avoid blockage of the supply port of the vacuum generator or power failure cause insufficient supply pressure and dropping of sucked object and impair safety.
- The vacuum generator is structure generating vacuum from air supply, there is no explosion proof design, the supply and discharge should be performed simultaneously, never used in confinement and exceed pressure range in specification table.

### ⚠ CAUTION

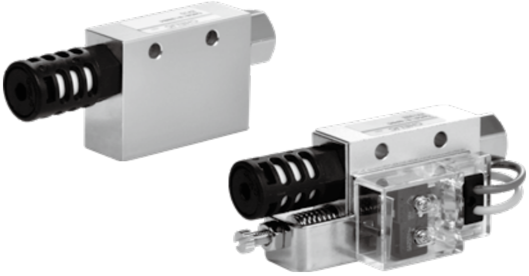
- Please don't disassemble the vacuum generator in discretion, disassemble the vacuum generator in discretion will lead to displacement of the original calibration accuracy; error disassembing will lead to hazard and cause problem on operation of the product.
- Read the warning and caution for connectors for the fixing thread and key point for tube insertion for the type of quick joint of the vacuum generator.
- The piping of the inlet port of vacuum generator should be 3 ~ 4 times of the cross section area of the nozzle, in quick joint of the vacuum generator.
- Piping at vacuum side ( from vacuum generator to sucker ), the pipeline should be as short as possible and with large pipe diameter , no excessive bend is allowed; insuifficient flow will cause prolong sucking and detaching time and affect the stability of operation.
- Generator of VM series plastic body should not be turned by tool, the portion turn able by hand should be serviced by disassembling by hand.

# EV series Vacuum Ejectors

## Product features/ Code of order

### Feature

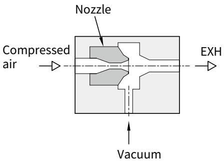
- Negative pressure easy to obtain by generating air pressure
- The filter element easy to change and replace when clog with dust.
- A viriety of choices of nozzle diameter specifications.



### Specification

| Item \ Model | 05 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|
| Fluid | Air | | | | | |
| Ambient and fluid temperature ℃ | 0 ~ 60 | | | | | |
| Lubrication | Unnecessary | | | | | |
| Operating pressure MPa(kPa) | 0.5(500) | | | | | |
| Nozzle diameter Ø(mm) | 0.5 | 0.5 | 1.5 | 2.0 | 2.5 | 3.0 |
| Max. Vacuum value kPa(mmHg) | -91.8(-690) | | | | | |

### Definition of vacuum ejectors



When compressor air through nozzle it generates high speed relasing and spreading that produce suction function.

### Mechnical vacuum signal confirmation device

| Item \ Model | S (Fixed type) | SK (Adjustable type) |
|---|---|---|
| Setting range kPa(mmHg) | -39.9(-300) | -20.0 ~ -53.2(-150 ~ -400) |
| Default setting kPa(mmHg) | -39.9(-300) | -46.6(-350) |
| Accuracy kPa(mmHg) | ± 5.3(± - 40) | |
| Hysteresis kPa(mmHg) | 4.0 ~ 13.3(30~100) | |
| Electrical rating | AC125V : 5A、 AC250V : 3A | |
| Ambient and fluid temperature ℃ | 0 ~ 60 | |

### Code of order

**EV 20 – S**
① ②

①

| Mark | Port size (mm) |
|---|---|
| 05 | 0.5 |
| 10 | 1.0 |
| 15 | 1.5 |
| 20 | 2.0 |
| 25 | 2.5 |
| 30 | 3.0 |

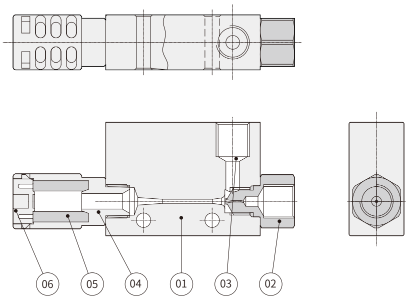
②

| Mark | Switching type |
|---|---|
| None | Without switch |
| S | With micro switch |
| SK | With micro switch and adjustable type |

EV series Selection table :

| Model | ① Port size | ② Switching type |
|---|---|---|
| EV | 05<br>•<br>10<br>•<br>15<br>•<br>20<br>•<br>25<br>•<br>30 | S<br>•<br>SK |

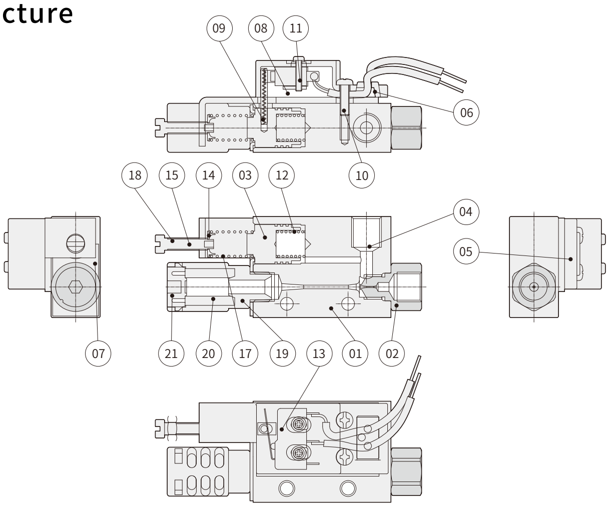
## EV - Internal structure



## EV - Components and material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 04 | Silencer body | POM |
| 02 | Nozzle | Copper | 05 | Filter | PE foam |
| 03 | Filter chip | Stainless steel | 06 | Silencer rear cover | POM |

## EVSK - Internal structure



## EVSK - Components and material list

| No. | Item | Material | No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 08 | Sensor spacer | Steel | 15 | Bracket | Steel |
| 02 | Nozzle | Copper | 09 | Lever | Steel | 16 | Adjusting screw | Carbon steel |
| 03 | Adjusting block | Copper | 10 | Screw | Carbon steel | 17 | Spring | Spring steel |
| 04 | Filter chip | Stainless steel | 11 | Screw | Carbon steel | 18 | Bolt | Carbon steel |
| 05 | Bowl guard | Polycarbonate | 12 | Adjusting spring | Spring steel | 19 | Silencer body | POM |
| 06 | Cable holder | Rubber | 13 | Sensor with wires | - | 20 | Filter | PE foam |
| 07 | Blank | Steel | 14 | Spring block | Copper | 21 | Silencer rear cover | POM |

# EV series Vacuum Ejectors

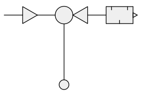
## Product features

### Product weight

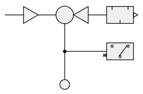
| EV | | | | | | |
|---|---|---|---|---|---|---|
| Model | 5 | 10 | 15 | 20 | 25 | 30 |
| Weight(g) | 80 | 73 | 140 | 337 | 732 | 850 |

### Vacuum ejector symbol

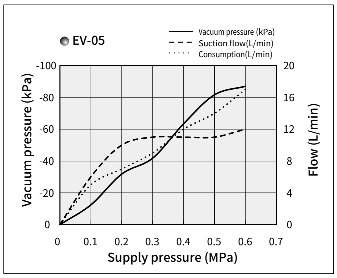
Standard type

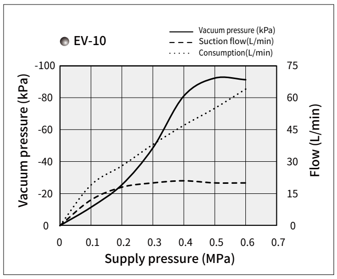


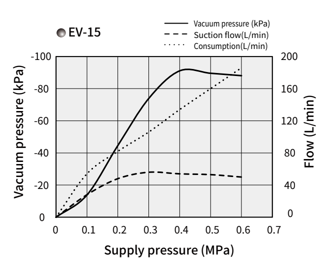
With switch type

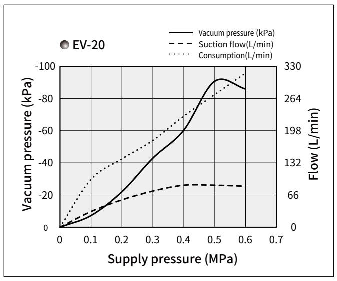


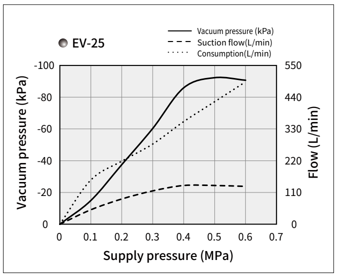
### Characteristics

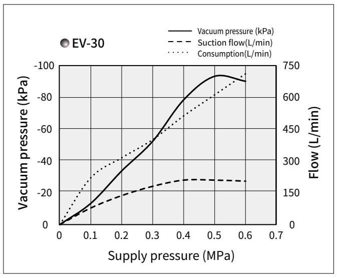












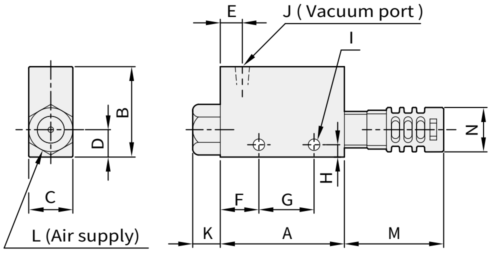
### Vacuum ejectors performance table

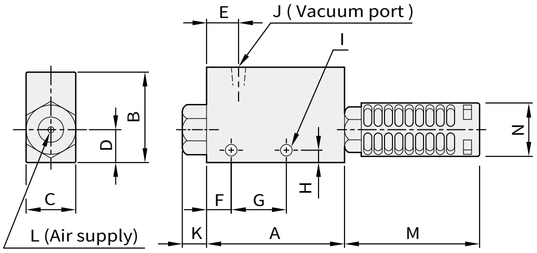
| Item<br>Model | Nozzle diameter<br>mm | Suction capacity<br>L/min | Vacuum pressure<br>kPa(mmHg) | Air consumption<br>L/min | Operating pressure<br>MPa(kPa) |
|---|---|---|---|---|---|
| EV-05 | 0.5 | 11 | -86.7 (650) | 14 | 0.5 (500) |
| EV-10 | 1.0 | 20 | -91.8 (690) | 55 | 0.5 (500) |
| EV-15 | 1.5 | 53 | -91.8 (690) | 160 | 0.5 (500) |
| EV-20 | 2.0 | 86 | -91.8 (690) | 272 | 0.5 (500) |
| EV-25 | 2.5 | 134 | -91.8 (690) | 424 | 0.5 (500) |
| EV-30 | 3.0 | 209 | -91.8 (690) | 611 | 0.5 (500) |

# EV series Vacuum Ejectors

## Dimensions

## External dimensions


E
J ( Vacuum port )
I
B
D
N
H
C
F
G
L (Air supply)
K
A
M


E
J ( Vacuum port )
I
B
D
N
H
C
F
G
L (Air supply)
K
A
M

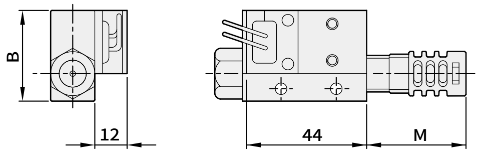
Unit: mm

| Model | A | B | C | D | E | F | G | H | I | J | K | L | M | N | Silencer (Port size) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EV-05 | 45 | 33 | 16 | 10 | 8 | 14 | 20 | 4.5 | 2 - Ø4.2 | PT 1/8 | 10 | PT 1/8 | 27 | Ø16 | PT 1/8 |
| EV-10 | 45 | 33 | 16 | 10 | 8 | 14 | 20 | 4.5 | 2 - Ø4.2 | PT 1/8 | 10 | PT 1/8 | 27 | Ø16 | PT 1/8 |
| EV-15 | 63 | 35 | 20 | 11 | 10 | 20 | 25 | 5 | 2 - Ø4.5 | PT 1/4 | 15 | PT 1/4 | 52.8 | Ø20 | PT 1/4 |
| EV-20 | 85 | 40 | 30 | 15 | 13 | 28 | 32 | 7 | 2 - Ø6 | PT 3/8 | 20 | PT 1/4 | 60.5 | Ø30 | PT 1/2 |
| EV-25 | 100 | 60 | 40 | 20 | 16 | 20 | 50 | 5.5 | 2 - Ø6 | PT 1/2 | 17 | PT 3/8 | 84.3 | Ø40 | PT 3/4 |
| EV-30 | 118 | 60 | 40 | 20 | 20 | 33 | 50 | 5.5 | 2 - Ø6 | PT 3/4 | 20 | PT 1/2 | 84.3 | Ø40 | PT 3/4 |

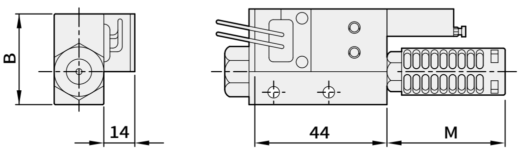
---

## Selection of vacuum signal

- With micro-switch: S



- With switch and adjustable type: SK



Unit: mm

| Item \ Model | EV-05 | EV-10 | EV-15 | EV-20 | EV-25 | EV-30 |
|---|---|---|---|---|---|---|
| M | 27 | 27 | 45.5 | 60.5 | 84.3 | 84.3 |
| B | 33 | 33 | 35 | 50 | 60 | 60 |

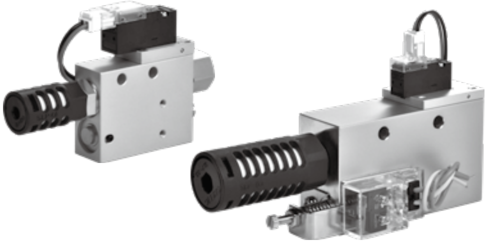
# EVM series Control Valve Type Vacuum Ejector

## Product features/ Code of order

EV
EVM
VA□
VM□
VM□U
VHS
VSL
VKM
VKMT
VCK
VK20□
VK30□
VQ20□
VFD
VFM
VFU
ERV
ERVL
MVS
DYC

### Feature

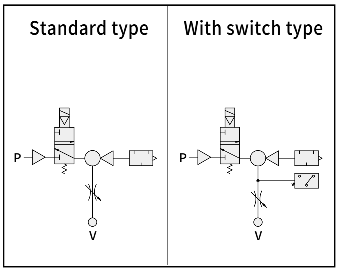
- Negative pressure easy to obtain by generating air pressure.
- The filter element easy to change and replace.
- A viriety of choices of nozzle diameter specifications.
- With micro switch(K) and micro switch adjustable type(SK) options



### Specification

| Item / Model | | 1005 | 1007 | 1010 | 1012 | 1515 | 2020 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Ambient and fluid temperature | ℃ | 0 ~ 60 | | | | | |
| Max. Vacuum value | MPa(kPa) | 0.1~0.6(100~600) | | | | | |
| Operating pressure | MPa(kPa) | 0.5(500) | | | | | |
| Nozzle diameter | mm | 0.5 | 0.7 | 1.0 | 1.2 | 1.5 | 2.0 |
| Max. Vacuum value | kPa(mmHg) | -91.8( -690) | | | | | |
| Valve type | | SR-100 | | | | | |
| Rated voltage | V | 24±10%VDC | | | | | |
| Power consumption | W | 1.2 | | | | | |

### Vacuum control vavle symbol



### Mechnical vacuum signal confirmation device

| Item / Model | | S (Fixed type) | SK (Adjustable type) |
|---|---|---|---|
| Setting range | kPa(mmHg) | -39.9(-300) | -20.0 ~ -53.2(-150 ~ -400) |
| Setting value before operational | kPa(mmHg) | -39.9(-300) | -46.6(-350) |
| Accuracy | kPa(mmHg) | ± 5.3(± - 40) | |
| Hysteresis | kPa(mmHg) | 4.0 ~ 13.3(30~100) | |
| Electrical rating | | AC125V : 5A、 AC250V : 3A | |
| Ambient and fluid temperature | ℃ | 0 ~ 60 | |

### Code of order

**EVM 10 10 – T – S**

① ② ③ ④

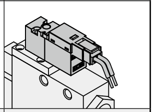
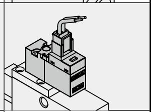
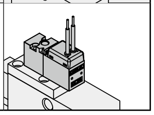
①

| Mark | Model |
|---|---|
| 10 | 10 series |
| 15 | 15 series |
| 20 | 20 series |

②

| Mark | Port size(mm) | Model |
|---|---|---|
| 05 | 05 | 10 |
| 07 | 0.7 | |
| 10 | 1.0 | |
| 12 | 1.2 | |
| 15 | 1.5 | 15 |
| 20 | 2.0 | 20 |

③

| Mark | Electrical entry |
|---|---|
| L |  |
| T |  |
| W |  |

● With wire length 300mm

④

| Mark | Switching type |
|---|---|
| None | Without switch |
| S | With micro switch |
| SK | With micro switch and adjustable type |

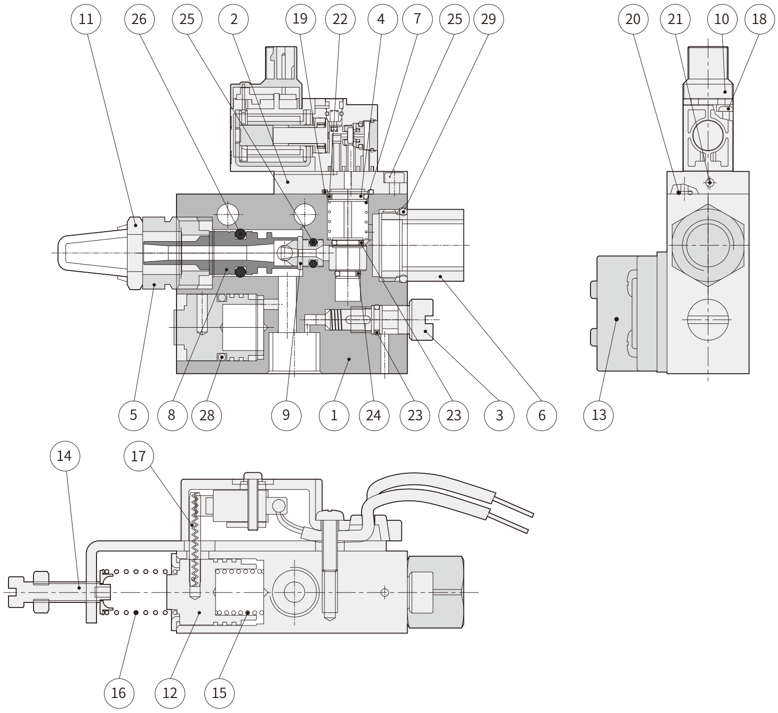
● EVM series Selection table :

| Item | ① Model | ② Port size | ③ Electrical entry | ④ Switching type |
|---|---|---|---|---|
| EVM | 10 | 05 | L<br>•<br>T<br>•<br>W | S<br>•<br>SK |
| | | 07 | | |
| | | 10 | | |
| | | 12 | | |
| | 15 | 15 | | |
| | 20 | 20 | | |

# EVM series Control Valve Type Vacuum Ejector

## Product features

### Internal structure



### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 16 | Spring | Stainless steel |
| 02 | Spacer | Aluminum alloy | 17 | Spring pin | Steel spring |
| 03 | Ajusting lever | Stainless steel | 18 | Round head bolt M3x0.5Px10L | Stainless steel |
| 04 | Shaft | Aluminum alloy | 19 | Spacer A hole O-ring | NBR |
| 05 | Exhaust port nut | Carbon steel | 20 | Spacer P hole O-ring | NBR |
| 06 | Nut | Carbon steel | 21 | Stainless steel bead | Stainless steel |
| 07 | Spool spring | Stainless steel | 22 | Upper spool O-ring | NBR |
| 08 | Sleeve | Aluminum alloy | 23 | Middle spool O-ring | NBR |
| 09 | Nozzle | Aluminum alloy | 24 | Lower spool O-ring | NBR |
| 10 | Solenoid vavle | - | 25 | Hexagon screw | Stainless steel |
| 11 | Muffler | Aluminum alloy | 26 | O-ring | NBR |
| 12 | Adjusting block | - | 27 | O-ring | NBR |
| 13 | Sensor combination | - | 28 | O-ring | NBR |
| 14 | Bracket combination | - | 29 | O-ring | NBR |
| 15 | Adjusting block spring | Stainless steel | | | |

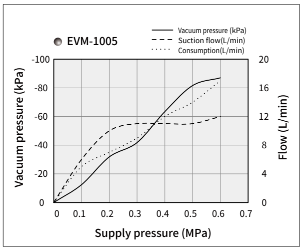
# EVM series Control Valve Type Vacuum Ejector

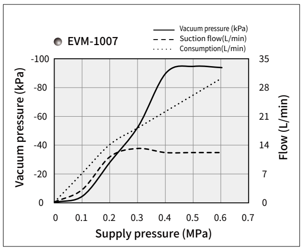
## Characteristics graph

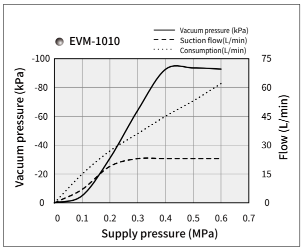
## Product weight

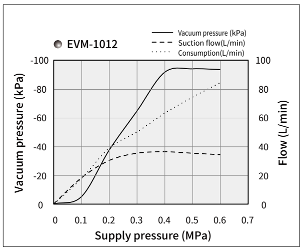
| EVM | | | |
|---|---|---|---|
| Model | 10 | 15 | 20 |
| Weight(g) | 110 | 140 | 380 |

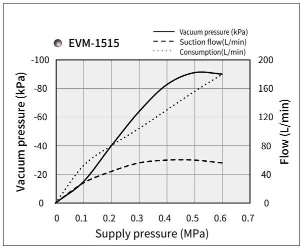
## Characteristics

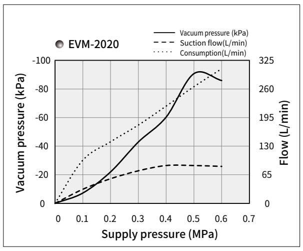












## Vacuum ejectors performance table

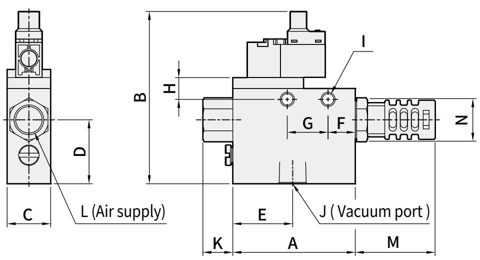
| Item / Model | Nozzle diameter mm | Suction capacity L/min | Vacuum pressure kPa(mmHg) | Air consumption L/min | Operating pressure MPa(kPa) |
|---|---|---|---|---|---|
| EVM-1005 | 0.5 | 11 | -91.8 (690) | 14 | 0.5 (500) |
| EVM-1007 | 0.7 | 12 | -91.8 (690) | 26 | 0.5 (500) |
| EVM-1010 | 1.0 | 23 | -91.8 (690) | 53 | 0.5 (500) |
| EVM-1012 | 1.2 | 35 | -91.8 (690) | 74 | 0.5 (500) |
| EVM-1515 | 1.5 | 60 | -91.8 (690) | 156 | 0.5 (500) |
| EVM-2020 | 2.0 | 86 | -91.8 (690) | 265 | 0.5 (500) |

# EVM series Control Valve Type Vacuum Ejector

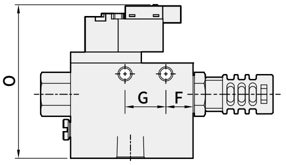
## Dimensions

## External dimensions

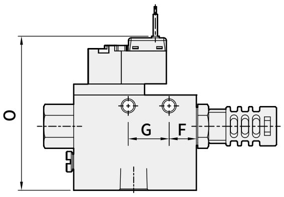
● T type - T



● L type - L



● W type grommet - W

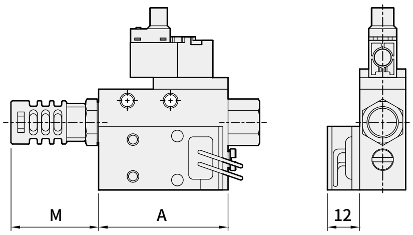


Unit: mm

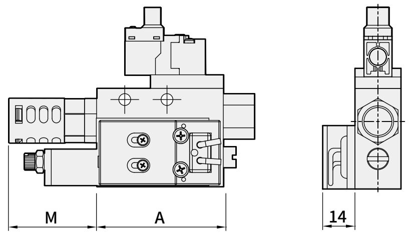
| Model | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | Silencer (Port size) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EVM-05 | 45 | 63.9 | 16 | 25 | 22 | 10 | 15 | 4 | Ø 4.2 | R 1/8 | 11 | R 1/8 | 31.5 | Ø16 | 56.8 | R 1/8 |
| EVM-07 | 45 | 63.9 | 16 | 25 | 22 | 10 | 15 | 4 | Ø 4.2 | R 1/8 | 11 | R 1/8 | 31.5 | Ø16 | 56.8 | R 1/8 |
| EVM-10 | 45 | 63.9 | 16 | 25 | 22 | 10 | 15 | 4 | Ø 4.2 | R 1/8 | 11 | R 1/8 | 31.5 | Ø16 | 56.8 | R 1/8 |
| EVM-12 | 45 | 63.9 | 16 | 25 | 22 | 10 | 15 | 4 | Ø 4.2 | R 1/8 | 11 | R 1/8 | 31.5 | Ø16 | 56.8 | R 1/8 |
| EVM-15 | 66 | 63.9 | 20 | 25 | 28 | 18 | 25 | 4 | Ø 4.5 | R 1/4 | — | R 1/4 | 31.5 | Ø18 | 56.8 | R 1/4 |
| EVM-20 | 85 | 78.5 | 30 | 36.5 | 33.5 | 25 | 32 | 7 | Ø 6 | R 3/8 | — | R 3/8 | 60.5 | Ø20 | 71.4 | R 3/8 |

## Selection of vacuum signal

● With micro-switch: S



● With switch and adjustable type: SK



Unit: mm

| Item \ Model | EVM-05 | EVM-07 | EVM-10 | EVM-12 | EVM-15 | EVM-20 |
|---|---|---|---|---|---|---|
| A | 45 | 45 | 45 | 45 | 66 | 85 |
| M | 31.3 | 31.3 | 31.3 | 31.3 | 31 | 59 |

# VAB/ VAS/ VABS series Vacuum Ejector

## Product features/ Code of order

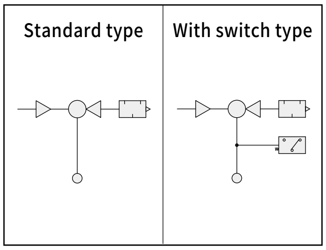
### Feature

- ● Light and compact, easy to install.
- ● Fitting design, easy to piping.
- ● Sensing switch: manual type pressure switch option

### Specification

| Item<br>Model | 0704 | 0706 | 1204 | 1206 | 1508 | 1510 |
|---|---|---|---|---|---|---|
| Fluid | Air | | | | | |
| Ambient and fluid temperature ℃ | 0~60 | | | | | |
| Lubrication | Unnecessary | | | | | |
| Pressure range MPa(kPa) | 0.1~0.6(100~600) | | | | | |
| Nozzle diameter Ø(mm) | 0.7 | 0.7 | 1.2 | 1.2 | 1.5 | 1.5 |
| Max. Vacuum value | -91.8 | | | | | |
| Port size Ø(mm) | 4 | 6 | 4 | 6 | 8 | 10 |

### Vacuum ejector symbol



### Mechnical vacuum signal confirmation device

| Item<br>Model | VAS-04 | VAS-06 | VAS-08 | VAS-10 |
|---|---|---|---|---|
| Setting range kPa(mmHg) | -39.9(-300) | -20.0~-53.2(-150~-400) | | |
| Default setting kPa(mmHg) | -39.9(-300) | -46.6(-350) | | |
| Accuracy kPa(mmHg) | ±5.3(±40) | | | |
| Hysteresis kPa(mmHg) | 4.0~13.3(30~100) | | | |
| Electrical rating | AC125V：5A、AC250V：3A | | | |
| Ambient and fluid temperature ℃ | 0~60 | | | |
| Port size Ø(mm) | 4 | 6 | 8 | 10 |

### Vacuum ejectors performance table

| Item<br>Model | Nozzle diameter (mm) | Port size (mm) | Suction flow (L/min) | Vacuum pressure kPa(mmHg) | Air consumption (L/min) | Supply air pressure MPa(kPa) |
|---|---|---|---|---|---|---|
| VAB-0704 | Ø0.7 | Ø4 | 9 | -86.7(650) | 22 | 0.5(500) |
| VAB-0706 | Ø0.7 | Ø6 | 9 | -91.8(690) | 22 | 0.5(500) |
| VAB-1204 | Ø1.2 | Ø4 | 32 | -91.8(690) | 64 | 0.5(500) |
| VAB-1206 | Ø1.2 | Ø6 | 32 | -91.8(690) | 64 | 0.5(500) |
| VAB-1508 | Ø1.5 | Ø8 | 64 | -91.8(690) | 192 | 0.5(500) |
| VAB-1510 | Ø1.5 | Ø10 | 64 | -91.8(690) | 192 | 0.5(500) |

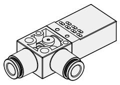
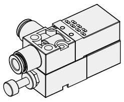
# VAB/ VAS/ VABS series Vacuum Ejector

## Code of order/ Characteristics

### Code of order **VABS 07 06**

① ② ③

①

| Mark | With switch | Image |
|---|---|---|
| VAB | Without switch |  |
| VABS | With vacuum pressure switch |  |

②

| Mark | Nozzie diameter |
|---|---|
| 07 | 0.7 |
| 12 | 1.2 |
| 15 | 1.5 |

③

| Mark | Port size (mm) |
|---|---|
| 04 | Ø4 |
| 06 | Ø6 |
| 08 | Ø8 |
| 10 | Ø10 |

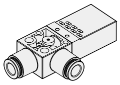
● VAB series Selection table:

| Model | ① With switch | ② Nozzie diameter | ③ Port size |
|---|---|---|---|
| VAB | S | 07 | 04 |
| | | | 06 |
| | | 12 | 04 |
| | | | 06 |
| | | 15 | 08 |
| | | | 10 |

### Code of order **VAS 04**

①

①

| Mark | Port size (mm) | Image |
|---|---|---|
| 04 | Ø4 |  |
| 06 | Ø6 | |
| 08 | Ø8 | |
| 10 | Ø10 | |

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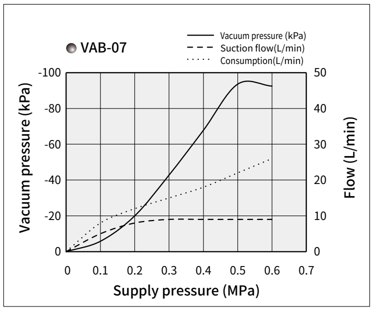
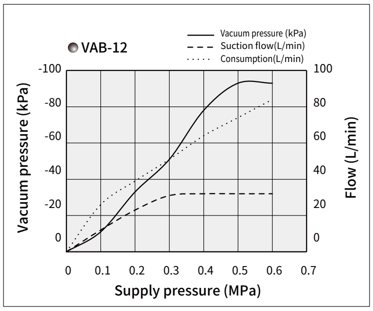
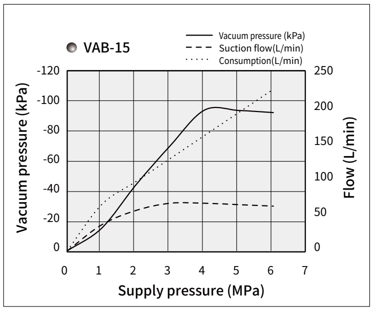
### Characteristics





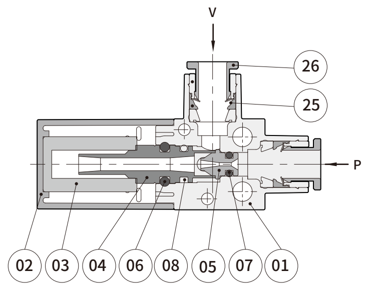


# VAB/ VAS/ VABS series Vacuum Ejector

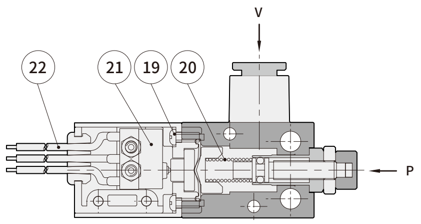
## Product features

## Internal structure

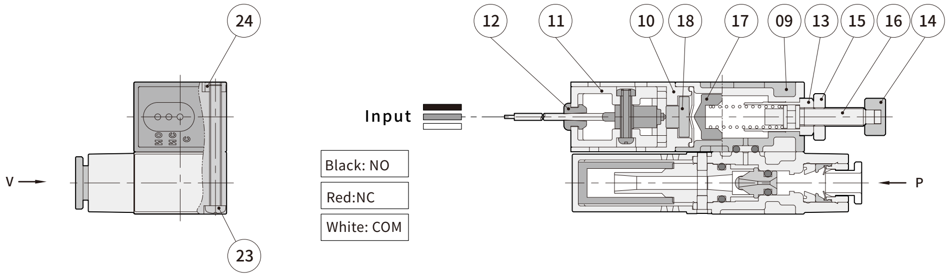
VAB



VAS



VABS



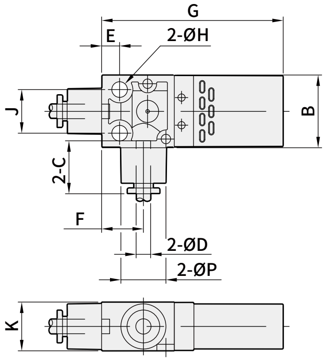
## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Ejector body | Nylon fiber | 14 | Adjusting bolt | Copper Alloy |
| 02 | Filter cap | Nylon fiber | 15 | Screw | Copper Alloy |
| 03 | Filter | EA30 | 16 | Adjusting rod | Copper Alloy |
| 04 | Exhaust pipe | Copper Alloy | 17 | Spring block | Copper Alloy |
| 05 | Nozzle | Copper Alloy | 18 | Sensor block | Copper Alloy |
| 06 | Pin | Copper Alloy | 19 | Sensor device screw | Copper Alloy |
| 07 | Nozzle O-ring | NBR | 20 | Spring | Spring steel |
| 08 | Exhaust pipe O-ring | NBR | 21 | Sensor | - |
| 09 | Mechanical switching body | Nylon fiber | 22 | Sensor device cable | Brass, Plastic |
| 10 | Switching lower body | Nylon fiber | 23 | Vacuum body screw | Alloy steel |
| 11 | Sensor holder | Nylon fiber | 24 | Vacuum body nut | Alloy steel |
| 12 | Wire holder | NBR | 25 | The 3-fitting part | Copper Alloy |
| 13 | Lever sleeve | Copper Alloy | 26 | Release ring | POM |

# VAB/ VAS/ VABS series Vacuum Ejector

## External dimensions

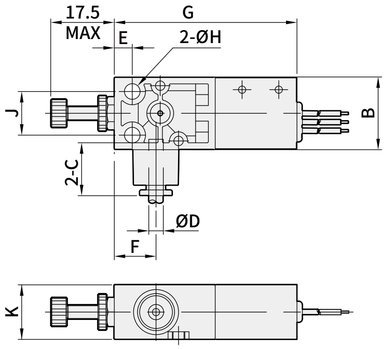
### VAB Vacuum ejector



Unit: mm

| Model \ Item | Port size ØD | ØP | B | C | E | F | G | H | J | K | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VAB-074 | Ø4 | 12.4 | 20 | 14.5 | 5 | 11.5 | 50 | 4.3 | 12 | 13.4 | 18 |
| VAB-076 | Ø6 | | | 16 | | | | | | | |
| VAB-124 | Ø4 | | | 14.5 | | | | | | | |
| VAB-126 | Ø6 | | | 16 | | | | | | | |
| VAB-158 | Ø8 | 17.8 | 28 | 18.5 | 7 | 16 | 70 | 5.2 | 18 | 18.8 | 25 |
| VAB-1510 | Ø10 | | | 20 | | | | | | | |

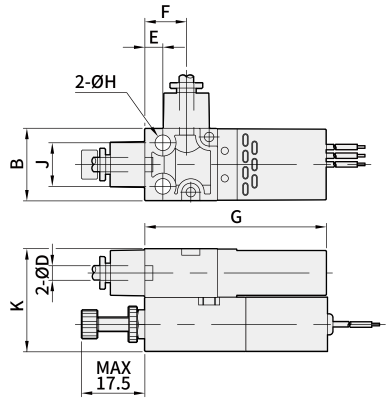
### VAS Vacuum ejector



Unit: mm

| Model \ Item | Port size ØD | B | C | E | F | G | H | J | K | Weight(g) |
|---|---|---|---|---|---|---|---|---|---|---|
| VAS-04 | Ø4 | 20 | 14.5 | 5 | 11.5 | 50 | 4.3 | 12 | 13.4 | 29 |
| VAS-06 | Ø6 | | 16 | | | | | | | |
| VAS-08 | Ø8 | 28 | 18.5 | 7 | 16 | 70 | 5.2 | 18 | 18.8 | 35 |
| VAS-10 | Ø10 | | 20 | | | | | | | |

### VABS Vacuum ejector with pressure switch



Unit: mm

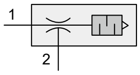
| Model \ Item | Port size ØD | B | E | F | G | H | J | K | Weight(g) |
|---|---|---|---|---|---|---|---|---|---|
| VABS-074 | Ø4 | 20 | 5 | 11.5 | 50 | 4.3 | 12 | 26.8 | 47 |
| VABS-076 | Ø6 | | | | | | | | |
| VABS-124 | Ø4 | | | | | | | | |
| VABS-126 | Ø6 | | | | | | | | |
| VABS-158 | Ø8 | 28 | 7 | 16 | 70 | 5.2 | 18 | 37.6 | 60 |
| VABS-1510 | Ø10 | | | | | | | | |

# VM series Vacuum Ejector

## Product features

### Feature

- Light and compact, easy to install.
- It's easy to replace it when the filter element is blocked and affects the flow.
- VML and VMT series are easy piping by the quick coupling.
- VML, VMT, VMK series can easily use bracket to fix it.



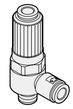
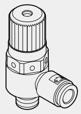
### Specification

| Item | Model | VMB | VMD | VML | VMK | VMT |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Pressure range | MPa (kPa) | 0.1~0.6 (0~600) | | | | |
| Operating pressure | MPa (kPa) | 0.5 (500) | | | | |
| Vacuum pressure | kPa(mmHg) | -91.8 (-690) | | | | |
| Nozzle diameter | mm | 0.5, 0.7, 1.0, 1.5 | | | | |
| Ambient and fluid temperature | ℃ | 5~60 | | | | |
| Material | Body | Copper (Nickel plating) | | | | |
| | Plastic | NYLON, PBT, PP | | | | |
| Port size | Rc (PT) | M5x0.8P, 1/8 | | | | |
| Thread | | With thread glue | | | | |

## Code of order **VMB 10 6 01**

① ② ③ ④

①

| Mark | Type | Exhaust | Image |
|---|---|---|---|
| VMB | B type | Center exhaust |  |
| VMD | D type | Direct exhaust |  |

②

| Mark | Nozzle size (mm) |
|---|---|
| 05 | 0.5 |
| 07 | 0.7 |
| 10 | 1.0 |
| 15 | 1.5 |

③

| Mark | Port size (mm) |
|---|---|
| 6 | Ø6 |
| 8 | Ø8 |
| 10 | Ø10 |

④

| Mark | Thread size (mm) |
|---|---|
| 01 | 1/8 |
| 02 | 1/4 |

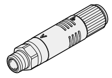
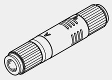
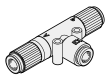
● VMB/ D series Selection table:

| Item | ① Model | ② Nozzle size | ③ Port size | ④ Thread size |
|---|---|---|---|---|
| VM | B<br>•<br>D | 05 | 6 | 01 |
| | | 07 | 6 | |
| | | | 8 | |
| | | 10 | 6 | |
| | | | 8 | |
| | | 15 | 8 | 02 |
| | | | 10 | |

## Code of order **VMK 10 6 01 – C**

① ② ③ ④ ⑤

①

| Mark | Type | Exhaust | Image |
|---|---|---|---|
| VMK | Direct-mounting | Direct exhaust |  |
| VML | Direct-piping | Direct exhaust |  |
| VMT | Union T | Center exhaust |  |

②

| Mark | Nozzle size (mm) |
|---|---|
| 05 | 0.5 |
| 10 | 1.0 |
| 15 | 1.5 |
| 20 | 2.0 |

③

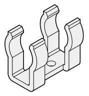
| Mark | Port size (mm) |
|---|---|
| 4 | Ø4 |
| 6 | Ø6 |
| 8 | Ø8 |
| 10 | Ø10 |
| 12 | Ø12 |

④

| Mark | Thread size (mm) |
|---|---|
| M5 | M5 |
| 01 | 1/8 |
| 02 | 1/4 |
| 03 | 3/8 |
| 04 | 1/2 |

● VMK limited specification options

⑤

| Mark | Bracket |
|---|---|
| None | No bracket |
| C |  |

● VMK/ L / T series Selection table:

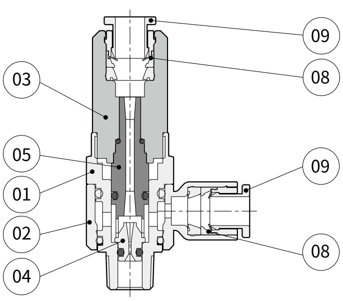
| Item | ① Model | ② Nozzle size | ③ Port size | ④ Thread size | ⑤ Bracket |
|---|---|---|---|---|---|
| VM | K | 05 | 4 | M5 | C |
| | | | 6 | 01 | |
| | | 10 | 6 | 01 | |
| | | | 8 | | |
| | | 15 | 8 | 02 | |
| | | | 10 | 03 | |
| | | 20 | 10 | | |
| | | | 12 | 04 | |
| | L<br>•<br>T | 05 | 4 | — | |
| | | | 6 | | |
| | | 10 | 6 | | |
| | | | 8 | | |
| | | 15 | 8 | | |
| | | | 10 | | |
| | | 20 | 10 | | |
| | | | 12 | | |

# VM series Vacuum Ejector

## Product features

### Internal structure

VMB


09
08
03
05
01
09
02
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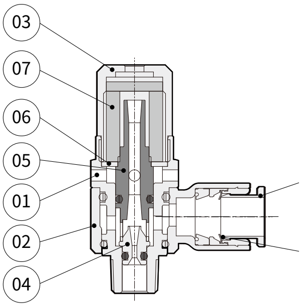
04

VMD

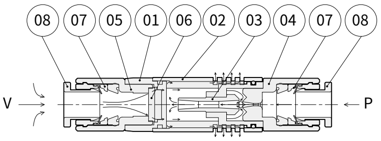

03
07
06
05
01
02
04

### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Metal body | Copper alloy | 06 | Plain washer | Copper alloy |
| 02 | Plastic body | Nylon fiber | 07 | Filter | EA30 |
| 03 | Filter cap | Copper alloy | 08 | The 3-fitting part | - |
| 04 | Nozzle | Copper alloy | 09 | Release ring | POM |
| 05 | Exhaust metal sleeve | Copper alloy | | | |

### Internal structure

VML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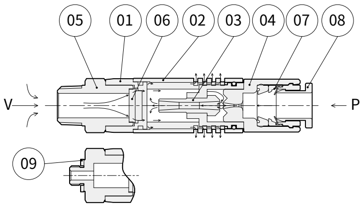
VMK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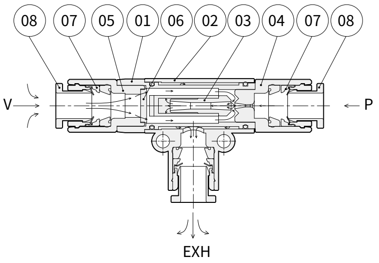
P
09

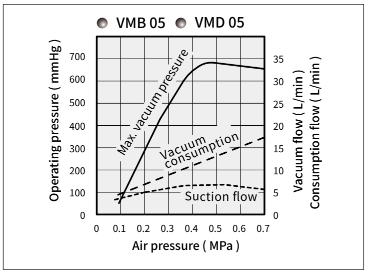
VMT

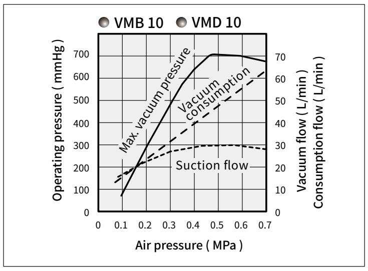

08
07
05
01
06
02
03
04
07
08
V
P
EXH

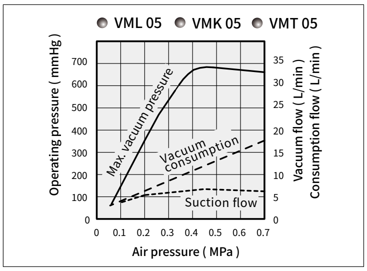
### Components and Material list

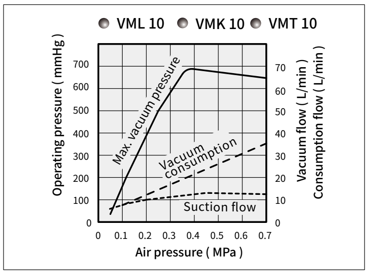
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Plastic body | POM | 06 | Element | EA30 |
| 02 | Outer shell | Nylon fiber | 07 | The 3-fitting part | - |
| 03 | Sleeve | Copper alloy | 08 | Release ring | POM |
| 04 | P port fitting | Copper alloy | 09 | Seal | paper |
| 05 | V port fitting | Copper alloy | | | |

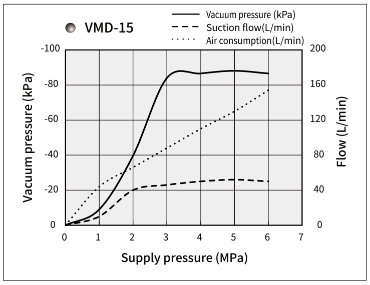
## Characteristics

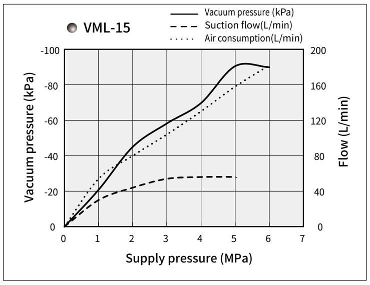


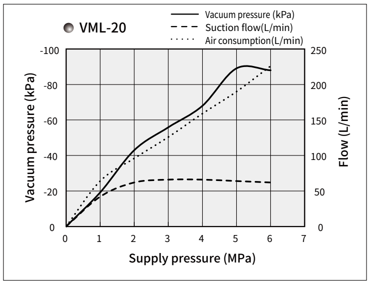








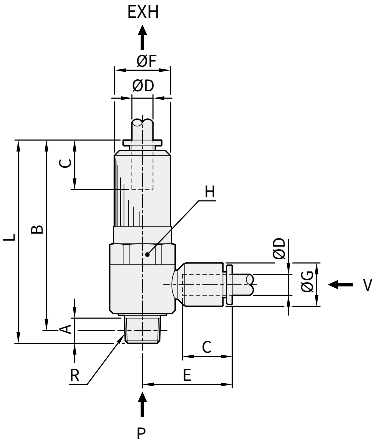




# VM series Vacuum Ejector

## Dimensions

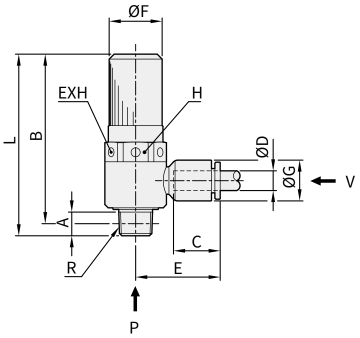
### VMB series



Unit: mm

| Model | Port size ØD | Thread size R | A | B | C | E | ØF | ØG | Opposite dim. H | L | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VMB-05-601 | Ø 6 | 1/8 | 7.2 | 54.6 | 16.7 | 25.5 | 16 | 12.4 | 17 | 58.2 | 0.5 | 11.5 | 45 |
| VMB-07-601 | Ø 6 | | 7.2 | 54.6 | 16.7 | 25.5 | 16 | 12.4 | 17 | 58.7 | 0.7 | 23 | 45 |
| VMB-07-801 | Ø 8 | | 7.2 | 56.2 | 18.8 | 27.6 | 16 | 14.3 | 17 | 59.8 | 0.7 | 23 | 50 |
| VMB-10-601 | Ø 6 | | 7.2 | 54.6 | 16.7 | 25.5 | 16 | 12.4 | 17 | 58.2 | 1.0 | 45 | 45 |
| VMB-10-801 | Ø 8 | | 7.2 | 56.2 | 18.8 | 27.6 | 16 | 14.3 | 17 | 59.8 | 1.0 | 45 | 50 |
| VMB-15-802 | Ø 8 | 1/4 | 8 | 69 | 18.8 | 27.6 | 19 | 14.3 | 21 | 73 | 1.5 | 52 | 53 |
| VMB-15-102 | Ø 10 | | 8 | 69 | 21 | 29.6 | 19 | 17.9 | 21 | 73 | 1.5 | 52 | 53 |

### VMD series



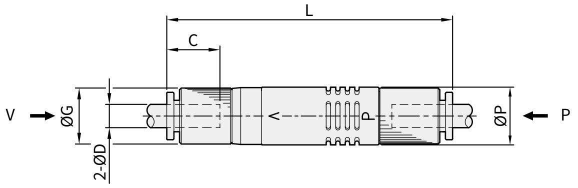
Unit: mm

| Model | Port size ØD | Thread size R | A | B | C | E | ØF | ØG | Opposite dim. H | L | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VMD-05-601 | Ø 6 | 1/8 | 7.2 | 45 | 16.7 | 25.5 | 16 | 12.4 | 17 | 48.6 | 0.5 | 11.5 | 45 |
| VMD-07-601 | Ø 6 | | 7.2 | 45 | 16.7 | 25.5 | 16 | 12.4 | 17 | 48.6 | 0.7 | 23 | 45 |
| VMD-07-801 | Ø 8 | | 7.2 | 45 | 18.8 | 27.6 | 16 | 14.3 | 17 | 48.6 | 0.7 | 23 | 50 |
| VMD-10-601 | Ø 6 | | 7.2 | 45 | 16.7 | 25.5 | 16 | 12.4 | 17 | 48.6 | 1.0 | 45 | 45 |
| VMD-10-801 | Ø 8 | | 7.2 | 45 | 18.8 | 27.6 | 16 | 14.3 | 17 | 48.6 | 1.0 | 45 | 50 |
| VMD-15-802 | Ø 8 | 1/4 | 8 | 54 | 18.8 | 27.6 | 19 | 14.3 | 21 | 58 | 1.5 | 52 | 53 |
| VMD-15-102 | Ø 10 | | 8 | 54 | 21 | 29.6 | 19 | 17.9 | 21 | 58 | 1.5 | 52 | 53 |

# VM series Vacuum Ejector

## Dimensions

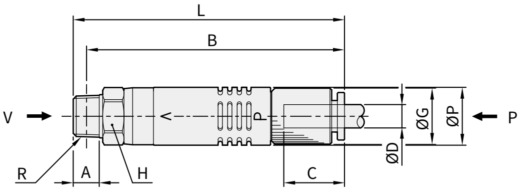
## VML series



Unit: mm

| Model | Port size ØD | C | ØG | L | ØP | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| VML-05-04 | Ø 4 | 14.1 | 13 | 60 | 14.3 | 0.5 | 15 | 25 |
| VML-05-06 | Ø 6 | 17.1 | 13 | 65.9 | 14.3 | 0.5 | 15 | 25 |
| VML-10-06 | Ø 6 | 17.1 | 15 | 75.6 | 15.8 | 1.0 | 23 | 30 |
| VML-10-08 | Ø 8 | 18.7 | 15 | 78.5 | 15.8 | 1.0 | 23 | 30 |
| VML-15-08 | Ø 8 | 19.7 | 18 | 79.6 | 18.8 | 1.5 | 56 | 45 |
| VML-15-10 | Ø 10 | 19.7 | 18 | 79.6 | 18.8 | 1.5 | 56 | 45 |
| VML-20-10 | Ø 10 | 21 | 21 | 90.2 | 21.8 | 2.0 | 64 | 53 |
| VML-20-12 | Ø 12 | 21 | 21 | 90.2 | 21.8 | 2.0 | 64 | 53 |

## VMK series



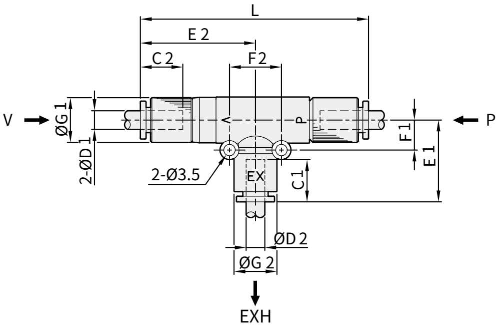
Unit: mm

| Model | Port size ØD | Thread size R | A | B | C | ØG | Opposite dim. H | L | ØP | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VMK-05-4M5 | Ø 4 | M5x0.8p | 3.1 | 55 | 14.1 | 13 | 12 | 56.4 | 14.3 | 0.5 | 15 | 20 |
| VMK-05-601 | Ø 6 | PT 1/8 | 6 | 59.6 | 17.1 | 13 | 12 | 62.6 | 14.3 | 0.5 | 15 | 25 |
| VMK-10-601 | Ø 6 | PT 1/8 | 6 | 70.4 | 17.1 | 15 | 14 | 73.4 | 15.8 | 1.0 | 23 | 30 |
| VMK-10-801 | Ø 8 |  | 6 | 72 | 18.7 | 15 | 14 | 75 | 15.8 | 1.0 | 23 | 30 |
| VMK-15-802 | Ø 8 | PT 1/4 | 8 | 69.9 | 18.7 | 18 | 17 | 74.3 | 18.8 | 1.5 | 56 | 45 |
| VMK-15-103 | Ø 10 | PT 3/8 | 8 | 69.9 | 19.7 | 18 | 17 | 74.3 | 18.8 | 1.5 | 56 | 45 |
| VMK-20-103 | Ø 10 | PT 3/8 | 10 | 83.5 | 19.7 | 21 | 21 | 89 | 21.8 | 2.0 | 64 | 53 |
| VMK-20-124 | Ø 12 | PT 1/2 | 10 | 83.5 | 21 | 21 | 21 | 89 | 21.8 | 2.0 | 64 | 53 |

# VM series Vacuum Ejector

## Dimensions

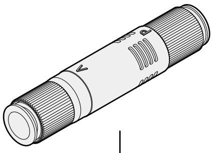
### VMT series



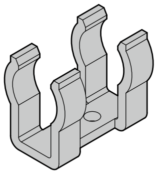
Unit: mm

| Model | Port size ØD1 | Port size ØD2 | C1 | C2 | E1 | E2 | F1 | F2 | ØG1 | ØG2 | L | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VMT-05-04 | Ø4 | Ø6 | 14.1 | 17.1 | 23.8 | 29.1 | 8.7 | 15 | 13 | 12.4 | 60 | 0.5 | 15 | 40 |
| VMT-05-06 | Ø6 | | 17.1 | | 23.8 | 32.1 | 8.7 | 15 | 13 | 12.4 | 65.9 | 0.5 | 15 | 40 |
| VMT-10-06 | Ø6 | Ø8 | 17.1 | 18.7 | 27.3 | 40.3 | 9.7 | 15 | 15 | 14.3 | 75.6 | 1.0 | 23 | 45 |
| VMT-10-08 | Ø8 | | 18.7 | | 27.3 | 41.9 | 9.7 | 15 | 15 | 14.3 | 78.5 | 1.0 | 23 | 35 |
| VMT-15-08 | Ø8 | Ø10 | 18.7 | 20.9 | 42 | 39.8 | 11.2 | 21.3 | 18 | 17.8 | 79.6 | 1.5 | 56 | 58 |
| VMT-15-10 | Ø10 | | 18.7 | | 42 | 39.8 | 11.2 | 21.3 | 18 | 17.8 | 79.6 | 1.5 | 56 | 54 |
| VMT-20-10 | Ø10 | Ø12 | 18.7 | 23.8 | 50 | 45.1 | 12.7 | 24.6 | 21 | 21.1 | 90.2 | 2.0 | 64 | 69 |
| VMT-20-12 | Ø12 | | 18.7 | | 50 | 45.1 | 12.7 | 24.6 | 21 | 21.1 | 90.2 | 2.0 | 64 | 64 |

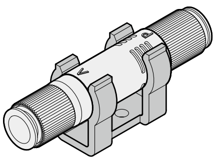
### Installation methods



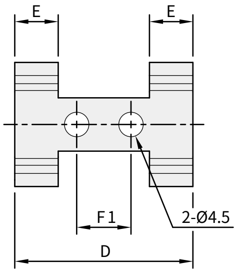
Vacuum ejector

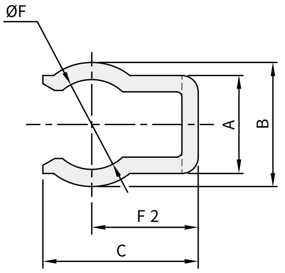


Bracket



Image





Unit: mm

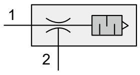
| Vacuum ejector | Bracket | A | B | C | D | E | ØF | F1 | F2 |
|---|---|---|---|---|---|---|---|---|---|
| VM □-05 | VM-C01 | 15 | 18.5 | 28.6 | 32.8 | 5.7 | 12.5 | 10 | 19.6 |
| VM □-10 | VM-C01 | | | | | | | | |
| VM □-15 | VM-C02 | 18 | 21 | 28.6 | 32.8 | 8 | 16.5 | 10 | 19.6 |
| VM □-20 | VM-C03 | 19.6 | 23.9 | 34.8 | 39.4 | 10 | 20.4 | 14 | 23.8 |

# VMBU/ VMDU series Elbow Type Vacuum Ejector

## Product features/ Code of order

### Feature

- Light and compact, easy to install.
- It's easy to replace it when the filter element is blocked and affects the flow.
- U type fitting can rotary 360, easy piping.



### Specification

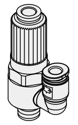
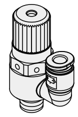
| Item \ Model | | VMBU, VMDU |
|---|---|---|
| Fluid | | Air |
| Pressure range MPa (kPa) | | 0.1~0.6(100~600) |
| Maintain pressure MPa (kPa) | | 0.5 ( 500 ) |
| Max. Vacuum value kPa(mmHg) | | -91.8 (-690) |
| Nozzle diameter mm | | 0.5, 0.7, 1.0, 1.5 |
| Ambient and fluid temperature ℃ | | 5 ~ 60 |
| Material | Body | Copper (Nickel plating) |
| | Plastic | NYLON, PBT, PP |
| Port size Rc (PT) | | 1/8, 1/4 |
| Thread glue | | With thread glue |

### Code of order

**VMBU 10 – 6 01**

① ② ③ ④

①

| Mark | Type | Exhaust | Image |
|---|---|---|---|
| VMBU | B type | Center exhaust |  |
| VMDU | D type | Air release |  |

②

| Mark | Nozzle (mm) |
|---|---|
| 05 | 0.5 |
| 07 | 0.7 |
| 10 | 1.0 |
| 15 | 1.5 |

③

| Mark | Port size (mm) |
|---|---|
| 6 | Ø6 |
| 8 | Ø8 |
| 10 | Ø10 |

④

| Mark | Thread size (mm) |
|---|---|
| 01 | 1/8 |
| 02 | 1/4 |

● VMBU/ DU series Selection table:

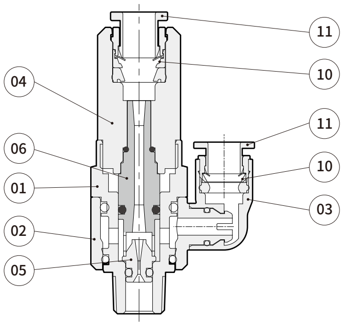
| Item | ① Model | ② Nozzle | ③ Port size | ④ Thread size |
|---|---|---|---|---|
| VM | BU<br>•<br>DU | 05 | 6 | 01 |
| | | 07 | 6 | 01 |
| | | | 8 | |
| | | 10 | 6 | 01 |
| | | | 8 | |
| | | 15 | 8 | 02 |
| | | | 10 | |

# VMBU/ VMDU series Elbow Type Vacuum Ejector

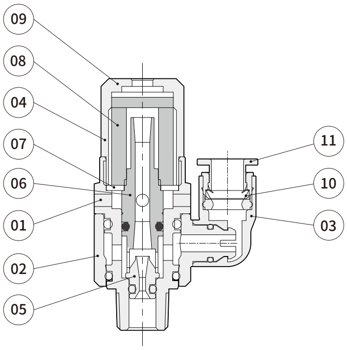
## Product features/

### Internal structure

VMBU



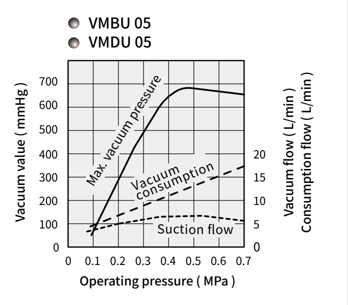
VMDU

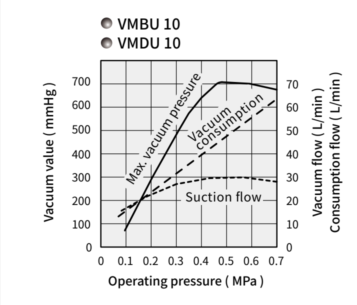


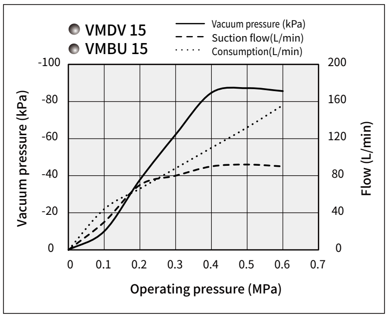
### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Metal body | Copper alloy | 07 | Plain washer | Copper alloy |
| 02 | Plastic body | Nylon fiber | 08 | Filter | EA30 |
| 03 | Joint plastic body | Nylon fiber | 09 | Element | EA30 |
| 04 | Filter cap | Copper alloy | 10 | The 3-fitting part | Copper alloy |
| 05 | Nozzle | Copper alloy | 11 | Release ring | POM |
| 06 | Exhaust metal sleeve | Copper alloy | | | |

### Characteristics



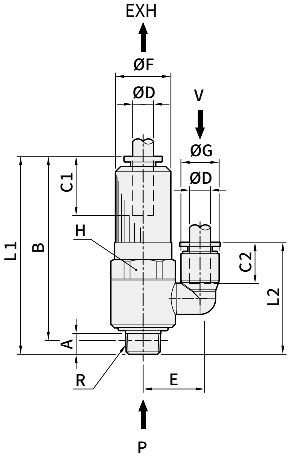




# VMBU/ VMDU series Elbow Type Vacuum Ejector

## Dimensions

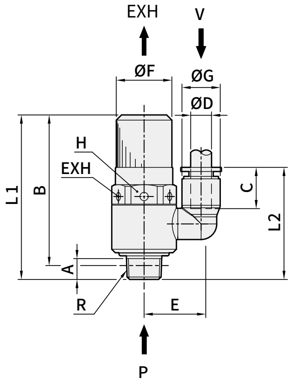
### VMBU series



Unit: mm

| Model | Port size ØD | Thread size R | A | B | C1 | C2 | E | ØF | ØG | L1 | L2 | Opposite dim. H | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VMBU-05-601 | Ø 6 | 1/8 | 6 | 53 | 16.5 | 11.5 | 16.4 | 16 | 11 | 57 | 32.3 | 17 | 0.5 | 15 | 45 |
| VMBU-07-601 | Ø 6 | | 6 | 53 | 16.5 | 11.5 | 16.4 | 16 | 11 | 57 | 32.3 | 17 | 0.7 | 23 | 45 |
| VMBU-07-801 | Ø 8 | | 6 | 53.3 | 18.2 | 17 | 21.5 | 16 | 14.3 | 57.3 | 38.3 | 17 | 0.7 | 23 | 50 |
| VMBU-10-601 | Ø 6 | | 6 | 53 | 16.5 | 11.5 | 16.4 | 16 | 11 | 57 | 32.3 | 17 | 1.0 | 45 | 45 |
| VMBU-10-801 | Ø 8 | | 6 | 53.3 | 18.2 | 17 | 21.5 | 16 | 14.3 | 57.3 | 38.3 | 17 | 1.0 | 45 | 50 |
| VMBU-15-802 | Ø 8 | 1/4 | 10 | 69 | 18.2 | 17 | 23.7 | 21 | 14.3 | 76 | 45.1 | 21 | 1.5 | 52 | 53 |
| VMBU-15-102 | Ø 10 | | 10 | 69.3 | 20 | 20 | 26 | 21 | 17.8 | 76.3 | 48.9 | 21 | 1.5 | 52 | 53 |

### VMDU series



Unit: mm

| Model | Port size ØD | Thread size R | A | B | C | E | ØF | ØG | L1 | L2 | Opposite dim. H | Nozzle size mm | Suction flow L/min ANR | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VMDU-05-601 | Ø 6 | 1/8 | 6 | 43.4 | 11.5 | 25.5 | 16 | 11 | 47.4 | 32.3 | 17 | 0.5 | 15 | 45 |
| VMDU-07-601 | Ø 6 | | 6 | 43.4 | 11.5 | 25.5 | 16 | 11 | 47.4 | 32.3 | 17 | 0.7 | 23 | 45 |
| VMDU-07-801 | Ø 8 | | 6 | 43.4 | 17 | 27.6 | 16 | 14.3 | 47.4 | 38.3 | 17 | 0.7 | 23 | 50 |
| VMDU-10-601 | Ø 6 | | 6 | 43.4 | 11.5 | 25.5 | 16 | 11 | 47.4 | 32.3 | 17 | 1.0 | 45 | 45 |
| VMDU-10-801 | Ø 8 | | 6 | 43.4 | 17 | 27.6 | 16 | 14.3 | 47.4 | 38.3 | 17 | 1.0 | 45 | 50 |
| VMDU-15-802 | Ø 8 | 1/4 | 10 | 64.1 | 17 | 27.6 | 21 | 14.3 | 71.1 | 45.1 | 21 | 1.5 | 52 | 53 |
| VMDU-15-102 | Ø 10 | | 10 | 64.1 | 20 | 29.6 | 21 | 17.8 | 71.1 | 48.9 | 21 | 1.5 | 52 | 53 |

# VHS series Integrated Type Vacuum Ejector

## Product features

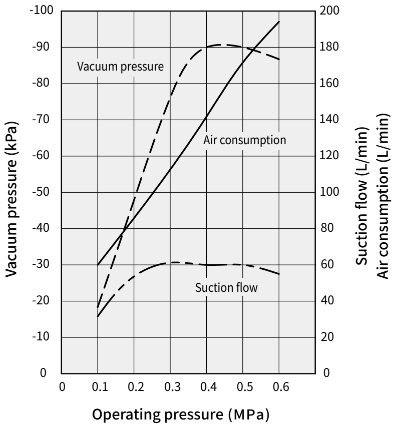
### Feature

- ● Vacuum ejector combined with vacuum pad.
- ● Built-in one-touch fittings, easy piping.
- ● Multiple choices for models or pad types.

### Specification

| Item / Model | | VHS |
|---|---|---|
| Fluid | | Air |
| Pressure range | MPa(kPa) | 0.3~0.7 (300~700) |
| Proof pressure | MPa(kPa) | 0.5 (500) |
| Max. vacuum degree | kPa(mmHg) | -90 (-675) |
| Nozzle diameter | mm | 1.5 |
| Max. suction flow | L/min | 60 |
| Ambient and fluid temperature | ℃ | 0 ~ 50 |
| Material | | Aluminum(anodized treatment) |
| Max. adsorption weight | kg | 8 |

### Characteristic graph



### Product weight

| Model | Weight(g) |
|---|---|
| VHS-01-60 | 226 |
| VHS-02-A25-N | 507 |
| VHS-03-A25-N | 718 |
| VHS-04-A25-N | 960 |

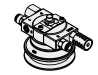
# VHS series Integrated Type Vacuum Ejector

## Code of order

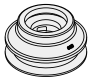
### Code of order **VHS 01 – 60 – N**

① ② ③

①

| Mark | Model | Image |
|---|---|---|
| 01 | Pad type |  |

②

| Mark | Pad type | |
|---|---|---|
| | Pad diameter (mm) | Vacuum pad Double layers |
| 60 | Ø60 |  |

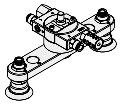
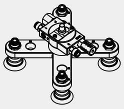
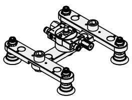
③

| Mark | Pad material | Color |
|---|---|---|
| N | NBR | Black |
| S | Silicon, Silicon rubber | White |
| SE | Anti-static rubber | Black |

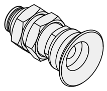
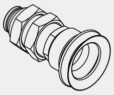
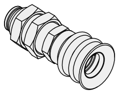
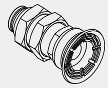
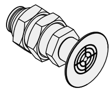
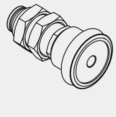
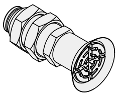
### Code of order **VHS 02 – A20 – N**

① ② ③

①

| Mark | Model | Image |
|---|---|---|
| 02 | Linear type |  |
| 03 | Cross type |  |
| 04 | H type |  |

②

| Mark | Pad diameter (mm) | Pad type |
|---|---|---|
| A20 | Ø20 |  1-Stage |
| A25 | Ø25 | |
| B20 | Ø20 |  2-Stage |
| C20 | Ø20 |  3-Stage |
| O20 | Ø20 |  Anti-slip type |
| P20 | Ø20 |  Flat type |
| Q20 | Ø20 |  Mark-free |
| G20 | Ø20 |  Film type |
| G25 | Ø25 | |

③

| Mark | Pad material | Color |
|---|---|---|
| N | NBR | Black |
| S | Silicon, Silicon rubber | White |
| SE | Anti-static rubber | Black |

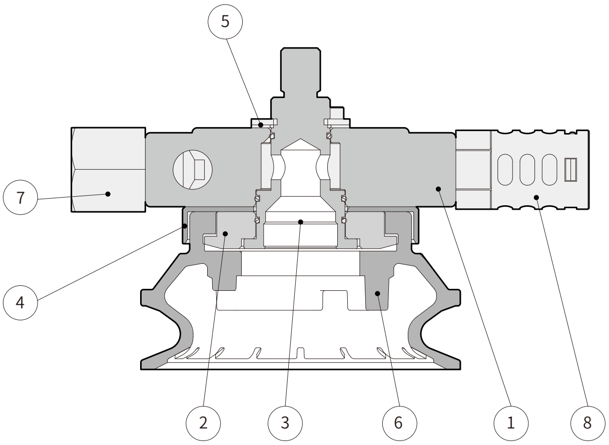
● VHS series Selection table:

| Item | ① Model | ② Pad type | ③ Pad material |
|---|---|---|---|
| VHS | 01 | 60 | N |
| | 02<br>•<br>03<br>•<br>04 | A20<br>•<br>A25<br>•<br>B20<br>•<br>C20<br>•<br>G20<br>•<br>G25<br>•<br>O20<br>•<br>P20<br>•<br>Q20 | N<br>•<br>S<br>•<br>SE |

# VHS series Integrated Type Vacuum Ejector

## Product features

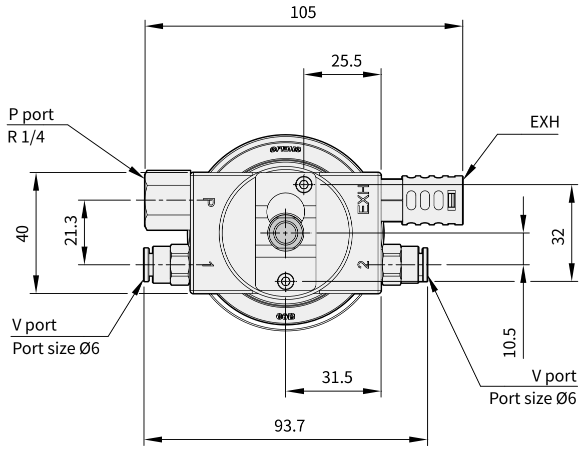
### Internal structure

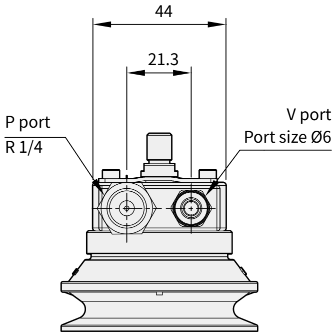


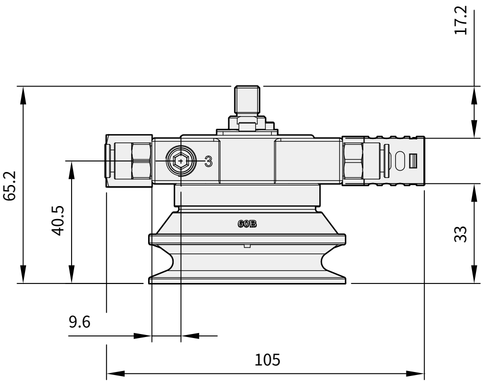
### Components and Material list

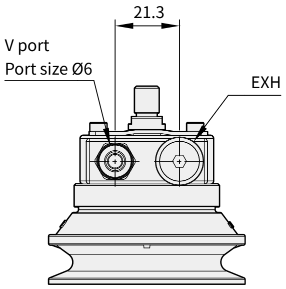
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Aluminum alloy | 05 | Plate | Stainless steel |
| 02 | Base | Aluminum alloy | 06 | Vacuum pad | NBR |
| 03 | Bolt | Steel | 07 | Nozzle | Aluminum alloy |
| 04 | Holder | Aluminum alloy | 08 | Silencer | POM |

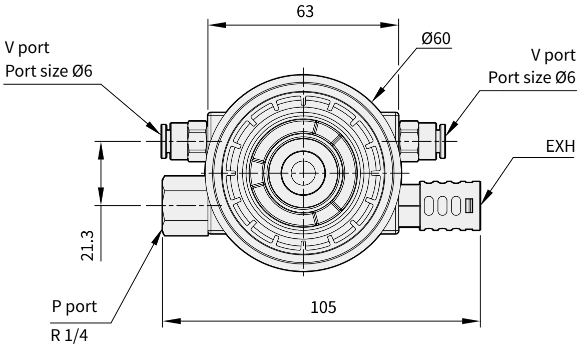
### VHS-01-60


105
25.5
P port
R 1/4
EXH
P
EXH
1
2
40
21.3
32
10.5
V port
Port size Ø6
31.5
V port
Port size Ø6
93.7


44
21.3
P port
R 1/4
V port
Port size Ø6


17.2
65.2
40.5
3
33
9.6
105

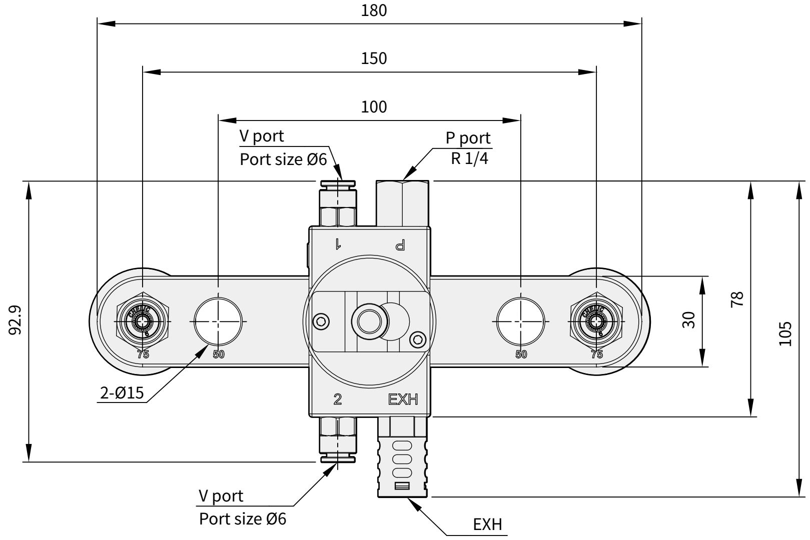

21.3
V port
Port size Ø6
EXH

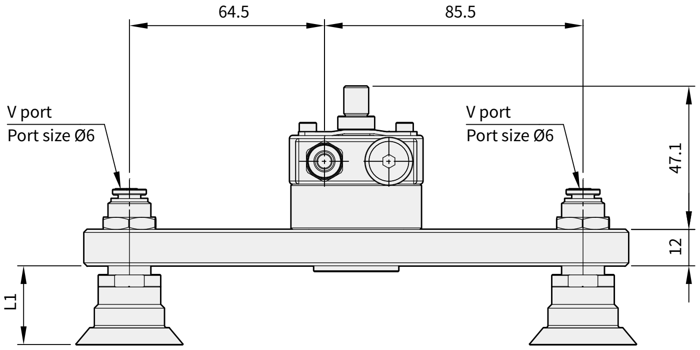

63
Ø60
V port
Port size Ø6
V port
Port size Ø6
EXH
21.3
P port
R 1/4
105

# VHS series Integrated Type Vacuum Ejector

## Dimensions

### VHS-02


180
150
100
V port
Port size Ø6
P port
R 1/4
1
P
92.9
30
78
105
75
50
50
75
2-Ø15
2
EXH
V port
Port size Ø6
EXH


64.5
85.5
V port
Port size Ø6
V port
Port size Ø6
47.1
12
L1

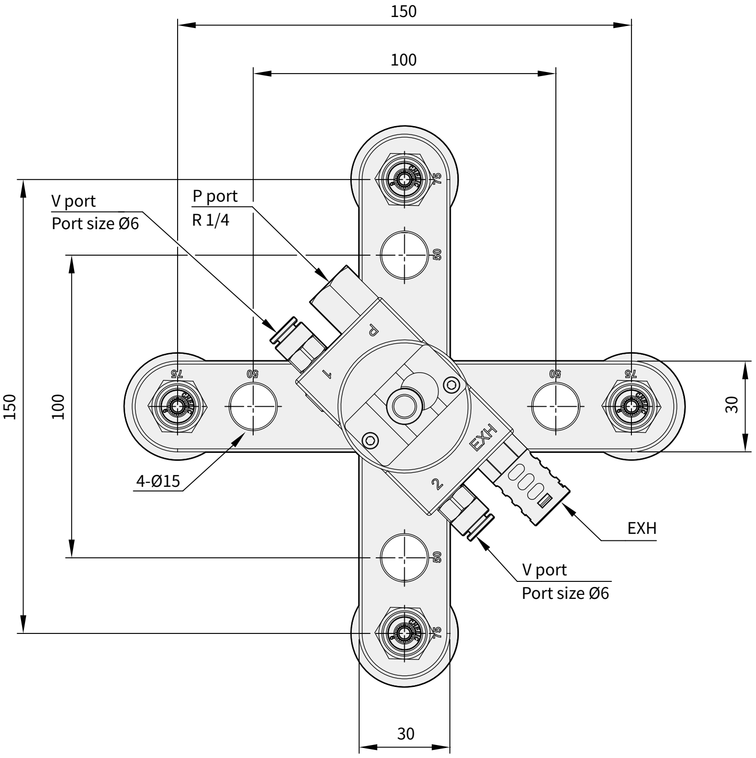
Unit: mm

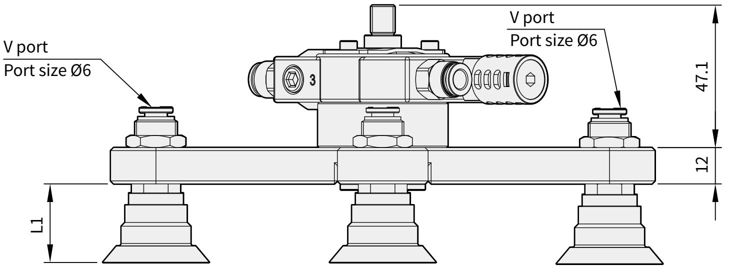
| Model<br>Item | A20 | A25 | B20 | C20 | G20 | G25 | O20 | P20 | Q20 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 22.5 | 26.5 | 20 | 25.5 | 26 | 30 | 19.5 | 26 | 26.3 |

# VHS series Integrated Type Vacuum Ejector

## Dimensions

### VHS-03


150
100
V port
Port size Ø6
P port
R 1/4
150
100
30
4-Ø15
P
1
EXH
2
EXH
V port
Port size Ø6
30
75
50


V port
Port size Ø6
V port
Port size Ø6
3
47.1
12
L1

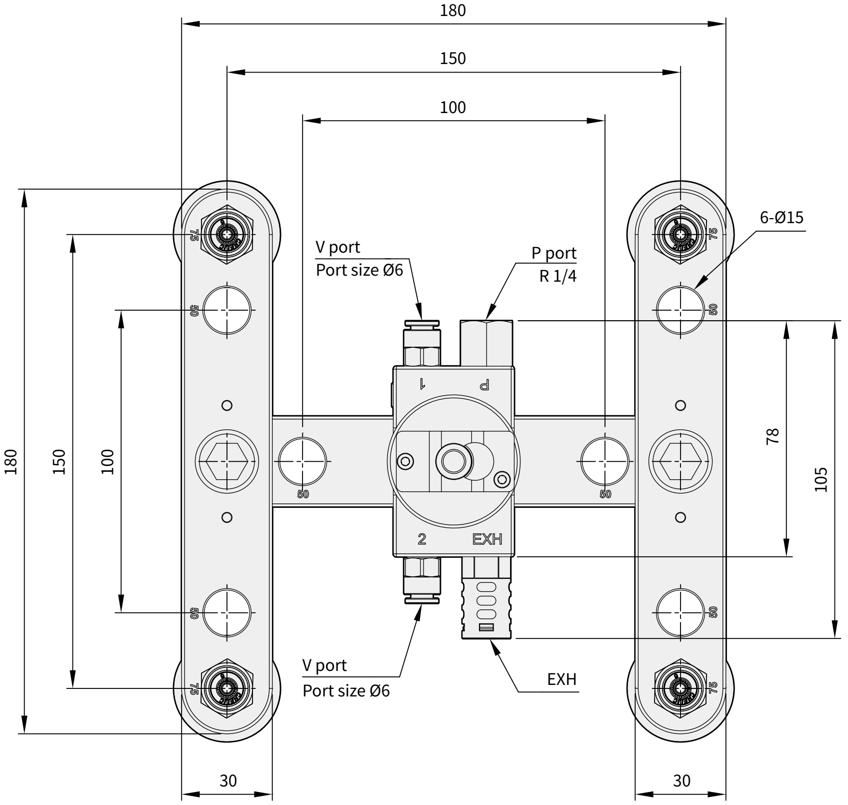
Unit: mm

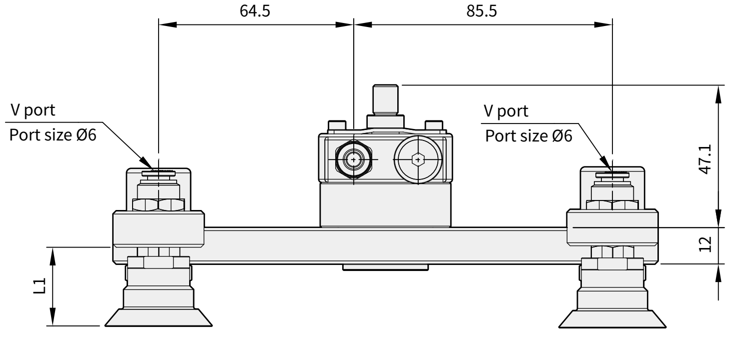
| Item \ Model | A20 | A25 | B20 | C20 | G20 | G25 | O20 | P20 | Q20 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 22.5 | 26.5 | 20 | 25.5 | 26 | 30 | 19.5 | 26 | 26.3 |

# VHS series Integrated Type Vacuum Ejector

## Dimensions

### VHS-04


180
150
100
V port
Port size Ø6
P port
R 1/4
6-Ø15
180
150
100
78
105
1
P
2
EXH
50
75
V port
Port size Ø6
EXH
30
30


64.5
85.5
V port
Port size Ø6
V port
Port size Ø6
47.1
12
L1

Unit: mm

| Item Model | A20 | A25 | B20 | C20 | G20 | G25 | O20 | P20 | Q20 |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 22.5 | 26.5 | 20 | 25.5 | 26 | 30 | 19.5 | 26 | 26.3 |

# VSL series Integrated Type Vacuum Ejector

## Product features

## Feature

- Function integration: vacuum, breaking, digital display, filter and silencer
- Quick wiring: cable connector, easy to install.
- Expandable: Max. 8 manifolds
- Energy-saving:Intelligent compensation, reducing power supply.

## Single unit Specification

| Item | | Model | VSL-A | | |
|---|---|---|---|---|---|
| Fluid | | | Air | | |
| Pressure range | | MPa (kPa) | 0.2 ～ 0.6 ( 200 ～ 600 ) | | |
| Proof pressure | | MPa (kPa) | 0.5(500) | | |
| Vacuum value | | kPa (mmHg) | -90(675) | | |
| Nozzle diameter | | mm | 0.5 | 0.7 | 1.0 |
| Max. suction flow | | L/min | 6 | 9 | 15 |
| Ambient and fluid temperature | | ° C | 0 ～ 40 | | |
| Material | Body | | Copper (Nickel plating) | | |
| | Plastic | | NYLON, PBT | | |
| Port size | | mm | Ø6 | | |
| V port | | mm | Ø4 | | |
| Exhaust type | | | Atmospheric emissions | | |
| Valve type | | | SR2 - 100 | | |
| Rated voltage | | V | 24±10%VDC | | |
| Power consumption | | W | 1.2 | | |

## Manifold type Specification

| Item | Model | VSL-B |
|---|---|---|
| Product function/ Material/ Voltage | | Unified specifications |
| Common supply port size | mm | Ø8 |
| Individual exhaust port size | mm | Ø4 |
| Unified exhaust type | | Atmospheric emissions, Ø 8 tube |
| Manifold type | | 1 ～ 8 M |

## Pressure switch specification

| Item | | Model | With Pressure switch embeded |
|---|---|---|---|
| Pressure range setting | | kPa | - 101.0~0 |
| Pressure range | | kPa | -100.0~100.0 |
| Withstanding pressure | | kPa | 500 |
| Applicable fluid | | | Filtered air, Non-corrosive, Non-flammable gas |
| Power voltage | | | 12 to 24V DC ± 10%, Ripple ≤ 10% |
| Response time | | ms | ≤ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| Repeatability | | | ± 0.2% F.S. ± 1 digit |
| Current consumption | | mA | ≤ 40( With no load ) |
| Environmental Resistance | Enclosure | | IP40 |
| | Ambient Temp. Range | ° C | 0 ~ 50 (No condensation or freezing ) |
| | Ambient Humidity Range | RH | Operation/ Storage: 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand Voltage | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | ≥ 50 MΩ ( at 500 V DC, between case and lead wire ) |
| | Vibration | | Total amplitude 1.5 mm , 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | 980 $m/s^2$ ( 100G ) , 3 times each in direction of X, Y and Z |
| Temperature Characteristic | | | ±2% F.S. (within 0–50° C temperature range) |

# VSL series Integrated Type Vacuum Ejector

## Code of order

## Code of order -Integrated type vacuum ejector/ Single unit

**VSL - A 10 - DC24 - P04 - S - C1**

① ② ③ ④ ⑤ ⑥

①

| Mark | Model |
|---|---|
| A | Single unit |

②

| Mark | Nozzle (mm) |
|---|---|
| 05 | Ø0.5 |
| 07 | Ø0.7 |
| 10 | Ø1.0 |

③

| Mark | Voltage |
|---|---|
| DC 12 | 12V, 1.2W |
| DC 24 | 24V, 1.2W |

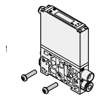
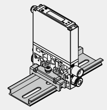
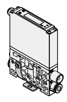
④

| Mark | Output |
|---|---|
| P04 | NPN output + Analog |
| P05 | PNP output + Analog |
| P06 | Analog1~5V |

⑤

| Mark | Cable connector |
|---|---|
| S | Straight type 2m |
| H | Angle type 2m |

⑥

| Mark | Bracket | Image |
|---|---|---|
| None | Without Rail |  |
| C1 | Rail bracket |  |
| C2 | Rail bracket<br>(Included rail) |  |

● C1：Included rail 107.1mm

## Code of order - Integrated type vacuum ejector/ Manifold type

**VSL - B 10 - 02 - E1 - DC24 - P04 - S - C3**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①

| Mark | Model |
|---|---|
| B | Manifold type |

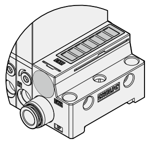
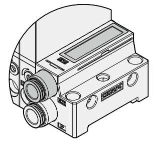
②

| Mark | Nozzle (mm) |
|---|---|
| 05 | Ø0.5 |
| 07 | Ø0.7 |
| 10 | Ø1.0 |

③

| Mark | Manifold quantity |
|---|---|
| 01 | 1 M |
| 02 | 2 M |
| ⋮ | ⋮ |
| 08 | 8 M |

④

| Mark | Exhaust |
|---|---|
| E1 | Atmospheric emissions |
| E2 | Ø 8 tube |
| Image | |
|  | |
| E1: Atmospheric emissions | |
|  | |
| E2: Ø 8 tube | |

⑤

| Mark | Voltage |
|---|---|
| DC 12 | 12V, 1.2W |
| DC 24 | 24V, 1.2W |

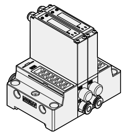
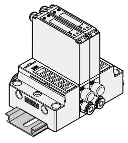
⑥

| Mark | Output |
|---|---|
| P04 | NPN output + Analog |
| P05 | PNP output + Analog |
| P06 | Analog1~5V |

⑦

| Mark | Cable connector |
|---|---|
| S | Straight type 2m |
| H | Angle type 2m |

⑧

| Mark | Bracket |
|---|---|
| None | Without Rail |
| C3 | Rail bracket |
| Image | |
|  | |
| Without Rail | |
|  | |
| C3: Rail bracket | |

● Without Rail: 4 x M4x20L screw

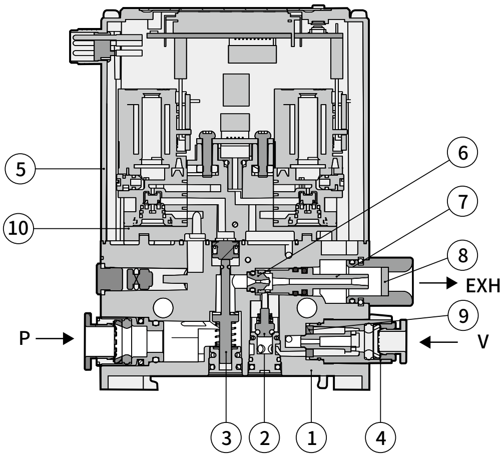
● C3: Manifold rail length (Chart 1)

| Mark | Rail length (L) |
|---|---|
| 1~2 M | 107.1 |
| 3~4 M | 142.8 |
| 5~6 M | 178.5 |
| 7~8 M | 214.2 |

# VSL series Integrated Type Vacuum Ejector

## Product features

### Internal structure



### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 1 | Base body | Relieving type | 6 | Nozzle | Copper |
| 2 | Backstop shaft | Copper | 7 | Vacuum copper tube | Copper |
| 3 | Down axis | Copper + NBR | 8 | V port filter | Foam cotton |
| 4 | Plastic suction connector | Relieving type | 9 | Supply filter | Foam cotton |
| 5 | Cover | Relieving type | 10 | Body upper seat | Relieving type |

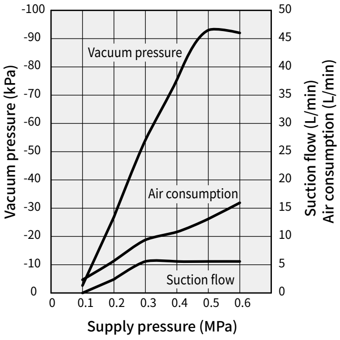
### Product weight

| Item | Model | Weight(g) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Integrated type vacuum ejector -Single unit | VSL-A | 65 | | | | | | | |
| Integrated type vacuum ejector - Manifold type | VSL-B-01...08 | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M | 8 M |
| | | 155 | 220 | 285 | 350 | 415 | 480 | 545 | 610 |

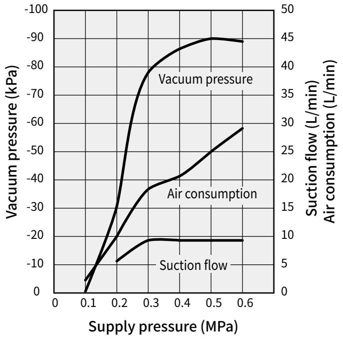
### Flow Rate Characteristics

The flow characteristic is that when the generator sucks in the air to reach the vacuum, the relationship between the inhaled air flow and the consumed air volume.

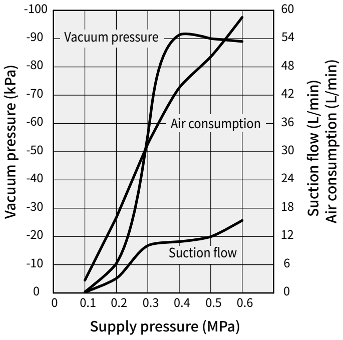
VSL-12-05



VSL-12-07



VSL-12-10



# VSL series Integrated Type Vacuum Ejector

## Component Replacement

## Single Unit Components

### A. Fitting replacement

**P port/ EXH port:**

(1) Dismentling fitting clips.

(2) Take out the fittings, then put into new fittings.

(3) Place new fittings onto ejectors and put back the fitting clips.

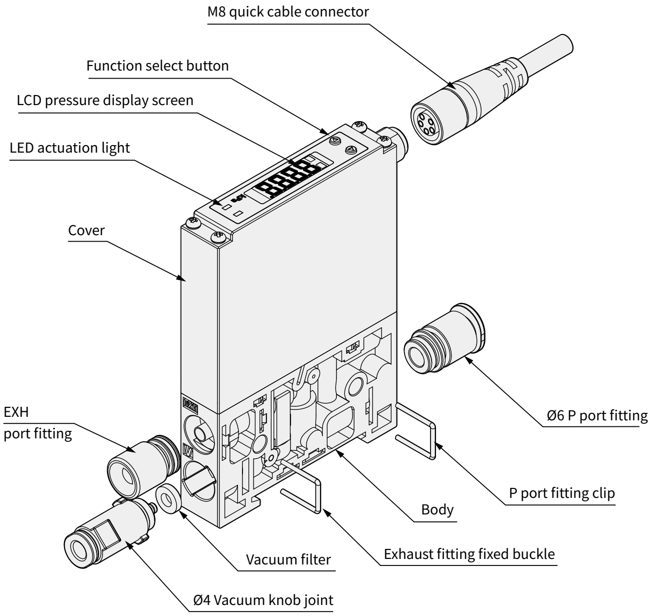
### B. Filter element replacement

**Vacuum port:**

(1) Pull out the vacuum port fitting.

(2) Take out the element and replace.

(3) Position the element into the ejector, then rotate vacuum fitting back to the port.


M8 quick cable connector
Function select button
LCD pressure display screen
LED actuation light
Cover
Ø6 P port fitting
EXH port fitting
P port fitting clip
Body
Exhaust fitting fixed buckle
Vacuum filter
Ø4 Vacuum knob joint

## Component Replacement

A. How to increase manifold stations

(1) Remove three tension bolts.

(2) Dismentling right end plate .
(Beware the packing to avoid air leakage caused by the wrong position.)

(3) Mount a single unit to the end surface.
(Beware the packing to avoid air leakage caused by the wrong position.)

(4) Lock three tension bolts.

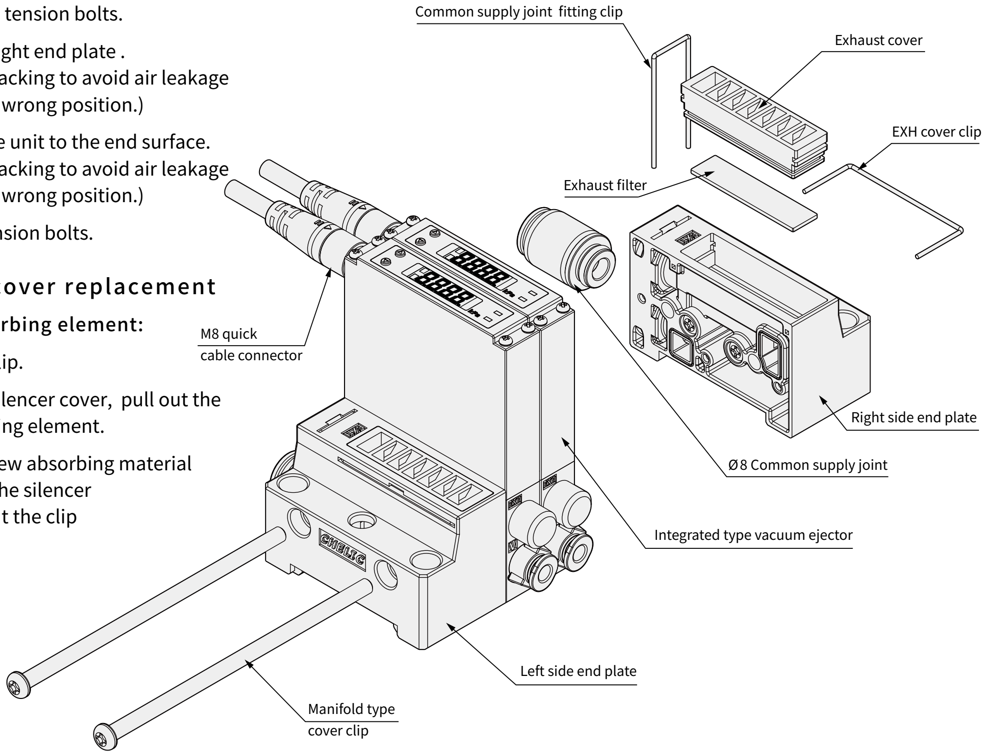
### B. Silencer cover replacement

**Sound absorbing element:**

(1) Remove the clip.

(2) Remove the silencer cover, pull out the sound absorbing element.

(3) Replace the new absorbing material and position the silencer cover, then put the clip back to unit.

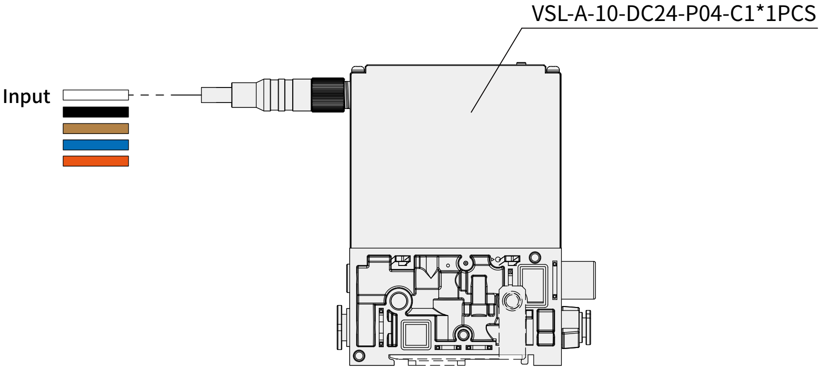

Common supply joint fitting clip
Exhaust cover
EXH cover clip
Exhaust filter
M8 quick cable connector
CHELIC
Right side end plate
Ø8 Common supply joint
Integrated type vacuum ejector
Left side end plate
Manifold type cover clip

# VSL series Integrated Type Vacuum Ejector

Wiring/ Caution expression

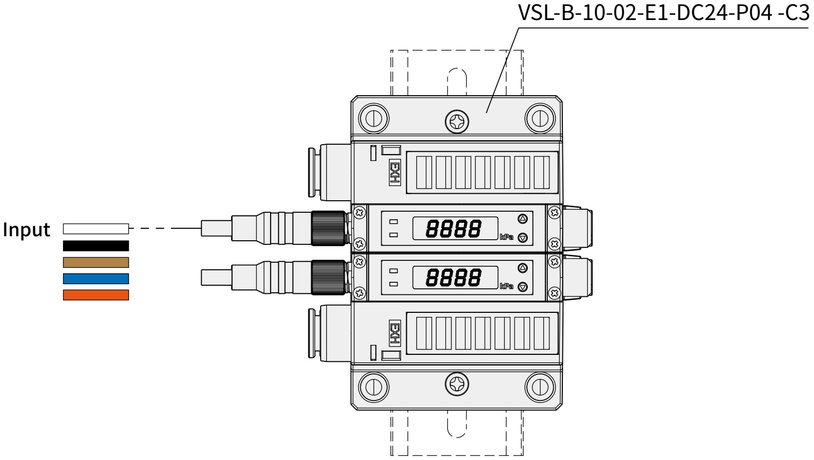
## Vacuum ejector/ Single unit

- White: IN(Vacuum generation)
- Black:IN(Vacuum release)
- Brown: +V(24V)
- Blue: 0V
- Orange: OUT
  (NPN or PNP or Analog1~5)



## Manifold vacuum ejector with individual wiring

- White: IN(Vacuum generation)
- Black:IN(Vacuum release)
- Brown: +V(24V)
- Blue: 0V
- Orange: OUT
  (NPN or PNP or Analog1~5)



## Caution For design, selection and maintenance

### ⚠ WARNING

- Avoid chemical, corrosive and inflammable gas; avoid sea water, steam high temperature place in surrounding.
- Avoid oil contain gas , don't oil mist in the pipeline , oil in pipeline will cause blockage resuliting in poor effect.
- Please don't use fluid other than compressed air , never suck in fluid other than clean air.
- When using gas, the gas should be kept dry, and there should be no large amount of water vapor, which will cause the possibility of abnormal pressure detector.

### ⚠ CAUTION

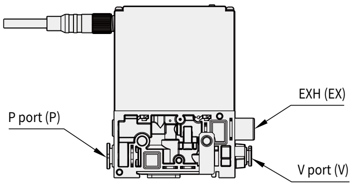
- Please don't disassemble the vacuum generator in discretion, error disassembing will lead to hazard and cause problem on operation of the product.
- Please be sure to use the supply pressure within the product specification range.If the maximum operating pressure is exceeded, the product may be damaged.
- During operation, please do not drop, hit, or apply excessive impact (100m/s) even if the body is not damaged, the internal part may be damaged and may cause malfunction.

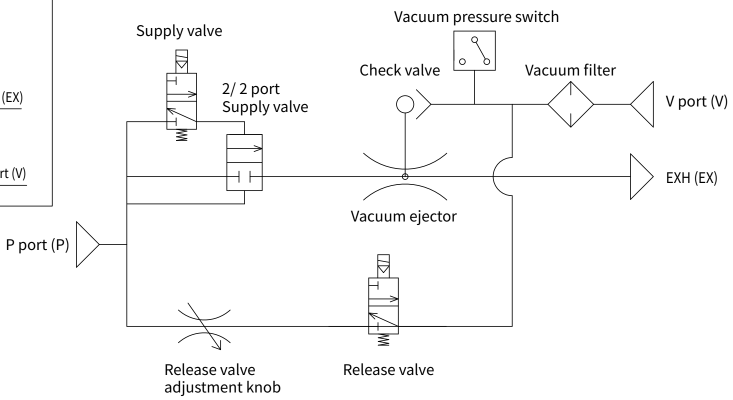
# VSL series Integrated Type Vacuum Ejector

## Circuit Expression

### Vacuum ejector/ Single unit

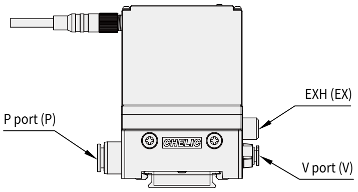
Single unit type: VSL - A - □□□□

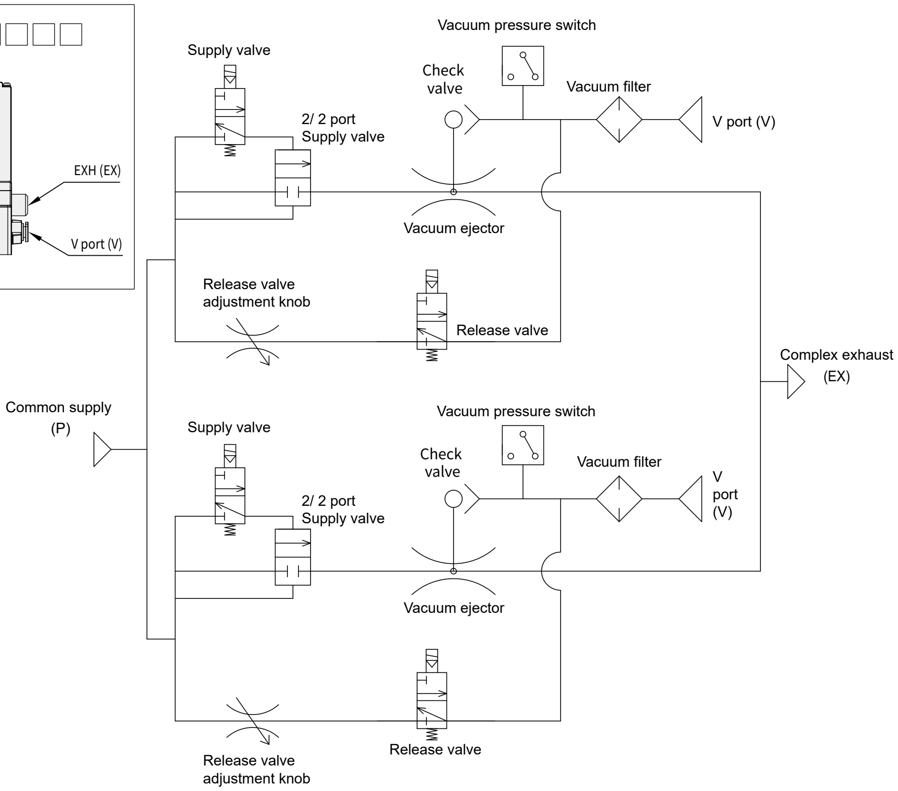

EXH (EX)
P port (P)
V port (V)


Supply valve
Vacuum pressure switch
Check valve
Vacuum filter
2/ 2 port
Supply valve
V port (V)
EXH (EX)
Vacuum ejector
P port (P)
Release valve
adjustment knob
Release valve

### Vacuum ejector/ Manifold type

Manifold type: VSL - B - □□□□


EXH (EX)
P port (P)
CHELIC
V port (V)

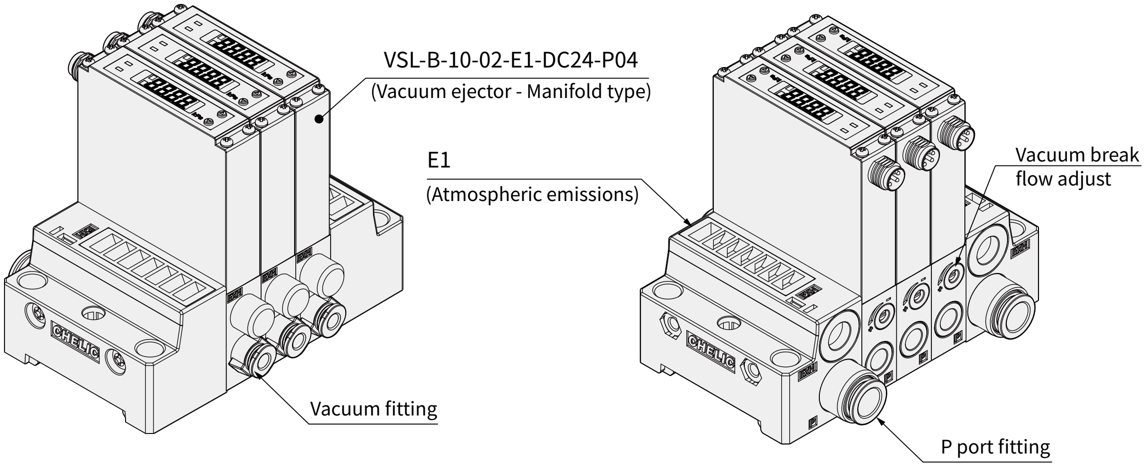

Vacuum pressure switch
Supply valve
Check
valve
Vacuum filter
2/ 2 port
Supply valve
V port (V)
Vacuum ejector
Release valve
adjustment knob
Release valve
Complex exhaust
(EX)
Common supply
(P)
Vacuum pressure switch
Supply valve
Check
valve
Vacuum filter
V
port
(V)
2/ 2 port
Supply valve
Vacuum ejector
Release valve
adjustment knob
Release valve

# VSL series Integrated Type Vacuum Ejector

## Installation

**CHELIC**

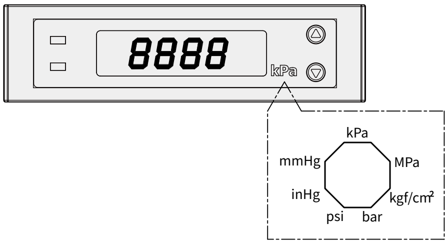
### Manifold Components description

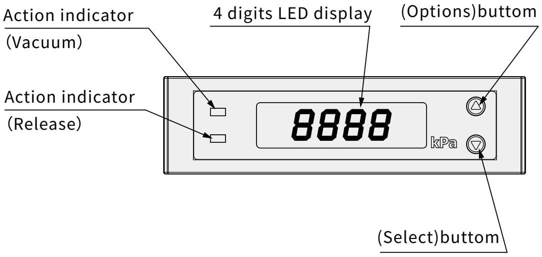

VSL-B-10-02-E1-DC24-P04
(Vacuum ejector - Manifold type)
E1
(Atmospheric emissions)
Vacuum break flow adjust
Vacuum fitting
P port fitting
CHELIC
8888

### VSLNumeric Display Pressure Switch Setting Instructions (Numeric type)

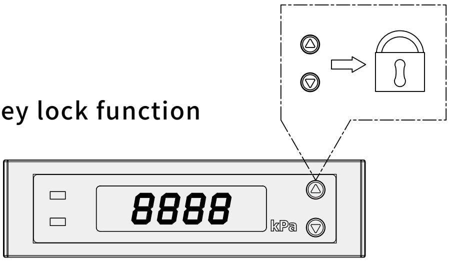
- 1 sets of output & linear analogy output (1~5V)
- Compact size: 13mm(W)
- Key lock function
- Various pressure units available
  kPa, MPa, kgf/cm², bar, psi, inHg, mmHg

### Various pressure units available


8888
kPa
kPa
MPa
kgf/cm²
bar
psi
inHg
mmHg


Action indicator
(Vacuum)
Action indicator
(Release)
4 digits LED display
(Options)buttom
8888
kPa
(Select)buttom

### Key lock function



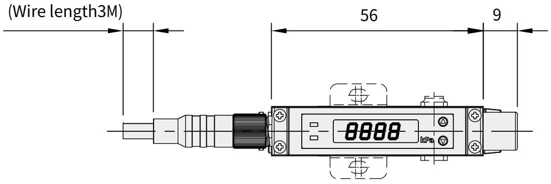
Key lock mode can prevent improper operation to pressure switch.

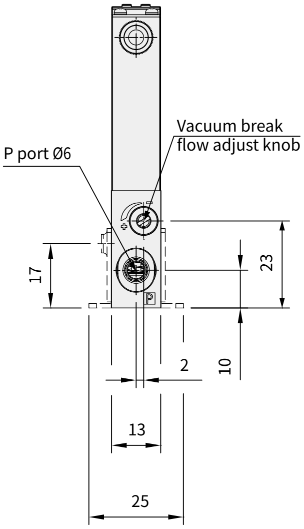
Key lock mode can pbe activated by pressing + and - for 3 seconds.

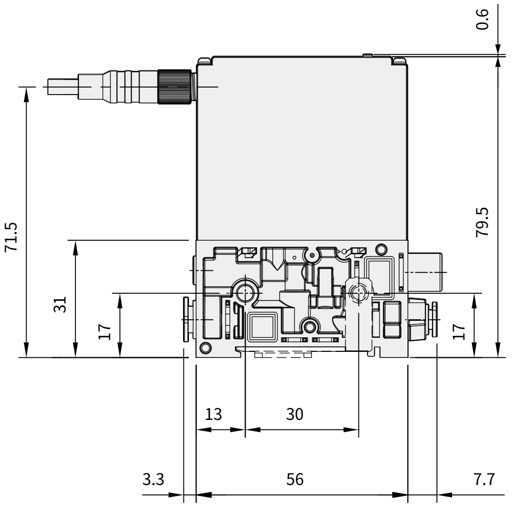
# VSL series Integrated Type Vacuum Ejector

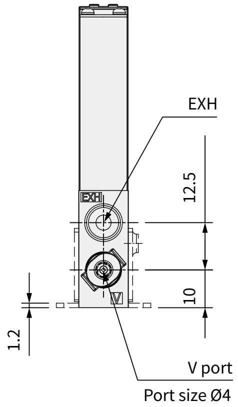
## Dimensions

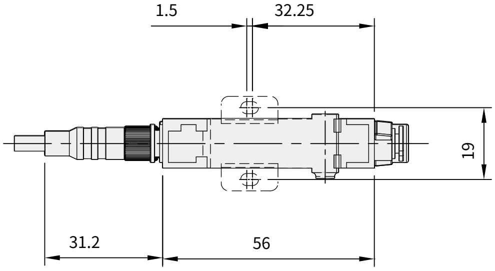
### Vacuum Ejector/ Single Unit


(Wire length3M)
56
9
8888
kPa


P port Ø6
Vacuum break
flow adjust knob
17
23
2
10
13
25
P


0.6
71.5
79.5
31
17
17
13
30
3.3
56
7.7


EXH
12.5
10
1.2
V port
Port size Ø4
EXH
V

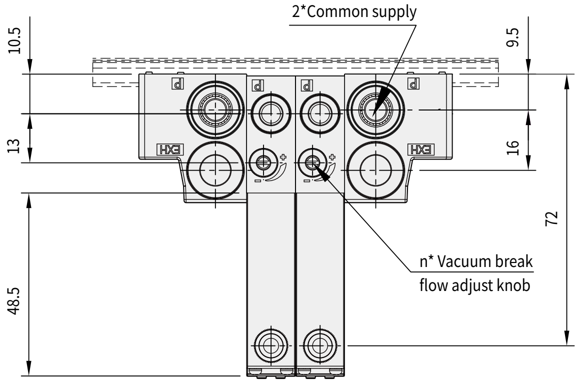

1.5
32.25
19
31.2
56

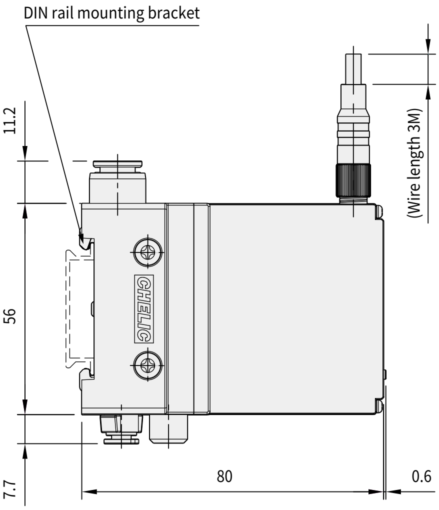
# VSL series Integrated Type Vacuum Ejector

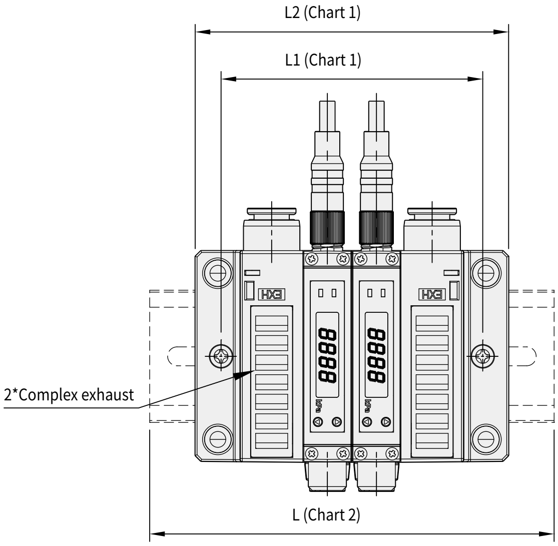
## Dimensions

CHELIC

### Compact Electronic/ Manifold type/Individual Wiring


2*Common supply
10.5
9.5
13
16
72
48.5
n* Vacuum break
flow adjust knob
P
EXH


DIN rail mounting bracket
11.2
56
7.7
(Wire length 3M)
80
0.6
CHELIC


L2 (Chart 1)
L1 (Chart 1)
2*Complex exhaust
L (Chart 2)
EXH
8888

Unit: mm

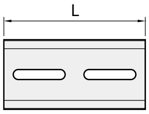
| Manifold no. / Mark | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| L1 | 45 | 69.3 | 82.3 | 95.3 | 108.3 | 121.3 | 134.3 | 147.3 |
| L2 | 58 | 83 | 96 | 109 | 122 | 135 | 148 | 161 |

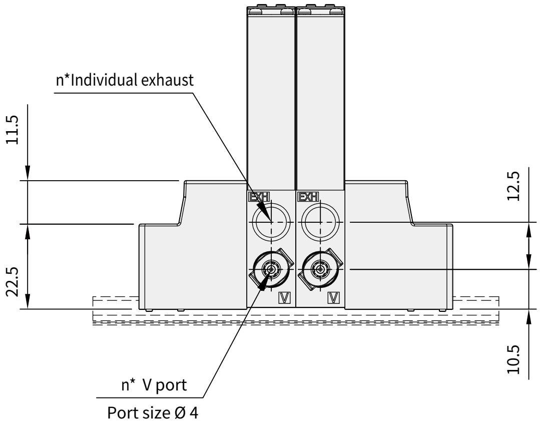
(Chart 1)

Unit: mm

| Manifold no. | Rail length (L) |
|---|---|
| 1~2 M | 107.1 |
| 3~4 M | 142.8 |
| 5~6 M | 178.5 |
| 7~8 M | 214.2 |

(Chart 2)




n*Individual exhaust
11.5
22.5
12.5
10.5
EXH
V
n* V port
Port size Ø 4

# MEMO

# VKM series Module Type Vacuum Ejector

## Product features

CHELIC

### Feature

- Modularization:Simple structure which can be changed easily.
- Fitting design, easy piping.
- Visualization:Digital display of pressure sensor which can visualiz by monitor.
- Multi-function:Vacuum ejector combined with breaking solenoid valve also with vacuum filter and silencer.
- It can be instal upright or sideways; Simple structure, easy installation and disassembly.

### Specification

| Item | | Model | VKM15 |
|---|---|---|---|
| Fluid | | | Air |
| Pressure range | | MPa (kPa) | 0.25 ~ 0.7 ( 250 ~ 700 ) |
| Proof pressure | | MPa (kPa) | 0.5 (500) |
| Vacuum value | | kPa(mmHg) | -91.8 ( -690 ) |
| Nozzle diameter | | Ømm | 1.0 |
| Max. suction flow | | L/min | 45 |
| Ambient and fluid temperature | | ℃ | 0 ~ 50 |
| Material | Body | | Copper (Nickel plating) |
| | Plastic | | NYLON , PBT |
| Port size | | mm | Ø6, Ø8 |
| Valve type | | | SR2 - 100 |
| Rated voltage | | V | 24±10%VDC |
| Power consumption | | W | 1.2 |

### Pressure switch specification

| Item | | | Model | PST 2 |
|---|---|---|---|---|
| Rated pressure range | | | kPa | - 100.0~0 |
| Pressure range | | | kPa | -100.0~100.0 |
| Withstanding pressure | | | kPa | 500 |
| Applicable fluid | | | | Filtered air, Non-corrosive, Non-flammable gas |
| Set pressure resolution | | | | 0.1kPa、0.001kgf/$cm^2$, 0.001bar, 0.01psi, 0.1inHg, 1mmHg |
| Power voltage | | | | 12 to 24V DC ± 10%, Ripple ≤ 10% |
| Current consumption | | | mA | ≤ 40( With no load ) |
| Switch output | Output | | | 2 NPN or 2 PNP open collector |
| | Max. load current | | | 80mA |
| | Power voltage | | | 24VDC |
| | Residual voltage | | | ≤ 1.5V |
| | Response time | | ms | ≤ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| | Output short circuit protection | | | Yes |
| Linear analogy output | Voltage | Output voltage | | 1~5V±2.5%F.S. |
| | | Output impedance | | Approx. 1kΩ |
| | Linearity | | | ±1%F.S. |
| Display | Display | | | 4-digit, 7-step display (green) |
| | Switch on indic ator | | | OUT1 green/OUT2 green |
| | Renewing | | | Approx. 0.2 sec |
| | Indicator accuracy | | | ±0.2% F.S.± 1 digit (Temperature: 25±3° C) |
| Repeatability | | | | ±0.2% F.S.± 1 digit |
| Environmental Resistance | Enclosure | | | IP40 |
| | Ambient temp. range | | | 0~50° C (No condensation or freezing ) |
| | Ambient humidity range | | | Operation / S torage: 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand voltage | | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | | ≥ 50 MΩ ( at 500 V DC, between case and lead wire ) |
| | Vibration | | | Total amplitude 1.5 mm , 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | | 980 m/$s^2$ ( 100G ) , 3 times each in direction of X, Y and Z |
| Temperature characteristic | | | | ±2% F.S. (within 0–50° C temperature range) |
| Lead wre | | | | oil-resistant cable (0.14 $mm^2$) |
| Weight ( With 1 Meter Lead Wire ) | | | g | 33 |

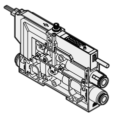
# VKM series Module Type Vacuum Ejector

## Code of order

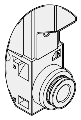
### Code of order **VKM 15 – A – 06 – E1 – 10 – D2 – H1 – P04 – C1**

A = ①, 06 = ②, E1 = ③, 10 = ④, D2 = ⑤, H1 = ⑥, P04 = ⑦, C1 = ⑧

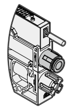
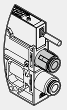
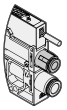
①

| Mark | Main body type | |
|---|---|---|
| A | Single unit |  |

②

| Mark | P port | |
|---|---|---|
| 06 | Ø6 supply tube |  |
| 08 | Ø8 supply tube | |

③

| Mark | Exhaust | |
|---|---|---|
| E1 | Direct exhaust |  |
| E2 | Ø6 tube |  |
| E3 | Ø8 tube |  |

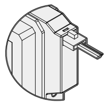
④

| Mark | Nozzle (mm) |
|---|---|
| 10 | Ø1.0 |

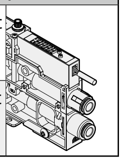
⑤

| Mark | Voltage |
|---|---|
| D1 | 12V, 1.2W NPN |
| D1P | 12V, 1.2W PNP |
| D2 | 24V, 1.2W NPN |
| D2P | 24V, 1.2W PNP |

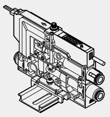
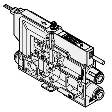
⑥

| Mark | Electrical entry | |
|---|---|---|
| H1 | Individual wiring |  |

⑦

| Mark | Output | |
|---|---|---|
| P04 | 2NPN output<br>+<br>Analog |  |
| P05 | 2PNP output<br>+<br>Analog | |

⑧

| Mark | Bracket | |
|---|---|---|
| None | No bracket | |
| C1 | Rail bracket |  |
| C2 | Mounting bracket |  |

- C1: Rail length 107.1 mm

- Vacuum ejector/ Single unit series Selection table :

| Model | ① Main body type | ② P port | ③ Exhaust | ④ Nozzle | ⑤ Voltage | ⑥ Electrical entry | ⑦ Output | ⑧ Bracket |
|---|---|---|---|---|---|---|---|---|
| VKM 15 | A | 06<br>•<br>08 | E1<br>•<br>E2<br>•<br>E3 | 10 | D1<br>•<br>D1P<br>•<br>D2<br>•<br>D2P | H1 | P04<br>•<br>P05 | C1<br>•<br>C2 |

# VKM series Module Type Vacuum Ejector

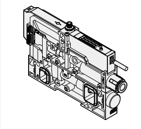
## Code of order

**CHELIC.**

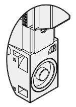
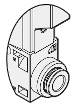
## Code of order **VKM 15 – B – 00 – E4 – 10 – D2 – H2 – P04**

① ② ③ ④ ⑤ ⑥ ⑦

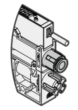
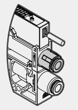
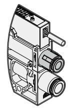
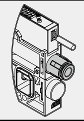
①

| Mark | Main body type | |
|---|---|---|
| A | Manifold type |  |

②

| Mark | P port | |
|---|---|---|
| 00 | Closed type |  |
| 06 | Ø6 supply tube |  |
| 08 | Ø8 supply tube | |

③

| Mark | Exhaust | |
|---|---|---|
| E1 | Direct exhaust |  |
| E2 | Ø6 tube |  |
| E3 | Ø8 tube |  |
| E4 | Closed type |  |

- While select E4, it can't be applied with E6 together

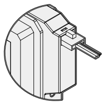
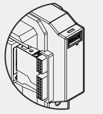
④

| Mark | Nozzle (mm) |
|---|---|
| 10 | Ø1.0 |

⑤

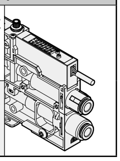
| Mark | Voltage |
|---|---|
| D1 | 12V, 1.2W NPN |
| D1P | 12V, 1.2W PNP |
| D2 | 24V, 1.2W NPN |
| D2P | 24V, 1.2W PNP |

⑥

| Mark | Electrical entry | |
|---|---|---|
| H1 | Individual wiring |  |
| H2 | Grouping wiring |  |

- Whiule select H1 individual wiring, it should apply L type side end plate without plug.
- While select H2 grouping wiring, it should apply K1 or K3 with D type plug.
- Individual wiring length: 1 meter.

⑦

| Mark | Output | |
|---|---|---|
| P04 | 2NPN output<br>+<br>Analog |  |
| P05 | 2PNP output<br>+<br>Analog | |

- Vacuum ejector/ Manifold typeseries Selection table :

| Model | ① Main body type | ② P port | ③ Exhaust | ④ Nozzle | ⑤ Voltage | ⑥ Electrical entry | ⑦ Output |
|---|---|---|---|---|---|---|---|
| VKM 15 | B | 00<br>•<br>06<br>•<br>08 | E1<br>•<br>E2<br>•<br>E3 | 10 | D1<br>•<br>D1P<br>•<br>D2<br>•<br>D2P | H1<br>•<br>H2 | P04<br>•<br>P05 |
| | | | E4 | | | | |

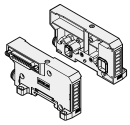
# VKM series Module Type Vacuum Ejector

Code of order

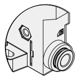
## Code of order **VKMX – 06 – E5 – K1 – 02 – C3**

**VKMX** ⑧ – **06** ⑨ – **E5** ⑩ – **K1** ⑪ – **02** ⑫ – **C3** ⑬

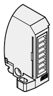
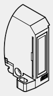
⑧

| Mark | Side end plate |
|---|---|
| VKMX |  |

⑨

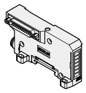
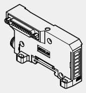
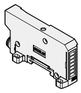
| Mark | P port | |
|---|---|---|
| 06 | Ø6 supply tube |  |
| 08 | Ø8 supply tube | |

⑩

| Mark | Exhaust | |
|---|---|---|
| E5 | Complex exhaust |  |
| E6 | Closed type |  |

- While select E6, it can't be applied with E4 together

⑪

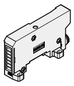
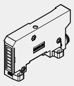
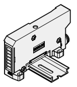
| Mark | Electrical entry | |
|---|---|---|
| K1 | D type plug: 1M cable length |  |
| K3 | D type plug: 3M cable length |  |
| L | Without plug |  |

- Select D type K1 or K3, shall apply manifold type of vacuum ejector with H2 grouping wire .
- Select L type without plug, shall apply manifold type of vacuum ejector with H1 individual wiring.

⑫

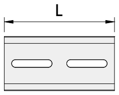
| Mark | Manifold quantity |
|---|---|
| 01 | 1 M |
| 02 | 2 M |
| ⋮ | ⋮ |
| 10 | 10 M |

⑬

| Mark | Bracket | |
|---|---|---|
| None | Without Rail |  |
| C3 | Rail bracket |  |
| C4 | Rail bracket (Included rail) |  |

- C4: Manifold rail length (Chart 1)
- Chart 1

| Mark | Rail length (L) |
|---|---|
| 1-2 M | 107.1mm |
| 3-4 M | 142.8mm |
| 5-6 M | 178.5mm |
| 7-8 M | 214.2mm |
| 9-10 M | 249.9mm |



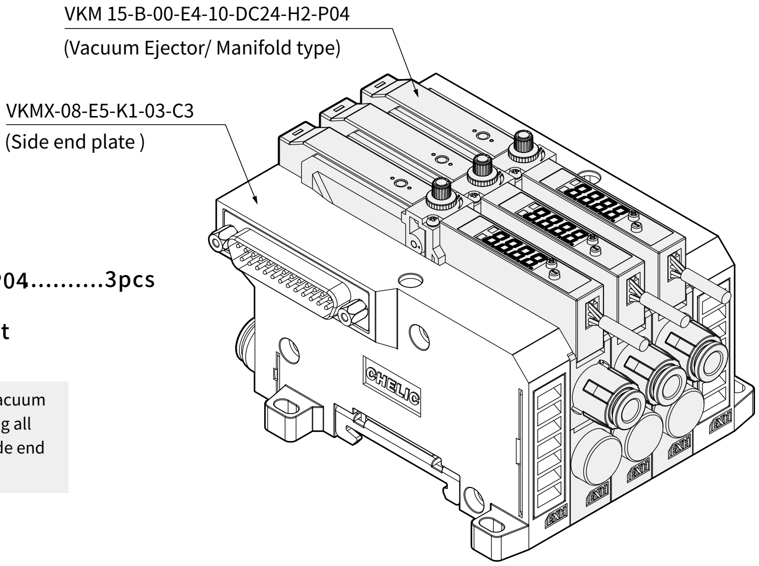
- Vacuum ejector/ Side end plate series Selection table :

| ⑧ Side end plate | ⑨ P port | ⑩ Electrical entry | ⑪ Electrical entry | ⑫ Manifold quantity | ⑬ Bracket |
|---|---|---|---|---|---|
| VKMX | 06<br>•<br>08 | E5<br>•<br>E6 | L<br>•<br>K1<br>•<br>K3 | 01<br>.<br>02<br>⋮<br>10 | C3<br>•<br>C4 |
| | | E5 | | | |

# VKM series Module Type Vacuum Ejector

## Description/ Setting

### Manifold type ordering expression


VKM 15-B-00-E4-10-DC24-H2-P04
(Vacuum Ejector/ Manifold type)
VKMX-08-E5-K1-03-C3
(Side end plate )
CHELIC

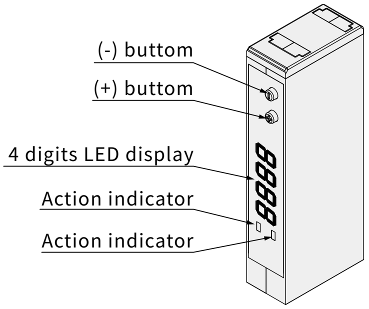
1. VKM 15-B-00-E4-10-DC24-H2-P04..........3pcs
   +
2. VKMX-08-E5-K1-03-C3........1set

* Before ordering, please confirm the type of vacuum ejector and quantity. After selection, gathering all the vacuum ejectors and chose the type of side end plate.

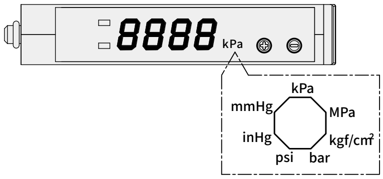
---

### PST2 Numeric Display Pressure Switch Setting Instructions

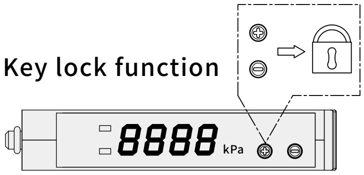
- 2 sets of output & linear analogy output (1~5V)
- Compact size: 50x10x20mm$^3$( L x W x H )
- Key lock function
- Various pressure units available
  kPa, MPa, kgf/cm², bar, psi, inHg, mmHg


(-) buttom
(+) buttom
4 digits LED display
Action indicator
Action indicator
8888

#### Various pressure units available


8888
kPa
kPa
MPa
kgf/cm²
bar
psi
inHg
mmHg

#### Key lock function



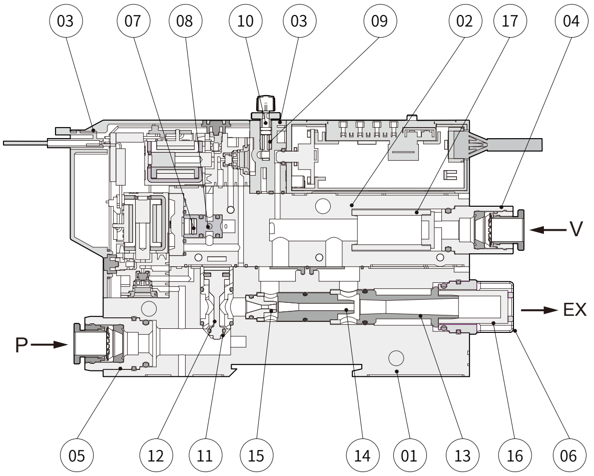
Key lock mode can prevent improper operation to pressure switch.

Key lock mode can pbe activated by pressing + and - for 3 seconds.

# VKM series Module Type Vacuum Ejector

## Product features

### Internal structure



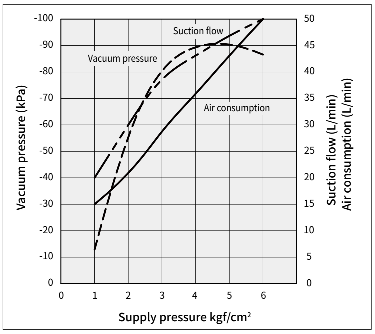
### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Base/ Single unit | PBT+Fiber | 10 | Release adjustor lever | Copper Alloy |
| 02 | Filter holder/ Single unit | PBT+Fiber | 11 | Inlet port lever | Copper Alloy |
| 03 | Cover/ Single unit | PC | 12 | Inlet port holder | Copper Alloy |
| 04 | Filter knob | Nylon fiber | 13 | Spool #2 | Copper Alloy |
| 05 | P port fitting | Copper Alloy | 14 | Spool #1 | Copper Alloy |
| 06 | EXH port fitting | Copper Alloy | 15 | Vacuum nozzle | Copper Alloy |
| 07 | Release lever | Copper Alloy | 16 | EXH filter | Foam |
| 08 | Release holder | Copper Alloy | 17 | Suction filter | Foam |
| 09 | Release adjustor holder | Copper Alloy | | | |

### Product weight

<table>
<tr><th>Item</th><th>VKMX</th><th colspan="10">Weight(g)</th></tr>
<tr><td>Single unit vacuum ejector</td><td>VKM 15-A-00-E1-10-DC24-H1-P04</td><td colspan="10">142</td></tr>
<tr><td>Manifold type vacuum ejector</td><td>VKM 15-B-00-E4-10-DC24-H2-P04</td><td colspan="10">140</td></tr>
<tr><td rowspan="2">Side end plate type</td><td rowspan="2">VKMX-08-E5-K1-01-C1<br>⋮<br>10</td><td>1 M</td><td>2 M</td><td>3 M</td><td>4 M</td><td>5 M</td><td>6 M</td><td>7 M</td><td>8 M</td><td>9 M</td><td>10 M</td></tr>
<tr><td>171</td><td>176</td><td>181</td><td>186</td><td>191</td><td>196</td><td>201</td><td>206</td><td>211</td><td>216</td></tr>
</table>

### Characteristics



### Maximum number of manifold stations that can operate simultaneously

| Item | Model | VKMX |
|---|---|---|
| Ø8 tube | Complex exhaust | 5 M |
| | Individual EXH | 10 M |

## Single unit components

### A. Fitting replacement

**P port/ EXH port:**

(1) Dismentling fitting clips

(2) Take out the fittings, then put into new fittings.

(3) Place new fittings onto ejectors and put back the fitting clips

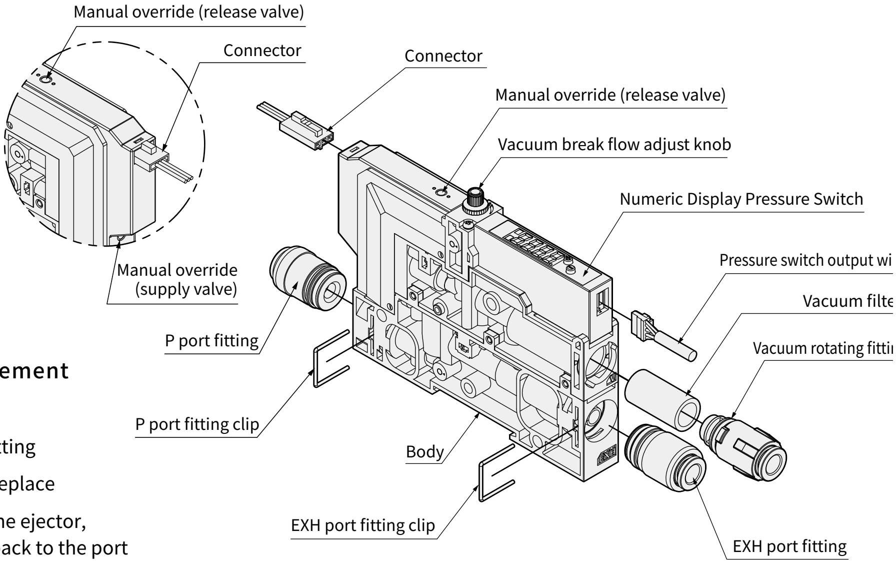
### B. Filter element replacement

**Vacuum port:**

(1) Pull out the vacuum port fitting

(2) Take out the element and replace

(3) Position the element into the ejector, then rotate vacuum fitting back to the port


Manual override (release valve)
Connector
Manual override (supply valve)
Connector
Manual override (release valve)
Vacuum break flow adjust knob
Numeric Display Pressure Switch
Pressure switch output wi
Vacuum filte
Vacuum rotating fitti
P port fitting
P port fitting clip
Body
EXH port fitting clip
EXH port fitting

---

## Component replacement

### A. How to increase manifold stations

(1) Remove three tension bolts

(2) Dismentling right end plate (Be careful not to drop the gasket and PC board)

(3) Mount a single unit to the end surface (Be careful not to drop the gasket and PC board)

(4) Lock three tension bolts

### B. Silencer cover replacement

**Sound absorbing element:**

(1) Remove the clip

(1) Remove the silencer cover, pull out the sound absorbing element

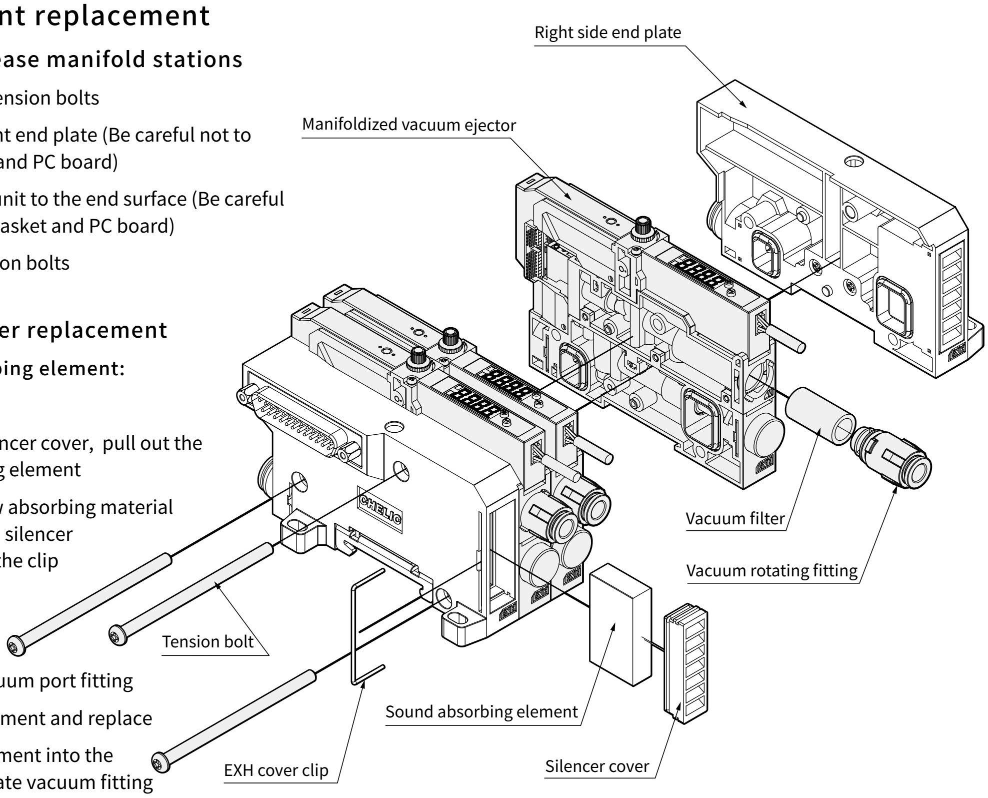
(1) Replace the new absorbing material and position the silencer cover, then put the clip back to unit

**Vacuum port:**

(1) Pull out the vacuum port fitting

(2) Take out the element and replace

(3) Position the element into the ejector, then rotate vacuum fitting back to the port

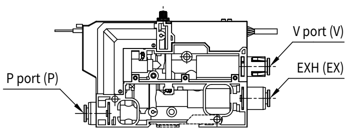

Right side end plate
Manifoldized vacuum ejector
CHELIC
Vacuum filter
Vacuum rotating fitting
Tension bolt
Sound absorbing element
EXH cover clip
Silencer cover

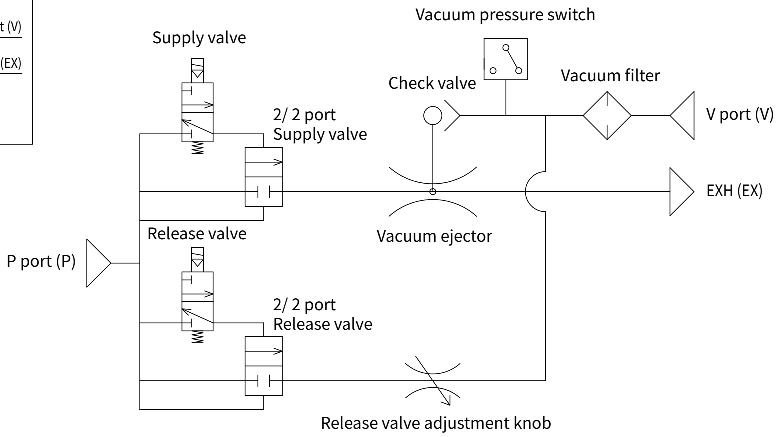
# VKM series Module Type Vacuum Ejector

## Circuit expression

### Vacuum ejector/ Single unit

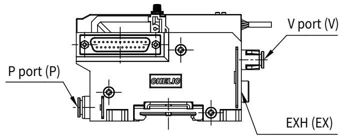
Single unit: VKM 15 - A - □□□□

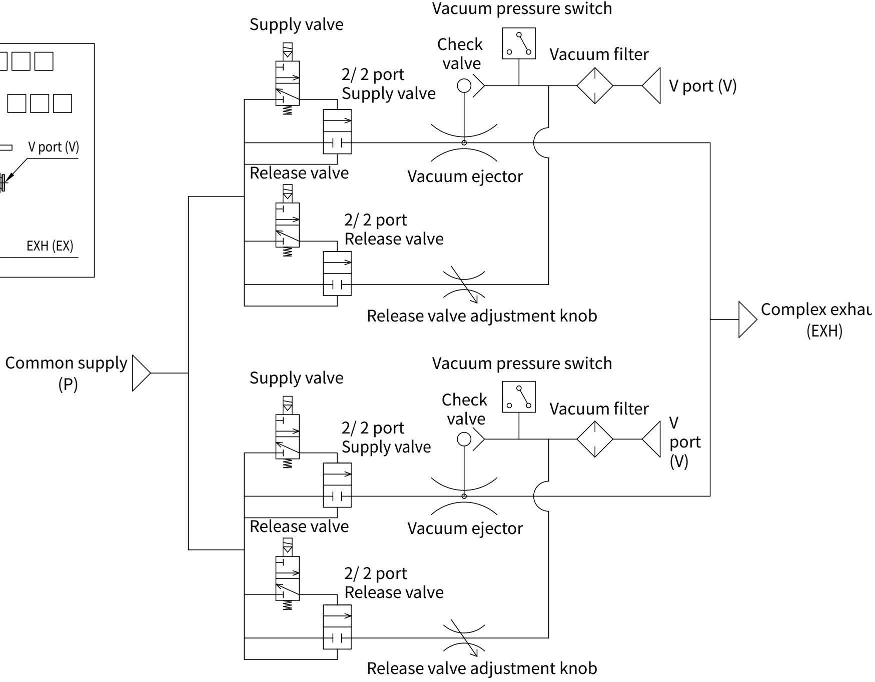

V port (V)
EXH (EX)
P port (P)


Vacuum pressure switch
Supply valve
Check valve
Vacuum filter
V port (V)
2/ 2 port
Supply valve
EXH (EX)
Release valve
Vacuum ejector
P port (P)
2/ 2 port
Release valve
Release valve adjustment knob

### Vacuum ejector/ Manifold type

Manifold type: VKM 15 - B - □□□□
+
VKMX - □ - E5 - □□□


V port (V)
P port (P)
CHELIC
EXH (EX)


Vacuum pressure switch
Supply valve
Check valve
Vacuum filter
2/ 2 port
Supply valve
V port (V)
Release valve
Vacuum ejector
2/ 2 port
Release valve
Release valve adjustment knob
Complex exhau
(EXH)
Common supply
(P)
Vacuum pressure switch
Supply valve
Check valve
Vacuum filter
2/ 2 port
Supply valve
V
port
(V)
Release valve
Vacuum ejector
2/ 2 port
Release valve
Release valve adjustment knob

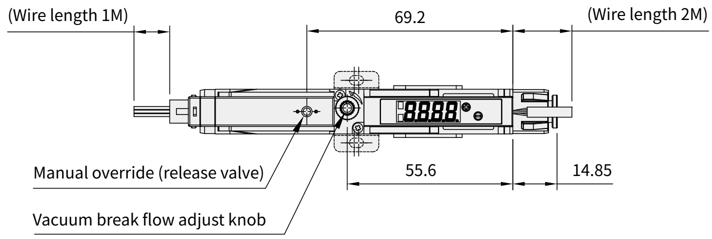
# VKM series Module Type Vacuum Ejector

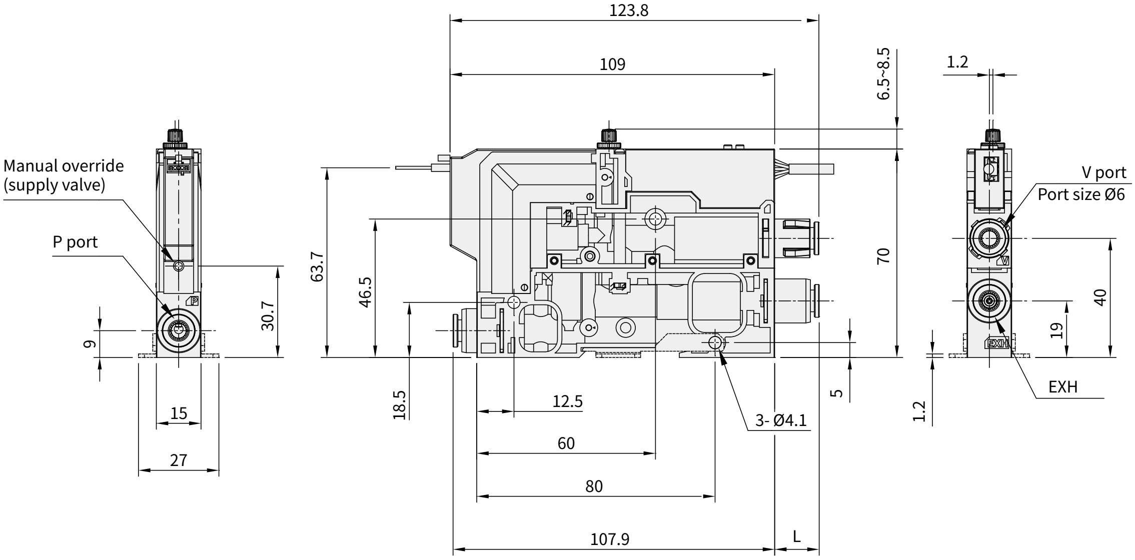
## Dimensions

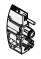
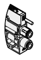
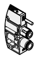
CHELIC

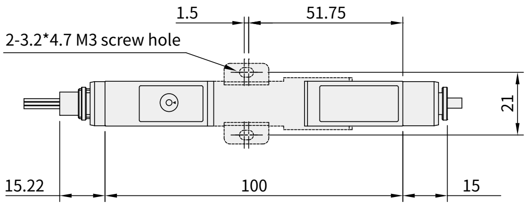
### Single unit components

VKM 15 -A-06- E2 -10-DC24-H1-P04-C2


(Wire length 1M)
69.2
(Wire length 2M)
8888
Manual override (release valve)
55.6
14.85
Vacuum break flow adjust knob


123.8
109
6.5~8.5
1.2
Manual override
(supply valve)
P port
30.7
9
15
27
63.7
46.5
18.5
12.5
60
80
107.9
L
3- Ø4.1
5
70
P
V port
Port size Ø6
V
40
19
EXH
1.2

| Exhaust | | | |
|---|---|---|---|
| Mark | Type | Image | L(mm) |
| E1 | Direct exhaust |  | 12 |
| E2 | Ø 6 tube |  | 15 |
| E3 | Ø 8 tube |  | 15 |

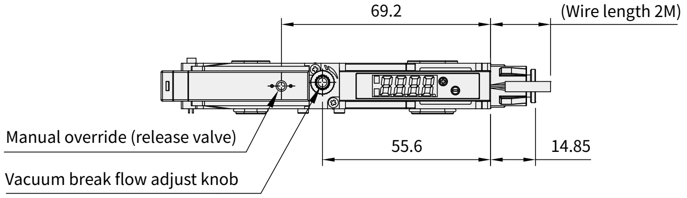

1.5
51.75
2-3.2*4.7 M3 screw hole
21
15.22
100
15

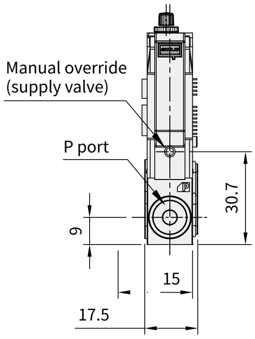
# VKM series Module Type Vacuum Ejector

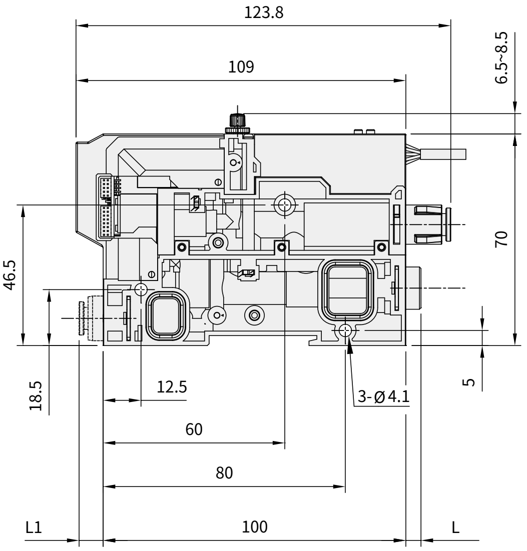
## Dimensions

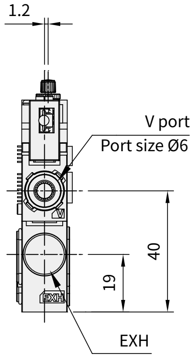
### Manifold vacuum ejector must with side end plate

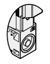
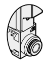
VKM 15-B-06-E4-10-DC24-H2-P04

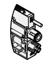
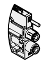
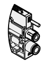
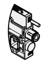

69.2
(Wire length 2M)
Manual override (release valve)
Vacuum break flow adjust knob
55.6
14.85


Manual override
(supply valve)
P port
30.7
9
15
17.5

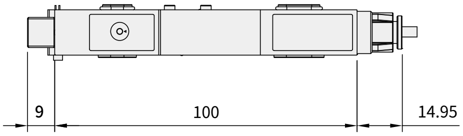

123.8
109
6.5~8.5
46.5
70
18.5
12.5
60
80
3-Ø4.1
5
L1
100
L


1.2
V port
Port size Ø6
40
19
EXH

| P port | | | |
|---|---|---|---|
| Mark | Type | Image | L1L(mm) |
| 00 | Closed type |  | - |
| 06 | Ø 6 supply tube |  | 8 |
| 08 | Ø 8 supply tube | | 8 |

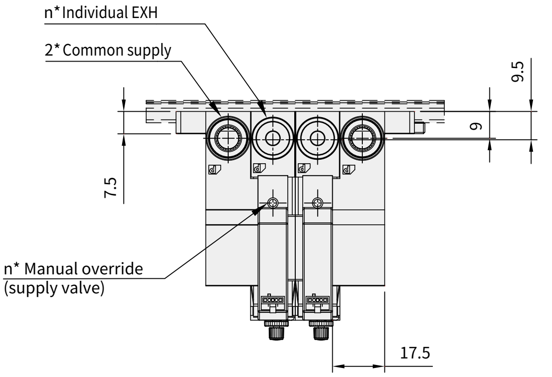
| Exhaust | | | |
|---|---|---|---|
| Mark | Type | Image | L(mm) |
| E1 | Direct exhaust |  | 12 |
| E2 | Ø 6 tube |  | 15 |
| E3 | Ø 8 tube |  | 15 |
| E4 | Closed type |  | 5 |

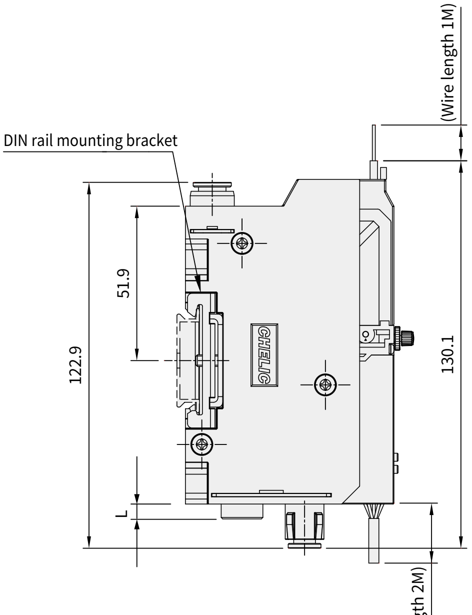
※ While select E4, it can't be applied with E6 together

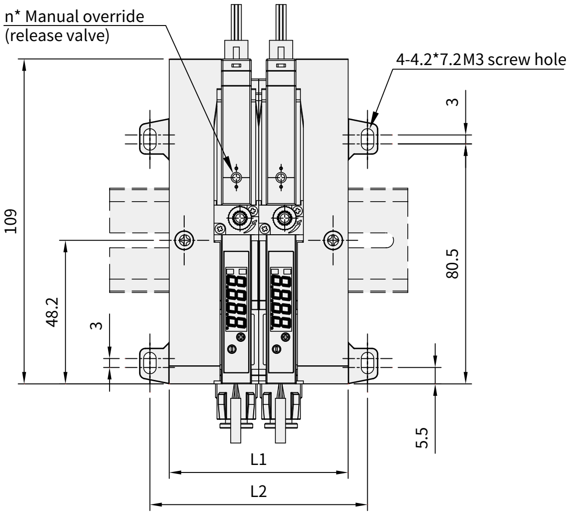


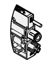
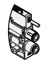
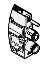
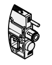
## Manifold individual wiring

VKM 15-B-00-E4-10-DC24-H1-P04 *2pcs
+
VKMX-06-E5-L1-02-C1*1set


n* Individual EXH
2* Common supply
9.5
9
7.5
n* Manual override
(supply valve)
17.5

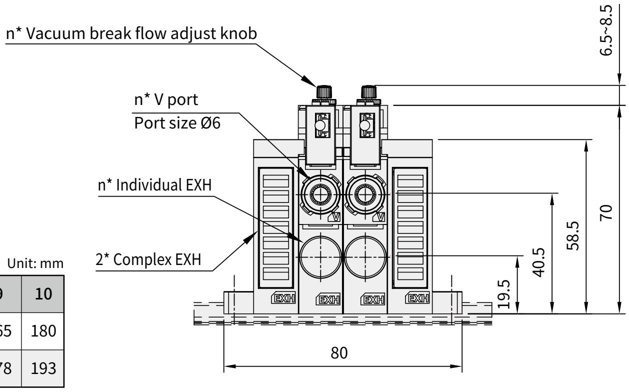

(Wire length 1M)
DIN rail mounting bracket
51.9
122.9
CHELIC
130.1
L
(Wire length 2M)


n* Manual override
(release valve)
4-4.2*7.2M3 screw hole
3
109
80.5
48.2
3
5.5
L1
L2

| Exhaust | | | |
|---|---|---|---|
| Mark | Type | Image | L(mm) |
| E1 | Direct exhaust |  | 12 |
| E2 | Ø 6 tube |  | 15 |
| E3 | Ø 8 tube |  | 15 |
| E4 | Closed type |  | 5 |

Unit: mm

| Manifold no. / Mark | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L2 | 58 | 73 | 88 | 103 | 118 | 133 | 148 | 163 | 178 | 193 |

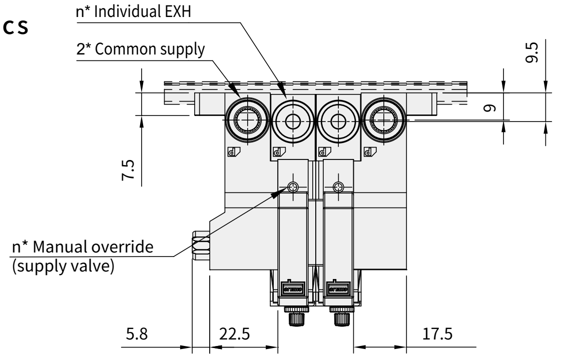

n* Vacuum break flow adjust knob
6.5~8.5
n* V port
Port size Ø6
n* Individual EXH
2* Complex EXH
EXH
70
58.5
40.5
19.5
80

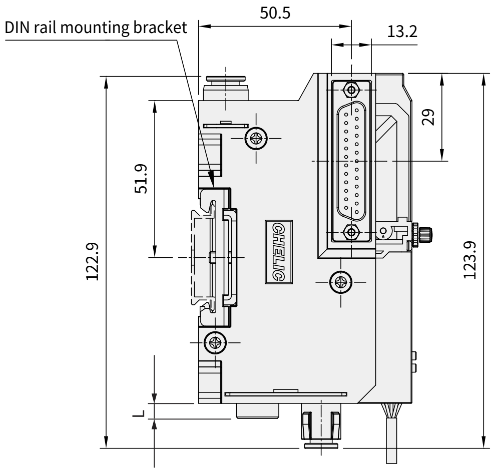
# VKM series Module Type Vacuum Ejector

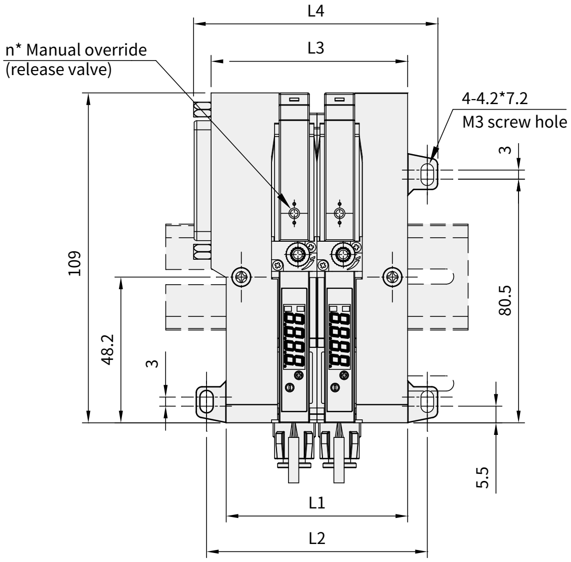
## Dimensions

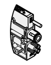
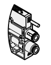
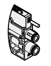
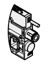
### D-Sub Connector

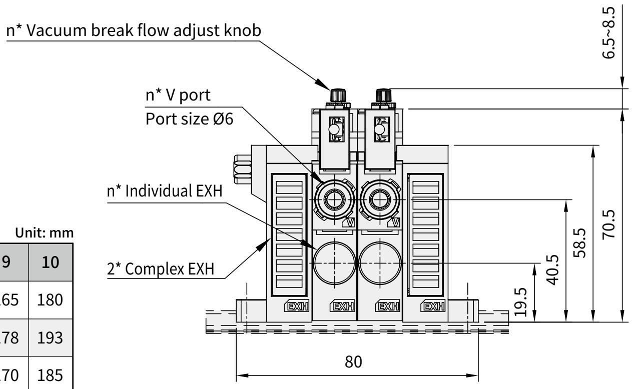
VKM 15-B-00-E4-10-DC24-H2-P04 *2pcs
+
VKMX-06-E5-K1-02-C1*1set


n* Individual EXH
2* Common supply
9.5
9
7.5
n* Manual override
(supply valve)
5.8
22.5
17.5


DIN rail mounting bracket
50.5
13.2
29
51.9
122.9
123.9
L
CHELIC


L4
L3
n* Manual override
(release valve)
4-4.2*7.2
M3 screw hole
3
109
48.2
3
80.5
5.5
L1
L2

| Exhaust | | | |
|---|---|---|---|
| Mark | Type | Image | L(mm) |
| E1 | Direct exhaust |  | 12 |
| E2 | Ø 6 tube |  | 15 |
| E3 | Ø 8 tube |  | 15 |
| E4 | Closed type |  | 5 |


n* Vacuum break flow adjust knob
n* V port
Port size Ø6
n* Individual EXH
2* Complex EXH
6.5~8.5
70.5
58.5
40.5
19.5
80
EXH
EXH
EXH
EXH

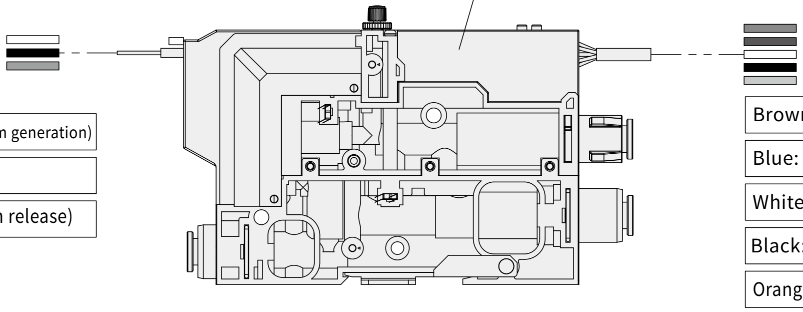
Unit: mm

| Mark \ Manifold no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L2 | 58 | 73 | 88 | 103 | 118 | 133 | 148 | 163 | 178 | 193 |
| L3 | 50 | 65 | 80 | 95 | 110 | 125 | 140 | 155 | 170 | 185 |
| L4 | 65.8 | 80.8 | 95.8 | 110.8 | 125.8 | 140.8 | 155.8 | 170.8 | 185.8 | 200.8 |

# VKM series Module Type Vacuum Ejector

## Wiring expression

### Vacuum ejector/ Single unit



VKM 15-A-06-E2-10-DC24-H1-P04 *1pcs

**Input**

(PNP)

- White: +V (Vacuum generation)
- Black: -COM
- Red: +V (Vacuum release)

(NPN)

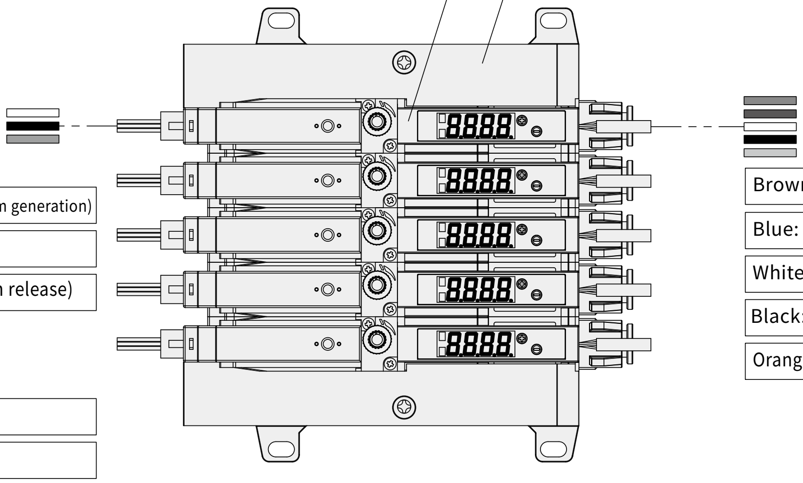
- White: -V
- Black: +COM
- Red: -V

**Output**

- Brown: +V(24V)
- Blue: GND
- White: OUT1
- Black: OUT2
- Orange: ANALOG 1~5V

---

### Manifold vacuum ejector with individual wiring



VKM 15-B-00-E1-10-DC24-H1-P04 *5pcs

VKMX 15-06-E6-L-05*1set

**Input**

(PNP)

- White: +V (Vacuum generation)
- Black: -COM
- Red: +V (Vacuum release)

(NPN)

- White: -V
- Black: +COM
- Red: -V

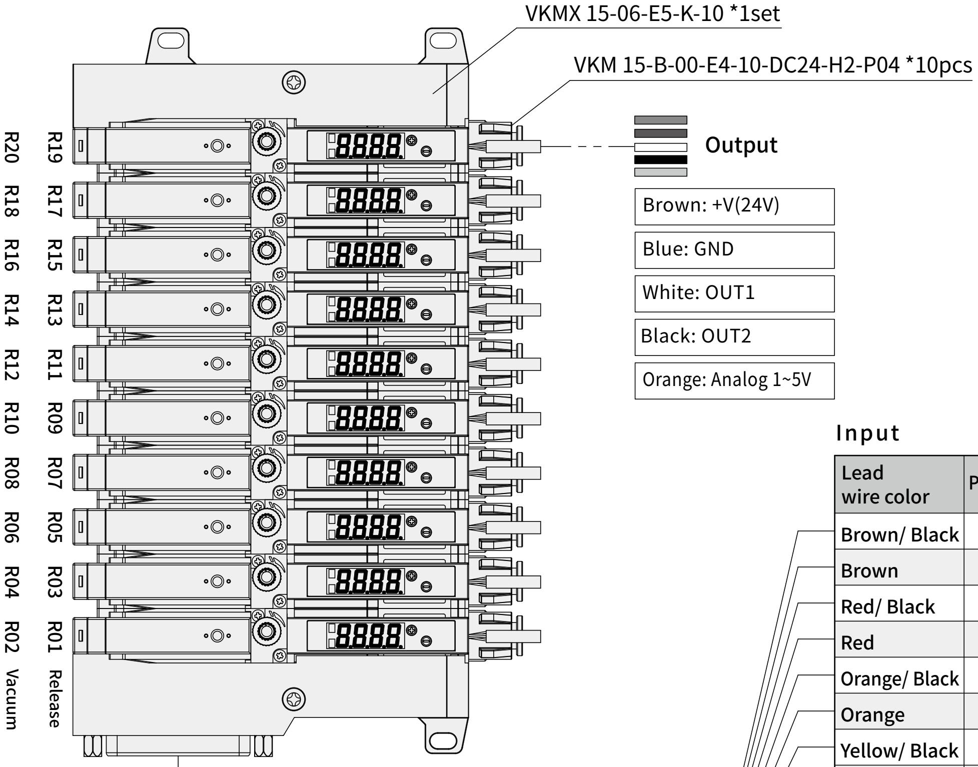
**Output**

- Brown: +V(24V)
- Blue: GND
- White: OUT1
- Black: OUT2
- Orange: ANALOG 1~5V

# VKM series Module Type Vacuum Ejector

## Wiring expression

### Manifold vacuum ejector with D-sub connector


VKMX 15-06-E5-K-10 *1set
VKM 15-B-00-E4-10-DC24-H2-P04 *10pcs
R20
R19
R18
R17
R16
R15
R14
R13
R12
R11
R10
R09
R08
R07
R06
R05
R04
R03
R02
R01
Vacuum
Release
8888

**Output**

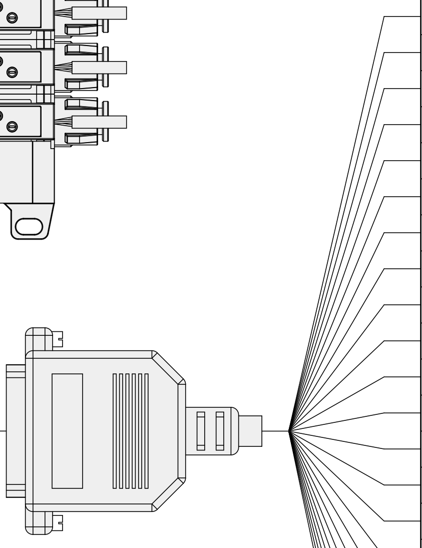
Brown: +V(24V)

Blue: GND

White: OUT1

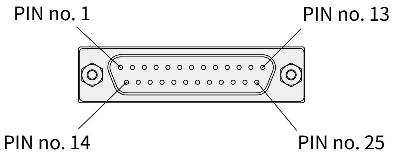
Black: OUT2

Orange: Analog 1~5V



### Input

| Lead wire color | PIN no. | Coil no. |
|---|---|---|
| Brown/ Black | 14 | R01 |
| Brown | 01 | R02 |
| Red/ Black | 15 | R03 |
| Red | 02 | R04 |
| Orange/ Black | 16 | R05 |
| Orange | 03 | R06 |
| Yellow/ Black | 17 | R07 |
| Yellow | 04 | R08 |
| Green/ Black | 18 | R09 |
| Green | 05 | R10 |
| Blue/ Black | 19 | R11 |
| Blue | 06 | R12 |
| Purple/ Black | 20 | R13 |
| Purple | 07 | R14 |
| Gray/ Black | 21 | R15 |
| Gray | 08 | R16 |
| White/ Black | 22 | R17 |
| Black | 09 | R18 |
| Pink/ Black | 23 | R19 |
| White | 10 | R20 |
| Light green/Black | 24 | R21 |
| Pink | 11 | R22 |
| Light blue/ Black | 25 | R23 |
| Light green | 12 | R24 |
| Light blue | 13 | COM |


PIN no. 1
PIN no. 13
PIN no. 14
PIN no. 25

### Cable assembly:

| Cable length (L) | Model | Note |
|---|---|---|
| 1M | VKMX-***-K1 | Cable<br>0.3mm$^2$ x 25 Core |
| 3M | VKMX-***-K3 | |

# VKM series Module Type Vacuum Ejector

## Specific product precautions

## Caution for design, selection and maintenance

### ⚠ WARNING

- Avoid chemical, corrosive and inflammable gas; avoid sea water, steam high temperature place in surrounding.
- Avoid oil contain gas , don't oil mist in the pipeline , oil in pipeline will cause blockage resuliting in poor effect.
- Please don't use fluid other than compressed air , never suck in fluid other than clean air.
- When using gas, the gas should be kept dry, and there should be no large amount of water vapor, which will cause the possibility of abnormal pressure detector.

### ⚠ CAUTION

- Please don't disassemble the vacuum generator in discretion, error disassembing will lead to hazard and cause problem on operation of the product.
- Please be sure to use the supply pressure within the product specification range.If the maximum operating pressure is exceeded, the product may be damaged.
- During operation, please do not drop, hit, or apply excessive impact (100m/s) even if the body is not damaged, the internal part may be damaged and may cause malfunction.

# VKMT series Module Type Energy-saving Vacuum Ejector

## Product features

## Feature

- Modularization: Simple structure which can be changed easily.
- Fitting design, easy piping.
- Visualization: Digital display of pressure sensor which can visualiz by monitor.
- Multi-function: Vacuum ejector combined with breaking solenoid valve also with vacuum filter and silencer.
- It can be instal upright or sideways; Simple structure, easy installation and disassembly.

## Specification

| Item \ Model | | | VKMT |
|---|---|---|---|
| Fluid | | | Air |
| Pressure range | | MPa (kPa) | 0.25 ～ 0.7 ( 250 ～ 700 ) |
| Proof pressure | | MPa (kPa) | 0.5(500) |
| Vacuum value | | kPa | -90(675) |
| Nozzle diameter | | Ømm | 1.0 |
| Max. suction flow | | L/min | 45 |
| Ambient and fluid temperature | | ° C | 0 ～ 50 |
| Material | Body | | Copper (Nickel plating) |
| | Plastic | | NYLON, PBT |
| Port size | | mm | Ø6, Ø8 |
| Valve type | | | SR2 - 100 |
| Rated voltage | | V | 24±10%VDC |
| Power consumption | | W | 1.2 |

## Pressure switch specification

| Item \ Model | | | PST 2 |
|---|---|---|---|
| Rated pressure range | | kPa | - 100.0~0 |
| Pressure range | | kPa | -100.0~100.0 |
| Withstanding pressure | | kPa | 500 |
| Applicable fluid | | | Filtered air, Non-corrosive, Non-flammable gas |
| Power voltage | | | 12 to 24V DC ± 10%, Ripple ≦ 10% |
| Repeatability | | | ±0.2% F.S.± 1 digit |
| Current consumption | | mA | ≦ 40( With no load ) |
| Response time | | ms | ≦ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| Environmental resistance | Enclosure | | IP40 |
| | Ambient temp. range | | 0~50° C (No condensation or freezing ) |
| | Ambient humidity range | | Operation / S torage : 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand voltage | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | ≥ 50 MΩ ( a t 500 V DC, between case and lead wire ) |
| | Vibration | | Total amplitude 1.5 mm, 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | 980 m/s$^2$ ( 100G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | | ±2% F.S. (within 0–50° C temperature range) |
| Weight ( With 1 Meter Lead Wire ) | | g | 33 |

# VKMT series Module Type Energy-saving Vacuum Ejector

## Code of order

### Code of order - Vacuum ejector/ Single unit

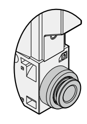
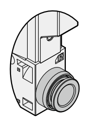
**VKMT - A 06 - E1 - 10 - DC24 - H1 - P04 - S - C2**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

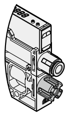
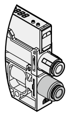
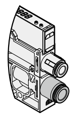
①

| Mark | Model |
|---|---|
| A | Single unit |

②

<table>
<tr><th>Mark</th><th>P port</th></tr>
<tr><td>06</td><td>Ø6 supply tube</td></tr>
<tr><td>08</td><td>Ø8 supply tube</td></tr>
<tr><th colspan="2">Image</th></tr>
<tr><td></td><td></td></tr>
<tr><td>Ø6</td><td>Ø8</td></tr>
</table>

③

<table>
<tr><th>Mark</th><th colspan="2">Exhaust</th></tr>
<tr><td>E1</td><td colspan="2">Direct exhaust</td></tr>
<tr><td>E2</td><td colspan="2">Ø6 tube</td></tr>
<tr><td>E3</td><td colspan="2">Ø8 tube</td></tr>
<tr><th colspan="3">Image</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Direct exhaust</td><td>Ø6 tube</td><td>Ø8 tube</td></tr>
</table>

④

| Mark | Nozzle (mm) |
|---|---|
| 10 | Ø1.0 |

⑤

| Mark | Voltage |
|---|---|
| DC 24 | 24V 1.2W |

⑥

| Mark | Electrical entry |
|---|---|
| H1 | Individual wiring |

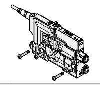
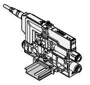
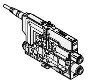
⑦

| Mark | Output |
|---|---|
| P04 | NPN output |
| P05 | PNP output |
| P06 | Analog1~5V |

⑧

| Mark | Cable connector |
|---|---|
| S | Straight type 2 M |
| H | Angle type 2 M |

⑨

<table>
<tr><th>Mark</th><th>Bracket</th></tr>
<tr><td>None</td><td>No bracket</td></tr>
<tr><td>C1</td><td>Rail bracket</td></tr>
<tr><td>C2</td><td>Mounting bracket</td></tr>
<tr><th colspan="2">Image</th></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">No bracket</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Rail bracket</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Mounting bracket</td></tr>
</table>

### Code of order - Vacuum ejector/ Manifold type

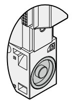
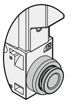
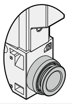
**VKMT - B 00 - E4 - 10 - DC24 - H2 - S - P04**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

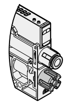
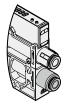
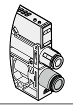
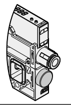
①

| Mark | Model |
|---|---|
| B | Manifold type |

②

<table>
<tr><th>Mark</th><th colspan="2">P port</th></tr>
<tr><td>00</td><td colspan="2">Closed type</td></tr>
<tr><td>06</td><td colspan="2">Ø6 supply tube</td></tr>
<tr><td>08</td><td colspan="2">Ø8 supply tube</td></tr>
<tr><th colspan="3">Image</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Closed type</td><td>Ø6</td><td>Ø8</td></tr>
</table>

③

<table>
<tr><th>Mark</th><th>Exhaust</th></tr>
<tr><td>E1</td><td>Direct exhaust</td></tr>
<tr><td>E2</td><td>Ø6 tube</td></tr>
<tr><td>E3</td><td>Ø8 tube</td></tr>
<tr><td>E4</td><td>Closed type</td></tr>
<tr><th colspan="2">Image</th></tr>
<tr><td></td><td></td></tr>
<tr><td>Direct exhaust</td><td>Ø6 tube</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Ø8 tube</td><td>Closed type</td></tr>
</table>

- While select E4, it can't be applied with E6 together

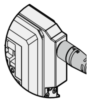
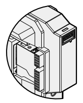
④

| Mark | Nozzle (mm) |
|---|---|
| 10 | Ø1.0 |

⑤

| Mark | Voltage |
|---|---|
| DC 24 | 24V 1.2W |

⑥

<table>
<tr><th>Mark</th><th>Electrical entry</th></tr>
<tr><td>H1</td><td>Individual wiring</td></tr>
<tr><td>H2</td><td>Grouping wiring</td></tr>
<tr><th colspan="2">Image</th></tr>
<tr><td></td><td></td></tr>
<tr><td>Individual wiring</td><td>Grouping wiring</td></tr>
</table>

- H1: Apply with L type plug
- H2: Apply with "K1/K3" D type plug

⑦

| Mark | Cable connector |
|---|---|
| S | Straight type 2 M |
| H | Angle type 2 M |

⑧

| Mark | Output |
|---|---|
| P04 | NPN output |
| P05 | PNP output |
| P06 | Analog1~5V |

# VKMT series Module Type Energy-saving Vacuum Ejector

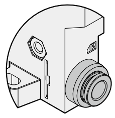
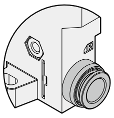
## Code of order

## Code of order - Vacuum ejector/ Side end plate

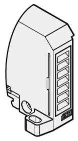
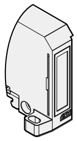
**VKMX 06 - E5 - K1 - 02 - C1**

① ② ③ ④ ⑤

①

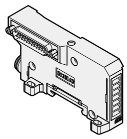
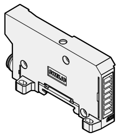
| Mark | Unified exhaust type |
|---|---|
| 06 | Ø6 supply tube |
| 08 | Ø8 supply tube |
| Image | |
|  | |
| Ø6 | |
|  | |
| Ø8 | |

②

| Mark | Unified exhaust type |
|---|---|
| E5 | Complex exhaust |
| E6 | Closed type |
| Image | |
|  |  |
| Complex exhaust | Closed type |

- While select E6, it can't be applied with E4 together

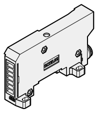
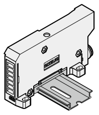
③

| Mark | Electrical entry |
|---|---|
| K1 | D type plug:<br>1M cable length |
| K3 | D type plug:<br>3M cable length |
| L3 | Without plug |
| Image | |
|  |  |
| D type plug | Without plug |

④

| Mark | Manifold quantity |
|---|---|
| 01 | 1 M |
| 02 | 2 M |
| ⋮ | ⋮ |
| 07 | 7 M |

⑤

| Mark | Bracket |
|---|---|
| None | No bracket |
| C1 | Rail bracket |
| Image | |
|  | |
| No bracket | |
|  | |
| Rail bracket | |

## Product weight

| Item | Model | Weight (g) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Single unit vacuum ejector | VKMT-A-00-E1-10-DC24-H1-P04 | 143 | | | | | | |
| Manifold type vacuum ejector | VKMT-B-00-E4-10-DC24-H2-P04 | 141 | | | | | | |
| Side end plate type | VKMX-08-E5-K1-01-C1<br>⋮<br>07 | 1 M | 2 M | 3 M | 4 M | 5 M | 6 M | 7 M |
| | | 172 | 177 | 182 | 187 | 192 | 197 | 202 |

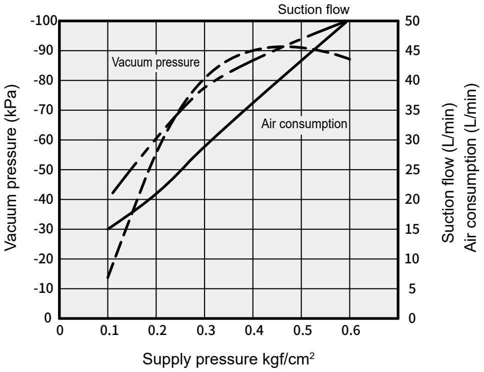
## Maximum number of manifold stations that can operate simultaneously

| Item | Specification | VKMX |
|---|---|---|
| Ø8 tube | Complex exhaust | 6 M |
| | Individual EXH | 7M |

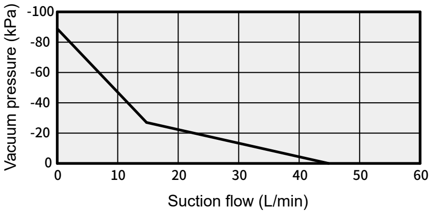
# VKMT series Module Type Energy-saving Vacuum Ejector

## Product features

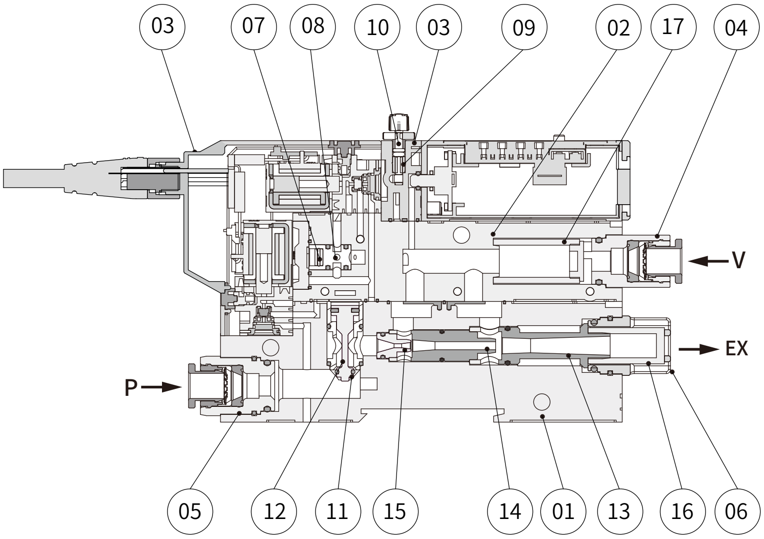
## Characteristics



## Flow rate characteristics



## Internal structure



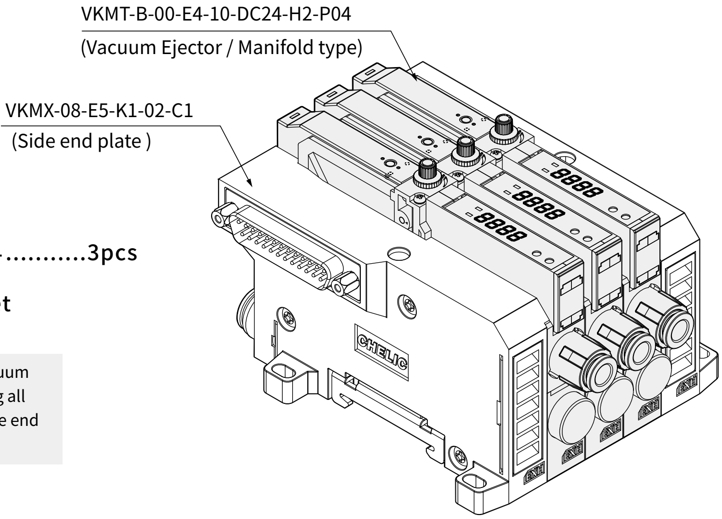
## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Base/ Single unit | PBT+Fiber | 10 | Release adjustor lever | Copper Alloy |
| 02 | Filter holder/ Single unit | PBT+Fiber | 11 | Inlet port lever | Copper Alloy |
| 03 | Cover /Single unit | PC | 12 | Inlet port holder | Copper Alloy |
| 04 | Filter knob | Nylon fiber | 13 | Spool #2 | Copper Alloy |
| 05 | P port fitting | Copper Alloy | 14 | Spool #1 | Copper Alloy |
| 06 | EXH port fitting | Copper Alloy | 15 | Vacuum nozzle | Copper Alloy |
| 07 | Break valve lever | Copper Alloy | 16 | EXH filter | Foam |
| 08 | Release holder | Copper Alloy | 17 | Suction filter | Foam |
| 09 | Break valve base | Copper Alloy | | | |

# VKMT series Module Type Energy-saving Vacuum Ejector

## Description/ Setting

### Manifold type ordering expression


VKMT-B-00-E4-10-DC24-H2-P04
(Vacuum Ejector / Manifold type)
VKMX-08-E5-K1-02-C1
(Side end plate )
8888
8888
8888
CHELIC

1. VKMT-B-00-E4-10-DC24-H2-P04...........3pcs

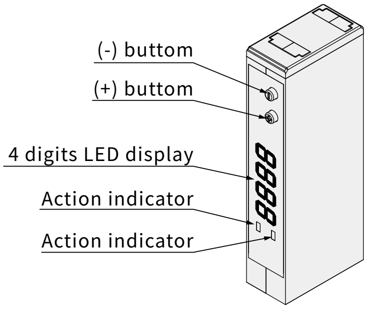
+

2. VKMX-08-E5-K1-02-C1 ........1set

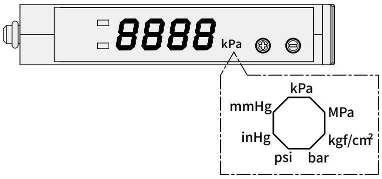
* efore ordering, please confirm the type of vacuum ejector and quantity. After selection, gathering all the vacuum ejectors and chose the type of side end plate.

### PST2 numeric display pressure switch setting instructions

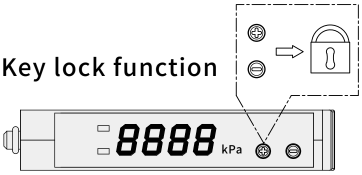
- 2 sets of output & linear analogy output (1~5V)
- Compact size: 50x10x20mm$^3$( L x W x H )
- Key lock function
- Various pressure units available
  kPa, MPa, $kgf/cm^2$, bar, psi, inHg, mmHg


(-) buttom
(+) buttom
4 digits LED display
Action indicator
Action indicator
8888

### Various pressure units available


8888
kPa
kPa
MPa
kgf/cm²
bar
psi
inHg
mmHg

### Key lock function



Key lock mode can prevent improper operation to pressure switch.

Key lock mode can pbe activated by pressing + and - for 3 seconds.

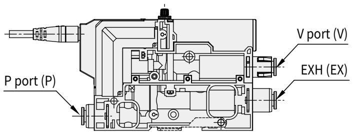
# VKMT series Module Type Energy-saving Vacuum Ejector

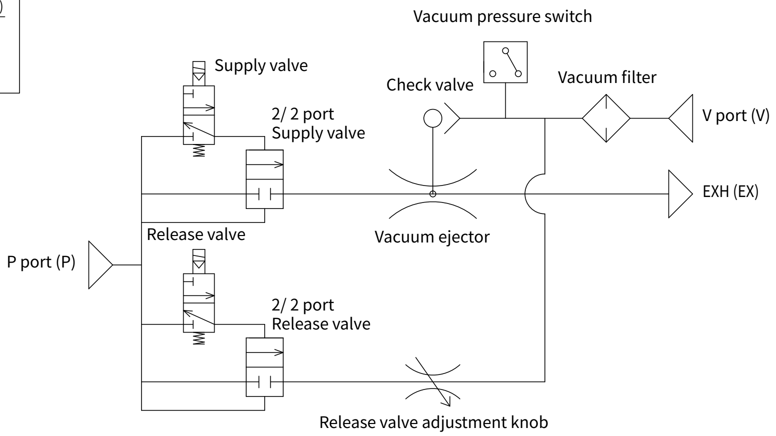
## Circuit Expression

**CHELIC**

### Vacuum ejector/ Single unit

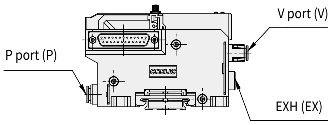
Single unit type: VKMT - A - ☐☐☐☐

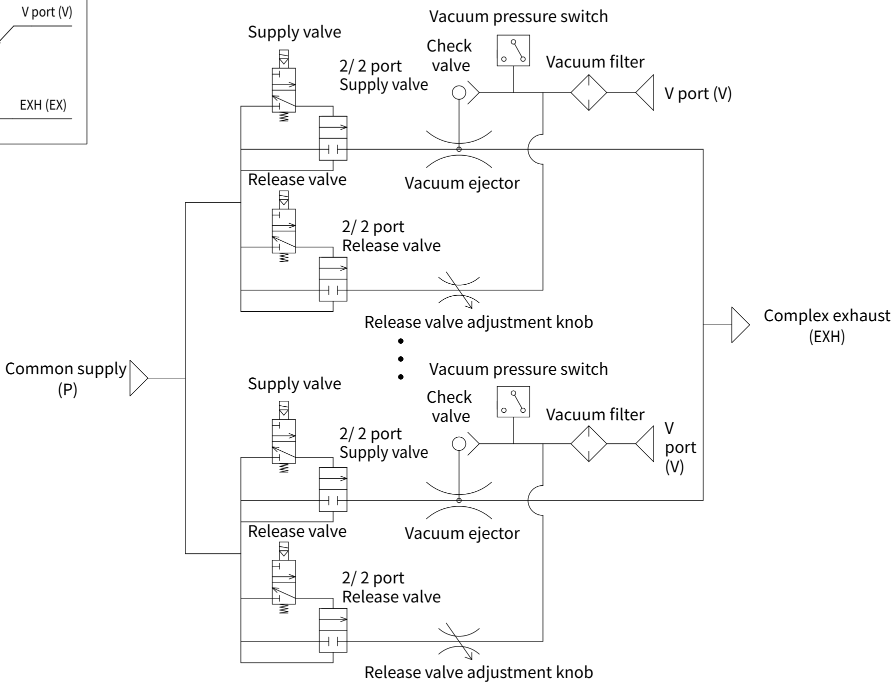

V port (V)
EXH (EX)
P port (P)


Vacuum pressure switch
Supply valve
Check valve
Vacuum filter
2/ 2 port
Supply valve
V port (V)
EXH (EX)
Release valve
Vacuum ejector
P port (P)
2/ 2 port
Release valve
Release valve adjustment knob

### Vacuum ejector/ Manifold type

Manifold type: VKMT - B - ☐☐☐☐
+
VKMX - ☐- E5 - ☐☐☐


V port (V)
P port (P)
EXH (EX)


Vacuum pressure switch
Supply valve
Check valve
2/ 2 port
Supply valve
Vacuum filter
V port (V)
Release valve
Vacuum ejector
2/ 2 port
Release valve
Release valve adjustment knob
Complex exhaust
(EXH)
Common supply
(P)
Vacuum pressure switch
Supply valve
Check valve
Vacuum filter
2/ 2 port
Supply valve
V
port
(V)
Release valve
Vacuum ejector
2/ 2 port
Release valve
Release valve adjustment knob

# VKMT series Module Type Energy-saving Vacuum Ejector

Description/ Setting

## Single unit components

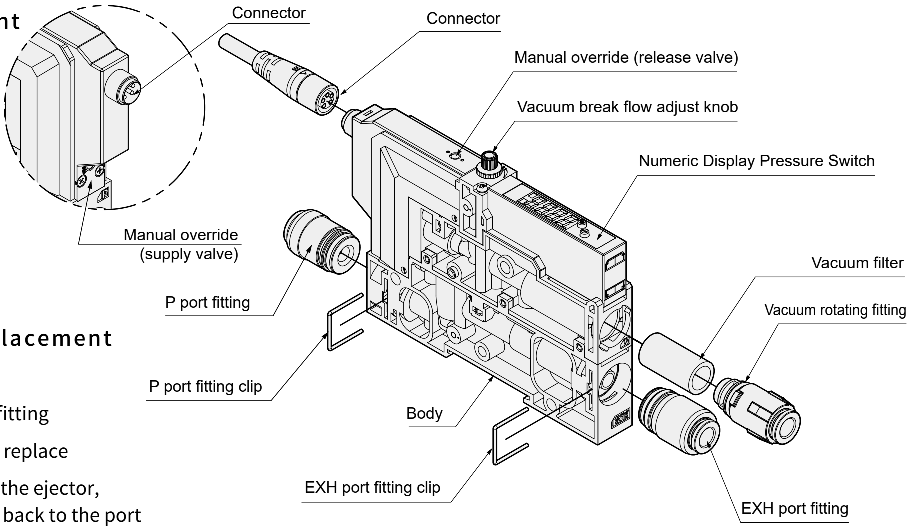
### A. Fitting replacement

● P port/ EXH port:

(1) Dismentling fitting clips

(2) Take out the fittings, then put into new fittings.

(3) Place new fittings onto ejectors and put back the fitting clips


Connector
Connector
Manual override (release valve)
Vacuum break flow adjust knob
Numeric Display Pressure Switch
Manual override (supply valve)
Vacuum filter
Vacuum rotating fitting
P port fitting
P port fitting clip
Body
EXH port fitting clip
EXH port fitting

### B. Filter element replacement

● Vacuum port:

(1) Pull out the vacuum port fitting

(2) Take out the element and replace

(3) Position the element into the ejector, then rotate vacuum fitting back to the port

---

## Component replacement

### A. How to increase manifold stations

(1) Remove three tension bolts

(2) Dismentling right end plate (Be careful not to drop the gasket and PC board)

(3) Mount a single unit to the end surface (Be careful not to drop the gasket and PC board)

(4) Lock three tension bolts

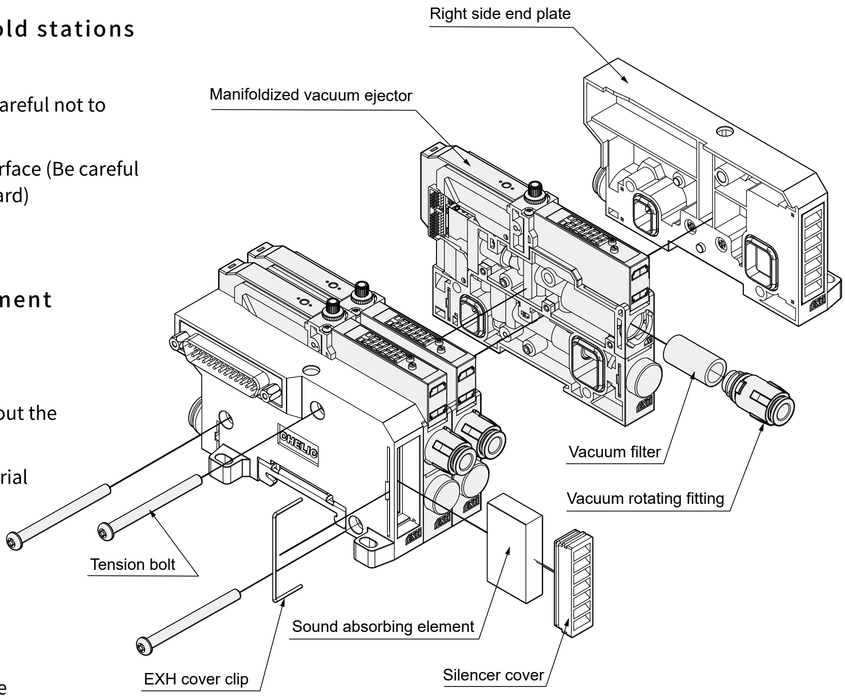
### B. Silencer cover replacement

● Sound absorbing element:

(1) Remove the clip

(1) Remove the silencer cover, pull out the sound absorbing element

(1) Replace the new absorbing material and position the silencer cover, then put the clip back to unit


Right side end plate
Manifoldized vacuum ejector
CHELIC
Vacuum filter
Vacuum rotating fitting
Tension bolt
Sound absorbing element
EXH cover clip
Silencer cover

● Vacuum port:

(1) Pull out the vacuum port fitting

(2) Take out the element and replace

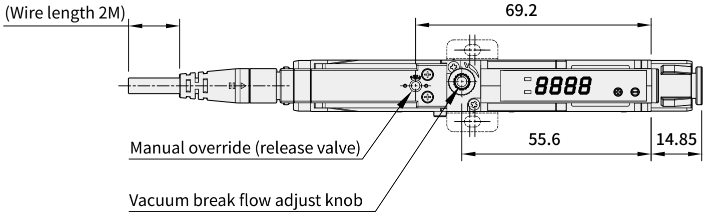
(3) Position the element into the ejector, then rotate vacuum fitting back to the port

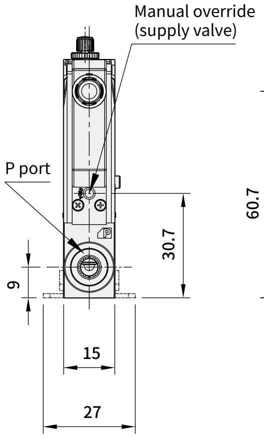
# VKMT series Module Type Energy-saving Vacuum Ejector

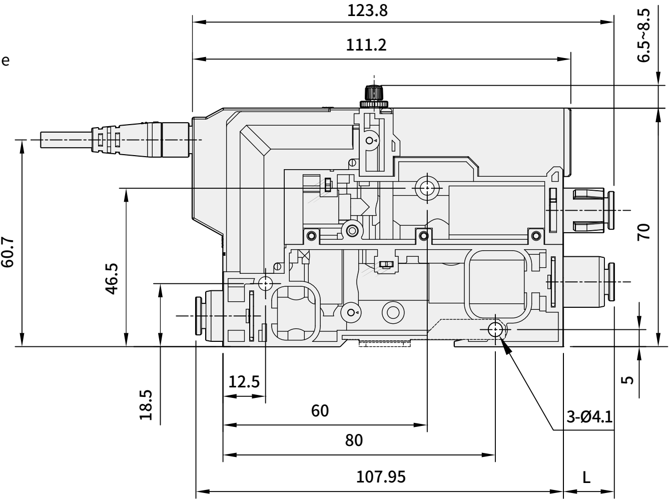
Dimensions

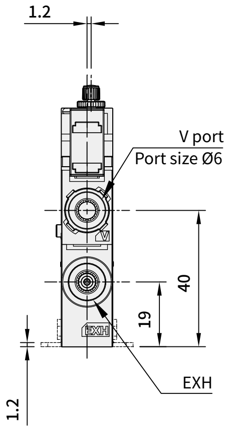
## Vacuum ejector/ Single unit

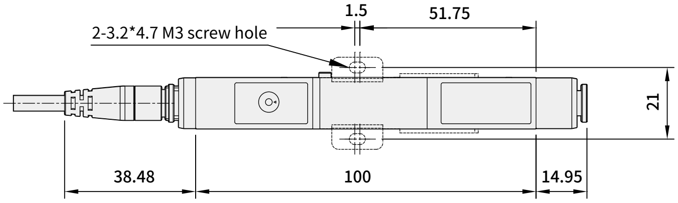
VKMT-A-06-E2-10-DC24-H1-P04-C2


(Wire length 2M)
69.2
8888
Manual override (release valve)
55.6
14.85
Vacuum break flow adjust knob


Manual override
(supply valve)
P port
30.7
9
15
27

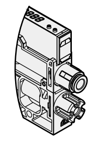
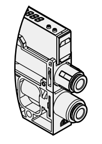
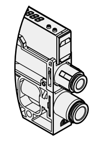

123.8
111.2
6.5~8.5
60.7
46.5
70
18.5
12.5
60
80
107.95
L
5
3-Ø4.1


1.2
V port
Port size Ø6
40
19
EXH
1.2


2-3.2*4.7 M3 screw hole
1.5
51.75
21
38.48
100
14.95

## Exhaust

Unit: mm

| Mark | Model | Image | L | Mark | Model | Image | L | Mark | Model | Image | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E1 | Base/<br>Single unit |  | 12 | E2 | Ø6<br>tube |  | 15 | E3 | Ø8<br>tube |  | 15 |

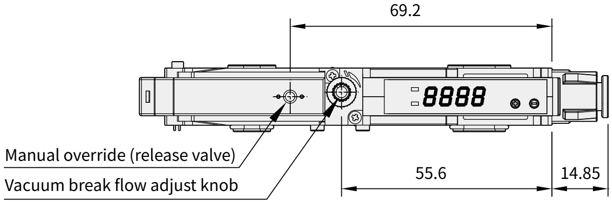
# VKMT series Module Type Energy-saving Vacuum Ejector

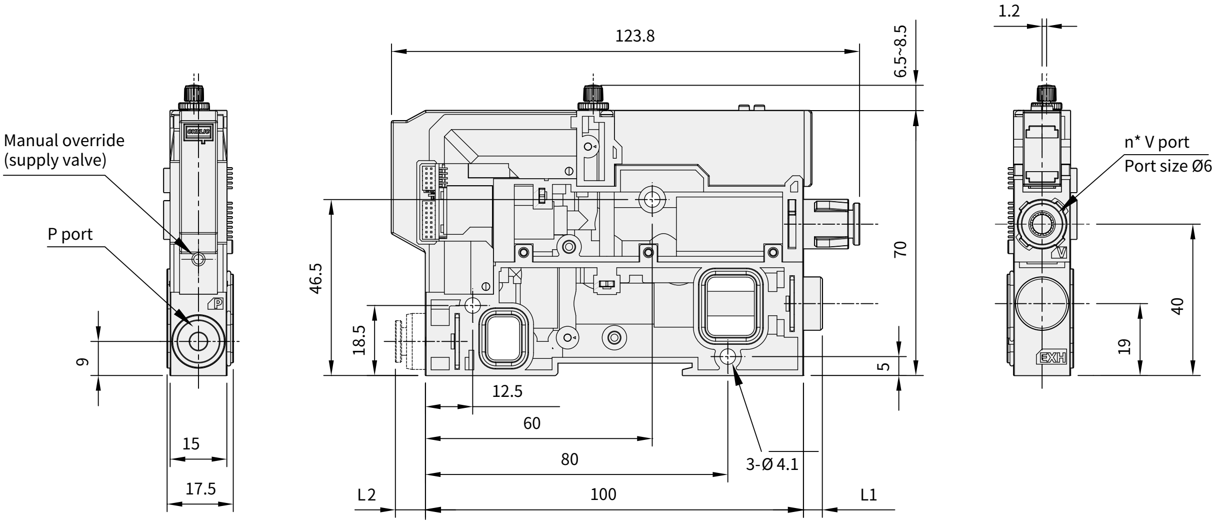
## Dimensions

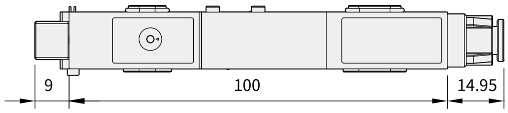
**CHELIC**

### Manifold vacuum ejector must with side end plate

VKMT-B-00-E4-10-DC24-H2-P04

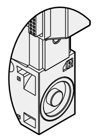
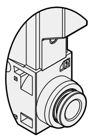
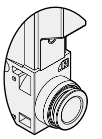

69.2
8888
Manual override (release valve)
Vacuum break flow adjust knob
55.6
14.85


1.2
123.8
6.5~8.5
Manual override
(supply valve)
P port
P
n* V port
Port size Ø6
V
EXH
46.5
18.5
70
40
19
9
5
12.5
60
80
3-Ø 4.1
15
17.5
L2
100
L1



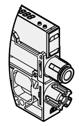
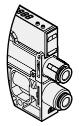
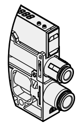
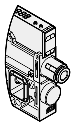
### P port

Unit: mm

| Mark | Model | Image | L2 | Mark | Model | Image | L2 | Mark | Model | Image | L2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | Closed type |  | - | 06 | Ø6<br>supply tube |  | 8 | 08 | Ø8<br>supply tube |  | 8 |

### Exhaust

Unit: mm

| Mark | Model | Image | L1 | Mark | Model | Image | L1 | Mark | Model | Image | L1 | Mark | Model | Image | L1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E1 | Base/<br>Single<br>unit |  | 12 | E2 | Ø6<br>tube |  | 15 | E3 | Ø8<br>tube |  | 15 | E4 | Closed<br>type |  | 5 |

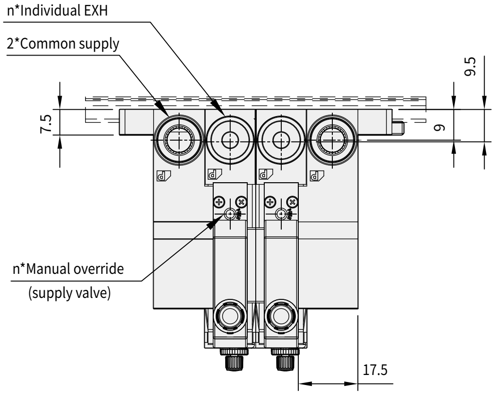
# VKMT series Module Type Energy-saving Vacuum Ejector

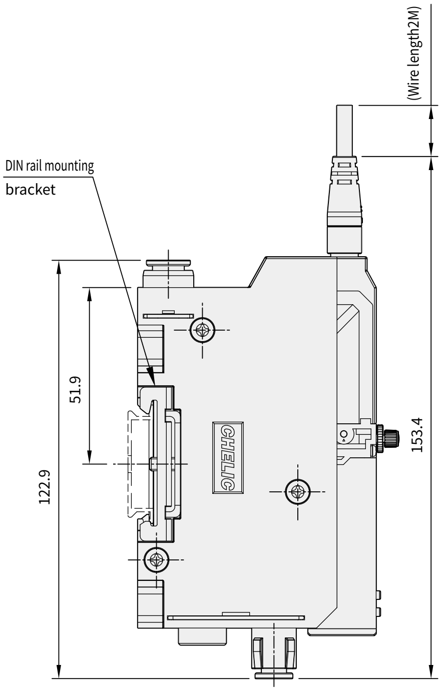
Dimensions

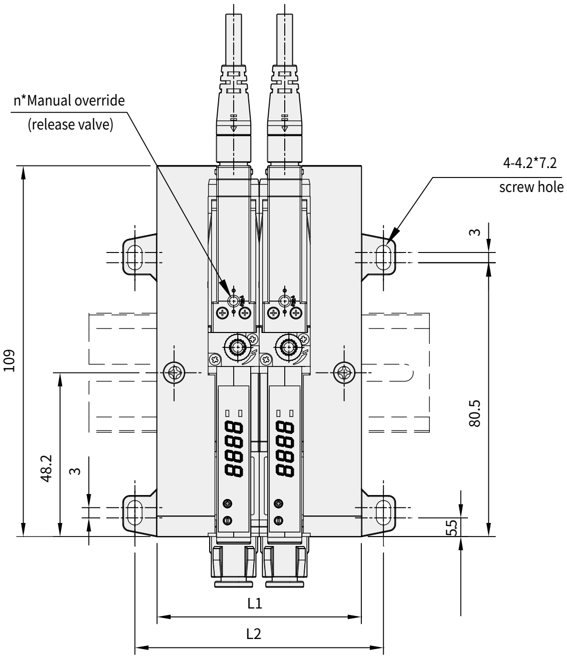
**CHELIC**

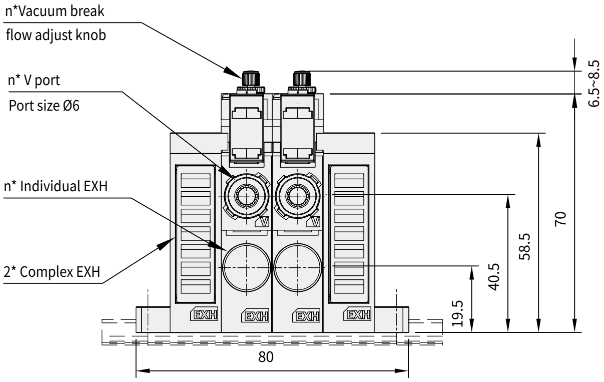
## Manifold individual wiring

VKMT - B - 00- E4 - 10 - DC24 - H1 - P04* 2pcs
+
VKMX-06-E5- L1 -02-C1*1set


n*Individual EXH
2*Common supply
9.5
7.5
9
n*Manual override
(supply valve)
17.5


(Wire length2M)
DIN rail mounting
bracket
51.9
122.9
153.4
CHELIC


n*Manual override
(release valve)
4-4.2*7.2
screw hole
3
109
80.5
48.2
3
5.5
8888
8888
L1
L2


n*Vacuum break
flow adjust knob
n* V port
Port size Ø6
n* Individual EXH
2* Complex EXH
6.5~8.5
70
58.5
40.5
19.5
80
V
V
EXH
EXH
EXH
EXH

Unit: mm

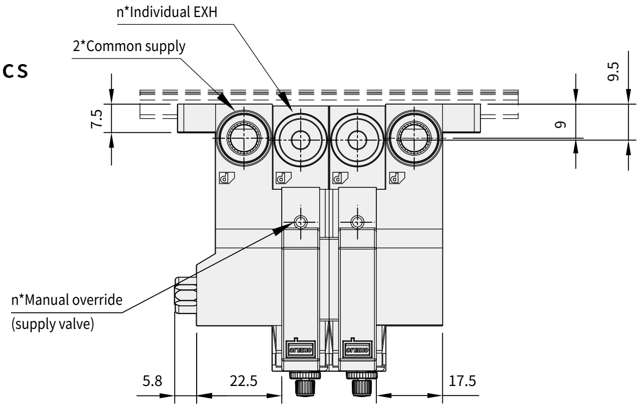
| Manifold no. / Mark | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L2 | 58 | 73 | 88 | 103 | 118 | 133 | 148 | 163 | 178 | 193 |

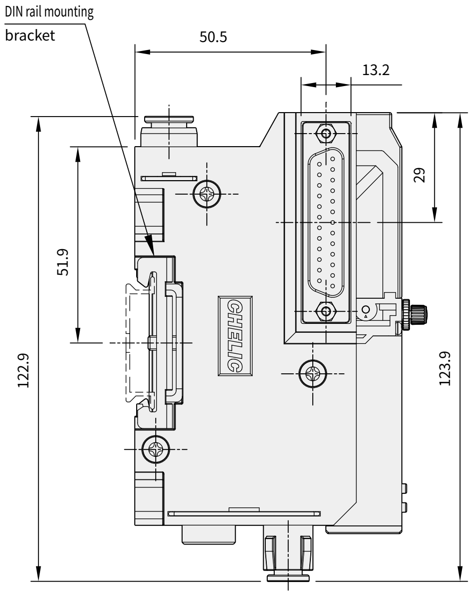
# VKMT series Module Type Energy-saving Vacuum Ejector

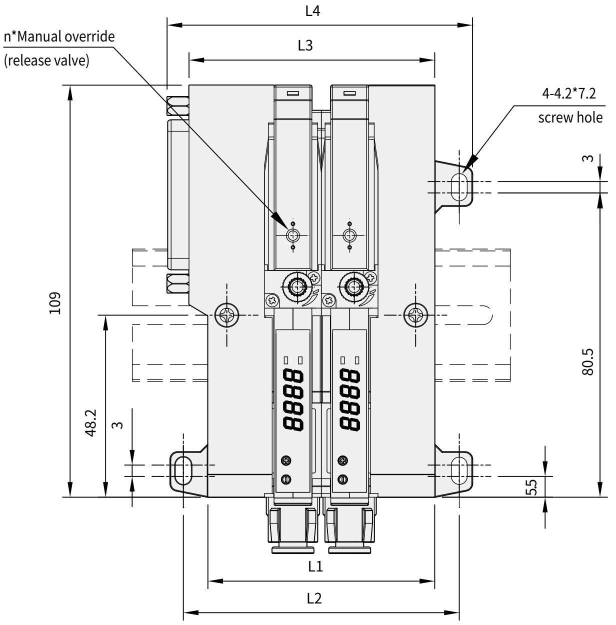
## Dimensions

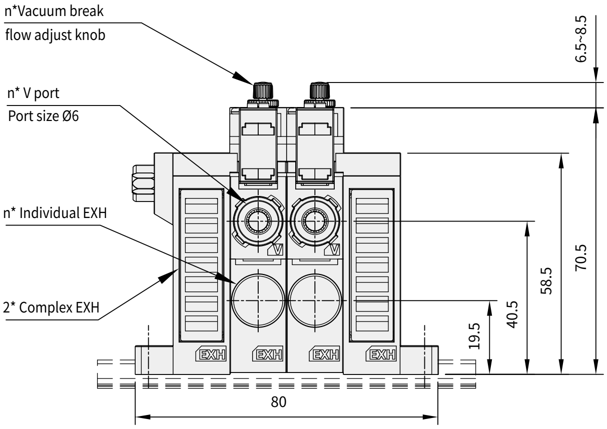
### D-Sub Connector

VKMT-B-00-E4-10-DC24-H2-P04 *2pcs
+
VKMX-06-E5-K1-02-C1*1set


n*Individual EXH
2*Common supply
7.5
9.5
9
n*Manual override
(supply valve)
5.8
22.5
17.5


DIN rail mounting
bracket
50.5
13.2
29
51.9
122.9
123.9
CHELIC


L4
L3
n*Manual override
(release valve)
4-4.2*7.2
screw hole
3
109
80.5
48.2
3
5.5
8888
8888
L1
L2


n*Vacuum break
flow adjust knob
n* V port
Port size Ø6
n* Individual EXH
2* Complex EXH
6.5~8.5
70.5
58.5
40.5
19.5
EXH
EXH
EXH
EXH
80

Unit: mm

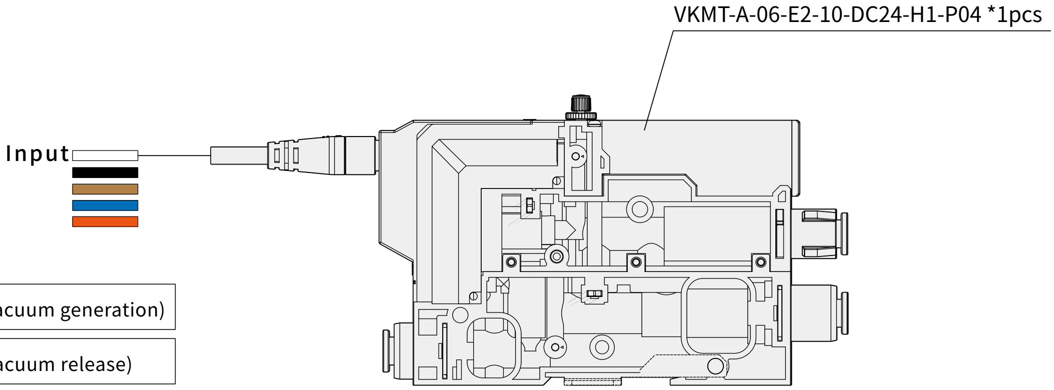
| Mark \ Manifold no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L2 | 58 | 73 | 88 | 103 | 118 | 133 | 148 | 163 | 178 | 193 |
| L3 | 50 | 65 | 80 | 95 | 110 | 125 | 140 | 155 | 170 | 185 |
| L4 | 65.8 | 80.8 | 95.8 | 110.8 | 125.8 | 140.8 | 155.8 | 170.8 | 185.8 | 200.8 |

# VKMT series Module Type Energy-saving Vacuum Ejector

## Wiring expression

CHELIC

### Vacuum ejector/ Single unit


VKMT-A-06-E2-10-DC24-H1-P04 *1pcs
Input

White: IN(Vacuum generation)

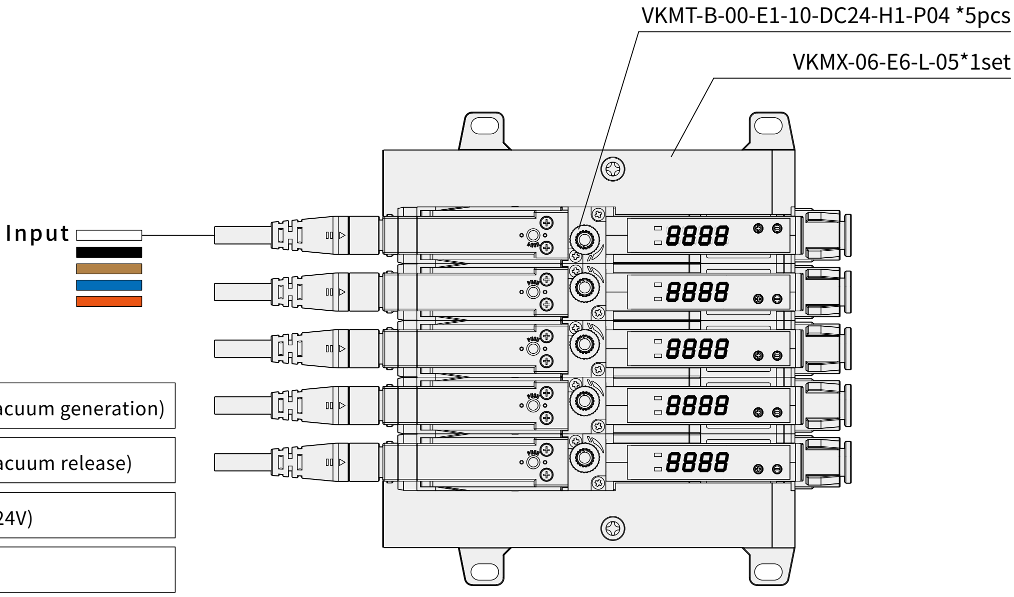
Black: IN(Vacuum release)

Brown: +V(24V)

Blue: 0V

Orange: OUT
(NPN or PNP or Analog1~5)

### Manifold vacuum ejector with individual wiring


VKMT-B-00-E1-10-DC24-H1-P04 *5pcs
VKMX-06-E6-L-05*1set
Input
8888
8888
8888
8888
8888

White: IN(Vacuum generation)

Black: IN(Vacuum release)

Brown: +V(24V)

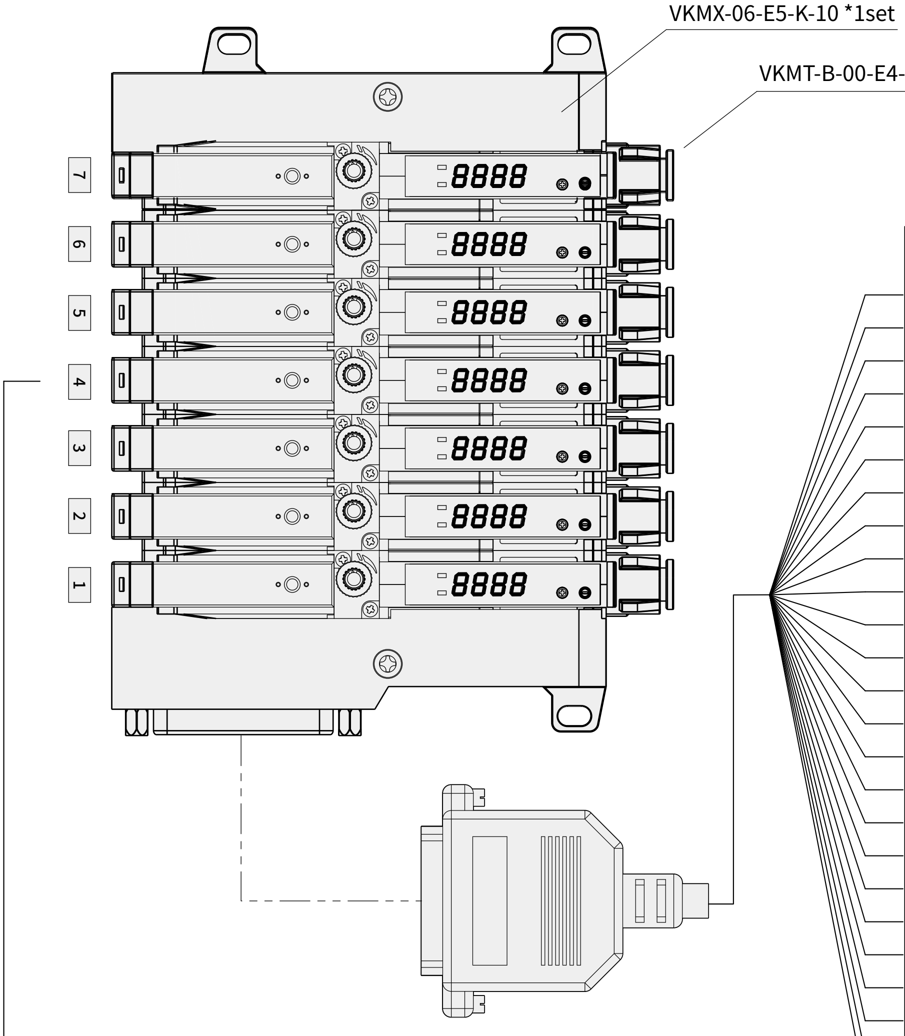
Blue: 0V

Orange: OUT
(NPN or PNP or Analog1~5)

# VKMT series Module Type Energy-saving Vacuum Ejector

## Wiring expression

## Manifold vacuum ejector with D-Sub connector



Input

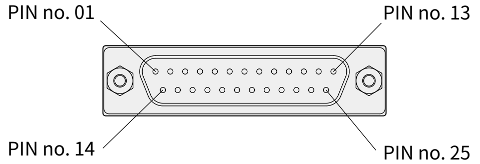
| Lead wire color | PIN no. | Coil no. |
|---|---|---|
| Brown | 01 | +24V |
| Red | 02 | Vacuum 1 |
| Orange | 03 | Vacuum 2 |
| Yellow | 04 | Vacuum 3 |
| Green | 05 | Vacuum 4 |
| Blue | 06 | Vacuum 5 |
| Purple | 07 | Vacuum 6 |
| Gray | 08 | Vacuum 7 |
| Black | 09 | 1 Analog output |
| White | 10 | 2 Analog output |
| Pink | 11 | 3 Analog output |
| Light green | 12 | 4 Analog output |
| Light blue | 13 | GND |
| Brown/ Black | 14 | +24V |
| Red/ Black | 15 | Release 1 |
| Orange/ Black | 16 | Release 2 |
| Yellow/ Black | 17 | Release 3 |
| Green/ Black | 18 | Release 4 |
| Blue/ Black | 19 | Release 5 |
| Purple/ Black | 20 | Release 6 |
| Gray/ Black | 21 | Release 7 |
| White/ Black | 22 | 5 Analog output |
| Pink/ Black | 23 | 6 Analog output |
| Light green/Black | 24 | 7 Analog output |
| Light blue/ Black | 25 | GND |

Wiring expression:

| PIN Coil \ Series | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Analog (DC1~5V) | 09 | 10 | 11 | 12 | 22 | 23 | 24 |
| Vacuum | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| Release | 12 | 16 | 17 | 18 | 19 | 20 | 21 |

Cable assembly:

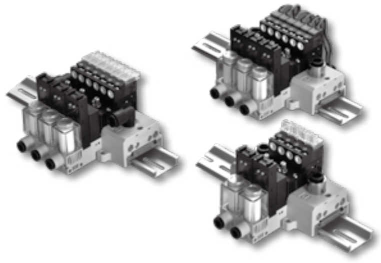
| Cable length (L) | Model | Note |
|---|---|---|
| 1M | VKMX-***-K1 | Cable 0.3mm$^2$ x 25 Core |
| 3M | VKMX-***-K3 | |



# VCK series DIN Rail Type Vacuum Ejector

## Product features

### Feature



- ● Easy to install: light and compact, easy to install.
- ● Multi-function: Vacuum ejector combined with breaking solenoid valve and vacuum filter.
- ● Visualization: Digital display of pressure sensor which can visualiz by monitor.
- ● Easy piping: Common supply for simplified piping.
- ● Expandable: Max. 8 manifolds.

### Specification

| Item | | Model | VCK 20 |
|---|---|---|---|
| Fluid | | | Air |
| Pressure range | | MPa (kPa) | 0.25 ~0. 7 ( 250 ~ 700 ) |
| Proof pressure | | MPa (kPa) | 0.5 (500) |
| Vacuum value | | kPa(mmHg) | -90 (-680) |
| Nozzle diameter | | Ømm | 1.0 |
| Max. suction flow | | L/min | 22 |
| Ambient and fluid temperature | | ℃ | 0 ~ 50 |
| Material | Body | | Copper (Nickel plating) |
| | Plastic | | NYLON, PBT |
| Port size | | mm | Ø8 |
| Valve type | | | SR2 - 100 |
| Rated voltage | | | 24±10%VDC |
| Power consumption | | W | 1.2 |
| Maximum number of manifold stations that can operate simultaneously | | M | 8 |

### Pressure switch specification

| Item | | | Model | PST 2 |
|---|---|---|---|---|
| Rated pressure range | | | kPa | - 100.0~0 |
| Pressure range | | | kPa | -100.0~100.0 |
| Withstanding pressure | | | kPa | 500 |
| Applicable fluid | | | | Filtered air, Non-corrosive, Non-flammable gas |
| Set pressure resolution | | | | 0.1kPa, 0.001kgf/$cm^2$, 0.001bar, 0.01psi, 0.1inHg, 1mmHg |
| Power voltage | | | | 12 to 24V DC ± 10%, Ripple ≤ 10% |
| Current consumption | | | mA | ≤ 40( With no load ) |
| Switch output | Output | | | 2 NPN or 2 PNP open collector |
| | Max. load current | | | 80mA |
| | Power voltage | | | 24VDC |
| | Residual voltage | | | ≤ 1.5V |
| | Response time | | ms | ≤ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| | Output short circuit protection | | | Yes |
| Linear analogy output | Voltage | Output voltage | | 1~5V±2.5%F.S. |
| | | Output impedance | | Approx. 1kΩ |
| | Linearity | | | ±1%F.S. |
| Display | Display | | | 4-digit, 7-step display (green) |
| | Switch on indic ator | | | OUT1 green/OUT2 green |
| | Renewing | | | Approx. 0.2 sec |
| | Indicator accuracy | | | ±0.2% F.S.± 1 digit (Temperature: 25±3° C) |
| Repeatability | | | | ±0.2% F.S.± 1 digit |
| Environmental Resistance | Enclosure | | | IP40 |
| | Ambient temp. range | | | 0~50° C (No condensation or freezing ) |
| | Ambient humidity range | | | Operation/ S torage: 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand voltage | | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | | ≥ 50 MΩ ( a t 500 V DC, between case and lead wire ) |
| | Vibration | | | Total amplitude 1.5 mm, 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | | 980 $m/s^2$ ( 100G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | | | ±2% F.S. (within 0–50° C temperature range) |
| Lead wre | | | | oil-resistant cable (0.14 $mm^2$) |
| Weight ( With 1 Meter Lead Wire ) | | | g | 33 |

## Code of order

**VCK20 02 – DC24 – L – P04 – S8 – C**

① ② ③ ④ ⑤ ⑥

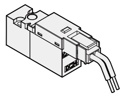
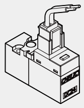
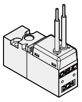
①

| Mark | Manifold quantity |
|---|---|
| 01 | 1 M |
| 02 | 2 M |
| ⋮ | ⋮ |
| 08 | 8 M |

②

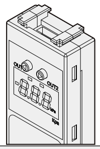
| Mark | Voltage |
|---|---|
| DC12 | DC 12 1.2 W |
| DC24 | DC 24 1.2 W |

③

| Mark | Electrical entry |
|---|---|
| L |  |
| T |  |
| W |  |

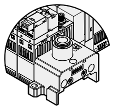
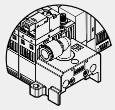
- With wire length 300mm

④

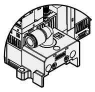
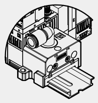
| Mark | Output |
|---|---|
| P04 | 2 NPN output<br>+<br>Analog output<br>(1~5 V) numeric type |
| P05 | 2 PNP output<br>+<br>Analog output<br>(1~5 V) numeric type |
| Image | |
|  | |
| P04, P05 | |

- With wire length 1 M

⑤

| Mark | P port | |
|---|---|---|
| S8 | Ø8<br>Vertical air supply |  |
| U8 | Ø8<br>L type supply port |  |

⑥

| Mark | Bracket | |
|---|---|---|
| None | Without Rail |  |
| C | Rail bracket |  |

- VCK20 series Selection table:

| Model | ① Manifold quantity | ② Voltage | ③ Electrical entry | ④ Output | ⑤ P port | ⑥ Bracket |
|---|---|---|---|---|---|---|
| VCK20 | 01<br>•<br>02<br>•<br>•<br>•<br>08 | DC12<br>•<br>DC24 | L<br>•<br>T<br>•<br>W | P04<br>•<br>P05 | S8<br>•<br>U8 | C |

## Product weight

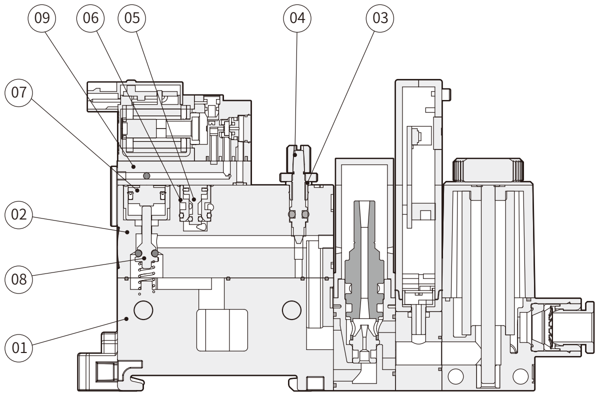
| Model | Item | Weight(g) |
|---|---|---|
| VCK20 | Single unit | 120 |
| | Inlet port holder | 150 |

# VCK series DIN Rail Type Vacuum Ejector

## Product features

CHELIC.

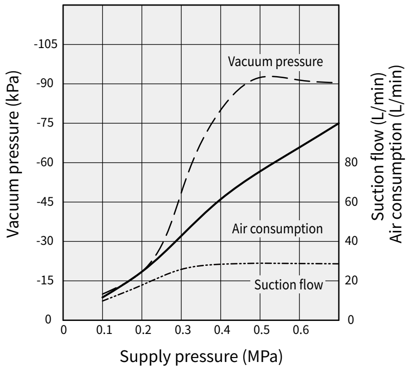
### Internal structure


09
06
05
04
03
07
02
08
01

### Components and Material list

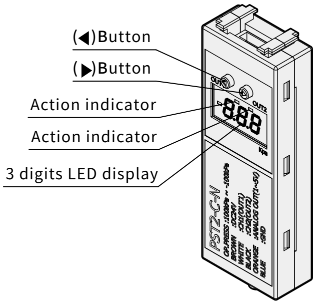
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Manifold lower | PBT+Fiber 30% | 06 | Release holder | Copper Alloy |
| 02 | Manifold upper | PBT+Fiber 30% | 07 | Piston | Copper Alloy |
| 03 | Break valve adjuster | Copper Alloy | 08 | Acting rod | Copper Alloy |
| 04 | Vacuum break valve lever | Copper Alloy | 09 | Spacer | Copper Alloy |
| 05 | Break valve lever | Copper Alloy | 10 | | |

### Characteristics



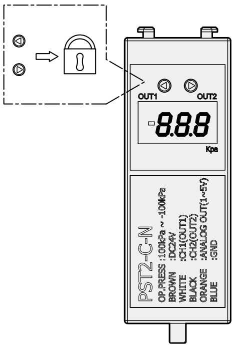
### Numeric Display Pressure Switch Setting Instructions

- 2 outputs &
  linear analogy output (1~5V)
- Compact size: 50x10x20mm$^3$(LxWxH)
- Key lock function


(◀)Button
(▶)Button
Action indicator
Action indicator
3 digits LED display
OUT1
OUT2
8.8.8
Kpa
PST2-C-N
OP.PRESS :100kPa ~ -100kPa
BROWN :DC24V
WHITE :CH1(OUT1)
BLACK :CH2(OUT2)
ORANGE :ANALOG OUT(1~5V)
BLUE :GND

### Key lock function

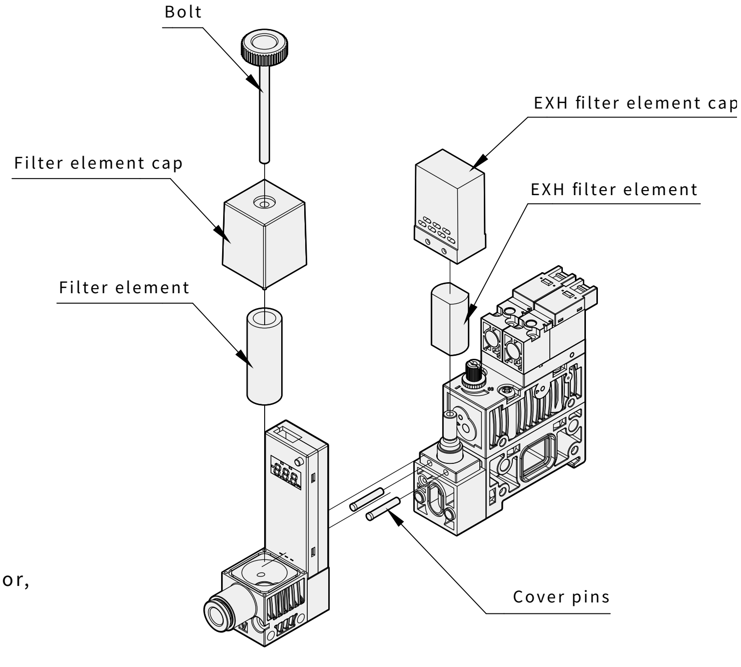
- Key lock mode can prevent improper operation to pressure switch.


OUT1
OUT2
8.8.8
Kpa
PST2-C-N
OP.PRESS :100kPa ~ -100kPa
BROWN :DC24V
WHITE :CH1(OUT1)
BLACK :CH2(OUT2)
ORANGE :ANALOG OUT(1~5V)
BLUE :GND

# VCK series DIN Rail Type Vacuum Ejector

## Component Replacement

### Filter replacement instruction


Bolt
Filter element cap
Filter element
EXH filter element cap
EXH filter element
Cover pins

**Exhaust filter replacement:**

(1) Dismentling cover pins.

(2) Take out filter cap, then put into new element.

(3) Place new filter onto ejectors and put back the pins.

**Port filter replacement:**

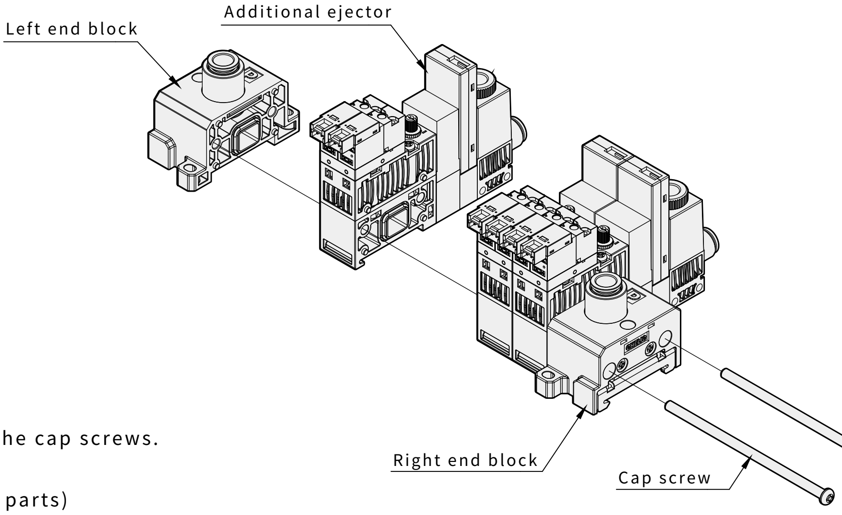
(1) Pull out the bolt.

(2) Take out the element and replace .

(3) Position the element into the ejector, then rotate the bolt to tighten.

---

### How to assemble smf dismental manifold


Left end block
Additional ejector
Right end block
Cap screw

(1) Loosen and remove the cap screws.

(2) Take left end block.
(pay attention small parts)

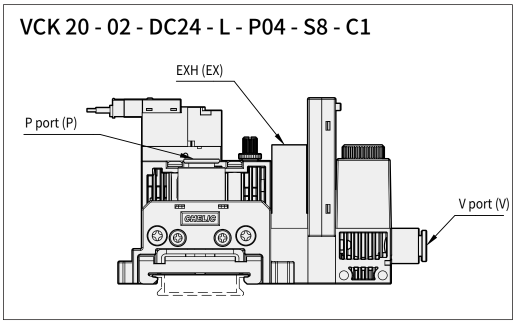
(3) Put on additional ejector.
(pay attention small parts)

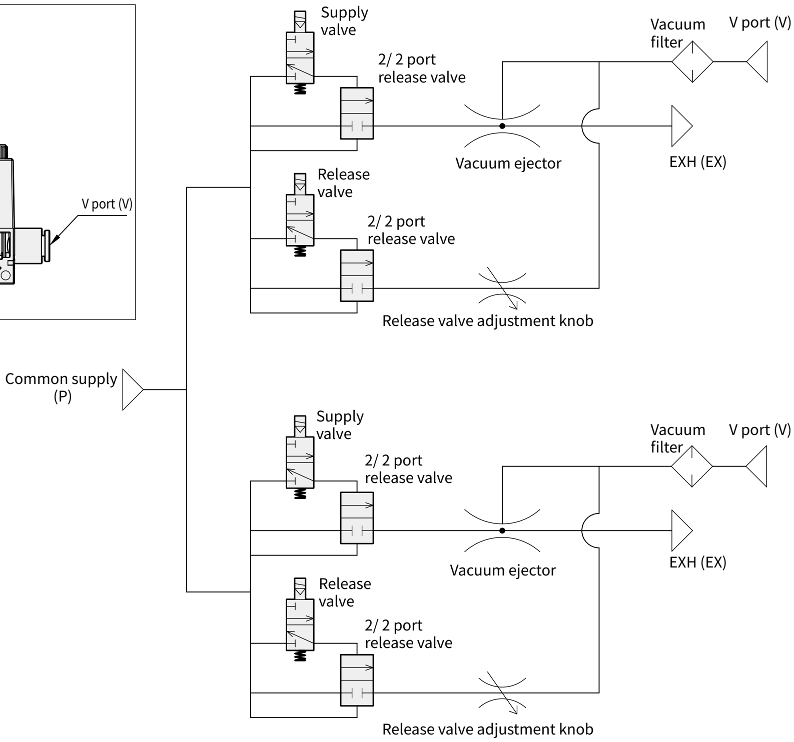
(4) Align all parts and fasten the cap screws.

# VCK series DIN Rail Type Vacuum Ejector

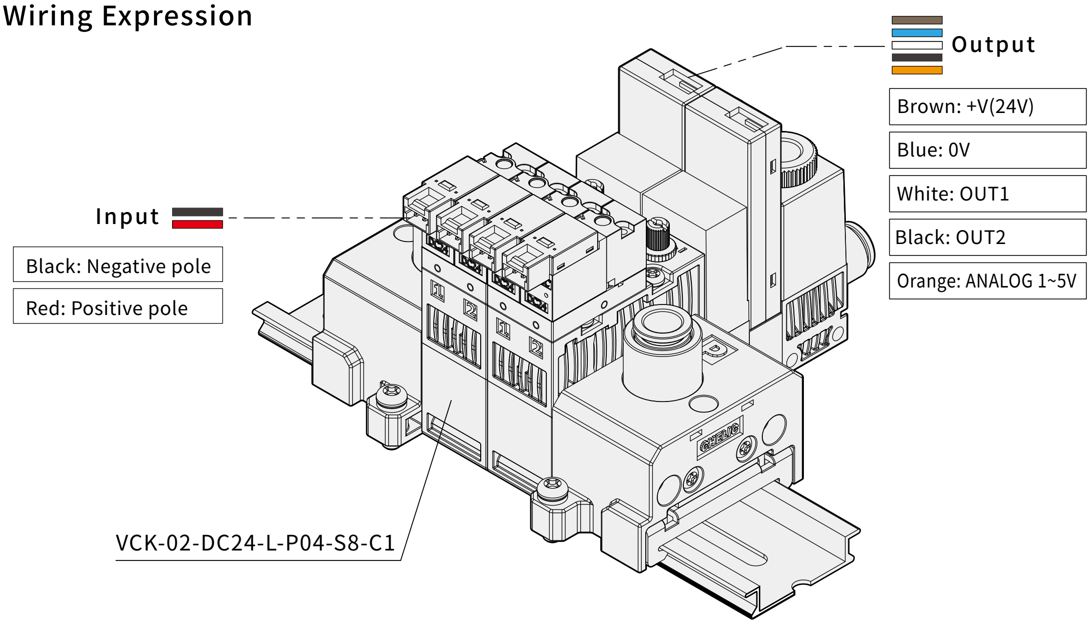
## Circuit/ Wiring expression

## VCK Manifold type vacuum ejector


VCK 20 - 02 - DC24 - L - P04 - S8 - C1
EXH (EX)
P port (P)
V port (V)
CHELIC


Supply valve
2/ 2 port release valve
Vacuum filter
V port (V)
Vacuum ejector
EXH (EX)
Release valve
2/ 2 port release valve
Release valve adjustment knob
Common supply (P)
Supply valve
2/ 2 port release valve
Vacuum filter
V port (V)
Vacuum ejector
EXH (EX)
Release valve
2/ 2 port release valve
Release valve adjustment knob

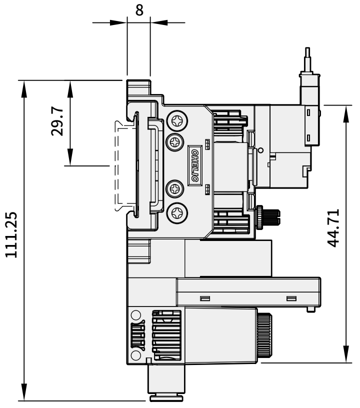
## Wiring Expression

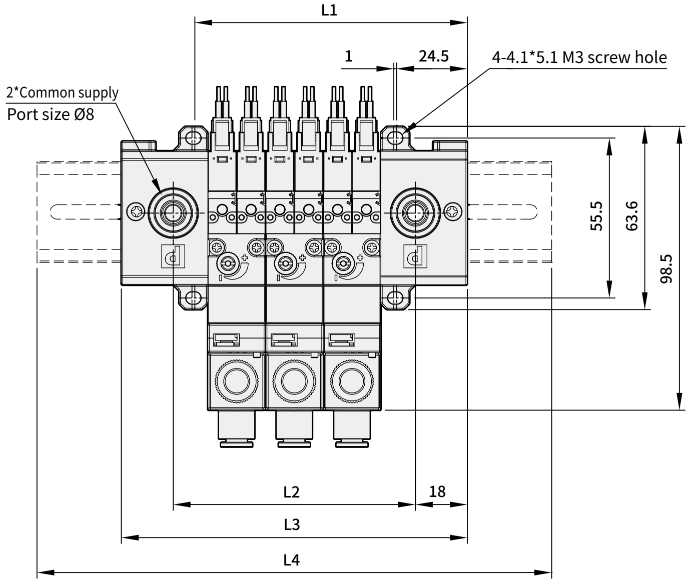

Output
Brown: +V(24V)
Blue: 0V
White: OUT1
Black: OUT2
Orange: ANALOG 1~5V
Input
Black: Negative pole
Red: Positive pole
VCK-02-DC24-L-P04-S8-C1
CHELIC

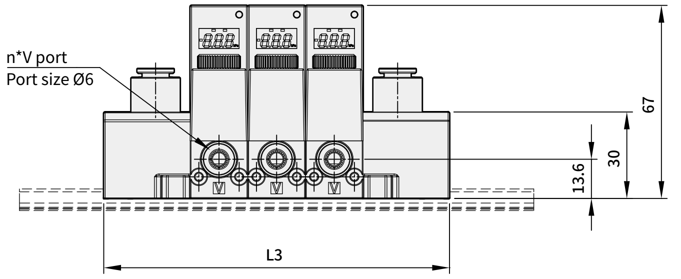
# VCK series DIN Rail Type Vacuum Ejector

## Dimensions

### VCK Manifold type vacuum ejector


8
29.7
111.25
44.71


L1
1
24.5
4-4.1*5.1 M3 screw hole
2*Common supply
Port size Ø8
55.5
63.6
98.5
L2
18
L3
L4


n*V port
Port size Ø6
67
30
13.6
L3

Unit: mm

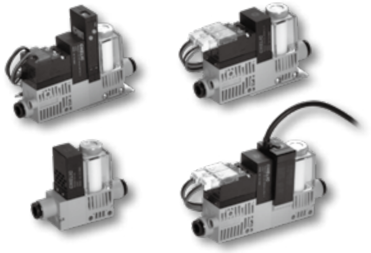
| Mark \ Manifold no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| L1 | 54.5 | 74.5 | 94.5 | 114.5 | 134.5 | 154.5 | 174.5 | 194.5 |
| L2 | 44 | 64 | 84 | 104 | 124 | 144 | 164 | 184 |
| L3 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 |
| L4 | 142.8 | 142.8 | 178.5 | 178.5 | 214.2 | 214.2 | 249.9 | 249.9 |

# VK20 series Filter Type Vacuum Ejector/ All-in-One

## Product features

CHELIC

## Feature



- Modularization:Simple structure can be changed easily.
- Fitting design, easy piping.
- Visualization:Digital display of pressure sensor which can visualiz by monitor.
- Multi-function:Vacuum ejector combined with breaking solenoid valve also with vacuum filter and silencer.
- It can be instal upright or sideways; Simple structure, easy installation and disassembly.

## Specification

| Item \ Model | | | VK20B | VK20S | VK20T | VK20ST |
|---|---|---|---|---|---|---|
| Fluid | | | | | | |
| Pressure range | | MPa (kPa) | 0.25 ~ 0.7 ( 250~700 ) | | | |
| Proof pressure | | MPa (kPa) | 0.5 (500) | | | |
| Vacuum value | | kPa(mmHg) | -91.8 (-690) | | | |
| Nozzle diameter | | mm | 0.5, 0.7, 1.0 | | | |
| Max. suction flow | | L/min | 22 | | | |
| Ambient and fluid temperature | | ℃ | 5~60 | | | |
| Material | Body | | Copper (Nickel plating) | | | |
| | Plastic | | NYLON、PBT | | | |
| Port size | | Ømm | 6 | | | |
| Valve type | | | SR2 - 100 | | | |
| Rated voltage | | V | 24±10%VDC | | | |
| Power consumption | | W | 1.4 | | | |

## Pressure switch specification

| Item \ Model | | | PSV-15 |
|---|---|---|---|
| Rated pressure range | | kPa | - 101 to 0 |
| Withstand Pressure | | kPa | 500 |
| Applicable Fluid | | | Filtered air, Non-corrosive/ Non-flammable gas |
| Set Pressure Range | | | 12 to 24 VDC ±10%, Ripple ( P -P ) 10 % or less |
| Withstand Pressure | | | 5 ms or less |
| Power supply v oltage | | | ± 1% F.S.or less |
| Current consumption | | | 1 Output: NPN & PNP: 21mA MAX., 2 Output: 25mA MAX. |
| Repea-tability | Enclosure | | IP40 |
| | Ambient temp. range | | Operation: 0 ~ 50 ° C, Storage: -20 ~ 60 ° C ( No c ondensation or fr eezing ) |
| | Ambient humidity range | | Operation/ Storage: 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand voltage | | 1000 VAC 1-min ( between case and le ad wire ) |
| | Insulation | | ≥ 50 MΩ ( a t 500 V DC be tween case and le ad wire ) |
| | Vibration | | Total amplitude 1.5 mm or 10 G, 10 Hz - 55 Hz - 10 Hz sc an for 1 minut e, two hours each direction of X, Y and Z |
| | Impact | | 980 m/s² ( 100 G ), 3 times e ach in dir ection of X, Y and Z |
| Temperature characteristic | | | ± 3% F.S. or less (Temperature: 25±3° C) |
| Weight | | g | 50g (With 1 meter lead wire) |

## Pressure switch specification

| Item \ Model | | | | PST 2 |
|---|---|---|---|---|
| Rated pressure range | | | kPa | - 100.0~0 |
| Pressure range | | | kPa | -100.0~100.0 |
| Withstanding pressure | | | kPa | 500 |
| Applicable fluid | | | | Filtered air, Non-corrosive, Non-flammable gas |
| Set pressure resolution | | | | 0.1kPa、0.001kgf/cm²、0.001bar、0.01psi、0.1inHg、1mmHg |
| Power voltage | | | | 12 to 24V DC ± 10%, Ripple ≤ 10% |
| Current consumption | | | mA | ≤ 40( With no load ) |
| Switch output | output | | | 2 NPN or 2 PNP open collector |
| | Max. Load Current | | | 80mA |
| | Power voltage | | | 24VDC |
| | Residual Voltage | | | ≤ 1.5V |
| | Response time | | ms | ≤ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| | Output short circuit protection | | | Yes |
| Linear analogy output | Voltage | Output Voltage | | 1~5V±2.5%F.S. |
| | | OutputImpedance | | Approx. 1kΩ |
| | Linearity | | | ±1%F.S. |
| Display | Display | | | 4-digit, 7-step display (green) |
| | Switch on indic ator | | | OUT1 green/OUT2 green |
| | Renewing | | | Approx. 0.2 sec |
| | Indicator accuracy | | | ±0.2% F.S.± 1 digit (Temperature: 25±3° C) |
| Repeatability | | | | ±0.2% F.S.± 1 digit |
| Environmental Resistance | Enclosure | | | IP40 |
| | Ambient Temp. Range | | | 0~50° C (No condensation or freezing ) |
| | Ambient Humidity Range | | | Operation / S torage : 35 ~ 85 % RH ( No c ondensation ) |
| | Withstand Voltage | | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | | ≥ 50 MΩ ( a t 500 V DC, between case and lead wire ) |
| | Vibration | | | Total amplitude 1.5 mm , 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | | 980 m/s² ( 100G ) , 3 times each in direction of X, Y and Z |
| Temperature Characteristic | | | | ±2% F.S. (within 0–50° C temperature range) |
| Lead wre | | | | oil-resistant cable (0.14 mm²) |
| Weight ( With 1 Meter Lead Wire ) | | | g | 33 |

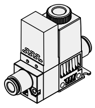
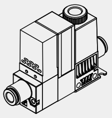
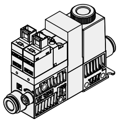
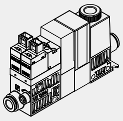
# VK20 series Filter Type Vacuum Ejector/ All-in-One

## Code of order

## Code of order **VK20 ST – 10 – 06 – DC24 – L – P01 – 1 – C**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①

| Mark | B | S | T | ST |
|---|---|---|---|---|
| Combination | Vacuum ejector<br>+<br>Filter | Vacuum ejector<br>+<br>Filter<br>+<br>Pressure switch | Vacuum ejector<br>+<br>Filter<br>+<br>Solenoid valve | Vacuum ejector<br>+<br>Filter<br>+<br>Solenoid valve<br>+<br>Pressure switch |
| Image |  |  |  |  |

②

| Mark | Nozzle diameter (mm) |
|---|---|
| 05 | 0.5 |
| 07 | 0.7 |
| 10 | 1.0 |

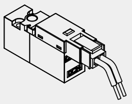
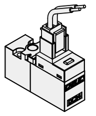
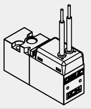
③

| Mark | Port size (mm) |
|---|---|
| 06 | Ø6 |

④

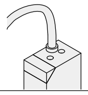
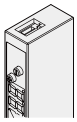
| Mark | Voltage |
|---|---|
| None | Without control valve |
| DC12 | DC 12, 1.2 W |
| DC24 | DC 24, 1.2 W |

⑤

| Mark | Electrical entry |
|---|---|
| None | Without control valve |
| L |  |
| T |  |
| W |  |

● With wire length 300mm

⑥

| Mark | Output | Image |
|---|---|---|
| None | Without pressure switch | – |
| P01 | NPN output |  PSV15 |
| P02 | PNP output | |
| P03 | 2 NPN output | |
| P04 | 2 NPN output<br>+<br>Analog output<br>(1~5 V) numeric type |  PST2 |
| P05 | 2 PNP output<br>+<br>Analog output<br>(1~5 V) numeric type | |

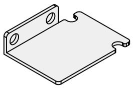
● P04, P05 with wire length 1 M

⑦

| Mark | Connector |
|---|---|
| None | Without pressure switch |
| 1 | With wire length 100mm |
| QD | M8 Male(P04/P05 without) |

● Only available to P01, 02, 03

⑧

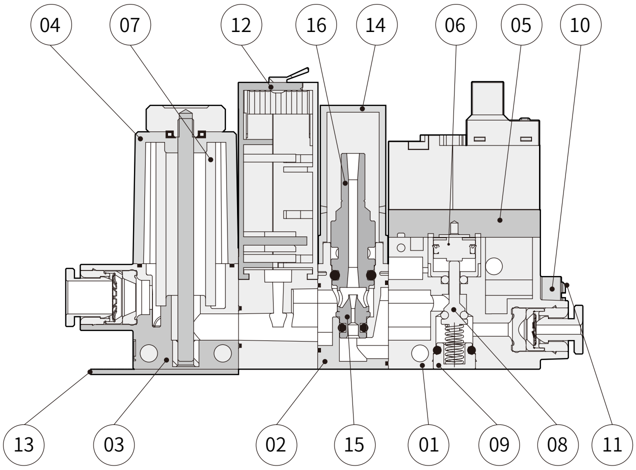
| Mark | Bracket |
|---|---|
| None | No bracket |
| C |  |

### ● Vacuum ejector VK20 optional correspondence table:

| Model | ① Combination | ② Nozzle diameter | ③ Port size | ④ Voltage | ⑤ Electrical entry | ⑥ Output | ⑦ Connector | ⑧ Bracket |
|---|---|---|---|---|---|---|---|---|
| VK20 | B | 05<br>•<br>07<br>•<br>10 | 06 | – | – | – | – | C |
| | S | | | | | P01<br>•<br>P04 | 1<br>•<br>QD | |
| | T | | | DC12<br>•<br>DC24 | L<br>•<br>T<br>•<br>W | – | – | |
| | ST | | | | | P01<br>•<br>P04 | 1<br>•<br>QD | |

# VK20 series Filter Type Vacuum Ejector/ All-in-One

## Internal structure



## Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| **01** | Main body | Nylon fiber | **09** | Valve spring seat | Copper alloy |
| **02** | Vacuum ejector | Nylon fiber | **10** | Throttle seat | Copper alloy |
| **03** | Silencer | Nylon fiber | **11** | Throttle screw | Copper alloy |
| **04** | Filter cap | PC | **12** | Pressure switch | – |
| **05** | Manifold board | Aluminum alloy | **13** | Mounting bracket | Aluminum alloy |
| **06** | Piston | Copper alloy | **14** | Filter cap | Nylon fiber |
| **07** | Silencer filter | EA30 | **15** | Exhaust nozzle | Copper alloy |
| **08** | Filter cap | Aluminum alloy | **16** | Exhaust pipe | Copper alloy |

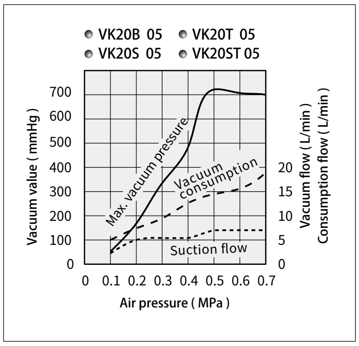
## Product weight

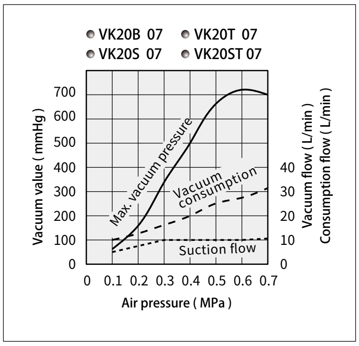
| Model | VK20 | | | |
|---|---|---|---|---|
| **Specification** | B | S | T | ST |
| **Weight(g)** | 40 | 80 | 90 | 170 |

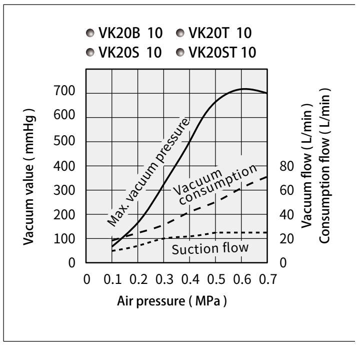
# VK20 series Filter Type Vacuum Ejector/ All-in-One

## Characteristic graph/ Dimensions

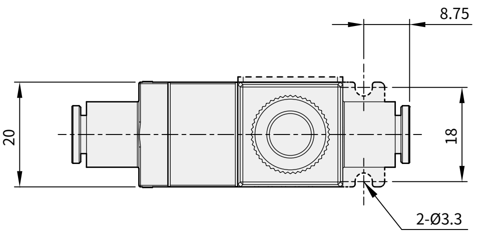
### Flow rate characteristic graph

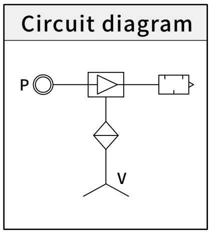


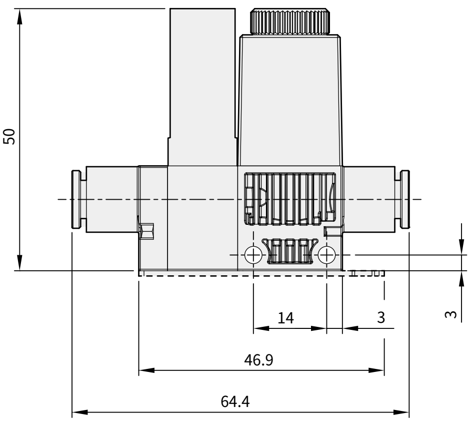


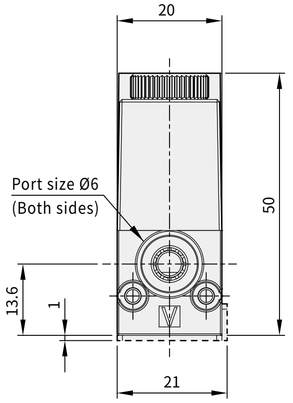


### VK20 B - 10 - 06 - C


8.75
20
18
2-Ø3.3


Circuit diagram
P
V


50
14
3
3
46.9
64.4

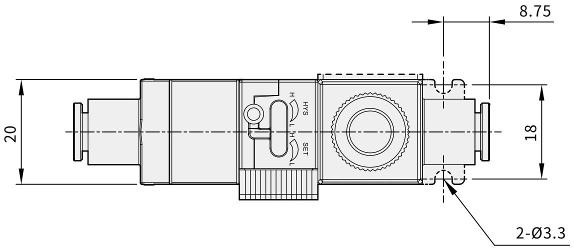

20
Port size Ø6
(Both sides)
50
13.6
1
21

EV
EVM
VA□
VM□
VM□U
VHS
VSL
VKM
VKMT
VCK
VK20□
VK30□
VQ20□
VFD
VFM
VFU
ERV
ERVL
MVS
DYC

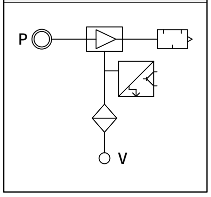
# VK20 series Filter Type Vacuum Ejector/ All-in-One

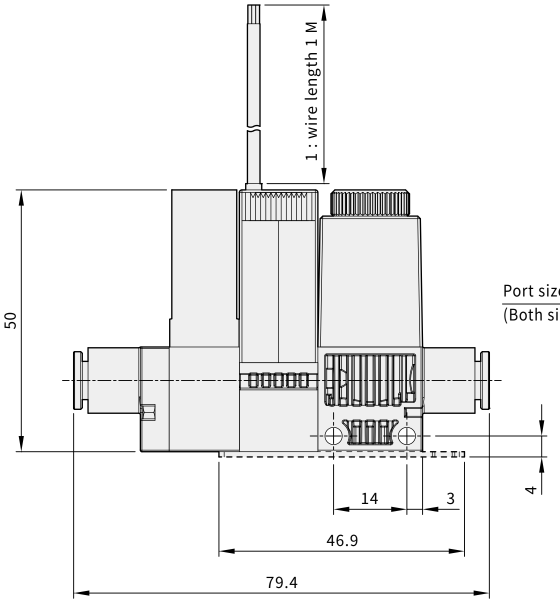
## Dimensions

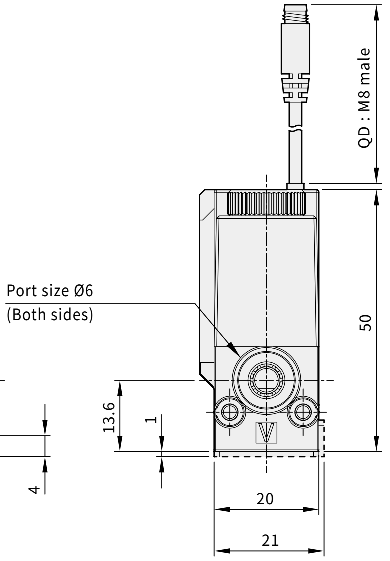
### VK20 S - 10 - 06 - P01 - 1 - C


8.75
20
18
2-Ø3.3
HYS
SET
H
L

Circuit diagram



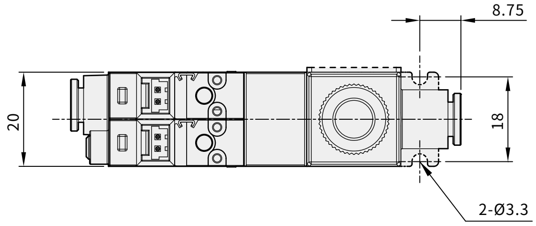

1 : wire length 1 M
50
4
14
3
46.9
79.4


QD : M8 male
Port size Ø6
(Both sides)
50
13.6
1
20
21
V

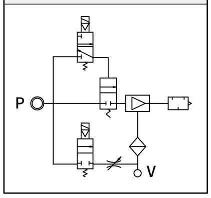
# VK20 series Filter Type Vacuum Ejector/ All-in-One

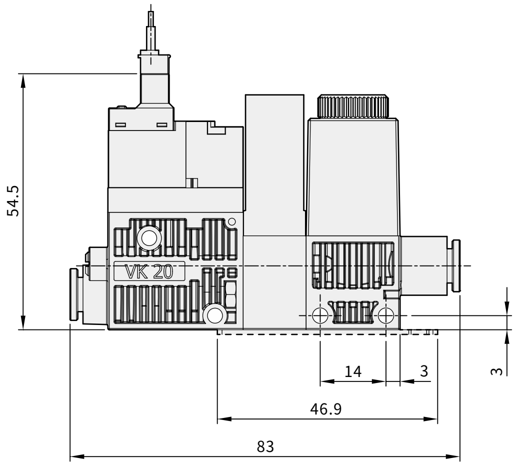
## Dimensions

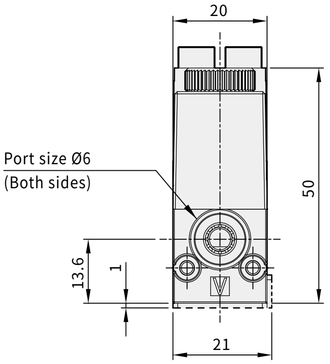
### VK20 T - 10 - 06 - DC24 - T - C


8.75
20
18
2-Ø3.3

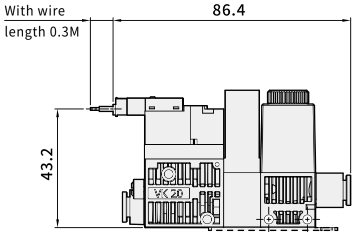
Circuit diagram



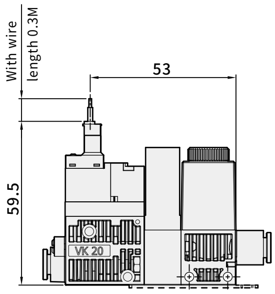

54.5
VK 20
3
14
3
46.9
83


20
Port size Ø6
(Both sides)
50
13.6
1
21

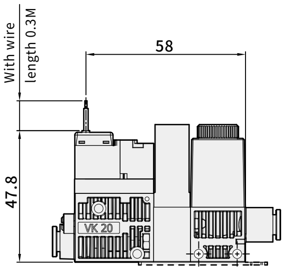
### L type - L


With wire
length 0.3M
86.4
43.2
VK 20

### T type - T


With wire
length 0.3M
53
59.5
VK 20

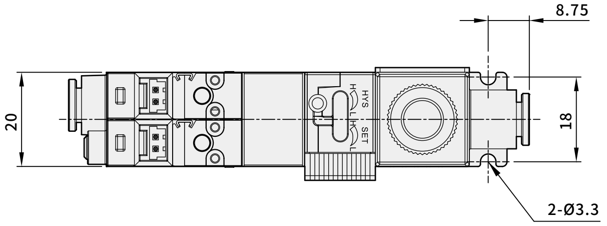
### W type grommet - W

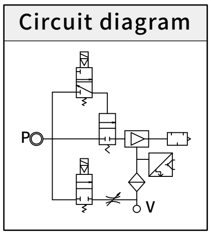

With wire
length 0.3M
58
47.8
VK 20

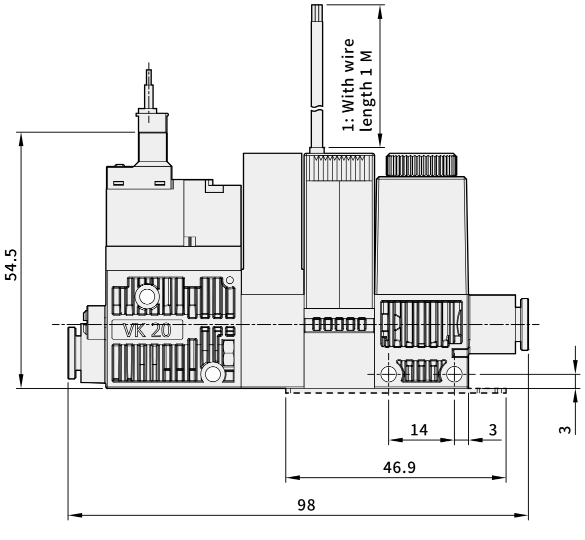
# VK20 series Filter Type Vacuum Ejector/ All-in-One

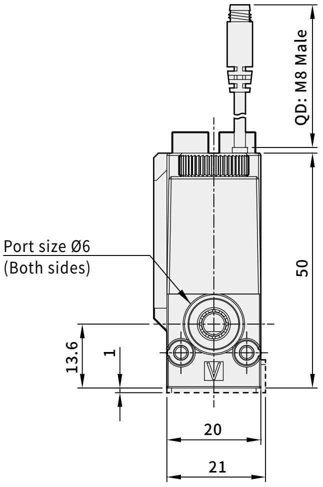
## Dimensions

### VK20 ST - 10 - 06 - DC24 - T - P01 - 1 - C

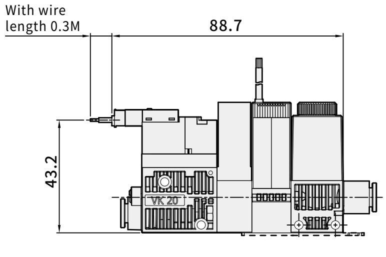

8.75
20
HYS
H
L
SET
18
2-Ø3.3


Circuit diagram

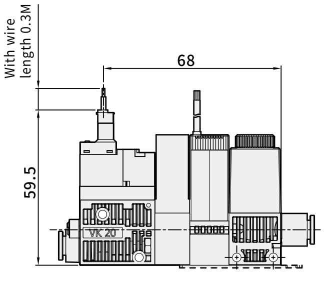

1: With wire length 1 M
54.5
VK 20
14
3
3
46.9
98


QD: M8 Male
Port size Ø6
(Both sides)
50
13.6
1
20
21

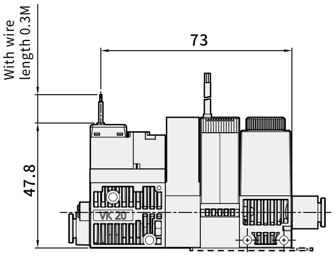
### L type - L


With wire
length 0.3M
88.7
43.2
VK 20

### T type - T


With wire
length 0.3M
68
59.5
VK 20

### W type grommet - W


With wire
length 0.3M
73
47.8
VK 20

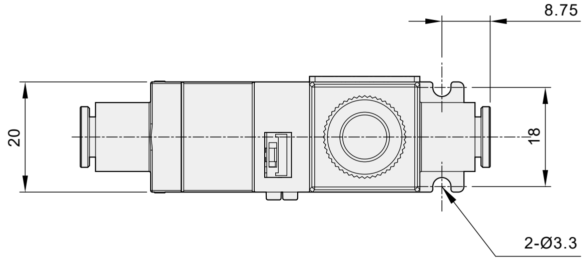
# VK20 series Filter Type Vacuum Ejector/ All-in-One

## Dimensions

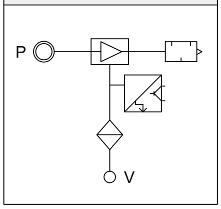
CHELIC

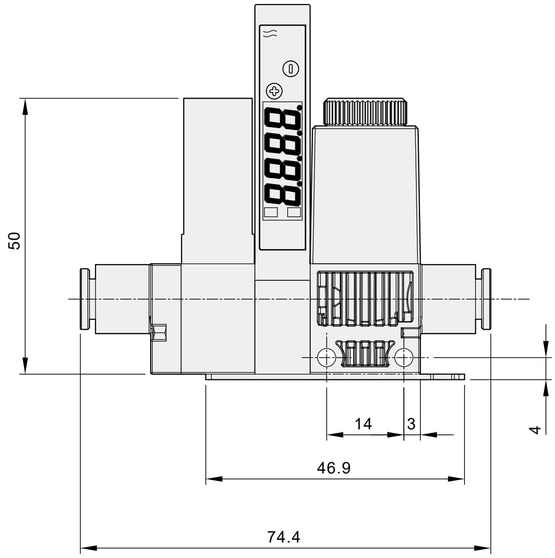
### VK20 S - 10 - 06 - P04 - C

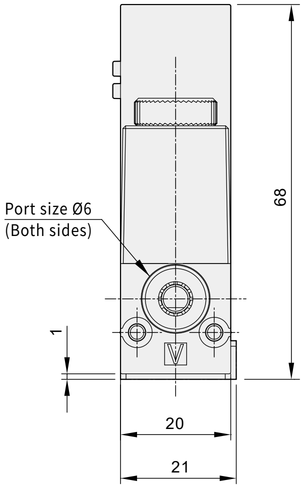
Numeric type


8.75
20
18
2-Ø3.3

Circuit diagram




8888
50
14
3
4
46.9
74.4

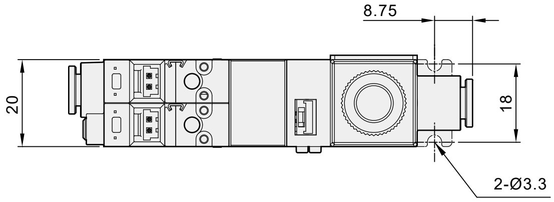

Port size Ø6
(Both sides)
68
1
V
20
21

# VK20 series Filter Type Vacuum Ejector/ All-in-One

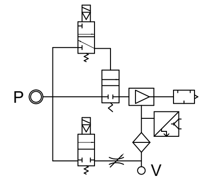
## Dimensions

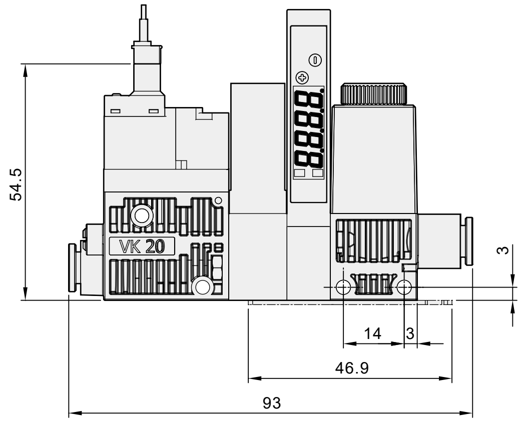
### VK20 ST - 10 - 06 - DC24 - T - P04 - C

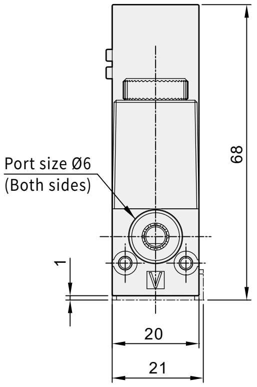
Numeric type


8.75
20
18
2-Ø3.3

Circuit diagram

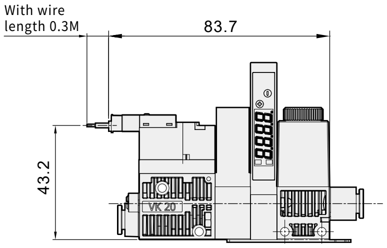



54.5
3
14
3
46.9
93
VK 20

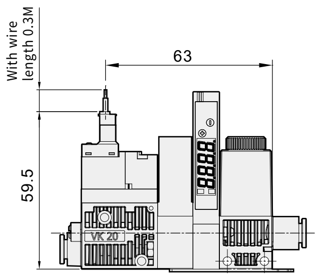

Port size Ø6
(Both sides)
68
1
20
21

---

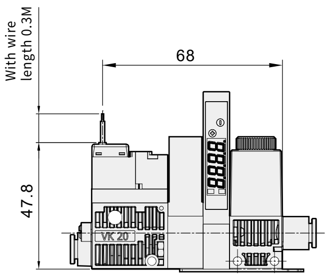
### L type - L


With wire
length 0.3M
83.7
43.2
VK 20

### T type - T

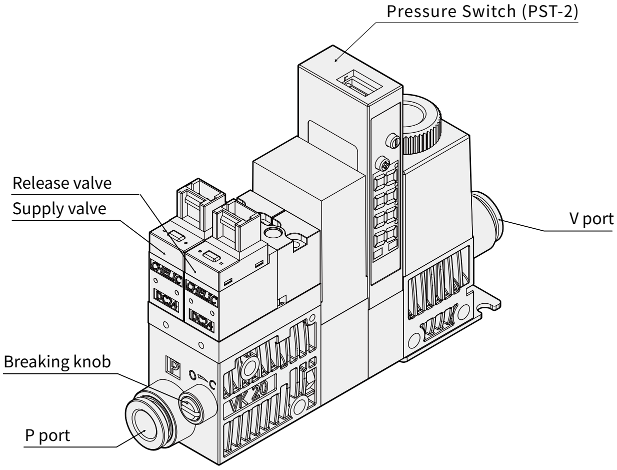

With wire
length 0.3M
63
59.5
VK 20

### W type grommet - W


With wire
length 0.3M
68
47.8
VK 20

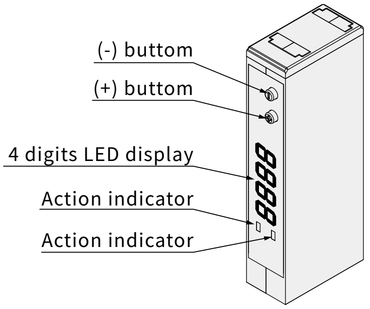
## VK 20 Series Vacuum ejector and vacuum breaking instructions

- The supply valve is to control air supply port, release valve is to control the breaking knob.
- The vacuum ejector generates the vacuum only when supply valve starts up.
- By adjusting break knob in clockwise, the vacuum increased; Otherwise counter-clockwise.

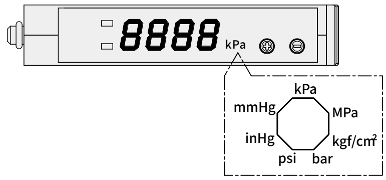

Pressure Switch (PST-2)
Release valve
Supply valve
V port
Breaking knob
P port
P
VK 20

## PST2 Numeric Display Pressure Switch Setting Instructions

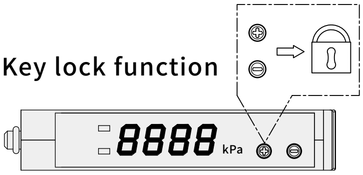
- 2 sets of output & linear analogy output (1~5V)
- Compact size: 50x10x20mm$^3$( L x W x H )
- Key lock function
- Various pressure units available
  kPa, MPa, kgf/cm$^2$, bar, psi, inHg, mmHg


(-) buttom
(+) buttom
4 digits LED display
Action indicator
Action indicator
8888

### Various pressure units available


8888
kPa
kPa
MPa
kgf/cm²
bar
psi
inHg
mmHg

### Key lock function



Key lock mode can prevent improper operation to pressure switch.

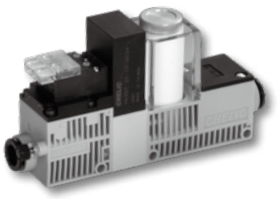
Key lock mode can pbe activated by pressing + and - for 3 seconds.

# VK30 series Large Flow Vacuum Ejector

## Product features

CHELIC

## Feature



- Modularization: Simple structure which can be changed easily.
- Fitting design, easy piping.
- Visualization: Digital display of pressure sensor which can visualiz by monitor.
- Multi-function: Vacuum ejector combined with breaking solenoid valve also with vacuum filter and silencer.
- It can be instal upright or sideways; Simple structure, easy installation and disassembly.

## Specification

| Item | | Model | VK30T | VK 30ST |
|---|---|---|---|---|
| Fluid | | | Air | |
| Pressure range | | MPa (kPa) | 0.25 ~ 0.7 ( 250 ~ 700 ) | |
| Proof pressure | | MPa (kPa) | 0.5 (500) | |
| Vacuum value | | kPa(mmHg) | -91.8 ( -690 ) | |
| Nozzle diameter | | mm | 2.0 | |
| Max. suction flow | | L/min | 64 | |
| Ambient and fluid temperature | | °C | 5 ~ 60 | |
| Material | Body | | Copper (Nickel plating) | |
| | Plastic | | NYLON , PBT | |
| Port size | | Ømm | Ø10 | |
| Valve type | | | SR2 - 100 | |
| Rated voltage | | V | 24±10%VDC | |
| Power consumption | | W | 1.2 | |

## Pressure switch specification

| Item | | Model | PSC-41 |
|---|---|---|---|
| Rated pressure range | | kPa | - 100.0 ~ 100.0 |
| Pressure Nominal filtration ratingrange | | kPa | - 101.0 ~ 101.0 |
| Withstanding pressure | | kPa | 300 |
| Applicable fluid | | | Filtered air, Non-corrosive, Non-flammable gas |
| Power voltage | | | 12 to 24V DC ± 10%, Ripple ≤ 10% |
| Current consumption | | mA | ≤ 40( With no load ) |
| Switch output | Output | | 2 NPN or 2 PNP open collector |
| | Max. loading current | mA | 125 |
| | Power supply voltage | V | 2 NPN 30 V DC, 2 PNP 24 V DC |
| | Residual voltage | V | ≤ 1.5 |
| | Response time | ms | Chattering-proof function: 50, 250, 500, 1000, 2000, 3000 selectable |
| | Output short circuit protection | | Yes |
| Display | Display | | 3 color (Red/Green/Orange) LCD, (Sampling cycle: 5 times/s) |
| | Switch on indic ator | | (1/2 display) OUT1 OUT2 Orange light |
| | Renewing | | Adjustable |
| | Indicator accuracy | | ± 2% F.S. ± 1 digit (Temperature: 25±3° C) |
| Repeatability | | | ± 0.2% F.S. ± 1 digit |
| Environmental Resistance | Enclosure | | IP 40 |
| | Ambient Temp. Range | | 0 ~ 50° C |
| | Operating temperature range | | -10 ~ 60 ° C ( No condensation or freezing ) |
| | Ambient Humidity Range | | 35 ~ 85 % RH ( No condensation ) |
| | Withstand Voltage | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | ≥ 50 MΩ ( a t 500 V DC, between case and lead wire ) |
| | Vibration | | Total amplitude 1.5 mm , 10 Hz - 55 Hz - 10 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | | ±2 % F.S. of detected pressure ( 25 ° C ) at temp. Range of 0 ~ 50 ° C |
| Lead wire | | | oil-resistant cable (0.15 mm²) |
| Weight | | g | Approx. 65 g ( With 2 meter lead wire ); Approx. 30g ( With M8 4PIN male connector ) |

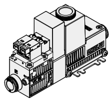
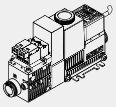
# VK30 series Large Flow Vacuum Ejector

## Code of order

## Code of order **VK30 ST – 20 – 10 – DC24 – L – 022 – QD – C**

① ST ② 20 ③ 10 ④ DC24 ⑤ L ⑥ 022 ⑦ QD ⑧ C

①

| Mark | T | ST |
|---|---|---|
| Combination | Vacuum ejector<br>+<br>Filter<br>+<br>Solenoid valve | Vacuum ejector<br>+<br>Filter<br>+<br>Solenoid valve<br>+<br>Pressure switch |
| Image |  |  |

②

| Mark | Nozzle diameter (mm) |
|---|---|
| 20 | 2.0 |

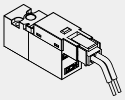
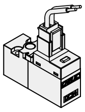
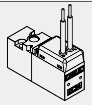
③

| Mark | Port size (mm) |
|---|---|
| 10 | Ø10 |

④

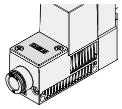
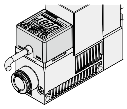
| Mark | Voltage |
|---|---|
| None | Without control valve |
| DC12 | DC 12, 1.2W |
| DC24 | DC 24, 1.2 W |

⑤

| Mark | Electrical entry |
|---|---|
| None | Without control valve |
| L |  |
| T |  |
| W |  |

● With wire length 300mm

⑥

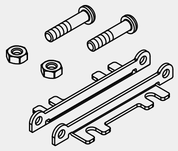
| Mark | Output | Image |
|---|---|---|
| None | With rear plate |  |
| 022 | 2 NPN output |  |
| 042 | 2 PNP output | |

● With wire length 2 M

⑦

| Mark | Connector |
|---|---|
| None | With wire length 200mm |
| QD | M8, 4-Pin Male |
| QS | M8, 4-Pin Female |

⑧

| Mark | Bracket |
|---|---|
| None | Without Bracket |
| C |  |

● Vacuum ejector VK30 optional correspondence table:

| Model | ① Combination | ② Nozzle diameter | ③ Port size | ④ Voltage | ⑤ Electrical entry | ⑥ Output | ⑦ Connector | ⑧ Bracket |
|---|---|---|---|---|---|---|---|---|
| VK30 | T | 20 | 10 | DC12<br>•<br>DC24 | L<br>•<br>T<br>•<br>W | — | — | C |
| | ST | | | | | 022<br>•<br>042 | QD | |

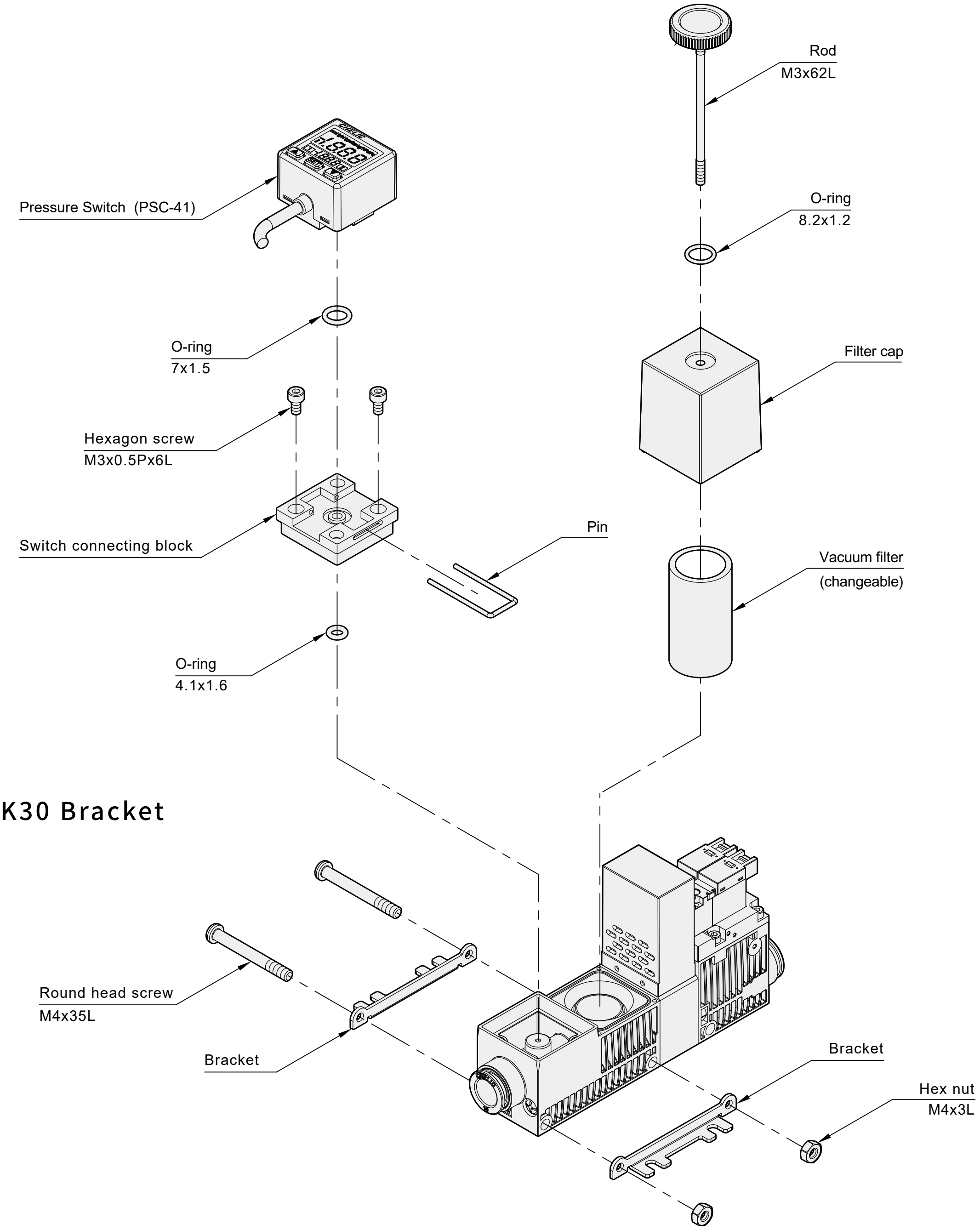
# VK30 series Large Flow Vacuum Ejector

## Installation

### VK30 Series pressure switch

### VK30 Filter element

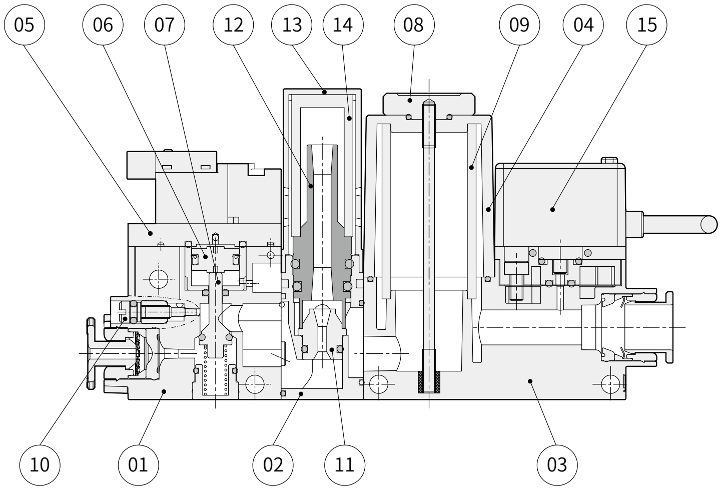
### VK30 Bracket


Rod
M3x62L
O-ring
8.2x1.2
Pressure Switch (PSC-41)
O-ring
7x1.5
Filter cap
Hexagon screw
M3x0.5Px6L
Pin
Switch connecting block
Vacuum filter
(changeable)
O-ring
4.1x1.6
Round head screw
M4x35L
Bracket
Bracket
Hex nut
M4x3L

# VK30 series Large Flow Vacuum Ejector

## Product features

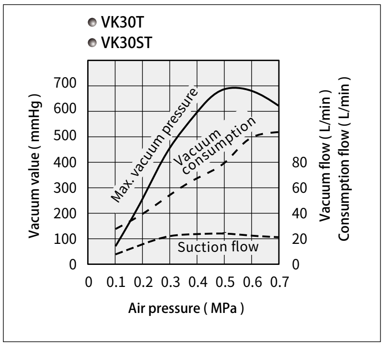
### Internal structure



### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Main body | Nylon fiber | 09 | Filter | EA30 |
| 02 | Vacuum ejector | Nylon fiber | 10 | Throttle screw | Copper alloy |
| 03 | Silencer | Nylon fiber | 11 | Nozzle | Copper alloy |
| 04 | Filter cap | PC | 12 | Copper tube | Copper alloy |
| 05 | Manifold board | Aluminum alloy | 13 | Filter cap | Nylon fiber |
| 06 | Piston | Copper alloy | 14 | Filter | EA30 |
| 07 | Acting rod | Copper alloy | 15 | Pressure switch | |
| 08 | Filter cap | Aluminum alloy | | | |

### Flow rate characteristic graph



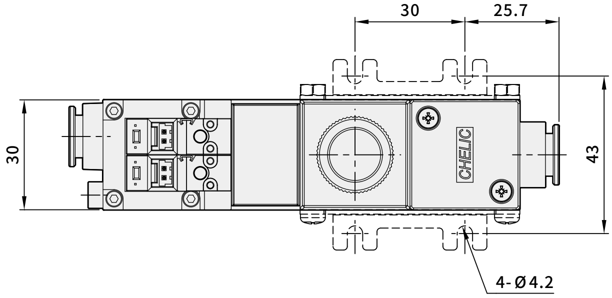
### Product weight

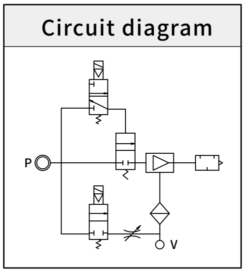
| Model | VK30 | |
|---|---|---|
| Specification | T | ST |
| Weight(g) | 180 | 300 |

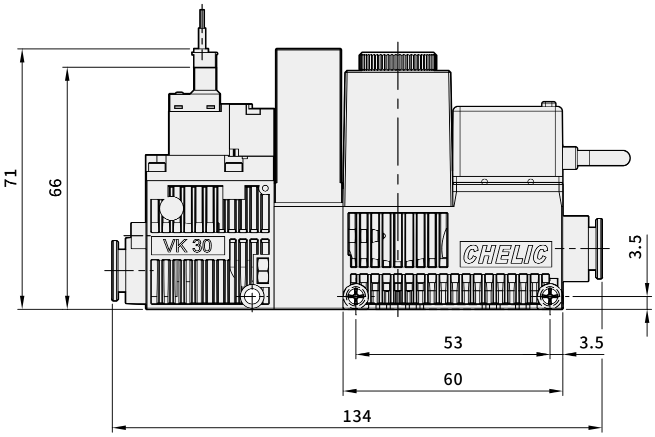
# VK30 series Large Flow Vacuum Ejector

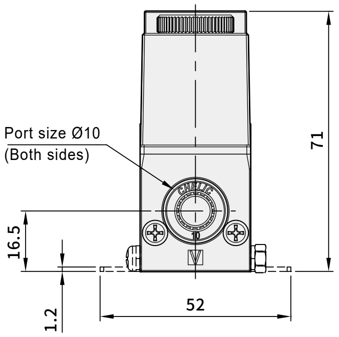
## Dimensions

### VK30 T - 20 - 10 - 24 VDC - T - C

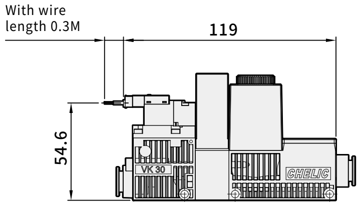

30
25.7
30
43
CHELIC
4-Ø4.2


Circuit diagram
P
V

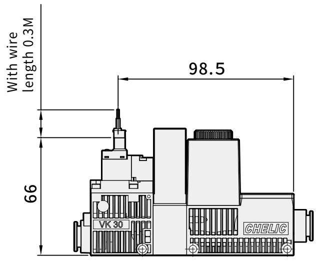

71
66
VK 30
CHELIC
3.5
53
3.5
60
134


Port size Ø10
(Both sides)
CHELIC
71
16.5
1.2
52

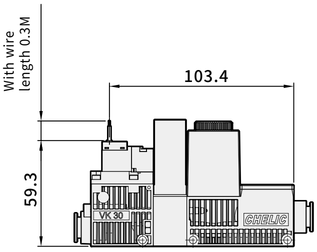
### L type - L


With wire
length 0.3M
119
54.6
VK 30
CHELIC

### T type - T


With wire
length 0.3M
98.5
66
VK 30
CHELIC

### W type grommet - W

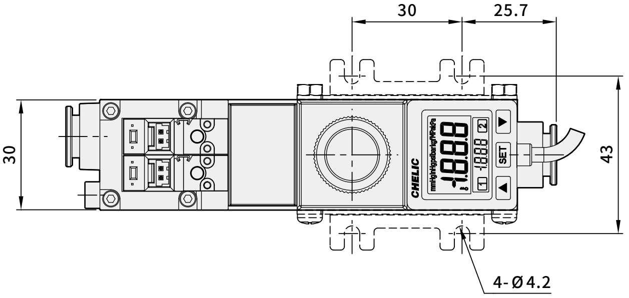

With wire
length 0.3M
103.4
59.3
VK 30
CHELIC

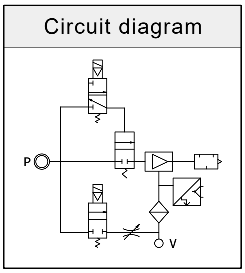
# VK30 series Large Flow Vacuum Ejector

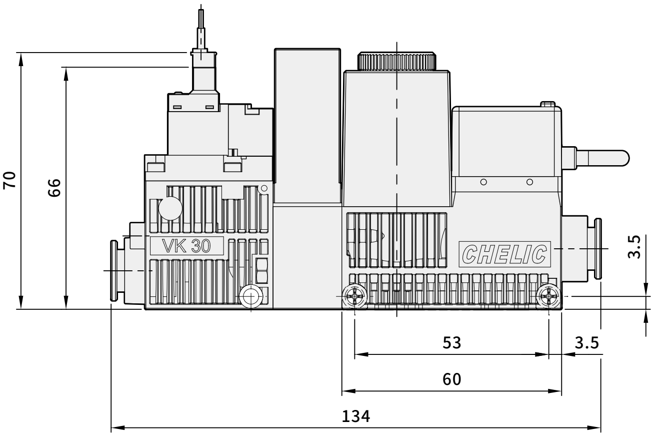
## Dimensions

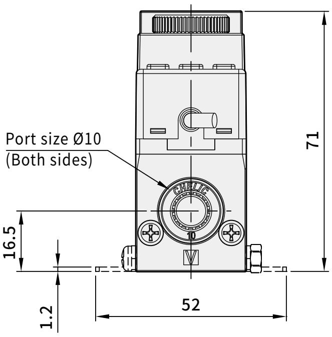
CHELIC

### VK30 ST - 20 - 10 - 24 VDC - T - 022 - C


30
25.7
30
43
4-Ø4.2

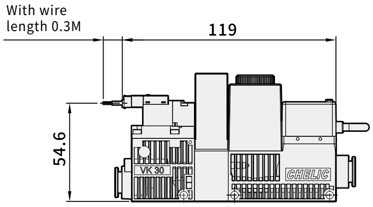

Circuit diagram


70
66
VK 30
CHELIC
3.5
53
3.5
60
134

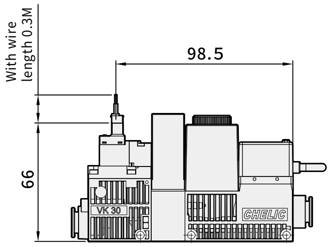

Port size Ø10
(Both sides)
71
16.5
1.2
52

---

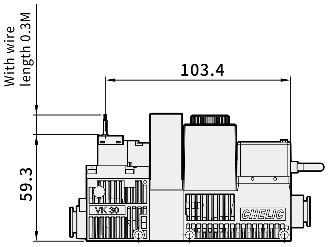
### L type - L


With wire
length 0.3M
119
54.6
VK 30
CHELIC

### T type - T


With wire
length 0.3M
98.5
66
VK 30
CHELIC

### W type grommet - W


With wire
length 0.3M
103.4
59.3
VK 30
CHELIC

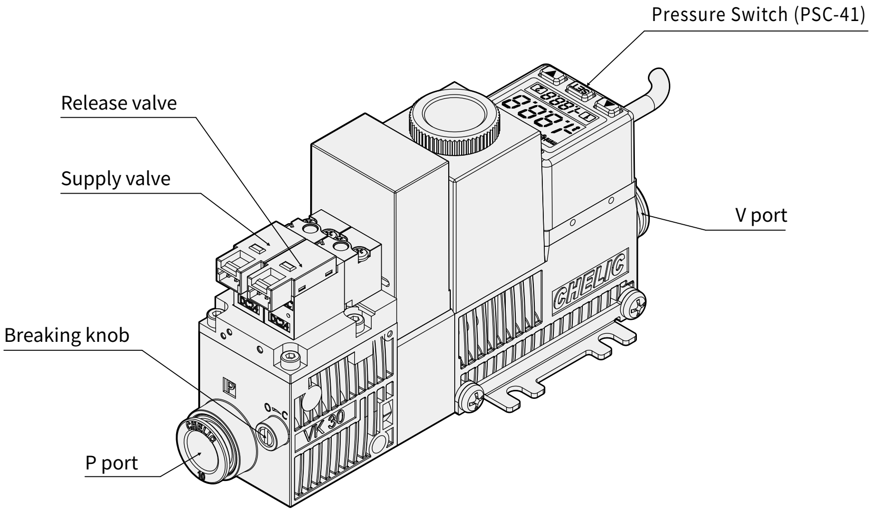
# VK30 series Large Flow Vacuum Ejector

Instructions

**CHELIC.**

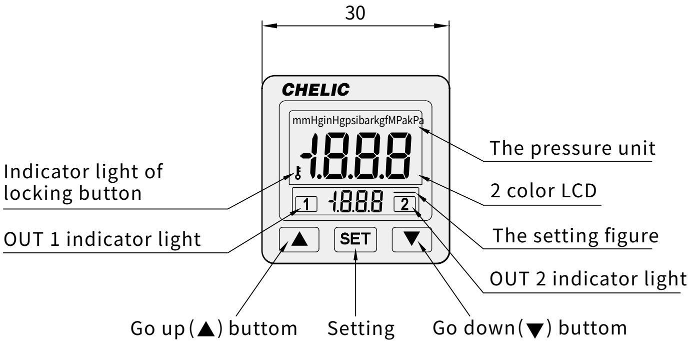
## VK 30 Series Vacuum ejector and vacuum breaking instructions

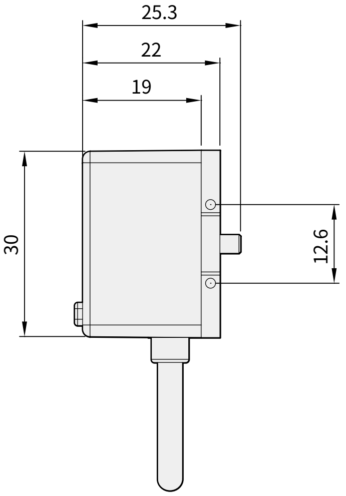
- The supply valve is to control air supply port, release valve is to control the breaking knob.
- The vacuum ejector generates the vacuum only when supply valve starts up.
- By adjusting break knob in clockwise, the vacuum increased; Otherwise counter-clockwise.


Pressure Switch (PSC-41)
Release valve
Supply valve
V port
Breaking knob
P port
CHELIC
VK 30
P

## PSC-41 Numeric Display Pressure Switch Setting Instructions (Compound)

- 2 sets of output ( 2 NPN / 2PNP )
- Key lock function
- Various pressure units available
  kPa, MPa, kgf/cm², bar, psi, inHg, mmHg


30
CHELIC
mmHginHgpsibarkgfMPakPa
-1.8.8.8
1
-1.8.8.8
2
▲
SET
▼
The pressure unit
2 color LCD
Indicator light of locking button
The setting figure
OUT 1 indicator light
OUT 2 indicator light
Go up(▲) buttom
Setting
Go down(▼) buttom


25.3
22
19
30
12.6

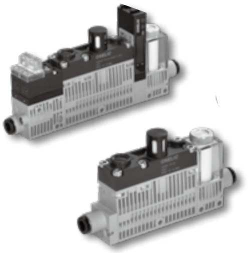
# VQ20 series Energy-saving Vacuum Ejector

## Product features

CHELIC

## Feature

- Energy saving function: vacuum maintenanace structure design, air consumption 80% reduction
- Modularization: Simple structure which can be changed easily.
- Fitting design, easy piping.
- Visualization: Digital display of pressure sensor which can visualiz by monitor.
- Multi-function: Vacuum ejector combined with breaking solenoid valve also with vacuum filter and silencer.
- It can be instal upright or sideways; Simple structure, easy installation and disassembly.



## Specification

| Item \ Model | | Unit | VQ20B | VQ20S | VQ20T | VQ20ST |
|---|---|---|---|---|---|---|
| Fluid | | | Air | | | |
| Pressure range | | MPa (kPa) | 0.4~0.7 (400~700) | | | |
| Proof pressure | | MPa (kPa) | 0.6 (600) | | | |
| Vacuum value | | kPa(mmHg) | -91.8 ( -690 ) | | | |
| Nozzle diameter | | mm | 1.0 | | | |
| Max. suction flow | | L/min | 22 | | | |
| Ambient and fluid temperature | | ℃ | 5 ~ 60 | | | |
| Material | Body | | NYLON, PBT | | | |
| | Plastic | | NYLON, PBT | | | |
| Port size | | | Ø6 | | | |
| Valve type | | | SR2 - 100 | | | |
| Rated voltage | | V | 24±10%VDC | | | |
| Power consumption | | W | 1.2 | | | |

## Pressure switch specification

| Item \ Model | | | Unit | PST 2 |
|---|---|---|---|---|
| Rated pressure range | | | kPa | - 100.0~0 |
| Pressure range | | | kPa | -100.0~100.0 |
| Withstanding pressure | | | kPa | 500 |
| Applicable fluid | | | | Filtered air, Non-corrosive, Non-flammable gas |
| Set pressure resolution | | | | 0.1kPa、0.001kgf/cm²、0.001bar、0.01psi、0.1inHg、1mmHg |
| Power voltage | | | | 12 to 24V DC ± 10%, Ripple ≤ 10% |
| Current consumption | | | mA | ≤ 40( With no load ) |
| Switch output | output | | | 2 NPN or 2 PNP open collector |
| | Max. Load Current | | | 80mA |
| | Power voltage | | | 24VDC |
| | Residual Voltage | | | ≤ 1.5V |
| | Response time | | ms | ≤ 2.5(Chattering-proof function: 25, 100, 250, 500, 1000 and 1500 selectable) |
| | Output short circuit protection | | | Yes |
| Linear analogy output | Voltage | Output Voltage | | 1~5V±2.5%F.S. |
| | | OutputImpedance | | Approx. 1kΩ |
| | Linearity | | | ±1%F.S. |
| Display | Display | | | 4-digit, 7-step display (green) |
| | Switch on indic ator | | | OUT1 green/OUT2 green |
| | Renewing | | | Approx. 0.2 sec |
| | Indicator accuracy | | | ±0.2% F.S.± 1 digit (Temperature: 25±3° C) |
| Repeatability | | | | ±0.2% F.S.± 1 digit |
| Environmental Resistance | Enclosure | | | IP40 |
| | Ambient Temp. Range | | | 0~50° C (No condensation or freezing ) |
| | Ambient Humidity Range | | | Operation / S torage : 35 ~ 85 % RH ( No condensation ) |
| | Withstand Voltage | | | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | | | ≥ 50 MΩ ( a t 500 V DC, between case and lead wire ) |
| | Vibration | | | Total amplitude 1.5 mm , 10 Hz ~ 55 Hz sc an for 1 minute, two hours each direction of X, Y and Z |
| | Impact | | | 980 m/s² ( 100G ) , 3 times each in direction of X, Y and Z |
| Temperature Characteristic | | | | ±2% F.S. (within 0–50° C temperature range) |
| Lead wire | | | | oil-resistant cable (0.14 mm²) |
| Weight ( With 1 Meter Lead Wire ) | | | g | 33 |

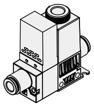
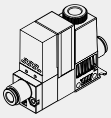
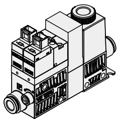
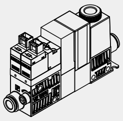
# VQ20 series Energy-saving Vacuum Ejector

## Code of order

## Code of order **VQ20 ST – 10 – 06 – DC24 – L – P04 – C**

ST ① – 10 ② – 06 ③ – DC24 ④ – L ⑤ – P04 ⑥ – C ⑦

①

| Mark | B | S | T | ST |
|---|---|---|---|---|
| Combination | Vacuum ejector<br>+<br>Filter | Vacuum ejector<br>+<br>Filter<br>+<br>Pressure switch | Vacuum ejector<br>+<br>Filter<br>+<br>Solenoid valve | Vacuum ejector<br>+<br>Filter<br>+<br>Solenoid valve<br>+<br>Pressure switch |
| Image |  |  |  |  |

②

| Mark | Nozzle diameter (mm) |
|---|---|
| 05 | 0.5 |
| 07 | 0.7 |
| 10 | 1.0 |

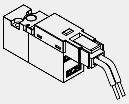
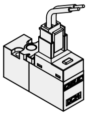
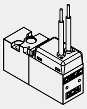
③

| Mark | Port size (mm) |
|---|---|
| 06 | Ø6 |

④

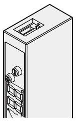
| Mark | Voltage |
|---|---|
| None | Without control valve |
| DC12 | DC 12, 1.2 W |
| DC24 | DC 24, 1.2 W |

⑤

| Mark | Electrical entry |
|---|---|
| None | Without control valve |
| L |  |
| T |  |
| W |  |

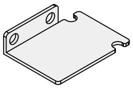
● With wire length 300mm

⑥

| Mark | Output | Image |
|---|---|---|
| None | Without pressure switch | — |
| P04 | 2 NPN output<br>+<br>Analog output<br>(1~5 V) numeric type |  |
| P05 | 2 PNP output<br>+<br>Analog output<br>(1~5 V) numeric type | |

● P04、P05 with wire length 1 M

⑦

| Mark | Bracket |
|---|---|
| None | No bracket |
| C |  |

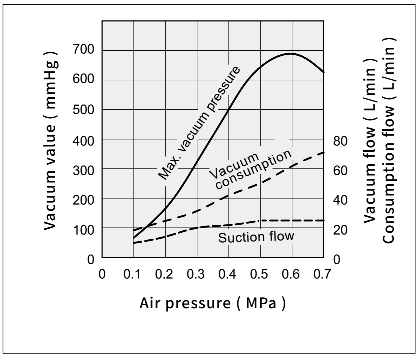
● Vacuum ejector VQ20 Optional correspondence table:

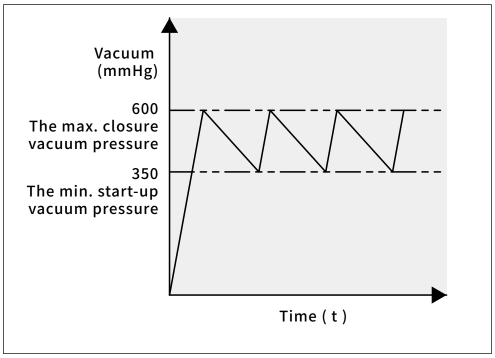
| Model | ①<br>Combination | ②<br>Nozzle diameter | ③<br>Port size | ④<br>Voltage | ⑤<br>Electrical entry | ⑥<br>Output | ⑦<br>Bracket |
|---|---|---|---|---|---|---|---|
| VQ20 | B | 05<br>•<br>07<br>•<br>10 | 06 | — | — | — | C |
| | S | | | | | | |
| | T | | | DC12<br>•<br>DC24 | L<br>•<br>T<br>•<br>W | — | |
| | ST | | | | | P04<br>•<br>P05 | |

# VQ20 series Energy-saving Vacuum Ejector

## Characteristic graph

## Characteristic graph





| Item | | Datasheet |
|---|---|---|
| Max. vacuum pressure | kPa (mmHg) | -90.1(-680) |
| Air consumption/ Vacuum ejector - Energy saving | L/min | 20 |
| Air consumption/ Vacuum ejector - No energy saving | L/min | 70 |
| Air consumption/ Vacuum release | L/min | 8 Note: 1 |
| Power-saving section | mmHg | -600~-350 Note: 2 |
| The min. start-up vacuum pressure | MPa | 0.4 |

Note: 1. VQB, VQS without vacuum breaking.
Note: 2. Power-saving section will be shifted along with pressure.

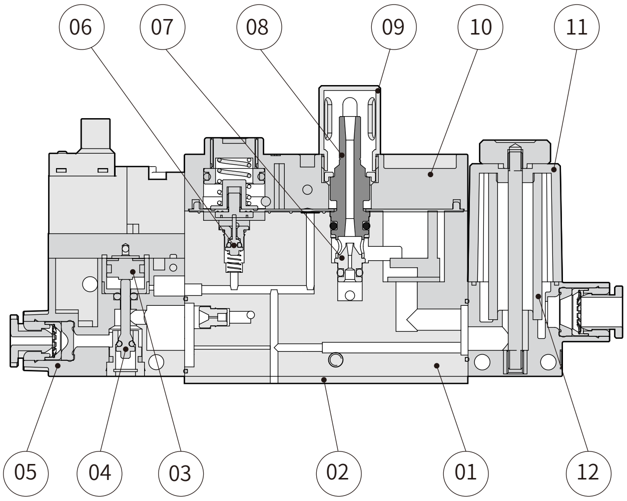
## Product weight

| Model | VQ20 | | | |
|---|---|---|---|---|
| Specification | B | S | T | ST |
| Weight(g) | 110 | 140 | 170 | 200 |

# VQ20 series Energy-saving Vacuum Ejector

## Product features

### Internal structure



### Components and Material list

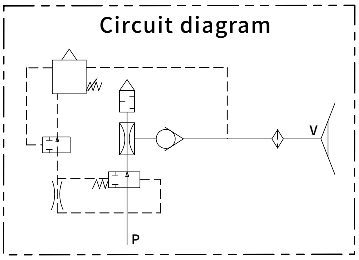
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | body | PBT+ fiber | 07 | Nozzle | Copper alloy |
| 02 | Fixed frame | PBT+ fiber | 08 | Copper tube | Copper alloy |
| 03 | Piston | Copper alloy | 09 | Filter cap | Copper alloy |
| 04 | Straight | Copper alloy | 10 | Top cover | PBT+ fiber |
| 05 | Main body | Nylon fiber | 11 | Filter cap | PC |
| 06 | Valve straight rod | Copper alloy | 12 | Filter | PU |

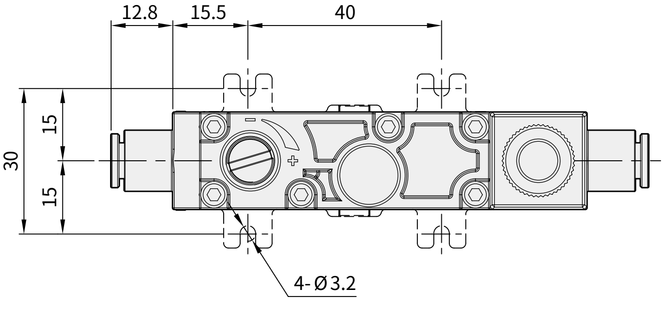
# VQ20 series Energy-saving Vacuum Ejector

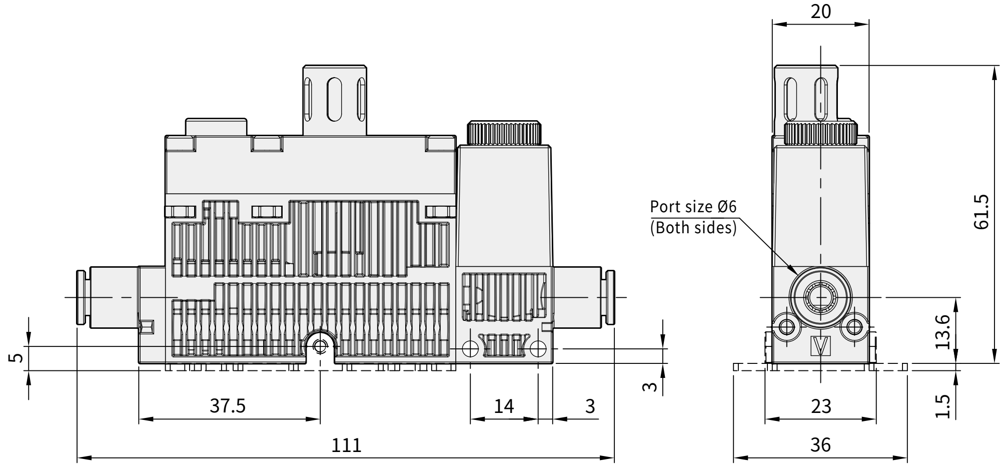
## Dimensions

### VQ20B - 10 - 06 - C

- Note: VQ energy-saving series「energy-saving structure」: when the vacuum reaches the set value, it will automatically be maintained to the low set value then automatically start.


Circuit diagram
V
P


12.8
15.5
40
30
15
15
−
+
4-Ø3.2

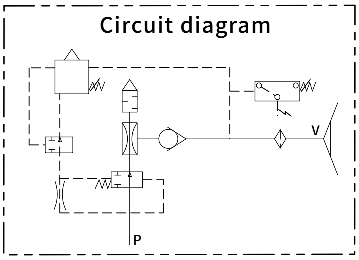

20
61.5
Port size Ø6
(Both sides)
5
3
13.6
37.5
14
3
23
1.5
111
36

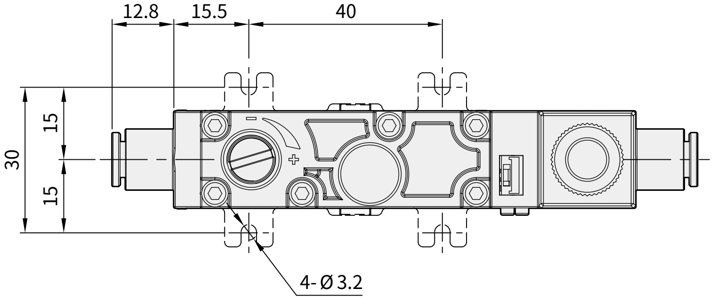
# VQ20 series Energy-saving Vacuum Ejector

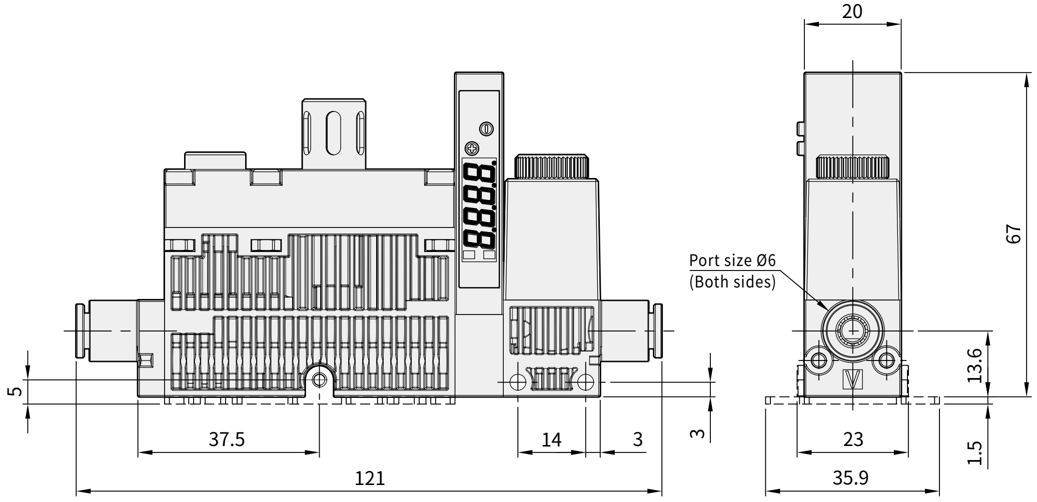
## Dimensions

### VQ20 S - 10 - 06 - P04 - C

- Note: VQ energy-saving series「energy-saving structure」: when the vacuum reaches the set value, it will automatically be maintained to the low set value then automatically start.


Circuit diagram
V
P


12.8
15.5
40
30
15
15
−
+
4-Ø3.2


20
67
Port size Ø6
(Both sides)
13.6
1.5
23
35.9
5
37.5
14
3
3
121

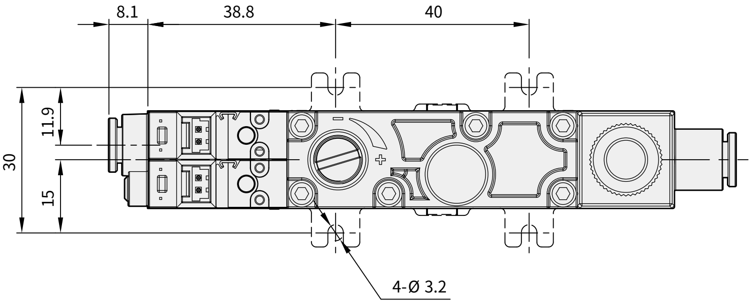
- Note: The product is without vacuum breaking, the breaking air source should be set up separately.

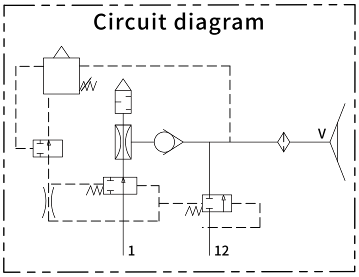
# VQ20 series Energy-saving Vacuum Ejector

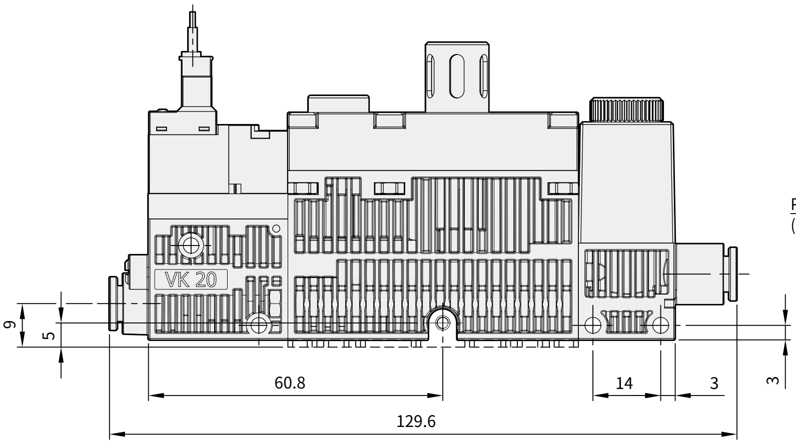
## Dimensions

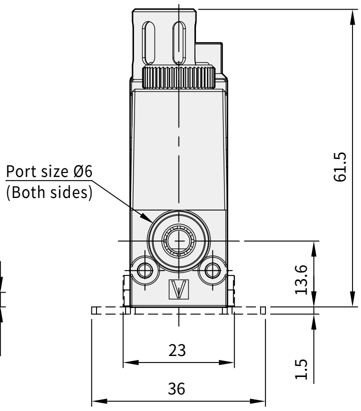
### VQ20 T - 10 - 06 - DC24 - T - C

- Note: VQ energy-saving series「energy-saving structure」: when the vacuum reaches the set value, it will automatically be maintained to the low set value then automatically start.

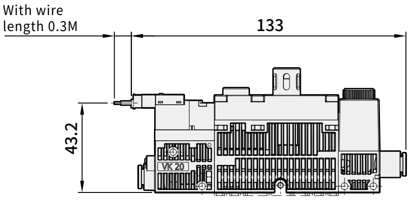

8.1
38.8
40
30
11.9
15
4-Ø 3.2


Circuit diagram
V
1
12

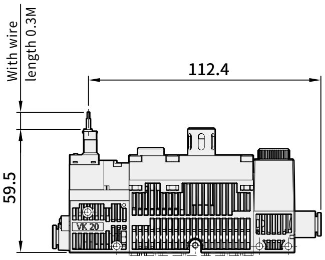

VK 20
9
5
60.8
14
3
3
129.6


Port size Ø6
(Both sides)
61.5
13.6
1.5
23
36

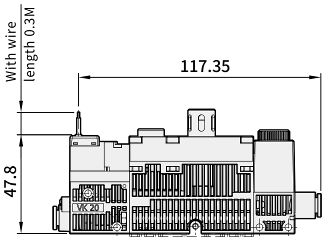
### L type - L


With wire
length 0.3M
133
43.2

### T type - T


With wire
length 0.3M
112.4
59.5

### W type grommet - W


With wire
length 0.3M
117.35
47.8

# VQ20 series Energy-saving Vacuum Ejector

## Dimensions

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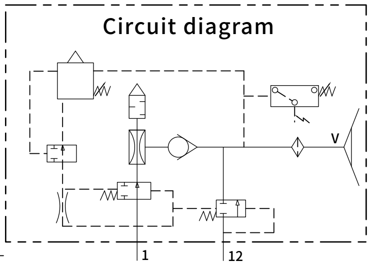
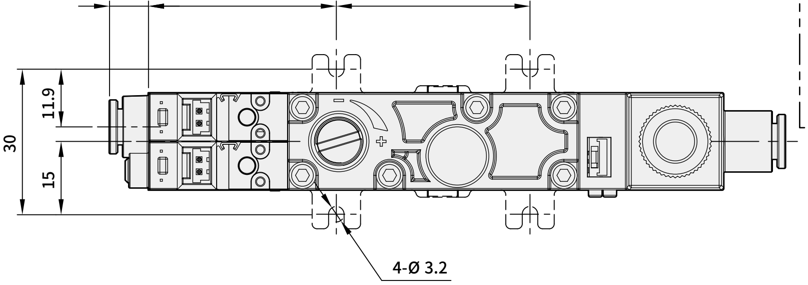
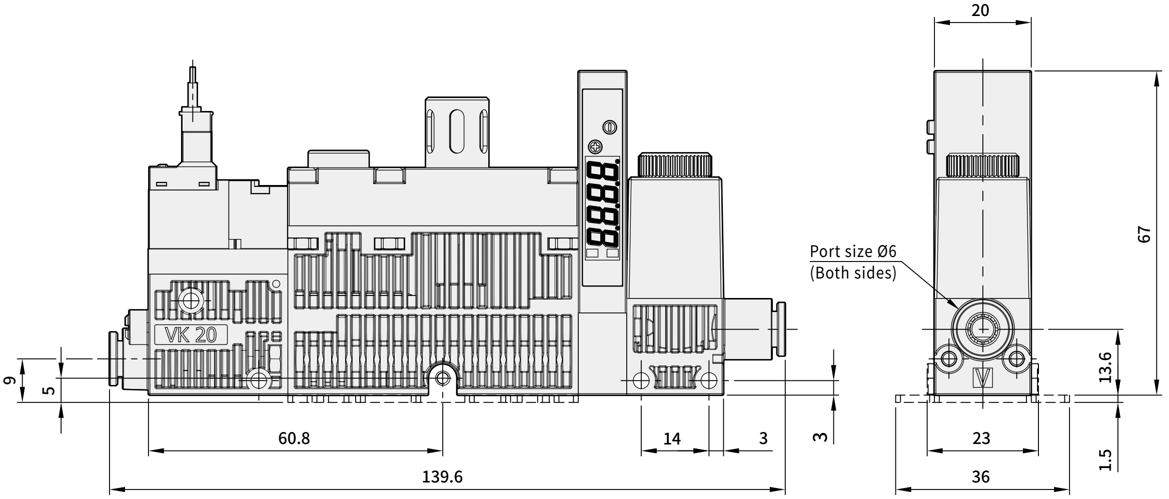
### VQ20 ST - 10 - 06 - DC24 - T - P04 - C



Circuit diagram
V
1
12

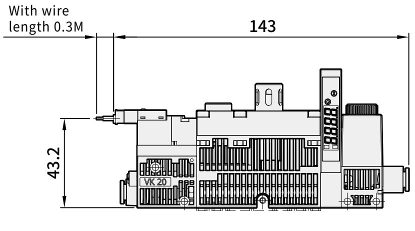


8.1
38.8
40
11.9
30
15
4-Ø 3.2



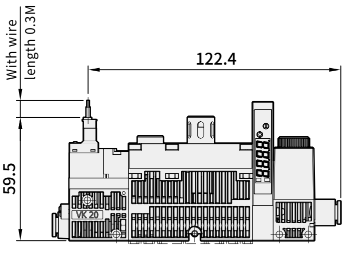
8888
VK 20
9
5
60.8
14
3
3
139.6
20
67
Port size Ø6
(Both sides)
13.6
23
36
1.5

### L type - L



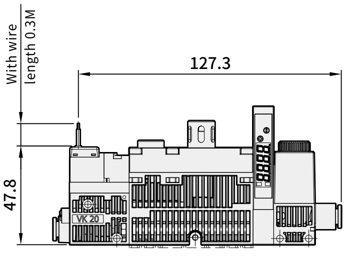
With wire
length 0.3M
143
43.2

### T type - T



With wire
length 0.3M
122.4
59.5

### W type grommet - W

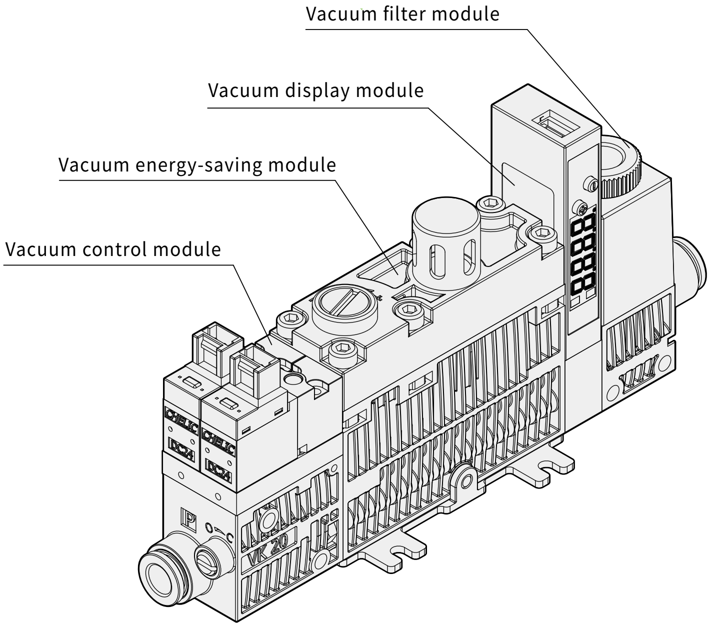


With wire
length 0.3M
127.3
47.8

# VQ20 series Energy-saving Vacuum Ejector

Installation

## VQ 20 Series - The Energy saving vacuun


Vacuum filter module
Vacuum display module
Vacuum energy-saving module
Vacuum control module
8888
CHELIC
DC24
CHELIC
DC24
P
VK 20

## VQ 20 Series - The Energy saving vacuum ejector consists of 4 modules:

- **Vacuum control module:**
  to control the vacuum ejection and breaking, the flow of vacuum breaking can be adjected manually.
- **Vacuum energy-saving module:**
  to possess the functions of vacuum maintenanace, the vacuum startup and closure.
- **Vacuum display module:**
  to display current vacuum data. Output function is enable.
- **Vacuum filter module:**
  to filter air and also to avoid dust entering.

## Vacuum control module

2 sets of solenoid valves control the switch of air su

- SR2-100 solenoid vavle input voltage DC24V 0.6W
- Valve function：Normally close
- Pressure range：0.6MPa
- 3 port 2 position

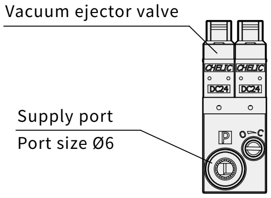
# VQ20 series Energy-saving Vacuum Ejector

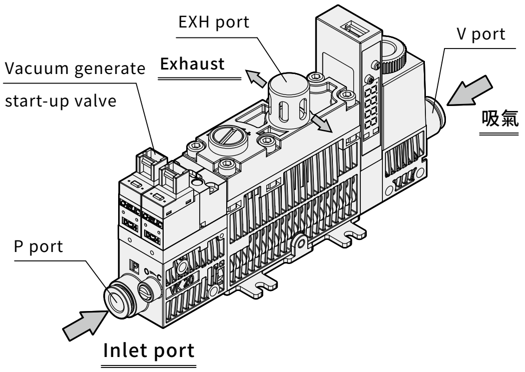
## Installation

CHELIC

### To start the vacuum ejector valve

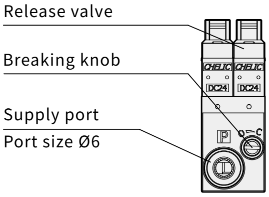
- To connect the supply port with positive air supply. When the vacuum ejector valve activates the air entering and through vacuum ejector to reach vacuum.
- The vacuum generate ejection when the supply port with negative pressure. All of inhaling and exhaling are released via the exhaust port.

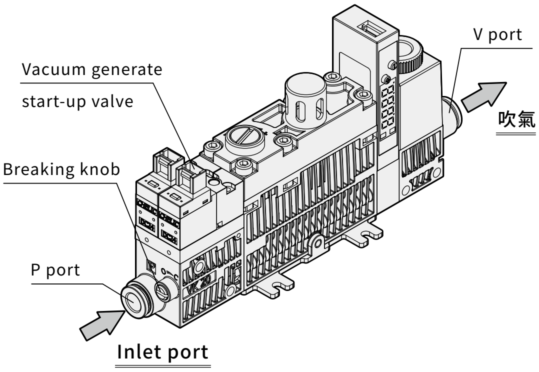

Vacuum ejector valve
Supply port
Port size Ø6


EXH port
Vacuum generate
start-up valve
Exhaust
V port
吸氣
P port
Inlet port

### To start the vacuum breaking valve

- To connect the air inlet to positive air supply. When the vacuum breaking valve activates, air enters via supply port and passes through the vacuum breaking passageway. The air exhausted by supply port.
- Vacuum breaks when the supply port reaches positive pressure.
- The vacuum flow breaking can be adjected by vacuum breaking adjustment knob.


Release valve
Breaking knob
Supply port
Port size Ø6


V port
Vacuum generate
start-up valve
吹氣
Breaking knob
P port
Inlet port

# VQ20 series Energy-saving Vacuum Ejector

## Installation

### Vacuum energy-saving module

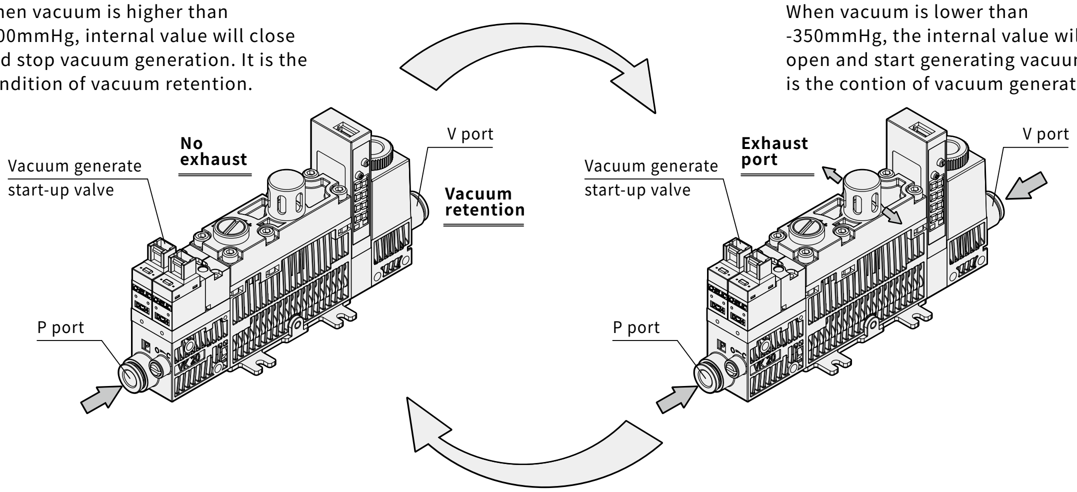
- Vacuum energy-saving modeule has the vacuum retention, the function control vacuum startup and closure.
- Vacuum energy-saving module can keep the vacuum at a given range and reducing air consumption
- Vacuum range -600 ~ -350 mmHg
- Pressure range：5 Kgf/cm²

### To operate the vacuum energy-saving ejector

- To connect the air supply port to positive air supply while the vacuum ejector valve activates Energy-saving range: When vacuum is higher than -600mmHg, the internal value will close and stop vacuum generation. It is the condition of vacuum retention. On the other hand, when vacuum is lower than -30mmHg, the value will open and start generating vacuum. It is the condition of vacuum generation.
- The flow of vacuum breaking can be adjusted by vacuum breaking adjustment knob.

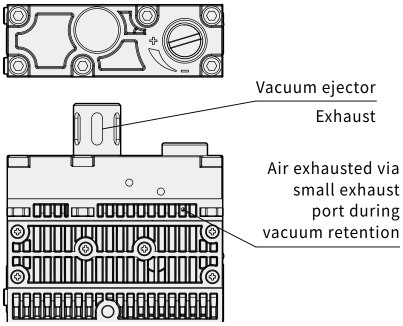
When vacuum is higher than -600mmHg, internal value will close and stop vacuum generation. It is the condition of vacuum retention.

When vacuum is lower than -350mmHg, the internal value will open and start generating vacuum. It is the contion of vacuum generation.


Vacuum generate start-up valve
**No exhaust**
V port
**Vacuum retention**
P port
Vacuum generate start-up valve
**Exhaust port**
V port
P port

### The exhaust condition of vacuum energy-saving module

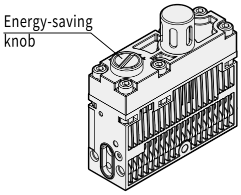
- Vacuum generate:
  air exhausting at exhaust port
- Vacuum retention:
  pressure balance port can keep internal balance by exhausting a fractional of air

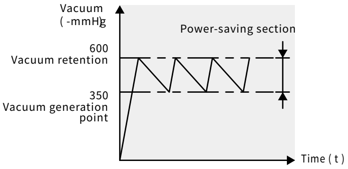

Vacuum ejector
Exhaust
Air exhausted via small exhaust port during vacuum retention

### Adjustment of energy-saving range

The range of power-saving is set -600 ~ -350mmHg

- The power-saving range can be adjusted by knob; however, it is not suggestable to change the current setting.
- Clockwise adjustment:
  to increase the vacuum range, if the adjustment is excessively high, the vacuum retention cannot be kept.
- Counterclockwise adjustment:
  to decrease the vacuum range, if the adjustment is too low, the vacuum generate could not happen.

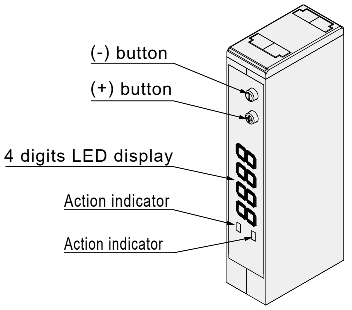

Energy-saving knob



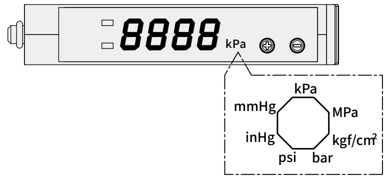
**Power-saving Section and Characteristic**

## PST2 Numeric Display Pressure Switch Setting Instructions

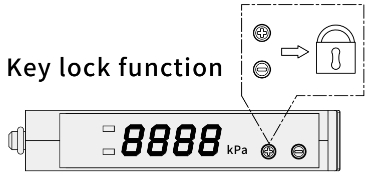
- 2 sets of output & linear analogy output (1~5V)
- Compact size: 50x10x20mm3( L x W x H )
- Key lock function
- Various pressure units available
  kPa, MPa, kgf/cm², bar, psi, inHg, mmHg


(-) button
(+) button
4 digits LED display
Action indicator
Action indicator
8888

### Various pressure units available


8888
kPa
kPa
MPa
kgf/cm²
bar
psi
inHg
mmHg

### Key lock function



Key lock mode can prevent improper operation to pressure switch.

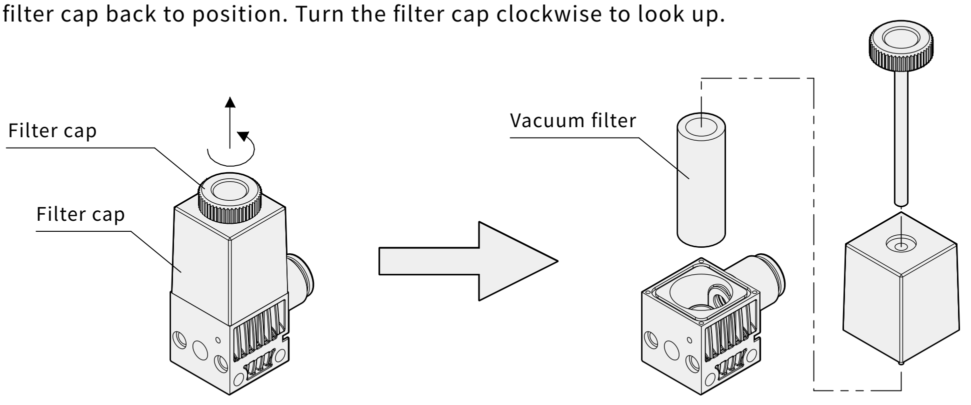
Key lock mode can pbe activated by pressing + and - for 3 seconds.

## Vacuum filter module

- Vacuum filter module has the function of vacuum filter which can prolong life cycle by filter the dust from inhaling air.
- Easy filter replacement
- Filter density: 60µm

## Filter replacement instruction

- Eject the filter cap counterclockwise to replace the filter. After filter replaced, please replace the filter cap back to position. Turn the filter cap clockwise to look up.


Filter cap
Filter cap
Vacuum filter

# VQ20 series Energy-saving Vacuum Ejector

## Precautions

## Caution For design, selection and maintenance

### ⚠ WARNING

- Avoid chemical , corrosive and inflammable gas; avoid sea water , steam high temperature place in surrounding.
- Avoid oil contain gas , don't oil mist in the pipeline, oil in pipeline will cause blockage resuliting in poor effect.
- Please don't use fluid other than compressed air, never suck in fluid other than clean air.
- When using gas, the gas should be kept dry, and there should be no large amount of water vapor, which will cause the possibility of abnormal pressure detector.

### ⚠ CAUTION

- Please don't disassemble the vacuum generator in discretion , disassemble the vacuum generator in discretion will lead to displacement of the original calibration accuracy ; error disassembing will lead to hazard and cause problem on operation of the product.
- Please be sure to use the supply pressure within the product specification range.If the maximum operating pressure is exceeded, the product may be damaged.
- During operation, please do not drop, hit, or apply excessive impact (100m/s) even if the body is not damaged, the internal part may be damaged and may cause malfunction.

# VFD series In-line Air Filter

## Product features/ Code of order

## Feature

- Negative pressure filtration:To filtering and removing dust and other foreign matter from the air. The density of the impurities is 10μm and the connection port size can be up to ϕ1.
- Easy to replace: When the filter element is blocked and the flow is affected, the cup body is easy to disassemble and easy to replace.

## Specification

| Item \ Model | | VFD01 | VFD02 | VFD03 | VFD04 |
|---|---|---|---|---|---|
| Port size | Ø(mm) | 4 | 4, 6 | 6, 8, 10 | 10, 12 |
| Filter area | $cm^2$ | 5 | 7.5 | 12.5 | 15 |
| **Withstanding pressure** | MPa(kPa) | 0.3(300) | | | |
| **Pressure range** | MPa(kPa) | -0.1~0(-100~0) | | | |
| Filter grade | μm | 10 | | | |
| Ambient and fluid temperature | ℃ | 0~60 | | | |

## Code of order **VFD 03 06**

① ②

①

| Mark | Filter area ($cm^2$) |
|---|---|
| 01 | 5 |
| 02 | 7.5 |
| 03 | 12.5 |
| 04 | 15 |

②

| Mark | Port size (mm) |
|---|---|
| 04 | Ø 4 |
| 06 | Ø 6 |
| 08 | Ø 8 |
| 10 | Ø 10 |
| 12 | Ø 12 |

● VFD Selection table:

| Mark | ① Filter area | ② Port size |
|---|---|---|
| VFD | 01 | 04 |
| | 02 | 04 |
| | | 06 |
| | 03 | 06 |
| | | 08 |
| | | 10 |
| | 04 | 10 |
| | | 12 |

## Product weight

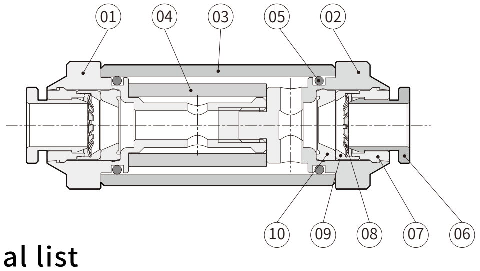
Unit: mm

| Model | Port size ØD | B | L1 | L2 | Ø P1 | Ø P2 | C | F1 | F2 | Filter area $mm^2$ | weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VFD 01 04 | Ø4 | 53.5 | 9.8 | 5.8 | 14.5 | 13.5 | 14.2 | 10 | 20 | 5 | 20 |
| VFD 02 04 | Ø4 | 53.5 | 9.8 | 5.8 | 18.5 | 17.5 | 14.2 | 10 | 20 | 7.5 | 25 |
| VFD 02 06 | Ø6 | 55.5 | 10.8 | 5.8 | 18.5 | 17.5 | 15.5 | 10 | 20 | 7.5 | 25 |
| VFD 03 06 | Ø6 | 63 | 11.3 | 6.3 | 22.5 | 21.5 | 17 | 14 | 24 | 12.5 | 25 |
| VFD 03 08 | Ø8 | 65.2 | 12.4 | 6.4 | 22.5 | 21.5 | 17.2 | 14 | 24 | 12.5 | 39.5 |
| VFD 03 10 | Ø10 | 76.5 | 18 | 7 | 22.5 | 21.5 | 20.1 | 14 | 24 | 12.5 | 39.5 |
| VFD 04 10 | Ø10 | 80.9 | 16.2 | 7.7 | 26.5 | 25.5 | 20.9 | 16 | 28.5 | 15 | 52 |
| VFD 04 12 | Ø12 | 86.4 | 19 | 8 | 26.5 | 25.5 | 23.7 | 16 | 28.5 | 15 | 52 |

# VFD series In-line Air Filter

## Product features/ Characteristic graph

## Internal structure

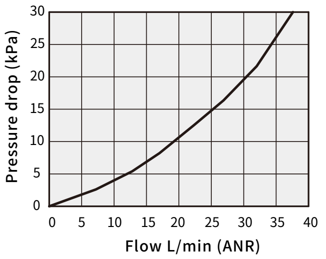


## Components and material list

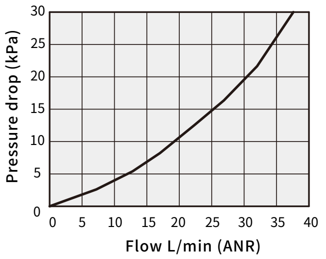
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Main body(Inlet) | Aluminum alloy | 07 | Central block seat | Nylon fiber |
| 02 | Main body(Outlet) | Aluminum alloy | 08 | Finger | Stainless steel sheet |
| 03 | Bowl guard | Nylon | 09 | Finger base | Copper |
| 04 | Filter | Foam cotton | 10 | Packing | NBR |
| 05 | Body cover O-ring | NBR | 11 | Bracket | Nylon fiber |
| 06 | Release ring | POM | 12 | | |

## Flow rate characteristic graph

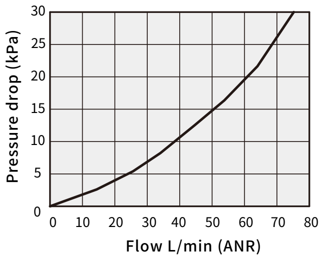
VFD-01-04



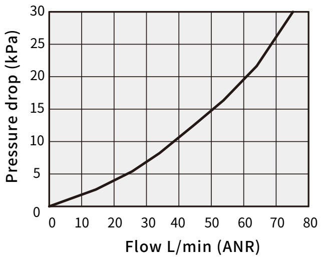
VFD-02-04



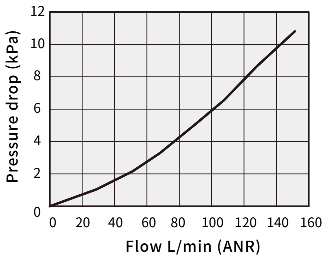
VFD-02-06



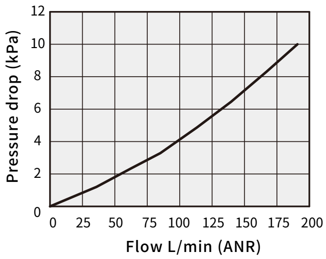
VFD-03-06



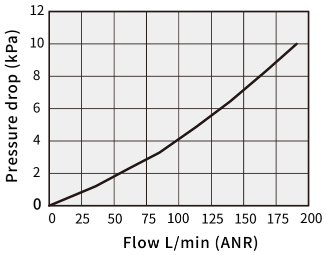
VFD-03-08



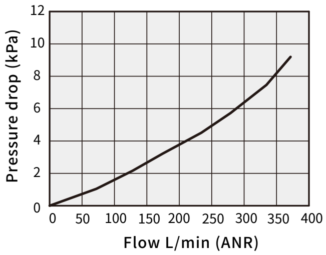
VFD-03-10



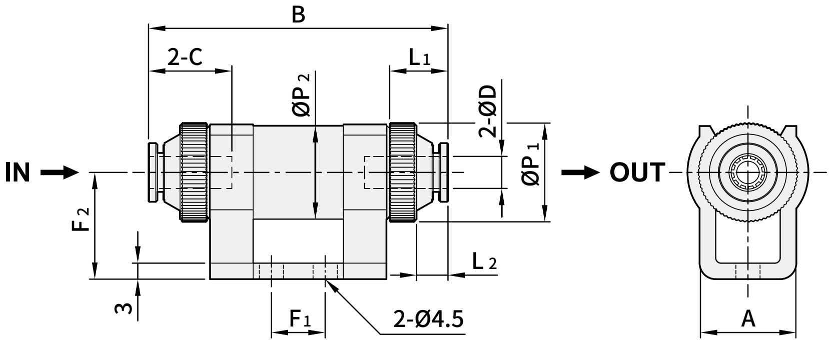
VFD-04-10



VFU-04-12



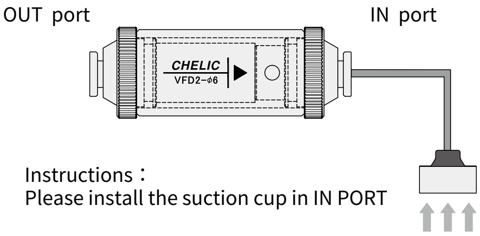
## External dimensions


B
2-C
L1
ØP2
2-ØD
ØP1
IN
OUT
F2
3
L2
F1
2-Ø4.5
A

Unit: mm

| Model | Port size ØD | A | B | L1 | L2 | Ø P1 | Ø P2 | C | F1 | F2 | Filter area mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VFD-01-04 | Ø 4 | 14.7 | 53.5 | 9.8 | 5.8 | 14.5 | 13.5 | 14.2 | 10 | 20 | 5 | 20 |
| VFD-02-04 | Ø 4 | 18 | 53.5 | 9.8 | 5.8 | 18.5 | 17.5 | 14.2 | 10 | 20 | 7.5 | 25 |
| VFD-02-06 | Ø 6 | 18 | 55.5 | 10.8 | 5.8 | 18.5 | 17.5 | 15.5 | 10 | 20 | 7.5 | 25 |
| VFD-03-06 | Ø 6 | 19.6 | 63 | 11.3 | 6.3 | 22.5 | 21.5 | 17 | 14 | 24 | 12.5 | 25 |
| VFD-03-08 | Ø 8 | 19.6 | 65.2 | 12.4 | 6.4 | 22.5 | 21.5 | 17.2 | 14 | 24 | 12.5 | 39.5 |
| VFD-03-10 | Ø 10 | 19.6 | 76.5 | 18 | 7 | 22.5 | 21.5 | 20.1 | 14 | 24 | 12.5 | 39.5 |
| VFD-04-10 | Ø 10 | 22 | 80.9 | 16.2 | 7.7 | 26.5 | 25.5 | 20.9 | 16 | 28.5 | 15 | 52 |
| VFD-04-12 | Ø 12 | 22 | 86.4 | 19 | 8 | 26.5 | 25.5 | 23.7 | 16 | 28.5 | 15 | 52 |

## Instructions


OUT port
IN port
CHELIC
VFD2-φ6

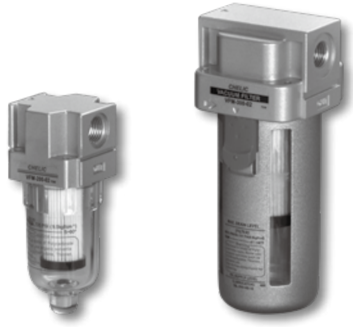
Instructions：
Please install the suction cup in IN PORT

# VFM series  Vacuum Filter

## Product features/ Code of order

## Feature

- ● Negative pressure filtration: To filtering and removing dust and other foreign matter from the air. The density of the impurities is 40μm and the connection port size can be up to Ø1".
- ● A viriety of choices of auto drain.
- ● Easy to replace: When the filter element is blocked and the flow is affected, the cup body is easy to disassemble and easy to replace.



## Specification

| Item \ Model | | VFM - 200 | VFM - 300 | VFM - 400 | VFM - 450 | VFM - 500 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size | Rc | 1/8, 1/4 | 1/4, 3/8 | 1/4, 3/8, 1/2 | 1/2, 3/4 | 3/4, 1 |
| Filter grade | μm | 40 | | | | |
| Proof pressure | | 0.5(500) | | | | |
| Pressure range | MPa(kPa) | -0.1~0(-100~0) | | | | |
| Range of service temperature | ℃ | 5 ~ 60 | | | | |
| Bowl capacity | CC | 15 | 60 | 60 | 100 | 100 |
| Weight | kg | 0.18 | 0.34 | 0.44 | 0.85 | 1.15 |
| Material | Body | Aluminum alloy die-casting | | | | |
| | Bowl | Relieving type | | | | |

## Code of order  VFM  300 – 03 – G – C

① ② ③ ④

①

| Mark | Model |
|---|---|
| 200 | 200 series |
| 300 | 300 series |
| 400 | 400 series |
| 450 | 450 series |
| 500 | 500 series |

②

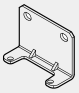
| Mark | Port size |
|---|---|
| 01 | 1/8 |
| 02 | 1/4 |
| 03 | 3/8 |
| 04 | 1/2 |
| 06 | 3/4 |
| 10 | 1 |

③

| Mark | Thread |
|---|---|
| None | Rc |
| G | G  type |
| N | NPT  type |

● G type only product 1/8, 1/4

④

| Mark | Bracket |
|---|---|
| None | No bracket |
| C |  |

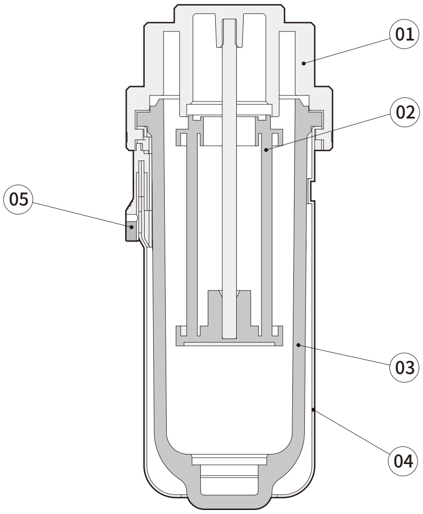
● VFM  Selection table:

| Item | ① Model | ② Port size | ③ Thread | ④ Bracket |
|---|---|---|---|---|
| VFM | 200 | 01 | G<br>•<br>N | C |
| | | 02 | | |
| | 300 | 02 | G<br>•<br>N | |
| | | 03 | G | |
| | 400 | 02 | G<br>•<br>N | |
| | | 03 | G | |
| | | 04 | | |
| | 450 | 04 | G | |
| | | 06 | | |
| | 500 | 06 | G | |
| | | 10 | | |

# VFM series  Vacuum Filter

## Product features

## Internal structure



## Components and Material list

| No. | Item | Material |
|---|---|---|
| 01 | Body | ADC12 |
| 02 | Vacuum filter element | Foam cotton |
| 03 | PC bow | PC |
| 04 | Bowl guard | SS41 |
| 05 | Key press | ABS |

## Product weight

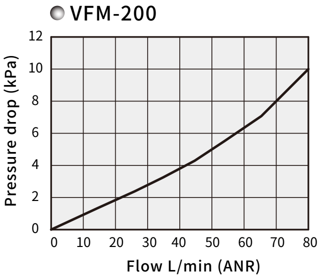
| Model | Specification | Weight(g) |
|---|---|---|
| VFM | 200 | 210 |
| | 300 | 340 |
| | 400 | 450 |
| | 450 | 850 |
| | 500 | 1150 |

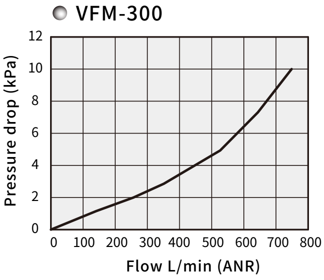
# VFM series Vacuum Filter

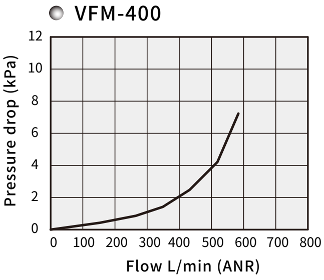
## Characteristic graph/ Dimensions

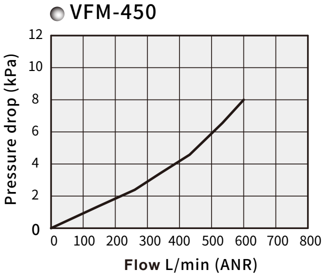
EV
EVM
VA□
VM□
VM□U
VHS
VSL
VKM
VKMT
VCK
VK20□
VK30□
VQ20□
VFD
VFM
VFU
ERV
ERVL
MVS
DYC

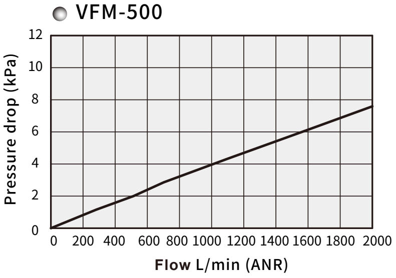
### Flow rate characteristic graph


VFM-200

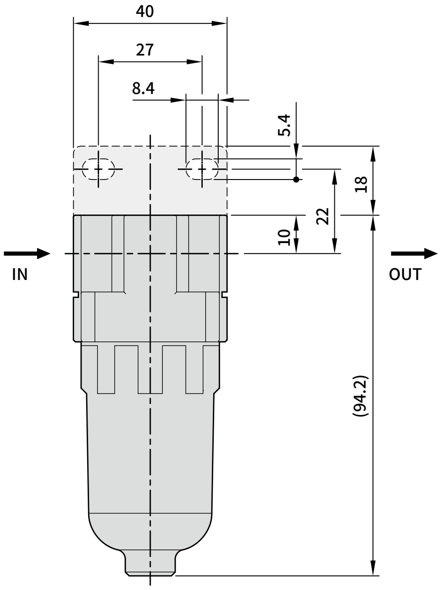

VFM-300

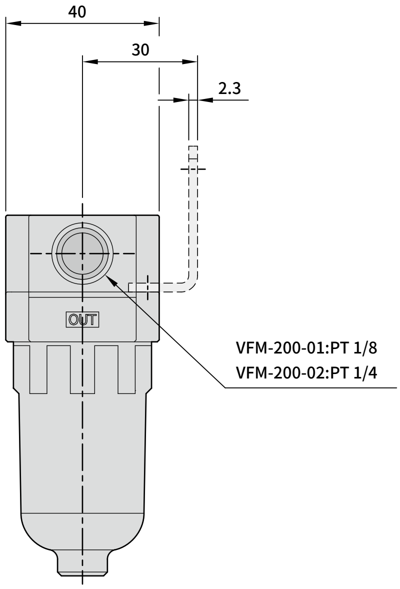

VFM-400


VFM-450


VFM-500

### VFM - 200 - □ - C

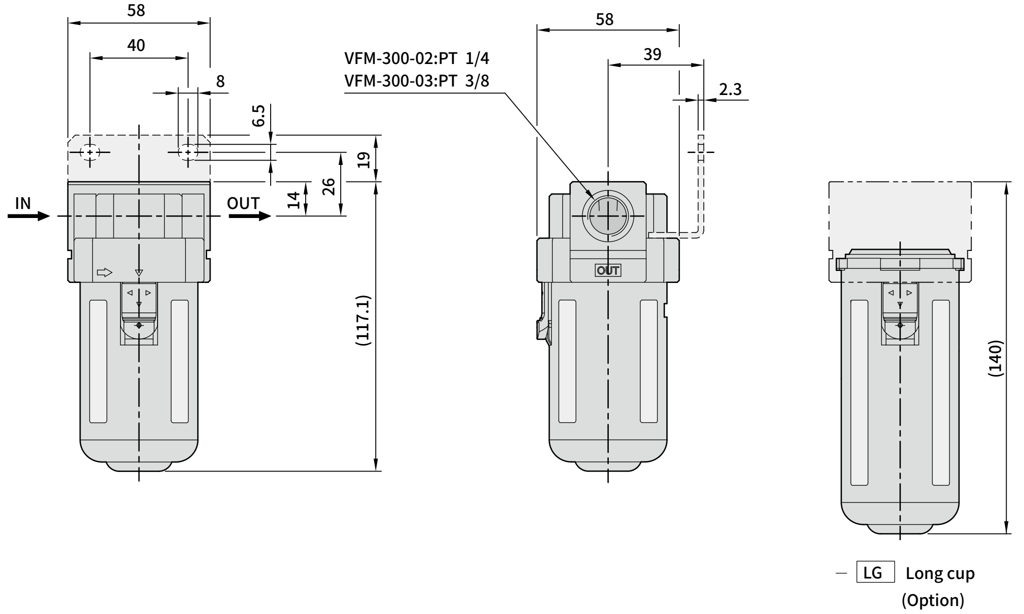

40
27
8.4
5.4
18
22
10
(94.2)
IN
OUT


40
30
2.3
OUT
VFM-200-01:PT 1/8
VFM-200-02:PT 1/4

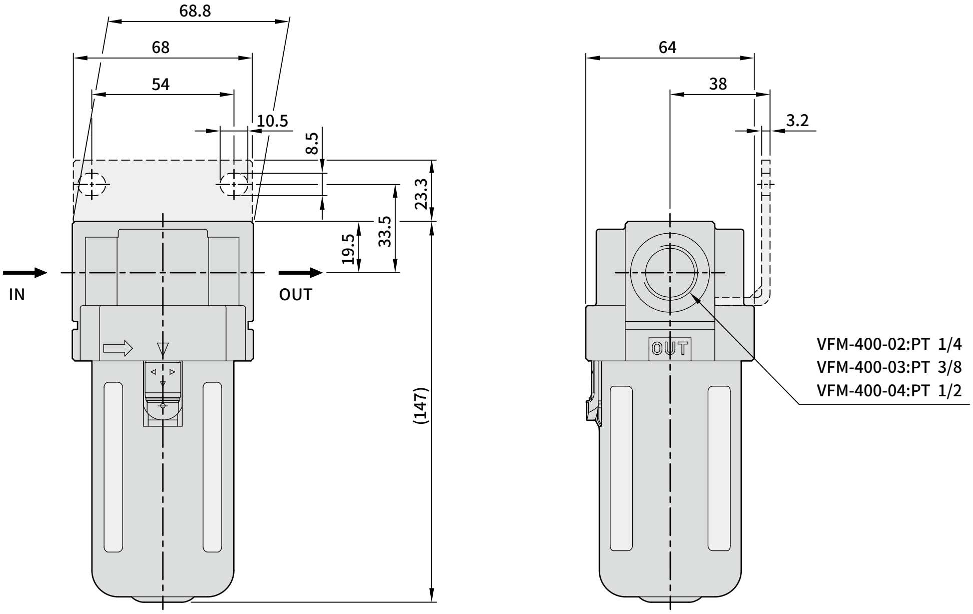
# VFM series Vacuum Filter

## Dimensions

### VFM – 300 – ☐ – C


58
40
8
6.5
19
26
14
IN
OUT
(117.1)
58
39
2.3
VFM-300-02:PT 1/4
VFM-300-03:PT 3/8
OUT
(140)
– LG Long cup
(Option)

### VFM – 400 – ☐ – C

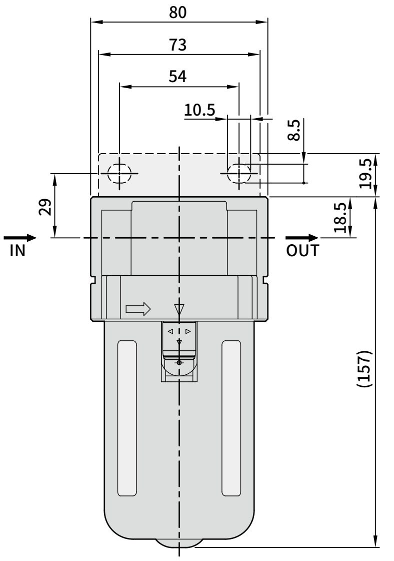

68.8
68
54
10.5
8.5
23.3
33.5
19.5
IN
OUT
(147)
64
38
3.2
OUT
VFM-400-02:PT 1/4
VFM-400-03:PT 3/8
VFM-400-04:PT 1/2

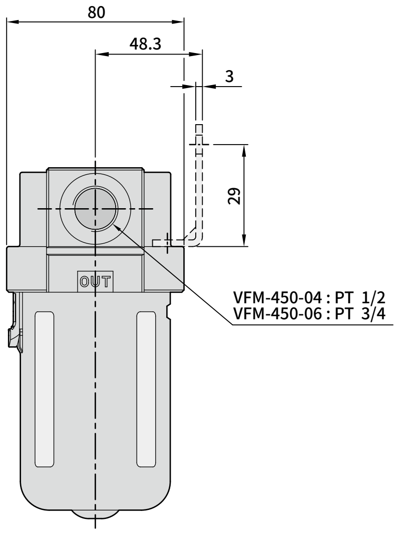
# VFM series  Vacuum Filter

## Dimensions

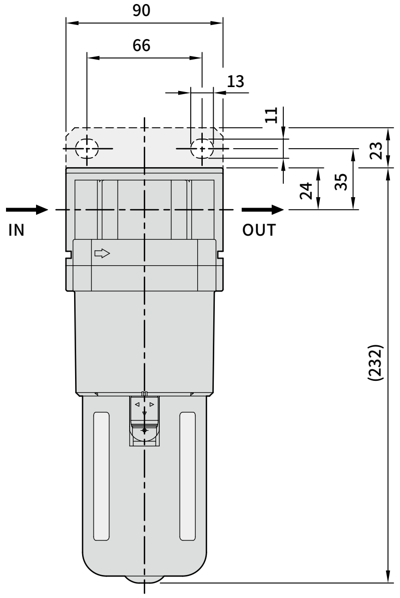
CHELIC

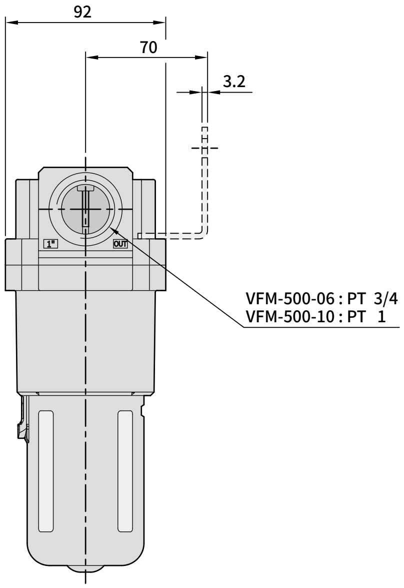
### VFM – 450 – ☐ – C


80
73
54
10.5
8.5
19.5
29
18.5
IN
OUT
(157)


80
48.3
3
29
OUT
VFM-450-04 : PT 1/2
VFM-450-06 : PT 3/4

### VFM – 500 – ☐ – C


90
66
13
11
23
24
35
IN
OUT
(232)


92
70
3.2
1"
OUT
VFM-500-06 : PT 3/4
VFM-500-10 : PT 1

# VFU series Air Suction Filter with One-touch Fitting

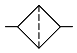
## Product features/ Code of order

**CHELIC.**

## Feature

- Negative pressure filtration:To filtering and removing dust and other foreign matter from the air. The density of the impurities is 40μm and the connection port size can be up to ϕ1".
- Easy to replace: When the filter element is blocked and the flow is affected, the cup body is easy to disassemble and easy to replace.

ymbol:



## Specification

| Item \ Model | | VFU01-04 | VFU01-06 | VFU02-06 | VFU02-08 | VFU03-08 | VFU03-10 |
|---|---|---|---|---|---|---|---|
| Port size ( IN Side, OUT Side ) | L/min(ANR) | 4 | 6 | 6 | 8 | 8 | 10 |
| Flow | | 10 | 20 | 30 | 50 | 75 | 75 |
| Fluid | | Air | | | | | |
| Pressure range | MPa(kPa) | -0.1~0(-100 ~ 0) | | | | | |
| Proof pressure | MPa(kPa) | 0.5(500) | | | | | |
| Ambient and fluid temperature | ° C | 0 ~ 60 (No freezing status) | | | | | |
| Nominal filtration rating | μm | 30 | | | | | |
| Element differential pressure resistance | MPa(kPa) | 0.15 (150) | | | | | |
| Applicable piping tube | | Nylon, Soft nylon | | | | | |

Note 1: If the working environment is close to chemical area, it is possible to damage the VFU body, please avoid applying VFU in this king of area. (Please do avoid alcohol and acetone)
Note 2: Please avoid applying VFU under continuing pressure which may cause damage.

## Code of order **VFU 01 04**

① ②

①

| Mark | Fluid L/min(ANR) |
|---|---|
| 01 | 20 |
| 02 | 50 |
| 03 | 75 |

②

| Mark | Port size (mm) |
|---|---|
| 04 | Ø 4 |
| 06 | Ø 6 |
| 08 | Ø 8 |
| 10 | Ø 10 |

● VFU Selection table:

| Model | ① Flow | ② Port size |
|---|---|---|
| VFU | 01 | 04 |
| | | 06 |
| | 02 | 06 |
| | | 08 |
| | 03 | 08 |
| | | 10 |

## Product weight

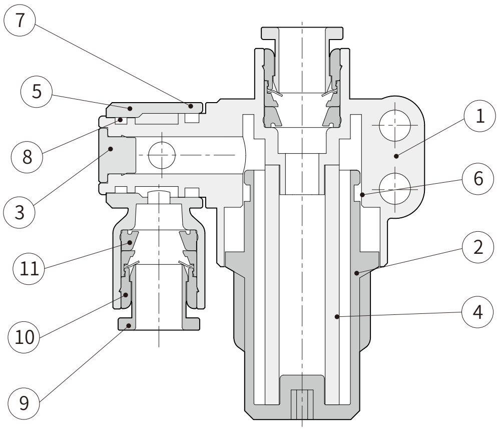
| Model | Specification | Weight (g) |
|---|---|---|
| VFU | 0104 | 20 |
| | 0106 | 22 |
| | 0206 | 33 |
| | 0208 | 35 |
| | 0308 | 49 |
| | 0310 | 53 |

# VFU series Air Suction Filter with One-touch Fitting

## Product features

CHELIC

### Internal structure



### Components and Material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Body | Nylon fiber | 07 | O-ring | NBR |
| 02 | PC bow | Plastic | 08 | O-ring | NBR |
| 03 | Cover | Copper | 09 | Release ring | POM |
| 04 | Filter | EA30 | 10 | Copper set | - |
| 05 | QSC Plastic Body | NBR | 11 | Fitting gasket | NBR |
| 06 | PC cup O-ring | NBR | 12 | | |

### How to replace filter element

1. Stop the operation first, then release inner vacuum pressure air to Atmospheric pressure.
2. Please turn PC bowl in counterclockwise: turn "L" (Lock) to "O' (Open). See Figure 1
3. Please pull out the bowl and take out the filter element. Then apply blow gun to clean dust or objects in bowl for making sure the cleaning. Meanwhile, you may exam the O-ring if in a good condition. See Figure 2
4. Raplace the filter element.
5. Insert the PC bowl to "O" (Open) and turn in clockwise position to "L" (Lock). See Figure 3
6. After assembly according to above procedure, the product can be processed properly.

Figure 1

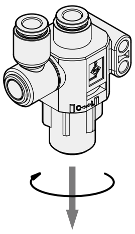


Figure 2

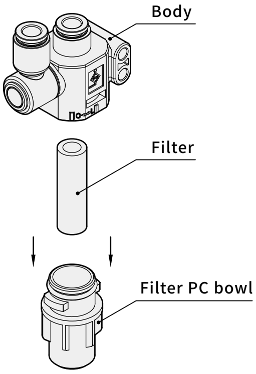
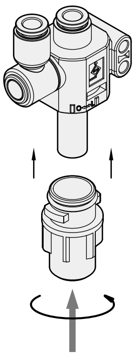


Figure 3

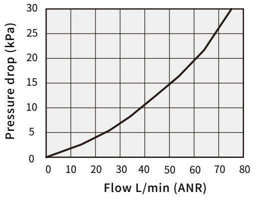


# VFU series Air Suction Filter with One-touch Fitting

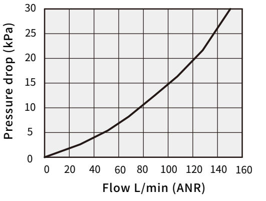
## Characteristic graph/ Dimensions

### Flow rate characteristics

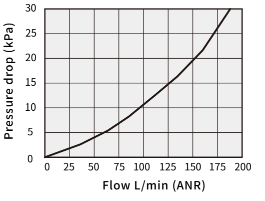
VFU-01-04



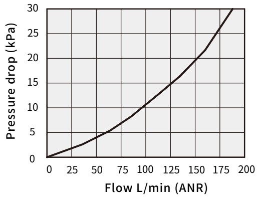
VFU-01-06



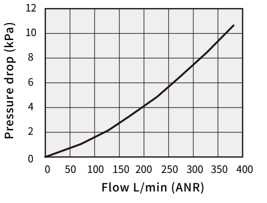
VFU-02-06



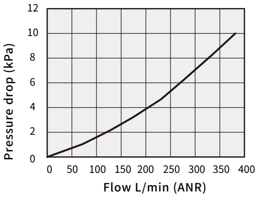
VFU-02-08



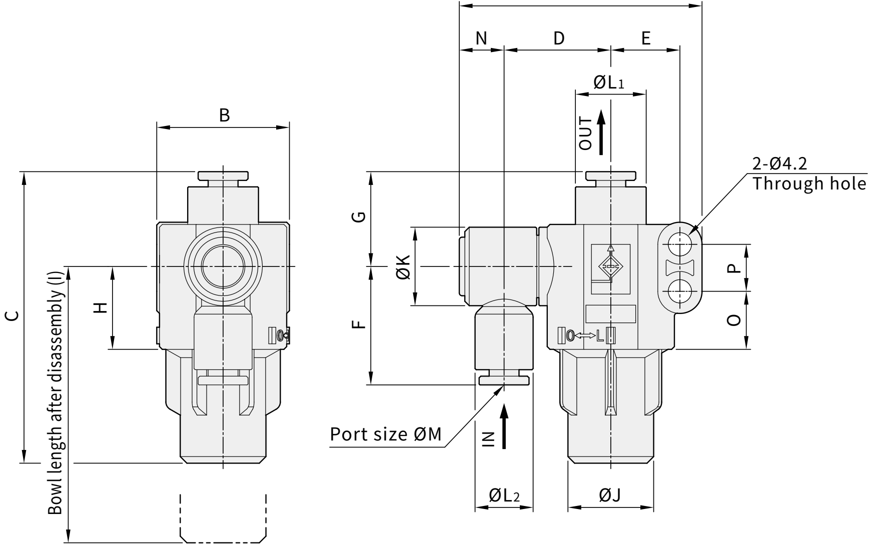
VFU-03-08



VFU-03-10



### External dimensions


A
N
D
E
ØL1
OUT
B
2-Ø4.2
Through hole
G
ØK
P
C
H
F
O
Bowl length after disassembly (I)
Port size ØM
IN
ØL2
ØJ

Unit: mm

| Model | A | B | C | D | E | F | G | H | I | J | K | L1 | L2 | M | N | O | P | Weight(g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VFU 01-04 | 44 | 24 | 53 | 19.3 | 12.5 | 21.5 | 17.2 | 15 | 50 | 15.5 | 14.2 | 12.8 | 10.5 | 4 | 8.1 | 10.5 | 8.5 | 22 |
| VFU 01-06 |  |  |  |  |  | 23.6 | 17.3 |  |  |  |  |  | 12.4 | 6 |  |  |  | 23 |
| VFU 02-06 | 48 | 27 | 65 | 21.7 | 13 | 25.9 | 19.3 | 16 | 61 | 17.5 | 18.6 | 15.2 | 12.4 | 6 | 9.3 | 11.3 | 10 | 33.4 |
| VFU 02-08 |  |  |  | 22.2 |  | 27.6 | 19.4 |  |  |  |  |  | 14.3 | 8 |  |  |  | 34.7 |
| VFU 03-08 | 56 | 29 | 70 | 25.9 | 14.5 | 29.8 | 20.9 | 17 | 65 | 21.5 | 23 | 18.5 | 14.3 | 8 | 11.7 | 11.5 | 13 | 48.8 |
| VFU 03-10 |  |  | 71 |  |  | 32.2 | 21.5 |  |  |  |  |  | 17.9 | 10 |  |  |  | 53.4 |

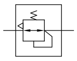
# ERV series Vacuum Regulator

## Product features/ Code of order

CHELIC

### Feature

- Easy to install: light and compact, space saving.
- The filter element easy to change and replace.
- Could apply with elbow type fitting with 360° rotation and easy to piping.

Symbol: 

### Specification

| Item / Model | | ERV - 200 |
|---|---|---|
| Fluid | | Air |
| Port size | Rc | 1/8、1/4 |
| Pressure range | kPa(mmHg) | -98.6～-1 (-740～-7.5) |
| Air consumption | L/min(ANR) | 0.6 within |
| Ambient and fluid temperature | ℃ | 5～60 |
| Weight | kg | 0.2 |
| Body material | | Aluminum alloy die-casting |

### Code of order **ERV 200 – 01 – G – VG10A**

① ② ③

①

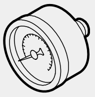
| Mark | Port size (mm) |
|---|---|
| 01 | 1/8 |
| 02 | 1/4 |

②

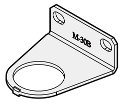
| Mark | Thread type |
|---|---|
| None | Rc |
| G | G |
| N | NPT |

● G applicable to 1/8, 1/4

③

| Mark | Pressure gauge |
|---|---|
| None | Without pressure gauge |
| VG10A |  |

● Accessory supplied with product

| Mark | Bracket |
|---|---|
| Bracket included |  |

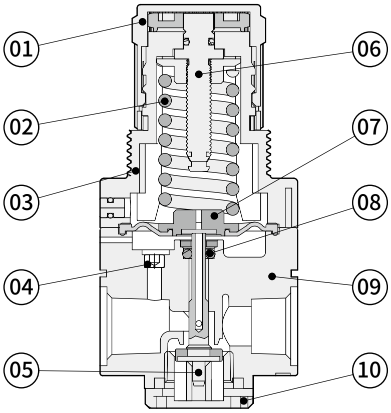
● ERV 200 series Selection table:

| Item | Model | ① Port size | ② Thread type | ③ Pressure gauge |
|---|---|---|---|---|
| ERV | 200 | 01<br>•<br>02 | G<br>•<br>N | VG10A |

# ERV series Vacuum Regulator

## Product features

### Internal structure



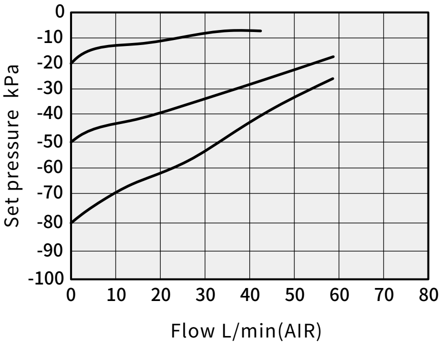
### Working principle

Turn the knob left to pressure main spring to push diaphragm and activate seal pad on shaft, when the seal closes it will push the shaft. Meantime, the valve gate will open to allow primary pressure through the shaft to the main diaphragm, the above space between main spring will be in a balancing function. When the knob turn right, the main spring pressure decreased to allow over-flow hole opened to reduce secondary in inner pressure until the main spring strength to pull back the diaphragm which shut off the over-flow hole for decreasing degree of vacuum.

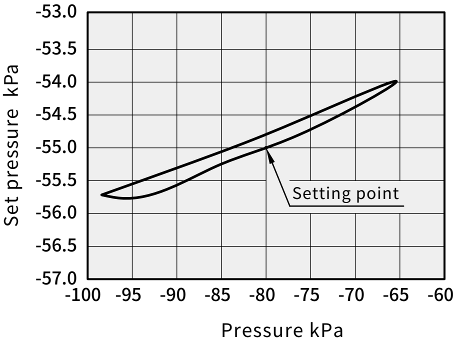
### Components and material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Pressure adjusting knob | POM | 06 | Screw rod | Copper Alloy |
| 02 | Pressure adjusting spring | Stainless | 07 | Main diaphragm | Copper+NBR |
| 03 | Pressure adjusting holder | POM | 08 | O-ring | NBR |
| 04 | Valve | Copper Alloy | 09 | The body | Copper Alloy |
| 05 | Shaft | Copper Alloy | 10 | The nut | POM |

### Flow rate characteristics



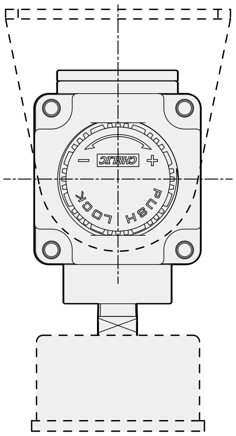
### Pressure characteristics

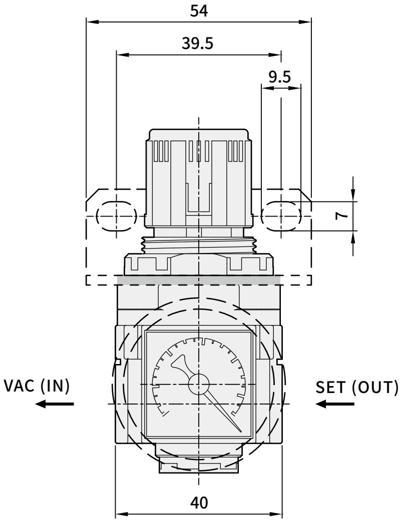


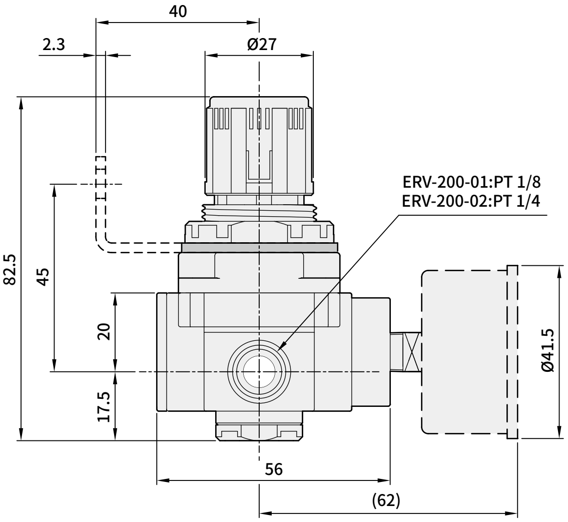
# ERV series Vacuum Regulator

## Dimensions

### ERV - 200 Standard


−
CHELIC
+
PUSH LOCK


54
39.5
9.5
7
VAC (IN)
SET (OUT)
40

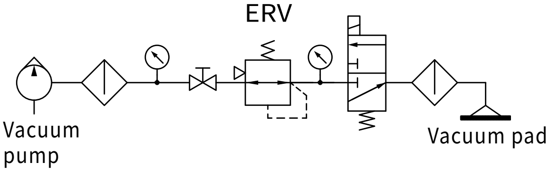

40
2.3
Ø27
ERV-200-01:PT 1/8
ERV-200-02:PT 1/4
82.5
45
20
17.5
56
(62)
Ø41.5

# ERV series Vacuum Regulator

## Application example/ Cautions

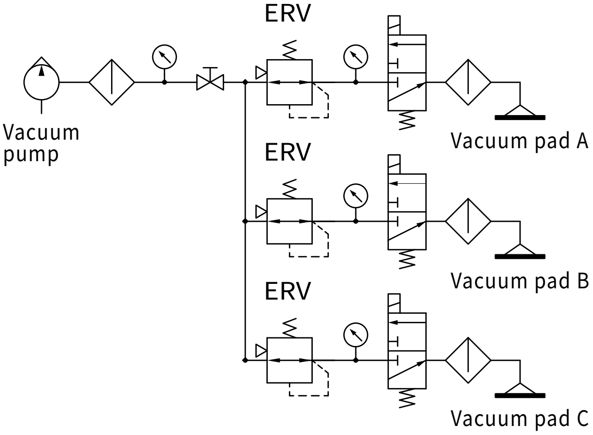
## Application example

When to vacuum one workpiece


ERV
Vacuum pump
Vacuum pad

※ Note : Please refer to vacuum pump datasheet when lifting workpiece weight and quantity.

When to vacuum multiple workpieces


ERV
Vacuum pump
Vacuum pad A
ERV
Vacuum pad B
ERV
Vacuum pad C

### The notice for when designing and selecting

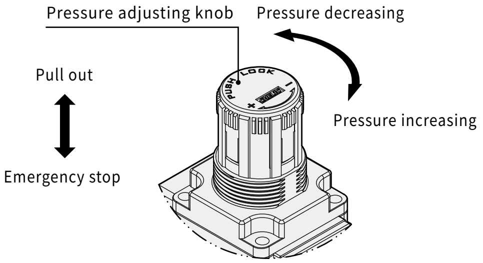
- When design the system, it should avoid the product in a high impact or strong movement working environment; And also to avoid exposing outdoor or under chemical environment.
- The pressure gauge is plastic transparent cover, please prevent the specific working environment such as spray printing or chemical fluid.
- The filter should be setting right after vacuum pump for keeping the product cleaning and away from dust environment that may cause flow insufficiently.

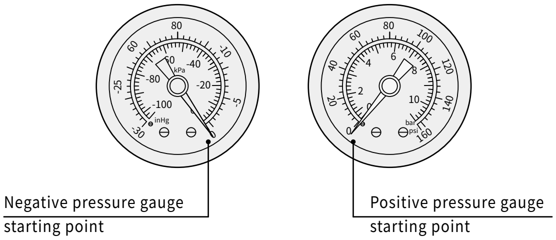
### The notice for assembly

- When assembly, be attention to the negative pressure direction. Use in opposite direction is not applicable.
- Please use wrench to tighten the pressure gauge onto the product. The surface of pressure gauge is possible to be damaged if using by hand with uncontrolleable pressures.
- Please avoid seal tap and objects flow into piping line, and avoid screw glue flowing to the product that cause damaged or insufficient functioning.

### Caution for using

- The knob should be pull out and turn for adjusting. In clockwise turning is for negative pressure adjustment, the counterclockwise is to decrease negative pressure; after setting, the knob should be pushed back in position. When clockwise turning to maximum pressure (the pressure figure without changes), it should not be turned further by hand or tool for preventing breaking or damaged.
- The starting point of vacuum pressure gauge is reverse direction of positive pressure gauge, please pay attention when applying.


Pressure adjusting knob
Pressure decreasing
Pull out
Pressure increasing
Emergency stop
PUSH
LOCK


Negative pressure gauge starting point
Positive pressure gauge starting point

# ERVL series Large Flow Vacuum Regulator/ Energy-saving

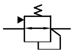
## Product features/ Code of order

CHELIC

## Feature

- No air inlet consumption can save the vacuum pressure consumption.
- High-precision sensitivity can set the correct vacuum pressure.
- Digital display of pressure sensor which can visualiz by monitor.
- User-friendly, easy to install.

Symbol:



## Specification

| Item \ Model | ERVL-400 |
|---|---|
| Fluid | Air |
| Pressure range kPa(mmHg) | -97~-1.3k(-727.5~-9.8) |
| Sensitivity | within ±1% F.S. |
| Air consumption L/min(ANR) | 0 (0) |
| Port size Rc(PT) | 1/4, 3/8, 1/2 |
| Pressure gauge port size Rc(PT) | 1/8(2 places) |
| Ambient and fluid temperature ℃ | 5~60 |
| Weight kg | 0.42 |

## Code of order

**ERVL 400 – 02 – G – VG10A**

① ② ③

①

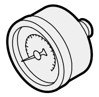
| Mark | Port size |
|---|---|
| 01 | 1/4 |
| 02 | 3/8 |
| 03 | 1/2 |

②

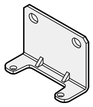
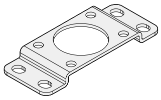
| Mark | Thread type |
|---|---|
| None | Rc |
| G | G |
| N | NPT |

● G applicable to 1/8, 1/4

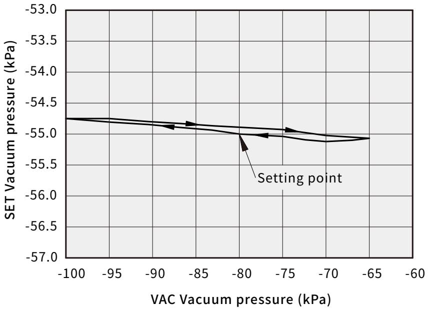
③

| Mark | Pressure gauge |
|---|---|
| None | Without pressure gauge |
| VG10A |  |

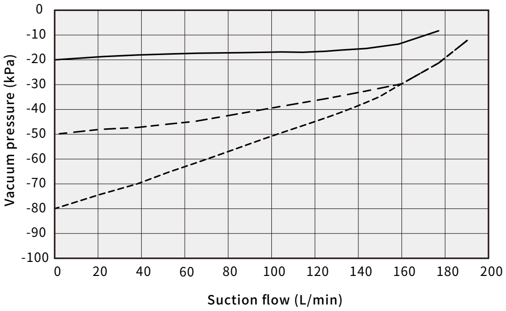
● Accessory supplied with product

| Mark | Bracket |
|---|---|
| None<br>With bracket |  |
| -B |  |

## Pressure characteristics



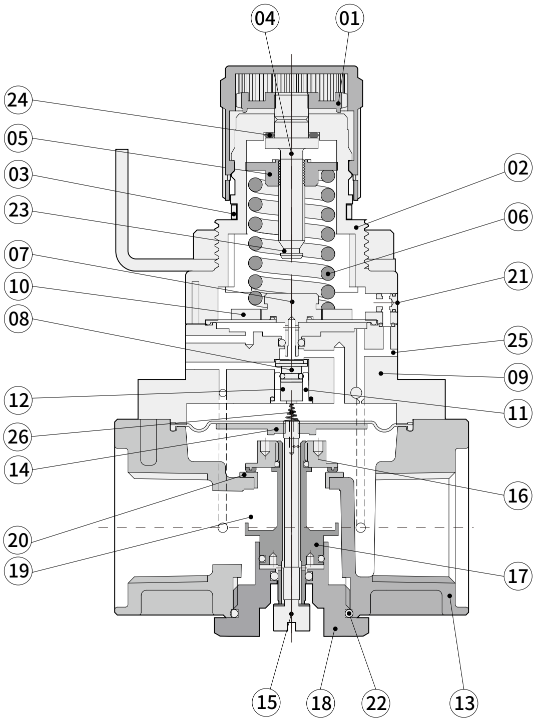
## Flow Rate Characteristics



# ERVL series Large Flow Vacuum Regulator/ Energy-saving

## Product features

### Internal structure



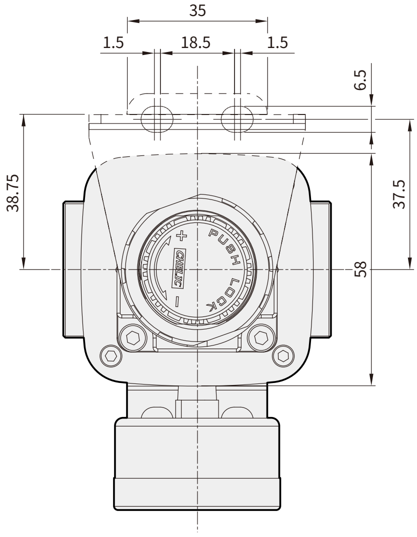
### Components and Material list

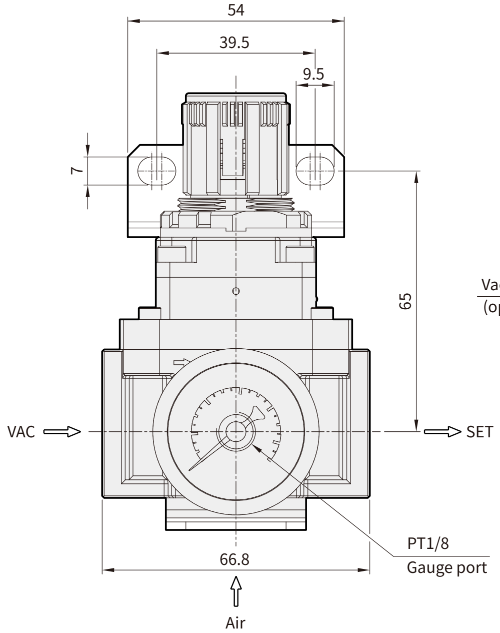
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Gear plate | POM | 14 | Main diaphragm | NBR+Aluminum alloy |
| 02 | Adjuster base | POM | 15 | Diaphragm lever | NBR + Copper |
| 03 | Indicator ring | POM | 16 | Piston cap | NBR + Aluminum alloy |
| 04 | Rod | Copper | 17 | Piston | Aluminum alloy |
| 05 | Knob cap | Copper + Nickel plating | 18 | Overflow tunnel base | Copper |
| 06 | Main spring | Piano wire + Nickel plating | 19 | Piston spring | Stainless steel |
| 07 | Diaphragm | NBR + Copper | 20 | Seal washer | Silicone rubber thickness 45° |
| 08 | Adjuster lever | Copper | 21 | Adjuster base plug | Aluminum alloy |
| 09 | Main base | Aluminum alloy | 22 | O-ring | NBR |
| 10 | Plain washer | Iron | 23 | E clip E3/nickel plating | - |
| 11 | Straight lever | Copper + Nickel plating | 24 | Spool packing | NBR |
| 12 | Lever spring | Stainless steel | 25 | Stainless steel bead | Stainless steel |
| 13 | Body | Aluminum alloy | 26 | Spring | Stainless steel |

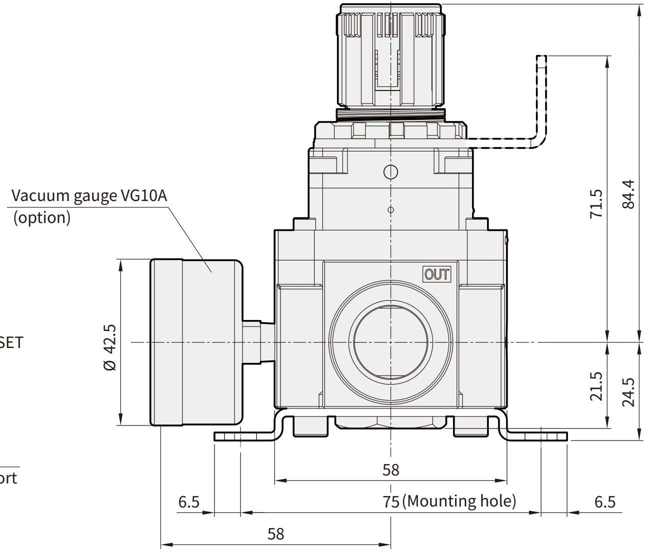
# ERVL series Large Flow Vacuum Regulator/ Energy-saving

## Dimensions

### ERVL 400


35
1.5
18.5
1.5
6.5
38.75
37.5
58
PUSH LOCK
CHELIC
+
−


54
39.5
9.5
7
65
VAC
SET
66.8
PT1/8
Gauge port
Air

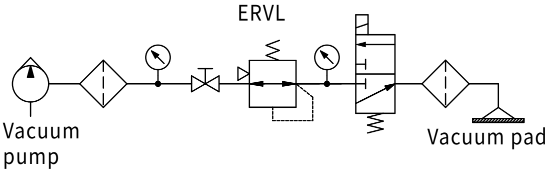

Vacuum gauge VG10A
(option)
Ø 42.5
OUT
71.5
84.4
21.5
24.5
58
6.5
75 (Mounting hole)
6.5
58

# ERVL series Large Flow Vacuum Regulator/ Energy-saving

## Application example/ Cautions

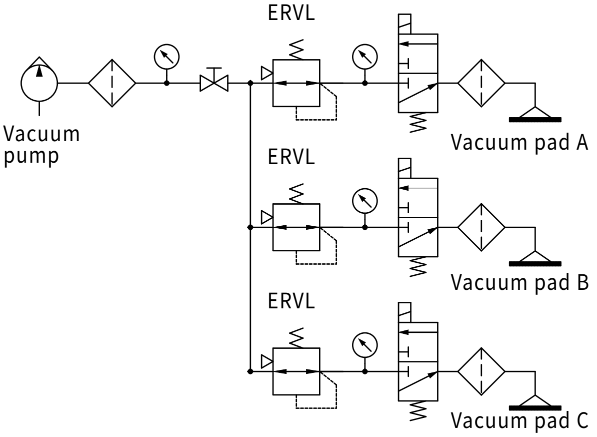
## Application example

### When to vacuum one workpiece


ERVL
Vacuum pump
Vacuum pad

※ Note : Please refer to vacuum pump datasheet when lifting workpiece weight and quantity.

### When to vacuum multiple workpieces


ERVL
Vacuum pump
Vacuum pad A
ERVL
Vacuum pad B
ERVL
Vacuum pad C

### The notice for when designing and selecting

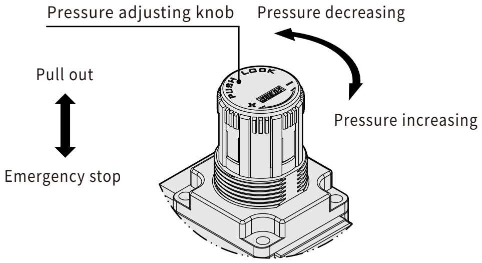
- When design the system, it should avoid the product in a high impact or strong movement working environment; And also to avoid exposing outdoor or under chemical environment.
- The pressure gauge is plastic transparent cover, please prevent the specific working environment such as spray printing or chemical fluid.
- The filter should be setting right after vacuum pump for keeping the product cleaning and away from dust environment that may cause flow insufficiently.

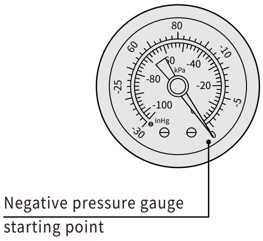
### The notice for assembly

- When assembly, be attention to the negative pressure direction. Use in opposite direction is not applicable.
- Please use wrench to tighten the pressure gauge onto the product. The surface of pressure gauge is possible to be damaged if using by hand with uncontrolleable pressures.
- Please avoid seal tap and objects flow into piping line, and avoid screw glue flowing to the product that cause damaged or insufficient functioning.

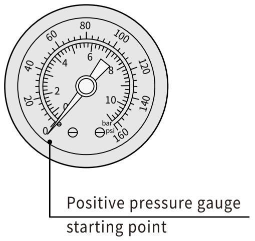
### Caution for using

- The knob should be pull out and turn for adjusting. In clockwise turning is for negative pressure adjustment, the counterclockwise is to decrease negative pressure; after setting, the knob should be pushed back in position. When clockwise turning to maximum pressure (the pressure figure without changes), it should not be turned further by hand or tool for preventing breaking or damaged.
- The starting point of vacuum pressure gauge is reverse direction of positive pressure gauge, please pay attention when applying.


Pressure adjusting knob
Pressure decreasing
Pull out
Pressure increasing
Emergency stop
PUSH
LOCK


80
60
-10
-25
-5
-30
kPa
inHg
-100
-80
-60
-40
-20

Negative pressure gauge starting point


80
60
100
40
120
20
140
0
160
bar
psi
2
4
6
8
10

Positive pressure gauge starting point

# MVS series Miniature Vacuum Cylinder

Product features

CHELIC

## Feature

- With independent vacuum inlet connector which can avoid the breakage of the air pipe when acting.
- Lightweight and compact, easy to install.
- A buffer device is installed inside to prevent damage to the workpiece.
- The double guide rod structure prevents the cylinder when rotating.

## Specification

| Item / Bore size(mm) | | Ø6 | Ø10 | |
|---|---|---|---|---|
| Stroke mm | | 10 | 10 | 15 |
| Operation | | Double acting | | |
| Theoretical thrusts | Piston out kgf | 1.4 | 3.9 | |
| | Piston in kgf | 1.05 | 3.25 | |
| Applicable pad size | | PA - 02 ~ 15 | | |
| Shock absorber stroke mm | | 3 | | |
| Cushion device | | Spring buffer | | |
| Pressure range kgf/cm² (kPa) | | 1 ~ 7 ( 100 ~ 700 ) | | |
| Fluid | | Air | | |
| Ambient and fluid temperature ℃ | | 5 ~ 60 | | |
| Main connection port | | M3 | | |
| Port size Ø (mm) | | 4 | | |

## Product weight

| Bore size (mm) | weight (g) |
|---|---|
| MVS Ø06x10 | 40 |
| MVS Ø10x10 | 90 |
| MVS Ø10x15 | 100 |

## Packing and O-ring part list

Unit: mm

| Item | Shaft packing | Piston packing | Front/ Rear cover O-ring | Ventilation guide O-ring | Rear O-ring-A | Rear cover O-ring -B |
|---|---|---|---|---|---|---|
| Bore size(mm) / Quantity | 1 | 1 | 3 | 1 | 1 | 1 |
| MVS Ø 06 | MYA-3 | COP-06 | Ø4*Ø1 | Ø3.5*Ø1 | Ø2*Ø1 | Ø4*Ø1 |
| MVS Ø 10 | MY-5A | OPA-10 | Ø8*Ø1 | Ø5.5*Ø1.5 | Ø2*Ø1 | Ø6.8*Ø0.8 |

## Code of order **MVS 06 X 10 – 02 – PA02 – N – 8G – 1**

① ② ③ ④ ⑤ ⑥

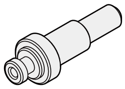
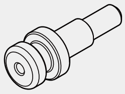
①

| Mark | Bore Size (mm) |
|---|---|
| 06 | Ø6 |
| 10 | Ø10 |

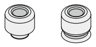
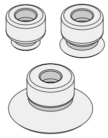
②

| Mark | Stroke (mm) |
|---|---|
| 10 | 10 |
| 15 | 15 |

③

| Mark | Bracket |
|---|---|
| 02 |  |
| 05 |  |

④

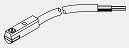
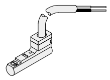
| Mark | Vacuum pad size | |
|---|---|---|
| | size (mm) | Single layer |
| PA02 | Ø2 |  |
| PA3.5 | Ø3.5 | |
| PA05 | Ø5 |  |
| PA06 | Ø6 | |
| PA08 | Ø8 | |
| PA10 | Ø10 | |
| PA15 | Ø15 | |

⑤

| Mark | Vacuum pad material | Color |
|---|---|---|
| N | NBR | Black |
| S | Silicon, Silicone rubber | White |
| U | PU | Black |

- PU rubber only for Ø6 ~ Ø15

⑥

| Mark | Sensor switch | Image |
|---|---|---|
| None | Without sensor switch | — |
| 8G | CS-8G |  |
| 8B | CS-8B |  |

- Only 1pc optional sensor switch.

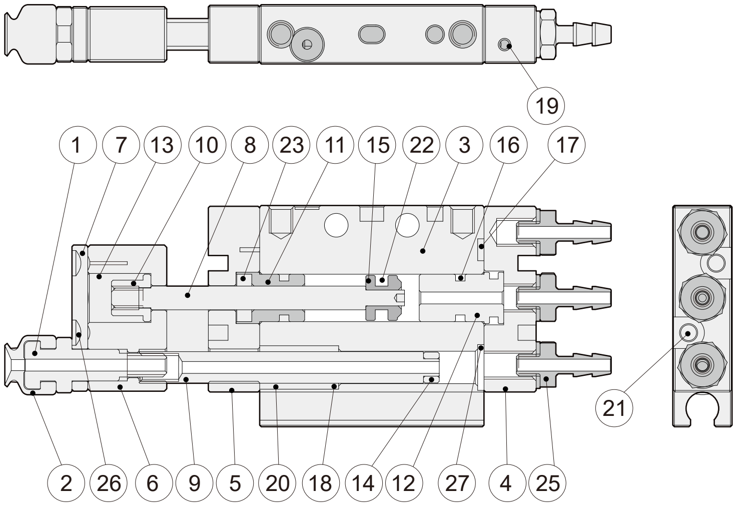
- MVS Correspondence table:

| Model | ① Bore size | ② Stroke | ③ Bracket | ④ Size | ⑤ Material | ⑥ Sensor switch |
|---|---|---|---|---|---|---|
| MVS | 06 | 10 | 02 | PA02<br>•<br>PA3.5 | N<br>•<br>S<br>•<br>U | 8G<br>•<br>8B |
| | | | 05 | PA05<br>•<br>PA06<br>•<br>PA08<br>•<br>PA10<br>•<br>PA15 | | |
| | 10 | 10<br>•<br>15 | 02 | PA02<br>•<br>PA3.5 | | |
| | | | 05 | PA05<br>•<br>PA06<br>•<br>PA08<br>•<br>PA10<br>•<br>PA15 | | |

# MVS series Miniature Vacuum Cylinder

## Product features

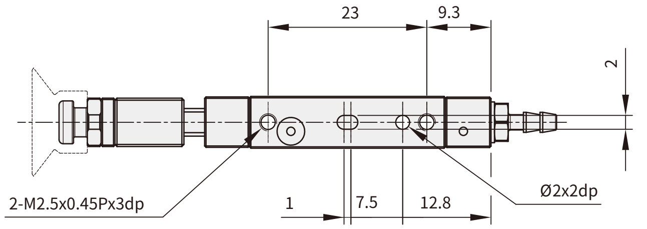
### Internal structure

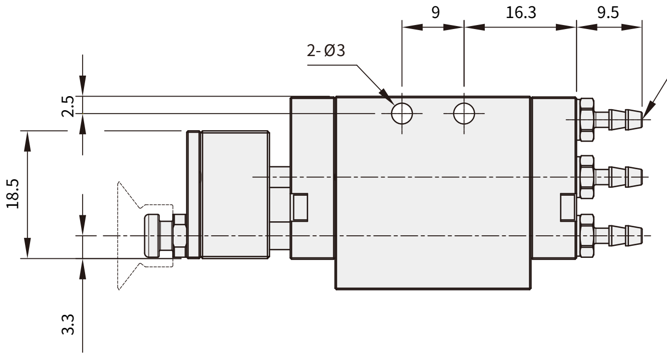


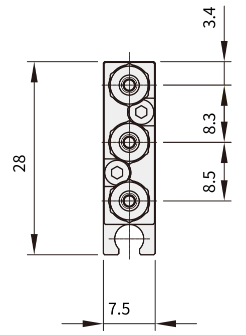
### Components and Material list

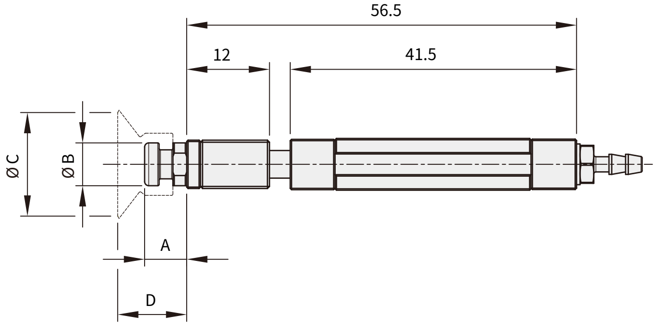
| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | Bracket | Copper alloy | 15 | Piston | Aluminum alloy |
| 02 | Vacuum pad | NBR | 16 | Front/ Rear cover O-ring | NBR |
| 03 | Body | Copper alloy | 17 | Rear O-ring - A | NBR |
| 04 | Rear cover | Copper alloy | 18 | Ventilation guide O-ring | NBR |
| 05 | Front cover | Copper alloy | 19 | Stainless steel beads | Stainless |
| 06 | Front plate | Copper alloy | 20 | Plastic bearing | Relieving type |
| 07 | Front slider cover | Copper alloy | 21 | Front/ Rear cover bolt | Alloy steel |
| 08 | Shaft | Stainless | 22 | Piston packing | NBR |
| 09 | Ventilation guide | Stainless | 23 | Shaft packing | NBR |
| 10 | Spring seat | Copper alloy | 24 | Pin | Bearing steel |
| 11 | Front cover | Copper alloy | 25 | Tiny vertical fitting | Stainless |
| 12 | Rear cover | Copper alloy | 26 | Front slider screw | Alloy steel |
| 13 | Spring | Piano wire | 27 | Rear cover O-ring -B | NBR |
| 14 | Magnet | Rare earth material |  |  |  |

## MVS 06x10


23
9.3
2
2-M2.5x0.45Px3dp
1
7.5
12.8
Ø2x2dp


9
16.3
9.5
Port size Ø4
2- Ø3
2.5
18.5
3.3


3.4
8.3
8.5
28
7.5


56.5
12
41.5
Ø C
Ø B
A
D

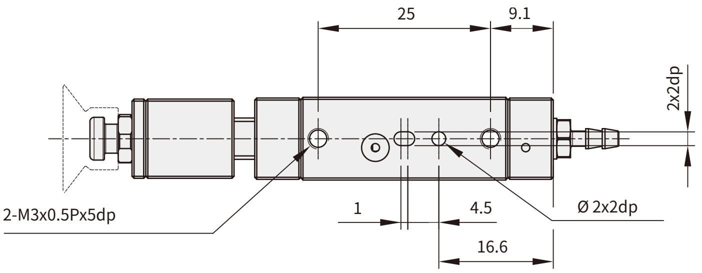
Unit: mm

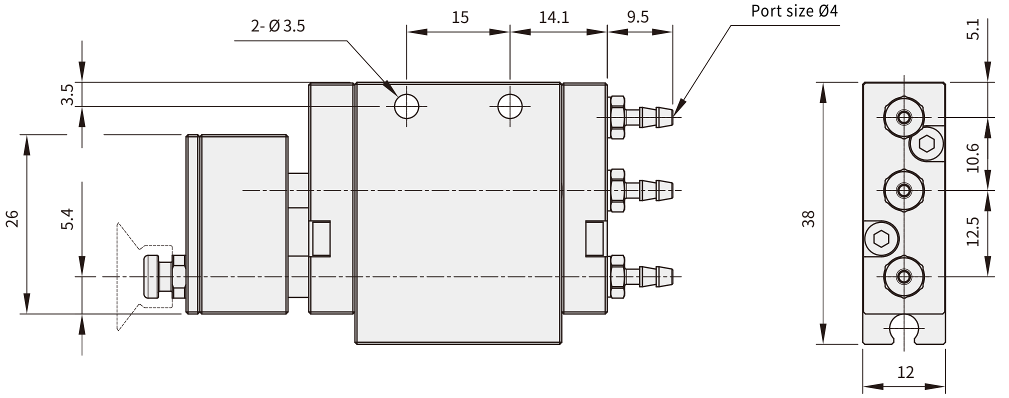
| Bracket | | 02 | | 05 | | | | |
|---|---|---|---|---|---|---|---|---|
| With vacuum pad | | PA-02 | PA-3.5 | PA-05 | PA-06 | PA-08 | PA-10 | PA-15 |
| Mark | A | 5.2 | | 6.1 | | | | |
| | ØB | 3 | | 6.2 | | | | |
| | ØC | 2 | 3.5 | 5 | 6 | 8 | 10 | 15 |
| | D | 6.6 | 6.6 | 8.5 | 8.5 | 9 | 9.5 | 10 |

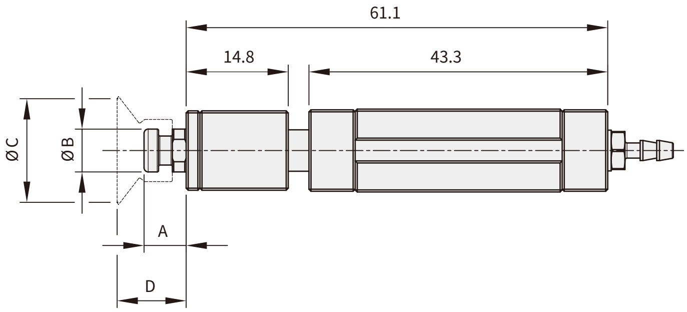
# MVS series Miniature Vacuum Cylinder

## Dimensions

### MVS 10x10


25
9.1
2x2dp
2-M3x0.5Px5dp
1
4.5
Ø 2x2dp
16.6


2- Ø 3.5
15
14.1
9.5
Port size Ø4
3.5
26
5.4
5.1
10.6
12.5
38
12


61.1
14.8
43.3
Ø C
Ø B
A
D

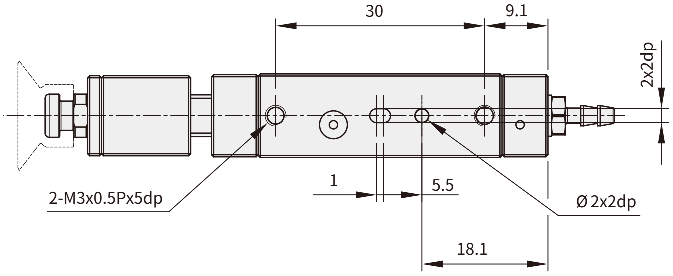
Unit: mm

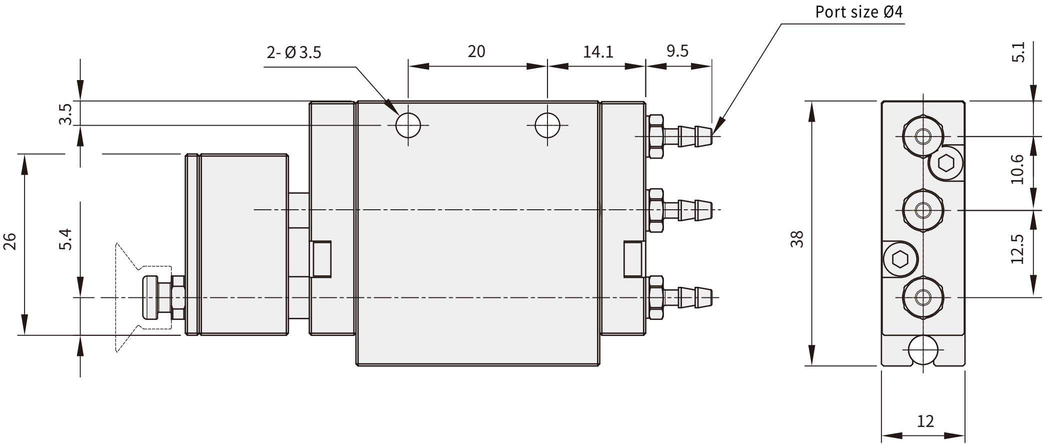
| Bracket | | 02 | | 05 | | | | |
|---|---|---|---|---|---|---|---|---|
| With vacuum pad | | PA-02 | PA-3.5 | PA-05 | PA-06 | PA-08 | PA-10 | PA-15 |
| Mark | A | 5.2 | | 6.1 | | | | |
| | ØB | 3 | | 6.2 | | | | |
| | ØC | 2 | 3.5 | 5 | 6 | 8 | 10 | 15 |
| | D | 6.6 | 6.6 | 8.5 | 8.5 | 9 | 9.5 | 10 |

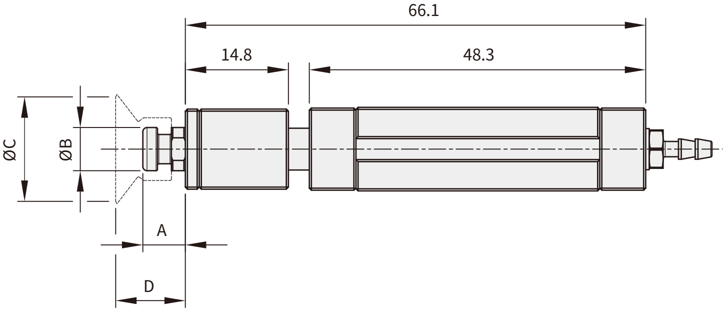
# MVS series Miniature Vacuum Cylinder

## Dimensions

### MVS 10x15


30
9.1
2x2dp
2-M3x0.5Px5dp
1
5.5
Ø 2x2dp
18.1


Port size Ø4
2- Ø 3.5
20
14.1
9.5
5.1
3.5
26
5.4
10.6
38
12.5
12


66.1
14.8
48.3
ØC
ØB
A
D

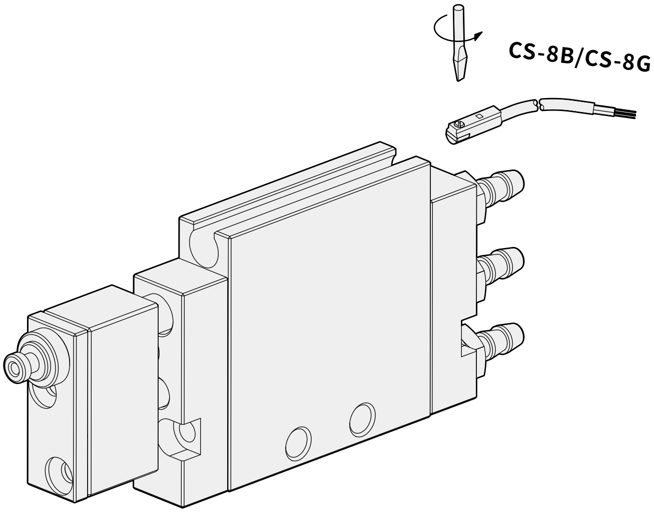
Unit: mm

| Bracket | | 02 | | 05 | | | | |
|---|---|---|---|---|---|---|---|---|
| With vacuum pad | | PA-02 | PA-3.5 | PA-05 | PA-06 | PA-08 | PA-10 | PA-15 |
| Mark | A | 5.2 | | 6.1 | | | | |
| | ØB | 3 | | 6.2 | | | | |
| | ØC | 2 | 3.5 | 5 | 6 | 8 | 10 | 15 |
| | D | 6.6 | 6.6 | 8.5 | 8.5 | 9 | 9.5 | 10 |

# MVS series Miniature Vacuum Cylinder

## Sensor Switch

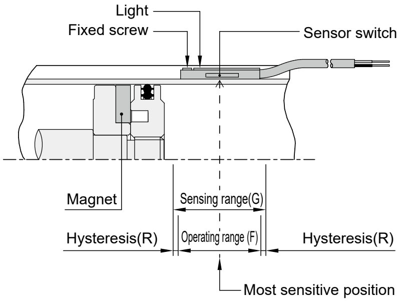
### Sensor switch installation



### Sensing range

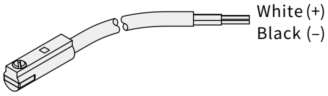
Sensor switch is fixed on the cylinder body. The magnetic piston head will activate the sensor switch when it enters the operating range. It has 0.5mm differential.

### Sensor switch setting and operating range


Light
Fixed screw
Sensor switch
Magnet
Sensing range(G)
Hysteresis(R)
Operating range (F)
Hysteresis(R)
Most sensitive position

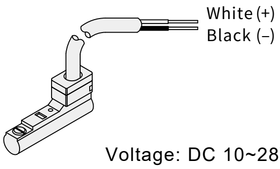
### Sensor switch introduction

**CS-8G**


White (+)
Black (–)

Voltage: DC 10~28V
AC 10~28V

**CS-8B**


White (+)
Black (–)

Voltage: DC 10~28V

# DYC series Vacuum Cylinder

## Product features/ Code of order

**CHELIC.**

## Feature

- The vacuum pump and pad can directly extended and suck workpiece without cylinder.
- Vacuum braker included to release the workpiece.

## Specification

| Item \ Bore size(mm) | Ø25 | Ø40 |
|---|---|---|
| Operation | Single acting | |
| Fluid | Air | |
| Stroke mm | 25, 50, 75, 100, 125, 150, 200, 300 | |
| Setting range mmHg | -600 | |

Note: 1. High air consumption need to used with vacuum pump.
2. Customized product, MOQ shoulg be 10pcs.

## Code of Order **DYC 25 x 150 – SA 2**

① ② ③ ④

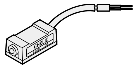
①

| Mark | Bore size(mm) |
|---|---|
| 25 | Ø25 |
| 40 | Ø40 |

②

| Mark | Stroke (mm) |
|---|---|
| 25 | 25 |
| 50 | 50 |
| 75 | 75 |
| 100 | 100 |
| 125 | 125 |
| 150 | 150 |
| 200 | 200 |
| 300 | 300 |

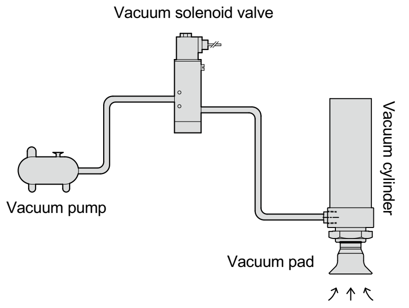
③

| Mark | Sensor switch |
|---|---|
| None | Without sensor switch |
| SA | CS-100 |
| Image | |
|  | |
| CS-100 | |

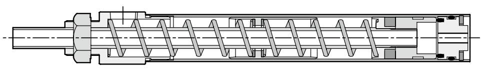
④

| Mark | Sensor quantity |
|---|---|
| 1 | 1 sensor |
| 2 | 1 sensors |

## Application instruction



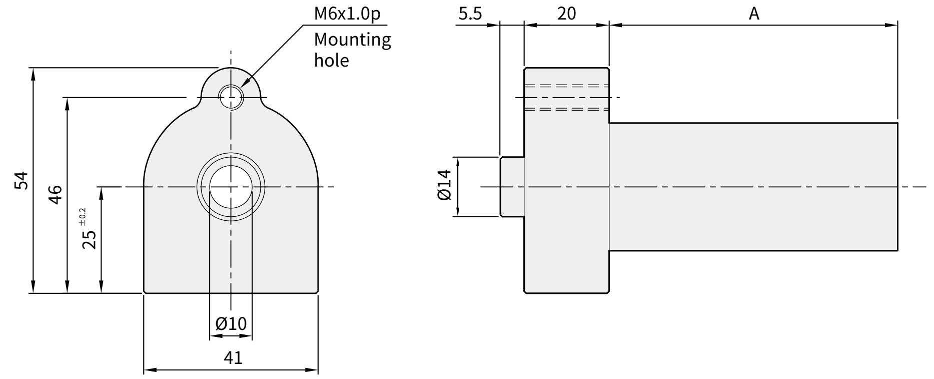
## Internal structure

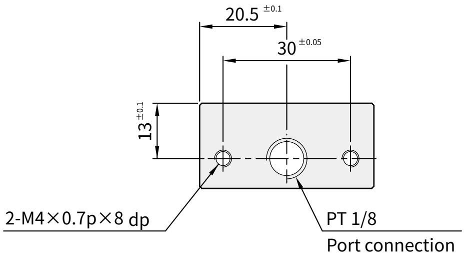


# DYC series Vacuum Cylinder

## Dimensions

### DYC - Ø25 x □

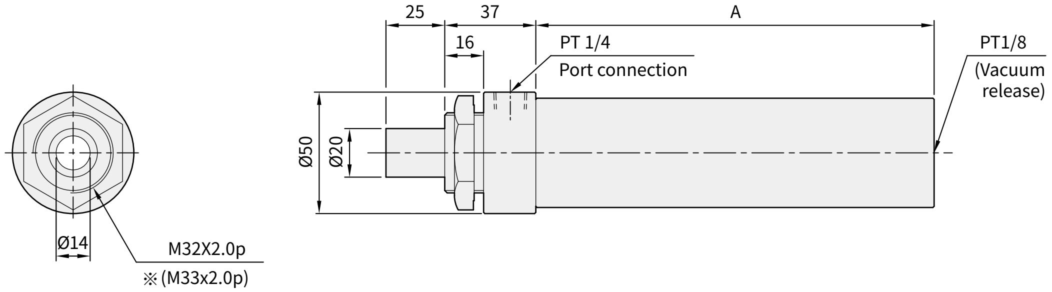

M6x1.0p
Mounting hole
54
46
25 ±0.2
Ø10
41
5.5
20
A
Ø14


20.5 ±0.1
30 ±0.05
13 ±0.1
2-M4×0.7p×8 dp
PT 1/8
Port connection

Unit: mm

| Stroke | 25 | 50 | 75 | 100 | 125 | 150 |
|---|---|---|---|---|---|---|
| A | 50 | 75 | 100 | 125 | 150 | 175 |

### DYC - Ø40 x □


Ø14
M32X2.0p
※(M33x2.0p)
25
37
A
16
PT 1/4
Port connection
PT1/8
(Vacuum release)
Ø50
Ø20

Unit: mm

| Stroke | 100 | 150 | 200 |
|---|---|---|---|
| A | 213 | 263 | 313 |

## The pad specification graph

| Pad type | | Series | Vacuum pad size | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 3.5 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 15 | 20 | 25 | 30 | 35 | 40 | 50 |
| Standard | Standard type | PA | ● | ● | | ● | ● | | ● | ● | | ● | ● | ● | ● | ● | ● | ● |
| | Double layer | PB | | | | | ● | | ● | ● | | ● | ● | | ● | | ● | ● |
| | Three layers type | PC | | | | ● | | ● | ● | ● | | ● | ● | | ● | | ● | |
| Deep Type Vacuum Pad | | PD | | | | | | | | ● | | | ● | | ● | | ● | ● |
| Bellow Type Vacuum Pad | | PDA | | | | | | | | ● | | | ● | | ● | | ● | |
| Micro Vacuum Pad | | PAM | | | | | | ● | | ● | ● | ● | | | | | | |
| Film type | | PAG | | | | | | | | ● | | ● | ● | ● | | ● | | ● |
| Anti-slip Flat type | | PAO | | | | | | | | ● | | | ● | | ● | | ● | ● |
| Flat type | | PAP | | | | ● | | | | ● | | ● | ● | | ● | | | |
| Mark-free type | | PAQ | | | | | ● | | ● | ● | | ● | ● | | ● | | ● | ● |
| Oval type | | PAW | 2x4<br>● | 3.5x7<br>● | 4x10<br>4x20<br>4x30<br>● | 5x10<br>5x20<br>5x30<br>● | 6x10<br>6x20<br>6x30<br>● | | 8x20<br>8x30<br>● | | | | | | | | | |

## The pad bracket graph

| Mark<br>Image<br>Type | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring | Non-rotating bracket | Ball joint |
|---|---|---|---|---|---|---|---|
| | F | K | T | FS | TS | P □ L | PAR |
| | | | | | | | |
| **Standard** | ● | ● | ● | ● | ● | ● | ● |
| Film type | ● | ● | ● | ● | ● | | ● |
| **Anti-slip type** | ● | ● | ● | ● | ● | | ● |
| **Flat type** | ● | ● | ● | ● | ● | | ● |
| Mark-free type | ● | ● | ● | ● | ● | | ● |
| **Oval type** | ● | ● | ● | ● | ● | | ● |

| Vacuum pad size | | | | | | Vacuum pad material | | | | | | Options | | | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | 80 | 100 | 120 | 150 | 200 | NBR (Rubber) | PU | Silicone rubber | Anti-static rubber | Low resistance & anti-static rubber | POM | P □ L Non-rotating bracket | PAR Ball joint | VP Vacuum Saving Valve | |
| | | | | | | N | U | S | SE | E | P | | | | |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | P.3-2.6 |
| ● | ● | | | | | ● | | ● | ● | ● | | ● | ● | ● | P.3-2.23 |
| ● | | | | | | ● | | ● | ● | ● | | ● | ● | ● | P.3-2.37 |
| | | | | | | | | | | | | | | | P.3-2.51 |
| | | | | | | | | | | | | | | | P.3-2.56 |
| | | | | | | | | | | | | | | | P.3-2.61 |
| | | | | | | | | ● | | | | | ● | ● | P.3-2.64 |
| | | | | | | ● | | | | | | | ● | ● | P.3-2.71 |
| | | | | | | ● | | ● | ● | ● | | | ● | ● | P.3-2.78 |
| | | | | | | ● | | ● | ● | ● | ● | | ● | ● | P.3-2.85 |
| | | | | | | ● | | ● | ● | | | | ● | ● | P.3-2.92 |

## Other type

| Item | Mark | Port size | | Page |
|---|---|---|---|---|
| | | M3 | M5 | |
| PS series<br>Non-contact Gripper | 20 | ● | | P.3-2.111 |
| | 40 | | ● | |
| | 60 | | ● | |

## Vacuum unit

| Item | Model(Thread) | | Model(Connection) | | Page |
|---|---|---|---|---|---|
| VP series<br>Vacuum Saving Valve | VP 10-A10, A11 | | VP 10-B101 | | P.3-2.117 |
| | VP 10-A20, A21 | | VP 10-B20, B21 | | |
| | VP 10-A30, A31 | | VP 10-A30, B31 | | |
| | VP 10-A40, A41 | | | | |

# ⚠ Safety Notice/ Vacuum Pad/ Caution For Application

- Please read the safety notice carefully before using and pay attention to the safety caution of this product.
- Pay attention to the individual caution for carious model series ( read the caution and safety notice in P.06 for common cautions ).

## Caution for design, selection and maintenance

### ⚠ WARNING

- The suction of work piece, heavy object and hazardous article shall prevent from dropping and cause hazard, safety precaution should be taken.
- Avoid sucking extra heavy and hazardous object, make the dropping prevention measure and safety management work.
- Select suitable shape and quantity base on the kind, shape. Size and weight of the sucked object; and take the surface condition of the work piece, oily or not, moisture into account, avoid porous surface cause poor sucking effect.
- Select suitable shape and kind of sucker in order to fit different work piece suction; select suitable pad material to suit the environment required and sucked object; avoid direct suction on medical pharmacy and food staff.
- Pay attention to the hazard of sucked object from dropping due to speed, swinging. Impact and vibration during moving; make sure the secure and reliable of the sucked object, avoid loosen and cause hazard.
- If multiple linked pads is applied in designing the vacuum circuit, note for the possibility of poor suction to cause drop of vacuum and affect the suction force of other pads and induce dropping hazard.
- Please do not use fluid other than compressed air, never apple in fluid other than clean air.
- Avoid chemical corrosive and inflammable gas; avoid sea water, steam high temperature place in surrounding.
- Avoid the gas with oil, do not use oil mist in the pipeline, oil in pipeline will cause blockage resulting in poor effect.

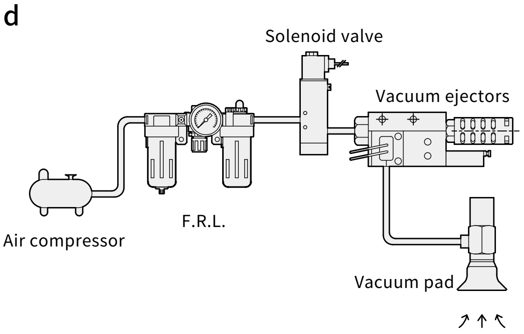
### ⚠ CAUTION

- Beware of the height and size uneven or imbalance distribution of weight of the sucked object cause hazard and damage of pads.
- For the sucked object with large area, area type sheet object, it is preferable to use several pads and take the even distribution of area and gravity center weight into account.
- Check for leakage blockage or loosen of the screw linking the pads of the vacuum circuit at usual which cause poor suction, service it in time to prevent hazard in operation.
- Check for deformation, crack and aging of the pads regularly, replace them if necessary in order to maintain stable working quality.
- Pay attention to rough surface on the sucked object or the pads area exposed the outside of the sucked object causing poor suction, hazard and damage to the object.
- While using antistatic, user may apply a metal object to fix vacuum bracket for releasing static to eliminate static leaving on vacuum pad.

# Vacuum Pad/ Single Layer

## Theoretical suction and feature

## How to use vacuum pad



## Theoretical suction

### Circle pad

| The dia. Vacuum pad (Ømm) | 2 | 3.5 | 5 | 6 | 8 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 80 | 95 | 100 | 120 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vacuum value (cm²) | 0.031 | 0.096 | 0.196 | 0.282 | 0.502 | 0.785 | 1.767 | 3.141 | 4.908 | 7.068 | 9.621 | 12.56 | 19.63 | 28.27 | 50.26 | 70.88 | 78.53 | 113.0 | 176.7 | 314.1 |
| -93.3 kpa<br>-700 (mmHg) | 0.293<br>[0.029] | 0.900<br>[0.091] | 1.837<br>[0.186] | 2.645<br>[0.269] | 4.703<br>[0.478] | 7.349<br>[0.747] | 16.53<br>[1.681] | 29.39<br>[2.989] | 45.93<br>[4.670] | 66.14<br>[6.725] | 90.03<br>[9.153] | 117.5<br>[11.95] | 183.7<br>[18.68] | 264.5<br>[26.90] | 470.3<br>[47.82] | 663.2<br>[67.44] | 734.9<br>[74.79] | 1058<br>[107.6] | 1653<br>[168.1] | 2939<br>[298.9] |
| -80.8 kpa<br>-600 (mmHg) | 0.254<br>[0.025] | 0.779<br>[0.078] | 1.591<br>[0.160] | 2.291<br>[0.230] | 4.073<br>[0.409] | 6.364<br>[0.640] | 14.32<br>[1.441] | 25.45<br>[2.562] | 39.78<br>[4.003] | 57.28<br>[5.764] | 77.96<br>[7.846] | 101.8<br>[10.24] | 159.1<br>[16.01] | 229.1<br>[23.05] | 407.3<br>[40.99] | 574.4<br>[57.8] | 636.4<br>[63.05] | 916.5<br>[92.23] | 1432<br>[144.1] | 2545<br>[256.2] |
| -66.7 kpa<br>-500 (mmHg) | 0.210<br>[0.021] | 0.648<br>[0.065] | 1.313<br>[0.133] | 1.891<br>[0.192] | 3.362<br>[0.341] | 5.254<br>[0.533] | 11.82<br>[1.200] | 21.01<br>[2.135] | 32.83<br>[3.336] | 47.28<br>[4.083] | 64.36<br>[6.538] | 84.06<br>[8.540] | 131.3<br>[13.34] | 189.1<br>[19.21] | 336.2<br>[34.16] | 474.1<br>[48.17] | 525.4<br>[53.37] | 756.5<br>[76.86] | 1182<br>[120.0] | 2101<br>[213.5] |
| -53.4 kpa<br>-400 (mmHg) | 0.168<br>[0.017] | 0.515<br>[0.052] | 1.051<br>[0.106] | 1.514<br>[0.153] | 2.692<br>[0.273] | 4.206<br>[0.427] | 9.464<br>[0.960] | 16.82<br>[1.708] | 26.29<br>[2.668] | 37.85<br>[3.843] | 51.52<br>[5.230] | 67.30<br>[6.832] | 105.1<br>[10.67] | 151.4<br>[15.37] | 269.2<br>[27.32] | 379.6<br>[38.53] | 420.6<br>[42.70] | 605.7<br>[61.48] | 947.4<br>[96.07] | 1682<br>[170.8] |
| -40.0 kpa<br>-300 (mmHg) | 0.126<br>[0.012] | 0.385<br>[0.039] | 0.787<br>[0.080] | 1.134<br>[0.115] | 2.016<br>[0.204] | 3.150<br>[0.320] | 7.089<br>[0.720] | 12.60<br>[1.281] | 19.69<br>[2.001] | 28.35<br>[2.882] | 38.59<br>[3.923] | 50.41<br>[5.124] | 78.77<br>[8.006] | 113.4<br>[11.52] | 201.6<br>[20.49] | 284.3<br>[28.90] | 315.0<br>[32.02] | 453.7<br>[46.11] | 708.9<br>[72.05] | 1260<br>[128.1] |

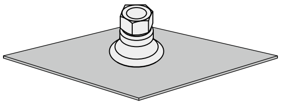
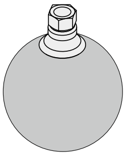
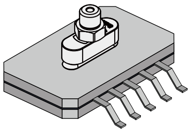
### Oblong pad

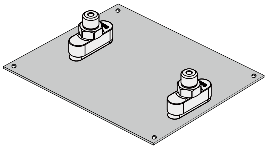
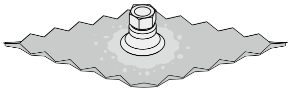
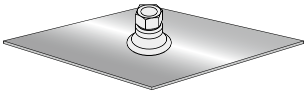
| The dia. Vacuum pad (Ømm) | 2 x 4 | 3.5 x 7 | 4 x 10 | 4 x 20 | 4 x 30 | 5 x 10 | 5 x 20 | 5 x 30 | 6 x 10 | 6 x 20 | 6 x 30 | 8 x 20 | 8 x 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vacuum value (cm²) | 0.071 | 0.218 | 0.365 | 0.765 | 1.165 | 0.446 | 0.946 | 1.446 | 0.522 | 1.122 | 1.722 | 1.462 | 2.262 |
| -93.3 kpa<br>-700 (mmHg) | 0.664<br>[0.068] | 2.04<br>[0.207] | 3.416<br>[0.347] | 7.159<br>[728] | 10.902<br>[1.108] | 4.173<br>[0.424] | 8.852<br>[0.900] | 13.35<br>[1.375] | 4.884<br>[0.496] | 10.49<br>[1.067] | 16.11<br>[1.638] | 13.68<br>[1.391] | 21.16<br>[2.152] |
| -80.8 kpa<br>-600 (mmHg) | 0.575<br>[0.058] | 1.767<br>[0.178] | 2.958<br>[0.298] | 6.200<br>[0.624] | 9.441<br>[0.950] | 3.614<br>[0.363] | 7.666<br>[0.771] | 11.71<br>[1.179] | 4.230<br>[0.425] | 9.092<br>[0.915] | 13.95<br>[1.404] | 11.84<br>[1.192] | 18.33<br>[1.844] |
| -66.7 kpa<br>-500 (mmHg) | 0.475<br>[0.048] | 1.158<br>[0.148] | 2.442<br>[0.248] | 5.118<br>[0.529] | 7.794<br>[0.792] | 2.983<br>[0.303] | 6.328<br>[0.642] | 9.673<br>[0.982] | 3.492<br>[0.354] | 7.750<br>[0.762] | 11.51<br>[1.170] | 9.780<br>[0.993] | 15.13<br>[1.537] |
| -53.4 kpa<br>-400 (mmHg) | 0.380<br>[0.039] | 1.168<br>[0.119] | 1.955<br>[0.198] | 4.097<br>[0.416] | 6.240<br>[0.633] | 2.388<br>[0.242] | 5.066<br>[0.514] | 7.744<br>[0.786] | 2.795<br>[0.283] | 6.009<br>[0.610] | 9.222<br>[0.936] | 7.830<br>[0.794] | 12.11<br>[1.229] |
| -40.0 kpa<br>-300 (mmHg) | 0.285<br>[0.029] | 0.875<br>[0.089] | 1.464<br>[0.149] | 3.069<br>[0.312] | 4.673<br>[0.475] | 1.789<br>[0.181] | 3.795<br>[0.385] | 5.801<br>[0.589] | 2.094<br>[0.212] | 4.501<br>[0.457] | 6.908<br>[0.702] | 5.865<br>[0.596] | 9.074<br>[0.922] |

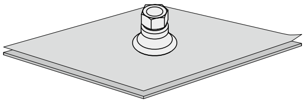
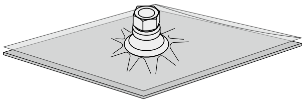
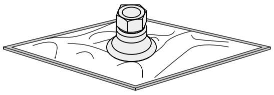
## Material and Characteristics of vacuum pad

| Item<br>Material | Stretch degree | Extension | Oil resistance (Gasoline) | Oil resistance (Benzene) | Weather Resistant | Ozine Resistant | Heat Resistant | Cold Resistant | Chemical Resistant | Excellent Wear Resistant | Acid Resistant | Waterproof | ElectricInsulat | Hardness HS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NBR** ( N ) | ◎ | ◎ | ◎ | △ | ○ | ○ | ○ | × | ◎ | ○ | ○ | ◎ | ○ | 60 ± 5 |
| **Silica gel** ( S ) | △ | ○ | △ | △ | ○ | ○ | ○ | ◎ | ◎ | × | × | ○ | ◎ | 60 ± 5 |
| **PU Rubber** ( PU ) | ◎ | ◎ | ◎ | ○ | ◎ | ◎ | × | ○ | ◎ | ◎ | × | △ | ◎ | 60 ± 5 |
| Anti-static rubber ( SE ) | △ | ○ | △ | △ | ○ | ○ | ○ | ◎ | ◎ | × | × | ○ | $10^4$~$10^6$Ω | 50 ± 5 |
| Low-impedence anti-static rubber ( E ) | △ | ○ | × | × | ○ | × | ○ | ◎ | ◎ | × | △ | ○ | 200Ω | 50 ± 5 |

Explain : : ◎ Suitable ; ○ Condition ; △ Un-Suitable ; × Confine

| Standard | | |
|---|---|---|
| General type PA☐ | Bellow type PB/PC | Small size PAW |
|  |  |  |
| For flat and thick work pieces | For spherical work pieces or wok pieces with inclined surface | For work pieces with limitaions on the adsorption surface |

| Oval | Anti-slip | Mark-free |
|---|---|---|
| PAW | PAO | PAQ |
|  |  |  |
| For long work pieces such as PCB or electronic work pieces | For object with oil on surface, such as die-casting work pieces | For use where adsorption marks must not be left on work pieces |

| Thin type | | Flat type |
|---|---|---|
| PAP | PAP | PAG |
|  |  |  |
| For thin type work pieces such as paper | For work pieces with wrinkle or bumps, suchas PVC | For sheets or vinyl |

# PA□ series 1-Stage Vacuum Pad

## Product features

### Feature

- Single layer, suitable for smooth surface.
- Diversification: Various sizes, materials and brackets can be selected.
- Durability: Rubber with extremely high oil resistance material, long lifetime and high strength.

### Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| U | PU(Uret-hane) | A60/S | -20~75°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

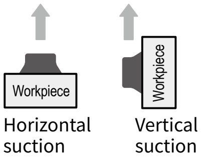
Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.

Before comfirm the Qty and location of suction pad, please reserve enough margin.

**Suction type**



**Calculation formula**

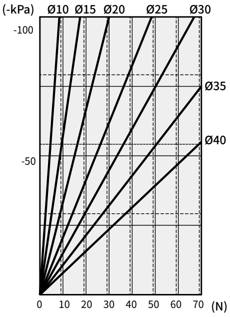
$$W = \frac{P \times A}{-10}$$

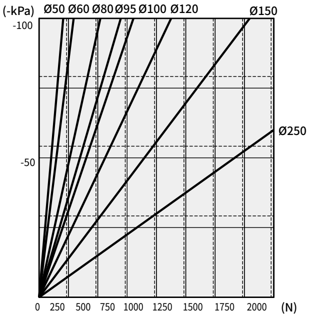
W: Force N

P : Vacuum pressure kPa

A : Pad area dimensions c

### Theoratical suction





# PA□ series 1-Stage Vacuum Pad

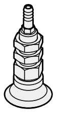
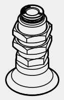
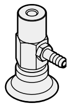
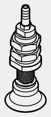
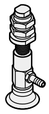
## Code of order

## Code of order

**PAFS 10 x 4 N – R**

① PAFS ② 10 ③ x ④ 4 N ⑤ – R

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 02 | 3.5 | 05 | 06 | 08 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|
| Pad dia. (mm) | Ø2 | Ø3.5 | Ø5 | Ø6 | Ø8 | Ø10 | Ø15 | Ø20 | Ø25 | Ø30 |
| Mark | 35 | 40 | 50 | 60 | 80 | 100 | 120 | 150 | 200 | |
| Pad dia. (mm) | Ø35 | Ø40 | Ø50 | Ø60 | Ø80 | Ø100 | Ø120 | Ø150 | Ø200 | |

③

- Only available to FS, TS series

| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 2.5 | 2.5 | Ø2, Ø3.5 | 4 | 4 | Ø10, Ø15 |
| 5 | 5 | | 10 | 10 | |
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
| 3 | 3 | Ø5, Ø6, Ø8 | 6 | 6 | Ø20, Ø25, Ø30<br>Ø35, Ø40, Ø50 |
| 10 | 10 | | 15 | 15 | |

- Only available to TS series

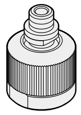
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 10 | 10 | Ø60, Ø80, Ø100 | 30 | 30 | Ø120, Ø150<br>Ø200 |
| 30 | 30 | | | | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| U | PU (Urethane) | A60/S | -20~75°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

- Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø5, Ø6, Ø8, Ø10, Ø15 | |
| 20 | Ø20, Ø25, Ø30, Ø35, Ø40, Ø50 | |
| 60 | Ø60, Ø80 | |

- Note: According to vacuum pad specification to py proper free holder.
- Note :Please refer to P.3-2.109

# PA□ series 1-Stage Vacuum Pad

## Optional correspondence table

### PA series selection table:

| Pad type | ① Bracket | | | | | ② Outer diameter | ③ Stroke | ④ Vacuum pad material | | | | | ⑤ Ball joint type | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | K | T | FS | TS | | | N | U | S | SE | E | 05 | 20 | 60 |
| PA | ● | | ● | ● | ● | 02 | 2.5<br>•<br>5 | ● | | ● | ● | ● | | | |
| | ● | | ● | ● | ● | 3.5 | | ● | | ● | ● | ● | | | |
| | ● | | ● | ● | ● | 05 | 3<br>•<br>10 | ● | | ● | ● | ● | ● | | |
| | ● | | ● | ● | ● | 06 | | ● | ● | ● | ● | ● | ● | | |
| | ● | | ● | ● | ● | 08 | | ● | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 10 | 4<br>•<br>10 | ● | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 15 | | ● | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 20 | 6<br>•<br>15 | ● | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 25 | | ● | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 30 | | ● | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 35 | | ● | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 40 | | ● | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 50 | | ● | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | | ● | 60 | 10<br>•<br>30 | ● | ● | ● | ● | ● | | | ● |
| | ● | ● | ● | | ● | 80 | | ● | | ● | | | | | ● |
| | ● | | ● | | ● | 100 | | ● | | ● | ● | ● | | | |
| | | | ● | | ● | 120 | 30 | ● | | ● | | | | | |
| | | | ● | | ● | 150 | | ● | | ● | | | | | |
| | | | ● | | ● | 200 | | ● | | ● | | | | | |

### Product weight

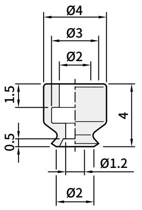
| Model | Weight(g) | Model | Weight(g) | Model | Weight(g) |
|---|---|---|---|---|---|
| 2 | 0.02 | 20 | 1.37 | 80 | 52.26 |
| 3.5 | 0.03 | 25 | 2.44 | 100 | 144.5 |
| 5 | 0.15 | 30 | 2.96 | 120 | 158.1 |
| 6 | 0.18 | 35 | 6.11 | 150 | 294.5 |
| 8 | 0.24 | 40 | 6.95 | 200 | 541.4 |
| 10 | 0.31 | 50 | 8.31 | | |
| 15 | 0.51 | 60 | 24.01 | | |

# PA□ series 1-Stage Vacuum Pad

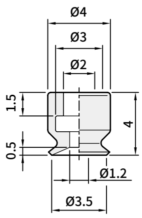
## Dimensions-PA series/ Standard type

### External dimensions

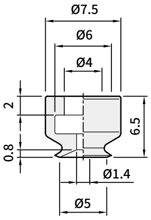
**PA-02**


Ø4
Ø3
Ø2
1.5
0.5
4
Ø1.2
Ø2

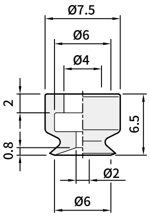
**PA-3.5**


Ø4
Ø3
Ø2
1.5
0.5
4
Ø1.2
Ø3.5

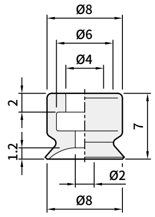
**PA-05**


Ø7.5
Ø6
Ø4
2
0.8
6.5
Ø1.4
Ø5

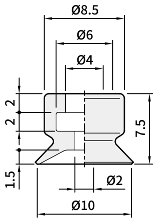
**PA-06**


Ø7.5
Ø6
Ø4
2
0.8
6.5
Ø2
Ø6

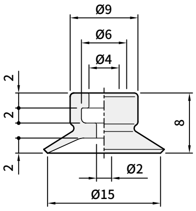
**PA-08**


Ø8
Ø6
Ø4
2
1.2
7
Ø2
Ø8

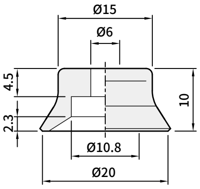
**PA-10**


Ø8.5
Ø6
Ø4
2
2
1.5
7.5
Ø2
Ø10

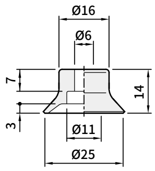
**PA-15**


Ø9
Ø6
Ø4
2
2
2
8
Ø2
Ø15

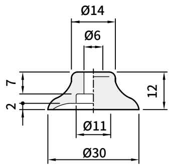
**PA-20**


Ø15
Ø6
4.5
2.3
10
Ø10.8
Ø20

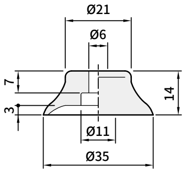
**PA-25**


Ø16
Ø6
7
3
14
Ø11
Ø25

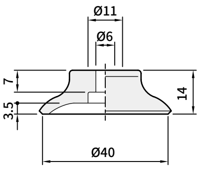
**PA-30**


Ø14
Ø6
7
2
12
Ø11
Ø30

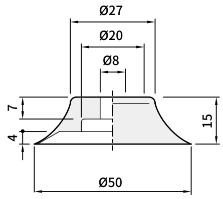
**PA-35**


Ø21
Ø6
7
3
14
Ø11
Ø35

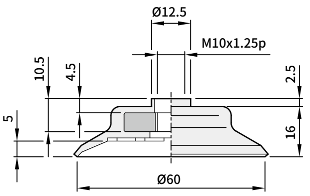
**PA-40**


Ø11
Ø6
7
3.5
14
Ø40

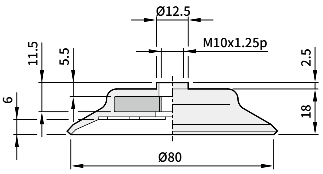
**PA-50**


Ø27
Ø20
Ø8
7
4
15
Ø50

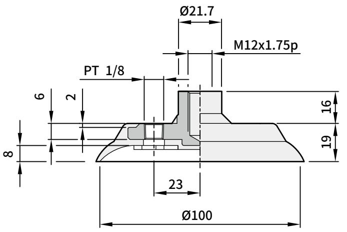
**PA-60**


Ø12.5
M10x1.25p
10.5
4.5
2.5
5
16
Ø60

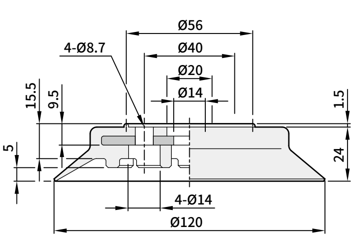
**PA-80**


Ø12.5
M10x1.25p
11.5
5.5
2.5
6
18
Ø80

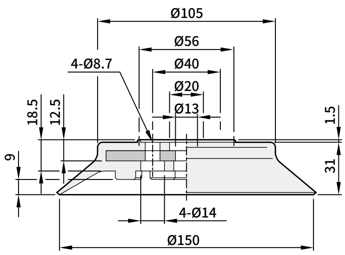
**PA-100**


Ø21.7
M12x1.75p
PT 1/8
6
2
16
8
19
23
Ø100

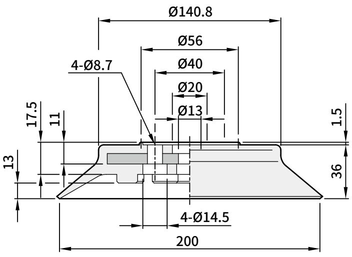
**PA-120**


Ø56
4-Ø8.7
Ø40
Ø20
Ø14
15.5
9.5
1.5
5
24
4-Ø14
Ø120

**PA-150**


Ø105
Ø56
4-Ø8.7
Ø40
Ø20
Ø13
18.5
12.5
1.5
9
31
4-Ø14
Ø150

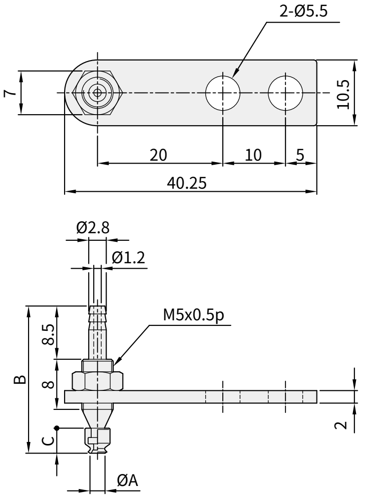
**PA-200**


Ø140.8
Ø56
4-Ø8.7
Ø40
Ø20
Ø13
17.5
11
1.5
13
36
4-Ø14.5
200

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAF series/ Vertical entry

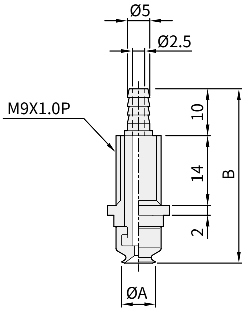
### Ø2 ~ Ø3.5


2-Ø5.5
7
10.5
20
10
5
40.25
Ø2.8
Ø1.2
M5x0.5p
8.5
8
B
C
2
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of PU tube |
|---|---|---|---|---|---|
| Circle pad | PAF-02 | Ø2 | 20.8 | 4 | PU tube Ø4 x Ø2.5 |
| | PAF-3.5 | Ø3.5 | 23.5 | 4 | |

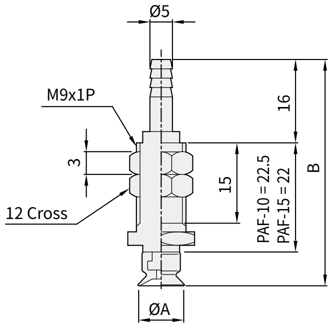
### Ø5 ~ Ø8


Ø5
Ø2.5
M9X1.0P
10
14
2
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-05 | Ø5 | 30.5 | PU tube Ø6 x Ø4 |
| | PAF-06 | Ø6 | 31 | |
| | PAF-08 | Ø8 | 31 | |

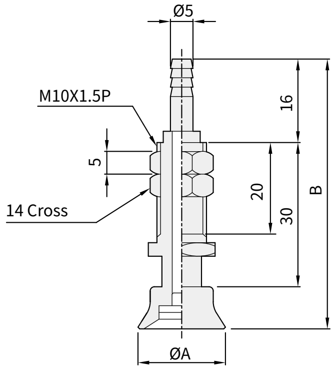
### Ø10 ~ Ø15


Ø5
M9x1P
3
12 Cross
16
15
PAF-10 = 22.5
PAF-15 = 22
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-10 | Ø10 | 46 | PU tube Ø6 x Ø4 |
| | PAF-15 | Ø15 | 46 | |

### Ø20 ~ Ø50


Ø5
M10X1.5P
5
14 Cross
16
20
30
B
ØA

Unit: mm

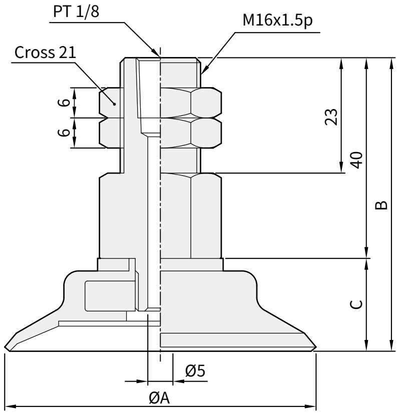
| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-20 | Ø20 | 56 | PU tube Ø6 x Ø4 |
| | PAF-25 | Ø25 | 60 | |
| | PAF-30 | Ø30 | 58 | |
| | PAF-35 | Ø35 | 60 | |
| | PAF-40 | Ø40 | 60 | |
| | PAF-50 | Ø50 | 61 | |

PA
PB
PC
PAG
PAO
PAP
PAQ
PAW
PAL
PBL
PCL
PAR
PS
VP

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAF series/ Vertical entry

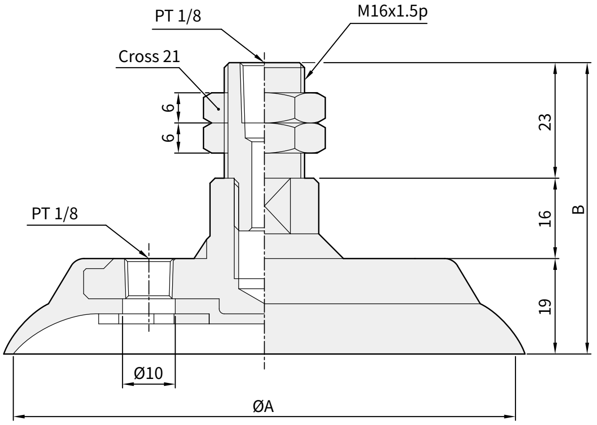
### Ø60 ~ Ø80


PT 1/8
M16x1.5p
Cross 21
6
6
23
40
B
C
Ø5
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of PU tube |
|---|---|---|---|---|---|
| Circle pad | PAF-60 | Ø60 | 58.5 | 18.5 | PT 1/8 |
| | PAF-80 | Ø80 | 60.5 | 20.5 | |

### Ø100


PT 1/8
M16x1.5p
Cross 21
6
6
PT 1/8
23
16
19
B
Ø10
ØA

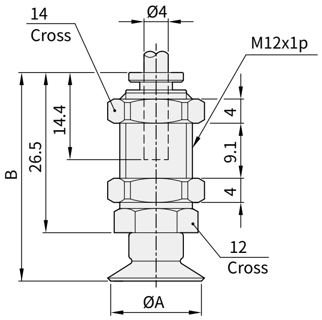
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of joint |
|---|---|---|---|---|
| Circle pad | PAF-100 | Ø100 | 58 | PT 1/8 |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAK series/ Vertical entry with fitting

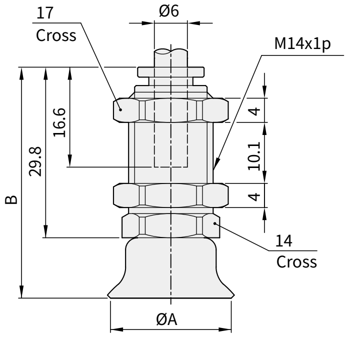
### Ø10 ~ Ø15


14
Cross
Ø4
M12x1p
B
26.5
14.4
4
9.1
4
12
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAK-10 | Ø10 | 34 | PU tube Ø4 x Ø2.5 |
| | PAK-15 | Ø15 | 34.5 | |

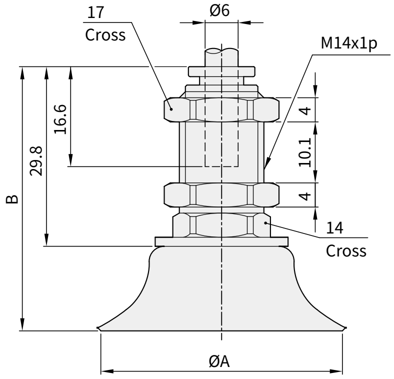
### Ø20 ~ Ø35


17
Cross
Ø6
M14x1p
B
29.8
16.6
4
10.1
4
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAK-20 | Ø20 | 38.3 | PU tube Ø6 x Ø4 |
| | PAK-25 | Ø25 | 42.3 | |
| | PAK-30 | Ø30 | 40.3 | |
| | PAK-35 | Ø35 | 42.3 | |

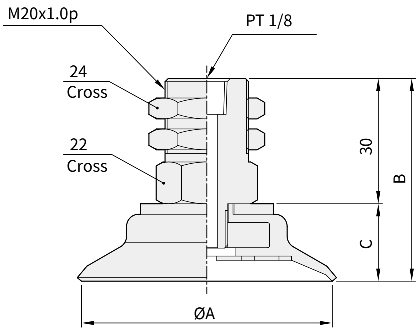
### Ø40 ~ Ø50


17
Cross
Ø6
M14x1p
B
29.8
16.6
4
10.1
4
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAK-40 | Ø40 | 43.8 | PU tube Ø6 x Ø4 |
| | PAK-50 | Ø50 | 44.8 | |

### Ø60 ~ Ø80


M20x1.0p
PT 1/8
24
Cross
22
Cross
30
B
C
ØA

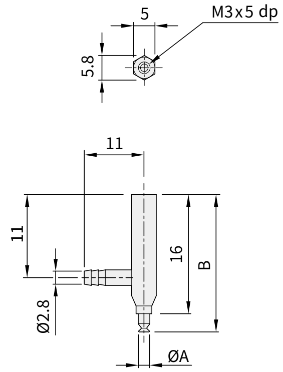
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of joint |
|---|---|---|---|---|---|
| Circle pad | PAK-60 | Ø60 | 48.5 | 18.5 | PT 1/8 |
| | PAK-80 | Ø80 | 50.5 | 20.5 | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAT series/ Side entry

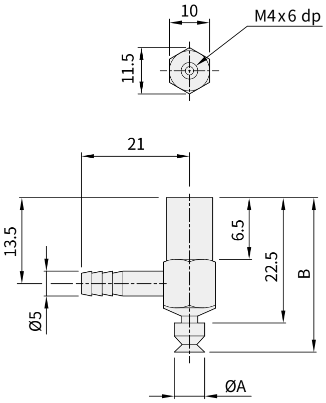
### Ø2 ~ Ø3.5


5
M3x5 dp
5.8
11
11
16
B
Ø2.8
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAT-02 | Ø2 | 20 | PU tube Ø4xØ2.5 |
| | PAT-3.5 | Ø3.5 | 20 | |

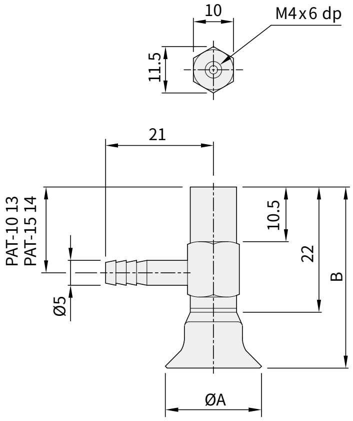
### Ø5 ~ Ø8


10
M4x6 dp
11.5
21
13.5
6.5
22.5
B
Ø5
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAT-05 | Ø5 | 29 | PU tube Ø6xØ4 |
| | PAT-06 | Ø6 | 29 | |
| | PAT-08 | Ø8 | 29.5 | |

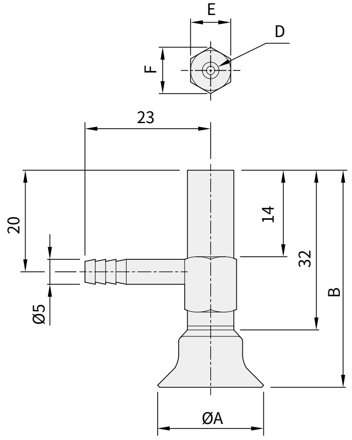
### Ø10 ~ Ø15


10
M4x6 dp
11.5
21
PAT-10 13
PAT-15 14
10.5
22
B
Ø5
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAT-10 | Ø10 | 30 | PU tube Ø6xØ4 |
| | PAT-15 | Ø15 | 30 | |

### Ø20 ~ Ø50


E
D
F
23
20
14
32
B
Ø5
ØA

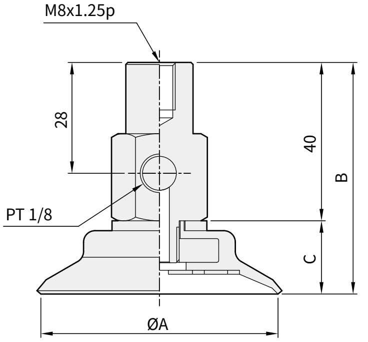
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | D | E | F | Size of PU tube |
|---|---|---|---|---|---|---|---|
| Circle pad | PAT-20 | Ø20 | 42 | M6x1 dp8 | 14 | 16.5 | PU tube Ø6 x Ø4 |
| | PAT-25 | Ø25 | 46 | | | | |
| | PAT-30 | Ø30 | 44 | | | | |
| | PAT-35 | Ø35 | 46 | | | | |
| | PAT-40 | Ø40 | 46 | | | | |
| | PAT-50 | Ø50 | 47 | | 15 | 17.3 | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAT series/ Side entry

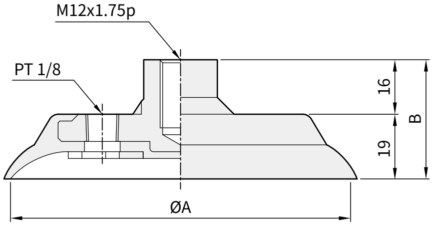
### Ø60, Ø80


M8x1.25p
28
40
B
PT 1/8
C
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of joint |
|---|---|---|---|---|---|
| Circle pad | PAT-60 | Ø60 | 58.5 | 18.5 | PT 1/8 |
| | PAT-80 | Ø80 | 60.5 | 20.5 | |

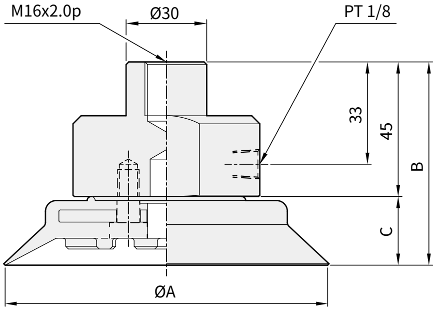
### Ø100


M12x1.75p
PT 1/8
16
19
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of joint |
|---|---|---|---|---|
| Circle pad | PAT-100 | Ø100 | 35 | PT 1/8 |

### Ø120, Ø150, Ø200


M16x2.0p
Ø30
PT 1/8
33
45
B
C
ØA

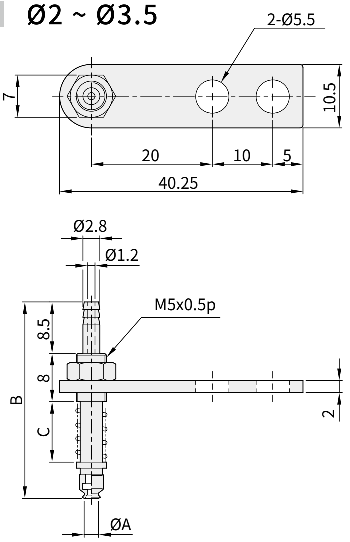
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of joint |
|---|---|---|---|---|---|
| Circle pad | PAT-120 | Ø120 | 70.5 | 25.5 | PT 1/8 |
| | PAT-150 | Ø150 | 77.5 | 32.5 | |
| | PAT-200 | Ø200 | 82.5 | 37.5 | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAFS series/ Vertical entry with spring

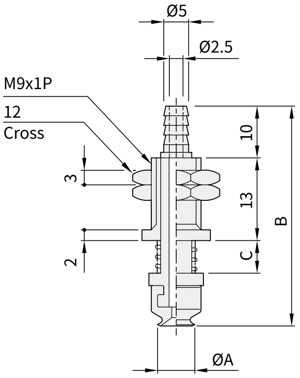
### Ø2 ~ Ø3.5


2-Ø5.5
7
10.5
20
10
5
40.25
Ø2.8
Ø1.2
M5x0.5p
8.5
8
B
C
2
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 2.5 | | Stroke 5 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PAFS-02 | Ø2 | 28.5 | 5.1 | 33.5 | 10.1 | PU tube Ø4xØ2.5 | 2.5, 5 |
| | PAFS-3.5 | Ø3.5 | 28.5 | 5.1 | 33.5 | 10.1 | | |

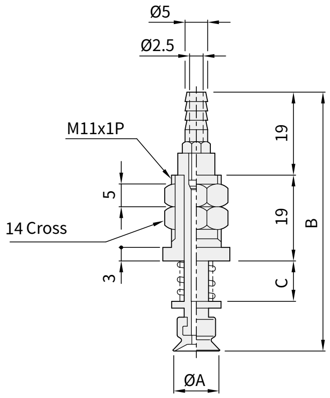
### Ø5 ~ Ø8


Ø5
Ø2.5
M9x1P
12
Cross
10
3
13
B
2
C
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PAFS-05 | Ø5 | 37.5 | 6 | 51.5 | 20 | PU tube Ø6 x Ø4 | 3, 10 |
| | PAFS-06 | Ø6 | 37.5 | 6 | 51.5 | 20 | | |
| | PAFS-08 | Ø8 | 38 | 6 | 52 | 20 | | |

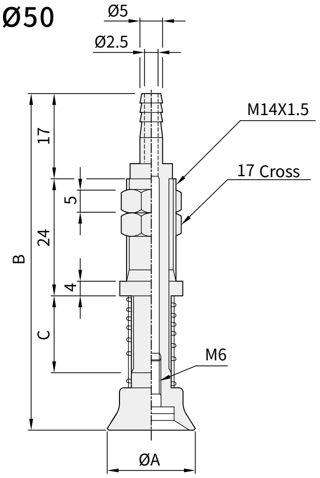
### Ø10 ~ Ø15


Ø5
Ø2.5
M11x1P
19
5
14 Cross
19
B
3
C
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PAFS-10 | Ø10 | 59.5 | 8 | 71.5 | 20 | PU tube Ø6xØ4 | 4, 10 |
| | PAFS-15 | Ø15 | 57 | 8 | 69 | 20 | | |

### Ø20 ~ Ø50


Ø5
Ø2.5
M14X1.5
17
17 Cross
5
24
B
4
C
M6
ØA

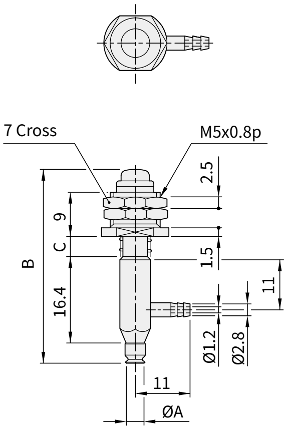
Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PAFS-20 | Ø20 | 69.5 | 13 | 86.5 | 30 | PU tube Ø6 x Ø4 | 6, 15 |
| | PAFS-25 | Ø25 | 73.5 | 13 | 90.5 | 30 | | |
| | PAFS-30 | Ø30 | 71.5 | 13 | 88.5 | 30 | | |
| | PAFS-35 | Ø35 | 73.5 | 13 | 90.5 | 30 | | |
| | PAFS-40 | Ø40 | 71 | 13 | 88 | 30 | | |
| | PAFS-50 | Ø50 | 72 | 13 | 89 | 30 | | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PATS series/ Side entry with spring

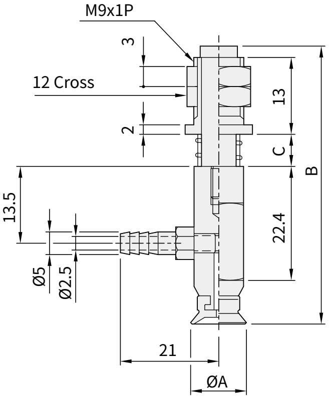
### Ø2 ~ Ø3.5


7 Cross
M5x0.8p
2.5
9
C
B
1.5
11
16.4
Ø1.2
Ø2.8
11
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 2.5 B | Stroke 2.5 C | Stroke 5 B | Stroke 5 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-02 | Ø2 | 35.7 | 4.5 | 40.5 | 9.5 | PU tube Ø4xØ2.5 | 2.5, 5 |
|  | PATS-3.5 | Ø3.5 | 35.7 | 4.5 | 40.7 | 9.5 |  |  |
| Oblong pad | PATS-2x4 | 2x4 | 37.4 | 4.5 | 42.4 | 9.5 |  |  |
|  | PATS-3.5x7 | 3.5x7 | 38.2 | 4.5 | 43.2 | 9.5 |  |  |

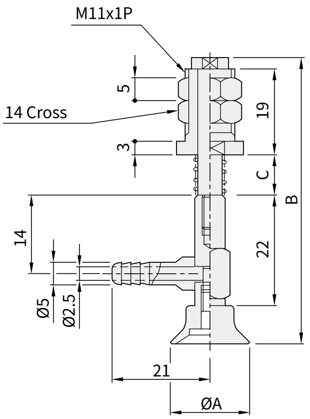
### Ø5 ~ Ø8


M9x1P
3
12 Cross
13
2
C
B
13.5
22.4
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 3 B | Stroke 3 C | Stroke 10 B | Stroke 10 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-05 | Ø5 | 51 | 6 | 65 | 20 | PU tube Ø6 x Ø4 | 3, 10 |
|  | PATS-06 | Ø6 | 51 | 6 | 65 | 20 |  |  |
|  | PATS-08 | Ø8 | 51.5 | 6 | 65.5 | 20 |  |  |

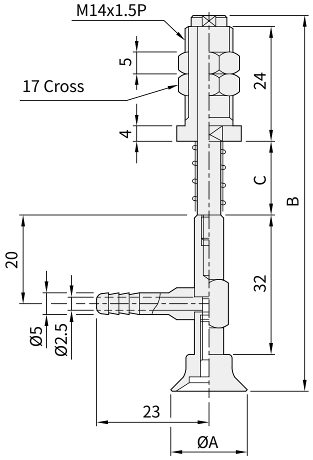
### Ø10 ~ Ø15


M11x1P
5
14 Cross
19
3
C
B
14
22
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 4 B | Stroke 4 C | Stroke 10 B | Stroke 10 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-10 | Ø10 | 60 | 8 | 72 | 20 | PU tube Ø6xØ4 | 4, 10 |
|  | PATS-15 | Ø15 | 60 | 8 | 72 | 20 |  |  |

### Ø20 ~ Ø50


M14x1.5P
5
17 Cross
24
4
C
B
20
32
Ø5
Ø2.5
23
ØA

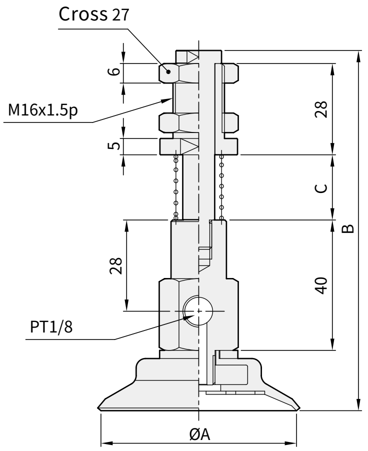
Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 B | Stroke 6 C | Stroke 15 B | Stroke 15 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-20 | Ø20 | 83 | 13 | 96 | 30 | PU tube Ø6 x Ø4 | 6, 15 |
|  | PATS-25 | Ø25 | 87 | 13 | 104 | 30 |  |  |
|  | PATS-30 | Ø30 | 85 | 13 | 102 | 30 |  |  |
|  | PATS-35 | Ø35 | 87 | 13 | 104 | 30 |  |  |
|  | PATS-40 | Ø40 | 87 | 13 | 104 | 30 |  |  |
|  | PAFS-50 | Ø50 | 88 | 13 | 105 | 30 |  |  |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PATS series/ Side entry with spring

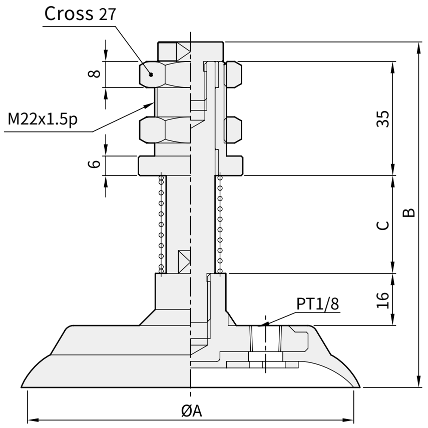
### Ø60, Ø80


Cross 27
6
M16x1.5p
5
28
C
40
B
28
PT1/8
ØA

Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 10 B | Stroke 10 C | Stroke 30 B | Stroke 30 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-60 | Ø60 | 110.5 | 20 | 150.5 | 60 | PT 1/8 | 10, 30 |
| | PATS-80 | Ø80 | 112.5 | 20 | 150.5 | 60 | | |

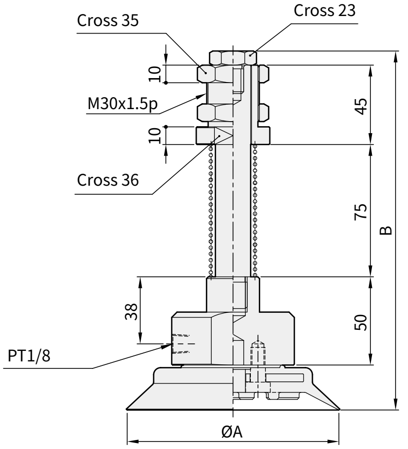
### Ø100


Cross 27
8
M22x1.5p
6
35
C
16
B
PT1/8
ØA

Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 15 B | Stroke 15 C | Stroke 30 B | Stroke 30 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-100 | Ø100 | 106 | 30 | 136 | 60 | PT 1/8 | 15, 30 |

### Ø120, 150, Ø200


Cross 35
Cross 23
10
M30x1.5p
10
Cross 36
45
75
B
38
50
PT1/8
ØA

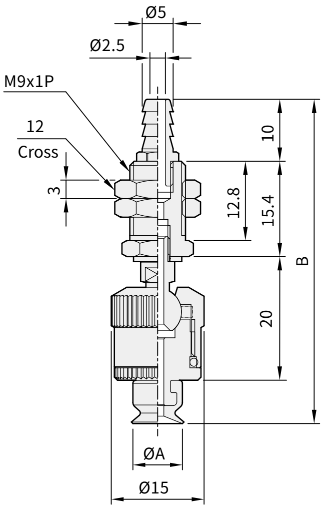
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of joint | Spring compression length |
|---|---|---|---|---|---|
| Circle pad | PATS-120 | Ø120 | 203.5 | PT 1/8 | 30 |
| | PATS-150 | Ø150 | 210.5 | | |
| | PATS-200 | Ø200 | 215.5 | | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAF-R series/ Vertical entry-Ball joint type

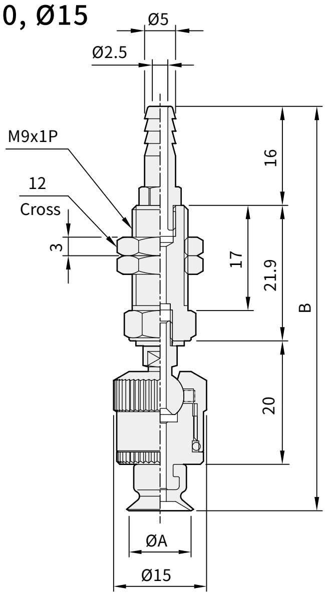
### Ø5, Ø6, Ø8


Ø5
Ø2.5
M9x1P
12
Cross
3
10
12.8
15.4
B
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-05-R | Ø5 | 51.9 | PU tube 6 x 4 |
| | PAF-06-R | Ø6 | 51.9 | |
| | PAF-08-R | Ø8 | 52.4 | |

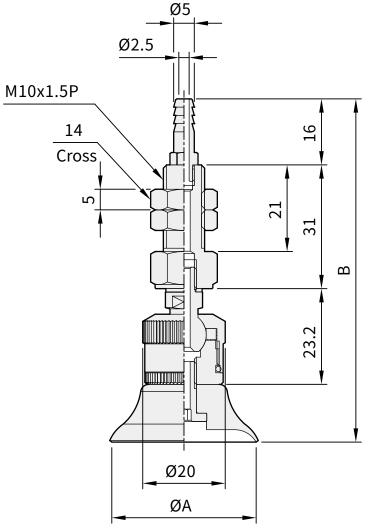
### Ø10, Ø15


Ø5
Ø2.5
M9x1P
12
Cross
3
16
17
21.9
B
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-10-R | Ø10 | 65.4 | PU tube 6 x 4 |
| | PAF-15-R | Ø15 | 65.9 | |

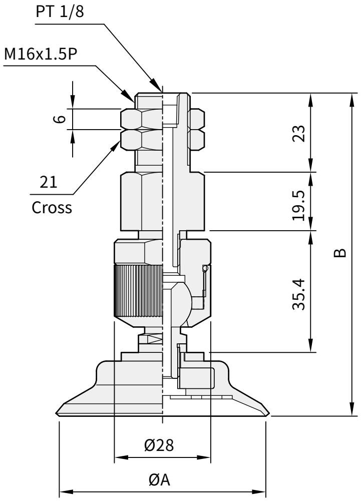
### Ø20 ~ Ø50


Ø5
Ø2.5
M10x1.5P
14
Cross
5
16
21
31
B
23.2
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-20-R | Ø20 | 79.2 | PU tube 6 x 4 |
| | PAF-25-R | Ø25 | 83.2 | |
| | PAF-30-R | Ø30 | 81.2 | |
| | PAF-35-R | Ø35 | 83.2 | |
| | PAF-40-R | Ø40 | 83.2 | |
| | PAF-50-R | Ø50 | 84.2 | |

### Ø60 ~ Ø80


PT 1/8
M16x1.5P
6
21
Cross
23
19.5
B
35.4
Ø28
ØA

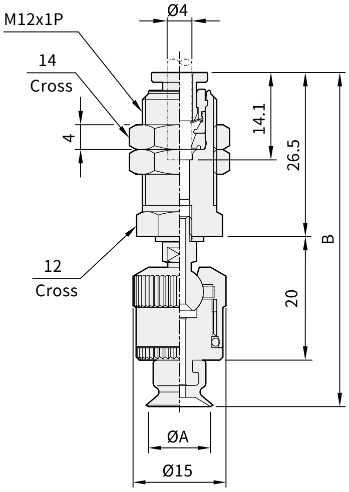
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAF-60-R | Ø60 | 94 | PT 1/8 |
| | PAF-80-R | Ø80 | 96 | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAK-R series/ Vertical entry with fitting-Ball joint type

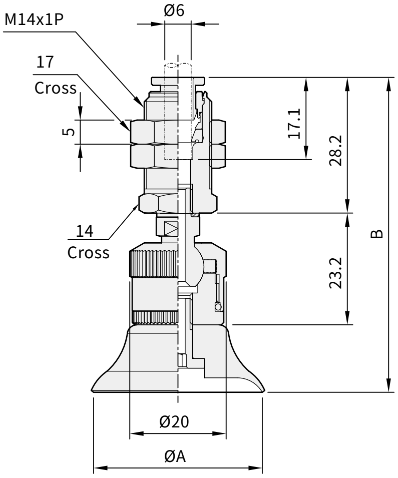
### Ø10, Ø15


M12x1P
Ø4
14
Cross
4
14.1
26.5
B
12
Cross
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAK-10-R | Ø10 | 54 | PU tube<br>Ø4 x Ø2.5 |
|  | PAK-15-R | Ø15 | 54.5 |  |

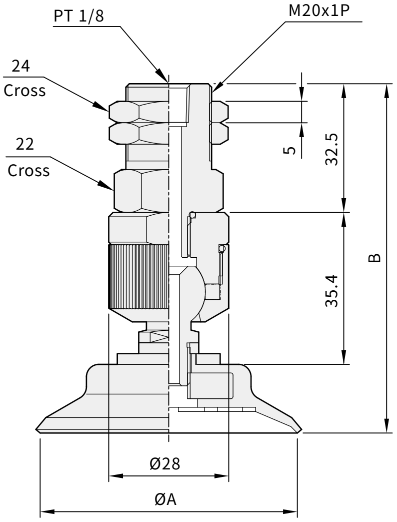
### Ø20 ~ Ø50


M14x1P
Ø6
17
Cross
5
17.1
28.2
B
14
Cross
23.2
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAK-20-R | Ø20 | 61.4 | PU tube<br>6 x 4 |
|  | PAK-25-R | Ø25 | 65.4 |  |
|  | PAK-30-R | Ø30 | 64.4 |  |
|  | PAK-35-R | Ø35 | 65.4 |  |
|  | PAK-40-R | Ø40 | 65.4 |  |
|  | PAK-50-R | Ø50 | 66.4 |  |

### Ø60, Ø80


PT 1/8
M20x1P
24
Cross
22
Cross
5
32.5
B
35.4
Ø28
ØA

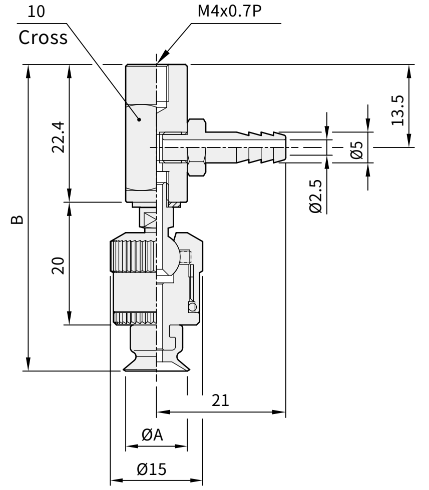
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAK-60-R | Ø60 | 81.5 | PT 1/8 |
|  | PAK-80-R | Ø80 | 83.5 |  |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAT-R series/ Side entry-Ball joint type

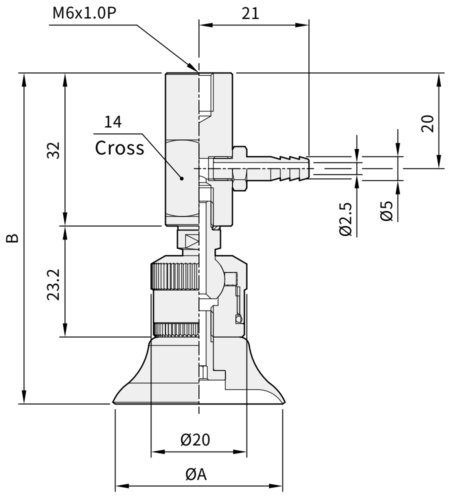
### Ø5 ~ Ø15


10
Cross
M4x0.7P
22.4
13.5
Ø5
Ø2.5
B
20
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAT-05-R | Ø5 | 51.9 | PU tube 6 x 4 |
| | PAT-06-R | Ø6 | 52.4 | |
| | PAT-08-R | Ø8 | 52.4 | |
| | PAT-10-R | Ø10 | 55.9 | |
| | PAT-15-R | Ø15 | 62.9 | |

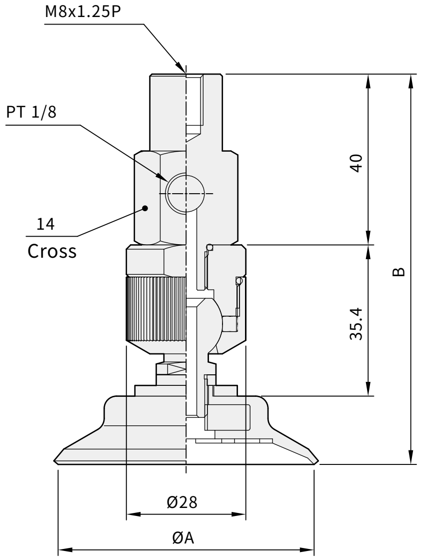
### Ø20 ~ Ø50


M6x1.0P
21
14
Cross
32
20
B
23.2
Ø2.5
Ø5
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAT-20-R | Ø20 | 65.2 | PU tube 6 x 4 |
| | PAT-25-R | Ø25 | 69.2 | |
| | PAT-30-R | Ø30 | 67.2 | |
| | PAT-35-R | Ø35 | 69.2 | |
| | PAT-40-R | Ø40 | 69.2 | |
| | PAT-50-R | Ø50 | 70.2 | |

### Ø60, Ø80


M8x1.25P
PT 1/8
14
Cross
40
B
35.4
Ø28
ØA

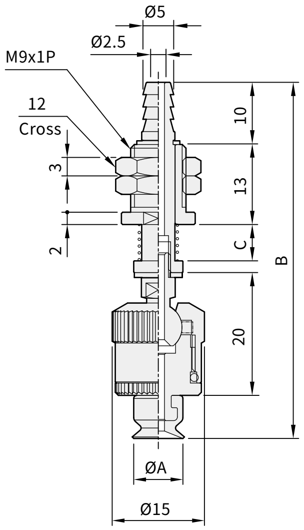
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAT-60-R | Ø60 | 91.5 | PT 1/8 |
| | PAT-80-R | Ø80 | 93.5 | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PAFS-R series/ Vertical entry with spring-Ball joint type

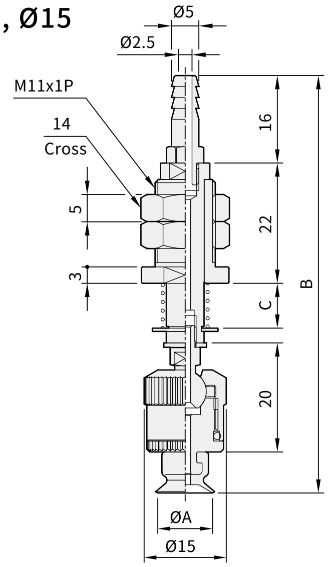
### Ø5, Ø6, Ø8


Ø5
Ø2.5
M9x1P
12
Cross
3
2
10
13
C
B
20
ØA
Ø15

Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 3 B | Stroke 3 C | Stroke 10 B | Stroke 10 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PAFS-05-R | Ø5 | 57.4 | 6 | 71.4 | 20 | PU tube 6 x 4 | 3, 10 |
| | PAFS-06-R | Ø6 | 57.4 | 6 | 71.4 | 20 | | |
| | PAFS-08-R | Ø8 | 57.9 | 6 | 71.9 | 20 | | |

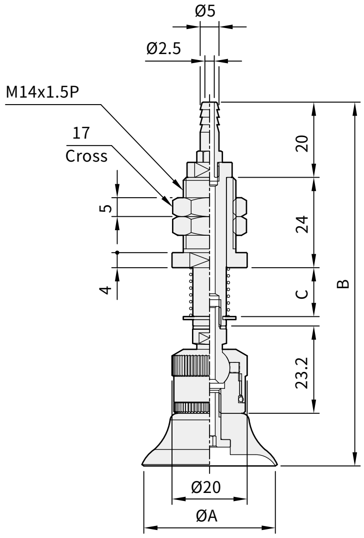
### Ø10, Ø15


Ø5
Ø2.5
M11x1P
14
Cross
5
3
16
22
C
B
20
ØA
Ø15

Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 4 B | Stroke 4 C | Stroke 10 B | Stroke 10 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PAFS-10-R | Ø10 | 76.4 | 8 | 88.4 | 20 | PU tube 6 x 4 | 4, 10 |
| | PAFS-15-R | Ø15 | 76.9 | 8 | 88.9 | 20 | | |

### Ø20 ~ Ø50


Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
20
24
C
B
23.2
Ø20
ØA

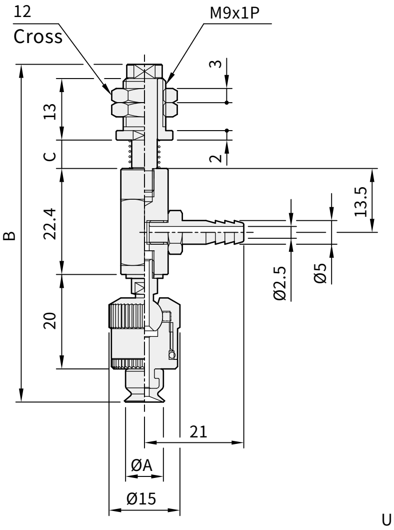
Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 6 B | Stroke 6 C | Stroke 15 B | Stroke 15 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PAFS-20-R | Ø20 | 92.7 | 13 | 109.7 | 30 | PU tube 6 x 4 | 6, 15 |
| | PAFS-25-R | Ø25 | 96.7 | 13 | 113.7 | 30 | | |
| | PAFS-30-R | Ø30 | 94.7 | 13 | 111.7 | 30 | | |
| | PAFS-35-R | Ø35 | 96.7 | 13 | 113.7 | 30 | | |
| | PAFS-40-R | Ø40 | 96.7 | 13 | 113.7 | 30 | | |
| | PAFS-50-R | Ø50 | 97.7 | 13 | 114.7 | 30 | | |

# PA□ series 1-Stage Vacuum Pad

## Dimensions-PATS-R series/ Side entry with spring-Ball joint type

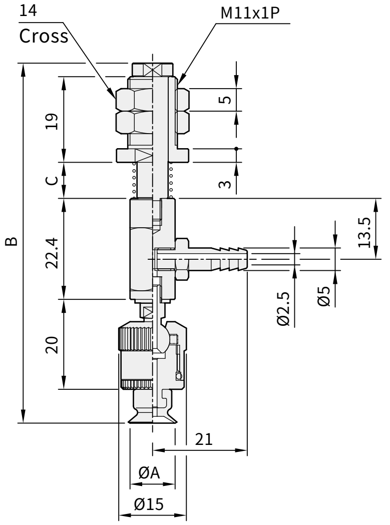
### Ø5, Ø6, Ø8


12
Cross
M9x1P
3
13
2
C
B
22.4
13.5
Ø2.5
Ø5
20
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 3 B | Stroke 3 C | Stroke 10 B | Stroke 10 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-05-R | Ø5 | 70.9 | 6 | 84.9 | 20 | PU tube 6 x 4 | 3, 10 |
| | PATS-06-R | Ø6 | 70.9 | 6 | 84.9 | 20 | | |
| | PATS-08-R | Ø8 | 71.4 | 6 | 85.4 | 20 | | |

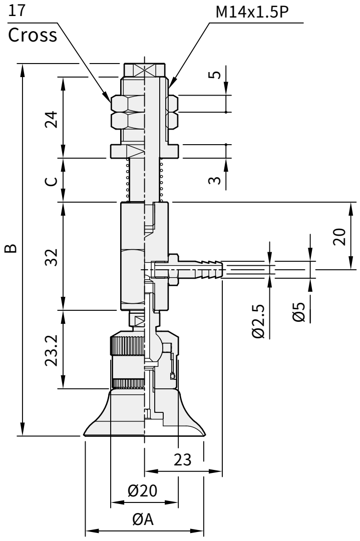
### Ø10, Ø15


14
Cross
M11x1P
5
19
3
C
B
22.4
13.5
Ø2.5
Ø5
20
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 4 B | Stroke 4 C | Stroke 10 B | Stroke 10 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-10-R | Ø10 | 80 | 8 | 92 | 20 | PU tube 6 x 4 | 4, 10 |
| | PATS-15-R | Ø15 | 80.5 | 8 | 92.5 | 20 | | |

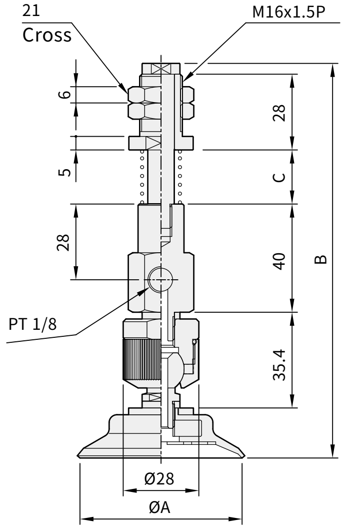
### Ø20 ~ Ø50


17
Cross
M14x1.5P
5
24
3
C
B
32
20
Ø2.5
Ø5
23.2
23
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 B | Stroke 6 C | Stroke 15 B | Stroke 15 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-20-R | Ø20 | 106.2 | 13 | 123.2 | 30 | PU tube 6 x 4 | 6, 15 |
| | PATS-25-R | Ø25 | 110.2 | 13 | 127.2 | 30 | | |
| | PATS-30-R | Ø30 | 108.2 | 13 | 125.2 | 30 | | |
| | PATS-35-R | Ø35 | 110.2 | 13 | 127.2 | 30 | | |
| | PATS-40-R | Ø40 | 110.2 | 13 | 127.2 | 30 | | |
| | PATS-50-R | Ø50 | 111.2 | 13 | 127.2 | 30 | | |

### Ø60, Ø80


21
Cross
M16x1.5P
6
28
5
C
28
40
B
PT 1/8
35.4
Ø28
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 10 B | Stroke 10 C | Stroke 30 B | Stroke 30 C | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| Circle pad | PATS-60-R | Ø60 | 146 | 20 | 186 | 60 | PT 1/8 | 10, 30 |
| | PATS-80-R | Ø80 | 148 | 20 | 188 | 60 | | |

# PB□ series 2-Stage Vacuum Pad

## Product features

### Feature

- Average difference in height: Designed as double corrugated pad is suitable for uneven workpieces, for example, tube materials or cartons.
- Diversification: Various sizes, materials and brackets can be selected.
- Durability: Rubber with extremely high oil resistance material, long lifetime and high strength.

### PB series selection table:

| Pad type | ① Bracket | | | | | ② Outer diameter | ③ Stroke | ④ Vacuum pad material | | | | ⑤ Ball joint type | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | K | T | FS | TS | | | N | S | SE | E | 05 | 20 | 60 |
| PB | ● | ● | ● | ● | ● | 06 | 3<br>•<br>10 | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 08 | | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 10 | 4<br>•<br>10 | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 15 | | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 20 | 6<br>•<br>15 | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 30 | | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 40 | | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 50 | | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | | ● | 60 | 10<br>•<br>30 | ● | ● | ● | ● | | | ● |
| | ● | ● | ● | | ● | 80 | | ● | ● | | | | | ● |

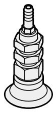
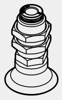
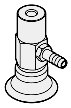
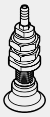
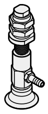
# PB☐ series 2-Stage Vacuum Pad

## Code of order

## Code of order **PBFS 10 x 4 N – R**

① ② ③ ④ ⑤

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 06 | 08 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|
| Pad dia. (mm) | Ø6 | Ø8 | Ø10 | Ø15 | Ø20 | Ø30 | Ø40 | Ø50 | Ø60 | Ø80 |

③ ● Only available to FS, TS series

| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 3 | 3 | Ø6, Ø8 | 6 | 6 | Ø20, Ø30<br>Ø40, Ø50 |
| 10 | 10 | | | | |
| 4 | 4 | Ø10, Ø15 | 15 | 15 | |
| 10 | 10 | | | | |

● Only available to TS series

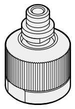
| Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|
| 10 | 10 | Ø60, Ø80 |
| 30 | 30 | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

● Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø5, Ø6, Ø8, Ø10, Ø15 | |
| 20 | Ø20, Ø25, Ø30, Ø35, Ø40, Ø50 | |
| 60 | Ø60, Ø80 | |

● Note: According to vacuum pad specification to py proper free holder.

● Note :Please refer to P.3-2.109

# PB□ series 2-Stage Vacuum Pad

## Product features

## Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A50/S | -20~180°C | Black | $10^4$~$10^6$Ω·cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200Ω·cm |

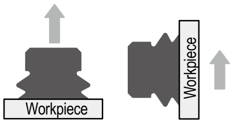
Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

## Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.

Before comfirm the Qty and location of suction pad, please reserve enough margin.

### Suction type



Horizontal suction

Vertical suction

### Calculation formu

$$W = \frac{P \times A}{-10}$$

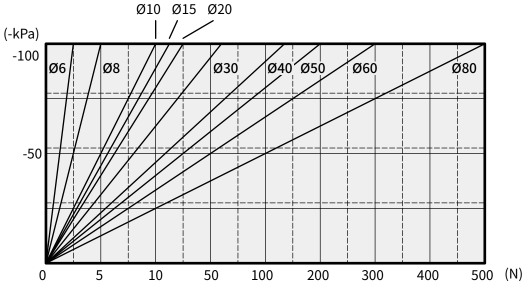
W: Force N

P : Vacuum pressure kPa

A : Pad area dimensions cm$^2$

## Theoratical suction

Pad diameter: Ø6~Ø80mm



## Product weight

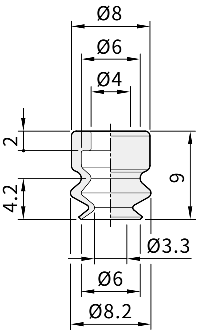
| Item | PB | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | 6 | 8 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 80 |
| Weight(g) | 0.25 | 0.27 | 0.63 | 0.94 | 1.6 | 5.3 | 10.7 | 20.5 | 35.6 | 81 |

# PB□ series 2-Stage Vacuum Pad

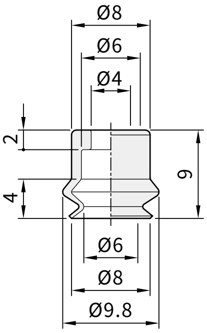
## Dimensions-Double layer PB series

### External dimensions

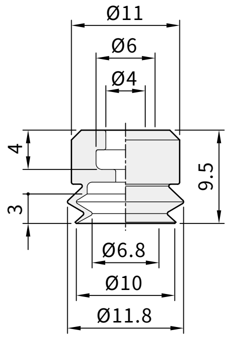
**PB 06**


Ø8
Ø6
Ø4
2
4.2
9
Ø3.3
Ø6
Ø8.2

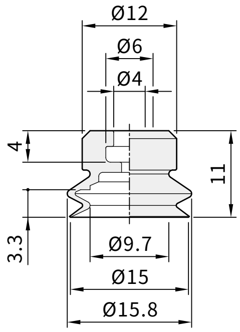
**PB 08**


Ø8
Ø6
Ø4
2
4
9
Ø6
Ø8
Ø9.8

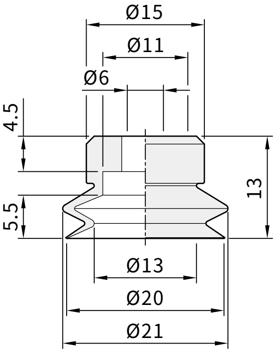
**PB 10**


Ø11
Ø6
Ø4
4
3
9.5
Ø6.8
Ø10
Ø11.8

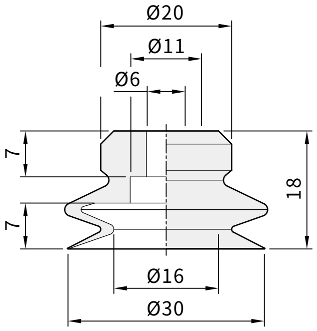
**PB 15**


Ø12
Ø6
Ø4
4
3.3
11
Ø9.7
Ø15
Ø15.8

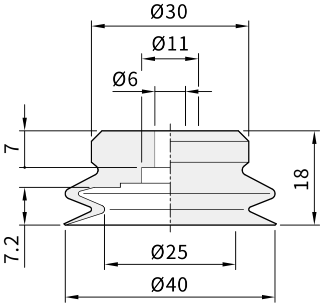
**PB 20**


Ø15
Ø11
Ø6
4.5
5.5
13
Ø13
Ø20
Ø21

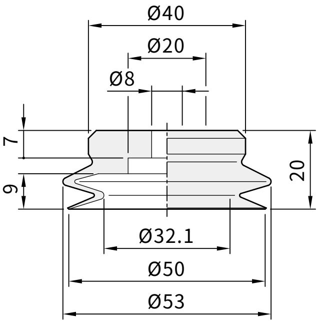
**PB 30**


Ø20
Ø11
Ø6
7
7
18
Ø16
Ø30

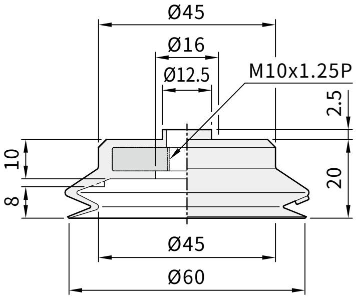
**PB 40**


Ø30
Ø11
Ø6
7
7.2
18
Ø25
Ø40

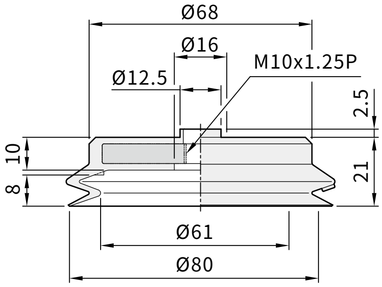
**PB 50**


Ø40
Ø20
Ø8
7
9
20
Ø32.1
Ø50
Ø53

**PB 60**


Ø45
Ø16
Ø12.5
M10x1.25P
2.5
10
8
20
Ø45
Ø60

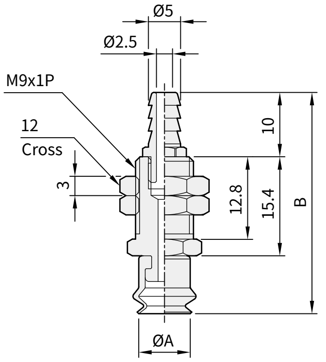
**PB 80**


Ø68
Ø16
Ø12.5
M10x1.25P
2.5
10
8
21
Ø61
Ø80

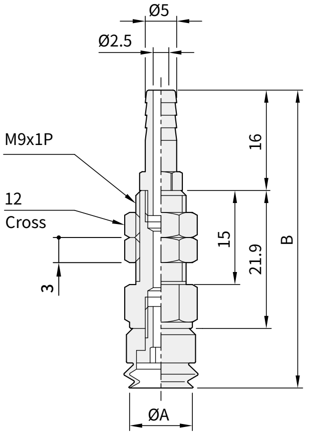
# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBF series/ Vertical entry

### Ø6, Ø8


Ø5
Ø2.5
M9x1P
12
Cross
3
10
12.8
15.4
B
ØA

### Ø10, Ø15


Ø5
Ø2.5
M9x1P
12
Cross
3
16
15
21.9
B
ØA

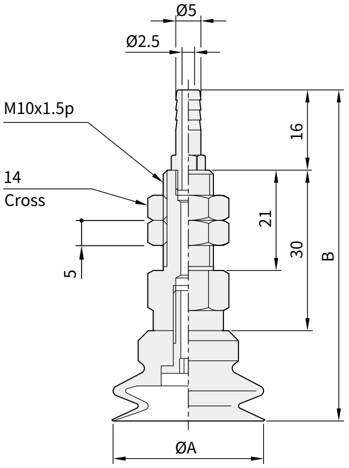
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of PU tube |
|---|---|---|---|---|---|
| Circle pad | PBF-06 | Ø2 | 20.8 | 34.4 | PU tube Ø6xØ4 |
| | PBF-08 | Ø8 | 23.5 | 34.4 | |

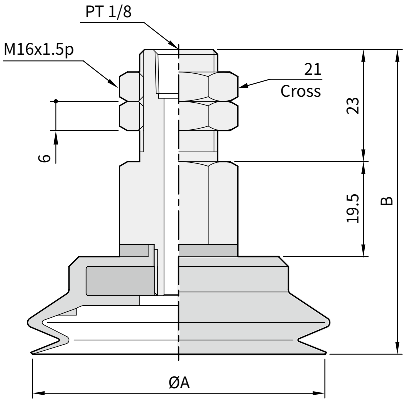
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBF-10 | Ø10 | 47.5 | PU tube Ø6xØ4 |
| | PBF-15 | Ø15 | 49 | |

### Ø20 ~ Ø50


Ø5
Ø2.5
M10x1.5p
14
Cross
5
16
21
30
B
ØA

### Ø60, Ø80


PT 1/8
M16x1.5p
21
Cross
6
23
19.5
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBF-20 | Ø20 | 61 | PU tube Ø6xØ4 |
| | PAF-30 | Ø30 | 66 | |
| | PBF-40 | Ø40 | 66 | |
| | PBF-80 | Ø50 | 68 | |

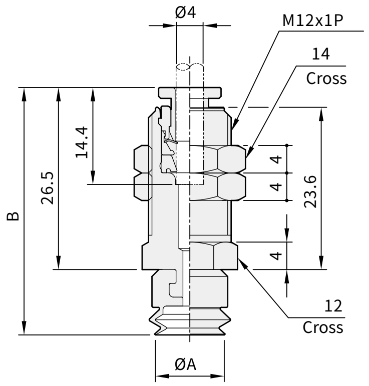
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of joint |
|---|---|---|---|---|
| Circle pad | PBF-60 | Ø60 | 62.5 | PT 1/8 |
| | PBF-80 | Ø80 | 63.5 | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBK series/ Vertical entry with fitting

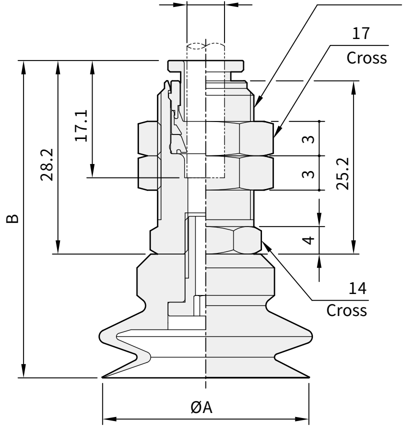
### Ø6, Ø15


Ø4
M12x1P
14
Cross
B
26.5
14.4
4
4
23.6
4
12
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBK-06 | Ø6 | 35.5 | PU tube Ø4xØ2.5 |
| | PBK-08 | Ø8 | 35.5 | |
| | PBK-10 | Ø10 | 36 | |
| | PBK-15 | Ø15 | 37.5 | |

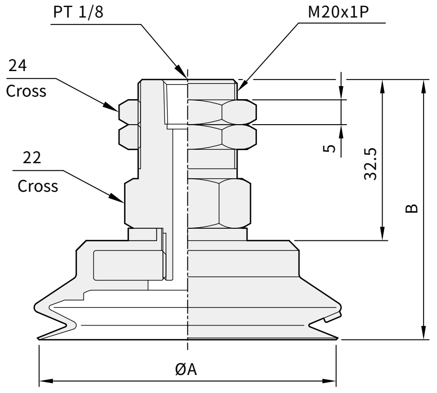
### Ø20, Ø50


Ø6
M14x1P
17
Cross
B
28.2
17.1
3
3
25.2
4
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBK-20 | Ø20 | 41.2 | PU tube Ø6xØ4 |
| | PBK-30 | Ø30 | 46.2 | |
| | PBK-40 | Ø40 | 46.2 | |
| | PBK-50 | Ø50 | 48.2 | |

### Ø60 ~ Ø80


PT 1/8
M20x1P
24
Cross
22
Cross
5
32.5
B
ØA

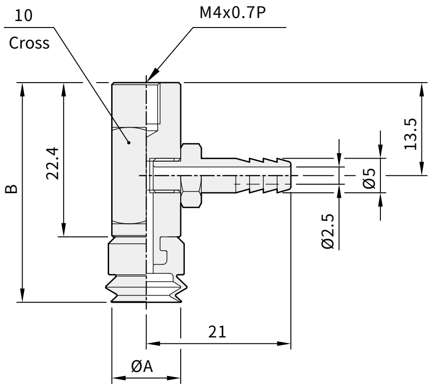
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | C | Size of joint |
|---|---|---|---|---|---|
| Circle pad | PBK-60 | Ø60 | 52.5 | 22.5 | PT 1/8 |
| | PBK-80 | Ø80 | 53.5 | 23.5 | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBT series/ Side entry

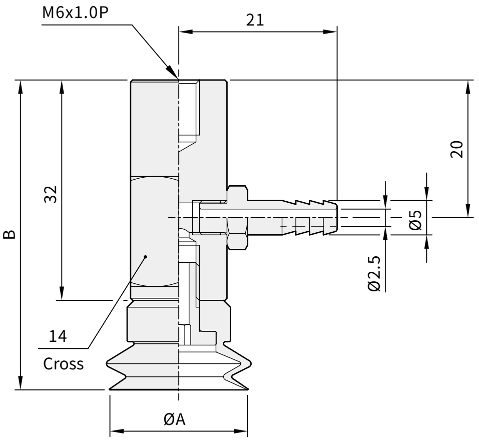
### Ø6, Ø15


10
Cross
M4x0.7P
13.5
22.4
B
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBT-06 | Ø6 | 31.4 | PU tube Ø4 x Ø2.5 |
| | PBT-08 | Ø8 | 31.4 | |
| | PBT-10 | Ø10 | 31.9 | |
| | PBT-15 | Ø15 | 33.4 | |

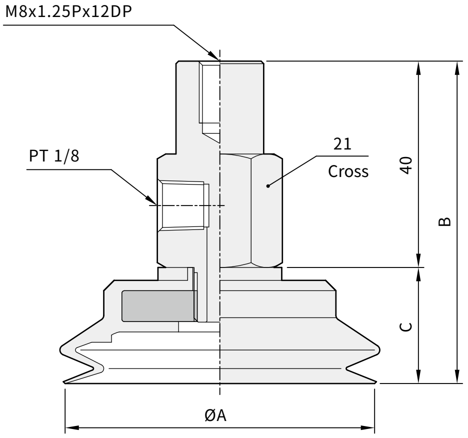
### Ø20, Ø50


M6x1.0P
21
20
32
B
Ø5
Ø2.5
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBT-20 | Ø20 | 45 | PU tube Ø6 x Ø4 |
| | PBT-30 | Ø30 | 50 | |
| | PBT-40 | Ø40 | 50 | |
| | PBT-50 | Ø50 | 52 | |

### Ø60 ~ Ø80


M8x1.25Px12DP
PT 1/8
21
Cross
40
B
C
ØA

Unit: mm

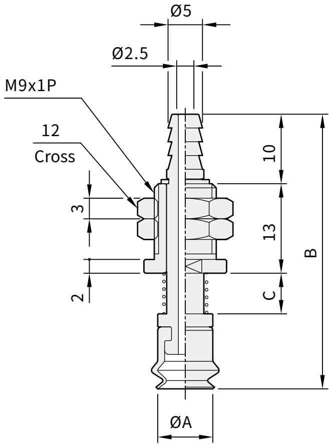
| Pad type | Model | Pad dia. A | Whole length B | C | Size of joint |
|---|---|---|---|---|---|
| Circle pad | PBT-60 | Ø60 | 62.5 | 22.5 | PT 1/8 |
| | PBT-80 | Ø80 | 63.5 | 23.5 | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBFS series/ Vertical entry with spring

CHELIC

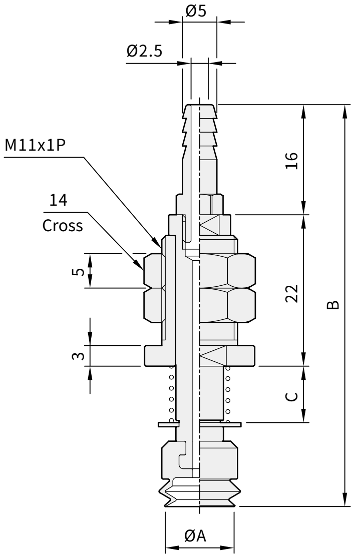
### Ø6, Ø8


Ø5
Ø2.5
M9x1P
12
Cross
3
2
10
13
C
B
ØA

Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBFS-06 | Ø6 | 40 | 6 | 54 | 20 | PU tube Ø6xØ4 | 3, 10 |
| | PBFS-08 | Ø8 | 40 | 6 | 54 | 20 | | |

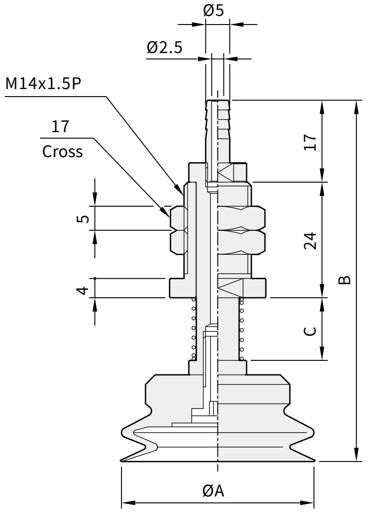
### Ø10, Ø15


Ø5
Ø2.5
M11x1P
14
Cross
5
3
16
22
C
B
ØA

Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBFS-10 | Ø10 | 58.4 | 8 | 70.4 | 20 | PU tube Ø6xØ4 | 4, 10 |
| | PBFS-15 | Ø15 | 59.9 | 8 | 71.9 | 20 | | |

### Ø20 ~ Ø50


Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
17
24
C
B
ØA

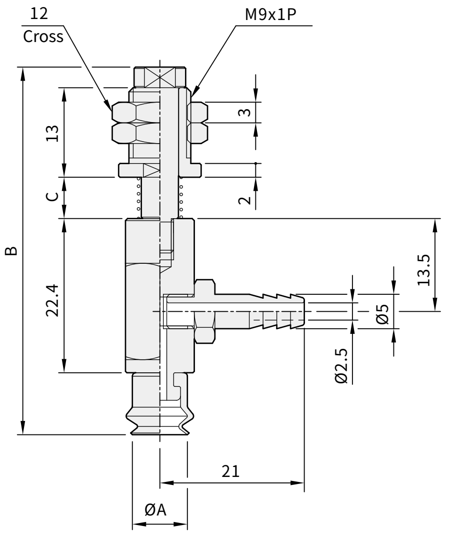
Unit: mm

| Pad type \ Model | | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBFS-20 | Ø20 | 69 | 13 | 89.5 | 30 | PU tube Ø6 x Ø4 | 6, 15 |
| | PBFS-30 | Ø30 | 75 | 13 | 94.5 | 30 | | |
| | PBFS-40 | Ø40 | 75 | 13 | 94.5 | 30 | | |
| | PBFS-50 | Ø50 | 77 | 13 | 96.5 | 30 | | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBTS series/ Side entry with spring

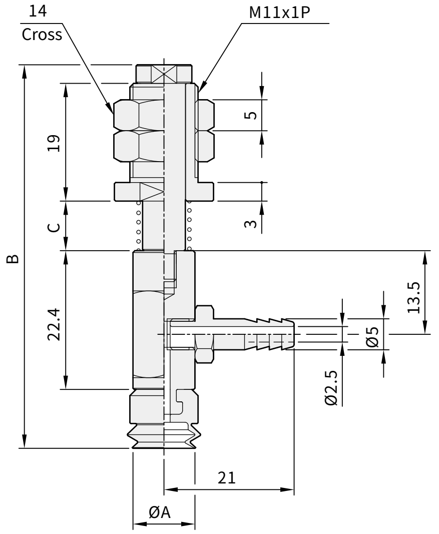
### Ø6, Ø8


12
Cross
M9x1P
13
3
C
2
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBTS-06 | Ø6 | 53.4 | 6 | 67.4 | 20 | PU tube Ø6xØ4 | 3, 10 |
| | PBTS-08 | Ø8 | 53.4 | 6 | 67.4 | 20 | | |

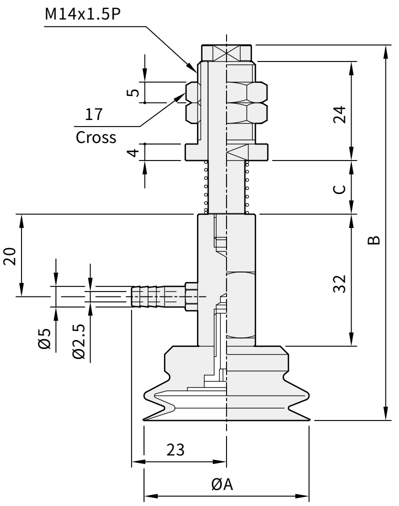
### Ø10, Ø15


14
Cross
M11x1P
19
5
C
3
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBTS-10 | Ø10 | 61.9 | 8 | 73.9 | 20 | PU tube Ø6xØ4 | 4, 10 |
| | PBTS-15 | Ø15 | 63.4 | 8 | 75.4 | 20 | | |

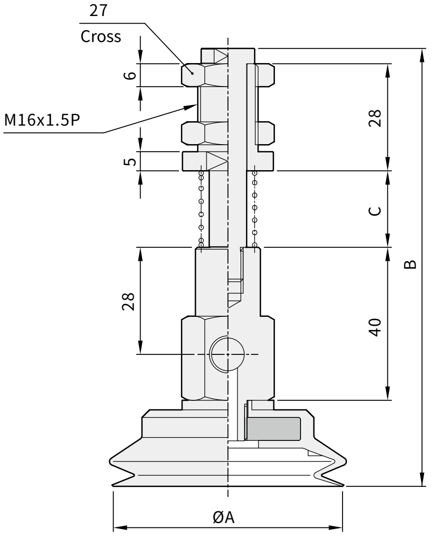
### Ø20, Ø50


M14x1.5P
5
17
Cross
4
24
C
B
32
20
Ø5
Ø2.5
23
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBTS-20 | Ø20 | 83 | 13 | 96 | 30 | PU tube Ø6 x Ø4 | 6, 15 |
| | PBTS-30 | Ø30 | 91 | 13 | 108 | 30 | | |
| | PBTS-40 | Ø40 | 91 | 13 | 108 | 30 | | |
| | PBTS-50 | Ø50 | 93 | 13 | 110 | 30 | | |

### Ø60 ~ Ø80


27
Cross
6
M16x1.5P
5
28
C
B
28
40
ØA

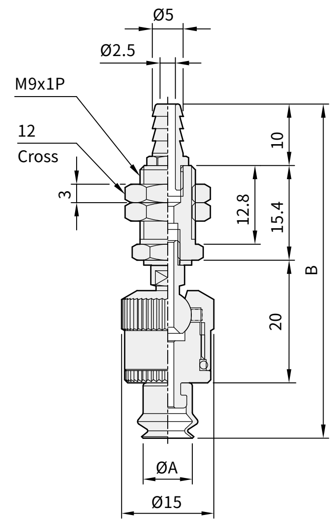
Unit: mm

| Pad type | Model | Pad dia. A | Stroke 10 | | Stroke 30 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PBTS-60 | Ø60 | 114.5 | 20 | 154.5 | 60 | PU tube Ø6xØ4 | 10, 30 |
| | PBTS-80 | Ø80 | 115.5 | 20 | 155.5 | 60 | | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBF-R series/ Vertical entry-Ball joint type

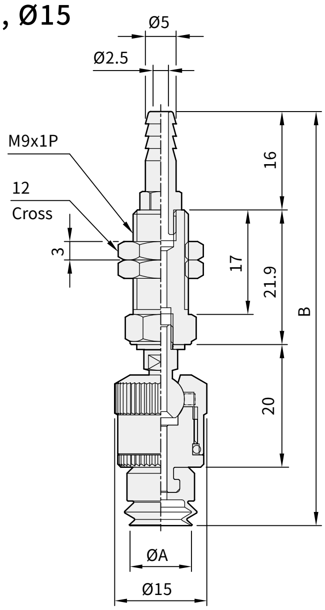
### Ø6, Ø8


Ø5
Ø2.5
M9x1P
12
Cross
3
10
12.8
15.4
B
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBF-06-R | Ø6 | 54.5 | PU tube 6 x 4 |
| | PBF-08-R | Ø8 | 54.5 | |

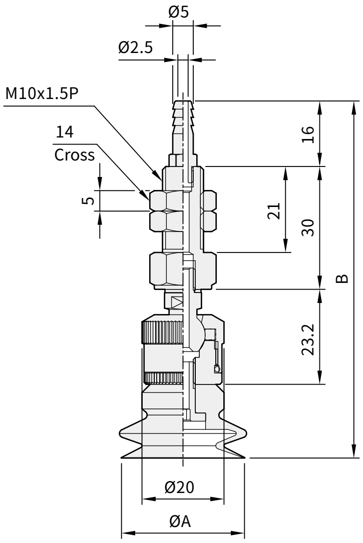
### Ø10, Ø15


Ø5
Ø2.5
M9x1P
12
Cross
3
16
17
21.9
B
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBF-10-R | Ø10 | 67.5 | PU tube 6 x 4 |
| | PBF-15-R | Ø15 | 69 | |

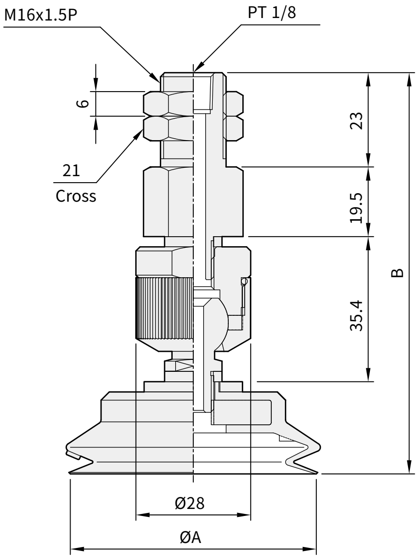
### Ø20 ~ Ø50


Ø5
Ø2.5
M10x1.5P
14
Cross
5
16
21
30
B
23.2
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBF-20-R | Ø20 | 82.2 | PU tube 6 x 4 |
| | PBF-30-R | Ø30 | 87.2 | |
| | PBF-40-R | Ø40 | 87.2 | |
| | PBF-50-R | Ø50 | 89.2 | |

### Ø60 ~ Ø80


M16x1.5P
PT 1/8
6
21
Cross
23
19.5
B
35.4
Ø28
ØA

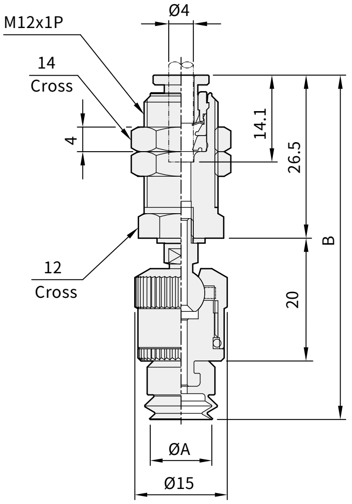
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBF-60-R | Ø60 | 98 | PT 1/8 |
| | PBF-80-R | Ø80 | 99 | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBK-R series/ Vertical entry with fitting-Ball joint type

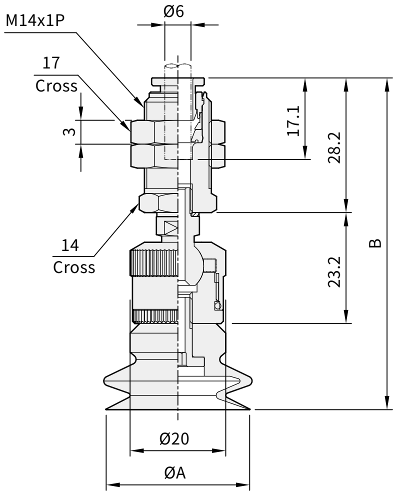
### Ø6, Ø15


M12x1P
Ø4
14
Cross
4
14.1
26.5
B
12
Cross
20
ØA
Ø15

Unit: mm

| Pad type / Model | | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBK-06-R | Ø6 | 55.5 | PU tube Ø4 x Ø2.5 |
| | PBK-08-R | Ø8 | 55.5 | |
| | PBK-10-R | Ø10 | 56 | |
| | PBK-15-R | Ø15 | 57.5 | |

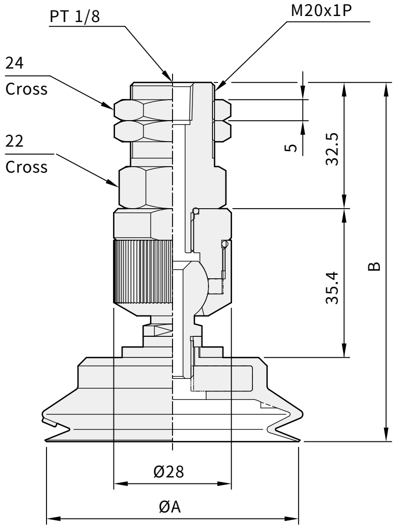
### Ø20 ~ Ø50


M14x1P
Ø6
17
Cross
3
17.1
28.2
14
Cross
B
23.2
Ø20
ØA

Unit: mm

| Pad type / Model | | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBK-20-R | Ø20 | 64.5 | PU tube 4 x 6 |
| | PBK-30-R | Ø30 | 69.5 | |
| | PBK-40-R | Ø40 | 69.5 | |
| | PBK-50-R | Ø50 | 71.5 | |

### Ø60, Ø80


PT 1/8
M20x1P
24
Cross
22
Cross
5
32.5
B
35.4
Ø28
ØA

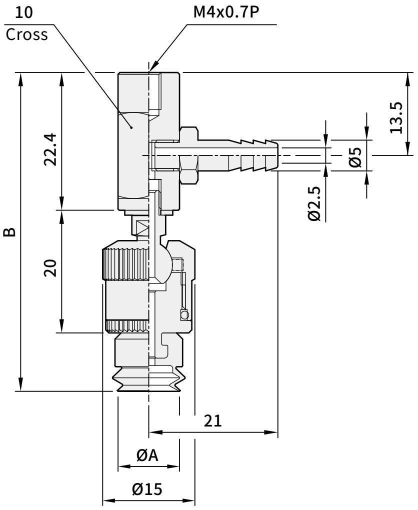
Unit: mm

| Pad type / Model | | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBK-60-R | Ø60 | 85.5 | PT 1/8 |
| | PBK-80-R | Ø80 | 86.5 | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBT-R series/ Side entry-Ball joint type

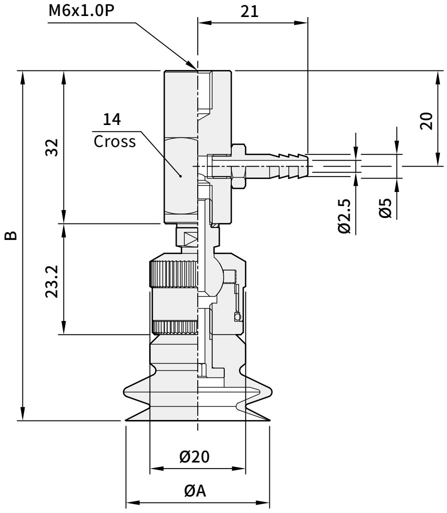
### Ø6 ~ Ø15


10
Cross
M4x0.7P
22.4
13.5
Ø5
Ø2.5
B
20
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBT-06-R | Ø6 | 51.4 | PU tube 6 x 4 |
| | PBT-08-R | Ø8 | 51.4 | |
| | PBT-10-R | Ø10 | 51.9 | |
| | PBT-15-R | Ø15 | 53.4 | |

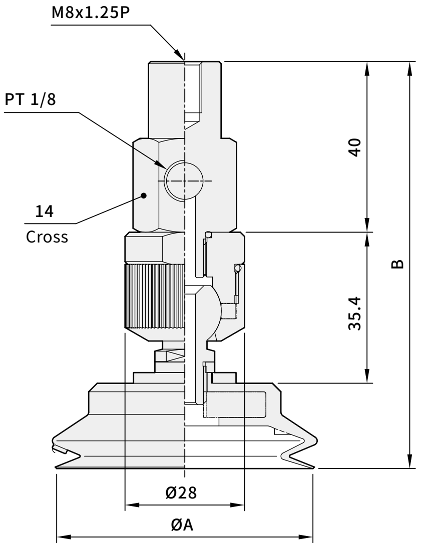
### Ø20 ~ Ø50


M6x1.0P
21
14
Cross
32
20
B
23.2
Ø2.5
Ø5
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBT-20-R | Ø20 | 68.2 | PU tube 4 x 6 |
| | PBT-30-R | Ø30 | 73.2 | |
| | PBT-40-R | Ø40 | 73.2 | |
| | PBT-50-R | Ø50 | 75.2 | |

### Ø60, Ø80


M8x1.25P
PT 1/8
14
Cross
40
B
35.4
Ø28
ØA

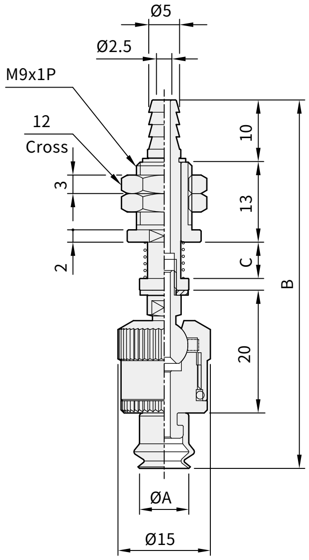
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PBK-60-R | Ø60 | 85.5 | PT 1/8 |
| | PBK-80-R | Ø80 | 86.5 | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBFS-R series/ Vertical entry with spring-Ball joint type

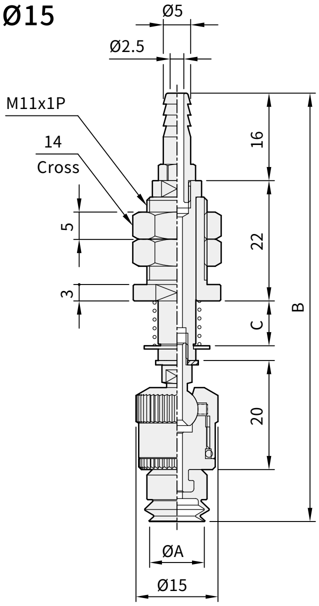
### Ø6, Ø8


Ø5
Ø2.5
M9x1P
12
Cross
3
2
10
13
C
20
B
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBFS-06-R | Ø6 | 60 | 6 | 74 | 20 | PU tube 6 x 4 | 3, 10 |
| | PBFS-08-R | Ø8 | 60 | 6 | 74 | 20 | | |

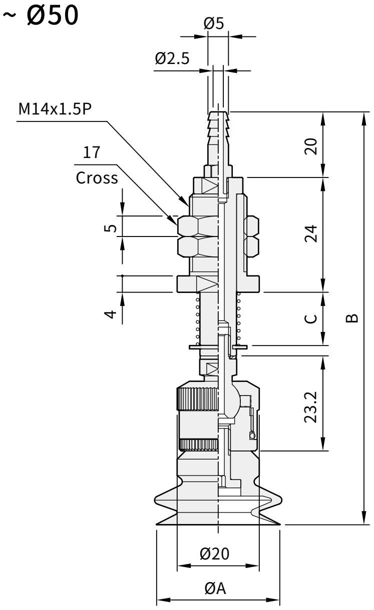
### Ø10, Ø15


Ø5
Ø2.5
M11x1P
14
Cross
5
3
16
22
C
20
B
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBFS-10-R | Ø10 | 78.5 | 8 | 90.5 | 20 | PU tube 6 x 4 | 4, 10 |
| | PBFS-15-R | Ø15 | 80 | 8 | 92 | 20 | | |

### Ø20 ~ Ø50


Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
20
24
C
23.2
B
Ø20
ØA

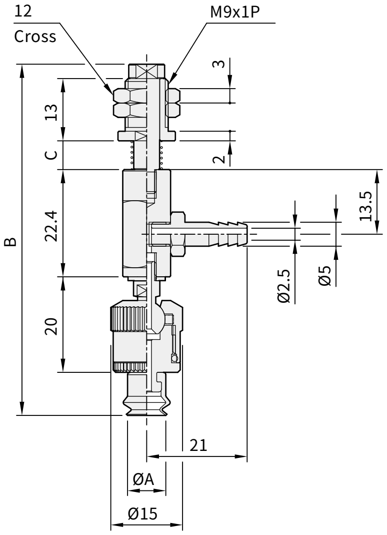
Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBFS-20-R | Ø20 | 95.7 | 13 | 112.7 | 30 | PU tube 6 x 4 | 6, 15 |
| | PBFS-30-R | Ø30 | 100.7 | 13 | 117.7 | 30 | | |
| | PBFS-40-R | Ø40 | 100.7 | 13 | 117.7 | 30 | | |
| | PBFS-50-R | Ø50 | 102.7 | 13 | 119.7 | 30 | | |

# PB□ series 2-Stage Vacuum Pad

## Dimensions-PBTS-R series/ Side entry with spring-Ball joint type

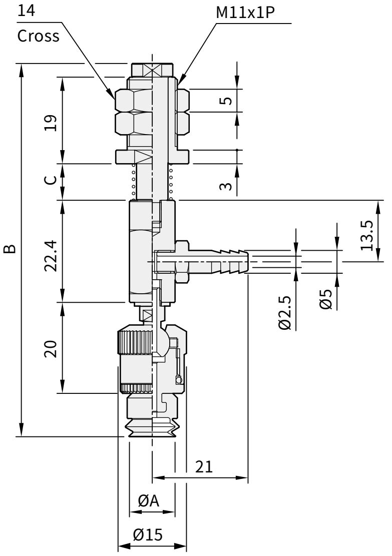
### Ø6, Ø8


12
Cross
M9x1P
3
13
C
2
22.4
13.5
B
20
Ø2.5
Ø5
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBTS-06-R | Ø6 | 73.4 | 6 | 87.4 | 20 | PU tube 6 x 4 | 3, 10 |
| | PBTS-08-R | Ø8 | 73.4 | 6 | 87.4 | 20 | | |

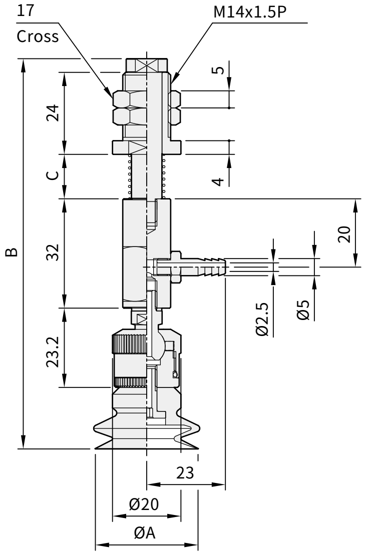
### Ø10, Ø15


14
Cross
M11x1P
5
19
C
3
13.5
B
22.4
20
Ø2.5
Ø5
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBTS-10-R | Ø10 | 81.9 | 8 | 93.9 | 20 | PU tube 6 x 4 | 4, 10 |
| | PBTS-15-R | Ø15 | 83.4 | 8 | 95.4 | 20 | | |

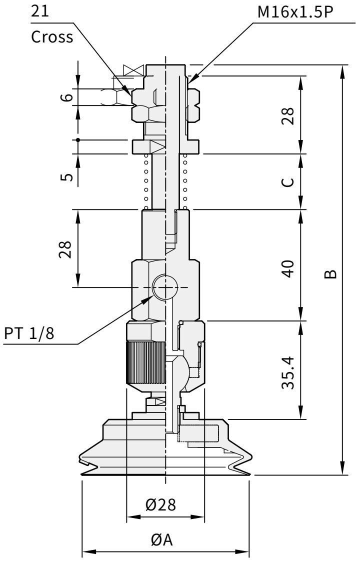
### Ø20, Ø50


17
Cross
M14x1.5P
5
24
C
4
20
B
32
Ø2.5
Ø5
23.2
23
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBTS-20-R | Ø20 | 109.2 | 13 | 126.2 | 30 | PU tube 6 x 4 | 6, 15 |
| | PBTS-30-R | Ø30 | 114.2 | 13 | 131.2 | 30 | | |
| | PBTS-40-R | Ø40 | 114.2 | 13 | 131.2 | 30 | | |
| | PBTS-50-R | Ø50 | 116.2 | 13 | 133.2 | 30 | | |

### Ø60, Ø80


21
Cross
M16x1.5P
6
28
5
C
28
40
B
PT 1/8
35.4
Ø28
ØA

Unit: mm

| Pad type | Model | Pad dia. | Stroke 10 | | Stroke 30 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PBTS-60-R | Ø60 | 147.5 | 20 | 187.5 | 60 | PT 1/8 | 10, 30 |
| | PBTS-80-R | Ø80 | 148.5 | 20 | 188.5 | 60 | | |

# PC☐ series 3-Stage Vacuum Pad

## Product features

### Feature

- High availability: With three layers of corrugated design, it has strong adaptability and high flexibility and fitness.
- Diversification: Various sizes, materials and brackets can be selected.
- Durability: Rubber with extremely high oil resistance material, long lifetime and high strength.

### PC series selection table:

| Pad type | ① Bracket | | | | | ② Outer diameter | ③ Stroke | ④ Vacuum pad material | | | | ⑤ Ball joint type | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | K | T | FS | TS | | | N | S | SE | E | 05 | 20 | 60 |
| PC | ● | | ● | ● | ● | 05 | 3<br>•<br>10 | ● | ● | ● | ● | ● | | |
| | ● | | ● | ● | ● | 07 | | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 10 | 4<br>•<br>10 | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 15 | | ● | ● | ● | ● | ● | | |
| | ● | ● | ● | ● | ● | 20 | 6<br>•<br>15 | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 30 | | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 40 | | ● | ● | ● | ● | | ● | |
| | ● | ● | ● | ● | ● | 60 | 10<br>•<br>30 | ● | ● | ● | ● | | | ● |

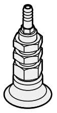
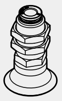
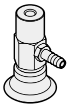
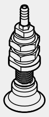
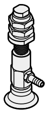
# PC☐ series 3-Stage Vacuum Pad

## Code of order

## Code of order **PC FS 10 x 4 N – R**

① FS ② 10 ③ x ④ 4 N ⑤ R

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 05 | 07 | 10 | 15 | 20 | 30 | 40 | 60 |
|---|---|---|---|---|---|---|---|---|
| Pad dia. (mm) | Ø5 | Ø7 | Ø10 | Ø15 | Ø20 | Ø30 | Ø40 | Ø60 |

③ ● Only available to FS, TS series

| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 3 | 3 | Ø5, Ø7 | 6 | 6 | Ø20, Ø30, Ø40 |
| 10 | 10 | | | | |
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | |
| 4 | 4 | Ø10, Ø15 | 15 | 15 | |
| 10 | 10 | | | | |

● Only available to TS series

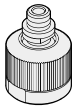
| Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|
| 10 | 10 | Ø60 |
| 30 | 30 | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

● Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø5, Ø6, Ø8, Ø10, Ø15 | |
| 20 | Ø20, Ø25, Ø30, Ø35, Ø40, Ø50 | |
| 60 | Ø60, Ø80 | |

● Note: According to vacuum pad specification to py proper free holder.

● Note :Please refer to P.3-2.109

# PC□ series 3-Stage Vacuum Pad

## Product features

### Vacuum pad material

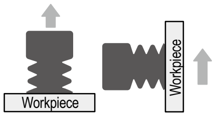
| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A50/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A50/S | -20~180°C | White | - |
| SE | Anti-static rubber | A50/S | -20~180°C | Black | $10^4$~$10^6$Ω·cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200Ω·cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.
Before comfirm the Qty and location of suction pad, please reserve enough margin.

**Suction type**



Horizontal suction

Vertical suction

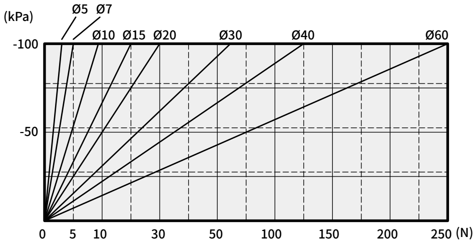
**Calculation formula**

$$W = \frac{P \times A}{-10}$$

W: Force N
P : Vacuum pressure kPa
A : Pad area dimensions cm$^2$

### Theoratical suction

Pad diameter: **Ø5~Ø60mm**



### Product weight

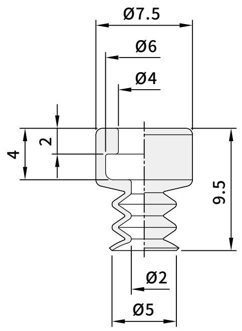
| Item | PC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | 5 | 7 | 10 | 15 | 20 | 30 | 40 | 60 |
| Weight(g) | 0.19 | 0.21 | 0.55 | 1.33 | 2.63 | 7.4 | 19 | 56 |

# PC□ series 3-Stage Vacuum Pad

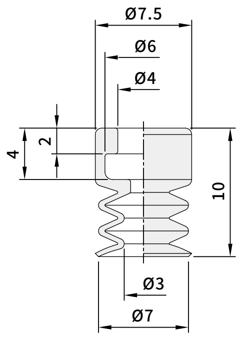
## Dimensions-Three layers PC series

### External dimensions

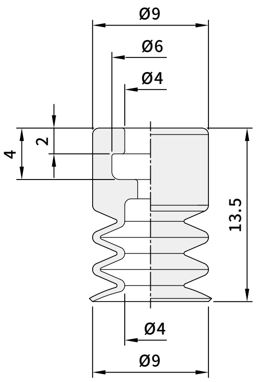
● PC - 05


Ø7.5
Ø6
Ø4
4
2
9.5
Ø2
Ø5

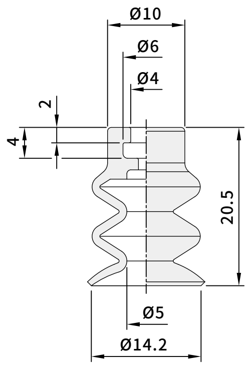
● PC - 07


Ø7.5
Ø6
Ø4
4
2
10
Ø3
Ø7

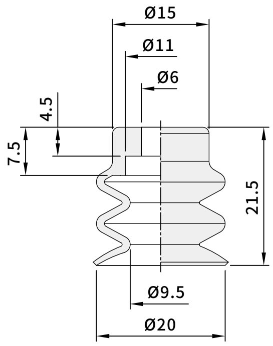
● PC - 10


Ø9
Ø6
Ø4
4
2
13.5
Ø4
Ø9

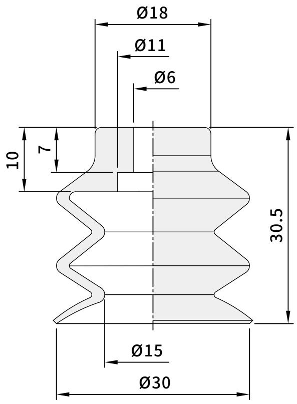
● PC - 15


Ø10
Ø6
Ø4
2
4
20.5
Ø5
Ø14.2

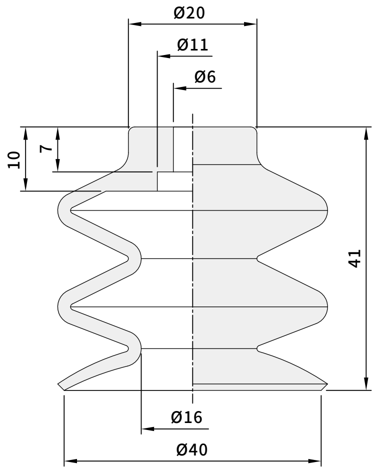
● PC - 20


Ø15
Ø11
Ø6
4.5
7.5
21.5
Ø9.5
Ø20

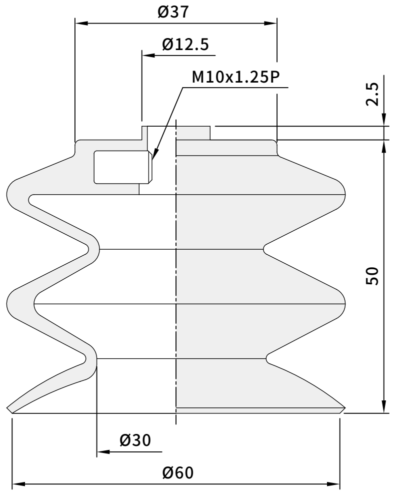
● PC - 30


Ø18
Ø11
Ø6
10
7
30.5
Ø15
Ø30

● PC - 40


Ø20
Ø11
Ø6
10
7
41
Ø16
Ø40

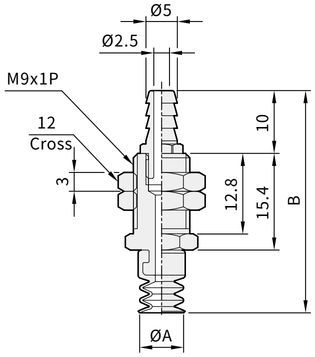
● PC - 60


Ø37
Ø12.5
M10x1.25P
2.5
50
Ø30
Ø60

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCF series/ Vertical entry

### Ø5, Ø7

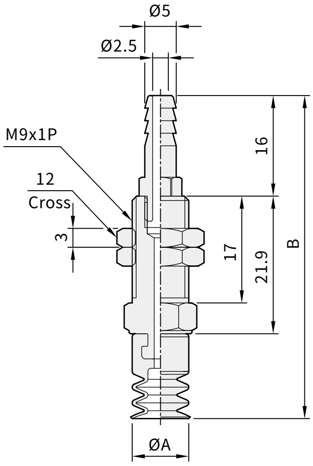


Ø5
Ø2.5
M9x1P
12
Cross
3
10
12.8
15.4
B
ØA

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCF-05 | Ø5 | 34.9 | PU tube<br>6 x 4 |
| | PCF-05 | Ø7 | 35.4 | |

### Ø10, Ø15

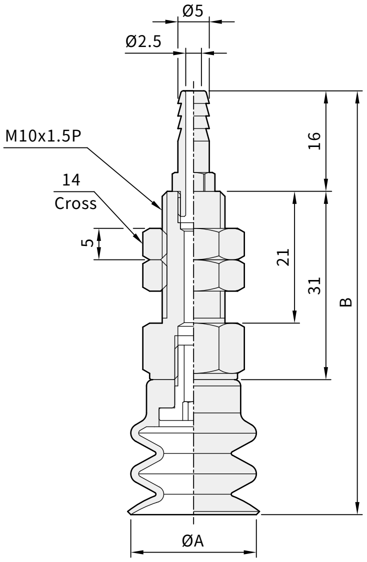


Ø5
Ø2.5
M9x1P
12
Cross
3
16
17
21.9
B
ØA

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCF-10 | Ø10 | 51.4 | PU tube<br>6 x 4 |
| | PCF-15 | Ø15 | 58.4 | |

### Ø20, Ø30, Ø40

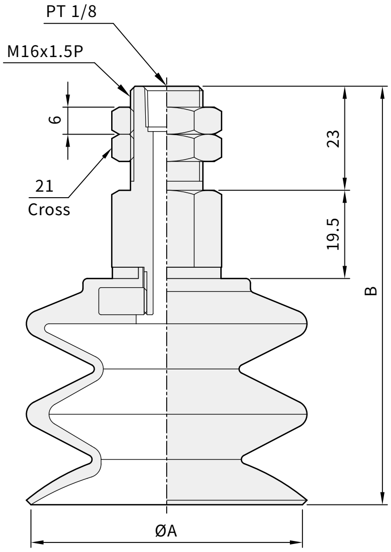


Ø5
Ø2.5
M10x1.5P
14
Cross
5
16
21
31
B
ØA

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCF - 20 | Ø20 | 67.5 | PU tube<br>6 x 4 |
| | PCF - 30 | Ø30 | 76.5 | |
| | PCF - 40 | Ø40 | 87 | |

### Ø60



PT 1/8
M16x1.5P
6
21
Cross
23
19.5
B
ØA

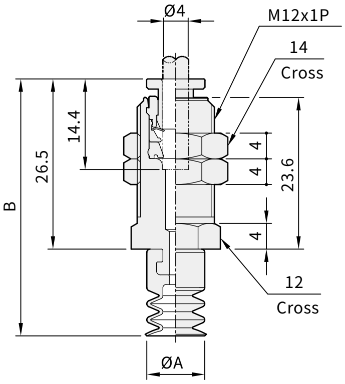
Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCF-60 | Ø60 | 92.5 | PT 1/8 |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCK series/ Vertical entry with fitting

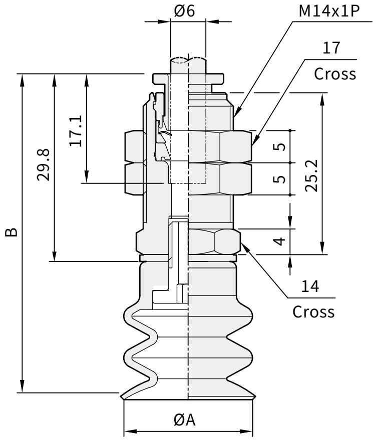
### Ø10, Ø15


Ø4
M12x1P
14
Cross
14.4
26.5
B
4
4
23.6
4
12
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCK-10 | Ø10 | 40 | PU tube Ø6xØ4 |
| | PCK-15 | Ø15 | 47 | |

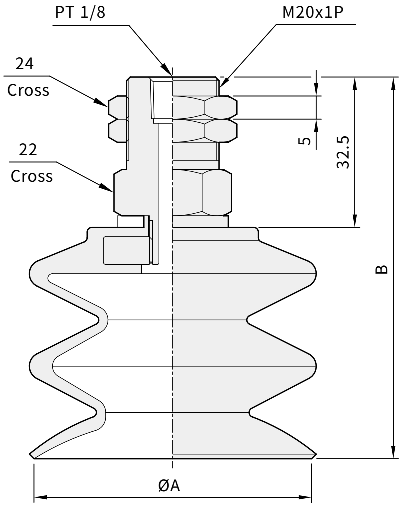
### Ø20, Ø30, Ø40


Ø6
M14x1P
17
Cross
17.1
29.8
B
5
5
25.2
4
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCK-20 | Ø20 | 51.3 | PU tube 6 x 4 |
| | PCK-30 | Ø30 | 60.3 | |
| | PCK-40 | Ø40 | 70.8 | |

### Ø60


PT 1/8
M20x1P
24
Cross
22
Cross
5
32.5
B
ØA

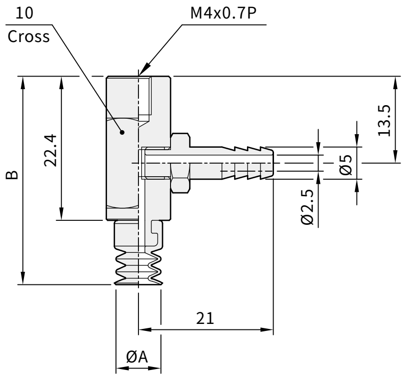
Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCK-60 | Ø60 | 82.5 | PT 1/8 |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCT series/ Side entry

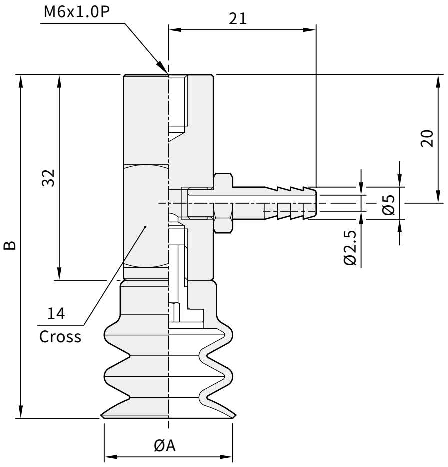
### Ø5 ~ Ø15


10
Cross
M4x0.7P
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCT-05 | Ø10 | 31.9 | PU tube 6 x 4 |
| | PCT-07 | Ø15 | 32.4 | |
| | PCT-10 | Ø10 | 35.9 | |
| | PCT-15 | Ø15 | 42.9 | |

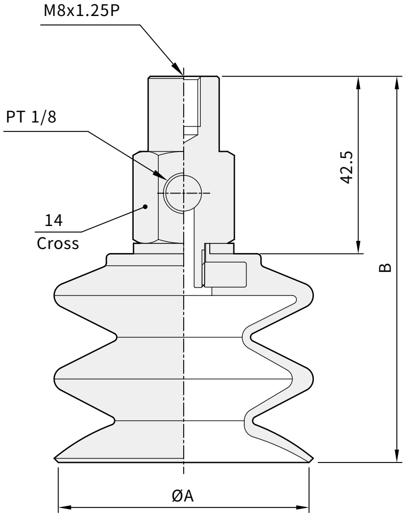
### Ø20, Ø30, Ø40


M6x1.0P
21
20
32
B
Ø5
Ø2.5
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCT-20 | Ø20 | 53.5 | PU tube 6 x 4 |
| | PCT-30 | Ø30 | 62.5 | |
| | PCT-40 | Ø40 | 73 | |

### Ø60


M8x1.25P
PT 1/8
14
Cross
42.5
B
ØA

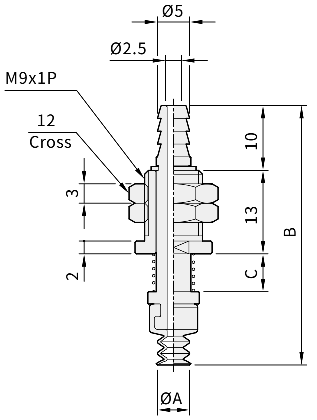
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCT-60 | Ø60 | 92.5 | PT 1/8 |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCFS series/ Vertical entry with spring

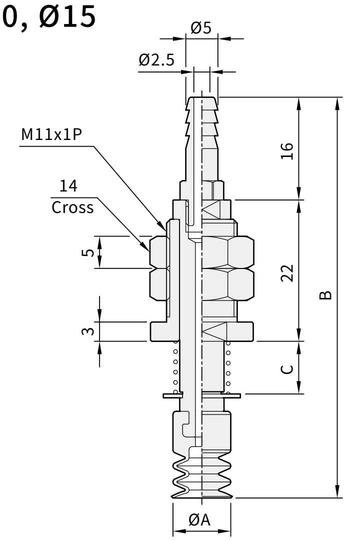
### Ø5, Ø7


Ø5
Ø2.5
M9x1P
12
Cross
3
2
10
13
C
B
ØA

Unit: mm

| Pad type | Model | Pad dia. | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCFS-05 | Ø5 | 40.4 | 6 | 54.4 | 20 | PU tube 6 x 4 | 3, 10 |
| | PCFS-07 | Ø7 | 40.9 | 6 | 54.9 | 20 | | |

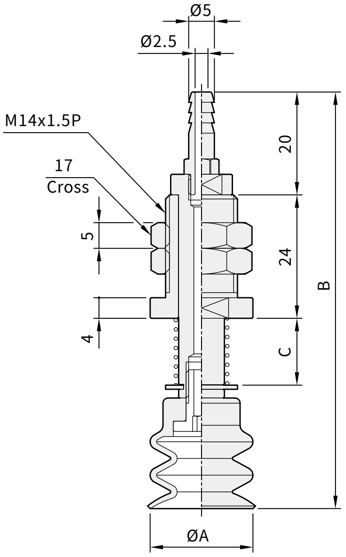
### Ø10, Ø15


Ø5
Ø2.5
M11x1P
14
Cross
5
3
16
22
C
B
ØA

Unit: mm

| Pad type | Model | Pad dia. | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCFS-10 | Ø10 | 62.4 | 8 | 74.4 | 20 | PU tube 6 x 4 | 4, 10 |
| | PCFS-15 | Ø15 | 69.4 | 8 | 81.4 | 20 | | |

### Ø20, Ø30, Ø40


Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
20
24
C
B
ØA

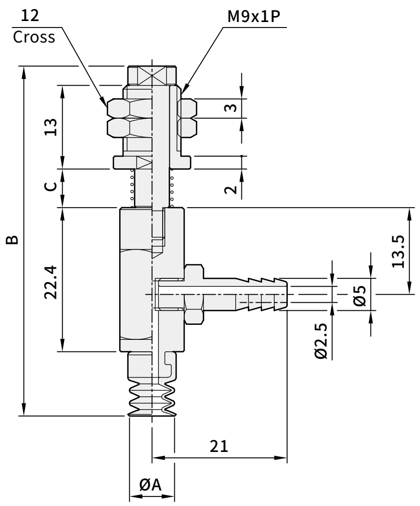
Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCFS-20 | Ø20 | 81 | 13 | 98 | 30 | PU tube 6 x 4 | 6, 15 |
| | PCFS-30 | Ø30 | 90 | 13 | 107 | 30 | | |
| | PCFS-40 | Ø40 | 100.5 | 13 | 117.5 | 30 | | |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCTS series/ Side entry with spring

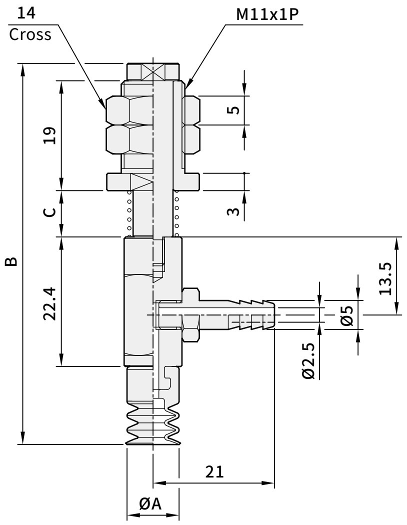
### Ø5, Ø7


12
Cross
M9x1P
13
3
C
2
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type \ Model | | Pad dia. | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-05 | Ø5 | 53.9 | 6 | 67.9 | 20 | PU tube 6 x 4 | 3, 10 |
| | PCTS-07 | Ø7 | 54.4 | 6 | 68.4 | 20 | | |

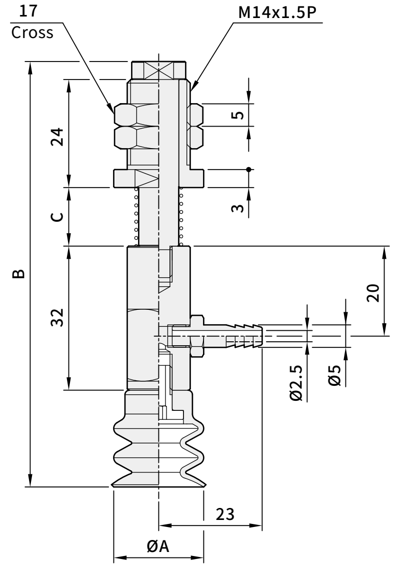
### Ø10, Ø15


14
Cross
M11x1P
19
5
C
3
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type \ Model | | Pad dia. | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-10 | Ø10 | 65.9 | 8 | 77.9 | 20 | PU tube 6 x 4 | 4, 10 |
| | PCTS-15 | Ø15 | 72.9 | 8 | 84.9 | 20 | | |

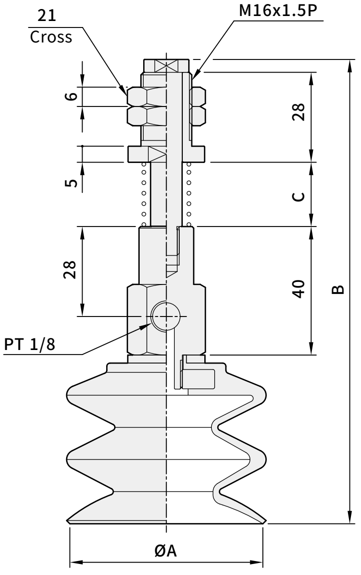
### Ø20, Ø30, Ø40


17
Cross
M14x1.5P
24
5
C
3
B
32
20
Ø2.5
Ø5
23
ØA

Unit: mm

| Pad type \ Model | | Pad dia. | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-20 | Ø20 | 94.5 | 13 | 111.5 | 30 | PU tube 6 x 4 | 6, 15 |
| | PCTS-30 | Ø30 | 103.5 | 13 | 120.5 | 30 | | |
| | PCTS-40 | Ø40 | 114 | 13 | 131.5 | 30 | | |

### Ø60


21
Cross
M16x1.5P
6
28
5
C
28
40
B
PT 1/8
ØA

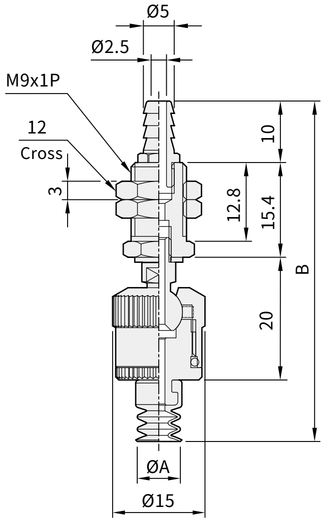
Unit: mm

| Pad type \ Model | | Pad dia. | Stroke 10 | | Stroke 30 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-60 | Ø60 | 144.5 | 20 | 174.5 | 60 | Rc 1/8" | 10, 30 |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCF-R series/ Vertical entry-Ball joint type

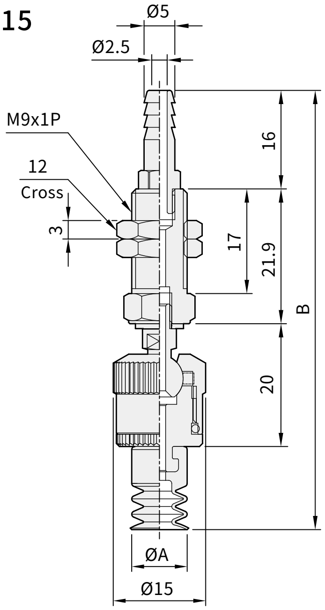
### Ø5, Ø7


Ø5
Ø2.5
M9x1P
12
Cross
3
10
12.8
15.4
B
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of<br>PU tube |
|---|---|---|---|---|
| Circle pad | PCF-05-R | Ø5 | 54.9 | PU tube<br>6 x 4 |
|  | PCF-07-R | Ø7 | 55.4 |  |

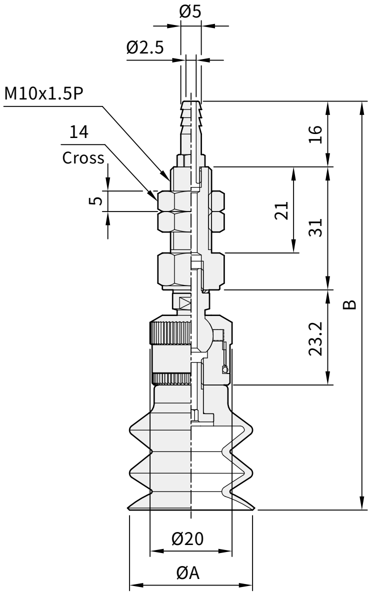
### Ø10, Ø15


Ø5
Ø2.5
M9x1P
12
Cross
3
16
17
21.9
B
20
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of<br>PU tube |
|---|---|---|---|---|
| Circle pad | PCF-10-R | Ø10 | 71.4 | PU tube<br>6 x 4 |
|  | PCF-15-R | Ø15 | 78.4 |  |

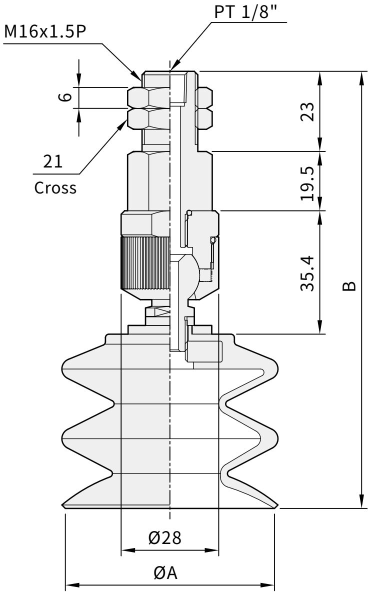
### Ø20, Ø30, Ø40


Ø5
Ø2.5
M10x1.5P
14
Cross
5
16
21
31
B
23.2
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of<br>PU tube |
|---|---|---|---|---|
| Circle pad | PCF-20-R | Ø20 | 90.7 | PU tube<br>6 x 4 |
|  | PCF-30-R | Ø30 | 99.7 |  |
|  | PCF-40-R | Ø40 | 110.2 |  |

### Ø60


PT 1/8"
M16x1.5P
6
21
Cross
23
19.5
35.4
B
Ø28
ØA

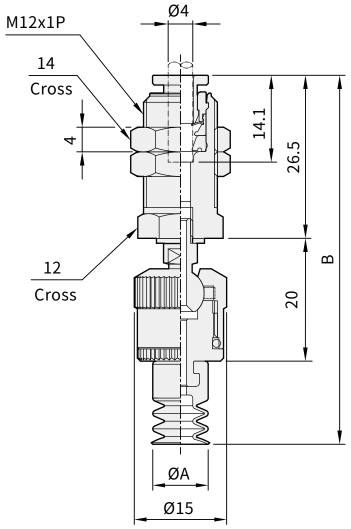
Unit: mm

| Pad type | Model | Pad dia.<br>A | Whole length<br>B | Size of<br>PU tube |
|---|---|---|---|---|
| Circle pad | PCF-60-R | Ø60 | 125.5 | PT 1/8 |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCK-R series/ Vertical entry with fitting-Ball joint type

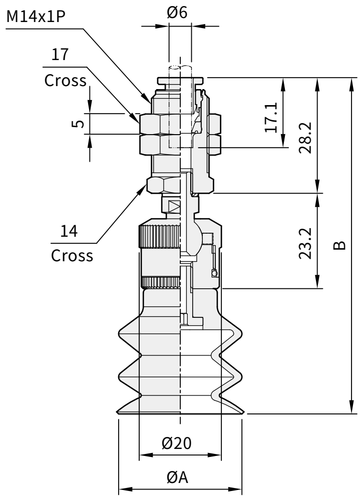
### Ø10, Ø15


M12x1P
Ø4
14
Cross
4
14.1
26.5
12
Cross
20
B
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCK-10-R | Ø10 | 60 | PU tube Ø4xØ2.5 |
| | PCK-15-R | Ø15 | 67 | |

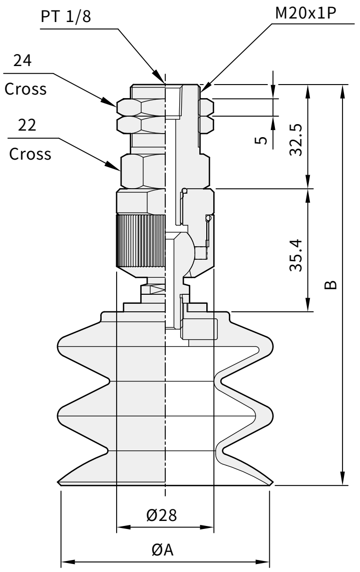
### Ø20, Ø30, Ø40


M14x1P
Ø6
17
Cross
5
17.1
28.2
14
Cross
23.2
B
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCK-20-R | Ø20 | 72.5 | PU tube 6 x 4 |
| | PCK-30-R | Ø30 | 81.9 | |
| | PCK-40-R | Ø40 | 92.4 | |

### Ø60


PT 1/8
M20x1P
24
Cross
22
Cross
5
32.5
35.4
B
Ø28
ØA

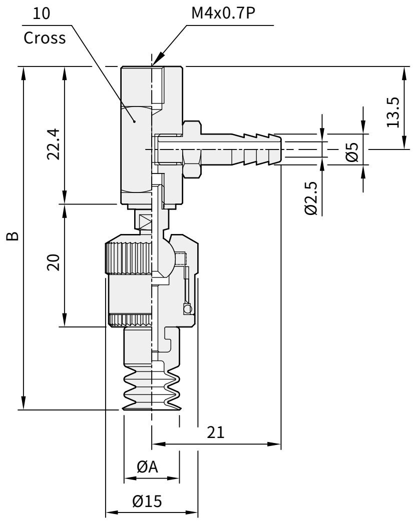
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCK-60-R | Ø60 | 115.5 | PT 1/8 |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCT-R series/ Side entry-Ball joint type

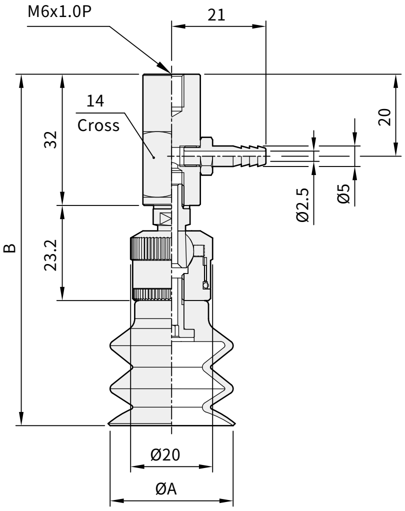
### Ø5 ~ Ø15


10
Cross
M4x0.7P
22.4
B
20
13.5
Ø5
Ø2.5
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCT-05-R | Ø10 | 51.9 | PU tube 6 x 4 |
| | PCT-07-R | Ø15 | 52.4 | |
| | PCT-10-R | Ø10 | 55.9 | |
| | PCT-15-R | Ø15 | 62.9 | |

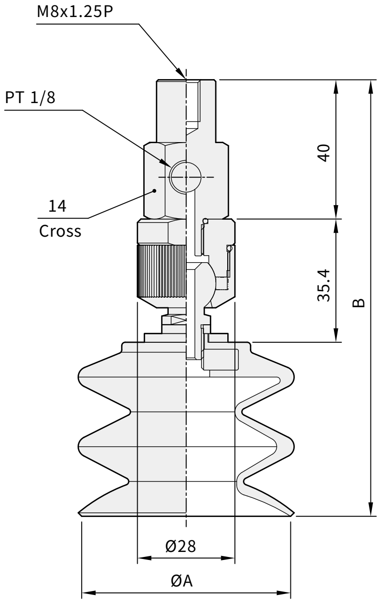
### Ø20, Ø30, Ø40


M6x1.0P
21
14
Cross
32
B
23.2
20
Ø2.5
Ø5
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCT-20-R | Ø20 | 76.7 | PU tube 6 x 4 |
| | PCT-30-R | Ø30 | 85.7 | |
| | PCT-40-R | Ø40 | 96.2 | |

### Ø60


M8x1.25P
PT 1/8
14
Cross
40
35.4
B
Ø28
ØA

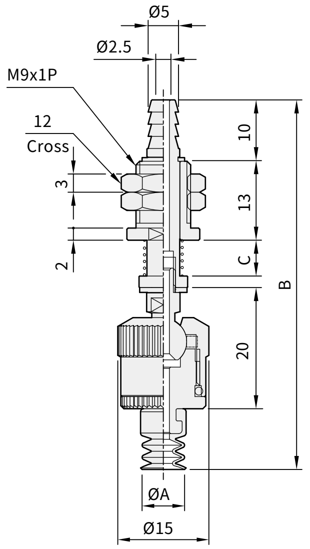
Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PCT-60-R | Ø60 | 125.5 | PT 1/8 |

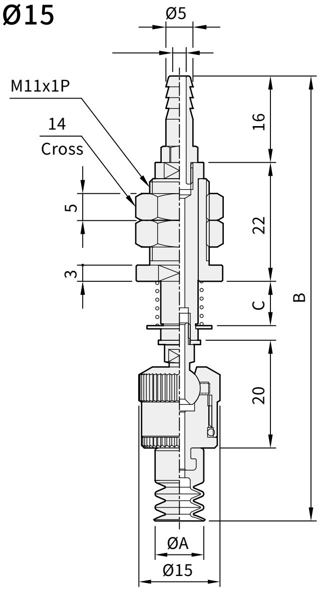
# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCFS-R series/ Vertical entry with spring-Ball joint type

### Ø5, Ø7


Ø5
Ø2.5
M9x1P
12
Cross
3
2
10
13
C
B
20
ØA
Ø15

### Ø10, Ø15


Ø5
M11x1P
14
Cross
5
3
16
22
C
B
20
ØA
Ø15

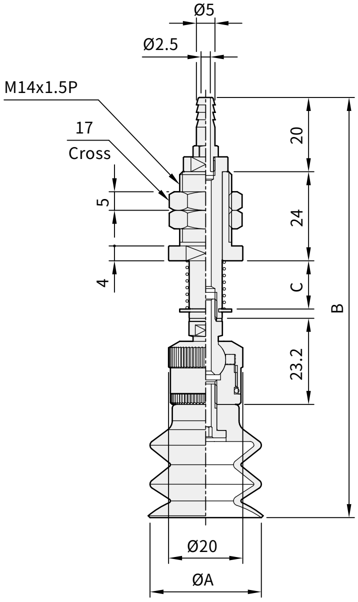
Unit: mm

| Pad type | Model | Pad dia. A | Stroke 3 |  | Stroke 10 |  | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
|  |  |  | B | C | B | C |  |  |
| Circle pad | PCFS-05-R | Ø5 | 60.4 | 6 | 74.4 | 20 | PU tube 6 x 4 | 3, 10 |
|  | PCFS-07-R | Ø7 | 60.9 | 6 | 74.9 | 20 |  |  |

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 4 |  | Stroke 10 |  | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
|  |  |  | B | C | B | C |  |  |
| Circle pad | PCFS-10-R | Ø10 | 82.4 | 8 | 94.4 | 20 | PU tube 6 x 4 | 4, 10 |
|  | PCFS-15-R | Ø15 | 89.4 | 8 | 101.4 | 20 |  |  |

### Ø20, Ø30, Ø40


Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
20
24
C
B
23.2
Ø20
ØA

Unit: mm

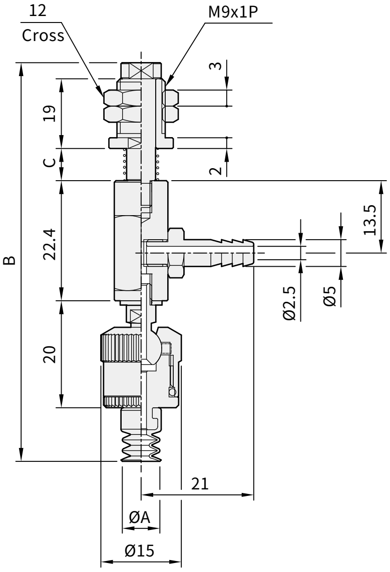
| Pad type | Model | Pad dia. A | Stroke 6 |  | Stroke 15 |  | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
|  |  |  | B | C | B | C |  |  |
| Circle pad | PCFS-20-R | Ø20 | 104.2 | 13 | 121.2 | 30 | PU tube 6 x 4 | 6, 15 |
|  | PCFS-30-R | Ø30 | 113.2 | 13 | 130.2 | 30 |  |  |
|  | PCFS-40-R | Ø40 | 123.7 | 13 | 140.7 | 30 |  |  |

# PC□ series 3-Stage Vacuum Pad

## Dimensions-PCTS-R series/ Side entry with spring-Ball joint type

CHELIC

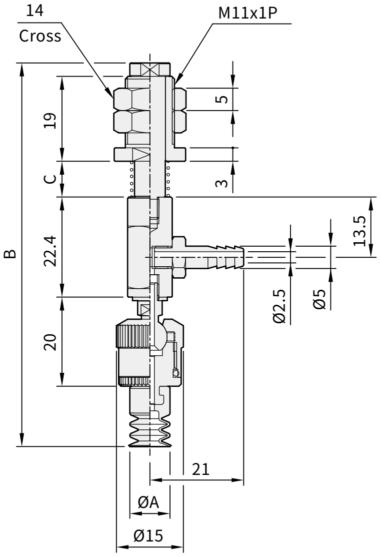
### Ø5, Ø7


12
Cross
M9x1P
3
19
C
2
13.5
B
22.4
Ø2.5
Ø5
20
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. | Stroke 3 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-05-R | Ø5 | 73.9 | 6 | 87.9 | 20 | PU tube 6 x 4 | 3, 10 |
| | PCTS-07-R | Ø7 | 74.4 | 6 | 88.4 | 20 | | |

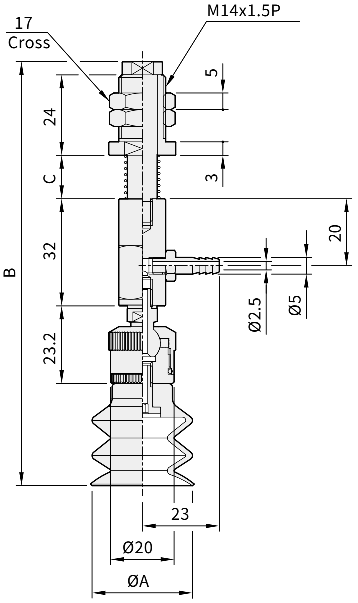
### Ø10, Ø15


14
Cross
M11x1P
5
19
C
3
13.5
B
22.4
Ø2.5
Ø5
20
21
ØA
Ø15

Unit: mm

| Pad type | Model | Pad dia. | Stroke 4 | | Stroke 10 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-10-R | Ø10 | 65.9 | 8 | 77.9 | 20 | PU tube 6 x 4 | 4, 10 |
| | PCTS-15-R | Ø15 | 72.9 | 8 | 84.9 | 20 | | |

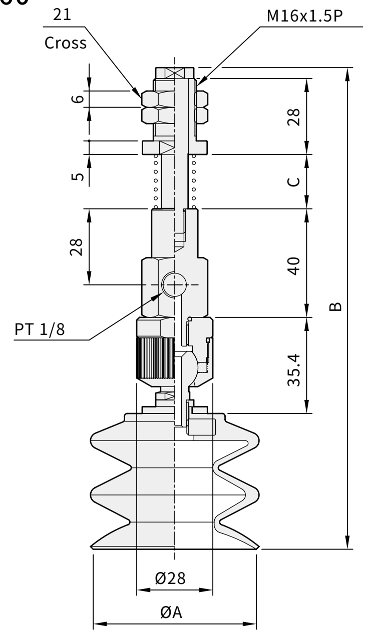
### Ø20, Ø30, Ø40


17
Cross
M14x1.5P
5
24
C
3
20
B
32
Ø2.5
Ø5
23.2
23
Ø20
ØA

Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-20-R | Ø20 | 94.5 | 13 | 111.5 | 30 | PU tube 6 x 4 | 6, 15 |
| | PCTS-30-R | Ø30 | 103.5 | 13 | 120.5 | 30 | | |
| | PCTS-40-R | Ø40 | 114 | 13 | 131.5 | 30 | | |

### Ø60


21
Cross
M16x1.5P
6
28
5
C
28
40
PT 1/8
B
35.4
Ø28
ØA

Unit: mm

| Pad type | Model | Pad dia. | Stroke 10 | | Stroke 30 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | B | C | | |
| Circle pad | PCTS-60-R | Ø60 | 177.5 | 20 | 217.5 | 60 | PT 1/8 | 10, 30 |

# PD series Deep Type Vacuum Pad

## Product features

### Feature

- Multi-material selection, according to different object surfaces.
- Multiple bracket options to meet the needs of different workplaces.
- Corresponding object height difference, multi-fault design buffer.

### Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120℃ | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180℃ | White | - |
| SE | Anti-static rubber | A60/S | -20~180℃ | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180℃ | Black | 200 Ω • cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.
Before comfirm the Qty and location of suction pad, please reserve enough margin.

#### Suction type

Horizontal

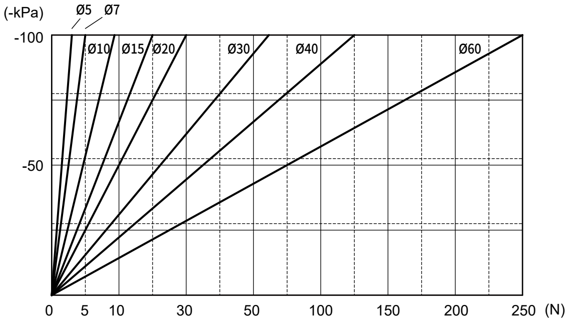
#### Calculation formula

$$W = \frac{P \times A}{-10}$$

W: Force N
P : Vacuum pressure kPa
A : Pad area dimensions $cm^2$

### Theoratical suction

#### Pad diameter: Ø5~Ø60



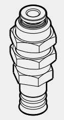
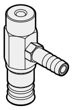
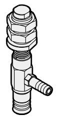
# PD series Deep Type Vacuum Pad

## Code of order, Dimensions

## Code of order **PDF – 10 – S**

① ② ③

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image | |  |  | |  |

②

| Mark | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|
| Pad dia. (mm) | 10 | 20 | 30 | 40 | 50 |

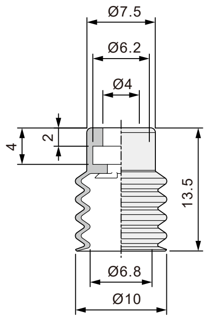
③

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

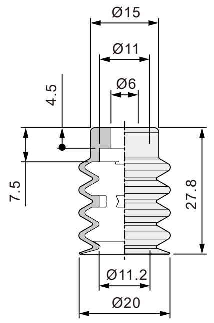
## Pad dimensions

### PD-Ø10



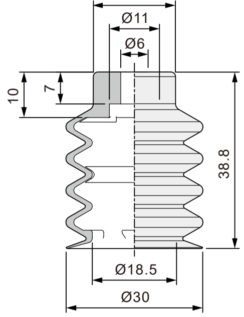
Ø7.5
Ø6.2
Ø4
4
2
13.5
Ø6.8
Ø10

### PD-Ø20



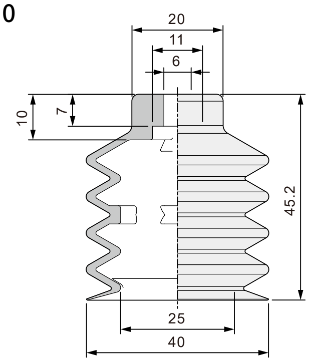
Ø15
Ø11
Ø6
4.5
7.5
27.8
Ø11.2
Ø20

### PD-Ø30



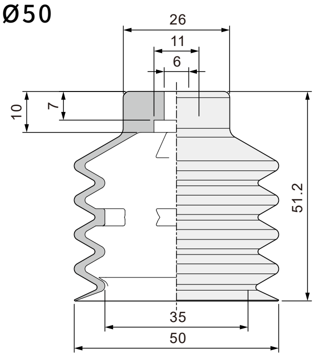
Ø18
Ø11
Ø6
10
7
38.8
Ø18.5
Ø30

### PD-Ø40



20
11
6
10
7
45.2
25
40

### PD-Ø50



26
11
6
10
7
51.2
35
50

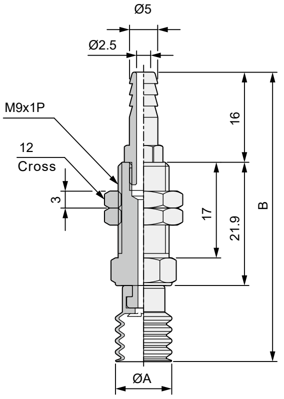
# PD series Deep Type Vacuum Pad

## Dimensions

CHELIC

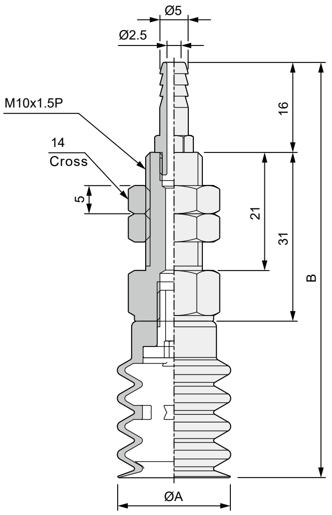
### PDF series/ Vertical entry

#### Ø10



Ø5
Ø2.5
M9x1P
12
Cross
3
16
17
21.9
B
ØA

#### Ø20, Ø30, Ø40, Ø50



Ø5
Ø2.5
M10x1.5P
14
Cross
5
16
21
31
B
ØA

Unit: mm

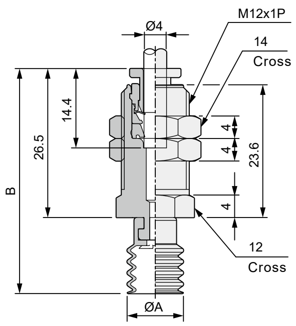
| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PDF-10 | Ø10 | 51.4 | PU tube 6x4 |

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PDF-20 | Ø20 | 74.8 | PU tube 6x4 |
| | PDF-30 | Ø30 | 85.8 | |
| | PDF-40 | Ø40 | 92.2 | |
| | PDF-50 | Ø50 | 92.2 | |

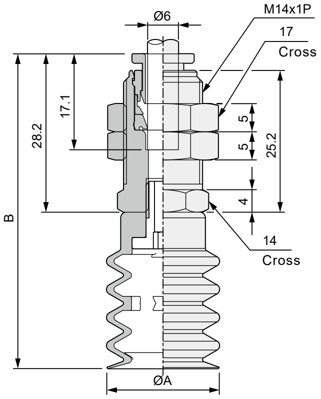
### PDK series/ Vertical entry with fitting

#### Ø10



Ø4
M12x1P
14
Cross
14.4
26.5
B
4
4
23.6
4
12
Cross
ØA

#### Ø20, Ø30, Ø40, Ø50



Ø6
M14x1P
17
Cross
17.1
28.2
B
5
5
25.2
4
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PDK-10 | Ø10 | 40 | PU tube 6x4 |

Unit: mm

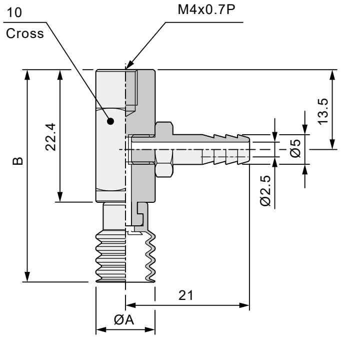
| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PDK-20 | Ø20 | 56 | PU tube 6x4 |
| | PDK-30 | Ø30 | 67 | |
| | PDK-40 | Ø40 | 73.4 | |
| | PDK-50 | Ø50 | 79.4 | |

# PD series Deep Type Vacuum Pad

## Dimensions

## PDT series/ Side entry

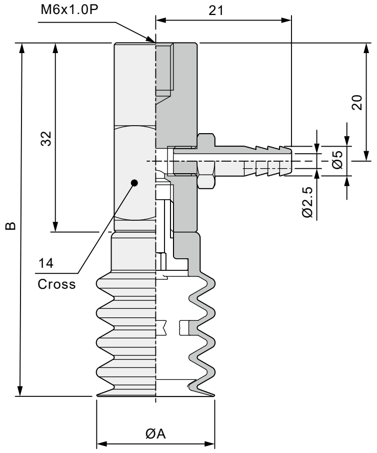
### Ø10


10
Cross
M4x0.7P
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PDT-10 | Ø10 | 35.9 | PU tube 6x4 |

### Ø20, Ø30, Ø40, Ø50

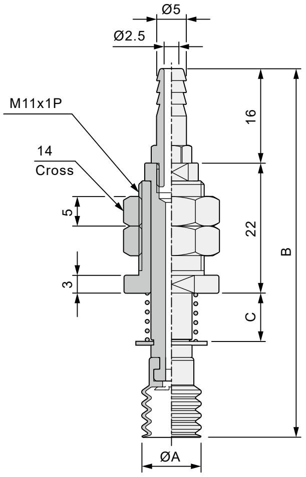

M6x1.0P
21
20
32
Ø5
Ø2.5
B
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PDT-20 | Ø20 | 59.8 | PU tube 6x4 |
| | PDT-30 | Ø30 | 70.8 | |
| | PDT-40 | Ø40 | 77.2 | |
| | PDT-50 | Ø50 | 83.2 | |

## PDFS series/ Vertical entry with spring

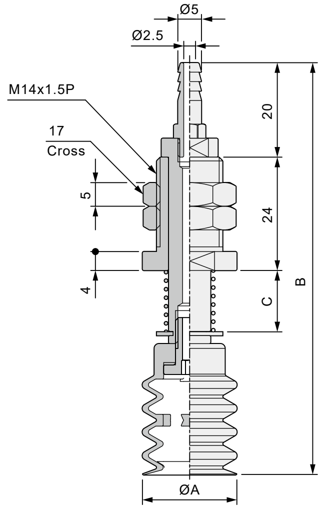
### Ø10


Ø5
Ø2.5
M11x1P
14
Cross
5
3
16
22
B
C
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PDFS-10 | Ø10 | 62.4 | 8 | 74.4 | 20 | PU tube 6x4 | 4, 10 |

### Ø20, Ø30, Ø40, Ø50

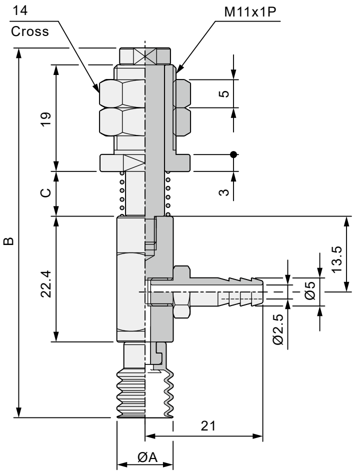

Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
20
24
C
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PDFS-20 | Ø20 | 87.3 | 13 | 104.3 | 30 | PU tube 6x4 | 6, 15 |
| | PDFS-30 | Ø30 | 98.3 | 13 | 115.3 | 30 | | |
| | PDFS-40 | Ø40 | 104.7 | 13 | 121.7 | 30 | | |
| | PDFS-50 | Ø50 | 110.7 | 13 | 127.7 | 30 | | |

## PDTS series/ Side entry with spring

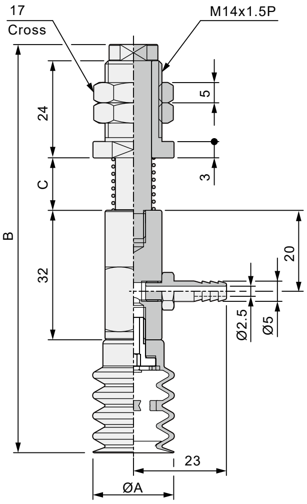
### Ø10


14
Cross
M11x1P
19
5
C
3
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PDTS-10 | Ø10 | 60.9 | 8 | 77.9 | 20 | PU tube 6x4 | 4, 10 |

### Ø20, Ø30, Ø40


17
Cross
M14x1.5P
24
5
3
C
B
32
20
Ø2.5
Ø5
23
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PDTS-20 | Ø20 | 100.8 | 13 | 117.8 | 30 | PU tube 6x4 | 6, 15 |
| | PDTS-30 | Ø30 | 111.8 | 13 | 128.8 | 30 | | |
| | PDTS-40 | Ø40 | 118.2 | 13 | 135.2 | 30 | | |
| | PDTS-50 | Ø50 | 124.2 | 13 | 141.2 | 30 | | |

# PAD series Bellow Type Vacuum Pad

## Product features

### Feature

- Multi-material selection, according to different object surfaces.
- Multiple bracket options to meet the needs of different workplaces.
- Applicable to the adsorption of arc objects.

### Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.

Before comfirm the Qty and location of suction pad, please reserve enough margin.

**Suction type**

Horizontal suction

**Calculation formula**

$$W = \frac{P \times A}{-10}$$

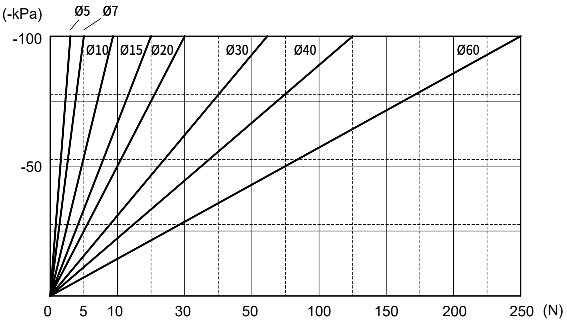
W: Force N

P : Vacuum pressure kPa

A : Pad area dimensions $cm^2$

### Theoratical suction

**Pad diameter: Ø5~Ø60**



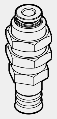
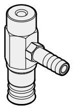
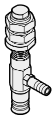
# PAD series Bellow Type Vacuum Pad

## Code of order, Dimensions

## Code of order **PADF – 10 – S**

① ② ③

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image | |  |  | |  |

②

| Mark | 10 | 20 | 30 | 40 |
|---|---|---|---|---|
| Pad dia. (mm) | Ø10 | Ø20 | Ø30 | Ø40 |

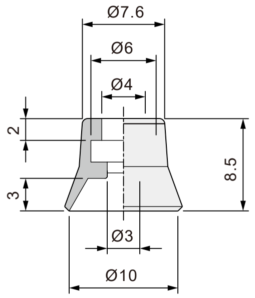
③

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

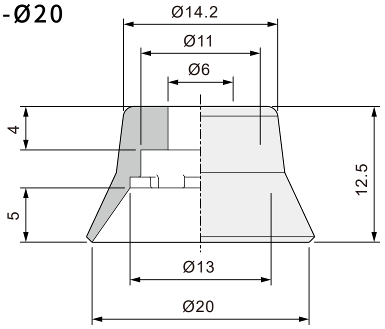
Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

## Pad dimensions

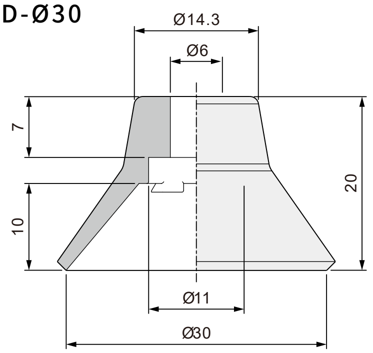
### PAD-Ø10


Ø7.6
Ø6
Ø4
2
3
8.5
Ø3
Ø10

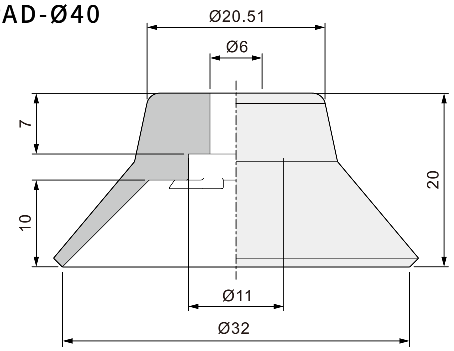
### PAD-Ø20


Ø14.2
Ø11
Ø6
4
5
12.5
Ø13
Ø20

### PAD-Ø30


Ø14.3
Ø6
7
10
20
Ø11
Ø30

### PAD-Ø40

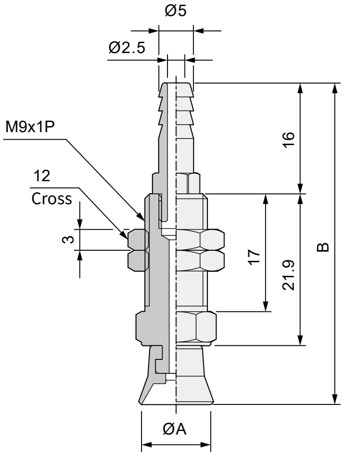

Ø20.51
Ø6
7
10
20
Ø11
Ø32

# PAD series Bellow Type Vacuum Pad

Dimensions

## PADF series/ Vertical entry

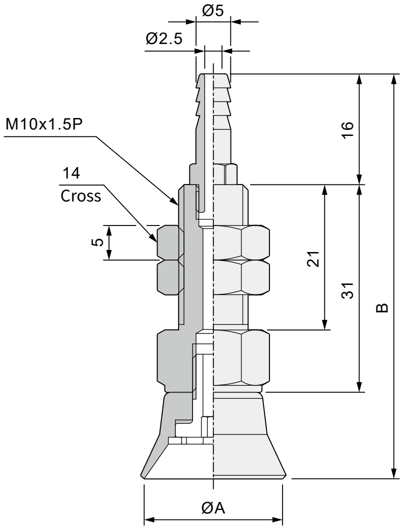
### Ø10


Ø5
Ø2.5
M9x1P
12
Cross
3
16
17
21.9
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PADF-10 | Ø10 | 46.4 | PU tube 6x4 |

### Ø20, Ø30, Ø40

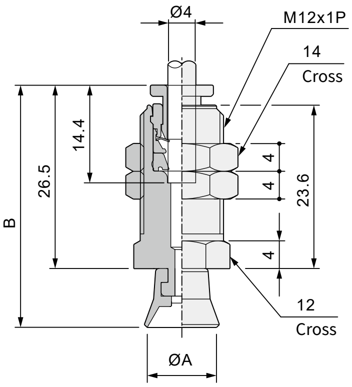

Ø5
Ø2.5
M10x1.5P
14
Cross
5
16
21
31
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PADF-20 | Ø20 | 59.5 | PU tube 6x4 |
|  | PADF-30 | Ø30 | 67 |  |
|  | PADF-40 | Ø40 | 67 |  |

## PADK series/ Vertical entry with fitting

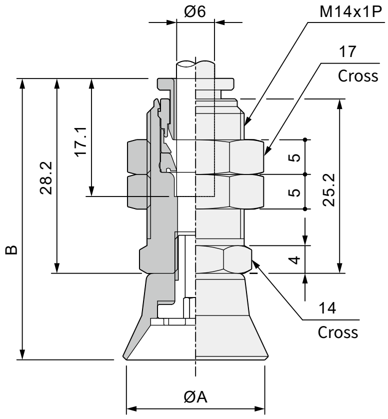
### Ø10


Ø4
M12x1P
14
Cross
14.4
26.5
B
4
4
23.6
4
12
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PADK-10 | Ø10 | 35 | PU tube 6x4 |

### Ø20, Ø30, Ø40


Ø6
M14x1P
17
Cross
17.1
28.2
B
5
5
25.2
4
14
Cross
ØA

Unit: mm

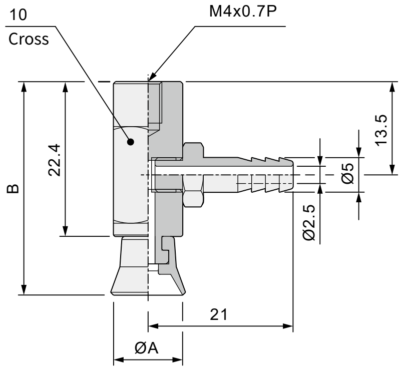
| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PADK-20 | Ø20 | 40.7 | PU tube 6x4 |
|  | PADK-30 | Ø30 | 48.2 |  |
|  | PADK-40 | Ø40 | 48.2 |  |

# PAD series Bellow Type Vacuum Pad

## Dimensions

## PADT series/ Side entry

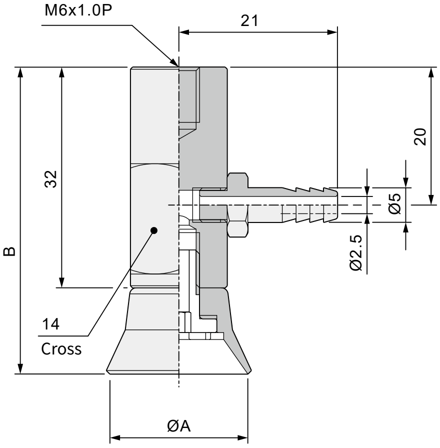
### Ø5~Ø15


10
Cross
M4x0.7P
B
22.4
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PADT-10 | Ø10 | 30.9 | PU tube 6x4 |

### Ø20, Ø30, Ø40

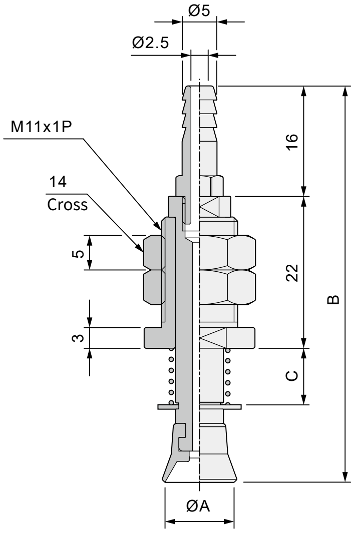

M6x1.0P
21
20
32
B
Ø5
Ø2.5
14
Cross
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PADT-20 | Ø20 | 44.5 | PU tube 6x4 |
| | PADT-30 | Ø30 | 52 | |
| | PADT-40 | Ø40 | 52 | |

## PADFS series/ Vertical entry with spring

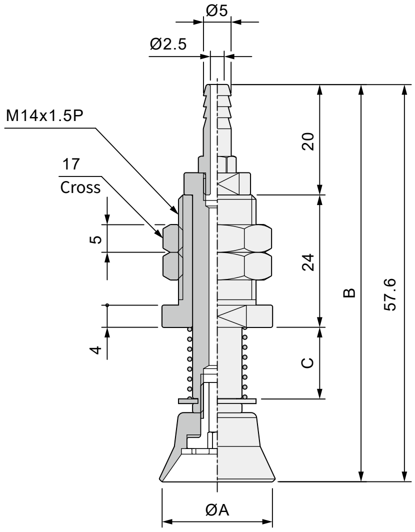
### Ø10, Ø15


Ø5
Ø2.5
M11x1P
14
Cross
5
3
16
22
C
B
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PADFS-10 | Ø10 | 57.4 | 8 | 69.4 | 20 | PU tube 6x4 | 4, 10 |

### Ø20, Ø30, Ø40


Ø5
Ø2.5
M14x1.5P
17
Cross
5
4
20
24
C
B
57.6
ØA

Unit: mm

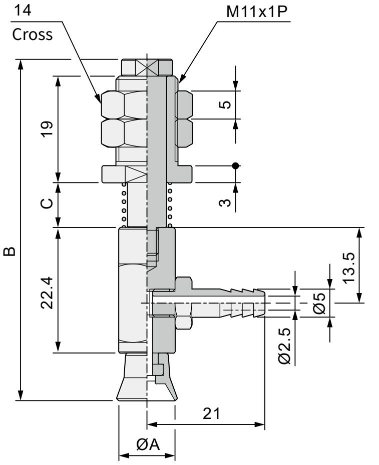
| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PADFS-20 | Ø20 | 72 | 13 | 89 | 30 | PU tube 6x4 | 6, 15 |
| | PADFS-30 | Ø30 | 79.5 | 13 | 96.5 | 30 | | |
| | PADFS-40 | Ø40 | 79.5 | 13 | 96.5 | 30 | | |

# PAD series Bellow Type Vacuum Pad

## Dimensions

### PADTS series/ Side entry with spring

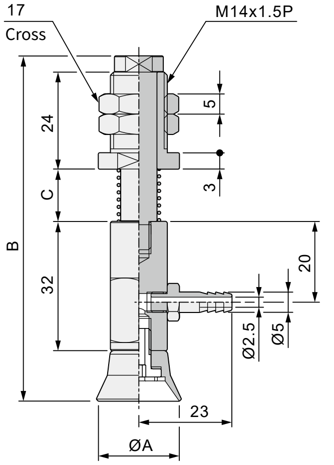
#### Ø10


14
Cross
M11x1P
19
C
B
22.4
5
3
13.5
Ø5
Ø2.5
21
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PADTS-10 | Ø10 | 60.9 | 8 | 72.9 | 20 | PU tube 6x4 | 4, 10 |

#### Ø20, Ø30, Ø40


17
Cross
M14x1.5P
24
C
B
32
5
3
20
Ø2.5
Ø5
23
ØA

Unit: mm

| Pad type | Model | Pad dia. A | Stroke 6 | | Stroke 15 | | Size of PU tube | Spring compression length |
|---|---|---|---|---|---|---|---|---|
| | | | B | C | B | C | | |
| Circle pad | PADTS-20 | Ø20 | 85.5 | 13 | 102.5 | 30 | PU tube 6x4 | 6, 15 |
| | PADTS-30 | Ø30 | 93 | 13 | 110 | 30 | | |
| | PADTS-40 | Ø40 | 93 | 13 | 110 | 30 | | |

# PAM series Micro Vacuum Pad

## Product features

## Feature

- Multi-material selection, according to different object surfaces
- Suitable for adsorption of small parts (electronic parts) etc.
- Multiple caliber options to meet the needs of different object sizes

## Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120℃ | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180℃ | White | - |
| SE | Anti-static rubber | A60/S | -20~180℃ | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180℃ | Black | 200 Ω • cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

## Vacuum control system

Theoretical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoretical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.
Before comfirm the Qty and location of suction pad, please reserve enough margin.

### Suction type

Horizontal

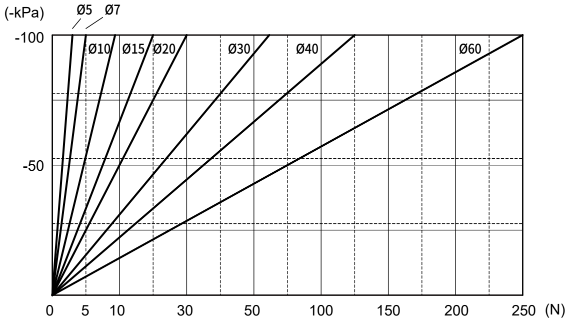
### Calculation formula

$$W = \frac{P \times A}{-10}$$

W: Force N
P : Vacuum pressure kPa
A : Pad area dimensions cm$^2$

## Theoretical suction

### Pad diameter: Ø5~Ø60



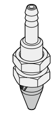
# PAM series Micro Vacuum Pad

## Code of order, Dimensions

### Code of order **PAMF – 10 – S**

① ② ③

①

| Bracket | Vertical entry |
|---|---|
| Mark | F |
| Image |  |

②

| Mark | 7 | 10 | 12 | 15 |
|---|---|---|---|---|
| Pad dia. (mm) | 0.7 | 1.0 | 1.2 | 1.5 |

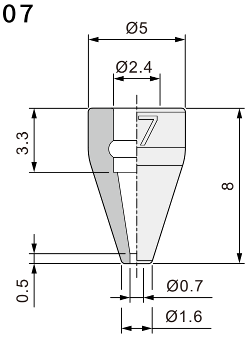
③

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

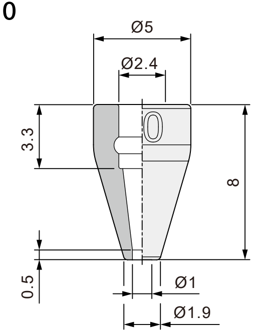
Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Pad dimensions

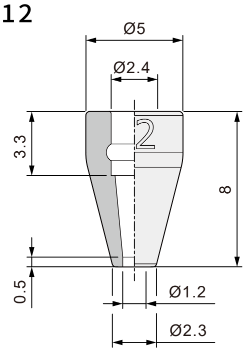
● PAM-Ø07


Ø5
Ø2.4
7
3.3
8
0.5
Ø0.7
Ø1.6

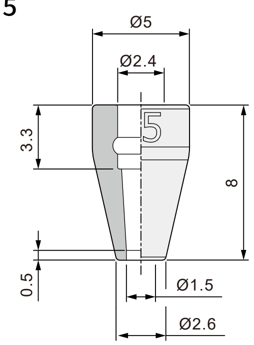
● PAM-Ø10


Ø5
Ø2.4
0
3.3
8
0.5
Ø1
Ø1.9

● PAM-Ø12


Ø5
Ø2.4
2
3.3
8
0.5
Ø1.2
Ø2.3

● PAM-Ø15

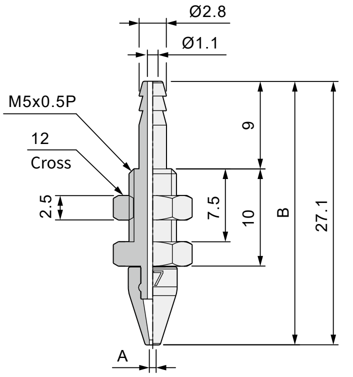

Ø5
Ø2.4
5
3.3
8
0.5
Ø1.5
Ø2.6

# PAM series Micro Vacuum Pad

## Dimensions

### PAM series

#### Ø7~Ø15


Ø2.8
Ø1.1
M5x0.5P
12
Cross
2.5
9
7.5
10
B
27.1
A

Unit: mm

| Pad type | Model | Pad dia. A | Whole length B | Size of PU tube |
|---|---|---|---|---|
| Circle pad | PAM-7 | Ø 0.7 | 27.1 | PU tube 6x4 |
| | PAM-10 | Ø 1.0 | 27.1 | |
| | PAM-12 | Ø 1.2 | 27.1 | |
| | PAM-15 | Ø 1.5 | 27.1 | |

# PAG series Film Type Vacuum Pad

## Product features

## Feature

- Uniqueness: The lip material is thin and soft, and the sealing property of the easily deformable workpiece is improved.
- Diversification: Various sizes, materials and brackets can be selected.
- Convenience: The structure is simple and compact, easily to replaced.

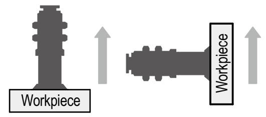
## Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color |
|---|---|---|---|---|
| S | Silicon, Silicone rubber | A55/S | -20~180°C | Blue |

## Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.
Before comfirm the Qty and location of suction pad, please reserve enough margin.

### Suction type



Horizontal suction

Vertical suction

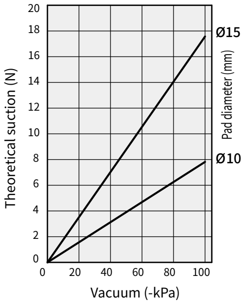
### Calculation formula

$$W = \frac{P \times A}{-10}$$

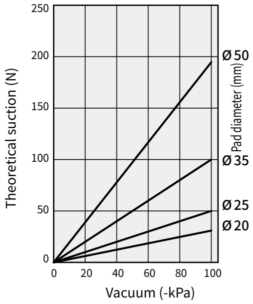
W: Force N
P : Vacuum pressure kPa
A : Pad area dimensions cm$^2$

## Theoratical suction

Pad diameter: Ø10~Ø15mm



Pad diameter: Ø20~Ø50mm



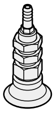
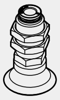
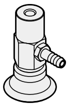
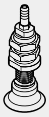
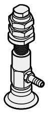
# PAG series Film Type Vacuum Pad

## Code of order

## Code of order **PAG FS 10 x 4 S – R**

① ② ③ ④ ⑤

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 10 | 15 | 20 | 25 | 35 | 50 |
|---|---|---|---|---|---|---|
| Pad dia. (mm) | Ø10 | Ø15 | Ø20 | Ø25 | Ø35 | Ø50 |

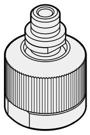
③ ● Only available to FS, TS series

| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 4 | 4 | Ø10, Ø15 | 6 | 6 | Ø20, Ø25<br>Ø35, Ø50 |
| 10 | 10 | | 15 | 15 | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color |
|---|---|---|---|---|
| S | Silicon, Silicone rubber | A60/S | -20~180°C | Blue |

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø10, Ø15 | |
| 20 | Ø20, Ø25<br>Ø35, Ø50 | |

- Note: According to vacuum pad specification to py proper free holder.
- Note :Please refer to P.3-2.109

## PAG series selection table:

| Pad type | ① Bracket | ② Pad dia. | ③ Stroke | ④ Vacuum pad material | ⑤ Ball joint type |
|---|---|---|---|---|---|
| PAG | F<br>•<br>K<br>•<br>T<br>•<br>FS<br>•<br>TS | 10 | 4<br>•<br>10 | S | 05 |
| | | 15 | | | |
| | | 20 | 6<br>•<br>15 | | 20 |
| | | 25 | | | |
| | | 35 | | | |
| | | 50 | | | |

## Product weight

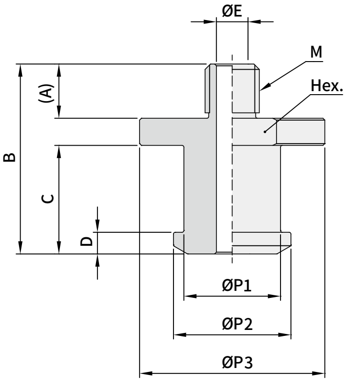
| Item | PAG | | | | | |
|---|---|---|---|---|---|---|
| Model | 10 | 15 | 20 | 25 | 35 | 50 |
| Weight(g) | 0.28 | 0.33 | 1.69 | 2.33 | 6.01 | 11.43 |

PA
PB
PC
PAG
PAO
PAP
PAQ
PAW
PAL
PBL
PCL
PAR
PS
VP

# PAG series Film Type Vacuum Pad

## Dimensions-Thin type PAG series

### The joint size

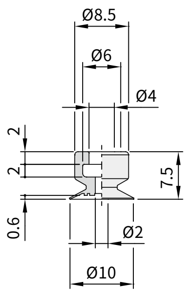

ØE
M
Hex.
(A)
B
C
D
ØP1
ØP2
ØP3

Unit: mm

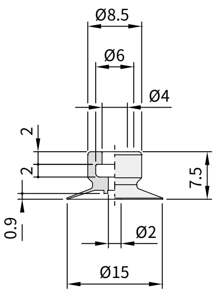
| Model | M | A | B | C | D | ØE | ØP1 | ØP2 | ØP3 | Cross Hex. | Applicable pad size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PAG 20-M6 | M6x1 | 6 | 21.3 | 12.5 | 2 | 3 | 7.5 | 10.3 | 13 | 12 | Ø20, Ø25 |
| PAG 35-M6 | M6x1 | 6 | 21.8 | 12 | 2.5 | 3 | 10.5 | 13.3 | 20.5 | 18 | Ø35, Ø50 |

### Vacuum pad size

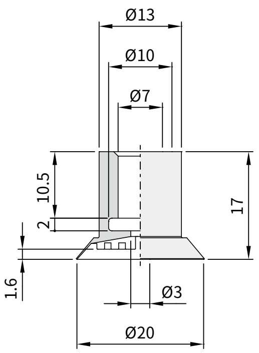
- PAG 10


Ø8.5
Ø6
Ø4
2
2
7.5
0.6
Ø2
Ø10

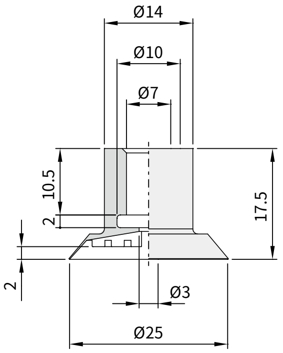
- PAG 15


Ø8.5
Ø6
Ø4
2
2
7.5
0.9
Ø2
Ø15

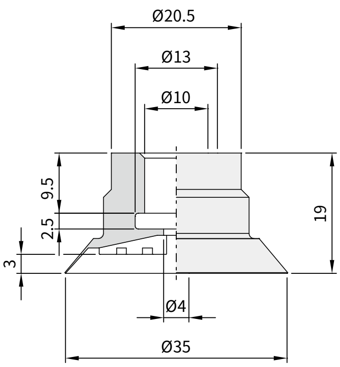
- PAG 20


Ø13
Ø10
Ø7
10.5
2
17
1.6
Ø3
Ø20

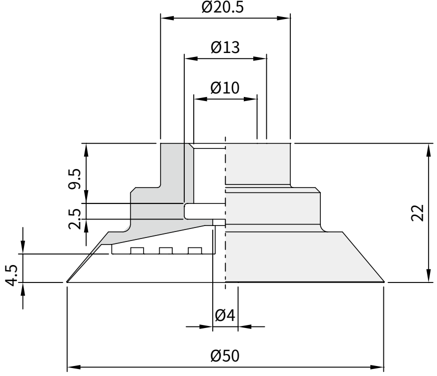
- PAG 25


Ø14
Ø10
Ø7
10.5
2
17.5
2
Ø3
Ø25

- PAG 35


Ø20.5
Ø13
Ø10
9.5
2.5
19
3
Ø4
Ø35

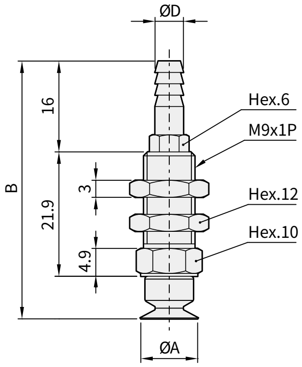
- PAG 50


Ø20.5
Ø13
Ø10
9.5
2.5
22
4.5
Ø4
Ø50

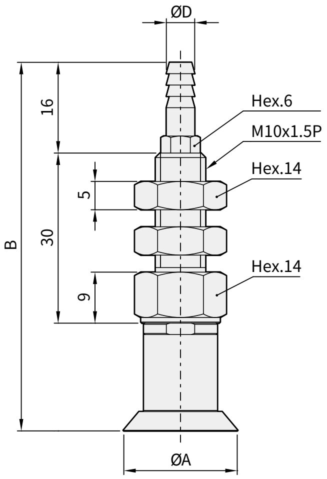
# PAG series Film Type Vacuum Pad

## Dimensions-Thin type PAGF series Vertical entry/ PAGK series Vertical entry with fitting

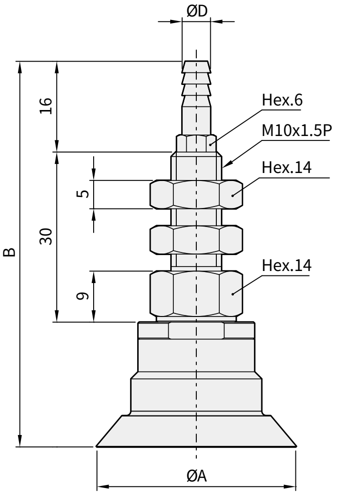
### PAG F - 10, 15


ØD
16
Hex.6
M9x1P
B
21.9
3
Hex.12
Hex.10
4.9
ØA

### PAG F - 20, 25


ØD
16
Hex.6
M10x1.5P
Hex.14
5
B
30
Hex.14
9
ØA

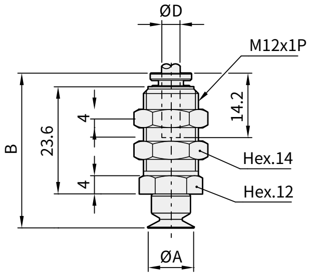
### PAG F - 35, 50


ØD
16
Hex.6
M10x1.5P
Hex.14
5
B
30
Hex.14
9
ØA

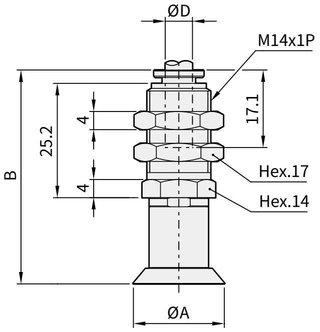
Unit: mm

| Model | Size of PU tube<br>Ø D | Pad dia.<br>Ø A | Whole length<br>B |
|---|---|---|---|
| PAG F - 10 | 6x4 | 10 | 45.4 |
| PAG F - 15 | 6x4 | 15 | 45.4 |
| PAG F - 20 | 6x4 | 20 | 66 |
| PAG F - 25 | 6x4 | 25 | 66.5 |
| PAG F - 35 | 6x4 | 35 | 67 |
| PAG F - 50 | 6x4 | 50 | 72 |

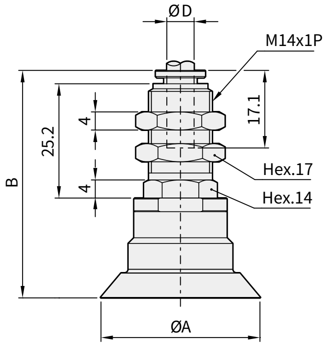
### PAG K - 10, 15


ØD
M12x1P
B
23.6
4
14.2
Hex.14
4
Hex.12
ØA

### PAG K - 20, 25


ØD
M14x1P
17.1
B
25.2
4
Hex.17
4
Hex.14
ØA

### PAG K - 35, 50


ØD
M14x1P
17.1
B
25.2
4
Hex.17
4
Hex.14
ØA

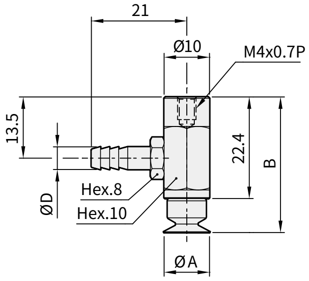
Unit: mm

| Model | Size of PU tube<br>ØD | Pad dia.<br>Ø A | Whole length<br>B |
|---|---|---|---|
| PAG K - 10 | 4 | 10 | 34.1 |
| PAG K - 15 | 4 | 15 | 34.1 |
| PAG K - 20 | 6 | 20 | 48.2 |
| PAG K - 25 | 6 | 25 | 48.7 |
| PAG K - 35 | 6 | 35 | 51.2 |
| PAG K - 50 | 6 | 50 | 54.2 |

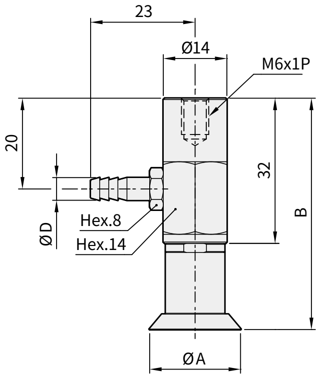
# PAG series Film Type Vacuum Pad

## Dimensions-Thin type PAGT series/ Side entry

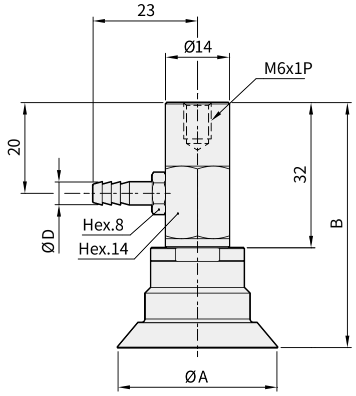
### PAG T - 05


21
Ø10
M4x0.7P
13.5
ØD
Hex.8
Hex.10
22.4
B
ØA

### PAG T - 20, 25


23
Ø14
M6x1P
20
ØD
Hex.8
Hex.14
32
B
ØA

### PAG T - 35, 50


23
Ø14
M6x1P
20
ØD
Hex.8
Hex.14
32
B
ØA

Unit: mm

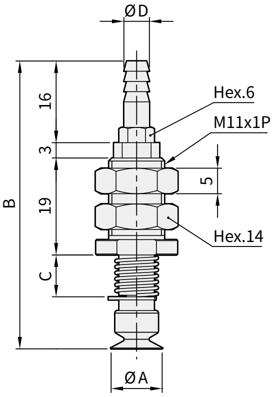
| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B |
|---|---|---|---|
| PAG T - 10 | 6x4 | 10 | 29.9 |
| PAG T - 15 | 6x4 | 15 | 29.9 |
| PAG T - 20 | 6x4 | 20 | 52 |
| PAG T - 25 | 6x4 | 25 | 52.5 |
| PAG T - 35 | 6x4 | 35 | 55 |
| PAG T - 50 | 6x4 | 50 | 68 |

# PAG series Film Type Vacuum Pad

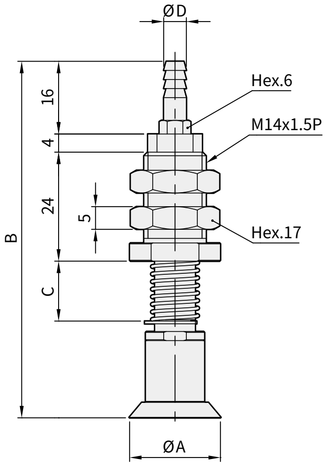
## Dimensions-Thin type PAGFS series/ Vertical entry with spring

CHELIC

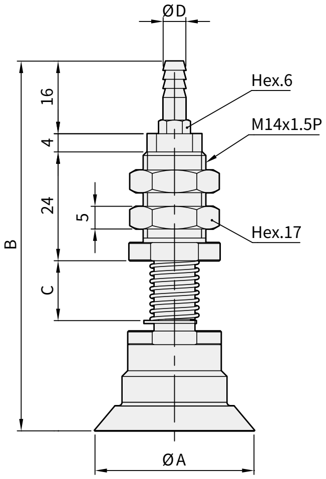
### PAG FS - 10, 15 x 04
### PAG FS - 10, 15 x 10


ØD
Hex.6
M11x1P
16
3
5
B
19
C
Hex.14
ØA

### PAG FS - 20, 25 x 06
### PAG FS - 20, 25 x 15


ØD
Hex.6
M14x1.5P
16
4
24
5
B
C
Hex.17
ØA

### PAG FS - 35, 50 x 06
### PAG FS - 35, 50 x 15


ØD
Hex.6
M14x1.5P
16
4
24
5
B
C
Hex.17
ØA

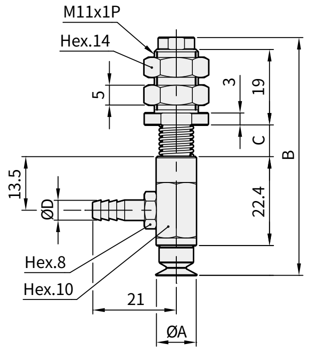
Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B | C |
|---|---|---|---|---|
| PAG FS - 10 x 04 | 6x4 | 10 | 56.4 | 8 |
| PAG FS - 10 x 10 | | | 68.4 | 20 |
| PAG FS - 15 x 04 | 6x4 | 15 | 56.4 | 8 |
| PAG FS - 15 x 10 | | | 68.4 | 20 |
| PAG FS - 20 x 06 | 6x4 | 20 | 79.5 | 12 |
| PAG FS - 20 x 15 | | | 96.5 | 30 |
| PAG FS - 25 x 06 | 6x4 | 25 | 80 | 12 |
| PAG FS - 25 x 15 | | | 97 | 30 |
| PAG FS - 35 x 06 | 6x4 | 35 | 82.5 | 12 |
| PAG FS - 35 x 15 | | | 99.5 | 30 |
| PAG FS - 50 x 06 | 6x4 | 50 | 85.5 | 12 |
| PAG FS - 50 x 15 | | | 102.5 | 30 |

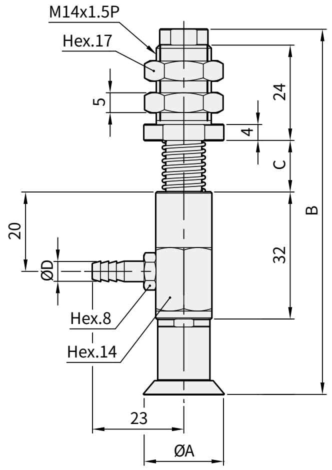
# PAG series Film Type Vacuum Pad

## Dimensions-Thin type PAGTS series/ Side entry with spring

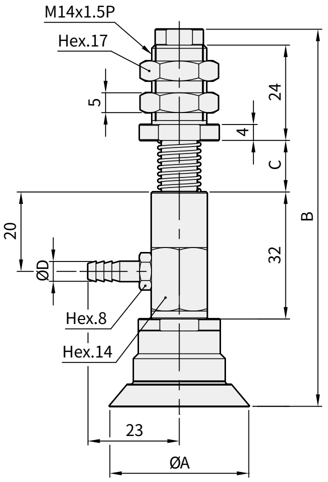
### PAG TS - 10, 15 x 04
### PAG TS - 10, 15 x 10


M11x1P
Hex.14
5
3
19
C
B
13.5
ØD
22.4
Hex.8
Hex.10
21
ØA

### PAG TS - 20, 25 x 06
### PAG TS - 20, 25 x 15


M14x1.5P
Hex.17
5
24
4
C
B
20
ØD
32
Hex.8
Hex.14
23
ØA

### PAG TS - 35, 50 x 06
### PAG TS - 35, 50 x 15


M14x1.5P
Hex.17
5
24
4
C
B
20
ØD
32
Hex.8
Hex.14
23
ØA

Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B | C |
|---|---|---|---|---|
| PAG TS - 10 x 04 | 6x4 | 10 | 59.9 | 8 |
| PAG TS - 10 x 10 | | | 71.9 | 20 |
| PAG TS - 15 x 04 | 6x4 | 15 | 59.9 | 8 |
| PAG TS - 15 x 10 | | | 71.9 | 20 |
| PAG TS - 20 x 06 | 6x4 | 20 | 93 | 12 |
| PAG TS - 20 x 15 | | | 110 | 30 |
| PAG TS - 25 x 06 | 6x4 | 25 | 93.5 | 12 |
| PAG TS - 25 x 15 | | | 110.5 | 30 |
| PAG TS - 35 x 06 | 6x4 | 35 | 96 | 12 |
| PAG TS - 35 x 15 | | | 113 | 30 |
| PAG TS - 50 x 06 | 6x4 | 50 | 96 | 12 |
| PAG TS - 50 x 15 | | | 116 | 30 |

# PAO series Anti-slip Flat Type Vacuum Pad

## Product features

## Feature

- Uniqueness: Through the special pattern design inside the vacuum pad, a large lateral force can be tolerated during the conveying process.
- Convenience: The suction pad has a simple and small structure and can be easily replaced.
- Diversification: Various sizes, materials and brackets can be selected.

## Vacuum pad material

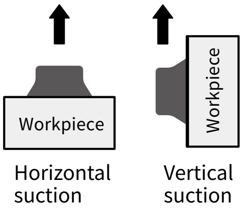
| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color |
|---|---|---|---|---|
| N | NBR(Rubber) | A55/S | -26~120°C | Red |

## Vacuum control system

Theoretical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoretical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.

Before comfirm the Qty and location of suction pad, please reserve enough margin.

### Suction type



### Calculation formula

$$W = \frac{P \times A}{-10}$$

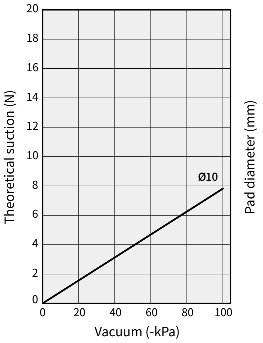
W: Force N

P : Vacuum pressure kPa

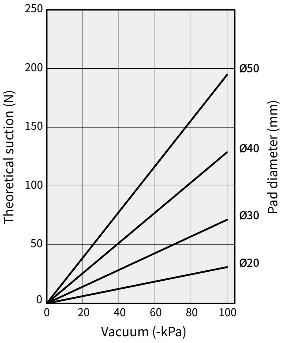
A : Pad area dimensions $cm^2$

## Theoretical suction

Pad diameter: Ø10mm



Pad diameter: Ø20~Ø50mm



PA
PB
PC
PAG
PAO
PAP
PAQ
PAW
PAL
PBL
PCL
PAR
PS
VP

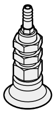
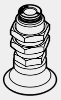
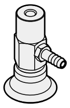
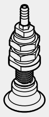
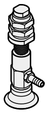
# PAO series Anti-slip Flat Type Vacuum Pad

## Code of order

## Code of order **PAO FS 10 x 4 N – R**

① ② ③ ④ ⑤

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|
| Pad dia. (mm) | Ø10 | Ø20 | Ø30 | Ø40 | Ø50 |

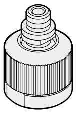
③ ● Only available to FS, TS series

| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 4 | 4 | Ø10 | 6 | 6 | Ø20, Ø30<br>Ø40, Ø50 |
| 10 | 10 | | 15 | 15 | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color |
|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Red |

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø10, Ø15 | |
| 20 | Ø20, Ø30<br>Ø40, Ø50 | |

● Note: According to vacuum pad specification to py proper free holder.

● Note :Please refer to P.3-2.109

## PAO series selection table:

| Pad type | ① Bracket | ② Pad dia. | ③ Stroke | ④ Vacuum pad material | ⑤ Ball joint type |
|---|---|---|---|---|---|
| PAO | F<br>•<br>K<br>•<br>T<br>•<br>FS<br>•<br>TS | 10 | 4<br>•<br>10 | N | 05 |
| | | 20 | 6<br>•<br>15 | | 20 |
| | | 30 | | | |
| | | 40 | | | |
| | | 50 | | | |

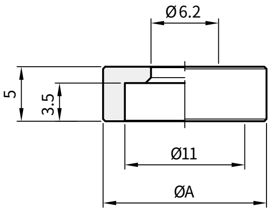
## Product weight

| Item | PAO | | | | |
|---|---|---|---|---|---|
| Model | 10 | 20 | 30 | 40 | 50 |
| Weight(g) | 0.54 | 1.48 | 4.4 | 10.31 | 16.35 |

# PAO series Anti-slip Flat Type Vacuum Pad

## Dimensions-Non-slip vacuum pad PAO series

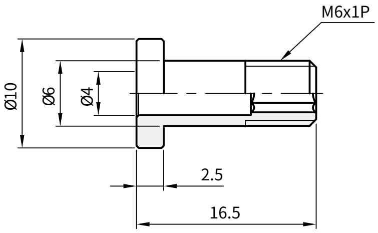
### Adapter mounting dimensions


Ø6.2
5
3.5
Ø11
ØA

Unit: mm

| Model | ØA | Applicable pad size |
|---|---|---|
| PAO 40 | 15 | Ø40 |
| PAO 50 | 20 | Ø50 |

### Adapter screw size

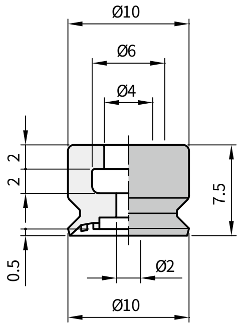

M6x1P
Ø10
Ø6
Ø4
2.5
16.5

Unit: mm

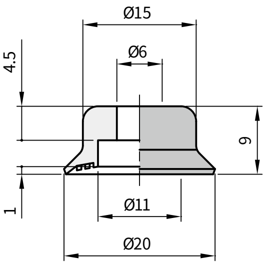
| Model | Applicable pad size |
|---|---|
| PAO 40-M6 | Ø40, Ø50 |

### Vacuum pad size

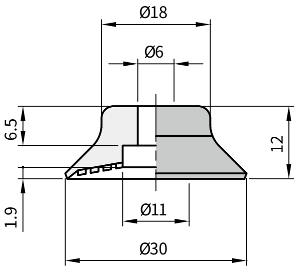
- PAO 10


Ø10
Ø6
Ø4
2
2
7.5
0.5
Ø2
Ø10

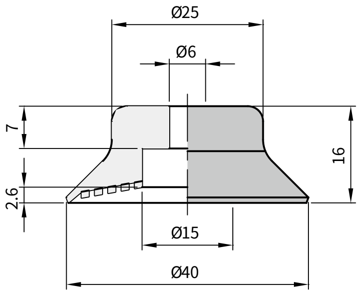
- PAO 20


Ø15
Ø6
4.5
9
1
Ø11
Ø20

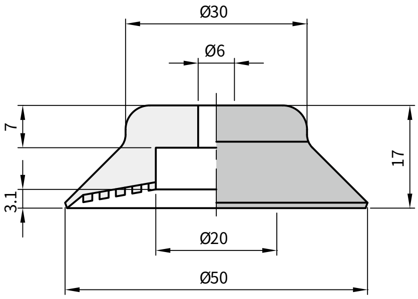
- PAO 30


Ø18
Ø6
6.5
12
1.9
Ø11
Ø30

- PAO 40


Ø25
Ø6
7
16
2.6
Ø15
Ø40

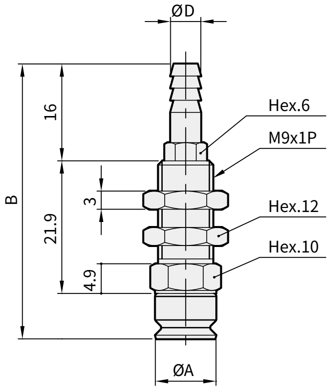
- PAO 50


Ø30
Ø6
7
17
3.1
Ø20
Ø50

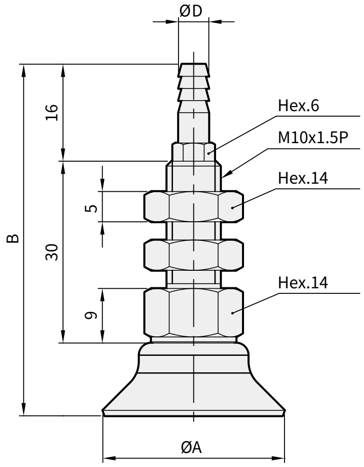
# PAO series Anti-slip Flat Type Vacuum Pad

## Dimensions-Anti-slip type PAOF series/ Vertical entry with fitting PAOK series

### PAO F - 10


ØD
16
B
3
21.9
4.9
Hex.6
M9x1P
Hex.12
Hex.10
ØA

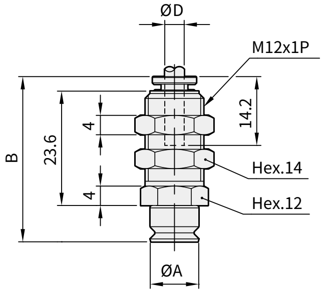
### PAO F - 20, 30, 40, 50


ØD
16
B
30
5
9
Hex.6
M10x1.5P
Hex.14
Hex.14
ØA

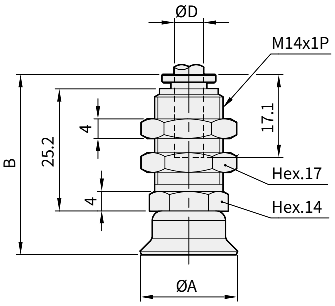
Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B |
|---|---|---|---|
| PAO F - 10 | 6x4 | 10 | 45.4 |
| PAO F - 20 | 6x4 | 20 | 55 |
| PAO F - 30 | 6x4 | 30 | 58 |
| PAO F - 40 | 6x4 | 40 | 62 |
| PAO F - 50 | 6x4 | 50 | 63 |

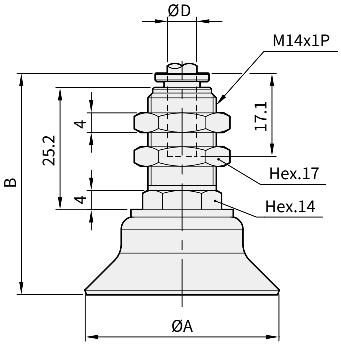
### PAO K - 10


ØD
M12x1P
B
23.6
4
14.2
4
Hex.14
Hex.12
ØA

### PAO K - 20, 30


ØD
M14x1P
B
25.2
4
17.1
4
Hex.17
Hex.14
ØA

### PAO K - 40, 50


ØD
M14x1P
B
25.2
4
17.1
4
Hex.17
Hex.14
ØA

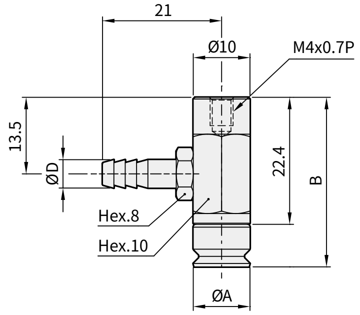
Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B |
|---|---|---|---|
| PAO K - 10 | 4 | 10 | 34.1 |
| PAO K - 20 | 6 | 20 | 37.2 |
| PAO K - 30 | 6 | 30 | 40.2 |
| PAO K - 40 | 6 | 40 | 45.7 |
| PAO K - 50 | 6 | 50 | 46.7 |

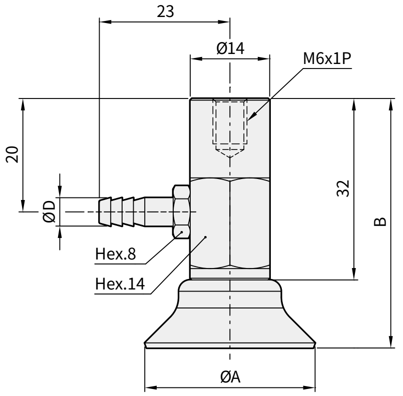
# PAO series Anti-slip Flat Type Vacuum Pad

## Dimensions-Anti-slip type PAOT series/ Vertical entry with spring

### PAO T - 10


21
Ø10
M4x0.7P
13.5
ØD
22.4
B
Hex.8
Hex.10
ØA

### PAO T - 20, 30, 40, 50


23
Ø14
M6x1P
20
ØD
32
B
Hex.8
Hex.14
ØA

Unit: mm

| Model | Size of PU tube<br>ØD | Pad dia.<br>ØA | Whole length<br>B |
|---|---|---|---|
| PAO T - 10 | 2.5 | 10 | 29.9 |
| PAO T - 20 | 4 | 20 | 41 |
| PAO T - 30 | 4 | 30 | 44 |
| PAO T - 40 | 4 | 40 | 48 |
| PAO T - 50 | 4 | 50 | 49 |

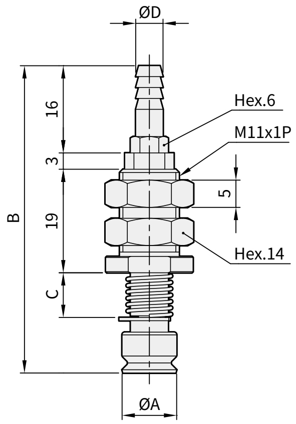
# PAO series Anti-slip Flat Type Vacuum Pad

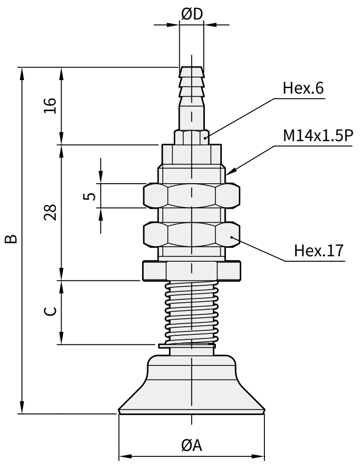
## Dimensions-Anti-slip type PAOFS series/ Vertical entry with spring

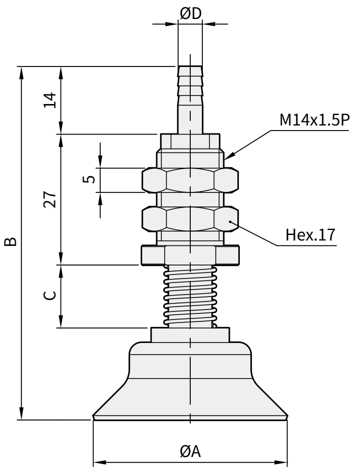
PAO FS - 10 x 04
PAO FS - 10 x 10

PAO FS - 20, 30 x 06
PAO FS - 20, 30 x 15

PAO FS - 40, 50 x 06
PAO FS - 40, 50 x 15


ØD
16
3
19
B
C
Hex.6
M11x1P
5
Hex.14
ØA


ØD
Hex.6
M14x1.5P
16
28
5
B
C
Hex.17
ØA


ØD
14
M14x1.5P
5
27
B
C
Hex.17
ØA

Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B | C |
|---|---|---|---|---|
| PAO FS - 10 x 04 | 4 | 10 | 56.4 | 8 |
| PAO FS - 10 x 10 | | | 68.4 | 20 |
| PAO FS - 20 x 06 | 4 | 20 | 68.5 | 12 |
| PAO FS - 20 x 15 | | | 85.5 | 30 |
| PAO FS - 30 x 06 | 4 | 30 | 71.5 | 12 |
| PAO FS - 30 x 15 | | | 88.5 | 30 |
| PAO FS - 40 x 06 | 4 | 40 | 73 | 12 |
| PAO FS - 40 x 15 | | | 90 | 30 |
| PAO FS - 50 x 06 | 4 | 50 | 74 | 12 |
| PAO FS - 50 x 15 | | | 91 | 30 |

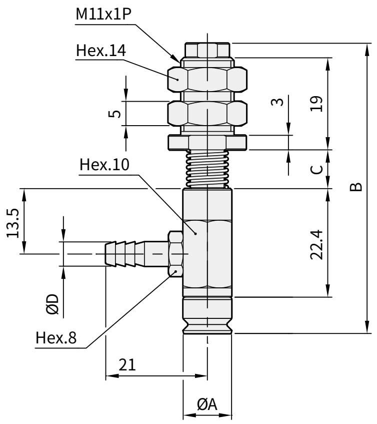
# PAO series Anti-slip Flat Type Vacuum Pad

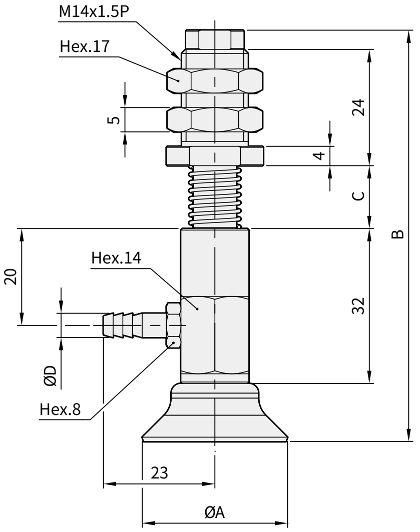
## Dimensions-Anti-slip type PAOTS series/ Side entry with spring

CHELIC

PAO TS - 10 x 04
PAO TS - 10 x 10

PAO TS - 20, 30, 40, 50 x 06
PAO TS - 20, 30, 40, 50 x 15


M11x1P
Hex.14
5
3
19
Hex.10
C
B
13.5
22.4
ØD
Hex.8
21
ØA


M14x1.5P
Hex.17
5
24
4
C
B
20
Hex.14
32
ØD
Hex.8
23
ØA

Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B | C |
|---|---|---|---|---|
| PAO TS - 10 x 04 | 4 | 10 | 59.9 | 8 |
| PAO TS - 10 x 10 | | | 71.9 | 20 |
| PAO TS - 20 x 06 | 4 | 20 | 82 | 12 |
| PAO TS - 20 x 15 | | | 99 | 30 |
| PAO TS - 30 x 06 | 4 | 30 | 85 | 12 |
| PAO TS - 30 x 15 | | | 102 | 30 |
| PAO TS - 40 x 06 | 4 | 40 | 89 | 12 |
| PAO TS - 40 x 15 | | | 106 | 30 |
| PAO TS - 50 x 06 | 4 | 50 | 90 | 12 |
| PAO TS - 50 x 15 | | | 107 | 30 |

# PAP series Flat Type Vacuum Pad

## Product features

### Feature

- Uniqueness: The flat shape design improves the adhesion of the workpieces and reduces the wrinkles caused by overlapping adsorption.
- Diversification: Various sizes, materials and brackets can be selected.
- Convenience: The structure is simple and compact, easily to replaced.

### Vacuum pad material

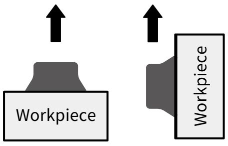
| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A55/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A55/S | -20~180°C | White | - |
| SE | Anti-static rubber | A50/S | -20~180°C | Black | $10^4$~$10^6$Ω·cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200Ω·cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.
Before comfirm the Qty and location of suction pad, please reserve enough margin.

#### Suction type



Horizontal suction

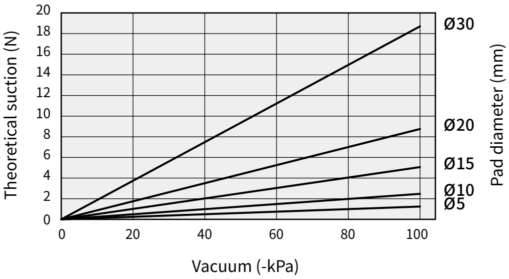
Vertical suction

#### Calculation formula

$$W = \frac{P \times A}{-10}$$

W: Force N
P : Vacuum pressure kPa
A : Pad area dimensions c

### Theoratical suction



# PAP series Flat Type Vacuum Pad

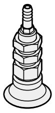
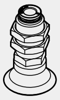
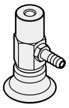
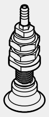
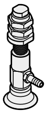
## Code of order

**CHELIC**

## Code of order **PAPFS 10 x 4 N – R**

① ② ③ ④ ⑤

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 05 | 10 | 15 | 20 | 30 |
|---|---|---|---|---|---|
| Pad dia. (mm) | Ø5 | Ø10 | Ø15 | Ø20 | Ø30 |

③ ● Only available to FS, TS series

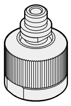
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 2.5 | 2.5 | Ø5 | 6 | 6 | Ø30 |
| 5 | 5 | | | | |
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | |
| 4 | 4 | Ø10, Ø15, Ø20 | 15 | 15 | |
| 10 | 10 | | | | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

● Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø10, Ø15 | |
| 20 | Ø20, Ø30<br>Ø40, Ø50 | |

● Note: According to vacuum pad specification to py proper free holder.

● Note :Please refer to P.3-2.109

## PAP series selection table:

| Pad type | ① Bracket | | | | | ② Pad dia. | ③ Stroke | ④ Vacuum pad material | | | | ⑤ Ball joint type | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | K | T | FS | TS | | | N | S | SE | E | 05 | 20 |
| PAP | ● | | ● | ● | ● | 05 | 2.5<br>•<br>5 | ● | ● | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 10 | 4<br>•<br>10 | ● | ● | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 15 | | ● | ● | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 20 | | ● | ● | ● | ● | | ● |
| | ● | ● | ● | ● | ● | 30 | 6<br>•<br>15 | ● | ● | ● | ● | | ● |

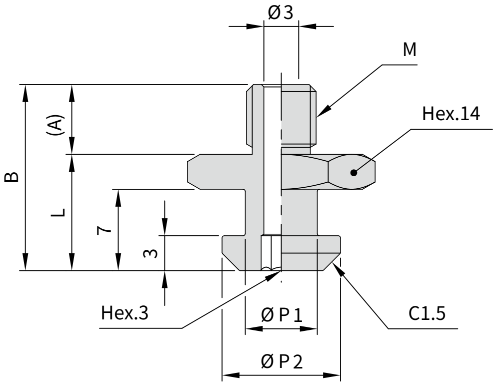
## Product weight

| Item | PAP | | | | |
|---|---|---|---|---|---|
| Model | 5 | 10 | 15 | 20 | 30 |
| Weight(g) | 0.05 | 0.32 | 0.36 | 0.75 | 3.17 |

# PAP series Flat Type Vacuum Pad

## Dimensions

### The joint size

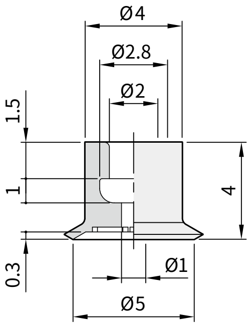

Ø3
M
Hex.14
(A)
B
L
7
3
Hex.3
ØP1
C1.5
ØP2

Unit: mm

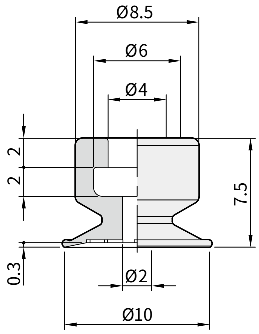
| Model | M | A | B | L | ØP1 | ØP2 | Applicable pad size |
|---|---|---|---|---|---|---|---|
| PAP 30-M6 | M6x1 | 5.8 | 16.8 | 11 | 6.2 | 10.3 | Ø30 |

### Vacuum pad size

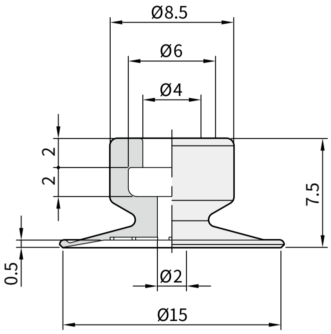
**PAP 05**


Ø4
Ø2.8
Ø2
1.5
1
4
0.3
Ø1
Ø5

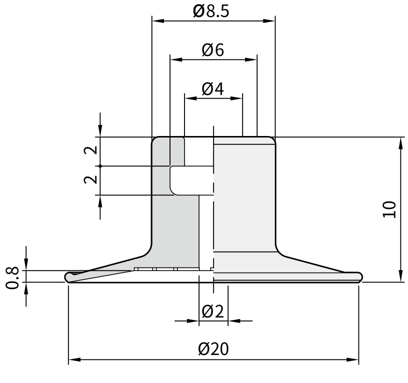
**PAP 10**


Ø8.5
Ø6
Ø4
2
2
7.5
0.3
Ø2
Ø10

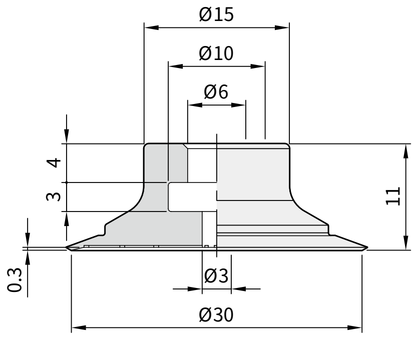
**PAP 15**


Ø8.5
Ø6
Ø4
2
2
7.5
0.5
Ø2
Ø15

**PAP 20**


Ø8.5
Ø6
Ø4
2
2
10
0.8
Ø2
Ø20

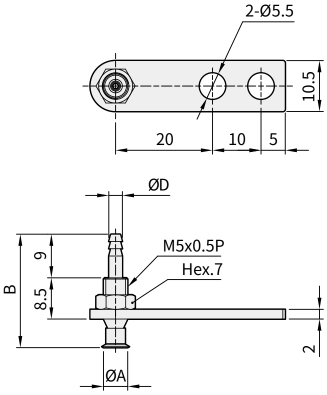
**PAP 30**


Ø15
Ø10
Ø6
4
3
11
0.3
Ø3
Ø30

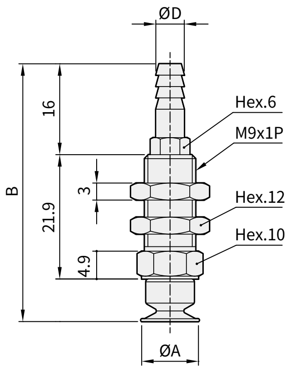
# PAP series Flat Type Vacuum Pad

## Dimensions

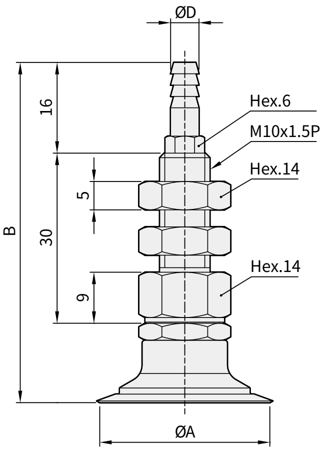
### PAP F - 05


2-Ø5.5
10.5
20
10
5
ØD
M5x0.5P
Hex.7
9
B
8.5
2
ØA

### PAP F - 10, 15, 20


ØD
16
Hex.6
M9x1P
3
B
21.9
Hex.12
Hex.10
4.9
ØA

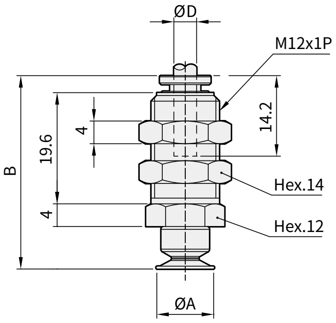
### PAP F - 30


ØD
16
Hex.6
M10x1.5P
Hex.14
5
B
30
Hex.14
9
ØA

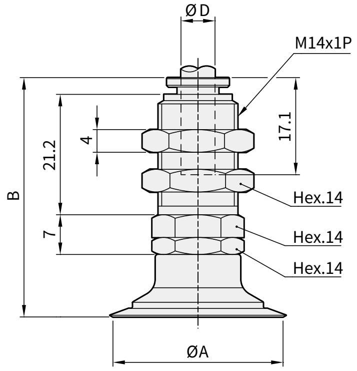
Unit: mm

| Model | Size of PU tube<br>Ø D | Pad dia.<br>Ø A | Whole length<br>B |
|---|---|---|---|
| PAP F - 05 | 2.5 | 5 | 23.4 |
| PAP F - 10 | 4 | 10 | 45.4 |
| PAP F - 15 | 4 | 15 | 45.4 |
| PAP F - 20 | 4 | 20 | 47.9 |
| PAP F - 30 | 4 | 30 | 61 |

### PAP K - 10, 15, 20


ØD
M12x1P
14.2
4
B
19.6
Hex.14
4
Hex.12
ØA

### PAP K - 30


Ø D
M14x1P
21.2
4
17.1
B
Hex.14
7
Hex.14
Hex.14
ØA

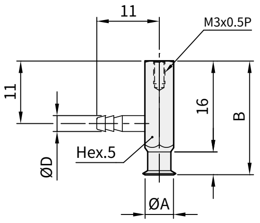
Unit: mm

| Model | Size of PU tube<br>Ø D | Pad dia.<br>ØA | Whole length<br>B |
|---|---|---|---|
| PAP K - 10 | 4 | 10 | 29.9 |
| PAP K - 15 | 4 | 15 | 29.9 |
| PAP K - 20 | 6 | 20 | 32.4 |
| PAP K - 30 | 6 | 30 | 47 |

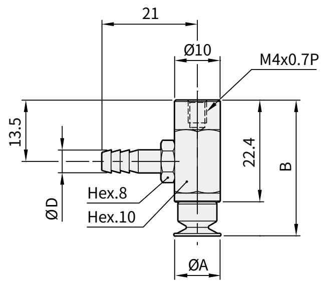
# PAP series Flat Type Vacuum Pad

## Dimensions

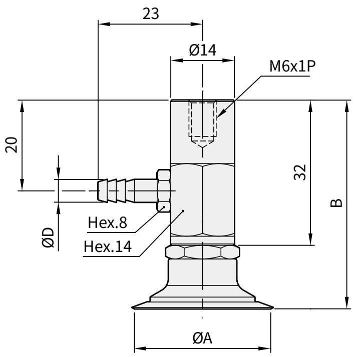
### PAP T - 05


11
M3x0.5P
11
16
B
Hex.5
ØD
ØA

### PAP T - 10, 15, 20


21
Ø10
M4x0.7P
13.5
22.4
B
Hex.8
Hex.10
ØD
ØA

### PAP T - 30


23
Ø14
M6x1P
20
32
B
Hex.8
Hex.14
ØD
ØA

Unit: mm

| Model | Size of PU tube<br>ØD | Pad dia.<br>ØA | Whole length<br>B |
|---|---|---|---|
| PAP T - 5 | 2 | 5 | 20 |
| PAP T - 10 | 4 | 10 | 29.9 |
| PAP T - 15 | 4 | 15 | 29.9 |
| PAP T - 20 | 4 | 20 | 32.4 |
| PAP T - 30 | 4 | 30 | 47 |

# PAP series Flat Type Vacuum Pad

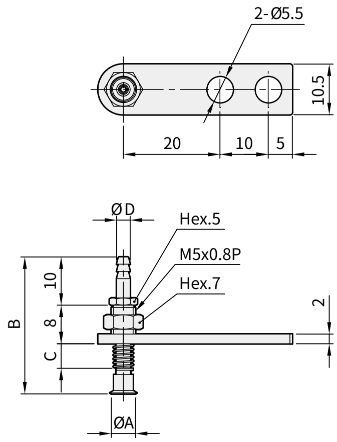
## Dimensions-Flat type PAPFS series/ Vertical entry with spring

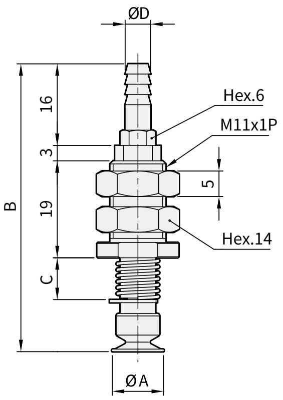
**CHELIC**

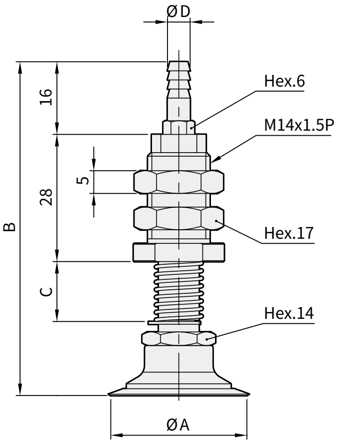
PAP FS - 05 x 2.5
PAP FS - 05 x 05

PAP FS - 10, 15, 20 x 04
PAP FS - 10, 15, 20 x 10

PAP FS - 30 x 06
PAP FS - 30 x 15


2-Ø5.5
10.5
20
10
5
ØD
Hex.5
M5x0.8P
Hex.7
10
8
B
C
2
ØA


ØD
Hex.6
M11x1P
16
3
5
19
B
C
Hex.14
ØA


ØD
Hex.6
M14x1.5P
16
5
28
B
C
Hex.17
Hex.14
ØA

Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B | C |
|---|---|---|---|---|
| PAP FS - 05 x 2.5 | 2.5 | 5 | 28.4 | 5 |
| PAP FS - 05 x 05 | | | 33.4 | 10 |
| PAP FS - 10 x 04 | 4 | 10 | 56.4 | 8 |
| PAP FS - 10 x 15 | | | 68.4 | 20 |
| PAP FS - 15 x 04 | 4 | 15 | 56.4 | 8 |
| PAP FS - 15 x 10 | | | 68.4 | 20 |
| PAP FS - 20 x 04 | 4 | 20 | 58.9 | 8 |
| PAP FS - 20 x 10 | | | 70.9 | 20 |
| PAP FS - 30 x 06 | 4 | 30 | 74.5 | 12 |
| PAP FS - 30 x 15 | | | 91.5 | 30 |

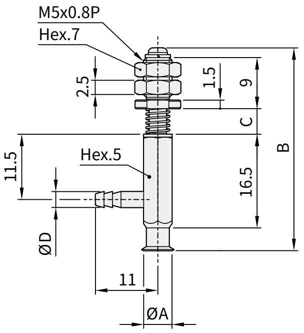
# PAP series Flat Type Vacuum Pad

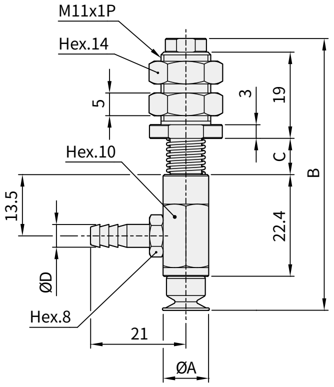
## Dimensions-Flat type PAPTS series/ Side entry with spring

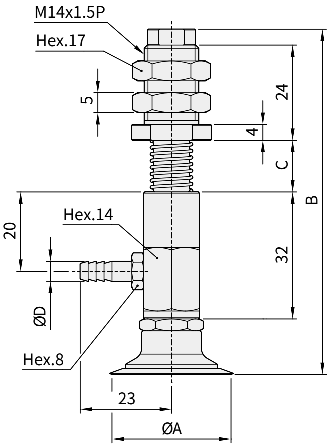
PAP TS - 05 x 2.5
PAP TS - 05 x 5

PAP TS - 10, 15, 20 x 04
PAP TS - 10, 15, 20 x 10

PAP TS - 30 x 06
PAP TS - 30 x 15


M5x0.8P
Hex.7
2.5
1.5
9
C
B
11.5
Hex.5
16.5
ØD
11
ØA


M11x1P
Hex.14
5
3
19
Hex.10
C
B
13.5
22.4
ØD
Hex.8
21
ØA


M14x1.5P
Hex.17
5
24
4
C
B
20
Hex.14
32
ØD
Hex.8
23
ØA

Unit: mm

| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B | C |
|---|---|---|---|---|
| PAP TS - 05 x 2.5 | 3x2 | 5 | 35.7 | 4.5 |
| PAP TS - 05 x 5 | | | 40.7 | 9.5 |
| PAP TS - 10 x 04 | 6x4 | 10 | 59.9 | 8 |
| PAP TS - 10 x 10 | | | 71.9 | 20 |
| PAP TS - 15 x 04 | 6x4 | 15 | 59.9 | 8 |
| PAP TS - 15 x 10 | | | 71.9 | 20 |
| PAP TS - 20 x 04 | 6x4 | 20 | 62.4 | 8 |
| PAP TS - 20 x 10 | | | 74.4 | 20 |
| PAP TS - 30 x 06 | 6x4 | 30 | 88 | 13 |
| PAP TS - 30 x 15 | | | 105 | 30 |

# PAQ series Mark-free Vacuum Pad

## Product features

## Feature

- Uniqueness：Through the special pattern design inside the vacuum pad, a large lateral force can be tolerated during the conveying process.
- Diversification: Various sizes, materials and brackets can be selected.
- Convenience: The structure is simple and compact, easily to replaced.

## Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A50/S | -20~180°C | Black | $10^4$~$10^6$Ω·cm |
| E | Low resistance & anti-static rubber | A60/S | -20~180°C | Black | 200Ω·cm |

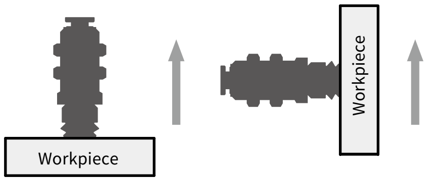
Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

## Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.

Before comfirm the Qty and location of suction pad, please reserve enough margin.

### Suction type



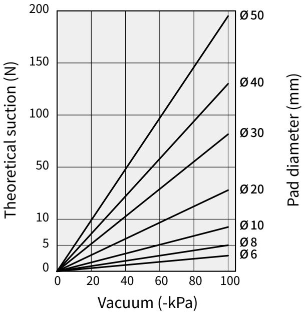
### Calculation formula

$$W = \frac{P \times A}{-10}$$

W: Force N
P : Vacuum pressure kPa
A : Pad area dimensions cm$^2$

## Theoratical suction

Pad diameter: Ø6~Ø50mm



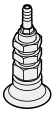
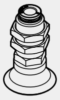
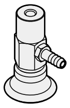
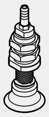
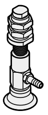
# PAQ series Mark-free Vacuum Pad

## Code of order

## Code of order

**PAQ FS 10 x 4 N – P – R**
① ② ③ ④ ⑤ ⑥

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Mark | 06 | 08 | 10 | 15 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|---|---|
| Pad dia. (mm) | Ø6 | Ø8 | Ø10 | Ø15 | Ø20 | Ø30 | Ø40 | Ø50 |

③ ● Only available to FS, TS series

| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 3 | 3 | Ø6, Ø8 | 6 | 6 | Ø20, Ø30<br>Ø40, Ø50 |
| 10 | 10 | | | | |
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | |
| 4 | 4 | Ø10, Ø15 | 15 | 15 | |
| 10 | 10 | | | | |

④

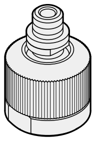
| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω • cm |

● Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

⑤

| Mark | Gasket material | Color |
|---|---|---|
| P | POM | White |

⑥

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) |  |
| 05 | Ø6, Ø8<br>Ø10, Ø15 | |
| 20 | Ø20, Ø30<br>Ø40, Ø50 | |

● Note: According to vacuum pad specification to py proper free holder.

● Note :Please refer to P.3-2.109

## PAQ series selection table:

| Pad type | ① Bracket | ② Pad dia. | ③ Stroke | ④ Vacuum pad material | ⑤ Gasket material | ⑥ Ball joint type |
|---|---|---|---|---|---|---|
| PAQ | F<br>•<br>K<br>•<br>T<br>•<br>FS<br>•<br>TS | 06 | 3<br>•<br>10 | N<br>•<br>S<br>•<br>SE<br>•<br>E | P | 05 |
| | | 08 | | | | |
| | | 10 | 4<br>•<br>10 | | | |
| | | 15 | | | | |
| | | 20 | 6<br>•<br>15 | | | 20 |
| | | 30 | | | | |
| | | 40 | | | | |
| | | 50 | | | | |

## Product weight

| Item | PAQ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | 6 | 8 | 10 | 15 | 20 | 30 | 40 | 50 |
| Weight(g) | 0.34 | 0.46 | 0.79 | 1.37 | 2.65 | 7.81 | 17.1 | 31.69 |

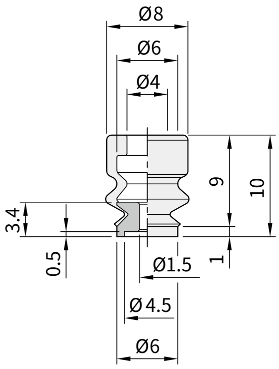
# PAQ series Mark-free Vacuum Pad

## Dimensions

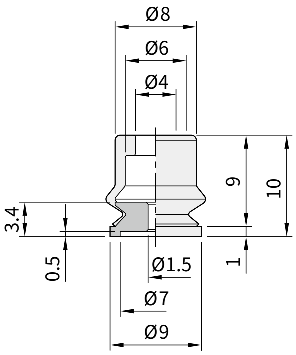
CHELIC

### Vacuum pad size

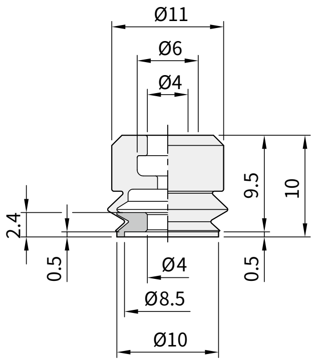
PAQ 06


Ø8
Ø6
Ø4
9
10
3.4
0.5
Ø1.5
1
Ø4.5
Ø6

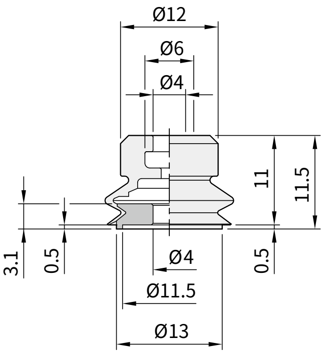
PAQ 08


Ø8
Ø6
Ø4
9
10
3.4
0.5
Ø1.5
1
Ø7
Ø9

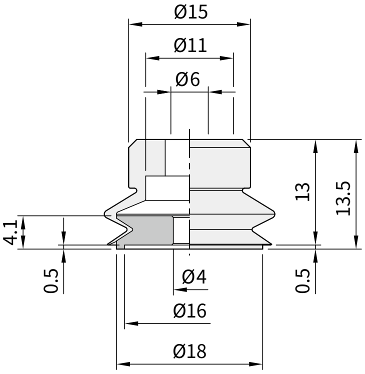
PAQ 10


Ø11
Ø6
Ø4
9.5
10
2.4
0.5
Ø4
0.5
Ø8.5
Ø10

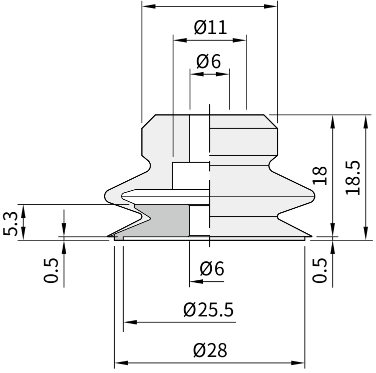
PAQ 15


Ø12
Ø6
Ø4
11
11.5
3.1
0.5
Ø4
0.5
Ø11.5
Ø13

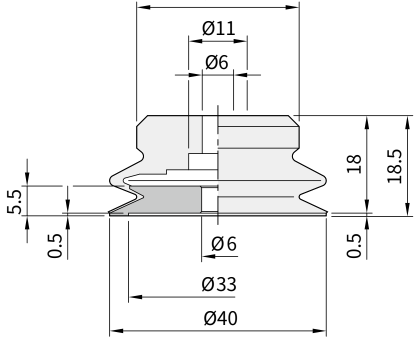
PAQ 20


Ø15
Ø11
Ø6
13
13.5
4.1
0.5
Ø4
0.5
Ø16
Ø18

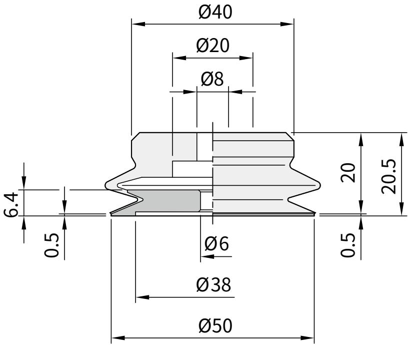
PAQ 30


Ø20
Ø11
Ø6
18
18.5
5.3
0.5
Ø6
0.5
Ø25.5
Ø28

PAQ 40


Ø30
Ø11
Ø6
18
18.5
5.5
0.5
Ø6
0.5
Ø33
Ø40

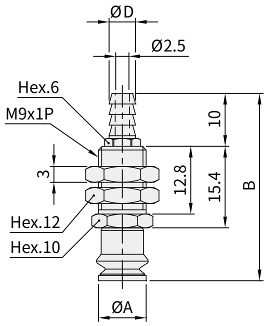
PAQ 50


Ø40
Ø20
Ø8
20
20.5
6.4
0.5
Ø6
0.5
Ø38
Ø50

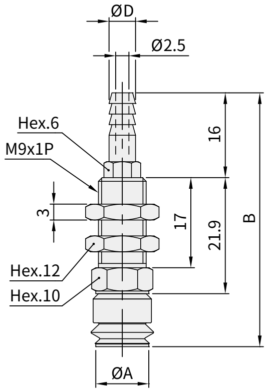
# PAQ series Mark-free Vacuum Pad

## Dimensions-Suction mark prevention PAQF/ Vertical, PAQK with fitting

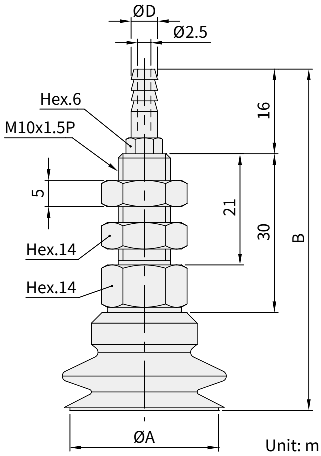
### PAQ F - 06, 08


ØD
Ø2.5
Hex.6
M9x1P
10
3
12.8
15.4
B
Hex.12
Hex.10
ØA

### PAQ F - 10, 15


ØD
Ø2.5
Hex.6
M9x1P
16
3
17
21.9
B
Hex.12
Hex.10
ØA

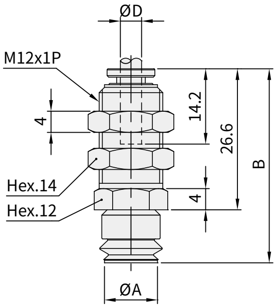
### PAQ F - 20, 30, 40, 50


ØD
Ø2.5
Hex.6
M10x1.5P
16
5
21
30
B
Hex.14
Hex.14
ØA

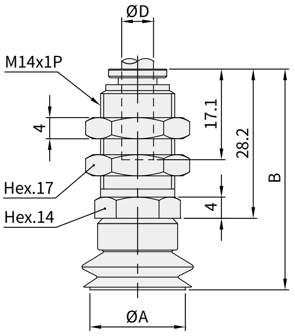
Unit: mm

| Model | Size of PU tube<br>Ø D | Pad dia.<br>Ø A | Whole length<br>B |
|---|---|---|---|
| PAQ F - 06 | 6x4 | 6 | 35.4 |
| PAQ F - 08 | 6x4 | 9 | 35.4 |
| PAQ F - 10 | 6x4 | 10 | 45.4 |
| PAQ F - 15 | 6x4 | 13 | 45.4 |
| PAQ F - 20 | 6x4 | 18 | 65 |
| PAQ F - 30 | 6x4 | 28 | 64.5 |
| PAQ F - 40 | 6x4 | 40 | 64.5 |
| PAQ F - 50 | 6x4 | 50 | 66.5 |

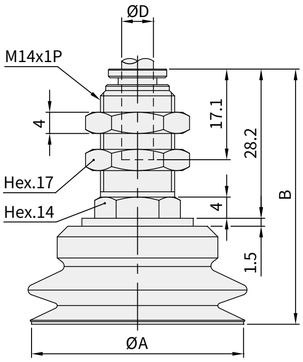
### PAQ K - 06, 08, 10, 15


ØD
M12x1P
4
14.2
26.6
B
Hex.14
Hex.12
4
ØA

### PAQ K - 20, 30


ØD
M14x1P
4
17.1
28.2
B
Hex.17
Hex.14
4
ØA

### PAQ K - 40, 50


ØD
M14x1P
4
17.1
28.2
B
Hex.17
Hex.14
4
1.5
ØA

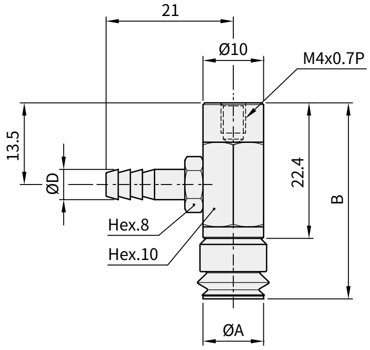
Unit: mm

| Model | Size of PU tube<br>Ø D | Pad dia.<br>Ø A | Whole length<br>B |
|---|---|---|---|
| PAQ K - 06 | 4 | 6 | 36.6 |
| PAQ K - 08 | 4 | 9 | 36.6 |
| PAQ K - 10 | 4 | 10 | 36.6 |
| PAQ K - 15 | 4 | 13 | 38.1 |
| PAQ K - 20 | 6 | 18 | 41.7 |
| PAQ K - 30 | 6 | 28 | 46.7 |
| PAQ K - 40 | 6 | 40 | 48.2 |
| PAQ K - 50 | 6 | 50 | 50.2 |

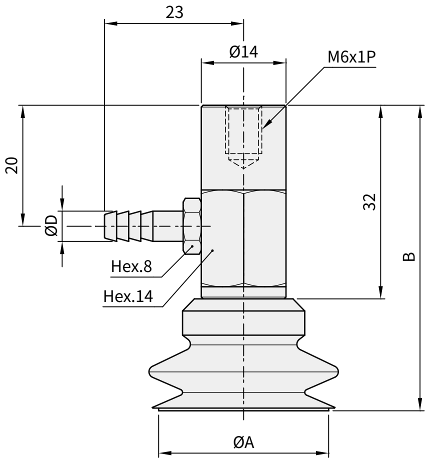
# PAQ series Mark-free Vacuum Pad

## Dimensions-Suction mark prevention PAQT/ Side entry

### PAQ T - 06, 08, 10, 15


21
Ø10
M4x0.7P
13.5
ØD
22.4
B
Hex.8
Hex.10
ØA

### PAQ T - 20, 30, 40, 50


23
Ø14
M6x1P
20
ØD
32
B
Hex.8
Hex.14
ØA

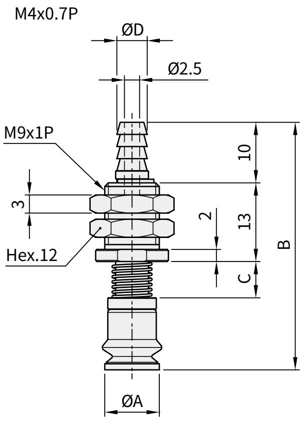
Unit: mm

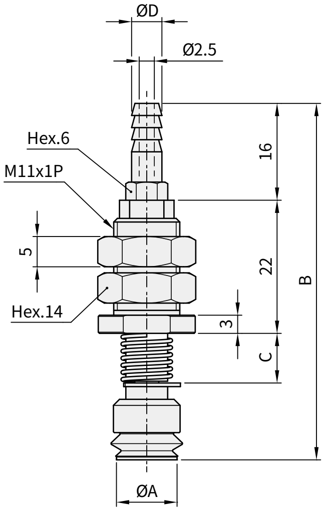
| Model | Size of PU tube ØD | Pad dia. ØA | Whole length B |
|---|---|---|---|
| PAQ T - 06 | 6x4 | 6 | 32.4 |
| PAQ T - 08 | 6x4 | 9 | 32.4 |
| PAQ T - 10 | 6x4 | 10 | 32.4 |
| PAQ T - 15 | 6x4 | 13 | 33.9 |
| PAQ T - 20 | 6x4 | 18 | 45.5 |
| PAQ T - 30 | 6x4 | 28 | 50.5 |
| PAQ T - 40 | 6x4 | 40 | 50.5 |
| PAQ T - 50 | 6x4 | 50 | 52.5 |

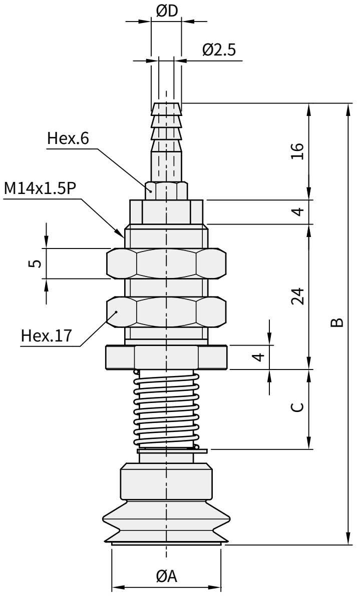
# PAQ series Mark-free Vacuum Pad

## Dimensions-Suction mark prevention PAQFS/ Vertical entry with spring

- PAQ FS - 06, 08 x 03
  PAQ FS - 06, 08 x 10
- PAQ FS - 10, 15 x 04
  PAQ FS - 10, 15 x 10
- PAQ FS - 20, 30, 40, 50 x 06
  PAQ FS - 20, 30, 40, 50 x 15


M4x0.7P
ØD
Ø2.5
M9x1P
3
10
2
13
B
Hex.12
C
ØA


ØD
Ø2.5
Hex.6
M11x1P
16
5
22
B
Hex.14
3
C
ØA


ØD
Ø2.5
Hex.6
M14x1.5P
16
4
5
24
B
Hex.17
4
C
ØA

Unit: mm

| Model | Size of PU tube Ø D | Pad dia. Ø A | Whole length B | C |
|---|---|---|---|---|
| PAQ FS - 06 x 03 | 6x4 | 6 | 40.9 | 6 |
| PAQ FS - 06 x 10 | | | 54.9 | 20 |
| PAQ FS - 08 x 03 | 6x4 | 9 | 40.9 | 6 |
| PAQ FS - 08 x 10 | | | 54.9 | 20 |
| PAQ FS - 10 x 04 | 6x4 | 10 | 58.9 | 8 |
| PAQ FS - 10 x 10 | | | 70.9 | 20 |
| PAQ FS - 15 x 04 | 6x4 | 13 | 60.4 | 8 |
| PAQ FS - 15 x 10 | | | 72.4 | 20 |
| PAQ FS - 20 x 06 | 6x4 | 18 | 73 | 12 |
| PAQ FS - 20 x 15 | | | 90 | 30 |
| PAQ FS - 30 x 06 | 6x4 | 28 | 78 | 12 |
| PAQ FS - 30 x 15 | | | 95 | 30 |
| PAQ FS - 40 x 06 | 6x4 | 40 | 75.5 | 12 |
| PAQ FS - 40 x 15 | | | 92.5 | 30 |
| PAQ FS - 50 x 06 | 6x4 | 50 | 77.5 | 12 |
| PAQ FS - 50 x 15 | | | 94.5 | 30 |

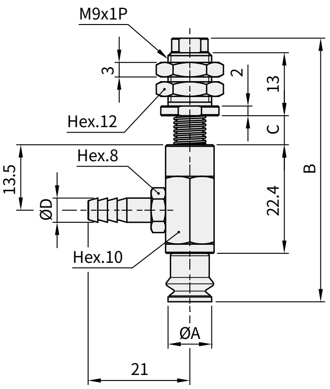
# PAQ series Mark-free Vacuum Pad

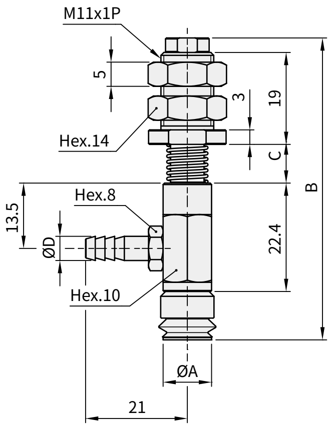
## Dimensions-Suction mark prevention PAQTS series/ Side entry with spring

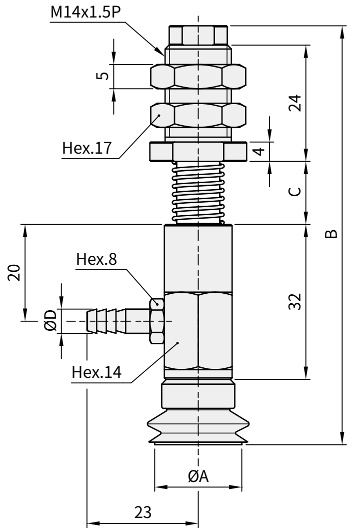
PAQ TS - 06, 08x 03
PAQ TS - 06, 08x 10

PAQ TS - 10, 15x 04
PAQ TS - 10, 15x 10

PAQ TS - 20, 30, 40, 50x 06
PAQ TS - 20, 30, 40, 50x 15


M9x1P
3
2
13
Hex.12
C
B
Hex.8
13.5
ØD
22.4
Hex.10
ØA
21


M11x1P
5
3
19
Hex.14
C
B
Hex.8
13.5
ØD
22.4
Hex.10
ØA
21


M14x1.5P
5
24
Hex.17
4
C
B
20
Hex.8
ØD
32
Hex.14
ØA
23

Unit: mm

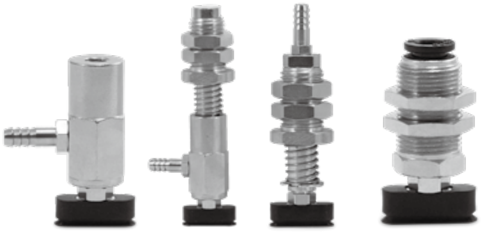
| Model | Size of PU tube Ø D | Pad dia. Ø A | Whole length B | C |
|---|---|---|---|---|
| PAQ TS - 06 x 03 | 6x4 | 6 | 54.4 | 6 |
| PAQ TS - 06 x 10 | | | 68.4 | 20 |
| PAQ TS - 08 x 03 | 6x4 | 9 | 54.4 | 6 |
| PAQ TS - 08 x 10 | | | 68.4 | 20 |
| PAQ TS - 10 x 04 | 6x4 | 10 | 62.4 | 8 |
| PAQ TS - 10 x 10 | | | 74.4 | 20 |
| PAQ TS - 15 x 04 | 6x4 | 13 | 63.9 | 8 |
| PAQ TS - 15 x 10 | | | 75.9 | 20 |
| PAQ TS - 20 x 06 | 6x4 | 18 | 86.5 | 12 |
| PAQ TS - 20 x 15 | | | 103.5 | 30 |
| PAQ TS - 30 x 06 | 6x4 | 28 | 91.5 | 12 |
| PAQ TS - 30 x 15 | | | 108.5 | 30 |
| PAQ TS - 40 x 06 | 6x4 | 40 | 91.5 | 12 |
| PAQ TS - 40 x 15 | | | 108.5 | 30 |
| PAQ TS - 50 x 06 | 6x4 | 50 | 93.5 | 12 |
| PAQ TS - 50 x 15 | | | 110.5 | 30 |

# PAW series Oval Vacuum Pad

## Product features

### Feature

- Uniquenes: The long oval shape absorbs narrower workpieces and some confined spaces.
- Diversification: Various sizes, materials and brackets can be selected.
- Convenience: The structure is simple and compact, easily to replaced.



### PAW series selection table:

| Pad type | ① Bracket | | | | | ② Pad dia. | ③ Stroke | ④ Vacuum pad material | | | ⑤ Ball joint type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | K | T | FS | TS | | | N | S | SE | 20 |
| PAW | ● | | ● | ● | ● | 2x4 | 2.5<br>•<br>5 | ● | ● | ● | |
| | ● | | ● | ● | ● | 3.5x7 | | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 4x10 | 3<br>•<br>10 | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 5x10 | | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 6x10 | | ● | ● | ● | |
| | ● | ● | ● | ● | ● | 4x20 | 6<br>•<br>15 | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 5x20 | | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 6x20 | | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 8x20 | | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 4x30 | | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 5x30 | | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 6x30 | | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | 8x30 | | ● | ● | ● | ● |

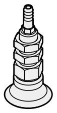
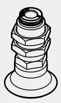
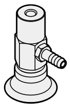
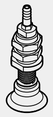
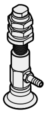
# PAW series Oval Vacuum Pad

## Code of order

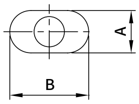
## Code of order **PAW FS 4x20 x 6 N – R**

① ② ③ ④ ⑤

①

| Bracket | Vertical entry | Vertical entry with fitting | Side entry | Vertical entry with spring | Side entry with spring |
|---|---|---|---|---|---|
| Mark | F | K | T | FS | TS |
| Image |  |  |  |  |  |

②

| Pad type | Short size area(A) x Long size area(B) | | | Image |
|---|---|---|---|---|
| Mark | 2x4 | 3.5x7 | |  A B |
| | 4x10 | 4x20 | 4x30 | |
| | 5x10 | 5x20 | 5x30 | |
| | 6x10 | 6x20 | 6x30 | |
| | 8x20 | 8x30 | | |

③ ● Only available to FS, TS series

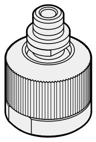
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | Outer diameter (mm) |
|---|---|---|---|---|---|
| 2.5 | 2.5 | 2x4, 3.5x7 | 6 | 6 | 4x20, 4x30<br>5x20, 5x30<br>6x20, 6x30<br>8x20, 8x30 |
| 5 | 5 | | | | |
| Mark | Stroke (mm) | Outer diameter (mm) | Mark | Stroke (mm) | |
| 3 | 3 | 4x10, 5x10<br>6x10 | 15 | 15 | |
| 10 | 10 | | | | |

④

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |

● Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

⑤

| With ball joint type | | |
|---|---|---|
| Mark | Outer diameter (mm) | |
| 20 | 4x20, 4x30<br>5x20, 5x30<br>6x20, 6x30<br>8x20, 8x30 |  |

● Note: According to vacuum pad specification to py proper free holder.

● Note :Please refer to P.3-2.109

## PAW series selection table:

| Pad type | ① Bracket | ② Pad dia. | ③ Stroke | ④ Vacuum pad material | ⑤ Ball joint type |
|---|---|---|---|---|---|
| PAW | F<br>•<br>K<br>•<br>T<br>•<br>FS<br>•<br>TS | 2x4 | 2.5 • 5 | N<br>•<br>S | 20 |
| | | 3.5x7 | | | |
| | | 4x10 | 3 • 10 | | |
| | | 4x20 | 6 • 5 | | |
| | | 4x30 | | | |
| | | 5x10 | 3 • 10 | | |
| | | 5x20 | 6 • 5 | | |
| | | 5x30 | | | |
| | | 6x10 | 3 • 10 | | |
| | | 6x20 | 6 • 15 | | |
| | | 6x30 | | | |
| | | 8x20 | | | |
| | | 8x30 | | | |

# PAW series Oval Vacuum Pad

## Product features

### Vacuum pad material

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A60/S | -26~120°C | Black | - |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | - |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω • cm |

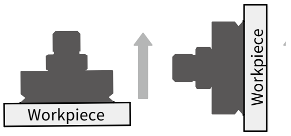
Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.

Before comfirm the Qty and location of suction pad, please reserve enough margin.

#### Suction type



Horizontal suction

Vertical suction

#### Calculation formula

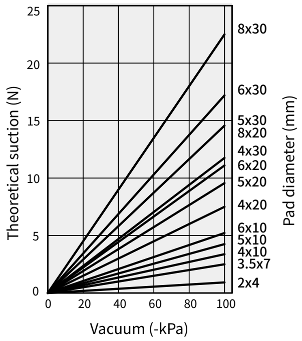
$$W = \frac{P \times A}{-10}$$

W: Force N

P : Vacuum pressure kPa

A : Pad area dimensions $cm^2$

### Theoratical suction



### Product weight

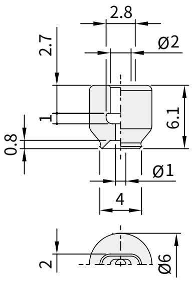
| Item | PAW | | | | | |
|---|---|---|---|---|---|---|
| **Model** | 2*4 | 3.5*7 | 4*10 | 4*20 | 4*30 | 5*10 | 5*20 |
| **Weight(g)** | 0.02 | 0.03 | 0.32 | 0.66 | 1.09 | 0.33 | 17.1 |
| **Model** | 5*30 | 6*10 | 6*20 | 6*30 | 8*20 | 8*30 | |
| **Weight(g)** | 1.18 | 0.32 | 0.67 | 1.14 | 0.67 | 1.14 | |

# PAW series Oval Vacuum Pad

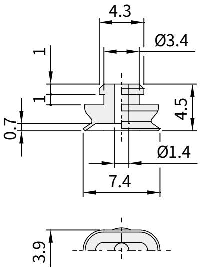
## Dimensions

### The joint size to bracket

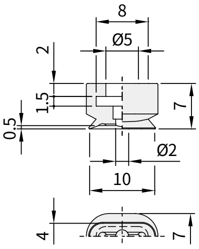
● PAW 2 x 4


2.8
Ø2
2.7
1
6.1
0.8
Ø1
4
2
Ø6

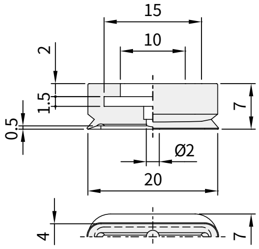
● PAW 3.5 x 7


4.3
Ø3.4
1
1
4.5
0.7
Ø1.4
7.4
3.9

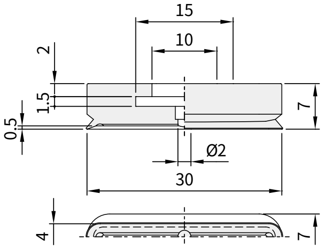
● PAW 4 x 10


8
Ø5
2
1.5
7
0.5
Ø2
10
4
7

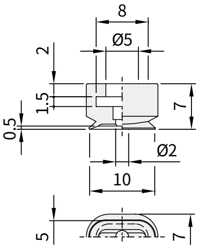
● PAW 4 x 20


15
10
2
1.5
7
0.5
Ø2
20
4
7

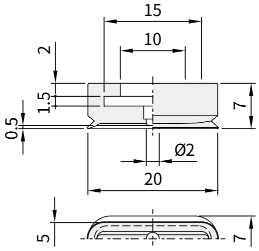
● PAW 4 x 30


15
10
2
1.5
7
0.5
Ø2
30
4
7

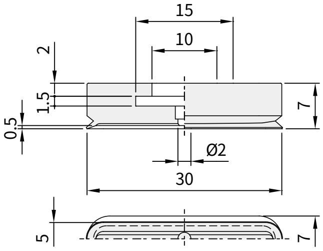
● PAW 5 x 10


8
Ø5
2
1.5
7
0.5
Ø2
10
5
7

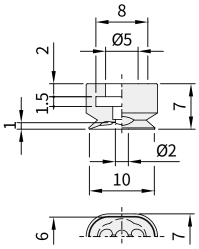
● PAW 5 x 20


15
10
2
1.5
7
0.5
Ø2
20
5
7

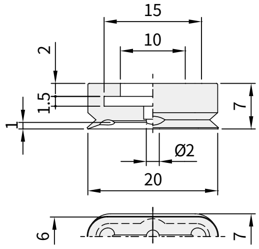
● PAW 5 x 30


15
10
2
1.5
7
0.5
Ø2
30
5
7

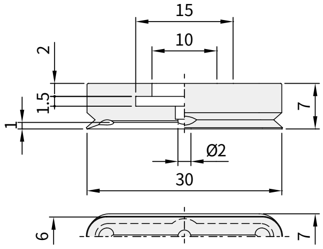
● PAW 6 x 10


8
Ø5
2
1.5
7
1
Ø2
10
6
7

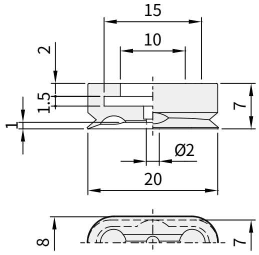
● PAW 6 x 20


15
10
2
1.5
7
1
Ø2
20
6
7

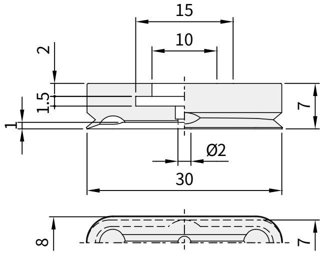
● PAW 6 x 30


15
10
2
1.5
7
1
Ø2
30
6
7

● PAW 8 x 20


15
10
2
1.5
7
1
Ø2
20
8
7

● PAW 8 x 30

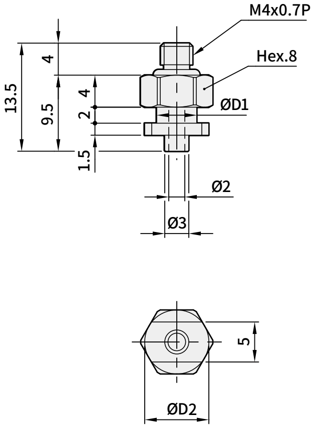

15
10
2
1.5
7
1
Ø2
30
8
7

# PAW series Oval Vacuum Pad

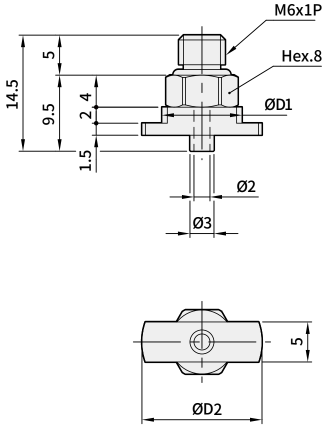
## Dimensions

### The joint size to bracket

- PAW☐x 10


M4x0.7P
Hex.8
ØD1
Ø2
Ø3
13.5
4
9.5
4
2
1.5
5
ØD2

- PAW☐x 20
- PAW☐x 30

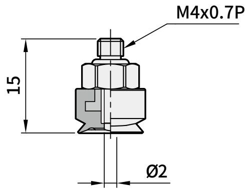

M6x1P
Hex.8
ØD1
Ø2
Ø3
14.5
5
9.5
4
2
1.5
5
ØD2

Unit: mm

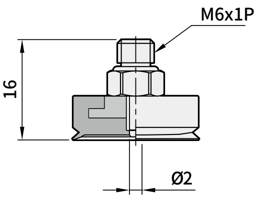
| Model | ØD1 | ØD2 | Applicable pad size |
|---|---|---|---|
| PAW 10-M4 | 5 | 8 | 4x10, 5x10, 6x10 |
| PAW 20-M6 | 10 | 15 | 4x20 4x30, 5x20, 5x30, 6x20, 6x30, 8x20, 8x30 |
| PAW 30-M6 | 10 | 15 | 4x20, 4x30, 5x20, 5x30, 6x20, 6x30, 8x20, 8x30 |

### The size of joint with vacuum pad

- PAW☐x 10


M4x0.7P
15
Ø2

- PAW☐x 20
- PAW☐x 30

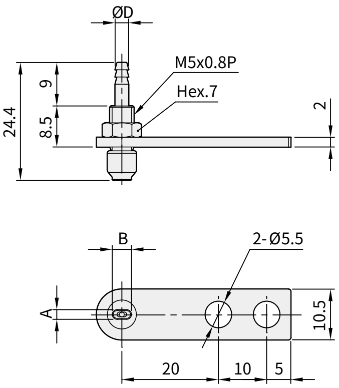


# PAW series Oval Vacuum Pad

## Dimensions-Oval type PAWF/ Vertical, PAWK with fitting

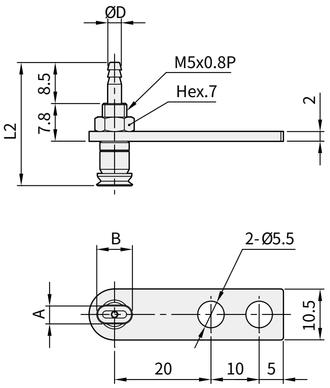
CHELIC

### PAW F - 2x4



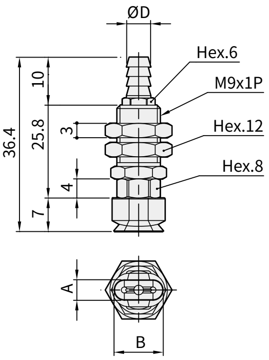
ØD
M5x0.8P
Hex.7
9
8.5
24.4
2
B
2-Ø5.5
A
10.5
20
10
5

### PAW F - 3.5x7



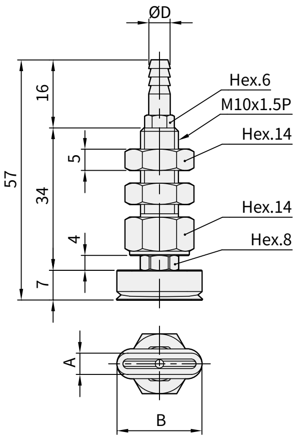
ØD
M5x0.8P
Hex.7
8.5
7.8
L2
2
B
2-Ø5.5
A
10.5
20
10
5

### PAW F - □ - x 10



ØD
Hex.6
M9x1P
Hex.12
Hex.8
10
36.4
25.8
3
4
7
A
B

### PAW F - □ - x 20、30

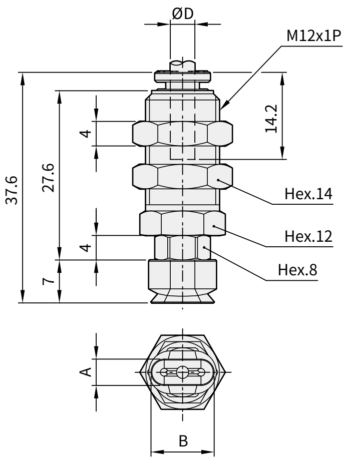


ØD
Hex.6
M10x1.5P
Hex.14
Hex.14
Hex.8
16
57
34
5
4
7
A
B

Unit: mm

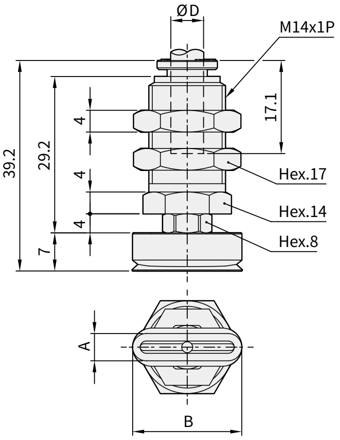
| Model | Size of PU tube<br>Ø D | Short size area<br>A | Long size area<br>B |
|---|---|---|---|
| PAW F - 2 x 4 | 4x2.5 | 2 | 4 |
| PAW F - 3.5 x 7 | 6x4 | 3.5 | 7 |
| PAW F - 4 x 10 | 6x4 | 4 | 10 |
| PAW F - 4 x 20 | | | 20 |
| PAW F - 4 x 30 | | | 30 |
| PAW F - 5 x 10 | 6x4 | 5 | 10 |
| PAW F - 5 x 20 | | | 20 |
| PAW F - 5 x 30 | | | 30 |
| PAW F - 6 x 10 | 6x4 | 6 | 10 |
| PAW F - 6 x 20 | | | 20 |
| PAW F - 6 x 30 | | | 30 |
| PAW F - 8 x 20 | 6x4 | 8 | 20 |
| PAW F - 8 x 30 | | | 30 |

### PAW K - □ - x 10



ØD
M12x1P
14.2
Hex.14
Hex.12
Hex.8
37.6
27.6
4
4
7
A
B

### PAW K - □ - x 20, 30



ØD
M14x1P
17.1
Hex.17
Hex.14
Hex.8
39.2
29.2
4
4
4
7
A
B

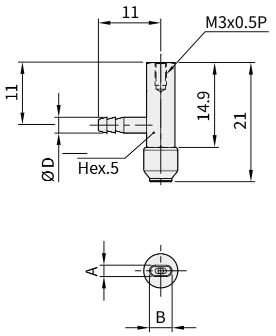
Unit: mm

| Model | Size of PU tube<br>Ø D | Short size area<br>A | Long size area<br>B |
|---|---|---|---|
| PAW K - 4 x 10 | 4 | 4 | 10 |
| PAW K - 4 x 20 | 6 | | 20 |
| PAW K - 4 x 30 | | | 30 |
| PAW K - 5 x 10 | 4 | 5 | 10 |
| PAW K - 5 x 20 | 6 | | 20 |
| PAW K - 5 x 30 | | | 30 |
| PAW K - 6 x 10 | 4 | 6 | 10 |
| PAW K - 6 x 20 | 6 | | 20 |
| PAW K - 6 x 30 | | | 30 |
| PAW K - 8 x 20 | 6 | 8 | 20 |
| PAW K - 8 x 30 | | | 30 |

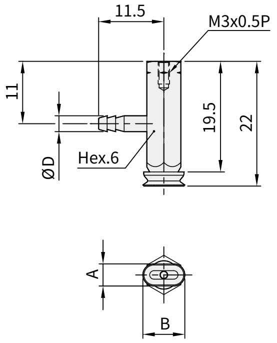
# PAW series Oval Vacuum Pad

## Dimensions-Oval type PAWT/ Side entry

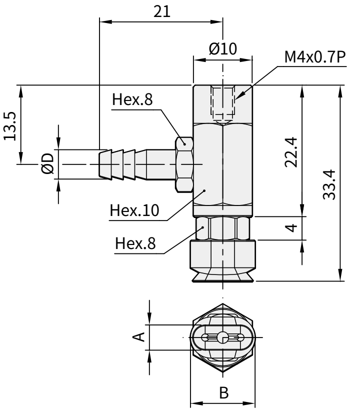
### PAW T - 2x4


11
M3x0.5P
11
14.9
21
ØD
Hex.5
A
B

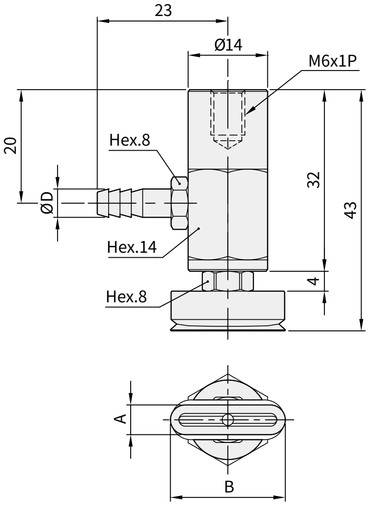
### PAW T - 3.5x7


11.5
M3x0.5P
11
19.5
22
ØD
Hex.6
A
B

### PAW T - ☐ x 10


21
Ø10
M4x0.7P
Hex.8
13.5
ØD
22.4
33.4
Hex.10
4
Hex.8
A
B

### PAW T - ☐ x 20, 30


23
Ø14
M6x1P
20
Hex.8
ØD
32
43
Hex.14
4
Hex.8
A
B

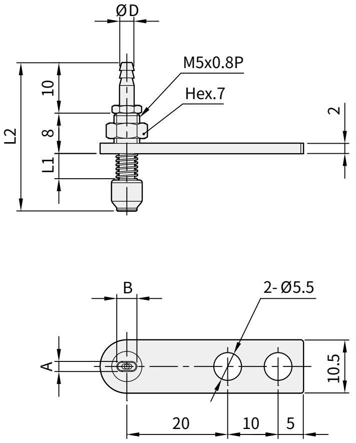
Unit: mm

| Model | Size of PU tube ØD | Short size area A | Long size area B |
|---|---|---|---|
| PAW T - 2 x 4 | 4x2.5 | 2 | 4 |
| PAW T - 3.5 x 7 | 6x4 | 3.5 | 7 |
| PAW T - 4 x 10 | 6x4 | 4 | 10 |
| PAW T - 4 x 20 | | | 20 |
| PAW T - 4 x 30 | | | 30 |
| PAW T - 5 x 10 | 6x4 | 5 | 10 |
| PAW T - 5 x 20 | | | 20 |
| PAW T - 5 x 30 | | | 30 |
| PAW T - 6 x 10 | 6x4 | 6 | 10 |
| PAW T - 6 x 20 | | | 20 |
| PAW T - 6 x 30 | | | 30 |
| PAW T - 8 x 20 | 6x4 | 8 | 20 |
| PAW T - 8 x 30 | | | 30 |

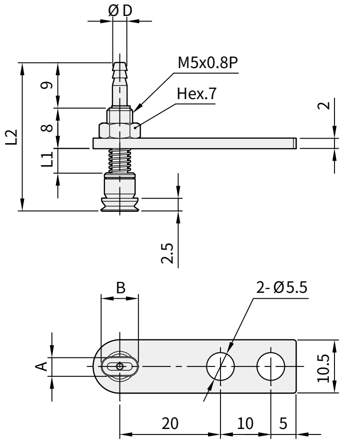
# PAW series Oval Vacuum Pad

## Dimensions-Oval type PAWFS/ Vertical entry with spring

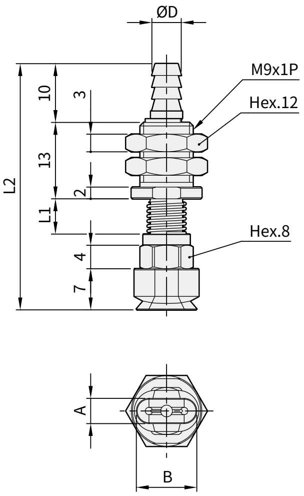
### PAW FS - 2x4x 2.5
### PAW FS - 2x4x 5


ØD
M5x0.8P
Hex.7
10
8
L2
L1
2
B
2- Ø5.5
A
10.5
20
10
5

### PAW FS - 3.5x7x 2.5
### PAW FS - 3.5x7x 5

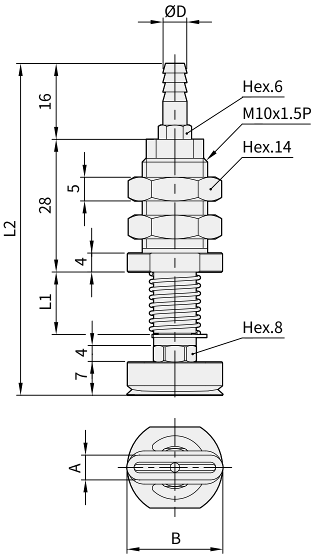

Ø D
M5x0.8P
Hex.7
9
8
L2
L1
2
2.5
B
2- Ø5.5
A
10.5
20
10
5

### PAW FS - □ x 10 x 03
### PAW FS - □ x 10 x 10


ØD
M9x1P
Hex.12
10
3
13
2
L2
L1
Hex.8
4
7
A
B

Unit: mm

### PAW FS - □ x 20, 30x 06
### PAW FS - □ x 20, 30x 15

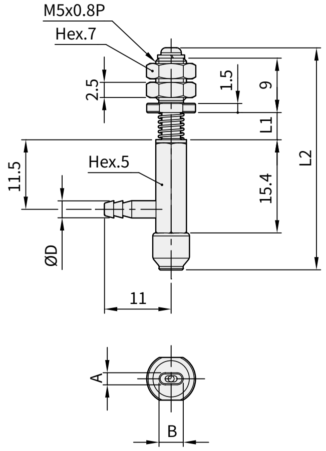

ØD
Hex.6
M10x1.5P
Hex.14
16
28
5
4
L2
L1
Hex.8
4
7
A
B

| Model | Size of PU tube ØD | Short size area A | Long size area B | L 1 | L 2 |
|---|---|---|---|---|---|
| PAW FS - 2 x 4 x 2.5 | 4x2.5 | 2 | 4 | 5 | 29.4 |
| PAW FS - 2 x 4 x 5 | | | | 10 | 34.4 |
| PAW FS - 3.5 x 7 x 2.5 | 4x2.5 | 3.5 | 7 | 5 | 29.4 |
| PAW FS - 3.5 x 7 x 5 | | | | 10 | 34.4 |
| PAW FS - 4 x 10 x 3 | 6x4 | 4 | 10 | 6 | 42 |
| PAW FS - 4 x 10 x 10 | | | | 20 | 56 |
| PAW FS - 4 x 20 x 6 | 6x4 | 4 | 20 | 12 | 70.5 |
| PAW FS - 4 x 20 x 15 | | | | 30 | 87.5 |
| PAW FS - 4 x 30 x 6 | 6x4 | 4 | 30 | 12 | 70.5 |
| PAW FS - 4 x 30 x 15 | | | | 30 | 87.5 |
| PAW FS - 5 x 10 x 3 | 6x4 | 5 | 10 | 6 | 42 |
| PAW FS - 5 x 10 x 10 | | | | 20 | 56 |
| PAW FS - 5 x 20 x 6 | 6x4 | 5 | 20 | 12 | 70.5 |
| PAW FS - 5 x 20 x 15 | | | | 30 | 87.5 |
| PAW FS - 5 x 30 x 6 | 6x4 | 5 | 30 | 12 | 70.5 |
| PAW FS - 5 x 30 x 15 | | | | 30 | 87.5 |
| PAW FS - 6 x 10 x 3 | 6x4 | 6 | 10 | 6 | 42 |
| PAW FS - 6 x 10 x 10 | | | | 20 | 56 |
| PAW FS - 6 x 20 x 6 | 6x4 | 6 | 20 | 12 | 70.5 |
| PAW FS - 6 x 20 x 15 | | | | 30 | 87.5 |
| PAW FS - 6 x 30 x 6 | 6x4 | 6 | 30 | 12 | 70.5 |
| PAW FS - 6 x 30 x 15 | | | | 30 | 87.5 |
| PAW FS - 8 x 20 x 6 | 6x4 | 8 | 20 | 12 | 70.5 |
| PAW FS - 8 x 20 x 15 | | | | 30 | 87.5 |
| PAW FS - 8 x 30 x 6 | 6x4 | 8 | 30 | 12 | 70.5 |
| PAW FS - 8 x 30 x 15 | | | | 30 | 87.5 |

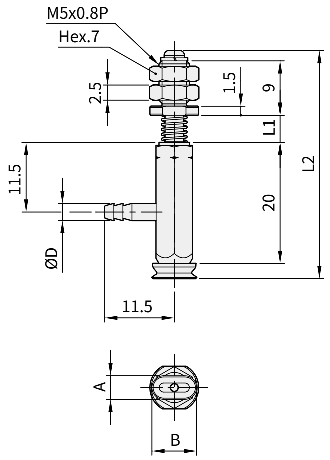
# PAW series Oval Vacuum Pad

## Dimensions-Oval type PAWTS/ Side entry with spring

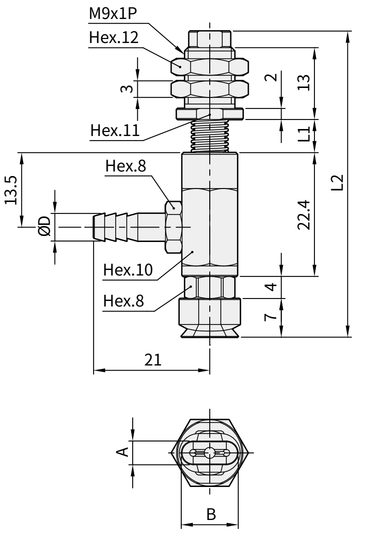
PAW TS - 2x4x 2.5
PAW TS - 2x4x 5


M5x0.8P
Hex.7
2.5
1.5
9
L1
L2
11.5
Hex.5
15.4
ØD
11
A
B

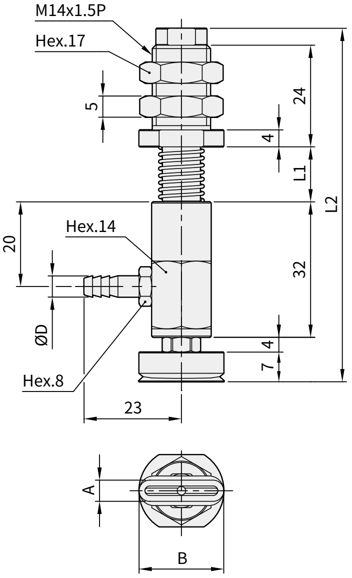
PAW TS - 3.5x7x 2.5
PAW TS - 3.5x7x 5


M5x0.8P
Hex.7
2.5
1.5
9
L1
L2
11.5
20
ØD
11.5
A
B

PAW TS - ☐ x 10 x 03
PAW TS - ☐ x 10 x 10


M9x1P
Hex.12
3
2
13
Hex.11
L1
13.5
Hex.8
ØD
22.4
L2
Hex.10
4
Hex.8
7
21
A
B

PAW TS - ☐ x 20, 30x 06
PAW TS - ☐ x 20, 30x 15


M14x1.5P
Hex.17
5
24
4
L1
L2
20
Hex.14
32
ØD
4
7
Hex.8
23
A
B

Unit: mm

| Model | Size of PU tube ØD | Short size area A | Long size area B | L 1 | L 2 |
|---|---|---|---|---|---|
| PAW TS - 2 x 4 x 2.5 | 4x2.5 | 2 | 4 | 5 | 36.7 |
| PAW TS - 2 x 4 x 5 | | | | 10 | 47.7 |
| PAW TS -3.5 x 7 x 2.5 | 4x2.5 | 3.5 | 7 | 5 | 37.7 |
| PAW TS -3.5 x 7 x 5 | | | | 10 | 48.7 |
| PAW TS - 4 x 10 x 3 | 6x4 | 4 | 10 | 6 | 55.5 |
| PAW TS - 4 x 10 x 10 | | | | 20 | 69.5 |
| PAW TS - 4 x 20 x 6 | 6x4 | 4 | 20 | 12 | 84 |
| PAW TS - 4 x 20 x 15 | | | | 30 | 101 |
| PAW TS - 4 x 30 x 6 | 6x4 | 4 | 30 | 12 | 84 |
| PAW TS - 4 x 30 x 15 | | | | 30 | 101 |
| PAW TS - 5 x 10 x 3 | 6x4 | 5 | 10 | 6 | 55.5 |
| PAW TS - 5 x 10 x 10 | | | | 20 | 69.5 |
| PAW TS - 5 x 20 x 6 | 6x4 | 5 | 20 | 12 | 84 |
| PAW TS - 5 x 20 x 15 | | | | 30 | 101 |
| PAW TS - 5 x 30 x 6 | 6x4 | 5 | 30 | 12 | 84 |
| PAW TS - 5 x 30 x 15 | | | | 30 | 101 |
| PAW TS - 6 x 10 x 3 | 6x4 | 6 | 10 | 6 | 55.5 |
| PAW TS - 6 x 10 x 10 | | | | 20 | 69.5 |
| PAW TS - 6 x 20 x 6 | 6x4 | 6 | 20 | 12 | 84 |
| PAW TS - 6 x 20 x 15 | | | | 30 | 101 |
| PAW TS - 6 x 30 x 6 | 6x4 | 6 | 30 | 12 | 84 |
| PAW TS - 6 x 30 x 15 | | | | 30 | 101 |
| PAW TS - 8 x 20 x 6 | 6x4 | 8 | 20 | 12 | 84 |
| PAW TS - 8 x 20 x 15 | | | | 30 | 101 |
| PAW TS - 8 x 30 x 6 | 6x4 | 8 | 30 | 12 | 84 |
| PAW TS - 8 x 30 x 15 | | | | 30 | 101 |

# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Product features

### Feature

- Suitable for small, light weight handling
- Non-rotating design to avoid accidental suction action
- Multiple specifications, variety of vacuum pad options

### Vacuum pad material

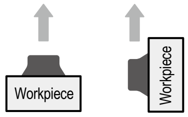
| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A55/S | -26~120°C | Black | - |
| U | PU(Uret-hane) | A60/S | -20~75°C | Black | |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω•cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω•cm |

Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

### Vacuum control system

Theoratical suction is calculated from pad size and vacuum value, which is only a number for reference. Theoratical suction is a number under static status. Please reserve enough margin while adding workpieces and movement.
Before comfirm the Qty and location of suction pad, please reserve enough margin.

● Suction type



Horizontal suction

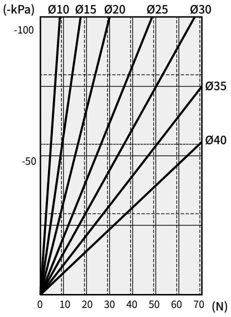
Vertical suction

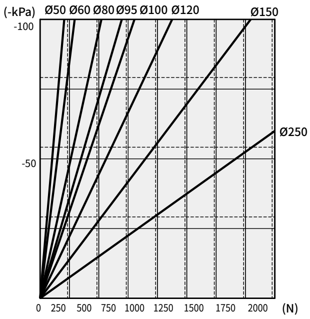
● Calculation formula

$$W = \frac{P \times A}{-10}$$

W: Force N
P : Vacuum pressure kP
A : Pad area dimension

### Theoratical suction





# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Code of order

CHELIC

## Code of order **PA L 10 x 08 N**

① ② ③ ④ ⑤

①

| Mark | Pad type |
|---|---|
| PA | Single layer |
| PB | Double layers |
| PC | Three layers |

②

| Mark | Bracket | |
|---|---|---|
| L | Vertical entry with spring | |

③

| PA 1-Stage | |
|---|---|
| Pad dia. (mm) | Mark |
| Ø 5 | 05 |
| Ø 6 | 06 |
| Ø 8 | 08 |
| Ø 10 | 10 |
| Ø 15 | 15 |
| Ø 20 | 20 |
| Ø 25 | 25 |
| Ø 30 | 30 |
| Ø 35 | 35 |
| Ø 40 | 40 |
| Ø 50 | 50 |

| PB 2-Stage | |
|---|---|
| Pad dia. (mm) | Mark |
| Ø 6 | 06 |
| Ø 10 | 10 |
| Ø 15 | 15 |
| Ø 20 | 20 |
| Ø 30 | 30 |
| Ø 40 | 40 |
| Ø 50 | 50 |

| PC 3-Stage | |
|---|---|
| Pad dia. (mm) | Mark |
| Ø 5 | 05 |
| Ø 7 | 07 |
| Ø 10 | 10 |
| Ø 15 | 15 |
| Ø 20 | 20 |
| Ø 30 | 30 |
| Ø 40 | 40 |

④

| Mark | Spring compression length | Pad type | Pad dia. (mm) |
|---|---|---|---|
| 06 | 6 mm | PA | Ø5, Ø6, Ø8 |
| | | PB | Ø6 |
| | | PC | Ø5, Ø7 |
| 08 | 8 mm | PA | Ø10, Ø15 |
| | | PB | Ø10, Ø15 |
| | | PC | Ø10, Ø15 |
| 13 | 13 mm | PA | Ø20, Ø25, Ø30, Ø35, Ø40, Ø50 |
| | | PB | Ø20, Ø30, Ø40, Ø50 |
| | | PC | Ø20, Ø30, Ø40 |

⑤

| Mark | Vacuum pad material | Hardness (HS) | Ambient and fluid temperature | Color | Electrical resistance(Note) |
|---|---|---|---|---|---|
| N | NBR(Rubber) | A55/S | -26~120°C | Black | - |
| U | PU(Uret-hane) | A60/S | -20~75°C | Black | |
| S | Silicon, Silicone rubber | A60/S | -20~180°C | White | |
| SE | Anti-static rubber | A60/S | -20~180°C | Black | $10^4$~$10^6$ Ω•cm |
| E | Low resistance & anti-static rubber | A70/S | -20~180°C | Black | 200 Ω•cm |

● Note: The above value covers only general characteristics of subject rubber materials. Pad materials used by CHELIC pass internal standard.

# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Optional correspondence table

### PAL series selection table:

| ① Pad type | ② Bracket | ③ Pad dia. | ④ Spring compression length | ⑤ Vacuum pad material |
|---|---|---|---|---|
| PA | L | 05 | 06 | N • U • S • SE • E |
| | | 06 | | |
| | | 08 | | |
| | | 10 | 08 | |
| | | 15 | | |
| | | 20 | 13 | |
| | | 25 | | |
| | | 30 | | |
| | | 35 | | |
| | | 40 | | |
| | | 50 | | |

### PBL series selection table:

| ① Pad type | ② Bracket | ③ Pad dia. | ④ Spring compression length | ⑤ Vacuum pad material |
|---|---|---|---|---|
| PB | L | 06 | 06 | N • S • SE • E |
| | | 10 | 08 | |
| | | 15 | | |
| | | 20 | 13 | |
| | | 30 | | |
| | | 40 | | |
| | | 50 | | |

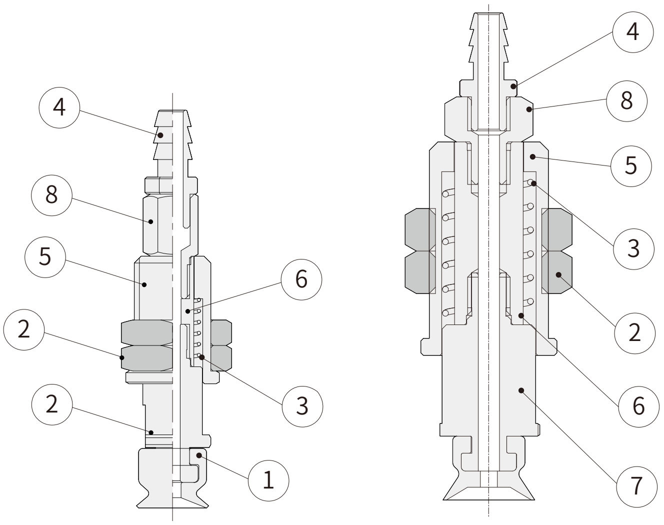
### PCL series selection table:

| ① Pad type | ② Bracket | ③ Pad dia. | ④ Spring compression length | ⑤ Vacuum pad material |
|---|---|---|---|---|
| PC | L | 05 | 06 | N • S • SE • E |
| | | 07 | | |
| | | 10 | 08 | |
| | | 15 | | |
| | | 20 | 13 | |
| | | 30 | | |
| | | 40 | | |

# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Product features

### Internal structure



### Components and material list

| No. | Item | Material |
|---|---|---|
| 01 | Vacuum pad | NBR Rubber |
| 02 | Nut | Copper |
| 03 | Return spring | Spring steel |
| 04 | Adapter | Copper |
| 05 | Bushing | Copper |
| 06 | Piston rod | Copper |
| 07 | Bracket | Copper |
| 08 | Bracket bushing | Copper |

### Product weight

| Item | PAL | | | | |
|---|---|---|---|---|---|
| **Model** | 05*06 | 10*08 | 20*13 | 25*13 | 50*13 |
| **Weight(g)** | 16.57 | 39.43 | 43.85 | 44.25 | 52.45 |

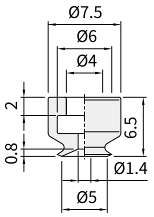
# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Dimensions-Standard type PA, PB, PC series

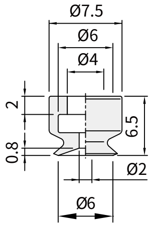
PA
PB
PC
PAG
PAO
PAP
PAQ
PAW
PAL
PBL
PCL
PAR
PS
VP

### Vacuum pad size

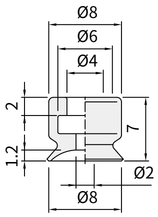
● PA-05


Ø7.5
Ø6
Ø4
2
6.5
0.8
Ø1.4
Ø5

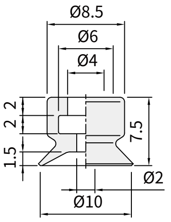
● PA-06


Ø7.5
Ø6
Ø4
2
6.5
0.8
Ø2
Ø6

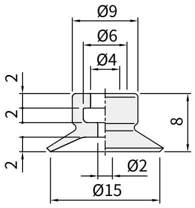
● PA-08


Ø8
Ø6
Ø4
2
7
1.2
Ø2
Ø8

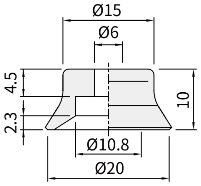
● PA-10


Ø8.5
Ø6
Ø4
2
2
7.5
1.5
Ø2
Ø10

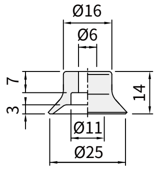
● PA-15


Ø9
Ø6
Ø4
2
2
8
2
Ø2
Ø15

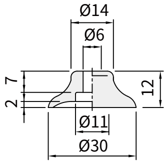
● PA-20


Ø15
Ø6
4.5
10
2.3
Ø10.8
Ø20

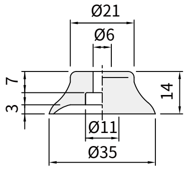
● PA-25


Ø16
Ø6
7
14
3
Ø11
Ø25

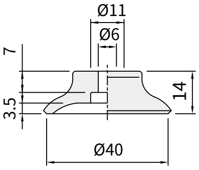
● PA-30


Ø14
Ø6
7
12
2
Ø11
Ø30

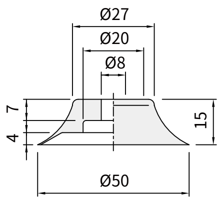
● PA-35


Ø21
Ø6
7
14
3
Ø11
Ø35

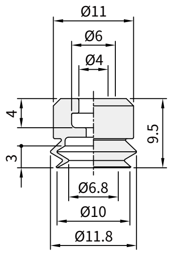
● PA-40


Ø11
Ø6
7
14
3.5
Ø40

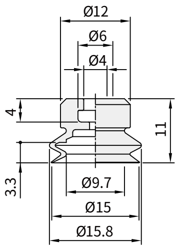
● PA-50


Ø27
Ø20
Ø8
7
15
4
Ø50

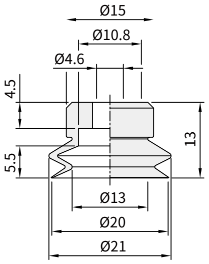
● PB-10


Ø11
Ø6
Ø4
4
9.5
3
Ø6.8
Ø10
Ø11.8

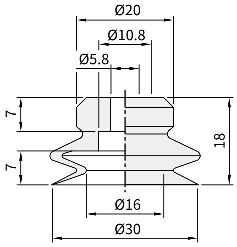
● PB-15


Ø12
Ø6
Ø4
4
11
3.3
Ø9.7
Ø15
Ø15.8

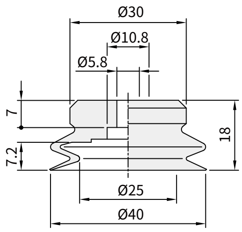
● PB-20


Ø15
Ø10.8
Ø4.6
4.5
13
5.5
Ø13
Ø20
Ø21

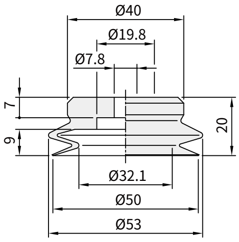
● PB-30


Ø20
Ø10.8
Ø5.8
7
18
7
Ø16
Ø30

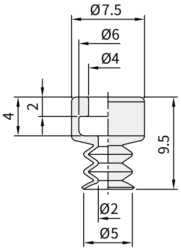
● PB-40


Ø30
Ø10.8
Ø5.8
7
18
7.2
Ø25
Ø40

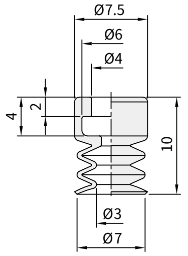
● PB-50


Ø40
Ø19.8
Ø7.8
7
20
9
Ø32.1
Ø50
Ø53

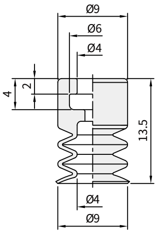
● PC-05


Ø7.5
Ø6
Ø4
4
2
9.5
Ø2
Ø5

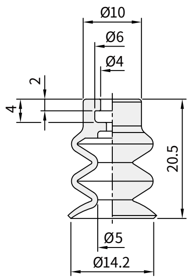
● PC-07


Ø7.5
Ø6
Ø4
4
2
10
Ø3
Ø7

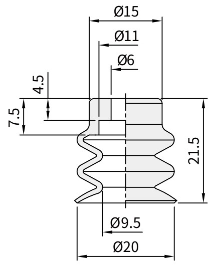
● PC-10


Ø9
Ø6
Ø4
4
2
13.5
Ø4
Ø9

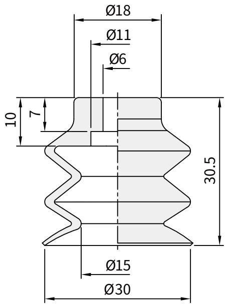
● PC-15


Ø10
Ø6
Ø4
2
4
20.5
Ø5
Ø14.2

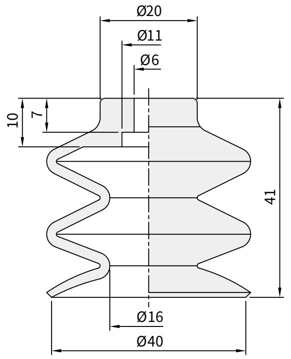
● PC-20


Ø15
Ø11
Ø6
4.5
7.5
21.5
Ø9.5
Ø20

● PC-30


Ø18
Ø11
Ø6
10
7
30.5
Ø15
Ø30

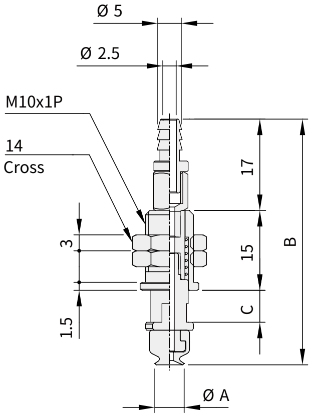
● PC-40


Ø20
Ø11
Ø6
10
7
41
Ø16
Ø40

# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Dimensions-PAL series/ Vertical entry

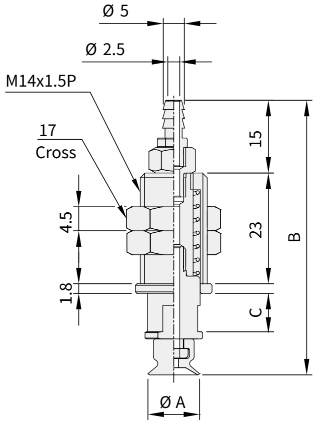
### Ø5, Ø6, Ø8


Ø 5
Ø 2.5
M10x1P
14
Cross
3
1.5
17
15
C
B
Ø A

Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PAL-05 | Ø5 | 46 | 6 | PU tube Ø6 |
| | PAL-06 | Ø6 | 46 | 6 | |
| | PAL-08 | Ø8 | 47 | 6 | |

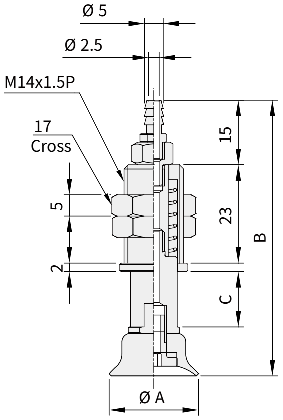
### Ø10, Ø15


Ø 5
Ø 2.5
M14x1.5P
17
Cross
4.5
1.8
15
23
C
B
Ø A

Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PAL-10 | Ø10 | 57 | 8 | PU tube Ø6 |
| | PAL-15 | Ø15 | 58 | 8 | |

### Ø20 ~ Ø50


Ø 5
Ø 2.5
M14x1.5P
17
Cross
5
2
15
23
C
B
Ø A

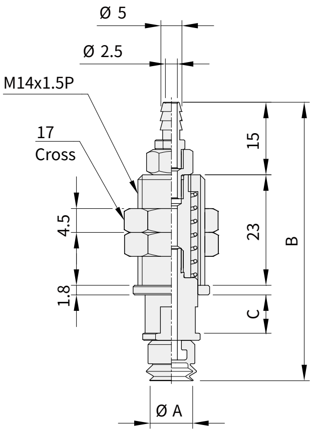
Unit: mm

| Pad type | Model | Pad dia. | Stroke 13 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PAL-20 | Ø20 | 65 | 13 | PU tube Ø6 |
| | PAL-25 | Ø25 | 69 | 13 | |
| | PAL-30 | Ø30 | 68 | 13 | |
| | PAL-35 | Ø35 | 69 | 13 | |
| | PAL-40 | Ø40 | 69 | 13 | |
| | PAL-50 | Ø50 | 71 | 13 | |

# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Dimensions-PBL series/ Vertical entry with spring

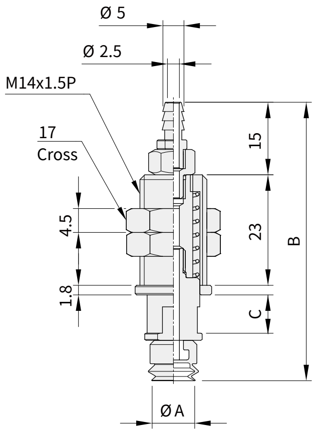
### Ø10, Ø15


Ø 5
Ø 2.5
M14x1.5P
17
Cross
4.5
1.8
15
23
B
C
Ø A

Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PBL-10 | Ø10 | 59 | 8 | PU tube Ø6 |
| | PBL-15 | Ø15 | 61 | 8 | |

### Ø20, Ø30, Ø40, Ø50


Ø 5
Ø 2.5
M14x1.5P
17
Cross
4.5
1.8
15
23
B
C
Ø A

Unit: mm

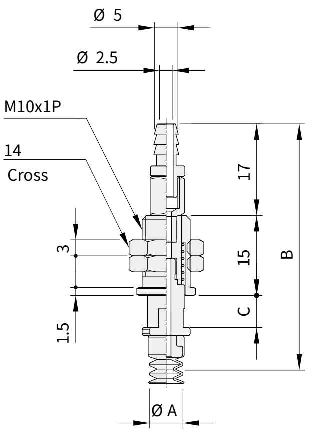
| Pad type | Model | Pad dia. | Stroke 13 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PBL-20 | Ø20 | 65 | 13 | PU tube Ø6 |
| | PBL-30 | Ø30 | 68 | 13 | |
| | PBL-40 | Ø40 | 69 | 13 | |
| | PBL-50 | Ø50 | 71 | 13 | |

PA
PB
PC
PAG
PAO
PAP
PAQ
PAW
PAL
PBL
PCL
PAR
PS
VP

# PAL, PBL, PCL series Non-Rotating Vacuum Pad

## Dimensions-PCL series/ Vertical entry

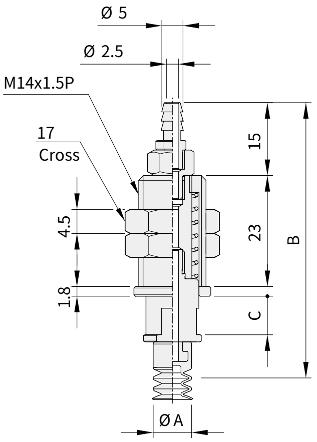
### Ø5, Ø7


Ø 5
Ø 2.5
M10x1P
14
Cross
3
1.5
17
15
C
B
Ø A

Unit: mm

| Pad type | Model | Pad dia. | Stroke 6 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PCL-05 | Ø5 | 49 | 6 | PU tube Ø6 |
| | PCL-07 | Ø7 | 49 | 6 | |

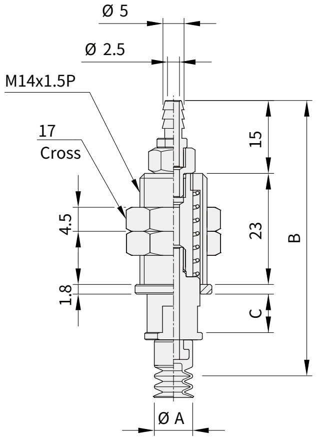
### Ø10, Ø15


Ø 5
Ø 2.5
M14x1.5P
17
Cross
4.5
1.8
15
23
C
B
Ø A

Unit: mm

| Pad type | Model | Pad dia. | Stroke 13 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PCL-10 | Ø10 | 63 | 8 | PU tube Ø6 |
| | PCL-15 | Ø15 | 71 | 8 | |

### Ø20, Ø30, Ø40


Ø 5
Ø 2.5
M14x1.5P
17
Cross
4.5
1.8
15
23
C
B
Ø A

Unit: mm

| Pad type | Model | Pad dia. | Stroke 13 | | Size of PU tube |
|---|---|---|---|---|---|
| | | A | B | C | |
| Circle pad | PCL-20 | Ø20 | 65 | 13 | PU tube Ø6 |
| | PCL-30 | Ø30 | 68 | 13 | |
| | PCL-40 | Ø40 | 69 | 13 | |

# PAR series Vacuum Pad With Ball Joint

## Product features

### Feature

- ● Installation easily: Small size, applicable with pad and easy to assembly.
- ● Swing design with 360 degrees, flexible installation, space saving.
- ● Multiple specifications, variety of vacuum pad optionsSwing design with 360 degrees, flexible installation, space saving.Swing design with

### Specification

Unit: mm

| Item \ Model | PAR 05 | PAR 20 | PAR 60 |
|---|---|---|---|
| Applicable pad size | Ø5 ~ Ø15 | Ø20 ~ Ø50 | Ø60 ~ Ø80 |
| Rotation angle | 30° | | |

### Code of order

**PAR 05**

① (under 05)

①

| Mark | Pad dia. (mm) |
|---|---|
| 05 | Ø5, Ø6, Ø8, Ø10, Ø15 |
| 20 | Ø20, Ø25, Ø30, Ø35, Ø40, Ø50 |
| 60 | Ø60, Ø80 |

| Rotation angle | |
|---|---|
| None | 30° |

● Standard

### Product weight

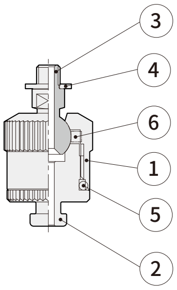
| Item | Model | Weight(g) |
|---|---|---|
| PAR | 05 | 11.0 |
| | 20 | 17.8 |
| | 60 | 52.8 |

# PAR series Vacuum Pad With Ball Joint

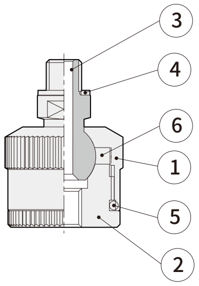
## Product features

## Internal structure

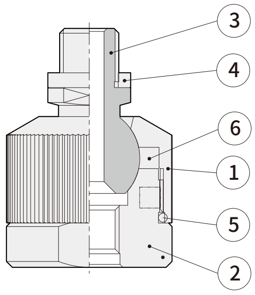
PAR 05



PAR 20



PAR 60

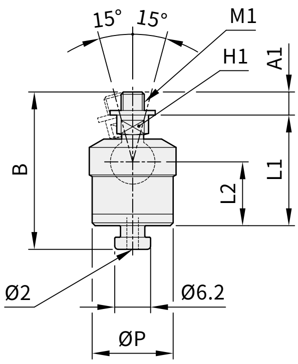


## Components and material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | PAR Top cover | Aluminum alloy | 07 | Plain washer | Cardboard |
| 02 | PAR Bottom cover | Aluminum alloy | 08 | O-ring | NBR |
| 03 | PAR Main shaft | Copper | 09 | X-ring | NBR |

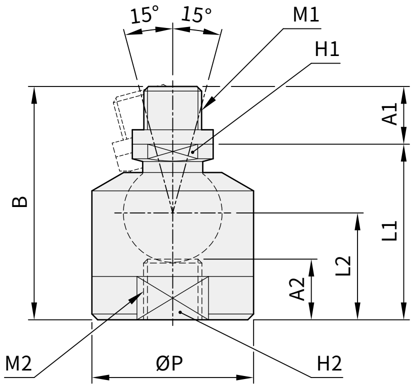
---

## PAR 05



15°
15°
M1
H1
A1
B
L1
L2
Ø2
Ø6.2
ØP

## PAR 20, 60



15°
15°
M1
H1
A1
B
L1
L2
A2
M2
ØP
H2

Unit: mm

| Model | M1 | M2 | A1 | A2 | B | L1 | L2 | ØP | Cross H1 | Cross H2 | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PAR 05** | M4x0.7P | - | 4 | - | 27.3 | 19.2 | 11.1 | 14 | 3.8 | 17.2 | 22 |
| **PAR 20** | M6x1P | M6x1P | 6 | 17.3 | 28.4 | 22.4 | 12 | 19 | 7 | 17.3 | 23 |
| **PAR 60** | M10x1.25P | M10x1.25P | 10 | 19.3 | 40.4 | 30.4 | 18.5 | 28 | 11 | 19.3 | 26 |

# PS series Non-contact Gripper

## Product features/ Code of order

## Feature

- Without vacuum ejector: A positive pressure is applied through form adequate. The exhaust of this air goes trough of low pressure and gets a vacuum aspiring any kind of workpieces.
- Contactless handling: This contactless handling is due to the pressure between the gripper and workpieces.
- Convenience: The body contains screw holes for locking, easily to replaced.

## Specification

| Item \ Model | | PS-20 | PS-40 | PS-60 |
|---|---|---|---|---|
| **Fluid** | | Air | | |
| **Operating pressure** | MPa | 0.1 ~ 0.7 | | |
| **Ambient and operating temperature** | ℃ | 5 ~ 60 | | |
| **Piping port size** | | M3 | M5 | M5 |
| **Air consumption** Note | L/min | 80 | 110 | 190 |
| **Lifting force** Note | N | 1 | 2 | 4.6 |
| **Weight** | g | 15 | 70 | 135 |
| **Body material** | | Aluminum alloy and stainless steel | | |

Note: REMARKS: Above result according to below testing condition
1. Operating pressure: 0.5 Mpa
2. Testing tool :
   (A) PS-20 tested with “PU 0425” PU Tube * 1M
   (B) PS-40 tested with “PU 0640” PU Tube * 1M
   (C) PS-60 tested with “PU 0640” PU Tube * 1M

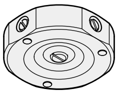
## Code of order **PS 20 – T**

① ②

①

| Mark | Model |
|---|---|
| 20 | 20 series |
| 40 | 40 series |
| 60 | 60s eries |

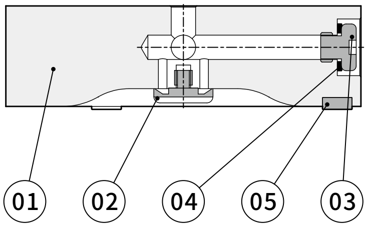
②

| Mark | With bumper pad |
|---|---|
| None | No bumper pad |
| T |  |

# PS series Non-contact Gripper

## Product features

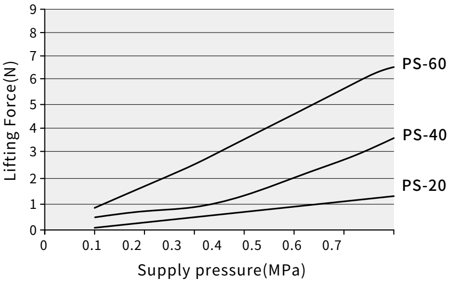
### Internal structure



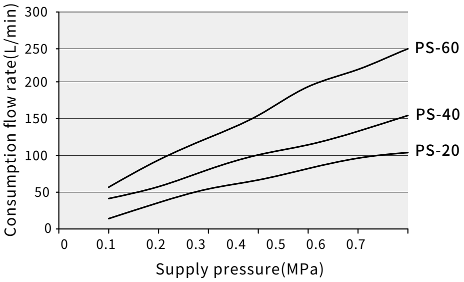
### Components and material list

| No. | Item | Material |
|---|---|---|
| 01 | Body | Aluminum alloy |
| 02 | Airguide cover | Stainless |
| 03 | Plug screw | Carbon steel |
| 04 | Leakproof seal | Copper alloy |
| 05 | Plain washer | Silicon |

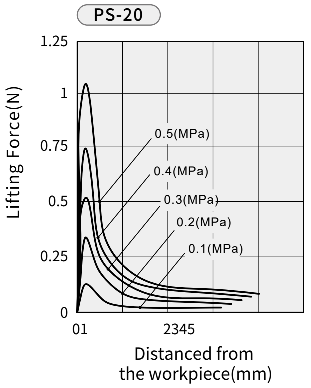
### Lifting force

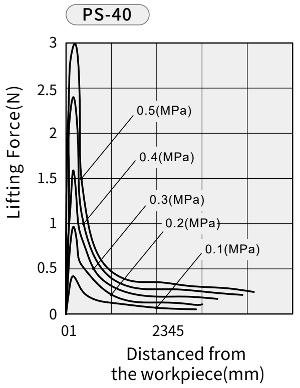


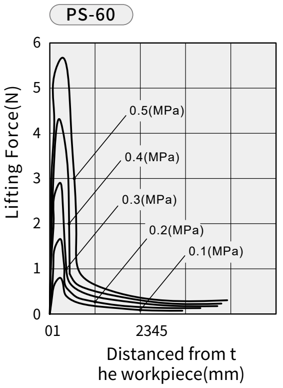
### Air consumption



### Lifting force-distance from the workpiece



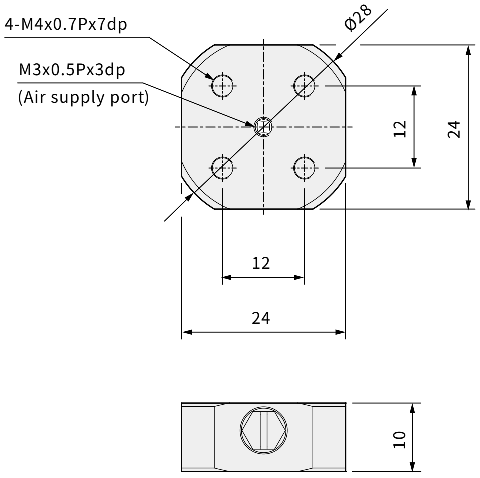




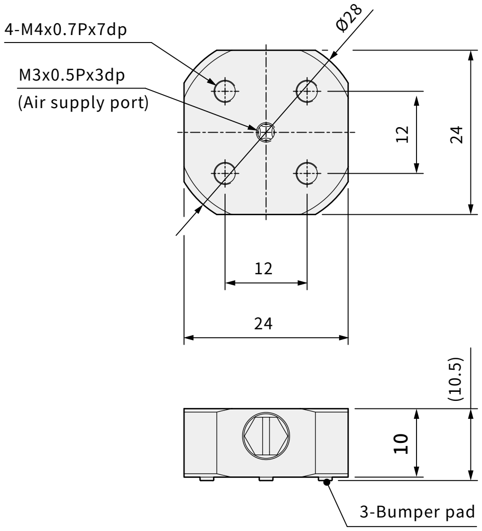
# PS series Non-contact Gripper

## Dimensions

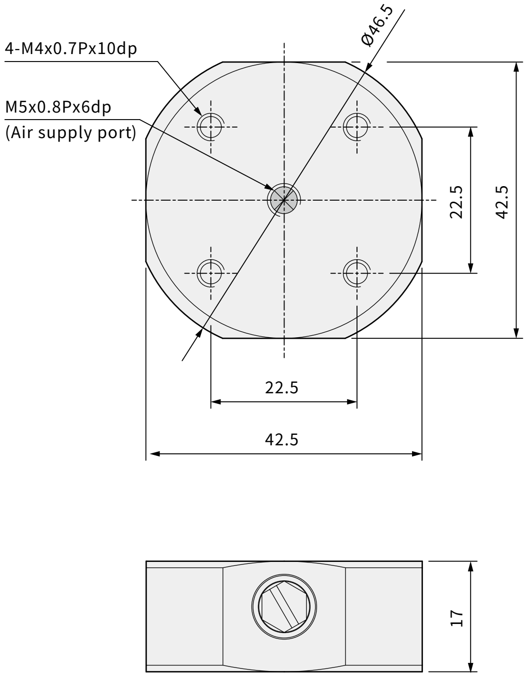
### PS- 20 Flat type


4-M4x0.7Px7dp
M3x0.5Px3dp
(Air supply port)
Ø28
12
24
12
24
10

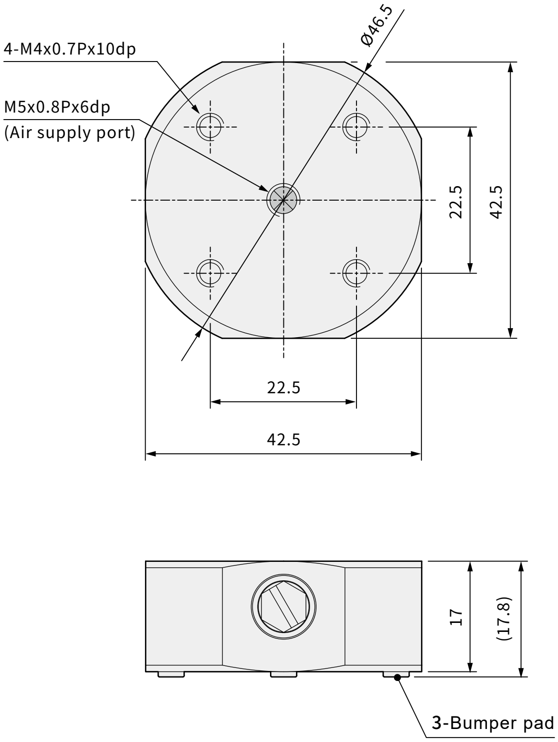
### PS- 20 -T Bumper pad type


4-M4x0.7Px7dp
M3x0.5Px3dp
(Air supply port)
Ø28
12
24
12
24
(10.5)
10
3-Bumper pad

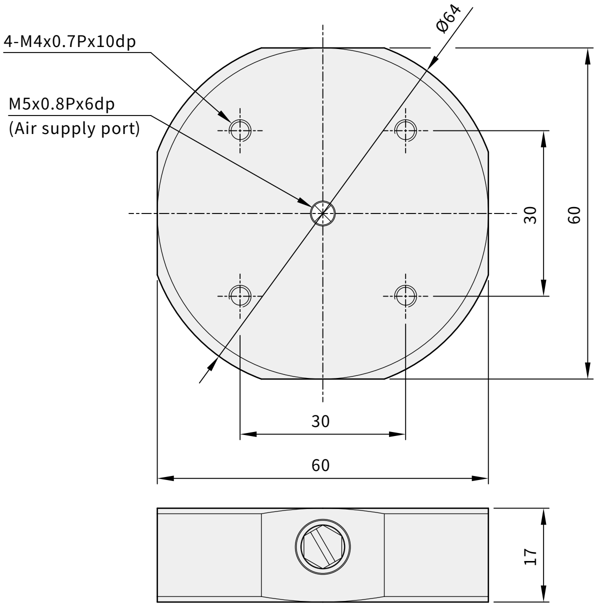
### PS- 40 Flat type


4-M4x0.7Px10dp
M5x0.8Px6dp
(Air supply port)
Ø46.5
22.5
42.5
22.5
42.5
17

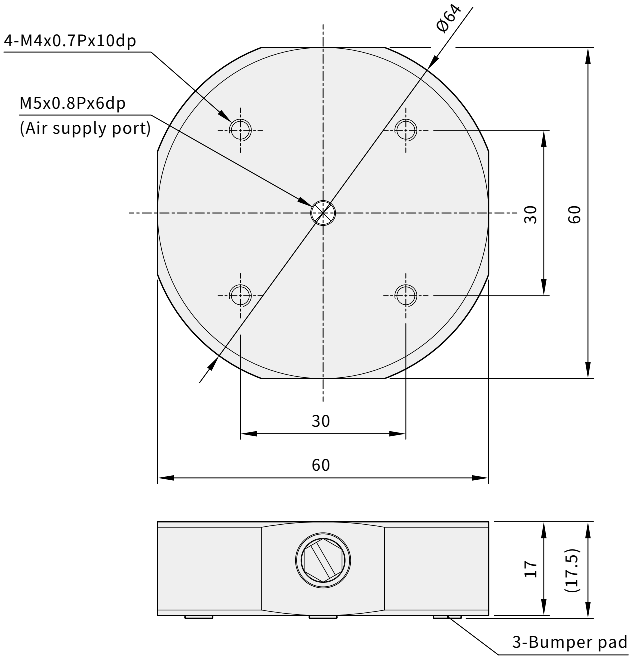
### PS- 40 -T Bumper pad


4-M4x0.7Px10dp
M5x0.8Px6dp
(Air supply port)
Ø46.5
22.5
42.5
22.5
42.5
17
(17.8)
3-Bumper pad

## PS- 60 Flat type


4-M4x0.7Px10dp
M5x0.8Px6dp
(Air supply port)
Ø64
30
60
30
60
17

## PS- 60 -T Bumper pad type

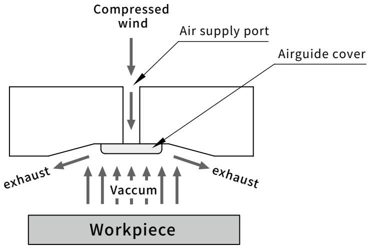

4-M4x0.7Px10dp
M5x0.8Px6dp
(Air supply port)
Ø64
30
60
30
60
17
(17.5)
3-Bumper pad

# PS series Non-contact Gripper

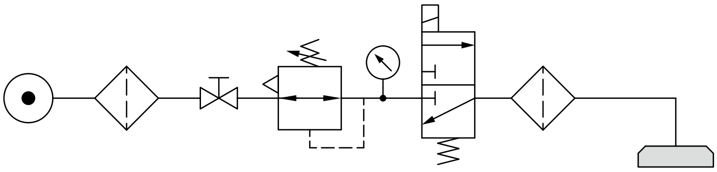
## Working principle/ Application example

### Operating

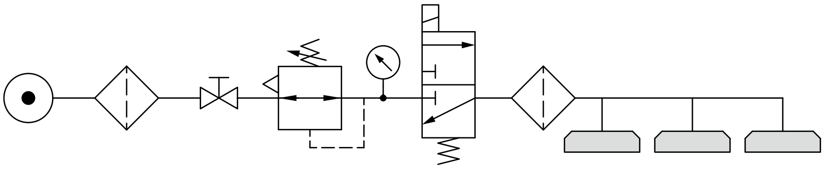
By compressing the wind from supply port and flow into gripper body, the air lead from body through cap to exhaust the wind between workpiece then create vacuum in the center to pick workpiece without touching; this operating called Bernoulli Type.


Compressed wind
Air supply port
Airguide cover
exhaust
exhaust
Vaccum
Workpiece

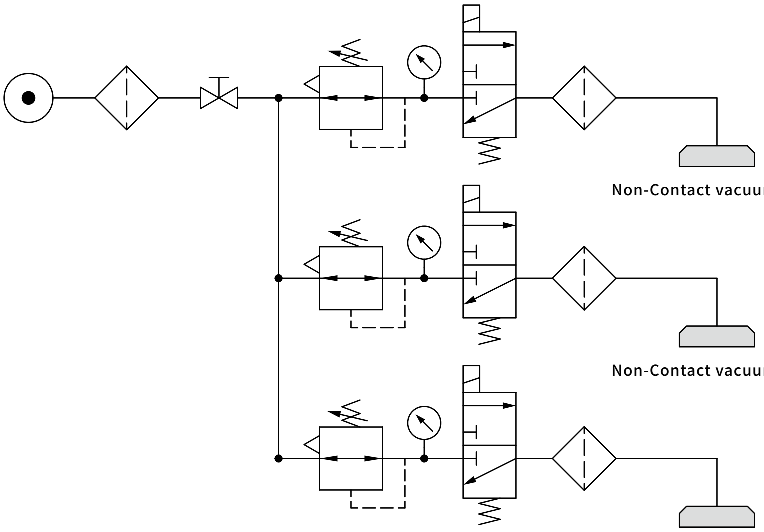
### Selection examples-For small workpiece


Non-Contact vacuum pad

### Selection examples(series)-For large workpiece


Non-Contact vacuum pad*3

### Selection examples(parallel)-For small and many workpieces


Non-Contact vacuum pad-1
Non-Contact vacuum pad-2
Non-Contact vacuum pad-3

※ Note: workpiece quantity should be considered with its weight and the air compressor working performance.

# PS series Non-contact Gripper

## Precautions for Selections or determine the layout

- Should prevent non-contact gripper from huge impact and avoid applying in violent environment. Do not expose grippers at outdoors or under the corrosion chemical working environment.
- Determine the position of the non-contact gripper and taking account the balance of the workpiece.
- A fixture/jig application should be considered when using no bumper gripper so that to avoid workpiece slipping/falling during movement.
- The initial speed while starting should not be fast to avoid workpiece slipping.
- Using a non-contact gripper that area should less than the workpiece. If the area of the gripper bigger than the workpiece, a vacuum zone will not occur, so the lifting force will not be generated.
- The basic mounting direction of the gripper is horizontal. If the gripper is mounted obliquely or vertically, the lifting force and safety factor should be considered.
- Filter modularized is recommended and suggested to be setting before gripper to give clean air and making sure the flow rate stable.
- For the workpiece which is either thin, or has holes, or has concave/convex or soft workpiece, that the area of workpiece should be full acknowledged before using the grippers.

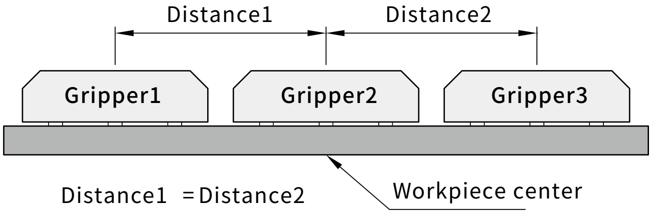


Fig.1

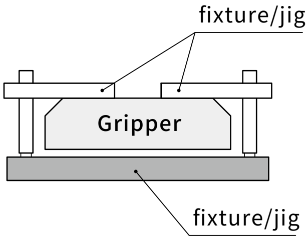


Fig.2

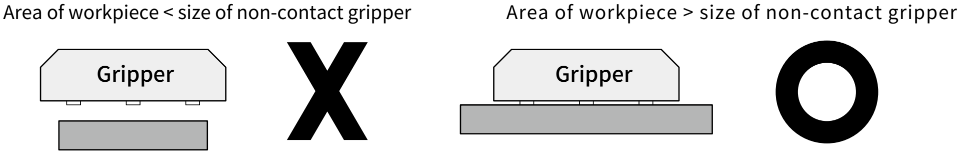

Area of workpiece < size of non-contact gripper
Gripper
X
Area of workpiece > size of non-contact gripper
Gripper
O

Fig.3

## Precautions for assembly

- While setting grippers, the direction of air source should be along with gripper. Opposite the direction of air source is not applicable.
- The substance and tap seal are not allowed to be existed while setting the piping; Loctite liquid should not leak into gripper to cause non functioning or reducing the air flow rate.
- The piping (for connecting the gripper) should not exceed 1 meter or should not apply curly piping to reducing flow rate and causing low lifting.

## Precautions for using

- While starting to use the non-contact gripper, please make sure the working pressure has reached to setting requirement.
- Please make sure all the electricity and air supply are shot-down before processing maintenance. It is to avoid injurying or product defective while disassembly the device.
- High chemical cleaner is not suggestible for cleaning. Only warm water with neutral and mild detergent with cotton paper for cleaning is applicable.
- After maintenance, please make sure all the parts/screws are in position and fixed before starting the air supply to non-contact grippers.

# VP series Vacuum Saving Valve

## Product features/ Code of order

## Feature

- Installation easily: Small size, applicable with pad and easy to assembly.
- Prevent vacuum vanish: Applicable with multiple vacuum pads to keep the vacuum pressure from vanish.
- Variety specifications: Applicable with multiple connecting options.

CHELIC
VP-10-A4

## Specification

| Item \ Model | | A10, A20, A30, A40, B20, B30 | A11, A21, A31, A41, B21, B31 | B10 |
|---|---|---|---|---|
| Connection size for pad | mm | M8x1.25P | PT 1/8 | Ø6 |
| Fixed orifice size | mm | Ø1.0 | | |
| Fluid | | Air | | |
| Pressure range | MPa(kPa) | 0.1 ~ 0.7(100 ~ 700) | | |
| Operating vacuum pressure range | kPa(-mmHg) | 0 ~ -92(0 ~ -690) | | |
| Ambient and fluid temperature | ℃ | 5~60 | | |
| Element nominal filtration rating | um | 40 | | |
| Min. operating flow rate | | 7 | | |
| Available pad size | L/min | 25 ~ 50 | | |

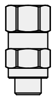
## Code of order VP 10 – A10

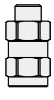
① 10 ② A10

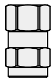
①

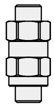
| Mark | Model |
|---|---|
| 10 | Ø1.0 |

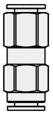
②

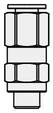
| Type | Vacuum Pad | Vacuum generator | |
|---|---|---|---|
| Mark | Male Thread | Female thread |  |
| A10 | M8x1.25P | | |
| A11 | PT 1/8 | | |

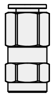
| Type | Vacuum Pad | Vacuum generator | |
|---|---|---|---|
| Mark | Male Thread | Female thread |  |
| A20 | M8x1.25P | | |
| A21 | PT 1/8 | | |

| Type | Vacuum Pad | Vacuum generator | |
|---|---|---|---|
| Mark | Male Thread | Female thread |  |
| A30 | M8x1.25P | | |
| A31 | PT 1/8 | | |

| Type | Vacuum pad | Vacuum generator | |
|---|---|---|---|
| Mark | Male Thread | Female thread |  |
| A40 | M8x1.25P | | |
| A41 | PT 1/8 | | |

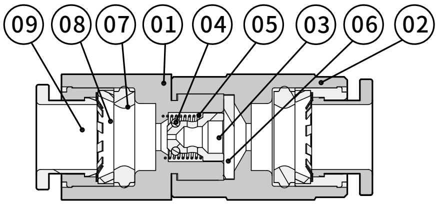
| Type | Vacuum pad | Vacuum generator | |
|---|---|---|---|
| Mark | Connection port(mm) | Connection port(mm) |  |
| B10 | Ø6 | | |

| Type | Vacuum pad | Vacuum generator | |
|---|---|---|---|
| Mark | Male Thread | Connection port(mm) |  |
| B20 | M8x1.25P | Ø6 | |
| B21 | PT 1/8 | Ø6 | |

| Type | Vacuum pad | Vacuum generator | |
|---|---|---|---|
| Mark | Female thread | Connection port(mm) |  |
| B30 | M8x1.25P | Ø6 | |
| B31 | PT 1/8 | Ø6 | |

# VP series Vacuum Saving Valve

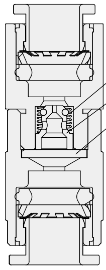
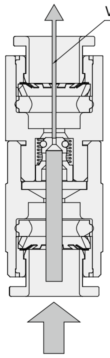
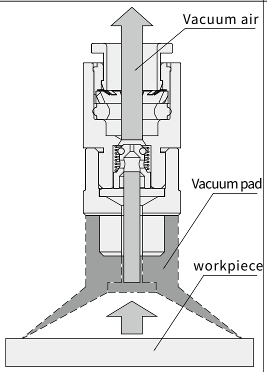
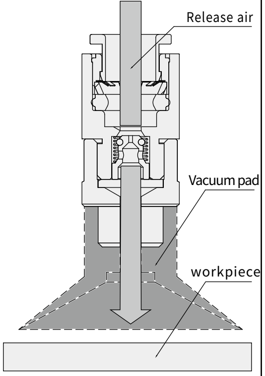
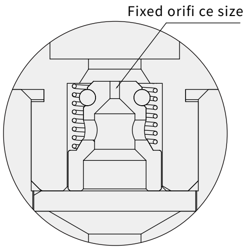
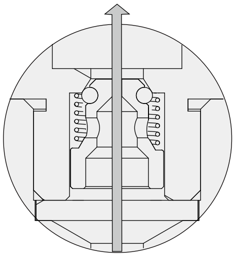
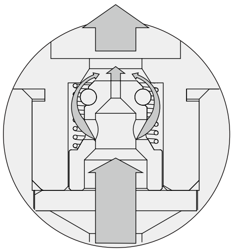
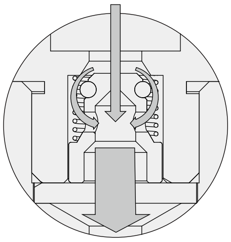
## Internal structure


09
08
07
01
04
05
03
06
02

## Components and material list

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 01 | VP upper part | Copper Alloy | 06 | VP element | Sintered copper |
| 02 | VP lower part | Copper Alloy | 07 | SQC0606 fitting gasket | NBR |
| 03 | VP-10-valve | Copper Alloy | 08 | SQC 06 the 3-fitting part | - |
| 04 | O-Ring 1.2*1 | NBR | 09 | SQC 06 release ring | - |
| 05 | VP spring | Stainless | | | |

## Working principle

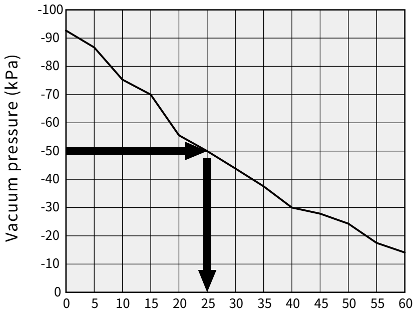
| | Initial condition | Without workpiece | With workpiece | When a workpiece is released |
|---|---|---|---|---|
| Air flow |  Spring<br>Valve<br>Element |  |  Vacuum air<br>Vacuum pad<br>workpiece |  Release air<br>Vacuum pad<br>workpiece |
| Valve operating condition |  Fixed orifice size<br>Since there is no air flow, the valve remains open by the spring force. | <br>**Valve closed**<br>When the workpiece is separated from the vacuum pad, the valve is closed by the air flow, and the suction air can only flow through the fixed orifice.<br>At this time, an amount of air corresponding to the fixed orifice size is sucked. | <br>**Valve open**<br>When the workpiece is sucked by the vacuum pad, the suction flow reduces, and the valve is open by the spring force, which opens the path between the valve and the body for suction. | <br>**Valve open**<br>When the workpiece is released, the valve is open by the vacuum release air, and the path between the valve and the body will open. |

## Product weight

| Model | Weight(g) | Model | Weight(g) |
|---|---|---|---|
| A10 | 19.74 | A41 | 20.22 |
| A11 | | B10 | 18.85 |
| A20 | | B20 | 20.76 |
| A21 | | B21 | |
| A30 | 17.51 | B30 | 18.48 |
| A31 | | B31 | |
| A40 | 20.22 | | |

## Selection conditions

- –50 kPa or more of vacuum pressure per vacuum pad.
- Part number of vacuum saving valve used: VP-10-B1.
- Connection thread size for pad side: Ø6 fixed orifice size: Ø1



Suction flow rate (L/min)
(Chart 1) Flow Rate Characteristics

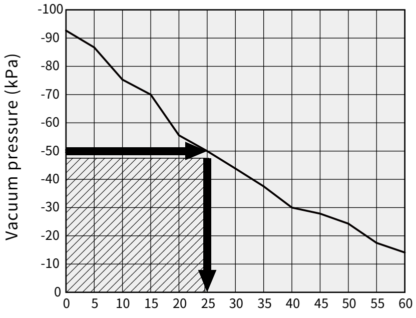
## Check the flow-rate characteristics of the vacuum generator used

- From the flow-rate characteristics of the vacuum generator (Chart 1).
- Calculate the suction flowrate of the vacuum generator from the required vacuum pressure.
- Vacuum pressure -50 kPa.
- Suction flow rate 25 L/min.

## Calculate the number of vacuum saving valves

- Find the minimum operating flow rate and the suction flow rate of the vacuum generator in the specific cations on page 2, and calculate the number of vacuum saving valves (N) that can be used with one vacuum generator.
- $$\text{Number of vacuum saving valves} = \frac{\text{Suction flow rate of the vacuum generator}}{\text{Minimum operating flow rate}}$$
- From (Chart 2) to calculate vacuum saving valve quantity

  Vacuum saving valve quantity: about 3 pcs, $\frac{25}{7}$



Suction flow rate (L/min)
(Chart 2) The Number of Vacuum Saving Valves Chart

## Specific Product Precautions

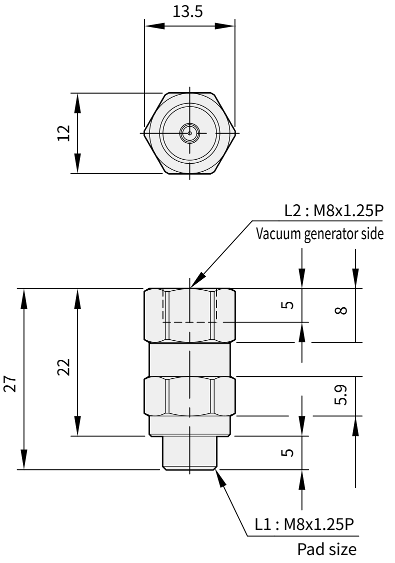
### ⚠ CAUTION

- The product is not equipped with a vacuum holding function, and cannot be used for the purpose of holding vacuum.
- Do not disassemble the product. Once the product is disassembled and reassembled, it will not be able to satisfy the original performance.
- When piping, do not get the pad side and vacuum generator side of the product the wrong way round.
- When the built-in element of the product gets clogged, replace the whole product.

# VP series Vacuum Saving Valve

## Dimensions

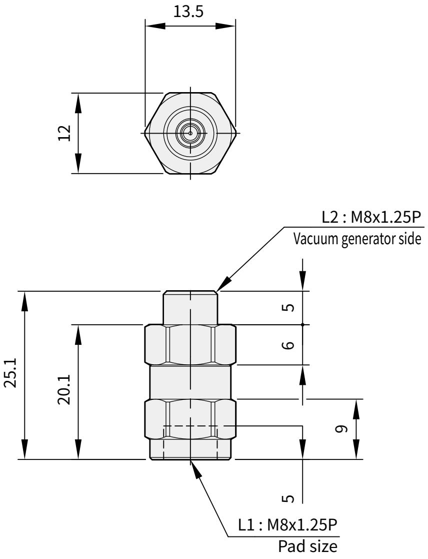
### VP - 10 - A ☐


13.5
12
L2 : M8x1.25P
Vacuum generator side
5
8
27
22
5.9
5
L1 : M8x1.25P
Pad size

Unit: mm

| Model | Thread size L1 | Thread size L2 |
|---|---|---|
| VP-10-A 10 | M8x1.25P | M8x1.25P |
| VP-10-A 11 | PT 1/8 | PT 1/8 |

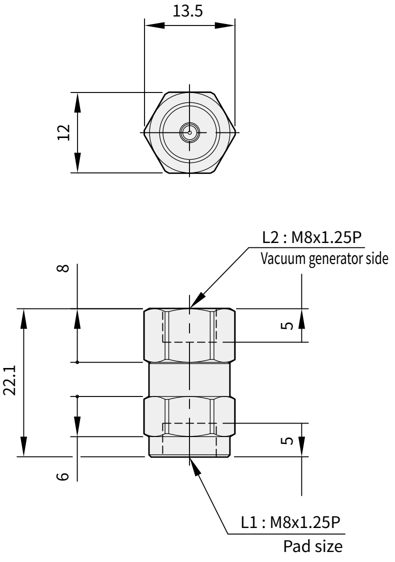
### VP - 10 - A ☐


13.5
12
L2 : M8x1.25P
Vacuum generator side
5
6
25.1
20.1
9
5
L1 : M8x1.25P
Pad size

Unit: mm

| Model | Thread size L1 | Thread size L2 |
|---|---|---|
| VP-10-A 20 | M8x1.25P | M8x1.25P |
| VP-10-A 21 | PT 1/8 | PT 1/8 |

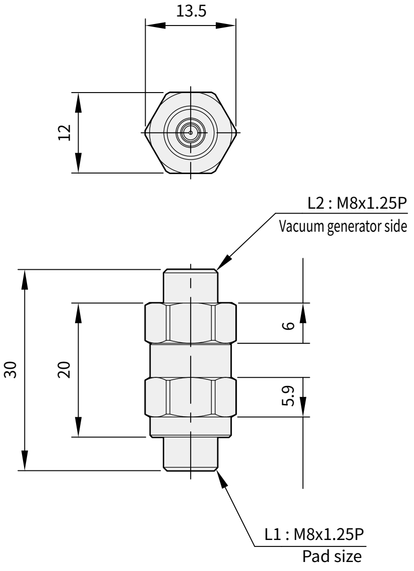
### VP - 10 - A ☐


13.5
12
L2 : M8x1.25P
Vacuum generator side
8
5
22.1
5
6
L1 : M8x1.25P
Pad size

Unit: mm

| Model | Thread size L1 | Thread size L2 |
|---|---|---|
| VP-10-A 30 | M8x1.25P | M8x1.25P |
| VP-10-A 31 | PT 1/8 | PT 1/8 |

### VP - 10 - A ☐


13.5
12
L2 : M8x1.25P
Vacuum generator side
6
30
20
5.9
L1 : M8x1.25P
Pad size

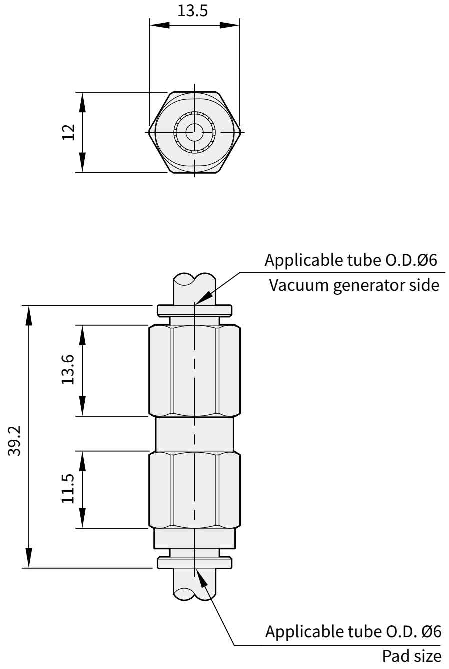
Unit: mm

| Model | Thread size L1 | Thread size L2 |
|---|---|---|
| VP-10-A 40 | M8x1.25P | M8x1.25P |
| VP-10-A 41 | PT 1/8 | PT 1/8 |

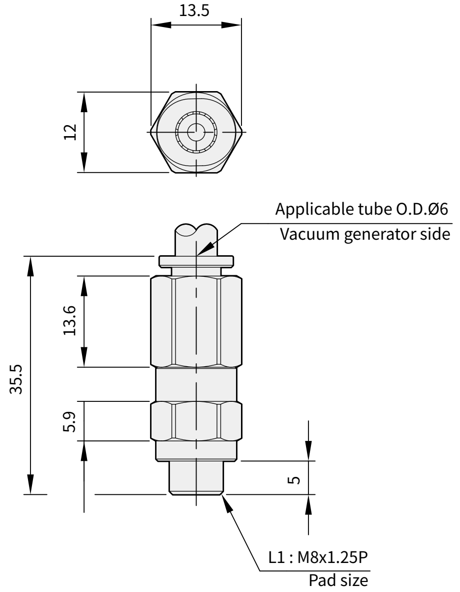
# VP series Vacuum Saving Valve

## Dimensions

### VP - 10 - B10


13.5
12
Applicable tube O.D.Ø6
Vacuum generator side
39.2
13.6
11.5
Applicable tube O.D. Ø6
Pad size

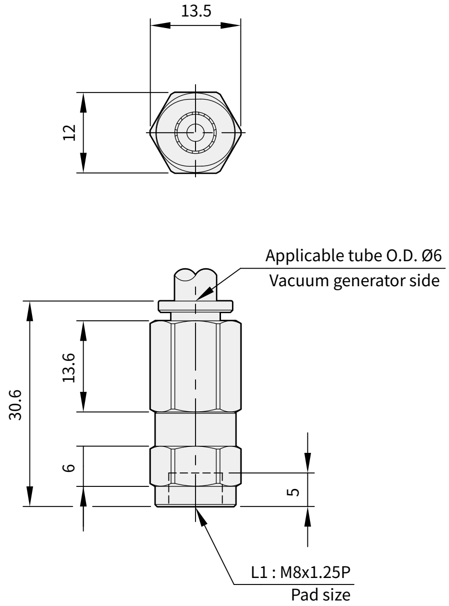
### VP - 10 - B □


13.5
12
Applicable tube O.D.Ø6
Vacuum generator side
35.5
13.6
5.9
5
L1 : M8x1.25P
Pad size

Unit: mm

| Model | Thread size L1 |
|---|---|
| VP-10-B 20 | M8x1.25P |
| VP-10-B 21 | PT 1/8 |

### VP - 10 -B □


13.5
12
Applicable tube O.D. Ø6
Vacuum generator side
30.6
13.6
6
5
L1 : M8x1.25P
Pad size

Unit: mm

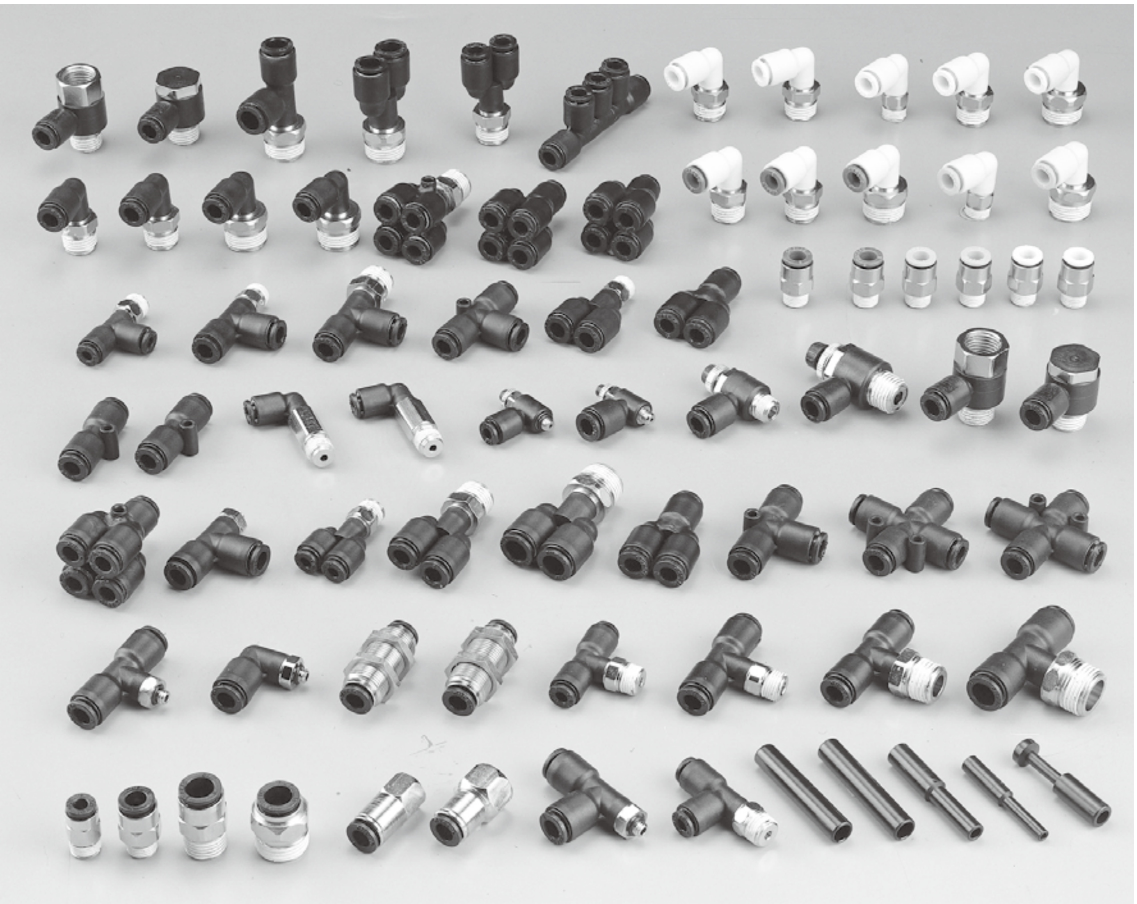
| Model | Thread size L1 |
|---|---|
| VP-10-B 30 | M8x1.25P |
| VP-10-B 31 | PT 1/8 |

# MEMO

# Fittings series

## SQ, SC, QSC, QSN, QHV series

| | | |
|---|---|---|
| Fitting accessory | SQ | series |
| Special fitting | | series |
| Speed controller | ASC | series |
| | BSC | series |
| | CSC | series |
| Speed control fitting | QSC | series |
| | QSN | series |
| | QHV | series |



# Safety Notice/ Fittings/ Caution For Application

Please read the safety notice carefully before using and pay attention to the safety caution of this product.

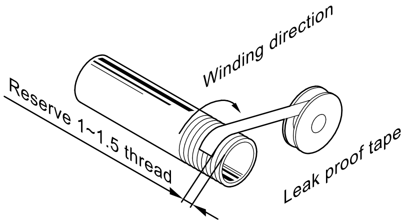
## Caution for design, selection

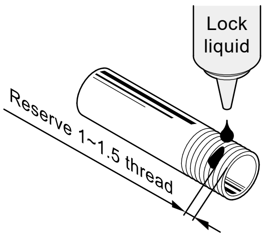
### WARNING

- Please do not use fluid other than compressed air, never aply in fluid other than clean air. Pay attention to the temperature of the fluid.
- Please use the range of specification table.
- Requirement of ambient condition:
  (1) Avoid chemical ( use stainless steel material and limit classification ), corrosive and high temperature place in surrounding.
  (2) Avoid being used in heating and radiation place and in the place with inflammable ( with spark ).
  (3) Avoid being used in place with oily, Inflamable, explosive and toxic object.
- Avoid situation of swing and revolving movement at screw end or pipe end of joint because swing and revolving movement tend to cause damage to pipe joint body.
- Prevent debris and dust from entering the pipe and joint while laying, keep clean.
- Follow the torque in table below while laying the pipe ( tighten the fitting ), never exceed the range of application to avoid damage of product.
- **Torque chart for piping**

| Size of piping | Appropriate turning torque N • m ( kgf • cm ) |
|---|---|
| M5 | 1.5 ~ 2 (15 ~ 20) |
| Rc (PT) 1/8 | 7 ~ 9 (70 ~ 90) |
| Rc (PT) 1/4 | 12 ~ 14 (120 ~ 140) |
| Rc (PT) 3/8 | 22 ~ 24 (220 ~ 240) |
| Rc (PT) 1/2 | 28 ~ 30 (280 ~ 300) |

- Prevent debris and leak proof tape residue from entering the pipe while pipe laying and assembling the fitting. Reserve 1~1.5 thread without tape while tying the tape.





- If the fitting is locked by using fluid fixing glue ( anoxic glue ), avoid excessive amount and fluid glue from flowing in the body, which may cause jammed and poor movement.

- The inserting portion of pipe shall have vertical cut section, no scratch at outer circumference of the pipe and not in oblong shape in order to avoid leakage and poor holding.

- Make the pipe is inserted to the bottom while joining of the pipe, make a trial pull to ensure the pipe is unable to be pulled out, leakage will be caused in the pipe is fail to inserted to the bottom or danger of loosen.

## Maintanance, selection

### WARNING

- Attention while the pipe is loosen:

(1) Make sure there is no pressure before loosen the pipe.

(2) Squeeze the crimp ring evenly to the end, pull the pipe out, if the crimp ring fail to be pressed to the end, it might hurt the pipe when pulling and cause residue of pipe scrape inside the pipe joint, and cause blockage of pipeline and poor sealing.

(3) The pipe pulled out frequency, there is deep recession or scratch at clamped portion, which should be removing and trim and then insert into pipe joint again, avoid poor sealing cause leakage.

- Check regularly and serviced

(1) Scratch mark at pipe joint and pipe, wear or corrosion.

(2) Leakage of the compressed air.

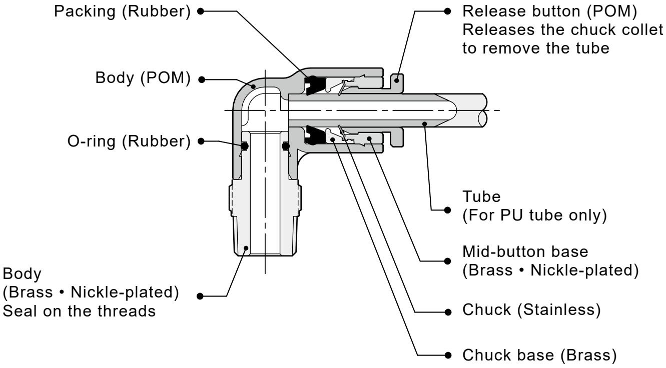
(3) Hardening, deterioration or deformation of pipe.

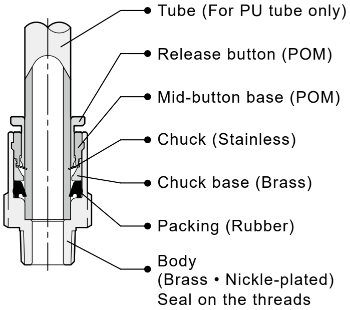
(4) Abnormality at jointing place of pipe and joint.

# SQ series Fitting

## Product features

### Internal structure


Packing (Rubber)
Body (POM)
O-ring (Rubber)
Body
(Brass • Nickle-plated)
Seal on the threads
Release button (POM)
Releases the chuck collet
to remove the tube
Tube
(For PU tube only)
Mid-button base
(Brass • Nickle-plated)
Chuck (Stainless)
Chuck base (Brass)


Tube (For PU tube only)
Release button (POM)
Mid-button base (POM)
Chuck (Stainless)
Chuck base (Brass)
Packing (Rubber)
Body
(Brass • Nickle-plated)
Seal on the threads

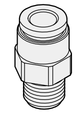
### Specification

| Item / Port size | | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32", 1/4", 5/16", 3/8", 1/2" |
|---|---|---|
| Fluid | | Air |
| Pressure range kgf/cm²(kPa) | | 9 (900) |
| Proof pressure kgf/cm²(kPa) | | 10 (1000) |
| Proof vacuum pressure kPa(Torr) | | -100 (10) |
| Ambient and fluid temperature °C | | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | PBT, PP |
| Thread Rc(PT/NPT) | | M5x0.8p (10/32"), 1/8", 1/4", 3/8", 1/2" |
| Seal on the threads | | With sealant |

### Code of order

**SQC** – **6** – **10**

Model



SQC:
Straight fitting

Port size

Metric:

| | |
|---|---|
| Ø4 : | Ø4 mm |
| Ø6 : | Ø6 mm |
| Ø8 : | Ø8 mm |
| Ø10 : | Ø10 mm |
| Ø12 : | Ø12 mm |

Inch:

| | |
|---|---|
| 5/32" : | Ø3.97 mm |
| 1/4" : | Ø6.35 mm |
| 5/16" : | Ø7.94 mm |
| 3/8" : | Ø9.53 mm |
| 1/2" : | Ø12.7 mm |

Thread

Metric:

| | |
|---|---|
| M5 : | M5x0.8 |
| 01 : | PT 1/8" |
| 02 : | PT 1/4" |
| 03 : | PT 3/8" |
| 04 : | PT 1/2" |

Inch:

| | |
|---|---|
| 10/32 : | NR 10/32" |
| 01 : | NPT 1/8" |
| 02 : | NPT 1/4" |
| 03 : | NPT 3/8" |
| 04 : | NPT 1/2" |

# SQ series Fitting

## Classification

CHELIC

### **SQC** series Male straight

A general type is applied to straight male piping.

Page 4-1.8

### **SQT** series Male branch tee

Applied to the tube of two sides 90° degrees.

Page 4-1.12

### **SQY** series Union Y

The Y type same direction with same size and different size of tube.

Page 4-1.16

### **SQG** series Female connector

Applied to straight female piping.

Page 4-1.9

### **SQD** series Male run tee

Applied to the tube of one side same direction and one side 90 degrees.

Page 4-1.13

### **SQX** series Cross

The cross each is 90° degrees same size and different size tube.

Page 4-1.17

### **SQL** series Male elbow

Applied to the tube of right angle 90° degrees direction.

Page 4-1.10

### **SQU** series Branch Y

Applied to the tube of same direction branch Y.

Page 4-1.14

### **SQF** series Triple universal elbow

The union 90° degrees vertical same size and different size of tube.

Page 4-1.17

### **SQSL** series Long male elbow

Applied to the long size of right angle 90° degree direction.

Page 4-1.11

### **SQM** series Double branch Y

Applied to the tube of same direction branch Y.

Page 4-1.11

### **SQW** series Double union Y

The branch union double Y same direction with same size and different size of piping.

Page 4-1.18

### **SQMH-C** series Bulkhead union

Applied to a type of panel, which two sides piping must be union.

Page 4-1.18

### **SQH** series Straight union

Applied to the same direction union with same size and different size of piping.

Page 4-1.15

### **SQZ** series Rotary male elbow

Applied to the right angle 90° degrees direction and rotational of piping.

Page 4-1.19

### **SQMH-P** series Bulkhead union (Plastic)

Applied to a type of panel, which two sides piping must be union.

Page 4-1.18

### **SQE** series Union tee

The 90 degrees T type same size and different size of piping.

Page 4-1.16

### **SQP** series Female universal elbow

Applied to the right angle 90° degrees direction and rotate than vertical used.

Page 4-1.21

# SQ series Speed Fitting

## Classification

### **SQV** series Union elbow

Applied to fix 90° angle use on elbow.

Page 4-1.15

### **SQLJ** series Plug-in elbow

Applied to straight 90° and fixed piping.

Page 4-1.45

### **SQLG** series Male elbow pressure gauge fitting

Applied to tube system confirm pressure.

Page 4-1.52

### **SQLH** series Bulkhead elbow

Applied to partition fixed under 7mm.

Page 4-1.29

### **SQRC** series Self-seal straight male

Applied to connect directly to temale thread of air check.

Page 4-1.48

### **SQEG** series Branch tee pressure gauge fitting

Applied to connect tube in piping confirm pressure.

Page 4-1.52

### **SPG** series Plug

Applied to fitting tube and do not use temporarily.

Page 4-1.43

### **SQRH** series Self-seal straight union

Applied in the middle of small flow piping for checking opposite direction.

Page 4-1.48

### **QSC** series Speed controller

Applied to adjust air flow, speed control.

Page 4-2.6

### **SPP** series Nipple

Apply to fitting two direction with same size nipple.

Page 4-1.44

### **SQRH** series Self-seal straight union

Applied in the middle of large flow piping for checking opposite direction.

Page 4-1.48

### **QSN** series Speed controller in-line

Applied to the right angle 90° degrees direction and rotational of double tube.

Page 4-2.19

### **SPF** series Different diam nipple

Applied to fitting two direction with same size nipple.

Page 4-1.44

### **SQCG** series Pressure gauge fitting

1/8” male fixed , identification gauge.

Page 4-1.51

### **QHV** series Switching type in-line

Applied to series connection piping, as manually operated value.

Page 4-2.27

### **SQHJ** series Plug-in reducer

Applied to extend tube of fitting.

Page 4-1.45

### **SQMG** series Bulkhead straight gauge type

Applied to pressure identification on panel fixed on partition.

Page 4-1.52

### **SQKZ** series Rotary branch male elbow

Applied to the right angle 90° degrees direction and rotational of double tube.

Page 4-1.23

# SQ series Fitting

## Classification

### **SQKP** series Rotary female elbow

Applied to the right angle 90° degrees direction and rotate than vertical used.

Page 4-1.25

### **SQKX** series Branch male elbow

Applied to right angle 90° degrees direction and double piping.

Page 4-1.27

### **SQKU** series Branch union elbow

Applied to fix the right angle 90° degrees direction.

Page 4-1.28

### **MSQC** series Mini male straight

A general type is applied to straight male piping.

Page 4-1.40

### **MSQL** series Mini male elbow

Applied to the tube of right angle 90° degrees direction.

Page 4-1.40

### **MSQE** series Mini union tee

The 90° degrees T type same size and different size of piping.

Page 4-1.40

### **MSQT** series Mini male branch tee

Applied to the piping of two sides 90°degrees.

Page 4-1.41

### **MSQH** series Mini straight union

Applied to the same direction union with same size and different.

Page 4-1.41

### **MSQR** series
### Mini bulkhead straight union

Applied to a type of panel, which two sides piping must be union.

Page 4-1.41

### **MSQB** series
### Mini male straight with sealant

Applied to straight tube with narrow space.

Page 4-1.42

### **SQRL** series Self-seal elbow

Applied to connect directly to male of air. check

Page 4-1.49

### **SQRM** series
### Self-seal bulkhead union

Applied to a type of panel, which two sides piping must be union.

Page 4-1.50

### **QVA** series
### Ball type switch in-line

Applied to series connection piping, as manually operated value.

Page 4-2.32

### **QVAH** series
### Bulkhead switch in-line

Applied to a type of panel, as manually operated valve.

Page 4-2.32

### **QVAB** series
### Ball type switch male straight

Applied to the tube as manually operated valve.

Page 4-2.32

### **SQCH** series Bulkhead straight

Applied to a type of panel, which two sides piping must be union.

Page 4-1.29

### **SQB** series series Delta union

Applied to piping with same sizes but different directions.

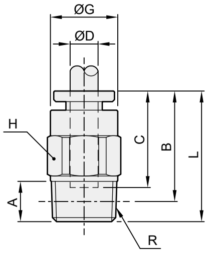
Page 4-1.28

### **MSQJ** series 45° Male elbow

Applied to 45°piping

Page 4-1.42

## SQC series Male straight



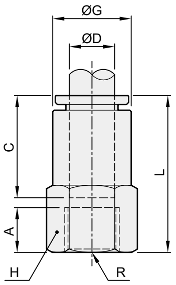
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQC 4 - M5 | 3.2 | 17.7 | 14.1 | 10 | 19.3 | 10 | 4 | 5 |
| | 1/8" | SQC 4 - 01 | 5.5 | 16 | 14.1 | 10 | 18.7 | 10 | 5.5 | 6 |
| | 1/4" | SQC 4 - 02 | 8 | 12.9 | 14.1 | 10 | 16.9 | 14 | 5.5 | 13 |
| Ø6 | M5 | SQC 6 - M5 | 2.9 | 20.3 | 16.3 | 12 | 21.7 | 12 | 4 | 8 |
| | 1/8" | SQC 6 - 01 | 5.5 | 18.2 | 17.1 | 12 | 20.9 | 12 | 12.5 | 7.5 |
| | 1/4" | SQC 6 - 02 | 8 | 18.2 | 17.1 | 12.4 | 22.2 | 14 | 12.5 | 15 |
| | 3/8" | SQC 6 - 03 | 8 | 15 | 17.1 | 12.4 | 19 | 17 | 12.5 | 23 |
| Ø8 | 1/8" | SQC 8 - 01 | 5.5 | 23 | 18.7 | 14 | 25.7 | 14 | 20 | 12.5 |
| | 1/4" | SQC 8 - 02 | 8 | 20 | 18.7 | 14 | 24 | 14 | 20 | 15 |
| | 3/8" | SQC 8 - 03 | 7.8 | 15.4 | 18.3 | 14.3 | 19.3 | 17 | 20 | 19 |
| Ø10 | 1/8" | SQC 10 - 01 | 5.5 | 25.6 | 20.6 | 17 | 28.3 | 17 | 22 | 21 |
| | 1/4" | SQC 10 - 02 | 8 | 25.9 | 20.4 | 17 | 29.9 | 17 | 35 | 23 |
| | 3/8" | SQC 10 - 03 | 8 | 21.9 | 20.9 | 17 | 25.9 | 17 | 35 | 25 |
| | 1/2" | SQC 10 - 04 | 10.5 | 19.7 | 20.9 | 17.5 | 24.9 | 21 | 35 | 40 |
| Ø12 | 1/4" | SQC 12 - 02 | 8 | 30.5 | 23.8 | 20.4 | 34.5 | 21 | 35 | 36 |
| | 3/8" | SQC 12 - 03 | 8 | 26.6 | 23.8 | 20.4 | 30.6 | 21 | 58 | 27 |
| | 1/2" | SQC 12 - 04 | 10 | 25.8 | 23.8 | 20.4 | 30.8 | 21 | 58 | 29 |

Inch specification

| Port size ØD | Thread size NPT | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR10/32” | SQC 5/32–10/32 | 3.2 | 17.7 | 14.1 | 10 | 19.3 | 10 | 4 | 5 |
| | 1/8" | SQC 5/32 – 01 | 6 | 16.5 | 14.1 | 10 | 19.5 | 10 | 5.5 | 6 |
| | 1/4" | SQC 5/32 – 02 | 9 | 14.3 | 14.1 | 10 | 18.8 | 14 | 5.5 | 13 |
| 1/4” | NR10/32” | SQC 1/4 – 10/32 | 3.2 | 20.8 | 17 | 12 | 22.4 | 12 | 4 | 8 |
| | 1/8" | SQC 1/4 – 01 | 6 | 19 | 17.5 | 12 | 22 | 12 | 12.5 | 7.5 |
| | 1/4" | SQC 1/4 – 02 | 9 | 19.6 | 17.5 | 12.4 | 24.1 | 14 | 12.5 | 15 |
| | 3/8" | SQC 1/4 – 03 | 9 | 17.4 | 17.5 | 12.4 | 21.9 | 17 | 12.5 | 23 |
| 5/16” | 1/8" | SQC 5/16 – 01 | 6 | 23.7 | 18.7 | 14 | 26.7 | 14 | 20 | 12.5 |
| | 1/4" | SQC 5/16 – 02 | 9 | 21.5 | 18.7 | 14 | 26 | 14 | 20 | 15 |
| | 3/8" | SQC 5/16 – 03 | 9 | 17.1 | 18.7 | 14.3 | 21.6 | 17 | 20 | 19 |
| 3/8” | 1/8" | SQC 3/8 – 01 | 6 | 25.8 | 20.8 | 17 | 28.8 | 17 | 22 | 21 |
| | 1/4" | SQC 3/8 – 02 | 9 | 25.3 | 18.8 | 17 | 29.8 | 17 | 35 | 23 |
| | 3/8" | SQC 3/8 – 03 | 9 | 23.3 | 20.8 | 17 | 27.8 | 17 | 35 | 25 |
| 1/2” | 1/4" | SQC 1/2 – 02 | 9 | 30.9 | 23.7 | 21.5 | 25.4 | 22 | 35 | 38 |
| | 3/8" | SQC 1/2 – 03 | 9 | 29.2 | 23.7 | 21.5 | 33.7 | 22 | 58 | 27 |
| | 1/2" | SQC 1/2 – 04 | 11 | 26.2 | 23.7 | 21.5 | 31.7 | 22 | 58 | 29 |

## SQG series Female connector



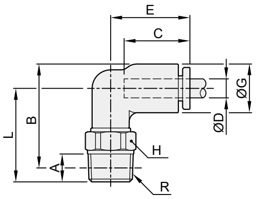
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQG 4 - 01 | 8.5 | 14.1 | 10 | 24.1 | 12 | 4 | 20.5 |
|  | 1/4" | SQG 4 - 02 | 10.5 | 14.4 | 10 | 26.9 | 17 | 5.5 | 12 |
| Ø6 | 1/8" | SQG 6 - 01 | 8 | 17 | 12 | 26.8 | 12 | 12.5 | 21 |
|  | 1/4" | SQG 6 - 02 | 10 | 17 | 12 | 29.3 | 17 | 12.5 | 18 |
| Ø8 | 1/8" | SQG 8 - 01 | 8.5 | 17.8 | 14 | 28 | 14 | 20 | 25 |
|  | 1/4" | SQG 8 - 02 | 10.5 | 17.8 | 14 | 30.5 | 17 | 20 | 28 |
|  | 3/8" | SQG 8 - 03 | 10.5 | 17.8 | 14 | 30.5 | 19 | 20 | 28 |
| Ø10 | 1/4" | SQG 10 - 02 | 10.5 | 20.8 | 17 | 33.4 | 17 | 22 | 32 |
|  | 3/8" | SQG 10 - 03 | 10.5 | 20.3 | 17 | 32.6 | 19 | 35 | 30 |
| Ø12 | 1/4" | SQG 12 - 02 | 10.5 | 23.6 | 20.4 | 37.7 | 21 | 58 | 53 |
|  | 3/8" | SQG 12 - 03 | 10.5 | 23.6 | 20.4 | 36.3 | 21 | 58 | 46 |
|  | 1/2" | SQG 12 - 04 | 12.5 | 23.6 | 20.4 | 38.8 | 24 | 58 | 54.5 |

Inch specification

| Port size ØD | Thread size NPT | Model | A | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| 5/32” | 1/8" | SQG 5/32 - 01 | 9 | 14.4 | 10 | 25.4 | 12 | 4 | 20.5 |
|  | 1/4" | SQG 5/32 - 02 | 11 | 14.4 | 10 | 27.9 | 17 | 5.5 | 12 |
| 1/4” | 1/8" | SQG 1/4 - 01 | 9 | 17.5 | 12 | 28.5 | 12 | 12.5 | 21 |
|  | 1/4" | SQG 1/4 - 02 | 11 | 17.5 | 12 | 31 | 17 | 12.5 | 18 |
| 5/16” | 1/8" | SQG 5/16 - 01 | 9 | 18.7 | 14 | 29.9 | 14 | 20 | 25 |
|  | 1/4" | SQG 5/16 - 02 | 11 | 18.7 | 14 | 32.4 | 17 | 20 | 26 |
|  | 3/8" | SQG 5/16 - 03 | 11 | 18.7 | 14 | 32.4 | 19 | 20 | 26 |
| 3/8” | 1/4" | SQG 3/8 - 02 | 11 | 20.7 | 17 | 34.7 | 17 | 22 | 30 |
|  | 3/8" | SQG 3/8 - 03 | 11 | 20.7 | 17 | 34.7 | 19 | 35 | 30 |
| 1/2” | 1/4" | SQG 1/2 - 02 | 11 | 23.7 | 21.5 | 37.7 | 21 | 58 | 53 |
|  | 3/8" | SQG 1/2 - 03 | 11 | 23.8 | 20.4 | 37.8 | 21 | 58 | 46 |
|  | 1/2" | SQG 1/2 - 04 | 13 | 23.8 | 20.4 | 40.3 | 24 | 58 | 54.5 |

## SQL series Male elbow



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQL 4 – M5 | 2.2 | 19.4 | 14.7 | 17.6 | 10.5 | 15.3 | 10 | 3.5 | 6 |
| | 1/8" | SQL 4 – 01 | 5.5 | 21.2 | 14.7 | 17.6 | 10.5 | 18.7 | 10 | 4.2 | 10 |
| | 1/4" | SQL 4 – 02 | 8 | 22.9 | 14.7 | 17.6 | 10.5 | 21.7 | 14 | 4.2 | 16 |
| Ø6 | M5 | SQL 6 – M5 | 2.5 | 23.6 | 17.1 | 20.7 | 12.5 | 18.5 | 10 | 3.5 | 8.5 |
| | 1/8" | SQL 6 – 01 | 5.5 | 22.1 | 17.1 | 20.7 | 12.5 | 18.5 | 10 | 10 | 10.5 |
| | 1/4" | SQL 6 – 02 | 8 | 23.6 | 17.1 | 20.7 | 12.5 | 21.3 | 14 | 10 | 18 |
| | 3/8" | SQL 6 – 03 | 8 | 24.9 | 17.1 | 20.7 | 12.5 | 22.6 | 17 | 10 | 22.5 |
| Ø8 | 1/8" | SQL 8 – 01 | 5.5 | 26.8 | 18.7 | 23 | 14.3 | 22.3 | 12 | 16 | 13.5 |
| | 1/4" | SQL 8 – 02 | 8 | 28.1 | 18.7 | 23 | 14.3 | 24.9 | 14 | 16 | 19 |
| | 3/8" | SQL 8 – 03 | 8 | 29.1 | 18.7 | 23 | 14.3 | 25.9 | 17 | 16 | 24.5 |
| Ø10 | 1/8" | SQL 10 – 01 | 5.5 | 30.8 | 20.9 | 26.6 | 17.8 | 24.6 | 17 | 16 | 27 |
| | 1/4" | SQL 10 – 02 | 8 | 32.3 | 20.9 | 26.6 | 17.8 | 27.4 | 17 | 30 | 29 |
| | 3/8" | SQL 10 – 03 | 8 | 32.5 | 20.9 | 26.6 | 17.8 | 27.6 | 17 | 30 | 31 |
| | 1/2" | SQL 10 – 04 | 10 | 34.8 | 20.9 | 26.6 | 17.8 | 30.9 | 21 | 30 | 46 |
| Ø12 | 1/4" | SQL 12 – 02 | 8 | 37 | 23.6 | 30.5 | 21.1 | 30.4 | 17 | 50 | 36 |
| | 3/8" | SQL 12 – 03 | 8 | 37 | 23.6 | 30.5 | 21.1 | 30.4 | 17 | 50 | 36 |
| | 1/2" | SQL 12 – 04 | 10 | 39.5 | 23.6 | 30.5 | 21.1 | 33.9 | 21 | 50 | 50 |

Inch specification

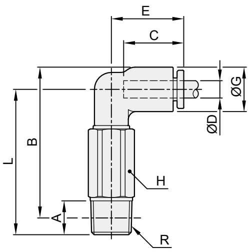
| Port size ØD | Thread size NPT | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR 10/32” | SQL 5/32–10/32 | 2.4 | 20.4 | 14.7 | 17.6 | 10.5 | 16.4 | 10 | 3.5 | 6 |
| | 1/8" | SQL 5/32 – 01 | 6 | 22.4 | 14.7 | 17.6 | 10.5 | 20.2 | 10 | 4.2 | 10 |
| | 1/4" | SQL 5/32 – 02 | 9 | 24.1 | 14.7 | 17.6 | 10.5 | 23.4 | 14 | 4.2 | 16 |
| 1/4” | NR 10/32” | SQL 1/4–10/32 | 2.5 | 23.9 | 17 | 20.6 | 12.5 | 18.8 | 10 | 3.5 | 8.5 |
| | 1/8" | SQL 1/4 – 01 | 6 | 23.1 | 17 | 20.6 | 12.5 | 19.8 | 10 | 10 | 10.5 |
| | 1/4" | SQL 1/4 – 02 | 9 | 24.9 | 17 | 20.6 | 12.5 | 23.1 | 14 | 10 | 18 |
| | 3/8" | SQL 1/4 – 03 | 9 | 26.4 | 17 | 20.6 | 12.5 | 24.6 | 17 | 10 | 22.5 |
| 5/16” | 1/8" | SQL 5/16 – 01 | 6 | 27.6 | 18.7 | 23 | 14.3 | 23.4 | 12 | 16 | 13.5 |
| | 1/4" | SQL 5/16 – 02 | 9 | 29.4 | 18.7 | 23 | 14.3 | 26.7 | 14 | 16 | 19 |
| | 3/8" | SQL 5/16 – 03 | 9 | 30.1 | 18.7 | 23 | 14.3 | 27.4 | 17 | 16 | 24.5 |
| 3/8” | 1/8" | SQL 3/8 – 01 | 6 | 31.6 | 21.3 | 27 | 17.8 | 25.7 | 17 | 16 | 27 |
| | 1/4" | SQL 3/8 – 02 | 9 | 33.4 | 21.3 | 27 | 17.8 | 29 | 17 | 30 | 29 |
| | 3/8" | SQL 3/8 – 03 | 9 | 34.1 | 21.3 | 27 | 17.8 | 29.7 | 17 | 30 | 31 |
| 1/2” | 1/4" | SQL 1/2 – 02 | 9 | 38.1 | 24.2 | 31.1 | 21.1 | 32.1 | 17 | 50 | 36 |
| | 3/8" | SQL 1/2 – 03 | 9 | 38.1 | 24.2 | 31.1 | 21.1 | 32.1 | 17 | 50 | 36 |
| | 1/2" | SQL 1/2 – 04 | 11 | 40.2 | 24.2 | 31.1 | 21.1 | 35.1 | 21 | 50 | 50 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

### **SQSL** series Long male elbow

Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQSL 4 - 01 | 5.5 | 32.9 | 14.7 | 17.6 | 10.5 | 30.4 | 10 | 4.2 | 20 |
|  | 1/4" | SQSL 4 - 02 | 8 | 33.8 | 14.7 | 17.6 | 10.5 | 33.1 | 14 | 4.2 | 36 |
| Ø6 | 1/8" | SQSL 6 - 01 | 5.5 | 35.8 | 17.1 | 20.7 | 12.5 | 32.2 | 10 | 10 | 20 |
|  | 1/4" | SQSL 6 - 02 | 8 | 37 | 17.1 | 20.7 | 12.5 | 34.7 | 14 | 10 | 32 |
| Ø8 | 1/8" | SQSL 8 - 01 | 5.5 | 43.4 | 18.7 | 23 | 14.3 | 38.9 | 12 | 16 | 42.5 |
|  | 1/4" | SQSL 8 - 02 | 8 | 44.6 | 18.7 | 23 | 14.3 | 41.4 | 14 | 16 | 43.5 |
|  | 3/8" | SQSL 8 - 03 | 8 | 44.6 | 18.7 | 23 | 14.3 | 41.4 | 17 | 16 | 54 |
| Ø10 | 1/4" | SQSL 10 - 02 | 8 | 53.4 | 20.9 | 26.6 | 17.8 | 48.5 | 17 | 30 | 62.5 |
|  | 3/8" | SQSL 10 - 03 | 8 | 52.8 | 20.9 | 26.6 | 17.8 | 47.9 | 17 | 30 | 55.5 |
|  | 1/2" | SQSL 10 - 04 | 10 | 55.7 | 20.9 | 26.6 | 17.8 | 50.5 | 21 | 30 | 60.5 |
| Ø12 | 3/8" | SQSL 12 - 03 | 9 | 62.8 | 23.6 | 30.5 | 21.1 | 56.9 | 17 | 50 | 70 |
|  | 1/2" | SQSL 12 - 04 | 10 | 62.6 | 23.6 | 30.5 | 21.1 | 57.1 | 21 | 50 | 96 |



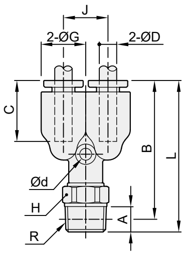
Inch specification

| Port size ØD | Thread size NPT | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | 1/8" | SQSL 5/32 - 01 | 5.5 | 34.1 | 14.7 | 17.6 | 10.5 | 30.4 | 10 | 4.2 | 20 |
|  | 1/4" | SQSL 5/32 - 02 | 8 | 35.6 | 14.7 | 17.6 | 10.5 | 33.1 | 14 | 4.2 | 36 |
| 1/4” | 1/8" | SQSL 1/4 - 01 | 5.5 | 36.8 | 17 | 20.6 | 12.5 | 32.2 | 10 | 10 | 20 |
|  | 1/4" | SQSL 1/4 - 02 | 8 | 37.8 | 17 | 20.6 | 12.5 | 34.7 | 14 | 10 | 32 |
| 5/16” | 1/8" | SQSL 5/16 - 01 | 5.5 | 44.4 | 18.7 | 23 | 14.3 | 38.9 | 12 | 16 | 42.5 |
|  | 1/4" | SQSL 5/16 - 02 | 8 | 45.9 | 18.7 | 23 | 14.3 | 41.4 | 14 | 16 | 43.5 |
|  | 3/8" | SQSL 5/16 - 03 | 8 | 45.9 | 18.7 | 23 | 14.3 | 41.4 | 17 | 16 | 54 |
| 3/8” | 1/4" | SQSL 3/8 - 02 | 8 | 54.7 | 21.3 | 27 | 17.8 | 48.5 | 17 | 30 | 66 |
|  | 3/8" | SQSL 3/8 - 03 | 8 | 54.1 | 20.3 | 26.4 | 17.8 | 47.9 | 17 | 30 | 58 |
| 1/2” | 3/8" | SQSL 1/2 - 03 | 9 | 62.9 | 24.2 | 31.1 | 21.1 | 56.9 | 17 | 50 | 72 |
|  | 1/2" | SQSL 1/2 - 04 | 10 | 64 | 19.8 | 26.7 | 21.1 | 57.1 | 21 | 50 | 96 |

### **SQM** series Double branch Y

Metric specification

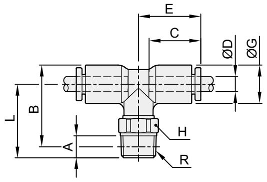
| Port size ØD | Thread size Rc (PT) | Model | A | B | C | Ød | ØG | J | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø6 | 1/8" | SQM 6 - 01 | 6 | 45.4 | 17 | 3.2 | 12.4 | 12.4 | 48.4 | 10 | 10 | 25 |
|  | 1/4" | SQM 6 - 02 | 9 | 47.5 | 17 | 3.2 | 12.4 | 12.4 | 52 | 14 | 10 | 29 |



Inch specification

| Port size ØD | Thread size NPT | Model | A | B | C | Ød | ØG | J | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | 1/8" | SQM 1/4 - 01 | 6 | 45.5 | 17 | 3.2 | 12.4 | 12.4 | 48.5 | 10 | 10 | 25 |
|  | 1/4" | SQM 1/4 - 02 | 9 | 47.6 | 17 | 3.2 | 12.4 | 12.4 | 52.1 | 14 | 10 | 29 |

## SQT series Male branch tee



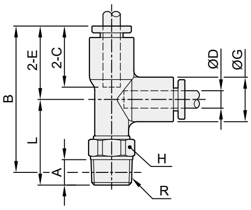
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQT 4 - M5 | 2.2 | 19.4 | 14.5 | 17.4 | 10.5 | 15.3 | 10 | 3.5 | 8 |
| | 1/8" | SQT 4 - 01 | 5.5 | 21.2 | 14.5 | 17.4 | 10.5 | 18.7 | 10 | 4.2 | 12 |
| | 1/4" | SQT 4 - 02 | 8 | 22.9 | 14.5 | 17.4 | 10.5 | 21.7 | 14 | 4.2 | 18 |
| Ø6 | M5 | SQT 6 - M5 | 2.5 | 23.8 | 17.1 | 20.7 | 12.4 | 18.8 | 10 | 3.5 | 11.5 |
| | 1/8" | SQT 6 - 01 | 5.5 | 26.1 | 17.1 | 20.7 | 12.4 | 22.6 | 10 | 10 | 13.5 |
| | 1/4" | SQT 6 - 02 | 8 | 28.1 | 17.1 | 20.7 | 12.4 | 25.9 | 14 | 10 | 20.5 |
| | 3/8" | SQT 6 - 03 | 8 | 29.6 | 17.1 | 20.7 | 12.4 | 27.4 | 17 | 10 | 25.5 |
| Ø8 | 1/8" | SQT 8 - 01 | 5.5 | 26.7 | 18.6 | 22.9 | 14.3 | 22.3 | 12 | 16 | 16.5 |
| | 1/4" | SQT 8 - 02 | 8 | 28 | 18.6 | 22.9 | 14.3 | 24.9 | 14 | 16 | 22.5 |
| | 3/8" | SQT 8 - 03 | 8 | 29 | 18.6 | 22.9 | 14.3 | 25.9 | 17 | 16 | 27 |
| Ø10 | 1/8" | SQT 10 - 01 | 5.5 | 30.8 | 20.9 | 26.6 | 17.8 | 24.6 | 17 | 16 | 32 |
| | 1/4" | SQT 10 - 02 | 8 | 32.3 | 20.9 | 26.6 | 17.8 | 27.4 | 17 | 30 | 34 |
| | 3/8" | SQT 10 - 03 | 8 | 32.5 | 20.9 | 26.6 | 17.8 | 27.6 | 17 | 30 | 35 |
| | 1/2" | SQT 10 - 04 | 10 | 34.8 | 20.9 | 26.6 | 17.8 | 30.9 | 21 | 30 | 50 |
| Ø12 | 1/4" | SQT 12 - 02 | 8 | 37 | 23.7 | 30.6 | 21.2 | 30.4 | 17 | 50 | 48 |
| | 3/8" | SQT 12 - 03 | 8 | 37 | 23.7 | 30.6 | 21.2 | 30.4 | 17 | 50 | 51 |
| | 1/2" | SQT 12 - 04 | 10 | 39.5 | 23.7 | 30.6 | 21.2 | 33.9 | 21 | 50 | 63 |

Inch specification

| Port size ØD | Thread size NPT | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR 10/32” | SQT 5/32 - 10/32 | 2.4 | 20.4 | 14.5 | 17.4 | 10.5 | 16.4 | 10 | 3.5 | 8 |
| | 1/8" | SQT 5/32 - 01 | 6 | 22.4 | 14.5 | 17.4 | 10.5 | 20.2 | 10 | 4.2 | 12 |
| | 1/4" | SQT 5/32 - 02 | 9 | 24.1 | 14.5 | 17.4 | 10.5 | 23.4 | 14 | 4.2 | 18 |
| 1/4” | NR 10/32” | SQT 1/4 - 10/32 | 2.5 | 23.8 | 17 | 20.6 | 12.4 | 18.8 | 10 | 3.5 | 11.5 |
| | 1/8" | SQT 1/4 - 01 | 6 | 25.8 | 17 | 20.6 | 12.4 | 22.6 | 10 | 10 | 13.5 |
| | 1/4" | SQT 1/4 - 02 | 9 | 27.6 | 17 | 20.6 | 12.4 | 25.9 | 14 | 10 | 20.5 |
| | 3/8" | SQT 1/4 - 03 | 9 | 29.1 | 17 | 20.6 | 12.4 | 27.4 | 17 | 10 | 25.5 |
| 5/16” | 1/8" | SQT 5/16 - 01 | 6 | 27.5 | 18.6 | 22.9 | 14.3 | 23.4 | 12 | 16 | 16.5 |
| | 1/4" | SQT 5/16 - 02 | 9 | 29.3 | 18.6 | 22.9 | 14.3 | 26.7 | 14 | 16 | 22.5 |
| | 3/8" | SQT 5/16 - 03 | 9 | 30 | 18.6 | 22.9 | 14.3 | 27.4 | 17 | 16 | 27 |
| 3/8” | 1/8" | SQT 3/8 - 01 | 6 | 31.7 | 21.3 | 27 | 17.8 | 25.8 | 17 | 16 | 32 |
| | 1/4" | SQT 3/8 - 02 | 9 | 33.4 | 21.3 | 27 | 17.8 | 29 | 17 | 30 | 34 |
| | 3/8" | SQT 3/8 - 03 | 9 | 34.1 | 21.3 | 27 | 17.8 | 29.7 | 17 | 30 | 35 |
| 1/2” | 1/4" | SQT 1/2 - 02 | 9 | 38.3 | 24.3 | 31.2 | 21.2 | 32.2 | 17 | 50 | 48 |
| | 3/8" | SQT 1/2 - 03 | 9 | 38.3 | 24.3 | 31.2 | 21.2 | 32.2 | 17 | 50 | 51 |
| | 1/2" | SQT 1/2 - 04 | 11 | 30.9 | 22.8 | 29.7 | 22.3 | 35.2 | 21 | 50 | 63 |

## SQD series Male run tee



Metric specification

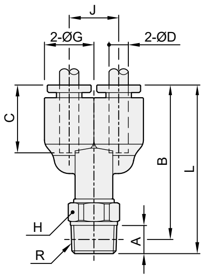
| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQD 4 - M5 | 2.2 | 31.6 | 14.5 | 17.4 | 10.5 | 15.3 | 10 | 3.5 | 8 |
| | 1/8" | SQD 4 - 01 | 5.5 | 33.4 | 14.5 | 17.4 | 10.5 | 18.7 | 10 | 4.2 | 12 |
| | 1/4" | SQD 4 - 02 | 8 | 35.1 | 14.5 | 17.4 | 10.5 | 21.7 | 14 | 4.2 | 18.5 |
| Ø6 | M5 | SQD 6 - M5 | 2.5 | 38.3 | 17.1 | 20.7 | 12.4 | 18.8 | 10 | 3.5 | 11.5 |
| | 1/8" | SQD 6 - 01 | 5.5 | 40.6 | 17.1 | 20.7 | 12.4 | 22.6 | 10 | 10 | 13.5 |
| | 1/4" | SQD 6 - 2 | 8 | 42.5 | 17.1 | 20.7 | 12.4 | 25.9 | 14 | 10 | 20.5 |
| | 3/8" | SQD 6 - 03 | 8 | 44.1 | 17.1 | 20.7 | 12.4 | 27.4 | 17 | 10 | 25.5 |
| Ø8 | 1/8" | SQD 8 - 01 | 5.5 | 42.7 | 18.6 | 22.9 | 14.3 | 22.5 | 12 | 16 | 17 |
| | 1/4" | SQD 8 - 02 | 8 | 44 | 18.6 | 22.9 | 14.3 | 25.1 | 14 | 16 | 23 |
| | 3/8" | SQD 8 - 03 | 8 | 45 | 18.6 | 22.9 | 14.3 | 26.1 | 17 | 16 | 28 |
| Ø10 | 1/8" | SQD 10 - 01 | 5.5 | 18.5 | 20.9 | 26.6 | 17.8 | 24.6 | 17 | 16 | 32 |
| | 1/4" | SQD 10 - 02 | 8 | 50 | 20.9 | 26.6 | 17.8 | 27.4 | 17 | 30 | 34 |
| | 3/8" | SQD 10 - 03 | 8 | 50.2 | 20.9 | 26.6 | 17.8 | 27.6 | 17 | 30 | 35 |
| | 1/2" | SQD 10 - 04 | 10 | 52.5 | 20.9 | 26.6 | 17.8 | 30.9 | 21 | 30 | 52 |
| Ø12 | 1/4" | SQD 12 - 02 | 8 | 56.4 | 23.2 | 29.9 | 22.3 | 29.6 | 17 | 50 | 48 |
| | 3/8" | SQD 12 - 03 | 8 | 56.4 | 23.2 | 29.9 | 22.3 | 29.6 | 17 | 50 | 47 |
| | 1/2" | SQD 12 - 04 | 10 | 58.9 | 23.2 | 29.9 | 22.3 | 33.1 | 21 | 50 | 60 |

Inch specification

| Port size ØD | Thread size NPT | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR 10/32” | SQD 5/32 - 10/32 | 2.4 | 32.6 | 14.5 | 17.4 | 10.5 | 16.4 | 10 | 3.5 | 8 |
| | 1/8" | SQD 5/32 - 01 | 6 | 34.6 | 14.5 | 17.4 | 10.5 | 20.2 | 10 | 4.2 | 12 |
| | 1/4" | SQD 5/32 - 02 | 9 | 36.3 | 14.5 | 17.4 | 10.5 | 23.4 | 14 | 4.2 | 18.5 |
| 1/4” | NR 10/32” | SQD 1/4 - 10/32 | 2.5 | 38 | 16.5 | 20.1 | 12.4 | 18.6 | 10 | 3.5 | 11.5 |
| | 1/8" | SQD 1/4 - 01 | 6 | 38.9 | 16.5 | 20.1 | 12.4 | 21.3 | 10 | 10 | 13.5 |
| | 1/4" | SQD 1/4 - 02 | 9 | 40.2 | 16.5 | 20.1 | 12.4 | 24.1 | 14 | 10 | 20.5 |
| | 3/8" | SQD 1/4 - 03 | 9 | 41.7 | 16.5 | 20.1 | 12.4 | 25.6 | 17 | 10 | 25.5 |
| 5/16” | 1/8" | SQD 5/16 - 01 | 6 | 43.5 | 18.6 | 22.9 | 14.3 | 23.6 | 12 | 16 | 17 |
| | 1/4" | SQD 5/16 - 02 | 9 | 45.3 | 18.6 | 22.9 | 14.3 | 26.9 | 14 | 16 | 23 |
| | 3/8" | SQD 5/16 - 03 | 9 | 46 | 18.6 | 22.9 | 14.3 | 27.6 | 17 | 16 | 28 |
| 3/8” | 1/8" | SQD 3/8 - 01 | 6 | 49.7 | 21.3 | 27 | 17.8 | 25.7 | 17 | 16 | 32 |
| | 1/4" | SQD 3/8 - 02 | 9 | 51.5 | 21.3 | 27 | 17.8 | 29 | 17 | 30 | 34 |
| | 3/8" | SQD 3/8 - 03 | 9 | 52.5 | 21.3 | 27 | 17.8 | 29.7 | 17 | 30 | 35 |
| | 1/2" | SQD 3/8 - 04 | 11 | 54 | 20.3 | 26.8 | 17.8 | 32.7 | 21 | 30 | 52 |
| 1/2” | 1/4" | SQD 1/2 - 02 | 9 | 58.3 | 23.8 | 31.4 | 22.3 | 31.4 | 17 | 50 | 48 |
| | 3/8" | SQD 1/2 - 03 | 9 | 58.3 | 23.8 | 31.4 | 22.3 | 31.4 | 17 | 50 | 47 |
| | 1/2" | SQD 1/2 - 04 | 11 | 58.8 | 22.8 | 29.9 | 22.3 | 34.4 | 21 | 50 | 60 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

## **SQU** series Branch Y



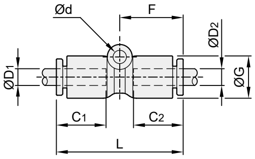
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | J | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQU 4 - M5 | 2.2 | 29.9 | 14.5 | 10.5 | 10.5 | 31 | 10 | 3.5 | 8.5 |
| | 1/8" | SQU 4 - 01 | 5.5 | 31.6 | 14.5 | 10.5 | 10.5 | 34.4 | 10 | 4.2 | 12 |
| | 1/4" | SQU 4 - 02 | 8 | 33.4 | 14.5 | 10.5 | 10.5 | 37.4 | 14 | 4.2 | 8.5 |
| Ø6 | M5 | SQU 6 - M5 | 2.5 | 35.3 | 17.1 | 12.3 | 12.3 | 36.6 | 10 | 3.5 | 11.5 |
| | 1/8" | SQU 6 - 01 | 6 | 37.6 | 17.1 | 12.3 | 12.3 | 40.4 | 10 | 10 | 13.5 |
| | 1/4" | SQU 6 - 02 | 9 | 39.1 | 17.1 | 12.3 | 12.3 | 43.6 | 14 | 10 | 20.5 |
| | 3/8" | SQU 6 - 03 | 9 | 40.7 | 17.1 | 12.3 | 12.3 | 45.2 | 17 | 10 | 25.5 |
| Ø8 | 1/8" | SQU 8 - 01 | 5.5 | 38.7 | 18.6 | 14.3 | 14.3 | 41.4 | 12 | 16 | 17 |
| | 1/4" | SQU 8 - 02 | 8 | 40 | 18.6 | 14.3 | 14.3 | 44 | 14 | 16 | 23 |
| | 3/8" | SQU 8 - 03 | 8 | 41 | 18.6 | 14.3 | 14.3 | 45 | 17 | 16 | 28 |
| Ø10 | 1/8" | SQU 10 - 01 | 5.5 | 43.6 | 20.9 | 17.8 | 17.8 | 46.4 | 17 | 16 | 32 |
| | 1/4" | SQU 10 - 02 | 8 | 45.2 | 20.9 | 17.8 | 17.8 | 49.2 | 17 | 30 | 34 |
| | 3/8" | SQU 10 - 03 | 8 | 45.4 | 20.9 | 17.8 | 17.8 | 49.4 | 17 | 30 | 35 |
| | 1/2" | SQU 10 - 04 | 10 | 47.7 | 20.9 | 17.8 | 17.8 | 52.7 | 21 | 30 | 52 |
| Ø12 | 1/4" | SQU 12 - 02 | 8 | 49.4 | 23.6 | 21.2 | 21.2 | 53.4 | 17 | 50 | 44 |
| | 3/8" | SQU 12 - 03 | 8 | 50.4 | 23.6 | 21.2 | 21.2 | 54.4 | 17 | 50 | 47 |
| | 1/2" | SQU 12 - 04 | 10 | 51.9 | 23.6 | 21.2 | 21.2 | 56.9 | 21 | 50 | 60 |

Inch specification

| Port size ØD | Thread size NPT | Model | A | B | C | J | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR 10/32” | SQU 5/32 - 10/32 | 2.4 | 30.9 | 14.5 | 10.5 | 10.5 | 32.1 | 10 | 3.5 | 8.5 |
| | 1/8" | SQU 5/32 - 01 | 6 | 32.9 | 14.5 | 10.5 | 10.5 | 35.9 | 10 | 4.2 | 12 |
| | 1/4" | SQU 5/32 - 02 | 9 | 34.6 | 14.5 | 10.5 | 10.5 | 39.1 | 14 | 4.2 | 8.5 |
| 1/4” | NR 10/32” | SQU 1/4 - 10/32 | 2.5 | 35.3 | 17 | 12.3 | 12.3 | 36.5 | 10 | 3.5 | 11.5 |
| | 1/8" | SQU 1/4 - 01 | 6 | 37.3 | 17 | 12.3 | 12.3 | 40.3 | 10 | 10 | 13.5 |
| | 1/4" | SQU 1/4 - 02 | 9 | 39.1 | 17 | 12.3 | 12.3 | 43.6 | 14 | 10 | 20.5 |
| | 3/8" | SQU 1/4 - 03 | 9 | 40.6 | 17 | 12.3 | 12.3 | 45.1 | 17 | 10 | 25.5 |
| 5/16” | 1/8" | SQU 5/16 - 01 | 6 | 39.5 | 18.6 | 14.3 | 14.3 | 42.5 | 12 | 16 | 17 |
| | 1/4" | SQU 5/16 - 02 | 9 | 41.3 | 18.6 | 14.3 | 14.3 | 45.8 | 14 | 16 | 23 |
| | 3/8" | SQU 5/16 - 03 | 9 | 42 | 18.6 | 14.3 | 14.3 | 46.5 | 17 | 16 | 28 |
| 3/8” | 1/8" | SQU 3/8 - 01 | 6 | 44.9 | 21.3 | 17.8 | 17.8 | 47.9 | 17 | 16 | 32 |
| | 1/4" | SQU 3/8 - 02 | 9 | 46.7 | 21.3 | 17.8 | 17.8 | 51.2 | 17 | 30 | 34 |
| | 3/8" | SQU 3/8 - 03 | 9 | 47.4 | 21.3 | 17.8 | 17.8 | 51.9 | 17 | 30 | 35 |
| 1/2” | 1/4" | SQU 1/2 - 02 | 9 | 51.3 | 24.2 | 21.2 | 21.2 | 55.8 | 17 | 50 | 44 |
| | 3/8" | SQU 1/2 - 03 | 9 | 51.3 | 24.2 | 21.2 | 21.2 | 55.8 | 17 | 50 | 47 |
| | 1/2" | SQU 1/2 - 04 | 11 | 51.9 | 24.2 | 21.2 | 21.2 | 56.9 | 21 | 50 | 60 |

## SQH series Straight union



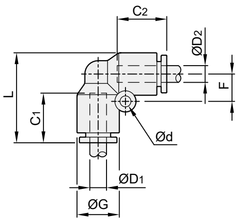
Metric specification

| Port size | | Model | C1 | C2 | Ød | F | ØG | L | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| Ø4 | Ø4 | SQH 4 | 14.9 | 14.9 | 3.3 | 15.9 | 10.4 | 31.7 | 4.2 | 4 |
| Ø6 | Ø4 | SQH 6 - 4 | 17.1 | 15.5 | 3.2 | 17.8 | 12.3 | 35.8 | 4.2 | 6 |
| | Ø6 | SQH 6 | 17.1 | 17.1 | 3.2 | 18.1 | 12.4 | 36.1 | 10 | 6 |
| Ø8 | Ø6 | SQH 8 - 6 | 18.6 | 17.1 | 3.3 | 21 | 14.3 | 41.9 | 10 | 8 |
| | Ø8 | SQH 8 | 18.6 | 18.6 | 3.3 | 20.9 | 14.3 | 41.8 | 16 | 8 |
| Ø10 | Ø8 | SQH 10 - 8 | 20.9 | 18.6 | 4.2 | 22.9 | 17.7 | 46.7 | 16 | 16 |
| | Ø10 | SQH 10 | 20.9 | 20.9 | 4.2 | 23.8 | 17.8 | 47.5 | 30 | 16 |
| Ø12 | Ø10 | SQH 12 - 10 | 23.7 | 20.9 | 4.2 | 26.2 | 21.2 | 52.7 | 30 | 22 |
| | Ø12 | SQH 12 | 23.7 | 23.7 | 4.2 | 26.5 | 21.2 | 52.9 | 30 | 22 |

Inch specification

| Port size | | Model | C1 | C2 | Ød | F | ØG | L | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| 5/32” | 5/32” | SQH 5/32 | 14.9 | 14.9 | 3.3 | 15.9 | 10.4 | 31.7 | 4.2 | 4 |
| 1/4” | 5/32” | SQH 1/4 - 5/32 | 17 | 15.5 | 3.2 | 17.8 | 12.3 | 35.8 | 4.2 | 6 |
| | 1/4” | SQH 1/4 | 17 | 17 | 3.2 | 18 | 12.4 | 36 | 10 | 6 |
| 5/16” | 1/4” | SQH 5/16 - 1/4 | 18.6 | 17 | 3.3 | 20.9 | 14.3 | 41.8 | 10 | 8 |
| | 5/16” | SQH 5/16 | 18.6 | 18.6 | 3.3 | 20.9 | 14.3 | 41.8 | 16 | 8 |
| 3/8” | 5/16” | SQH 3/8 - 5/16 | 21.3 | 18.6 | 4.2 | 22.9 | 17.7 | 47.1 | 16 | 16 |
| | 3/8” | SQH 3/8 | 21.3 | 21.3 | 4.2 | 24.2 | 17.8 | 47.7 | 30 | 16 |
| 1/2” | 3/8” | SQH 1/2 - 3/8 | 24.3 | 21.3 | 4.2 | 26.6 | 21.2 | 53.7 | 30 | 22 |
| | 1/2” | SQH 1/2 | 24.3 | 24.3 | 4.2 | 27.1 | 21.2 | 54.1 | 30 | 22 |

## SQV series Union elbow



Metric specification

| Port size | | Model | C1 | C2 | Ød | F | ØG | L | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| Ø4 | Ø4 | SQV 4 - 4 | 14.5 | 14.5 | 3.3 | 7.2 | 10.5 | 22.5 | 4.2 | 8 |
| Ø6 | Ø6 | SQV 6 - 6 | 16.6 | 16.6 | 3.3 | 8 | 12.4 | 26.4 | 12.6 | 10 |
| Ø8 | Ø8 | SQV 8 - 8 | 17.6 | 17.6 | 4.2 | 10 | 14.3 | 29.4 | 19.6 | 12 |
| Ø10 | Ø10 | SQV 10 - 10 | 19.4 | 19.4 | 4.2 | 10.9 | 17.8 | 34 | 33.2 | 18 |
| Ø12 | Ø12 | SQV 12 - 12 | 22.7 | 22.7 | 4.2 | 12.6 | 21.2 | 40.1 | 50.3 | 28 |

Inch specification

| Port size | | Model | C1 | C2 | Ød | F | ØG | L | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| 5/32” | 5/32” | SQV 5/32 - 5/32 | 14.5 | 14.5 | 3.3 | 7.2 | 10.5 | 22.5 | 4.2 | 8 |
| 1/4” | 1/4” | SQV 1/4 - 1/4 | 16.5 | 16.5 | 3.3 | 8 | 12.4 | 26.3 | 12.6 | 10 |
| 5/16” | 5/16” | SQV 5/16 - 5/16 | 17.6 | 17.6 | 4.2 | 10 | 14.3 | 29.4 | 19.6 | 12 |
| 3/8” | 3/8” | SQV 3/8 - 3/8 | 19.8 | 19.8 | 4.2 | 10.9 | 17.8 | 34.4 | 33.2 | 18 |
| 1/2” | 1/2” | SQV 1/2 - 1/2 | 23.3 | 23.3 | 4.2 | 12.6 | 21.2 | 40.7 | 50.3 | 28 |

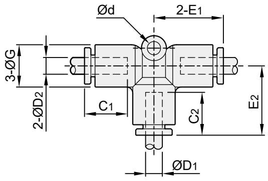
# SQ series Fitting

## SQE, SQY series

### SQE series Union tee

Metric specification

| Port size | | Model | C1 | C2 | Ød | E1 | E2 | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| Ø4 | Ø4 | SQE 4 | 14.6 | 14.6 | 3.2 | 17.5 | 17.5 | 10.5 | 3.5 | 6.5 |
| Ø6 | Ø4 | SQE 6 - 4 | 17 | 15.6 | 3.2 | 20.6 | 20.6 | 12.4 | 4.2 | 8.2 |
| | Ø6 | SQE 6 | 17 | 17 | 3.2 | 20.6 | 20.6 | 12.4 | 10 | 9 |
| Ø8 | Ø6 | SQE 8 - 6 | 18.8 | 17.5 | 3.2 | 23.6 | 23.4 | 14.3 | 10 | 12 |
| | Ø8 | SQE 8 | 18.8 | 18.8 | 3.2 | 23.6 | 23.6 | 14.3 | 16 | 12 |
| Ø10 | Ø8 | SQE 10 - 8 | 20.2 | 18.8 | 4.2 | 26.1 | 26.1 | 17.8 | 16 | 22 |
| | Ø10 | SQE 10 | 20.2 | 20.2 | 4.2 | 26.1 | 26.1 | 17.8 | 30 | 22 |
| Ø12 | Ø10 | SQE 12 - 10 | 22.8 | 20.2 | 4.2 | 30.1 | 30 | 21.2 | 30 | 36 |
| | Ø12 | SQE 12 | 22.8 | 22.8 | 4.2 | 30.1 | 30.1 | 21.2 | 30 | 36 |



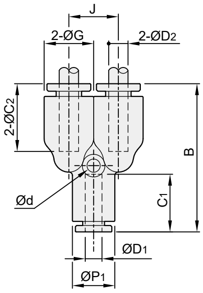
Inch specification

| Port size | | Model | C1 | C2 | Ød | E1 | E2 | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| 5/32” | 5/32” | SQE 5/32 | 14.6 | 14.6 | 3.2 | 17.5 | 17.5 | 10.5 | 3.5 | 6.5 |
| 1/4” | 5/32” | SQE 1/4 - 5/32 | 17 | 15.6 | 3.2 | 20.6 | 20.6 | 12.4 | 4.2 | 8.5 |
| | 1/4” | SQE 1/4 | 17 | 17 | 3.2 | 20.6 | 20.6 | 12.4 | 10 | 9 |
| 5/16” | 1/4” | SQE 5/16 - 1/4 | 18.8 | 17.5 | 3.2 | 23.6 | 23.4 | 14.3 | 10 | 12 |
| | 5/16” | SQE 5/16 | 18.8 | 18.8 | 3.2 | 23.6 | 23.6 | 14.3 | 16 | 12 |
| 3/8” | 5/16” | SQE 3/8 - 5/16 | 20.2 | 18.8 | 4.2 | 26.1 | 26.1 | 17.8 | 16 | 22 |
| | 3/8” | SQE 3/8 | 20.2 | 20.2 | 4.2 | 26.1 | 26.1 | 17.8 | 30 | 22 |
| 1/2” | 3/8” | SQE 1/2 - 3/8 | 23 | 20.2 | 4.2 | 30.3 | 30.2 | 22.3 | 30 | 36 |
| | 1/2” | SQE 1/2 | 23 | 23 | 4.2 | 30.3 | 30.3 | 22.3 | 30 | 36 |

### SQY series Union Y

Metric specification

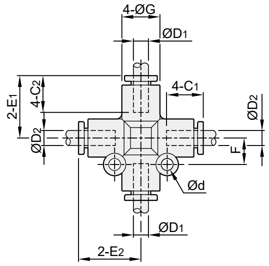
| Port size | | Model | B | C1 | C2 | Ød | ØG | J | ØP1 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | |
| Ø4 | Ø4 | SQY 4 | 33.5 | 14.6 | 14.6 | 3.2 | 10.5 | 10.5 | 10.5 | 4.2 | 6.5 |
| Ø6 | Ø4 | SQY 6 - 4 | 36.8 | 16.3 | 14.6 | 3.2 | 12.4 | 12.4 | 12.4 | 4.2 | 8.5 |
| | Ø6 | SQY 6 | 36.8 | 16.3 | 16.3 | 3.2 | 12.4 | 12.4 | 12.4 | 10 | 9 |
| Ø8 | Ø6 | SQY 8 - 6 | 40.8 | 16.5 | 17.8 | 3.2 | 14.3 | 14.3 | 14.3 | 10 | 12 |
| | Ø8 | SQY 8 | 40.8 | 16.5 | 16.5 | 3.2 | 14.3 | 14.3 | 14.3 | 16 | 12 |
| Ø10 | Ø8 | SQY 10 - 8 | 48 | 18.3 | 19.3 | 4.2 | 17.8 | 17.8 | 17.8 | 16 | 22 |
| | Ø10 | SQY 10 | 48 | 18.3 | 18.3 | 4.2 | 17.8 | 17.8 | 17.8 | 30 | 22 |
| Ø12 | Ø10 | SQY 12 - 10 | 54.4 | 22.3 | 20.4 | 4.2 | 21.2 | 21.2 | 21.2 | 30 | 36 |
| | Ø12 | SQY 12 | 54.4 | 22.3 | 22.3 | 4.2 | 21.2 | 21.2 | 21.2 | 50 | 36 |



Inch specification

| Port size | | Model | B | C1 | C2 | Ød | ØG | J | ØP1 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | |
| 5/32” | 5/32” | SQY 5/32 | 33.5 | 14.6 | 14.6 | 3.2 | 10.5 | 10.5 | 10.5 | 4.2 | 6.5 |
| 1/4” | 5/32” | SQY 1/4 - 5/32 | 36.8 | 16.3 | 14.6 | 3.2 | 12.4 | 12.4 | 12.4 | 4.2 | 8.5 |
| | 1/4” | SQY 1/4 | 36.8 | 16.3 | 16.3 | 3.2 | 12.4 | 12.4 | 12.4 | 10 | 9 |
| 5/16” | 1/4” | SQY 5/16 - 1/4 | 40.8 | 16.5 | 17.8 | 3.2 | 14.3 | 14.3 | 14.3 | 10 | 12 |
| | 5/16” | SQY 5/16 | 40.8 | 16.5 | 16.5 | 3.2 | 14.3 | 14.3 | 14.3 | 16 | 12 |
| 3/8” | 5/16” | SQY 3/8 - 5/16 | 48 | 18.3 | 19.3 | 4.2 | 17.8 | 17.8 | 17.8 | 16 | 22 |
| | 3/8” | SQY 3/8 | 48 | 18.3 | 18.3 | 4.2 | 17.8 | 17.8 | 17.8 | 30 | 22 |
| 1/2” | 3/8” | SQY 1/2 - 3/8 | 54.8 | 22.5 | 20.4 | 4.2 | 22.3 | 22.3 | 22.3 | 30 | 36 |
| | 1/2” | SQY 1/2 | 54.8 | 22.5 | 22.3 | 4.2 | 22.3 | 22.3 | 22.3 | 50 | 36 |

## SQX series Cross



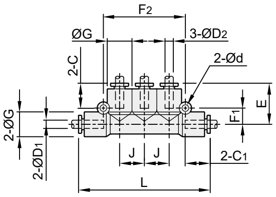
Metric specification

| Port size | | Model | C1 | C2 | Ød | E1 | E2 | F | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | |
| Ø4 | Ø4 | SQX 4 | 14.6 | 14.6 | 3.2 | 17.4 | 17.4 | 7.3 | 10.5 | 4.2 | 8.5 |
| Ø6 | Ø4 | SQX 6 - 4 | 17.1 | 14.6 | 3.2 | 20.7 | 20.7 | 8.1 | 12.4 | 4.2 | 11.5 |
| | Ø6 | SQX 6 | 17.1 | 17.1 | 3.2 | 20.7 | 20.7 | 8.1 | 12.4 | 10 | 12.5 |
| Ø8 | Ø6 | SQX 8 - 6 | 18.9 | 17.6 | 3.2 | 23.6 | 23.4 | 9.2 | 14.3 | 10 | 18 |
| | Ø8 | SQX 8 | 18.9 | 18.9 | 3.2 | 23.6 | 23.6 | 9.2 | 14.3 | 16 | 16 |
| Ø10 | Ø8 | SQX 10 - 8 | 20.3 | 18.9 | 4.2 | 26 | 26 | 11.3 | 17.8 | 16 | 32 |
| | Ø10 | SQX 10 | 20.3 | 20.3 | 4.2 | 26 | 26 | 11.3 | 17.8 | 30 | 30 |
| Ø12 | Ø10 | SQX 12 - 10 | 28.2 | 20.3 | 4.2 | 29.7 | 29.7 | 13 | 21.3 | 30 | 47 |
| | Ø12 | SQX 12 | 28.2 | 28.2 | 4.2 | 29.7 | 29.7 | 13 | 21.3 | 50 | 45 |

Inch specification

| Port size | | Model | C1 | C2 | Ød | E1 | E2 | F | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | |
| 5/32” | 5/32” | SQX 5/32 | 14.6 | 14.6 | 3.2 | 17.4 | 17.4 | 7.3 | 10.5 | 4.2 | 8.5 |
| 1/4” | 5/32” | SQX 1/4 - 5/32 | 17.1 | 14.6 | 3.2 | 20.7 | 20.7 | 8.1 | 12.4 | 4.2 | 11.5 |
| | 1/4” | SQX 1/4 | 17.1 | 17.1 | 3.2 | 20.7 | 20.7 | 8.1 | 12.4 | 10 | 12.5 |
| 5/16” | 1/4” | SQX 5/16 - 1/4 | 18.9 | 17.6 | 3.2 | 23.6 | 23.4 | 9.2 | 14.3 | 10 | 18 |
| | 5/16” | SQX 5/16 | 18.9 | 18.9 | 3.2 | 23.6 | 23.6 | 9.2 | 14.3 | 16 | 16 |
| 3/8” | 5/16” | SQX 3/8 - 5/16 | 20.3 | 18.9 | 4.2 | 26 | 26 | 11.3 | 17.8 | 16 | 32 |
| | 3/8” | SQX 3/8 | 20.3 | 20.3 | 4.2 | 26 | 26 | 11.3 | 17.8 | 30 | 30 |
| 1/2” | 3/8” | SQX 1/2 - 3/8 | 22.6 | 20.3 | 4.2 | 30.5 | 30.5 | 13 | 22.3 | 30 | 47 |
| | 1/2” | SQX 1/2 | 22.6 | 22.6 | 4.2 | 30.5 | 30.5 | 13 | 22.3 | 50 | 45 |

## SQF series Triple universal elbow



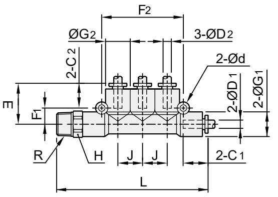
Metric specification

| Port size | | Model | C1 | C2 | Ød | E | F1 | F2 | L | ØG | J | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | | | |
| Ø4 | Ø4 | SQF 4 | 14.6 | 14.6 | 3.2 | 20.6 | 8.1 | 40.6 | 65.4 | 12.4 | 12.4 | 4.2 | 16 |
| Ø6 | Ø4 | SQF 6 - 4 | 17.1 | 14.6 | 3.2 | 20.7 | 8.1 | 40.6 | 66.2 | 12.4 | 12.4 | 4.2 | 16 |
| | Ø6 | SQF 6 | 17.1 | 17.1 | 3.2 | 20.6 | 8.1 | 40.6 | 66.2 | 12.4 | 12.4 | 10 | 16.5 |
| Ø8 | Ø6 | SQF 8 - 6 | 18.9 | 17.1 | 3.2 | 25.8 | 11.3 | 47 | 76.4 | 14.3 | 14.3 | 10 | 26 |
| | Ø8 | SQF 8 | 18.9 | 18.9 | 3.2 | 26 | 11.3 | 47 | 76.4 | 14.3 | 14.3 | 16 | 22 |
| Ø10 | Ø8 | SQF 10 - 8 | 20.2 | 18.8 | 3.2 | 26.4 | 10.8 | 57.1 | 86.7 | 17.8 | 17.8 | 30 | 39 |
| | Ø10 | SQF 10 | 20.2 | 20.2 | 3.2 | 26.4 | 10.8 | 57.1 | 86.7 | 17.8 | 17.8 | 30 | 39 |

Inch specification

| Port size | | Model | C1 | C2 | Ød | E | F1 | F2 | L | ØG | J | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | | | |
| 5/32” | 5/32” | SQF 5/32 | 14.6 | 14.6 | 3.2 | 20.6 | 8.1 | 40.6 | 65.4 | 12.4 | 12.4 | 4.2 | 16 |
| 1/4” | 5/32” | SQF 1/4 - 5/32 | 17.1 | 14.6 | 3.2 | 20.7 | 8.1 | 40.6 | 66.2 | 12.4 | 12.4 | 4.2 | 16 |
| | 1/4” | SQF 1/4 | 17.1 | 17.1 | 3.2 | 20.6 | 8.1 | 40.6 | 66.2 | 12.4 | 12.4 | 10 | 16.5 |
| 5/16” | 1/4” | SQF 5/16 - 1/4 | 18.9 | 17.1 | 3.2 | 25.8 | 11.3 | 47 | 76.4 | 14.3 | 14.3 | 10 | 26 |
| | 5/16” | SQF 5/16 | 18.9 | 18.9 | 3.2 | 26 | 11.3 | 47 | 76.4 | 14.3 | 14.3 | 16 | 22 |
| 3/8” | 5/16” | SQF 3/8 - 5/16 | 20.2 | 18.8 | 3.2 | 26.4 | 10.8 | 57.1 | 86.7 | 17.8 | 17.8 | 30 | 39 |
| | 3/8” | SQF 3/8 | 20.2 | 20.2 | 3.2 | 26.4 | 10.8 | 57.1 | 86.7 | 17.8 | 17.8 | 30 | 39 |

## SQFD series Triple universal male elbow



Metric specification

| Port size | | Model | C1 | C2 | Ød | E | F1 | F2 | L | ØG1 | ØG2 | J | Across flats H | R | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | | | | | | |
| Ø4 | Ø4 | SQFD 4-01 | 14.6 | 14.6 | 3.3 | 17.1 | 7.8 | 40.4 | 74.7 | 12.4 | 12.4 | 12.4 | 14 | R1/8" | 4.2 | 16 |
| Ø6 | Ø4 | SQFD 6-4-01 | 17.1 | 16.1 | 3.3 | 20.6 | 7.8 | 40.4 | 74.7 | 12.4 | 12.4 | 12.4 | 14 | R1/8" | 4.2 | 16 |
| | Ø6 | SQFD 6-01 | 17.1 | 17 | 3.3 | 20.6 | 7.8 | 40.4 | 74.7 | 12.4 | 12.4 | 12.4 | 14 | R1/8" | 10 | 16.5 |
| Ø8 | Ø6 | SQFD 8-6-02 | 18.9 | 17 | 3.3 | 22.9 | 8.8 | 46.2 | 88.9 | 14.3 | 14.3 | 14.3 | 19 | R1/4" | 10 | 26 |
| | Ø8 | SQFD 8-02 | 18.9 | 18.8 | 3.3 | 23.1 | 8.8 | 46.2 | 88.9 | 14.3 | 14.3 | 14.3 | 19 | R1/4" | 16 | 22 |
| Ø10 | Ø8 | SQFD 10-8-03 | 20.2 | 14.8 | 3.2 | 26.4 | 10.8 | 57.1 | 100.3 | 17.8 | 17.8 | 17.8 | 21 | R3/8" | 30 | 39 |
| | Ø10 | SQFD 10-03 | 20.2 | 20.2 | 3.2 | 26.4 | 10.8 | 57.1 | 100.3 | 17.8 | 17.8 | 17.8 | 21 | R3/8" | 30 | 39 |

Inch specification

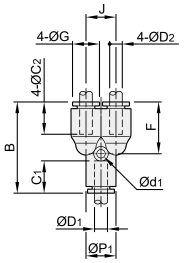
| Port size | | Model | C1 | C2 | Ød | E | F1 | F2 | L | ØG1 | ØG2 | J | Across flats H | R | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | | | | | | | |
| 5/32" | 5/32" | SQFD 5/32-01 | 14.6 | 14.6 | 3.3 | 17.1 | 7.8 | 40.4 | 74.7 | 12.4 | 12.4 | 12.4 | 14 | R1/8" | 4.2 | 16 |
| 1/4" | 5/32" | SQFD 1/4-5/32-01 | 17.1 | 16.1 | 3.3 | 20.6 | 7.8 | 40.4 | 74.7 | 12.4 | 12.4 | 12.4 | 14 | R1/8" | 4.2 | 16 |
| | 1/4" | SQFD 1/4-01 | 17.1 | 17 | 3.3 | 20.6 | 7.8 | 40.4 | 74.7 | 12.4 | 12.4 | 12.4 | 14 | R1/8" | 10 | 16.5 |
| 5/16" | 1/4" | SQFD 5/16-1/4-02 | 18.8 | 17 | 3.3 | 22.9 | 8.8 | 46.2 | 88.9 | 14.3 | 14.3 | 14.3 | 19 | R1/4" | 10 | 26 |
| | 5/16" | SQFD 5/16-02 | 18.8 | 18.8 | 3.3 | 23.1 | 8.8 | 46.2 | 88.9 | 14.3 | 14.3 | 14.3 | 19 | R1/4" | 16 | 22 |
| 3/8" | 5/16" | SQFD 3/8-5/16-03 | 20.2 | 14.8 | 3.2 | 26.4 | 10.8 | 57.1 | 100.3 | 17.8 | 17.8 | 17.8 | 21 | R3/8" | 30 | 39 |
| | 3/8" | SQFD 3/8-03 | 20.2 | 20.2 | 3.2 | 26.4 | 10.8 | 57.1 | 100.3 | 17.8 | 17.8 | 17.8 | 21 | R3/8" | 30 | 39 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

## SQW series Double union Y

Metric specification

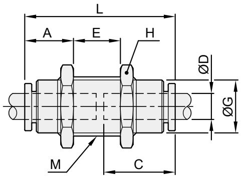
| Port size |  | Model | B | C1 | C2 | Ød | ØG | J | ØP1 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 |  |  |  |  |  |  |  |  |  |  |
| Ø6 | Ø6 | SQW 6 - 6 | 40.2 | 17.1 | 17.1 | 3.2 | 12.4 | 12.4 | 12.4 | 12.5 | 16 |



Inch specification

| Port size |  | Model | B | C1 | C2 | Ød | ØG | J | ØP1 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 |  |  |  |  |  |  |  |  |  |  |
| 1/4” | 1/4” | SQW 1/4” - 1/4” | 40.2 | 17.1 | 17.1 | 3.2 | 12.4 | 12.4 | 12.4 | 12.5 | 16 |

## SQMH series Bulkhead union



Metric specification

| Port size ØD | Thread size M | Model | A | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M12x1 | SQMH - □ 4 - 4 | 9.5 | 14.5 | 7 | 10 | 31.5 | 14 | 4.2 | 16 |
| Ø6 | M14x1 | SQMH - □ 6 - 6 | 10 | 16.9 | 10 | 12 | 35.5 | 17 | 10 | 20 |
| Ø8 | M16x1 | SQMH - □ 8 - 8 | 12 | 18.8 | 10 | 14 | 38 | 19 | 16 | 32 |
| Ø10 | M20x1 | SQMH - □ 10 - 10 | 12 | 19.6 | 13 | 18 | 43 | 24 | 30 | 43 |
| Ø12 | M22x1 | SQMH - □ 12 - 12 | 12 | 22.3 | 18 | 20 | 48 | 27 | 50 | 52 |

Note: Bulkhead union has brass - C and plastic - P

**SQMH - C** (Brass body)

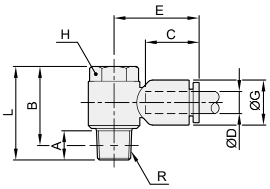
Inch specification

| Port size ØD | Thread size M | Model | A | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M12x1 | SQMH - □ 5/32” - 5/32” | 9.5 | 14.5 | 7 | 10 | 31.5 | 14 | 4.2 | 16 |
| 1/4” | M14x1 | SQMH - □ 1/4” - 1/4” | 10 | 16.9 | 10 | 12 | 35.5 | 17 | 10 | 20 |
| 5/16” | M16x1 | SQMH - □ 5/16” - 5/16” | 12 | 18.8 | 10 | 14 | 38 | 19 | 16 | 32 |
| 3/8” | M20x1 | SQMH - □ 3/8” - 3/8” | 12 | 19.6 | 13 | 18 | 43 | 24 | 30 | 43 |

Note: Bulkhead union has brass - C and plastic - P

**SQMH - P** (Plastic body)

## SQZ series Rotary male elbow



Metric specification

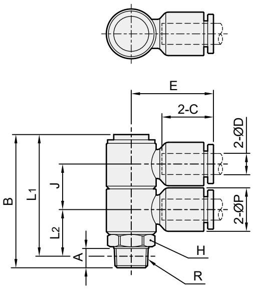
| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQZ 4 - M5 | 3.8 | 17.1 | 14.6 | 19.9 | 10.5 | 19 | 8 | 3.5 | 8.5 |
| | 1/8" | SQZ 4 - 01 | 6 | 20.7 | 14.6 | 21.6 | | 23.7 | 12 | 4.2 | 12 |
| Ø6 | M5 | SQZ 6 - M5 | 3.8 | 17.1 | 17.1 | 21.8 | 12.4 | 19 | 8 | 3.5 | 11.5 |
| | 1/8" | SQZ 6 - 01 | 6 | 20.7 | 17.1 | 23.7 | | 23.7 | 12 | 10 | 13.5 |
| | 1/4" | SQZ 6 - 02 | 9 | 23 | 17.1 | 25.9 | | 27.5 | 17 | 10 | 20.5 |
| Ø8 | 1/4" | SQZ 8 - 02 | 9 | 23 | 18.9 | 27.7 | 14.3 | 27.5 | 17 | 16 | 23 |
| | 3/8" | SQZ 8 - 03 | 10 | 27.4 | 18.9 | 29.9 | | 32.4 | 19 | 16 | 28 |
| Ø10 | 1/4" | SQZ 10 - 02 | 9 | 23 | 20.4 | 29.6 | 17.9 | 27.5 | 17 | 30 | 34 |
| | 3/8" | SQZ 10 - 03 | 10 | 27.4 | 20.4 | 31.7 | | 32.4 | 19 | 30 | 35 |
| | 1/2" | SQZ 10 - 04 | 14 | 33.9 | 22.8 | 37.2 | 21.2 | 40.9 | 24 | 50 | 60 |
| Ø12 | 3/8" | SQZ 12 - 03 | 10 | 27.4 | 22.8 | 35 | 21.2 | 32.4 | 19 | 50 | 47 |
| | 1/2" | SQZ 12 - 04 | 14 | 33.9 | 22.8 | 37.2 | | 40.9 | 24 | 50 | 60 |

Inch specification

| Port size ØD | Thread size NR / NPT | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4" | NR10/32" | SQZ 1/4 - 10/32 | 3.8 | 17.1 | 17.1 | 21.8 | 12.4 | 19 | 8 | 3.5 | 11.5 |
| | 1/8" | SQZ 1/4 - 01 | 6 | 20.7 | 17.1 | 23.7 | | 23.7 | 12 | 10 | 13.5 |
| | 1/4" | SQZ 1/4 - 02 | 9 | 23 | 17.1 | 25.9 | | 27.5 | 17 | 10 | 20.5 |
| 5/16" | 1/4" | SQZ 5/16 - 02 | 9 | 23 | 18.9 | 27.7 | 14.3 | 27.5 | 17 | 16 | 23 |
| | 3/8" | SQZ 5/16 - 03 | 10 | 27.4 | 18.9 | 29.9 | | 32.4 | 19 | 16 | 28 |
| 3/8" | 1/4" | SQZ 3/8 - 02 | 9 | 23 | 20.4 | 29.6 | 17.9 | 27.5 | 17 | 30 | 34 |
| | 3/8" | SQZ 3/8 - 03 | 10 | 27.4 | 20.4 | 31.7 | | 32.4 | 19 | 30 | 35 |
| | 1/2" | SQZ 3/8 - 04 | 14 | 33.9 | 22.8 | 37.2 | 21.2 | 40.9 | 24 | 50 | 60 |
| 1/2" | 3/8" | SQZ 1/2 - 03 | 10 | 27.4 | 22.8 | 35 | 21.2 | 32.4 | 19 | 50 | 47 |
| | 1/2" | SQZ 1/2 - 04 | 14 | 33.9 | 22.8 | 37.2 | | 40.9 | 24 | 50 | 60 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

## **SQZB** series Rotary double universal male elbow



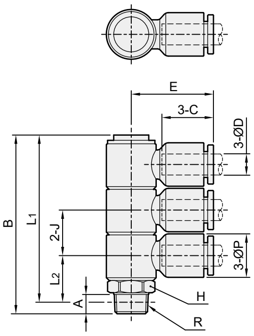
Metric specification

| Port size ØD | Thread size PT | Model | A | B | L1 | L2 | ØP | C | J | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQZB 4-01 | 5.5 | 38 | 34.7 | 13.3 | 10 | 15 | 14 | 21.2 | 12 | 5.1 | 21.6 |
| | 1/4" | SQZB 4-02 | 8 | 43.8 | 37.8 | 15.6 | | | | 23.7 | 17 | 4.4 | 36 |
| Ø6 | 1/8" | SQZB 6-01 | 5.5 | 38 | 34.7 | 13.3 | 12.5 | 17 | 13 | 23.5 | 12 | 9.3 | 23.4 |
| | 1/4" | SQZB 6-02 | 8 | 43.8 | 37.8 | 15.6 | | | | 25.7 | 17 | 9.3 | 38.2 |
| | 3/8" | SQZB 6-03 | 8 | 52 | 46 | 16.6 | | | | 27.8 | 19 | 9.5 | 61 |
| Ø8 | 1/8" | SQZB 8-01 | 5.5 | 40 | 36.7 | 13.3 | 14.5 | 18.5 | 15 | 25.2 | 12 | 14.2 | 26 |
| | 1/4" | SQZB 8-02 | 8 | 44.8 | 39.8 | 15.1 | | | | 27.4 | 17 | 15.3 | 42 |
| | 3/8" | SQZB 8-03 | 8 | 52 | 46 | 16.6 | | | | 29.6 | 19 | 15 | 63 |
| Ø10 | 1/4" | SQZB 10-02 | 8 | 47.8 | 41.8 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.6 | 52.4 |
| | 3/8" | SQZB 10-03 | 8 | 52 | 46 | 16.6 | | | | 31.6 | 19 | 23.2 | 70.1 |
| | 1/2" | SQZB 10-04 | 8 | 62.6 | 55.4 | 20.7 | | | | 34.6 | 24 | 23.3 | 120 |
| Ø12 | 3/8" | SQZB 12-03 | 8 | 56 | 50 | 16.6 | 21 | 23.5 | 21 | 34.2 | 19 | 31.4 | 86.5 |
| | 1/2" | SQZB 12-04 | 10 | 62.6 | 55.4 | 20.7 | | | | 37.2 | 24 | 30.8 | 125.5 |

Inch specification

| Port size ØD | Thread size PT | Model | A | B | L1 | L2 | ØP | C | J | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8" | SQZB 1/4-01 | 5.5 | 38 | 34.7 | 13.3 | 12.5 | 17 | 14 | 23.5 | 12 | 15.3 | 23.4 |
| | 1/4" | SQZB 1/4-02 | 8 | 43.8 | 37.8 | 15.6 | | | | 25.7 | 17 | 15 | 38.2 |
| 5/16 | 1/4" | SQZB 5/16-02 | 8 | 44.8 | 39.8 | 15.1 | 14.5 | 18.5 | 15 | 27.4 | 17 | 10.1 | 42 |
| | 3/8" | SQZB 5/16-03 | 8 | 52 | 46 | 16.6 | | | | 29.6 | 19 | 9.9 | 63 |
| 3/8 | 1/4" | SQZB 3/8-02 | 8 | 47.8 | 41.8 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.4 | 52.4 |
| | 3/8" | SQZB 3/8-03 | 8 | 52 | 46 | 16.6 | | | | 31.6 | 19 | 21.7 | 70.1 |

## **SQZC** series Rotary triple universal male elbow



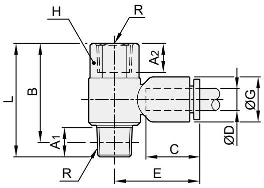
Metric specification

| Port size ØD | Thread size PT | Model | A | B | L1 | L2 | ØP | C | J | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQZC 4-01 | 5.5 | 51 | 47.7 | 13.3 | 10 | 15 | 14 | 21.2 | 12 | 4.7 | 29 |
| | 1/4" | SQZC 4-02 | 8 | 57.8 | 51.8 | 15.6 | | | | 23.7 | 17 | 4.3 | 47 |
| Ø6 | 1/8" | SQZC 6-01 | 5.5 | 51 | 47.7 | 13.3 | 12.5 | 17 | 14 | 23.5 | 12 | 9.6 | 31.5 |
| | 1/4" | SQZC 6-02 | 8 | 57.8 | 51.8 | 15.6 | | | | 25.7 | 17 | 9.7 | 50.5 |
| | 3/8" | SQZC 6-03 | 8 | 70 | 64 | 16.6 | | | | 27.8 | 19 | 9.5 | 79 |
| Ø8 | 1/8" | SQZC 8-01 | 5.5 | 55 | 51.7 | 13.3 | 14.5 | 18.5 | 15 | 25.2 | 12 | 14.3 | 35.5 |
| | 1/4" | SQZC 8-02 | 8 | 59.8 | 53.8 | 15.1 | | | | 27.4 | 17 | 15.5 | 57 |
| | 3/8" | SQZC 8-03 | 8 | 70 | 64 | 16.6 | | | | 29.6 | 19 | 15.1 | 82.5 |
| Ø10 | 1/4" | SQZC 10-02 | 8 | 65.8 | 59.8 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.9 | 75 |
| | 3/8" | SQZC 10-03 | 8 | 70 | 64 | 16.6 | | | | 31.6 | 19 | 22.7 | 93 |
| | 1/2" | SQZC 10-04 | 8 | 84.4 | 77.2 | 20.7 | | | | 34.6 | 24 | 22.6 | 156.5 |
| Ø12 | 3/8" | SQZC 12-03 | 8 | 78 | 73 | 16.6 | 21 | 23.5 | 21 | 34.2 | 19 | 30.6 | 123 |
| | 1/2" | SQZC 12-04 | 10 | 84.4 | 77.2 | 20.7 | | | | 37.2 | 24 | 31.5 | 163 |

Inch specification

| Port size ØD | Thread size PT | Model | A | B | L1 | L2 | ØP | C | J | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8" | SQZC 1/4-01 | 5.5 | 51 | 47.7 | 13.3 | 12.5 | 17 | 14 | 23.5 | 12 | 9.8 | 31.5 |
| | 1/4" | SQZC 1/4-02 | 8 | 57.8 | 51.8 | 15.6 | | | | 25.7 | 17 | 10 | 50.5 |
| 5/16 | 1/4" | SQZC 5/16-02 | 8 | 59.8 | 53.8 | 15.1 | 14.5 | 18.5 | 15 | 27.4 | 17 | 15.5 | 57 |
| | 3/8" | SQZC 5/16-03 | 8 | 70 | 64 | 16.6 | | | | 29.6 | 19 | 15.1 | 82.5 |
| 3/8 | 1/4" | SQZC 3/8-02 | 8 | 65.8 | 59.8 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 20.9 | 75 |
| | 3/8" | SQZC 3/8-03 | 8 | 70 | 64 | 16.6 | | | | 31.6 | 19 | 22 | 93 |

## **SQP** series Female universal elbow



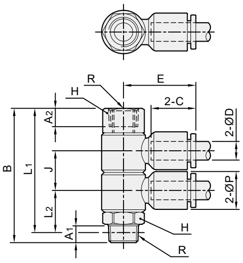
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A1 | A2 | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQP 4 - M5 | 3.8 | 4 | 19.1 | 14.6 | 19.9 | 10.5 | 19 | 8 | 4 | 8 |
|  | 1/8" | SQP 4 - 01 | 6 | 6 | 24.7 | 14.6 | 21.6 |  | 23.7 | 12 | 5.5 | 16 |
| Ø6 | M5 | SQP 6 - M5 | 3.8 | 4 | 19.1 | 17.1 | 21.8 | 12.4 | 19 | 8 | 4 | 10 |
|  | 1/8" | SQP 6 - 01 | 6 | 6 | 24.7 | 17.1 | 23.7 |  | 23.7 | 12 | 5.5 | 14 |
|  | 1/4" | SQP 6 - 02 | 9 | 9 | 30.5 | 17.1 | 25.9 |  | 27.5 | 17 | 12.5 | 30 |
| Ø8 | 1/4" | SQP 8 - 02 | 9 | 9 | 30.5 | 18.9 | 27.7 | 14.3 | 27.5 | 17 | 12.5 | 29.5 |
|  | 3/8" | SQP 8 - 03 | 10 | 11 | 37.1 | 18.9 | 29.9 |  | 32.4 | 19 | 20 | 40 |
| Ø10 | 1/4" | SQP 10 - 02 | 9 | 9 | 30.5 | 20.4 | 29.6 | 17.9 | 27.5 | 17 | 12.5 | 34 |
|  | 3/8" | SQP 10 - 03 | 10 | 11 | 37.1 | 20.4 | 31.7 |  | 32.4 | 19 | 20 | 50 |
|  | 1/2" | SQP 10 - 04 | 14 | 14 | 46.9 | 22.8 | 47.2 | 21.2 | 40.9 | 24 | 35 | 94 |
| Ø12 | 3/8" | SQP 12 - 03 | 10 | 11 | 37.1 | 22.8 | 35 | 21.2 | 32.4 | 19 | 20 | 56 |
|  | 1/2" | SQP 12 - 04 | 14 | 14 | 46.9 | 22.8 | 47.2 |  | 40.9 | 24 | 35 | 94 |

Inch specification

| Port size ØD | Thread size NR/ NPT |  | A1 | A2 | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | NR10/32” | SQP 1/4 - 10/32 | 3.8 | 4 | 19.1 | 17.1 | 21.8 | 12.4 | 21 | 8 | 4 | 10 |
|  | 1/8" | SQP 1/4 - 01 | 6 | 6 | 24.7 | 17.1 | 23.7 |  | 27.7 | 12 | 5.5 | 14 |
|  | 1/4" | SQP 1/4 - 02 | 9 | 9 | 30.5 | 17.1 | 25.9 |  | 35 | 17 | 12.5 | 30 |
| 5/16” | 1/4" | SQP 5/16 - 02 | 9 | 9 | 30.5 | 18.9 | 27.7 | 14.3 | 35 | 17 | 12.5 | 29.5 |
|  | 3/8" | SQP 5/16 - 03 | 10 | 11 | 37.1 | 18.9 | 29.9 |  | 42.1 | 19 | 20 | 40 |
| 3/8” | 1/4" | SQP 3/8 - 02 | 9 | 9 | 30.5 | 20.4 | 29.6 | 17.9 | 35 | 17 | 12.5 | 34 |
|  | 3/8" | SQP 3/8 - 03 | 10 | 11 | 37.1 | 20.4 | 31.7 |  | 42.1 | 19 | 20 | 50 |
|  | 1/2" | SQP 3/8 - 04 | 14 | 14 | 46.9 | 22.8 | 47.2 | 21.2 | 53.9 | 24 | 35 | 94 |
| 1/2” | 3/8" | SQP 1/2 - 03 | 10 | 11 | 37.1 | 23.6 | 35 | 22.3 | 42.1 | 19 | 20 | 56 |
|  | 1/2" | SQP 1/2 - 04 | 14 | 14 | 46.9 | 23.6 | 38 |  | 53.9 | 24 | 35 | 94 |

## SQPB series Rotary double universal female elbow



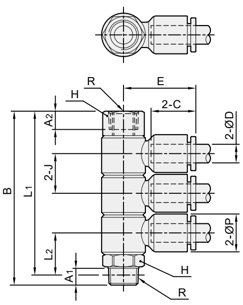
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | J | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQPB 4-01 | 5.5 | 6 | 43.5 | 40.2 | 13.3 | 10 | 15 | 14 | 21.2 | 12 | 5.1 | 22.5 |
| | 1/4" | SQPB 4-02 | 8 | 9 | 46.3 | 52.3 | 15.6 | | | | 23.7 | 17 | 4.4 | 43.5 |
| Ø6 | 1/8" | SQPB 6-01 | 5.5 | 6 | 43.5 | 40.2 | 13.3 | 12.5 | 17 | 13 | 23.5 | 12 | 9.3 | 24.3 |
| | 1/4" | SQPB 6-02 | 8 | 9 | 46.3 | 52.3 | 15.6 | | | | 25.7 | 17 | 9.3 | 45.6 |
| | 3/8" | SQPB 6-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 27.8 | 19 | 9.5 | 64 |
| Ø8 | 1/8" | SQPB 8-01 | 5.5 | 6 | 42.2 | 45.5 | 13.3 | 14.5 | 18.5 | 15 | 25.2 | 12 | 14.2 | 27 |
| | 1/4" | SQPB 8-02 | 8 | 9 | 47.3 | 53.3 | 15.1 | | | | 27.4 | 17 | 15.3 | 50 |
| | 3/8" | SQPB 8-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 29.6 | 19 | 15 | 66 |
| Ø10 | 1/4" | SQPB 10-02 | 8 | 9 | 50.3 | 56.3 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.6 | 60 |
| | 3/8" | SQPB 10-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 31.6 | 19 | 23.2 | 73 |
| | 1/2" | SQPB 10-04 | 8 | 13 | 76.1 | 68.9 | 20.7 | | | | 34.6 | 24 | 23.3 | 134.5 |
| Ø12 | 3/8" | SQPB 12-03 | 8 | 10 | 65.7 | 60.7 | 16.6 | 21 | 23.5 | 21 | 34.2 | 19 | 31.4 | 90.5 |
| | 1/2" | SQPB 12-04 | 10 | 13 | 76.1 | 68.9 | 20.7 | | | | 37.2 | 24 | 30.8 | 140.5 |

Inch specification

| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | J | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø6 | 1/8" | SQPB 1/4-01 | 5.5 | 6 | 43.5 | 40.2 | 13.3 | 12.5 | 17 | 13 | 23.5 | 12 | 9.3 | 24.3 |
| | 1/4" | SQPB 1/4-02 | 8 | 9 | 46.3 | 52.3 | 15.6 | | | | 25.7 | 17 | 9.3 | 45.6 |
| Ø8 | 1/4" | SQPB 5/16-02 | 8 | 9 | 47.3 | 53.3 | 15.1 | 14.5 | 18.5 | 15 | 27.4 | 17 | 15.3 | 50 |
| | 3/8" | SQPB 5/16-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 29.6 | 19 | 15 | 66 |
| Ø10 | 1/4" | SQPB 3/8-02 | 8 | 9 | 50.3 | 56.3 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.6 | 60 |
| | 3/8" | SQPB 3/8-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 31.6 | 19 | 23.2 | 73 |

## SQPC series Rotary triple universal female elbow



Metric specification

| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | J | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQPC 4-01 | 5.5 | 6 | 56.5 | 53.2 | 13.3 | 10 | 15 | 14 | 21.2 | 12 | 5.1 | 30 |
| | 1/4" | SQPC 4-02 | 8 | 9 | 66.3 | 60.3 | 15.6 | | | | 23.7 | 17 | 4.4 | 54 |
| Ø6 | 1/8" | SQPC 6-01 | 5.5 | 6 | 56.5 | 53.2 | 13.3 | 12.5 | 17 | 13 | 23.5 | 12 | 9.3 | 32 |
| | 1/4" | SQPC 6-02 | 8 | 9 | 66.3 | 60.3 | 15.6 | | | | 25.7 | 17 | 9.3 | 57 |
| | 3/8" | SQPC 6-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 27.8 | 19 | 9.5 | 81 |
| Ø8 | 1/8" | SQPC 8-01 | 5.5 | 6 | 60.5 | 57.2 | 13.3 | 14.5 | 18.5 | 15 | 25.2 | 12 | 14.2 | 36 |
| | 1/4" | SQPC 8-02 | 8 | 9 | 68.3 | 62.3 | 15.1 | | | | 27.4 | 17 | 15.3 | 64.5 |
| | 3/8" | SQPC 8-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 29.6 | 19 | 15 | 85 |
| Ø10 | 1/4" | SQPC 10-02 | 8 | 9 | 65.8 | 68.3 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.6 | 82 |
| | 3/8" | SQPC 10-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 31.6 | 19 | 23.2 | 95 |
| | 1/2" | SQPC 10-04 | 8 | 13 | 98.4 | 91.2 | 20.7 | | | | 34.6 | 24 | 23.3 | 171 |
| Ø12 | 3/8" | SQPC 12-03 | 8 | 10 | 87.7 | 81.7 | 16.6 | 21 | 23.5 | 21 | 34.2 | 19 | 31.4 | 125 |
| | 1/2" | SQPC 12-04 | 10 | 13 | 98.4 | 91.2 | 20.7 | | | | 37.2 | 24 | 30.8 | 178 |

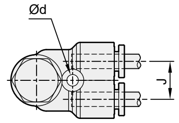
Inch specification

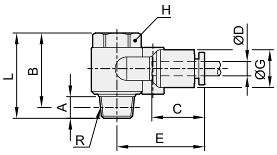
| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | J | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø6 | 1/8" | SQPC 1/4-01 | 5.5 | 6 | 56.5 | 53.2 | 13.3 | 12.5 | 17 | 13 | 23.5 | 12 | 9.3 | 32 |
| | 1/4" | SQPC 1/4-02 | 8 | 9 | 66.3 | 60.3 | 15.6 | | | | 25.7 | 17 | 9.3 | 57 |
| Ø8 | 1/4" | SQPC 5/16-02 | 8 | 9 | 68.3 | 62.3 | 15.1 | 14.5 | 18.5 | 15 | 27.4 | 17 | 15.3 | 64.5 |
| | 3/8" | SQPC 5/16-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 29.6 | 19 | 15 | 85 |
| Ø10 | 1/4" | SQPC 3/8-02 | 8 | 9 | 65.8 | 68.3 | 14.9 | 18 | 20.5 | 18 | 29.5 | 17 | 21.6 | 82 |
| | 3/8" | SQPC 3/8-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 31.6 | 19 | 23.2 | 95 |

# SQ series Fitting

## SQKZ series

### **SQKZ** series Rotary branch male elbow





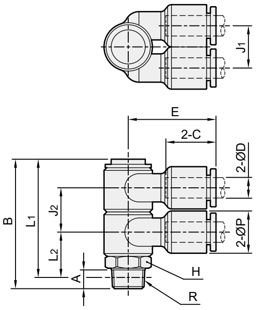
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | J | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQKZ 4 - M5 | 3.8 | 17.1 | 14.6 | 19.9 | 10.5 | 10.5 | 19 | 8 | 4 | 6.5 |
| | 1/8" | SQKZ 4 - 01 | 6 | 20.7 | 14.6 | 21.6 | | | 23.7 | 12 | 5.5 | 16 |
| Ø6 | M5 | SQKZ 6 - M5 | 3.8 | 17.1 | 17.1 | 21.8 | 12.4 | 12.4 | 19 | 8 | 4 | 8 |
| | 1/8" | SQKZ 6 - 01 | 6 | 20.7 | 17.1 | 23.7 | | | 23.7 | 12 | 5.5 | 16 |
| | 1/4" | SQKZ 6 - 02 | 9 | 23 | 17.1 | 25.9 | | | 27.5 | 17 | 12.5 | 36 |
| Ø8 | 1/4" | SQKZ 8 - 02 | 9 | 23 | 18.9 | 27.7 | 14.3 | 14.3 | 27.5 | 17 | 12.5 | 45 |
| | 3/8" | SQKZ 8 - 03 | 10 | 27.4 | 18.9 | 29.9 | | | 32.4 | 19 | 20 | 50 |
| Ø10 | 1/4" | SQKZ 10 - 02 | 9 | 23 | 20.4 | 29.6 | 17.9 | 17.8 | 27.5 | 17 | 12.5 | 32 |
| | 3/8" | SQKZ 10 - 03 | 10 | 27.4 | 20.4 | 31.7 | | | 32.4 | 19 | 20 | 48 |
| Ø12 | 3/8" | SQKZ 12 - 03 | 10 | 27.4 | 22.8 | 35 | 21.2 | 20.8 | 32.4 | 19 | 20 | 54 |
| | 1/2" | SQKZ 12 - 04 | 14 | 33.9 | 22.8 | 37.2 | | | 40.9 | 24 | 35 | 88 |

Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B | C | E | ØG | J | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | NR10/32” | SQKZ 1/4 - 10/32 | 3.8 | 17.1 | 17.1 | 21.8 | 12.4 | 12.4 | 19 | 8 | 4 | 8 |
| | 1/8" | SQKZ 1/4 - 01 | 6 | 20.7 | 17.1 | 23.7 | | | 23.7 | 12 | 5.5 | 16 |
| | 1/4" | SQKZ 1/4 - 02 | 9 | 23 | 17.1 | 25.9 | | | 27.5 | 17 | 12.5 | 36 |
| 5/16” | 1/4" | SQKZ 5/16 - 02 | 9 | 23 | 18.9 | 27.7 | 14.3 | 14.3 | 27.5 | 17 | 12.5 | 45 |
| | 3/8" | SQKZ 5/16 - 03 | 10 | 27.4 | 18.9 | 29.9 | | | 32.4 | 19 | 20 | 50 |
| 3/8” | 1/4" | SQKZ 3/8 - 02 | 9 | 23 | 20.4 | 29.6 | 17.9 | 17.8 | 27.5 | 17 | 12.5 | 32 |
| | 3/8" | SQKZ 3/8 - 03 | 10 | 27.4 | 20.4 | 31.7 | | | 32.4 | 19 | 20 | 48 |

## **SQBZ** series Rotary double branch universal male elbow



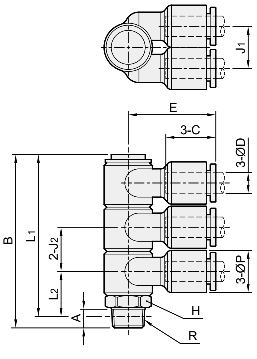
Metric specification

| Port size ØD | Thread size PT | Model | A | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQBZ 4-01 | 5.5 | 38 | 34.7 | 13.3 | 10 | 15 | 10 | 14 | 24.4 | 12 | 4.3 | 23.5 |
| Ø6 | 1/8" | SQBZ 6-01 | 5.5 | 38 | 34.7 | 13.3 | 12.5 | 17 | 12 | 14 | 25.9 | 12 | 6.9 | 26 |
|  | 1/4" | SQBZ 6-02 | 8 | 43.8 | 37.8 | 15.6 |  |  |  |  | 28.4 | 17 | 7 | 40 |
| Ø8 | 1/4" | SQBZ 8-02 | 8 | 44.8 | 39.8 | 15.1 | 14.5 | 18.5 | 14 | 15 | 29.6 | 17 | 13.9 | 45 |
|  | 3/8" | SQBZ 8-03 | 8 | 52 | 46 | 16.6 |  |  |  |  | 31.6 | 19 | 14 | 66 |
| Ø10 | 1/4" | SQBZ 10-02 | 8 | 47.8 | 41.8 | 14.9 | 17.5 | 20.5 | 17 | 18 | 33.7 | 17 | 21.6 | 59 |
|  | 3/8" | SQBZ 10-03 | 8 | 52 | 46 | 16.6 |  |  |  |  | 35.7 | 19 | 21.3 | 76 |
| Ø12 | 3/8" | SQBZ 12-03 | 8 | 56 | 50 | 16.6 | 21 | 23.5 | 20 | 21 | 38.5 | 19 | 44.4 | 97 |
|  | 1/2" | SQBZ 12-04 | 10 | 62.6 | 55.4 | 20.7 |  |  |  |  | 41.5 | 24 | 45.4 | 136 |

Inch specification

| Port size ØD | Thread size PT | Model | A | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8" | SQBZ 1/4-01 | 5.5 | 38 | 34.7 | 13.3 | 12.5 | 17 | 12 | 14 | 25.9 | 12 | 6.9 | 26 |
|  | 1/4" | SQBZ 1/4-02 | 8 | 43.8 | 37.8 | 15.6 |  |  |  |  | 28.4 | 17 | 7 | 40 |
| 5/16 | 1/4" | SQBZ 5/16-02 | 8 | 44.8 | 39.8 | 15.1 | 14.5 | 18.5 | 14 | 15 | 29.6 | 17 | 13.9 | 45 |
|  | 3/8" | SQBZ 5/16-03 | 8 | 52 | 46 | 16.6 |  |  |  |  | 31.6 | 19 | 14 | 66 |
| 3/8 | 1/4" | SQBZ 3/8-02 | 8 | 47.8 | 41.8 | 14.9 | 17.5 | 20.5 | 17 | 18 | 33.7 | 17 | 20.4 | 59 |
|  | 3/8" | SQBZ 3/8-03 | 8 | 52 | 46 | 16.6 |  |  |  |  | 35.7 | 19 | 21.1 | 76 |

## **SQCZ** series Rotary triple branch universal male elbow



Metric specification

| Port size ØD | Thread size PT | Model | A | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQCZ 4-01 | 5.5 | 51 | 47.7 | 13.3 | 10 | 15 | 10 | 14 | 24.4 | 12 | 4.3 | 31.5 |
| Ø6 | 1/8" | SQCZ 6-01 | 5.5 | 51 | 47.7 | 13.3 | 12.5 | 17 | 12 | 14 | 25.9 | 12 | 6.9 | 35 |
|  | 1/4" | SQCZ 6-02 | 8 | 57.8 | 51.8 | 15.6 |  |  |  |  | 28.4 | 17 | 7 | 53 |
| Ø8 | 1/4" | SQCZ 8-02 | 8 | 59.8 | 53.8 | 15.1 | 14.5 | 18.5 | 14 | 15 | 29.6 | 17 | 13.9 | 61 |
|  | 3/8" | SQCZ 8-03 | 8 | 70 | 64 | 16.6 |  |  |  |  | 31.6 | 19 | 14 | 86.5 |
| Ø10 | 1/4" | SQCZ 10-02 | 8 | 65.8 | 59.8 | 14.9 | 17.5 | 20.5 | 17 | 18 | 33.7 | 17 | 21.6 | 84.5 |
|  | 3/8" | SQCZ 10-03 | 8 | 70 | 64 | 16.6 |  |  |  |  | 35.7 | 19 | 21.3 | 101.5 |
| Ø12 | 3/8" | SQCZ 12-03 | 8 | 78 | 73 | 16.6 | 21 | 23.5 | 20 | 21 | 38.5 | 19 | 44.4 | 138.5 |
|  | 1/2" | SQCZ 12-04 | 10 | 84.4 | 77.2 | 20.7 |  |  |  |  | 41.5 | 24 | 45.4 | 178 |

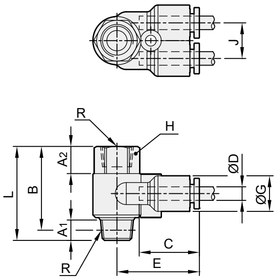
Inch specification

| Port size ØD | Thread size PT | Model | A | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8" | SQCZ 1/4-01 | 5.5 | 38 | 34.7 | 13.3 | 12.5 | 17 | 12 | 14 | 25.9 | 12 | 6.9 | 35 |
|  | 1/4" | SQCZ 1/4-02 | 8 | 43.8 | 37.8 | 15.6 |  |  |  |  | 28.4 | 17 | 7 | 53 |
| 5/16 | 1/4" | SQCZ 5/16-02 | 8 | 44.8 | 39.8 | 15.1 | 14.5 | 18.5 | 14 | 15 | 29.6 | 17 | 13.9 | 61 |
|  | 3/8" | SQCZ 5/16-03 | 8 | 52 | 46 | 16.6 |  |  |  |  | 31.6 | 19 | 14 | 86.5 |
| 3/8 | 1/4" | SQCZ 3/8-02 | 8 | 47.8 | 41.8 | 14.9 | 17.5 | 20.5 | 17 | 18 | 33.7 | 17 | 20.4 | 84.5 |
|  | 3/8" | SQCZ 3/8-03 | 8 | 52 | 46 | 16.6 |  |  |  |  | 35.7 | 19 | 21.1 | 101.5 |

# SQ series Fitting

## SQKP series

### SQKP series Rotary female elbow



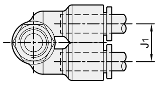
Metric specification

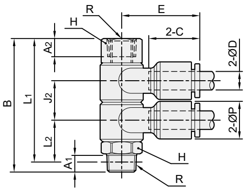
| Port size ØD | Thread size Rc (PT) | Model | A1 | A2 | B | C | E | ØG | J | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQKP 4 - M5 | 3.8 | 4 | 19.1 | 14.6 | 19.9 | 10.5 | 10.5 | 19 | 8 | 4 | 6.5 |
| | 1/8" | SQKP 4 - 01 | 6 | 6 | 24.7 | 14.6 | 21.6 | | | 23.7 | 12 | 5.5 | 16 |
| Ø6 | M5 | SQKP 6 - M5 | 3.8 | 4 | 19.1 | 17.1 | 21.8 | 12.4 | 12.4 | 19 | 8 | 4 | 8 |
| | 1/8" | SQKP 6 - 01 | 6 | 6 | 24.7 | 17.1 | 23.7 | | | 23.7 | 12 | 5.5 | 16 |
| | 1/4" | SQKP 6 - 02 | 9 | 9 | 30.5 | 17.1 | 25.9 | | | 27.5 | 17 | 12.5 | 36 |
| Ø8 | 1/4" | SQKP 8 - 02 | 9 | 9 | 30.5 | 18.9 | 27.7 | 14.3 | 14.3 | 27.5 | 17 | 12.5 | 45 |
| | 3/8" | SQKP 8 - 03 | 10 | 11 | 37.1 | 18.9 | 29.9 | | | 32.4 | 19 | 20 | 50 |
| Ø10 | 1/4" | SQKP 10 - 02 | 9 | 9 | 30.5 | 20.4 | 29.6 | 17.9 | 17.8 | 27.5 | 17 | 12.5 | 32 |
| | 3/8" | SQKP 10 - 03 | 10 | 11 | 37.1 | 20.4 | 31.7 | | | 32.4 | 19 | 20 | 48 |
| Ø12 | 3/8" | SQKP 12 - 03 | 10 | 11 | 37.1 | 22.8 | 35 | 21.2 | 20.8 | 32.4 | 19 | 20 | 54 |
| | 1/2" | SQKP 12 - 04 | 14 | 14 | 46.9 | 22.8 | 37.2 | | | 40.9 | 24 | 35 | 88 |

Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A1 | A2 | B | C | E | ØG | J | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | NR10/32” | SQKP 1/4 - 10/32 | 3.8 | 4 | 19.1 | 17.1 | 21.8 | 12.4 | 12.4 | 21 | 8 | 4 | 10 |
| | 1/8" | SQKP 1/4 - 01 | 6 | 6 | 24.7 | 17.1 | 23.7 | | | 27.7 | 12 | 5.5 | 16 |
| | 1/4" | SQKP 1/4 - 02 | 9 | 9 | 30.5 | 17.1 | 25.9 | | | 35 | 17 | 12.5 | 30 |
| 5/16” | 1/4" | SQKP 5/16 - 02 | 9 | 9 | 30.5 | 18.9 | 27.7 | 14.3 | 14.3 | 35 | 17 | 12.5 | 29.5 |
| | 3/8" | SQKP 5/16 - 03 | 10 | 11 | 37.1 | 18.9 | 29.9 | | | 42.1 | 19 | 20 | 40 |
| 3/8” | 1/4" | SQKP 3/8 - 02 | 9 | 9 | 30.5 | 20.4 | 29.6 | 17.9 | 17.8 | 35 | 17 | 12.5 | 34 |
| | 3/8" | SQKP 3/8 - 03 | 10 | 11 | 37.1 | 20.4 | 31.7 | | | 42.1 | 19 | 20 | 50 |

## SQBP series Rotary double branch universal female elbow





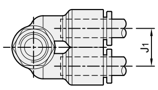
Metric specification

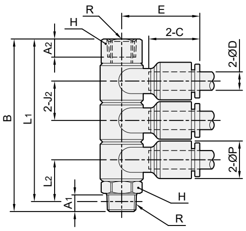
| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQBP 4-01 | 5.5 | 6 | 43.5 | 40.2 | 13.3 | 10.5 | 14.2 | 10.5 | 13 | 24.4 | 12 | 4.3 | 24.5 |
| Ø6 | 1/8" | SQBP 6-01 | 5.5 | 6 | 43.5 | 40.2 | 13.3 | 12.4 | 16.5 | 12.4 | 13 | 25.9 | 12 | 6.9 | 27 |
| | 1/4" | SQBP 6-02 | 8 | 9 | 46.3 | 52.3 | 15.6 | | | | 14 | 28.4 | 17 | 7 | 47.5 |
| Ø8 | 1/4" | SQBP 8-02 | 8 | 9 | 47.3 | 53.3 | 15.1 | 14.3 | 18.5 | 14.3 | 14 | 29.6 | 17 | 13.9 | 52.5 |
| | 3/8" | SQBP 8-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 18 | 31.6 | 19 | 14 | 69 |
| Ø10 | 1/4" | SQBP 10-02 | 8 | 9 | 50.3 | 56.3 | 14.9 | 17.8 | 20 | 17.8 | 14 | 33.7 | 17 | 21.6 | 66.5 |
| | 3/8" | SQBP 10-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 18 | 35.7 | 19 | 21.3 | 78.5 |
| Ø12 | 3/8" | SQBP 12-03 | 8 | 10 | 65.7 | 60.7 | 16.6 | 21.2 | 22.5 | 21.2 | 18 | 38.5 | 19 | 44.4 | 101 |
| | 1/2" | SQBP 12-04 | 10 | 13 | 76.1 | 68.9 | 20.7 | | | | 21.8 | 41.5 | 24 | 45.4 | 151 |

Inch specification

| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8" | SQBP 1/4-01 | 5.5 | 6 | 43.5 | 40.2 | 13.3 | 12.4 | 16.5 | 12.4 | 13 | 25.9 | 12 | 6.9 | 27 |
| | 1/4" | SQBP 1/4-02 | 8 | 9 | 46.3 | 52.3 | 15.6 | | | | 14 | 28.4 | 17 | 7 | 47.5 |
| 5/16 | 1/4" | SQBP 5/16-02 | 8 | 9 | 47.3 | 53.3 | 15.1 | 14.3 | 18.5 | 14.3 | 14 | 29.6 | 17 | 13.9 | 52.5 |
| | 3/8" | SQBP 5/16-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 18 | 31.6 | 19 | 14 | 69 |
| 3/8 | 1/4" | SQBP 3/8-02 | 8 | 9 | 50.3 | 56.3 | 14.9 | 17.8 | 20 | 17.8 | 14 | 33.7 | 17 | 21.6 | 66.5 |
| | 3/8" | SQBP 3/8-03 | 8 | 10 | 61.7 | 55.7 | 16.6 | | | | 18 | 35.7 | 19 | 21.3 | 78.5 |

## SQCP series Rotary triple branch universal female elbow





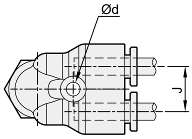
Metric specification

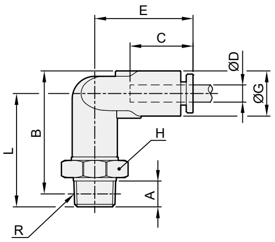
| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQCP 4-01 | 5.5 | 6 | 56.5 | 53.2 | 13.3 | 10.5 | 14.2 | 10.5 | 13 | 24.4 | 12 | 4.8 | 32.5 |
| Ø6 | 1/8" | SQCP 6-01 | 5.5 | 6 | 56.5 | 53.2 | 13.3 | 12.4 | 16.5 | 12.4 | 13 | 25.9 | 12 | 6.7 | 36 |
| | 1/4" | SQCP 6-02 | 8 | 9 | 66.3 | 60.3 | 15.6 | | | | 14 | 28.4 | 17 | 6.8 | 60 |
| Ø8 | 1/4" | SQCP 8-02 | 8 | 9 | 68.3 | 62.3 | 15.1 | 14.3 | 18.5 | 14.3 | 14 | 29.6 | 17 | 13.5 | 68.5 |
| | 3/8" | SQCP 8-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 18 | 31.6 | 19 | 13.9 | 88.5 |
| Ø10 | 1/4" | SQCP 10-02 | 8 | 9 | 65.8 | 68.3 | 14.9 | 17.8 | 20 | 17.8 | 14 | 33.7 | 17 | 21.3 | 92 |
| | 3/8" | SQCP 10-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 18 | 35.7 | 19 | 21.3 | 103.5 |
| Ø12 | 3/8" | SQCP 12-03 | 8 | 10 | 87.7 | 81.7 | 16.6 | 21.2 | 22.5 | 21.2 | 18 | 38.5 | 19 | 44.8 | 140.5 |
| | 1/2" | SQCP 12-04 | 10 | 13 | 98.4 | 91.2 | 20.7 | | | | 21.8 | 41.5 | 24 | 45.8 | 193 |

Inch specification

| Port size ØD | Thread size PT | Model | $A_1$ | $A_2$ | B | $L_1$ | $L_2$ | ØP | C | $J_1$ | $J_2$ | E | Across flats H | Effective orifice mm$^2$ | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8" | SQCP 1/4-01 | 5.5 | 6 | 56.5 | 53.2 | 13.3 | 12.4 | 16.5 | 12.4 | 13 | 25.9 | 12 | 6.7 | 36 |
| | 1/4" | SQCP 1/4-02 | 8 | 9 | 66.3 | 60.3 | 15.6 | | | | 14 | 28.4 | 17 | 6.8 | 60 |
| 5/16 | 1/4" | SQCP 5/16-02 | 8 | 9 | 68.3 | 62.3 | 15.1 | 14.3 | 18.5 | 14.3 | 14 | 29.6 | 17 | 13.5 | 68.5 |
| | 3/8" | SQCP 5/16-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 18 | 31.6 | 19 | 13.9 | 88.5 |
| 3/8 | 1/4" | SQCP 3/8-02 | 8 | 9 | 65.8 | 68.3 | 14.9 | 17.8 | 20 | 17.8 | 14 | 33.7 | 17 | 21.3 | 92 |
| | 3/8" | SQCP 3/8-03 | 8 | 10 | 79.7 | 73.7 | 16.6 | | | | 18 | 35.7 | 19 | 21.3 | 103.5 |

### SQKX series Branch male elbow





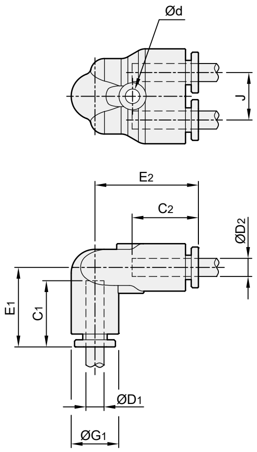
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | C | E | ØG | L | B | J | Ød | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | SQKX 4 - 01 | 6 | 14.7 | 23 | 10.5 | 26.4 | 28.3 | 10.5 | 3.2 | 14 | 4.2 | 12 |
| | 1/4" | SQKX 4 - 02 | 9 | 14.7 | 23 | 10.5 | 29.4 | 29.6 | 10.5 | 3.2 | 14 | 4.2 | 18.5 |
| Ø6 | 1/8" | SQKX 6 - 01 | 6 | 17.2 | 26.5 | 12.5 | 29.3 | 32.3 | 12.5 | 3.2 | 14 | 10 | 13.5 |
| | 1/4" | SQKX 6 - 02 | 9 | 17.2 | 26.5 | 12.5 | 32.9 | 34.2 | 12.5 | 3.2 | 14 | 10 | 20.5 |
| Ø8 | 1/8 | SQKX 8 - 01 | 6 | 18.8 | 26.5 | 14.3 | 31.8 | 35.6 | 14.3 | 3.2 | 19 | 16 | 17 |
| | 1/4" | SQKX 8 - 02 | 9 | 18.8 | 26.5 | 14.3 | 34.8 | 37 | 14.3 | 3.2 | 19 | 16 | 23 |
| | 3/8" | SQKX 8 - 03 | 10 | 18.8 | 26.5 | 14.3 | 34.8 | 37 | 14.3 | 3.2 | 19 | 16 | 28 |
| Ø10 | 1/8" | SQKX 10 - 01 | 6 | 20.8 | 32.7 | 17.8 | 37.1 | 42.7 | 17.8 | 4.5 | 21 | 16 | 32 |
| | 1/4" | SQKX 10 - 02 | 9 | 20.8 | 32.7 | 17.8 | 40.1 | 44.1 | 17.8 | 4.5 | 21 | 30 | 34 |
| | 3/8" | SQKX 10 - 03 | 9 | 20.8 | 32.7 | 17.8 | 40.1 | 44.1 | 17.8 | 4.5 | 21 | 30 | 35 |
| | 1/2" | SQKX 10 - 04 | 11 | 20.8 | 32.7 | 17.8 | 42.1 | 45 | 17.8 | 4.5 | 21 | 30 | 52 |
| Ø12 | 1/4" | SQKX 12 - 02 | 9 | 24.8 | 36 | 21.1 | 44.7 | 50.3 | 21.1 | 4.5 | 21 | 50 | 48 |
| | 3/8" | SQKX 12 - 03 | 9 | 24.8 | 36 | 21.1 | 44.7 | 50.3 | 21.1 | 4.5 | 21 | 50 | 47 |
| | 1/2" | SQKX 12 - 04 | 11 | 24.8 | 36 | 21.1 | 44.7 | 51.2 | 21.1 | 4.5 | 21 | 50 | 60 |

Inch specification

| Port size ØD | Thread size NPT | Model | A | C | E | ØG | L | B | J | Ød | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | 1/8" | SQKX 5/32 - 01 | 6 | 14.7 | 23 | 10.5 | 26.4 | 28.3 | 10.5 | 3.2 | 14 | 4.2 | 12 |
| | 1/4" | SQKX 5/32 - 02 | 9 | 14.7 | 23 | 10.5 | 29.4 | 29.6 | 10.5 | 3.2 | 14 | 4.2 | 18.5 |
| 1/4” | 1/8" | SQKX 1/4 - 01 | 6 | 17.2 | 26.5 | 12.5 | 29.3 | 32.3 | 12.5 | 3.2 | 14 | 10 | 13.5 |
| | 1/4" | SQKX 1/4 - 02 | 9 | 17.2 | 26.5 | 12.5 | 32.9 | 34.2 | 12.5 | 3.2 | 14 | 10 | 20.5 |
| 5/16” | 1/8" | SQKX 5/16 - 01 | 6 | 18.8 | 26.5 | 14.3 | 31.8 | 35.6 | 14.3 | 3.2 | 19 | 16 | 17 |
| | 1/4" | SQKX 5/16 - 02 | 9 | 18.8 | 26.5 | 14.3 | 34.8 | 37 | 14.3 | 3.2 | 19 | 16 | 23 |
| | 3/8" | SQKX 5/16 - 03 | 10 | 18.8 | 26.5 | 14.3 | 34.8 | 37 | 14.3 | 3.2 | 19 | 16 | 28 |
| 3/8” | 1/8" | SQKX 3/8 - 01 | 6 | 21.2 | 33.1 | 17.8 | 37.1 | 42.7 | 17.8 | 4.5 | 21 | 16 | 32 |
| | 1/4" | SQKX 3/8 - 02 | 9 | 21.2 | 33.1 | 17.8 | 40.1 | 44.1 | 17.8 | 4.5 | 21 | 30 | 34 |
| | 3/8" | SQKX 3/8 - 03 | 9 | 21.2 | 33.1 | 17.8 | 40.1 | 44.1 | 17.8 | 4.5 | 21 | 30 | 35 |
| | 1/2" | SQKX 3/8 - 04 | 11 | 21.2 | 33.1 | 17.8 | 42.1 | 45 | 17.8 | 4.5 | 21 | 30 | 52 |

## SQKU series  Branch union elbow



Metric specification

| Port size |  | Model | C1 | C2 | E1 | E2 | ØG | J | Ød | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 |  |  |  |  |  |  |  |  |  |  |
| Ø4 | Ø4 | SQKU 4 - 4 | 14.7 | 14.7 | 17.8 | 23 | 10.5 | 10.5 | 3.2 | 4.2 | 6.5 |
| Ø6 | Ø6 | SQKU 6 - 6 | 17.2 | 17.2 | 21 | 26.5 | 12.5 | 12.5 | 3.2 | 10 | 9 |
| Ø8 | Ø8 | SQKU 8 - 8 | 18.8 | 18.8 | 22.2 | 26.5 | 14.3 | 14.3 | 3.2 | 16 | 12 |
| Ø10 | Ø10 | SQKU 10 - 10 | 20.8 | 20.8 | 27.2 | 32.7 | 17.8 | 17.8 | 4.5 | 30 | 22 |
| Ø12 | Ø12 | SQKU 12 - 12 | 24.8 | 24.8 | 32 | 35.9 | 21.1 | 21.1 | 4.5 | 50 | 36 |

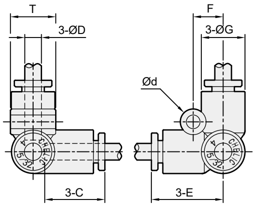
Inch specification

| Port size |  | Model | C1 | C2 | E1 | E2 | ØG | J | Ød | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 |  |  |  |  |  |  |  |  |  |  |
| 5/32” | 5/32” | SQKU 5/32”- 5/32” | 14.7 | 14.7 | 17.8 | 23 | 10.5 | 10.5 | 3.2 | 4.2 | 6.5 |
| 1/4” | 1/4” | SQKU 1/4”- 1/4” | 17.2 | 17.2 | 21 | 26.5 | 12.5 | 12.5 | 3.2 | 10 | 9 |
| 5/16” | 5/16” | SQKU 5/16”- 5/16” | 18.8 | 18.8 | 22.2 | 26.5 | 14.3 | 14.3 | 3.2 | 16 | 12 |
| 3/8” | 3/8” | SQKU 3/8”- 3/8” | 20.8 | 20.8 | 27.2 | 32.7 | 17.8 | 17.8 | 4.5 | 30 | 22 |

## SQB series  Delta union

Metric specification

| Port size ØD | Model | C | Ød | E | F | ØG | T | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| Ø4 | SQB 4 | 14.6 | 3.3 | 17.3 | 7.2 | 10.5 | 10.9 | 3.7 | 7.4 |
| Ø6 | SQB 6 | 16.5 | 3.3 | 20.2 | 8 | 12.4 | 12.8 | 8.3 | 11 |
| Ø8 | SQB 8 | 17.6 | 4.2 | 22.3 | 10 | 14.3 | 14.7 | 16 | 16 |
| Ø10 | SQB 10 | 19.3 | 4.2 | 25 | 10.9 | 17.8 | 18.3 | 30.2 | 25 |
| Ø12 | SQB 12 | 22.6 | 4.2 | 29.4 | 12.6 | 21.2 | 21.7 | 40.2 | 36 |



Inch specification

| Port size ØD | Model | C | Ød | E | F | ØG | T | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| 5/32" | SQB 5/32" | 14.6 | 3.3 | 17.3 | 7.2 | 10.5 | 10.9 | 3.7 | 7.4 |
| 1/4" | SQB 1/4" | 16.5 | 3.3 | 20.2 | 8 | 12.4 | 12.8 | 8.3 | 11 |
| 5/16" | SQB 5/16" | 17.6 | 4.2 | 22.3 | 10 | 14.3 | 14.7 | 16 | 16 |
| 3/8" | SQB 3/8" | 19.3 | 4.2 | 25 | 10.9 | 17.8 | 18.3 | 30.2 | 25 |

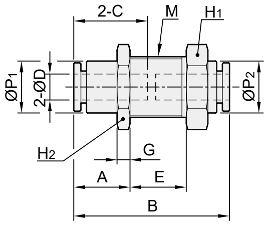
# SQ series Fitting

## SQCH, SQLH series

### **SQCH** series Bulkhead straight

Metric specification

| Port size ØD | Thread size M | Model | A | B | C | E | G | ØP1 | ØP2 | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M12x1 | SQCH 4 - 4 | 12 | 29.8 | 14 | 9.4 | 3 | 10 | 10 | 14 | 14 | 4.2 | 19.5 |
| Ø6 | M14x1 | SQCH 6 - 6 | 13 | 35.6 | 17 | 14.6 | 3 | 12.4 | 12.4 | 17 | 17 | 10 | 28 |
| Ø8 | M16x1 | SQCH 8 - 8 | 14 | 38.5 | 18.5 | 16.5 | 3 | 14 | 14 | 19 | 19 | 16 | 30 |
| Ø10 | M20x1 | SQCH 10 - 10 | 14.5 | 42.1 | 20.3 | 16.5 | 3 | 18 | 18 | 24 | 24 | 30 | 63 |
| Ø12 | M22x1 | SQCH 12 - 12 | 17 | 48.7 | 23.6 | 19.7 | 3 | 20.4 | 20.4 | 27 | 27 | 50 | 79.5 |



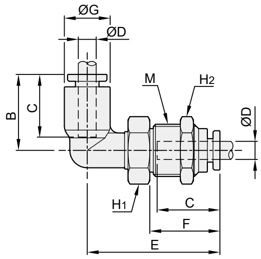
Inch specification

| Port size ØD | Thread size M | Model | A | B | C | E | G | ØP1 | ØP2 | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | M14x1 | SQCH 1/4” - 1/4” | 13 | 35.6 | 17 | 14.6 | 3 | 12.4 | 12.4 | 17 | 17 | 10 | 19.5 |
| 5/16” | M16x1 | SQCH 5/16” - 5/16” | 14 | 38.5 | 18.5 | 16.5 | 3 | 14 | 14 | 19 | 19 | 16 | 28 |
| 3/8” | M20x1 | SQCH 3/8” - 3/8” | 14.5 | 42.1 | 20.3 | 16.6 | 3 | 18 | 18 | 24 | 24 | 30 | 30 |

### **SQLH** series Bulkhead elbow

Metric specification

| Port size ØD | Thread size M | Model | B | C | E | F | ØG | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M12x1 | SQLH 4 - 4 | 17.1 | 14.4 | 30.4 | 16 | 10.5 | 14 | 14 | 4.2 | 19.5 |
| Ø6 | M14x1 | SQLH 6 - 6 | 20.6 | 17 | 34 | 17 | 12.5 | 17 | 17 | 10 | 28 |
| Ø8 | M16x1 | SQLH 8 - 8 | 22.9 | 18.6 | 36.6 | 18.8 | 14.3 | 17 | 19 | 16 | 30 |
| Ø10 | M20x1 | SQLH 10 - 10 | 26.5 | 20.8 | 43.5 | 21 | 17.8 | 21 | 24 | 30 | 63 |
| Ø12 | M22x1 | SQLH 12 - 12 | 30.6 | 23.7 | 45.5 | 22.2 | 21.2 | 24 | 27 | 50 | 79.5 |



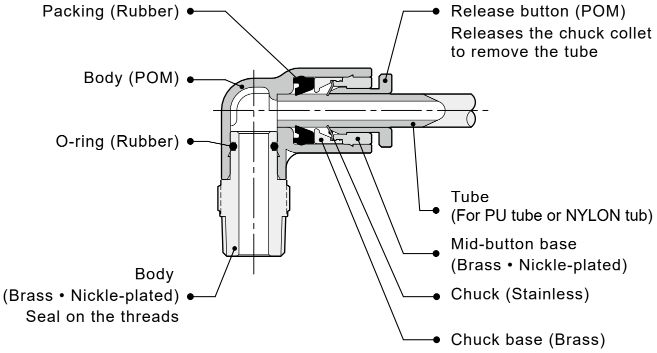
Inch specification

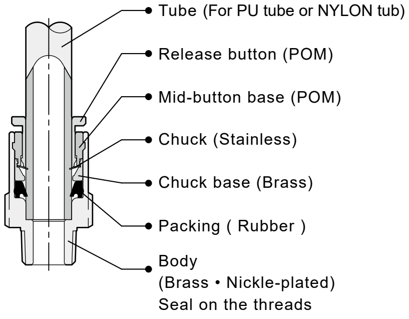
| Port size ØD | Thread size M | Model | B | C | E | F | ØG | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M12x1 | SQLH 5/32” - 5/32” | 17.1 | 14.4 | 30.4 | 16 | 10.5 | 14 | 14 | 4.2 | 19.5 |
| 1/4” | M14x1 | SQLH 1/4” - 1/4” | 20.6 | 17 | 34 | 17 | 12.5 | 17 | 17 | 10 | 28 |
| 5/16” | M16x1 | SQLH 5/16” - 5/16” | 22.9 | 18.6 | 36.6 | 18.8 | 14.3 | 17 | 19 | 16 | 30 |
| 3/8” | M20x1 | SQLH 3/8” - 3/8” | 26.5 | 20.8 | 43.5 | 21 | 17.8 | 21 | 24 | 30 | 63 |

# SQ3 series Fitting

## Product features

### Internal structure


Packing (Rubber)
Body (POM)
O-ring (Rubber)
Body
(Brass • Nickle-plated)
Seal on the threads
Release button (POM)
Releases the chuck collet
to remove the tube
Tube
(For PU tube or NYLON tub)
Mid-button base
(Brass • Nickle-plated)
Chuck (Stainless)
Chuck base (Brass)


Tube (For PU tube or NYLON tub)
Release button (POM)
Mid-button base (POM)
Chuck (Stainless)
Chuck base (Brass)
Packing ( Rubber )
Body
(Brass • Nickle-plated)
Seal on the threads

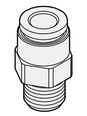
### Specification

| Item \ Port size | | Ø4, Ø6, Ø8, Ø10, Ø12 |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm$^2$(kPa) | 9 (900) |
| Proof pressure | kgf/cm$^2$(kPa) | 10 (1000) |
| Proof vacuum pressure | kPa(Torr) | -100 (10) |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |
| Thread | Rc(PT/NPT) | M5x0.8p (10/32”), 1/8”, 1/4”, 3/8”, 1/2” |
| Seal on the threads | | With sealant |

### Code of order

**SQC3** – **6** – **01**

Model



SQC3:
Straight fitting

Port size

Metric:
- Ø4: Ø4 mm
- Ø6: Ø6 mm
- Ø8: Ø8 mm
- Ø10: Ø10 mm
- Ø12: Ø12 mm

Thread

Metric:
- M5: M5 x 0.8
- 01: PT 1/8”
- 02: PT 1/4”
- 03: PT 3/8”
- 04: PT 1/2”

# SQ3 series Fitting

## Classification

CHELIC

### **SQC3** series Male straight

A general type is applied to straight male piping.

Page 4-1.32

### **SQV3** series Union elbow

Apply to fix 90° angle use on elbow.

Page 4-1.36

### **SQZ3** series Rotary male elbow

Apply to the right angle 90° degrees direction and rotational of piping.

Page 4-1.39

### **SQG3** series Female connector

Apply to straight female piping.

Page 4-1.33

### **SQX3** series Cross

The cross each is 90° degrees same size and different size tube.

Page 4-1.36

### **SQLJ3** series Plug-in elbow

Apply to straight 90° and fixed piping.

Page 4-1.33

### **SQE3** series Union tee

The 90 degrees T type same size and different size of piping.

Page 4-1.37

### **SQL3** series Male elbow

Apply to the tube of right angle 90° degrees direction.

Page 4-1.34

### **SQY3** series Union Y

The Y type same direction with same size and different size of tube.

Page 4-1.37

### **SQSL3** series Long male elbow

Apply to the long size of right angle 90° degree direction.

Page 4-1.35

### **SQH3** series Straight union

Apply to the same direction union with same size and different size of piping.

Page 4-1.38

### **SQMH-C3** series Bulkhead union

Apply to a type of panel, which two sides piping must be union.

Page 4-1.35

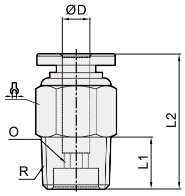
### **SQF3** series Triple universal elbow

The union 90° degrees vertical same size and different size of tube.

Page 4-1.38

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

## **SQC3** series Male straight



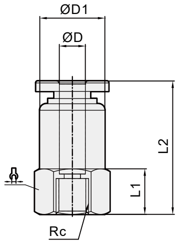
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | L1 | L2 | O | Across flats H |
|---|---|---|---|---|---|---|
| Ø4 | M5 | SQC3 4-M5 | 3.5 | 20.3 | 2 | 10 |
| | M6 | SQC3 4-M6 | 4 | 20.8 | 2 | 10 |
| | 1/8" | SQC3 4-01 | 7.5 | 20 | 3 | 10 |
| | 1/4" | SQC3 4-02 | 9.5 | 18 | 3 | 14 |
| | 3/8" | SQC3 4-03 | 10.5 | 19 | 3 | 17 |
| Ø6 | M5 | SQC3 6-M5 | 3.5 | 21 | 2 | 12 |
| | M6 | SQC3 6-M6 | 4 | 21 | 2 | 12 |
| | 1/8" | SQC3 6-01 | 7.5 | 20.5 | 4 | 12 |
| | 1/4" | SQC3 6-02 | 9.5 | 22.5 | 4 | 14 |
| | 3/8" | SQC3 6-03 | 10.5 | 20.5 | 4 | 17 |
| | 1/2" | SQC3 6-04 | 13.5 | 24.5 | 4 | 21 |
| Ø8 | 1/8" | SQC3 8-01 | 7.5 | 25.5 | 5 | 14 |
| | 1/4" | SQC3 8-02 | 9.5 | 24.5 | 5 | 14 |
| | 3/8" | SQC3 8-03 | 10.5 | 21.5 | 6 | 17 |
| | 1/2" | SQC3 8-04 | 13.5 | 25.5 | 6 | 21 |
| Ø10 | 1/8" | SQC3 10-01 | 7.5 | 29.5 | 5 | 17 |
| | 1/4" | SQC3 10-02 | 9.5 | 31 | 6 | 17 |
| | 3/8" | SQC3 10-03 | 10.5 | 28.5 | 8 | 17 |
| | 1/2" | SQC3 10-04 | 13.5 | 26.5 | 8 | 21 |
| Ø12 | 1/8" | SQC3 12-01 | 7.5 | 31 | 5 | 21 |
| | 1/4" | SQC3 12-02 | 9.5 | 33 | 6 | 21 |
| | 3/8" | SQC3 12-03 | 10.5 | 30 | 8 | 21 |
| | 1/2" | SQC3 12-04 | 13.5 | 32.5 | 8 | 21 |

# SQ series Fitting

## SQG3, SQLJ3 series

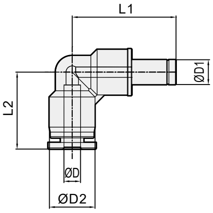
### SQG3 series  Female connector



Metric specification

| Port size<br>ØD | Thread size<br>Rc (PT) | Model | L1 | L2 | ØD1 | Across flats<br>H |
|---|---|---|---|---|---|---|
| Ø4 | M5 | SQG3 4-M5 | 5.5 | 21 | 10 | 10 |
| | M6 | SQG3 4-M6 | 6 | 21.5 | 10 | 10 |
| | 1/8" | SQG3 4-01 | 8.5 | 24 | 10 | 14 |
| | 1/4" | SQG3 4-02 | 11 | 26.5 | 10 | 17 |
| Ø6 | M5 | SQG3 6-M5 | 5.5 | 21.5 | 12 | 12 |
| | M6 | SQG3 6-M6 | 6 | 22 | 12 | 12 |
| | 1/8" | SQG3 6-01 | 8.5 | 24.5 | 12 | 14 |
| | 1/4" | SQG3 6-02 | 11 | 27 | 12 | 17 |
| | 3/8" | SQG3 6-03 | 12 | 28 | 12 | 21 |
| | 1/2" | SQG3 6-04 | 14 | 30 | 12 | 24 |
| Ø8 | 1/8" | SQG3 8-01 | 8.5 | 26 | 14 | 14 |
| | 1/4" | SQG3 8-02 | 11 | 28.5 | 14 | 17 |
| | 3/8" | SQG3 8-03 | 12 | 29.5 | 14 | 21 |
| | 1/2" | SQG3 8-04 | 14 | 31.5 | 14 | 24 |
| Ø10 | 1/8" | SQG3 10-01 | 8.5 | 29.5 | 17 | 17 |
| | 1/4" | SQG3 10-02 | 11 | 32.7 | 17 | 17 |
| | 3/8" | SQG3 10-03 | 12 | 33 | 17 | 21 |
| | 1/2" | SQG3 10-04 | 14 | 35.7 | 17 | 24 |
| Ø12 | 1/8" | SQG3 12-01 | 8.5 | 31 | 20 | 21 |
| | 1/4" | SQG3 12-02 | 11 | 33.5 | 20 | 21 |
| | 3/8" | SQG3 12-03 | 12 | 34.5 | 20 | 21 |
| | 1/2" | SQG3 12-04 | 14 | 36.5 | 20 | 24 |

### SQLJ3 series  Plug-in elbow

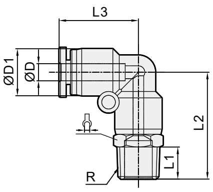


Metric specification

| Port size | | Model | L1 | L2 | ØD2 |
|---|---|---|---|---|---|
| ØD | ØD1 | | | | |
| Ø4 | Ø4 | SQLJ3 4 | 33.7 | 19 | 11.5 |
| Ø6 | Ø6 | SQLJ3 6 | 34 | 19.2 | 13.5 |
| Ø4 | Ø6 | SQLJ3 6-4 | 34 | 19 | 11.5 |
| Ø6 | Ø8 | SQLJ3 8-6 | 35.7 | 19.2 | 13.5 |
| Ø8 | Ø8 | SQLJ3 8 | 38.5 | 22.5 | 15 |
| Ø8 | Ø10 | SQLJ3 10-8 | 42.5 | 22.5 | 15 |
| Ø10 | Ø10 | SQLJ3 10 | 46.8 | 27.8 | 19 |
| Ø10 | Ø12 | SQLJ3 12-10 | 48.3 | 27.8 | 19 |
| Ø12 | Ø12 | SQLJ3 12 | 49.5 | 29.5 | 21.5 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

## **SQL3** series Male elbow



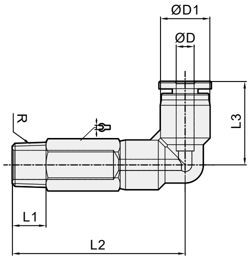
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | L1 | L2 | L3 | ØD1 | Across flats H |
|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQL3 4-M5 | 3.5 | 22.5 | 19 | 11.5 | 10 |
| | M6 | SQL3 4-M6 | 4 | 23 | 19 | 11.5 | 10 |
| | 1/8" | SQL3 4-01 | 7.5 | 25 | 19 | 11.5 | 10 |
| | 1/4" | SQL3 4-02 | 9.5 | 28 | 19 | 11.5 | 14 |
| | 3/8" | SQL3 4-03 | 10.5 | 29.5 | 19 | 11.5 | 17 |
| Ø6 | M5 | SQL3 6-M5 | 3.5 | 23.2 | 19.2 | 13.5 | 12 |
| | M6 | SQL3 6-M6 | 4 | 23.7 | 19.2 | 13.5 | 12 |
| | 1/8" | SQL3 6-01 | 7.5 | 25.7 | 19.2 | 13.5 | 12 |
| | 1/4" | SQL3 6-02 | 9.5 | 28.2 | 19.2 | 13.5 | 14 |
| | 3/8" | SQL3 6-03 | 10.5 | 29.7 | 19.2 | 13.5 | 17 |
| | 1/2" | SQL3 6-04 | 13.5 | 33.2 | 19.2 | 13.5 | 21 |
| Ø8 | 1/8" | SQL3 8-01 | 7.5 | 29 | 22.5 | 15 | 14 |
| | 1/4" | SQL3 8-02 | 9.5 | 31 | 22.5 | 15 | 14 |
| | 3/8" | SQL3 8-03 | 10.5 | 33 | 22.5 | 15 | 17 |
| | 1/2" | SQL3 8-04 | 13.5 | 36.5 | 22.5 | 15 | 21 |
| Ø10 | 1/8" | SQL3 10-01 | 7.5 | 34.5 | 27.8 | 19 | 17 |
| | 1/4" | SQL3 10-02 | 9.5 | 36.5 | 27.8 | 19 | 17 |
| | 3/8" | SQL3 10-03 | 10.5 | 37.5 | 27.8 | 19 | 17 |
| | 1/2" | SQL3 10-04 | 13.5 | 41 | 27.8 | 19 | 21 |
| Ø12 | 1/8" | SQL3 12-01 | 7.5 | 36 | 29.5 | 21.5 | 21 |
| | 1/4" | SQL3 12-02 | 9.5 | 38.5 | 29.5 | 21.5 | 21 |
| | 3/8" | SQL3 12-03 | 10.5 | 39.5 | 29.5 | 21.5 | 21 |
| | 1/2" | SQL3 12-04 | 13.5 | 42.5 | 29.5 | 21.5 | 21 |

# SQ series Fitting

## SQSL3, SQMH-C3 series

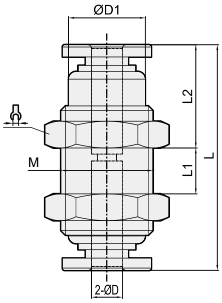
### **SQSL3** series  Long male elbow



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | L1 | L2 | L3 | ØD1 | Across flats H |
|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQSL3 4-M5 | 3.5 | 34.5 | 19 | 11.5 | 10 |
|  | M6 | SQSL3 4-M6 | 4 | 35 | 19 | 11.5 | 10 |
|  | 1/8" | SQSL3 4-01 | 7.5 | 37 | 19 | 11.5 | 10 |
|  | 1/4" | SQSL3 4-02 | 9.5 | 40 | 19 | 11.5 | 14 |
| Ø6 | M5 | SQSL3 6-M5 | 3.5 | 36.5 | 19.2 | 13.5 | 12 |
|  | M6 | SQSL3 6-M6 | 4 | 37 | 19.2 | 13.5 | 12 |
|  | 1/8" | SQSL3 6-01 | 7.5 | 39.7 | 19.2 | 13.5 | 12 |
|  | 1/4" | SQSL3 6-02 | 9.5 | 42.2 | 19.2 | 13.5 | 14 |
|  | 3/8" | SQSL3 6-03 | 10.5 | 43.7 | 19.2 | 13.5 | 17 |
|  | 1/2" | SQSL3 6-04 | 13.5 | 47.2 | 19.2 | 13.5 | 21 |
| Ø8 | 1/8" | SQSL3 8-01 | 7.5 | 44.8 | 22.5 | 15 | 14 |
|  | 1/4" | SQSL3 8-02 | 9.5 | 46.8 | 22.5 | 15 | 14 |
|  | 3/8" | SQSL3 8-03 | 10.5 | 48.8 | 22.5 | 15 | 17 |
|  | 1/2" | SQSL3 8-04 | 13.5 | 50.8 | 22.5 | 15 | 21 |
| Ø10 | 1/8" | SQSL3 10-01 | 7.5 | 54.5 | 27.8 | 19 | 17 |
|  | 1/4" | SQSL3 10-02 | 9.5 | 56.5 | 27.8 | 19 | 17 |
|  | 3/8" | SQSL3 10-03 | 10.5 | 57.5 | 27.8 | 19 | 17 |
|  | 1/2" | SQSL3 10-04 | 13.5 | 61 | 27.8 | 19 | 21 |
| Ø12 | 1/8" | SQSL3 12-01 | 7.5 | 59.5 | 29.5 | 21.5 | 21 |
|  | 1/4" | SQSL3 12-02 | 9.5 | 61.5 | 29.5 | 21.5 | 21 |
|  | 3/8" | SQSL3 12-03 | 10.5 | 62.5 | 29.5 | 21.5 | 21 |
|  | 1/2" | SQSL3 12-04 | 13.5 | 65.5 | 29.5 | 21.5 | 21 |

### **SQMH-C3** series  Bulkhead union



Metric specification

| Port size ØD | Model | M | L | L1 | L2 | ØD1 | Across flats H |
|---|---|---|---|---|---|---|---|
| Ø4 | SQMH-C3 4-4 | M12 x 1 | 30.5 | 9.5 | 10 | 10 | 14 |
| Ø6 | SQMH-C3 6-6 | M14 x 1 | 31 | 7.5 | 10.6 | 12 | 17 |
| Ø8 | SQMH-C3 8-8 | M16 x 1 | 34.5 | 6.5 | 12 | 14 | 19 |
| Ø10 | SQMH-C3 10-10 | M20 x 1 | 41.5 | 11.5 | 12 | 17 | 24 |
| Ø12 | SQMH-C3 12-12 | M22 x 1 | 44.5 | 12.5 | 13.5 | 20 | 26 |

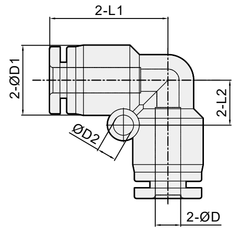
# SQ series Fitting

## SQV3, SQX3 series

### **SQV3** series Union elbow

Metric specification

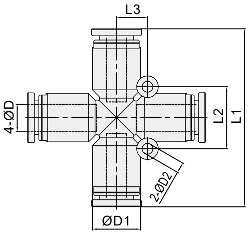
| Port size ØD | Model | L1 | L2 | ØD1 | ØD2 |
|---|---|---|---|---|---|
| Ø4 | SQV3 4-4 | 19 | 7 | 11.5 | 3.2 |
| Ø6 | SQV3 6-6 | 19.2 | 8 | 13.5 | 3.2 |
| Ø8 | SQV3 8-8 | 22.5 | 9.5 | 15 | 3.2 |
| Ø10 | SQV3 10-10 | 27.8 | 12 | 19 | 4.2 |
| Ø12 | SQV3 12-12 | 29.5 | 13 | 21.5 | 4.2 |



### **SQX3** series Cross

Metric specification

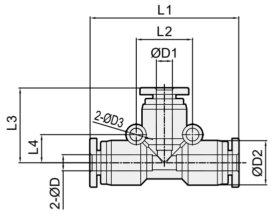
| Port size ØD | Model | L1 | L2 | L3 | ØD1 | ØD2 |
|---|---|---|---|---|---|---|
| Ø4 | SQX3 4 | 38 | 14 | 7 | 11.5 | 3.2 |
| Ø6 | SQX3 6 | 39 | 16 | 8 | 13.5 | 3.2 |
| Ø8 | SQX3 8 | 45 | 19 | 9.5 | 15 | 3.2 |
| Ø10 | SQX3 10 | 57 | 24 | 12 | 19 | 4.2 |
| Ø12 | SQX3 12 | 59 | 26 | 13 | 21.5 | 4.3 |



# SQ series Fitting

## SQE3, SQY3 series

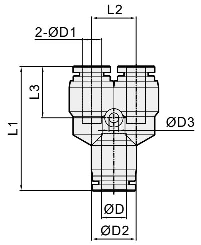
### SQE3 series Union tee



Metric specification

| Port size | | Model | L1 | L2 | L3 | L4 | ØD2 | ØD3 |
|---|---|---|---|---|---|---|---|---|
| ØD | ØD1 | | | | | | | |
| Ø4 | Ø4 | SQE3 4 | 38 | 14 | 19 | 7 | 11.5 | 3.2 |
| Ø6 | Ø6 | SQE3 6 | 39 | 16 | 19.2 | 8 | 13.5 | 3.2 |
| Ø8 | Ø8 | SQE3 8 | 45 | 19 | 22.5 | 9.5 | 15 | 3.2 |
| Ø10 | Ø10 | SQE3 10 | 57 | 24 | 27.8 | 12 | 19 | 4.2 |
| Ø12 | Ø12 | SQE3 12 | 59 | 26 | 29.5 | 13 | 21.5 | 4.3 |
| Ø4 | Ø6 | SQE3 6-4 | 39 | 16 | 19.2 | 8 | 13.5 | 3.2 |
| Ø6 | Ø4 | SQE3 4-6 | 39 | 16 | 19.2 | 8 | 13.5 | 3.2 |
| Ø4 | Ø8 | SQE3 8-4 | 45 | 19 | 22.5 | 9.5 | 15 | 3.2 |
| Ø8 | Ø4 | SQE3 4-8 | 45 | 19 | 22.5 | 9.5 | 15 | 3.2 |
| Ø6 | Ø8 | SQE3 8-6 | 45 | 19 | 22.5 | 9.5 | 15 | 3.2 |
| Ø8 | Ø6 | SQE3 6-8 | 45 | 19 | 22.5 | 9.5 | 15 | 3.2 |
| Ø6 | Ø10 | SQE3 10-6 | 57 | 24 | 26.3 | 12 | 19 | 4.2 |
| Ø10 | Ø6 | SQE3 6-10 | 57 | 24 | 26.3 | 12 | 19 | 4.2 |
| Ø8 | Ø10 | SQE3 10-8 | 57 | 24 | 26.8 | 12 | 19 | 4.2 |
| Ø10 | Ø8 | SQE3 8-10 | 57 | 24 | 26.8 | 12 | 19 | 4.2 |
| Ø8 | Ø12 | SQE3 12-8 | 59 | 26 | 28.5 | 13 | 21.5 | 4.3 |
| Ø12 | Ø8 | SQE3 8-12 | 59 | 26 | 28.5 | 13 | 21.5 | 4.3 |
| Ø10 | Ø12 | SQE3 12-10 | 59 | 26 | 29.5 | 13 | 21.5 | 4.3 |
| Ø12 | Ø10 | SQE3 10-12 | 59 | 26 | 29.5 | 13 | 21.5 | 4.3 |

### SQY3 series Union Y



Metric specification

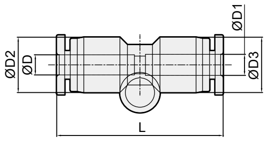
| Port size | | Model | L1 | L2 | L3 | ØD2 | ØD3 |
|---|---|---|---|---|---|---|---|
| ØD | ØD1 | | | | | | |
| Ø4 | Ø4 | SQY3 4 | 36.5 | 11 | 14.5 | 11.5 | 3.2 |
| Ø6 | Ø6 | SQY3 6 | 37.5 | 13 | 15 | 13.5 | 3.2 |
| Ø8 | Ø8 | SQY3 8 | 39.8 | 15 | 18 | 15 | 3.2 |
| Ø10 | Ø10 | SQY3 10 | 50 | 18 | 21 | 19 | 4.2 |
| Ø12 | Ø12 | SQY3 12 | 53 | 21 | 21.5 | 21.5 | 4.2 |
| Ø6 | Ø4 | SQY3 6-4 | 37.5 | 13 | 15 | 13.5 | 3.2 |
| Ø8 | Ø4 | SQY3 8-4 | 39.8 | 15 | 18 | 15 | 3.2 |
| Ø8 | Ø6 | SQY3 8-6 | 39.8 | 15 | 18 | 15 | 3.2 |
| Ø10 | Ø6 | SQY3 10-6 | 39.8 | 18 | 21 | 19 | 4.2 |
| Ø10 | Ø8 | SQY3 10-8 | 50 | 18 | 21 | 19 | 4.2 |
| Ø12 | Ø8 | SQY3 12-8 | 53 | 21 | 21.5 | 21.5 | 4.2 |
| Ø12 | Ø10 | SQY3 12-10 | 53 | 21 | 21.5 | 21.5 | 4.2 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

# SQ series Fitting

## SQH3, SQF3 series

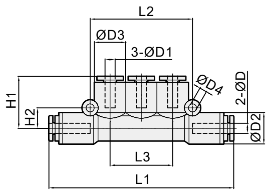
### SQH3 series Straight union



Metric specification

| Port size | | Model | L | ØD2 | ØD3 |
|---|---|---|---|---|---|
| ØD | ØD1 | | | | |
| Ø4 | Ø4 | SQH3 4 | 34 | 11.5 | 11.5 |
| Ø6 | Ø6 | SQH3 6 | 35.5 | 13.5 | 13.5 |
| Ø8 | Ø8 | SQH3 8 | 38.5 | 15 | 15 |
| Ø10 | Ø10 | SQH3 10 | 48 | 19 | 19 |
| Ø12 | Ø12 | SQH3 12 | 49 | 21.5 | 21.5 |
| Ø6 | Ø4 | SQH3 6-4 | 34.5 | 13.5 | 11.5 |
| Ø8 | Ø4 | SQH3 8-4 | 36.5 | 15 | 13.5 |
| Ø8 | Ø6 | SQH3 8-6 | 36.5 | 15 | 13.5 |
| Ø10 | Ø6 | SQH3 10-6 | 44 | 19 | 15 |
| Ø10 | Ø8 | SQH3 10-8 | 44 | 19 | 15 |
| Ø12 | Ø6 | SQH3 12-6 | 48 | 21.5 | 19 |
| Ø12 | Ø8 | SQH3 12-8 | 48 | 21.5 | 19 |
| Ø12 | Ø10 | SQH3 12-10 | 49 | 21.5 | 19 |

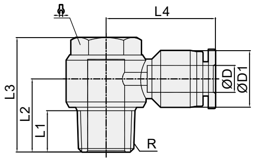
### SQF3 series Triple universal elbow



Metric specification

| Port size | | Model | L1 | L2 | L3 | ØD2 | ØD3 | ØD4 | H1 | ØP2 | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ØD | ØD1 | | | | | | | | | | |
| Ø4 | Ø4 | SQF3 4 | 57 | 36 | 22 | 14.5 | 13 | 3.2 | 19 | 11 | 8 |
| Ø6 | Ø6 | SQF3 6 | 58 | 36 | 22 | 14.5 | 13 | 3.2 | 19.5 | 13 | 8 |
| Ø8 | Ø8 | SQF3 8 | 84 | 61 | 29 | 19 | 14.5 | 4.2 | 24.5 | 14.5 | 11.5 |
| Ø10 | Ø10 | SQF3 10 | 87 | 61 | 29 | 19 | 14.5 | 4.2 | 26 | 18.5 | 11.5 |
| Ø6 | Ø4 | SQF3 6-4 | 58 | 36 | 22 | 14.5 | 13 | 3.2 | 19 | 11 | 8 |
| Ø8 | Ø4 | SQF3 8-4 | 62 | 42 | 26 | 18.4 | 14.5 | 3.2 | 20.5 | 13 | 9 |
| Ø8 | Ø6 | SQF3 8-6 | 81 | 48 | 29 | 18.4 | 14.5 | 3.2 | 24.5 | 13 | 9 |
| Ø10 | Ø6 | SQF3 10-6 | 87 | 61 | 29 | 19 | 14.5 | 4.2 | 24.5 | 14.5 | 11.5 |
| Ø10 | Ø8 | SQF3 10-8 | 87 | 61 | 29 | 19 | 14.5 | 4.2 | 24.5 | 14.5 | 11.5 |

## **SQZ3** series Rotary male elbow



Metric specification

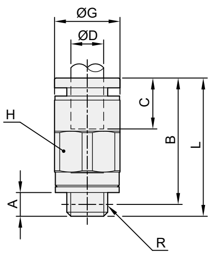
| Port size ØD | Thread size Rc (PT) | Model | L1 | L2 | L3 | L4 | ØD1 | Across flats H |
|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQZ3 4-M5 | 3.5 | 10.7 | 17.3 | 20.5 | 11.5 | 8 |
| | 1/8" | SQZ3 4-01 | 7.5 | 15 | 23 | 23.5 | 11.5 | 12 |
| | 1/4" | SQZ3 4-02 | 9.5 | 16.8 | 26.3 | 25.5 | 11.5 | 14 |
| Ø6 | M5 | SQZ3 6-M5 | 3.5 | 11.7 | 17.3 | 22 | 13.5 | 8 |
| | 1/8" | SQZ3 6-01 | 7.5 | 15 | 23 | 23.5 | 13.5 | 12 |
| | 1/4" | SQZ3 6-02 | 9.5 | 16.2 | 26.3 | 25.4 | 13.5 | 14 |
| | 3/8" | SQZ3 6-03 | 10.5 | 19 | 31.9 | 29.5 | 13.5 | 19 |
| Ø8 | 1/8" | SQZ3 8-01 | 7.5 | 15.7 | 23 | 26.5 | 15 | 12 |
| | 1/4" | SQZ3 8-02 | 9.5 | 17.5 | 26.3 | 28.9 | 15 | 14 |
| | 3/8" | SQZ3 8-03 | 10.5 | 19 | 31.9 | 29.8 | 15 | 19 |
| | 1/2" | SQZ3 8-04 | 13.5 | 24 | 38.6 | 32.5 | 15 | 24 |
| Ø10 | 1/8" | SQZ3 10-01 | 7.5 | 18 | 23 | 30.5 | 19 | 12 |
| | 1/4" | SQZ3 10-02 | 9.5 | 19.5 | 26.3 | 32.6 | 19 | 14 |
| | 3/8" | SQZ3 10-03 | 10.5 | 21 | 31.9 | 33 | 19 | 19 |
| | 1/2" | SQZ3 10-04 | 13.5 | 24.2 | 38.6 | 36 | 19 | 24 |
| Ø12 | 1/4" | SQZ3 12-02 | 9.5 | 20.8 | 26.3 | 33.5 | 21.5 | 14 |
| | 3/8" | SQZ3 12-03 | 10.5 | 22.2 | 31.9 | 35.5 | 21.5 | 19 |
| | 1/2" | SQZ3 12-04 | 13.5 | 25.5 | 38.6 | 36.5 | 21.5 | 24 |

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

# MSQ series Fitting

## Mini fitting type - MSQC, MSQL, MSQE series

### MSQC series Mini male straight



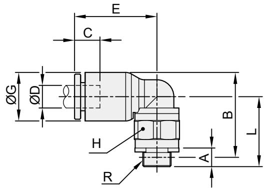
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M3x0.5 | MSQC 4 – M3 | 3.5 | 15.2 | 3.9 | 8 | 16.9 | 8 | 1.33 | 2.8 |
| | M5x0.8 | MSQC 4 – M5 | 3.5 | 15.1 | 3.9 | 8 | 16.9 | 8 | 4.91 | 3.3 |
| | 1/8 | MSQC 4 – 01 | 6 | 11.4 | 3.9 | 8 | 14.5 | 10 | 6.16 | 5.2 |
| Ø6 | M5x0.8 | MSQC 6 – M5 | 4 | 16 | 3.9 | 8 | 18.1 | 10 | 4.91 | 4.3 |
| | 1/8 | MSQC 6 – 01 | 6 | 13.9 | 3.9 | 8 | 17.1 | 10 | 15.9 | 7 |

Inch specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M3x0.5 | MSQC 5/32” – M3 | 3.5 | 15.2 | 3.9 | 8 | 16.9 | 8 | 1.33 | 2.8 |
| | M5x0.8 | MSQC 5/32” – M5 | 3.5 | 15.1 | 3.9 | 8 | 16.9 | 8 | 4.91 | 3.3 |
| | 1/8 | MSQC 5/32” – 01 | 6 | 11.4 | 3.9 | 8 | 14.5 | 10 | 6.16 | 5.2 |

### MSQL series Mini male elbow



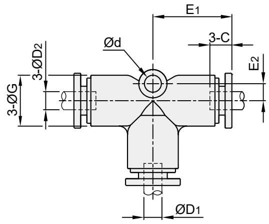
Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M3x0.5 | MSQL 4 – M3 | 3 | 16.3 | 11.5 | 14.2 | 9 | 14.3 | 8 | 1.33 | 3.7 |
| | M5x0.8 | MSQL 4 – M5 | 3.5 | 16.7 | 11.5 | 14.2 | 9 | 14.9 | 8 | 3.8 | 4 |
| | 1/8 | MSQL 4 – 01 | 6 | 20.3 | 11.5 | 14.2 | 9 | 18.8 | 10 | 3.8 | 7.9 |
| Ø6 | M5x0.8 | MSQL 6 – M5 | 3 | 20.1 | 13 | 16.3 | 11 | 23.3 | 10 | 4.91 | 7.1 |
| | 1/8 | MSQL 6 – 01 | 6 | 20.1 | 13 | 16.3 | 11 | 23.7 | 10 | 15.9 | 7.8 |

Inch specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M3x0.5 | MSQL 5/32” – M3 | 3 | 16.3 | 11.5 | 14.2 | 9 | 14.3 | 8 | 1.33 | 3.7 |
| | M5x0.8 | MSQL 5/32” – M5 | 3.5 | 16.7 | 11.5 | 14.2 | 9 | 14.9 | 8 | 3.8 | 4 |
| | 1/8 | MSQL 5/32” – 01 | 6 | 20.3 | 11.5 | 14.2 | 9 | 18.8 | 10 | 3.8 | 7.9 |

### MSQE series Mini union tee



Metric specification

| Port size | | Model | C | Ød | E1 | E2 | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | |
| Ø4 | Ø4 | MSQE 4 – 4 | 4 | 3 | 11 | 3 | 9 | 5.3 | 3.7 |
| Ø6 | Ø6 | MSQE 6 – 6 | 4 | 3 | 12.5 | 3.5 | 11 | 5.3 | 7.1 |
| Ø6 | Ø4 | MSQE 6 – 4 | 4 | 3 | 12.5 | 3.5 | 11 | 5.3 | 5 |

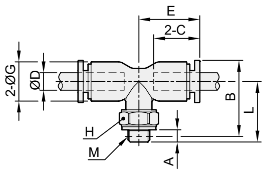
Inch specification

| Port size | | Model | C | Ød | E1 | E2 | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | |
| 5/32” | 5/32” | MSQE 5/32” – 5/32” | 4 | 3 | 11 | 3 | 9 | 5.3 | 3.7 |

# MSQ series Fitting

## Mini fitting type - MSQT, MSQH, MSQR series

### **MSQT** series Mini male branch tee



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M3x0.5 | MSQT 4 - M3 | 3.3 | 16.6 | 10.6 | 14 | 9 | 14.8 | 8 | 1.33 | 3.7 |
| | M5x0.8 | MSQT 4 - M5 | 3.3 | 16.6 | 10.6 | 14 | 9 | 14.8 | 8 | 3.8 | 4 |
| | 1/8 | MSQT 4 - 01 | 6 | 19.4 | 10.6 | 14 | 9 | 17.8 | 10 | 3.8 | 7.9 |
| Ø6 | M5x0.8 | MSQT 6 - M5 | 3.5 | 19.8 | 12.1 | 15.8 | 11 | 16.9 | 10 | 4.91 | 7.1 |
| | 1/8 | MSQT 6 - 01 | 6 | 21.2 | 12.1 | 15.8 | 11 | 18.6 | 10 | 15.9 | 7.8 |

Inch specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M3x0.5 | MSQT 5/32” - 5/32” | 3.3 | 16.6 | 10.6 | 14 | 9 | 14.8 | 8 | 1.33 | 3.7 |

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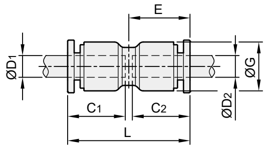
### **MSQH** series Mini straight union



Metric specification

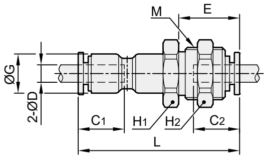
| Port size | | Model | C1 | C2 | E | ØG | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | |
| Ø4 | Ø4 | MSQH 4 - 4 | 10.6 | 10.6 | 11.3 | 9 | 22.5 | 5.3 | 3 |
| Ø6 | Ø4 | MSQH 6 - 4 | 12.1 | 10.6 | 12.7 | 11 | 25.3 | 5.3 | 7 |
| Ø6 | Ø6 | MSQH 6 - 6 | 12.1 | 12.1 | 12.8 | 11 | 25.6 | 15.9 | 5 |

Inch specification

| Port size | | Model | C1 | C2 | E | ØG | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | |
| 5/32” | 5/32” | MSQH 5/32” - 5/32” | 10.6 | 10.6 | 11.3 | 9 | 22.5 | 5.3 | 3 |

---

### **MSQR** series Mini bulkhead straight union



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | C1 | C2 | E | ØG | L | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M12x1 | MSQR 4 - 4 | 10.6 | 3.9 | 16.1 | 9 | 39.7 | 14 | 14 | 5.3 | 7.1 |
| Ø6 | M12x1 | MSQR 6 - 6 | 12.1 | 3.9 | 16.9 | 19 | 43.1 | 14 | 14 | 15.9 | 7.8 |

Inch specification

| Port size ØD | Thread size Rc (PT) | Model | C1 | C2 | E | ØG | L | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M12x1 | MSQR 5/32” - 5/32” | 10.6 | 3.9 | 16.1 | 9 | 39.7 | 14 | 14 | 5.3 | 7.1 |

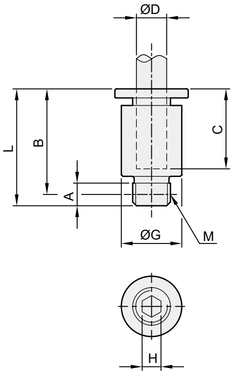
# MSQ series Fitting

## Mini fitting type - MSQB, MSQJ series

### **MSQB** series Mini male straight with sealant

Metric specification

| Port size ØD | Thread size M | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M3x0.5 | MSQB 4 - M3 | 3.3 | 15.3 | 10.6 | 8 | 17 | 1.5 | 2 | 2.8 |
| | M5x0.8 | MSQB 4 - M5 | 3.3 | 15.3 | 10.6 | 8 | 17 | 2.5 | 5.4 | 3.3 |
| | 1/8 | MSQB 4 - 01 | 6 | 11.4 | 3.9 | 10 | 14.5 | 3 | 7.8 | 5.2 |
| Ø6 | M5x0.8 | MSQB 6 - M5 | 3.3 | 16.5 | 3.9 | 10 | 18.3 | 2.5 | 5.4 | 4.3 |
| | 1/8 | MSQB 6 - 01 | 6 | 14 | 3.9 | 10 | 17.2 | 4 | 13.8 | 7 |



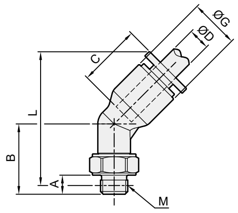
Inch specification

| Port size ØD | Thread size M | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M3x0.5 | MSQB 5/32” - M3 | 3.3 | 15.3 | 10.6 | 8 | 17 | 1.5 | 2 | 2.8 |
| | M5x0.8 | MSQB 5/32” - M5 | 3.3 | 15.3 | 10.6 | 8 | 17 | 2.5 | 5.4 | 3.3 |
| | 1/8 | MSQB 5/32” - 01 | 6 | 11.4 | 3.9 | 10 | 14.5 | 3 | 7.8 | 5.2 |

### **MSQJ** series 45° Male elbow

Inch specification

| Port size ØD | Thread size M | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M3x0.5 | MSQJ 4 - M3 | 3 | 12.3 | 10.6 | 9 | 25.6 | 1.5 | 2 | 3 |
| | M5x0.8 | MSQJ 4 - M5 | 3.5 | 12.9 | 10.6 | 9 | 26.2 | 2.5 | 5.4 | 3 |
| | PT 1/8" | MSQJ 4 - 01 | 6 | 16.8 | 10.6 | 9 | 30 | 3 | 7.8 | 8 |
| Ø6 | M5x0.8 | MSQJ 6 - M5 | 3.5 | 15.7 | 12 | 11 | 31.3 | 2.5 | 5.4 | 8 |
| | PT 1/8" | MSQJ 6 - 01 | 6 | 16.4 | 12 | 11 | 32 | 4 | 13.8 | 8 |



Inch specification

| Port size ØD | Thread size M | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32" | M3x0.5 | MSQJ 5/32"- M3 | 3 | 12.3 | 10.6 | 9 | 25.6 | 1.5 | 2 | 3 |
| | M5x0.8 | MSQJ 5/32"- M5 | 3.5 | 12.9 | 10.6 | 9 | 26.2 | 2.5 | 5.4 | 3 |
| | PT 1/8" | MSQJ 5/32"- 01 | 6 | 16.8 | 10.6 | 9 | 30 | 3 | 7.8 | 8 |

# SP series Fitting

## Plug, Nipple, Reducer nipple

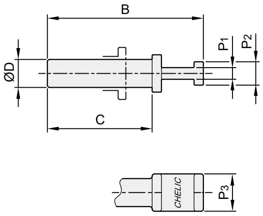
### Feature

1. Vertical, elbow and mutiple connections, and different diameter in option.
2. Small size, light weight, and storage easily.

### SPG series Plug

Metric specification

| Port size ØD | Model | B | C | P1 | P2 | P3 | Weight (g) |
|---|---|---|---|---|---|---|---|
| Ø4 | SPG 4 | 30.5 | 20.1 | 2.3 | 4.8 | 6 | 0.5 |
| Ø6 | SPG 6 | 33.5 | 22.5 | 2.5 | 5 | 8 | 0.9 |
| Ø8 | SPG 8 | 36.2 | 24.7 | 2.5 | 6 | 10 | 1.2 |
| Ø10 | SPG 10 | 39 | 26.1 | 3 | 8 | 10 | 2.2 |
| Ø12 | SPG 12 | 42.9 | 29 | 3 | 8 | 14 | 2.6 |



Inch specification

| Port size ØD | Model | B | C | P1 | P2 | P3 | Weight (g) |
|---|---|---|---|---|---|---|---|
| 5/32” | SPG 5/32” | 30.5 | 20.1 | 2.3 | 4.8 | 6 | 0.5 |
| 1/4” | SPG 1/4” | 33.5 | 22.5 | 2.5 | 5 | 8 | 0.9 |
| 5/16” | SPG 5/16” | 36.2 | 24.7 | 2.5 | 6 | 10 | 1.2 |
| 3/8” | SPG 3/8” | 39 | 26 | 3 | 8 | 10 | 2.2 |
| 1/2” | SPG 1/2” | 43 | 29 | 3 | 8 | 14 | 2.5 |

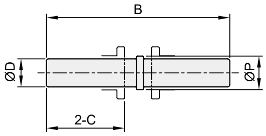
# SP series Fitting

## SPP, SPF series

### **SPP** series Nipple

Metric specification

| Port size ØD | Model | B | C | ØP | Weight (g) |
|---|---|---|---|---|---|
| Ø4 | SPP 4 | 34.2 | 14.7 | 5.3 | 0.2 |
| Ø6 | SPP 6 | 39.3 | 16.5 | 7.2 | 0.9 |
| Ø8 | SPP 8 | 42.6 | 18 | 9.2 | 1.4 |
| Ø10 | SPP 10 | 45 | 19.4 | 11.3 | 2.0 |
| Ø12 | SPP 12 | 51.6 | 22.4 | 13.3 | 2.5 |



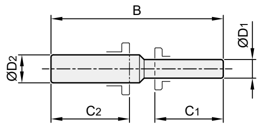
Inch specification

| Port size ØD | Model | B | C | ØP | Weight (g) |
|---|---|---|---|---|---|
| 5/32” | SPG 5/32” | 34.2 | 14.7 | 5.3 | 0.2 |
| 5/16” | SPG 5/16” | 42.6 | 18 | 9.2 | 1.4 |

### **SPF** series Different diam nipple

Metric specification

| Port size | | Model | B | C1 | C2 | Weight (g) |
|---|---|---|---|---|---|---|
| ØD$_1$ | ØD$_2$ | | | | | |
| Ø4 | Ø6 | SPF 4 - 6 | 36.1 | 14.7 | 16.5 | 0.5 |
| Ø6 | Ø8 | SPF 6 - 8 | 40.7 | 16.5 | 18 | 1.2 |
| Ø8 | Ø10 | SPF 8 - 10 | 44.1 | 18 | 19.4 | 1.7 |
| Ø10 | Ø12 | SPF 10 - 12 | 48.1 | 19.4 | 22.4 | 2.3 |



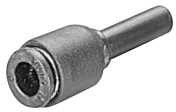
Inch specification

| Port size | | Model | B | C1 | C2 | Weight (g) |
|---|---|---|---|---|---|---|
| ØD$_1$ | ØD$_2$ | | | | | |
| 5/32” | 1/4” | SPF 5/32”- 1/4” | 37 | 14.7 | 16.5 | 0.5 |
| 1/4” | 5/16” | SPF 1/4” - 5/16” | 41.5 | 16.5 | 18 | 1.2 |
| 5/16” | 3/8” | SPF5/16” - 3/8” | 45 | 18 | 19.4 | 1.7 |
| 3/8” | 1/2” | SPF 3/8” - 1/2” | 49 | 19.4 | 22.4 | 2.3 |

# SQ□J series Fitting

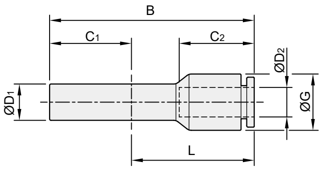
## SQHJ, SQLJ series

### **SQHJ** series  Plug-in reducer



Metric specification

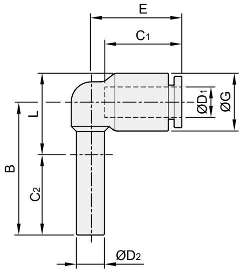
| Port size | | Model | B | C1 | C2 | ØG | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | |
| Ø6 | Ø4 | SQHJ 6 - 4 | 38.1 | 17 | 14.5 | 10.5 | 21.1 | 5.3 | 3 |
| Ø8 | Ø4 | SQHJ 8 - 4 | 41.1 | 18 | 16.5 | 12.4 | 23.1 | 5.3 | 4 |
| Ø8 | Ø6 | SQHJ 8 - 6 | 40.8 | 18 | 16.5 | 12.4 | 22.8 | 9 | 4 |
| Ø10 | Ø6 | SQHJ 10 - 6 | 46.8 | 20 | 16.5 | 14.3 | 26.8 | 9 | 4.5 |
| Ø10 | Ø8 | SQHJ 10 - 8 | 47 | 20 | 17.8 | 14.3 | 27 | 20 | 6 |
| Ø12 | Ø8 | SQHJ 12 - 8 | 54 | 23.5 | 17.8 | 17.8 | 30.5 | 20 | 7 |
| Ø12 | Ø10 | SQHJ 12 - 10 | 54 | 23.5 | 19.2 | 17.8 | 30.5 | 35 | 8 |



### **SQLJ** series Plug-in elbow

Metric specification

| Port size | | Model | B | C1 | C2 | E | ØG | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | | | |
| Ø4 | Ø4 | SQLJ 4 - 4 | 25.8 | 14.5 | 15.3 | 17.5 | 10.5 | 15.5 | 2 | 2.5 |
| Ø4 | Ø6 | SQLJ 6 - 4 | 28.8 | 14.5 | 17.2 | 19.8 | 12.4 | 17.5 | 4.6 | 3.5 |
| Ø6 | Ø6 | SQLJ 6 - 6 | 28.8 | 16.5 | 17.2 | 19.6 | 12.4 | 17.5 | 7.5 | 4 |
| Ø6 | Ø8 | SQLJ 8 - 6 | 32.1 | 16.5 | 18.2 | 22.6 | 14.3 | 21.6 | 10.4 | 5 |
| Ø8 | Ø8 | SQLJ 8 - 8 | 32.6 | 18.5 | 18.2 | 23.1 | 14.3 | 21.6 | 16.5 | 5.5 |
| Ø8 | Ø10 | SQLJ 10 - 8 | 33.8 | 17.8 | 20.4 | 24.2 | 17.8 | 22.3 | 17.4 | 12 |
| Ø10 | Ø10 | SQLJ 10 - 10 | 33.8 | 19.2 | 20.4 | 24.2 | 17.8 | 22.6 | 30 | 13 |
| Ø10 | Ø12 | SQLJ 12 - 10 | 40.3 | 19.7 | 24.7 | 28.3 | 21.2 | 26.3 | 28 | 14 |
| Ø12 | Ø12 | SQLJ 12 - 12 | 40.3 | 21.9 | 24.7 | 28.3 | 21.2 | 26.3 | 42.5 | 14.5 |



# SQR series Fitting

## Product features/ Code of order

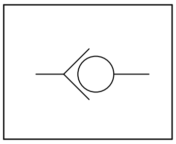
### Feature

- Only single direction can air flow but opposite direction can't ( remain pressure of single direction ).
- It can in low pressure and retain vacuum pressure.

### Specification

| Item \ Model | SQRC, SQRH |
|---|---|
| Fluid | Air |
| Action pressure kgf/cm²(MPa) | 0.5 (0.05) |
| Pressure range kgf/cm²(MPa) | 0~9 (0.09) |
| Ambient and fluid temperature °C | 0 ~ 60 |
| Vacuum pressure mmHg(Torr) | -750 ( 1.0 ) |

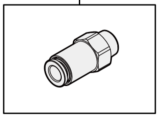
### Symbol

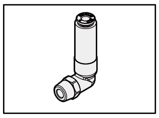


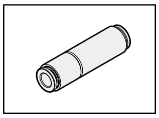
### Code of order

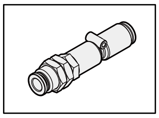
**SQRC** – **6** – **01** – **A**

Model


SQRC: Self-seal straight male


SQRL: Self-seal elbow


SQRH: Self-seal straight union


SQRM: Self-seal bulkhead union

Port size

Metric:

Ø4 : Ø4 mm
Ø6 : Ø6 mm
Ø8 : Ø8 mm
Ø10 : Ø10 mm
Ø12 : Ø12 mm

Inch:

5/32": Ø3.97mm
1/4": Ø6.35mm
5/16": Ø7.94mm
3/8": Ø9.53mm
1/2": Ø12.7mm

Thread

Metric:

M5 : M5 x 0.8
01 : PT 1/8"
02 : PT 1/4"
03 : PT 3/8"
04 : PT 1/2"

Inch:

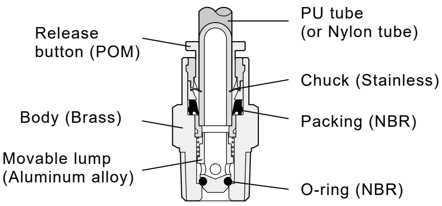
10/32: NR 10/32"
01: NPT 1/8"
02: NPT 1/4"
03: NPT 3/8"
04: NPT 1/2"

Control direction

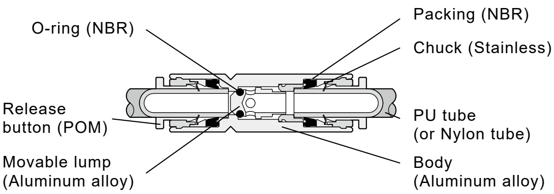
| | |
|---|---|
| A | Input control from thread point. |
| B | Input control from hold point. |

### Internal structure

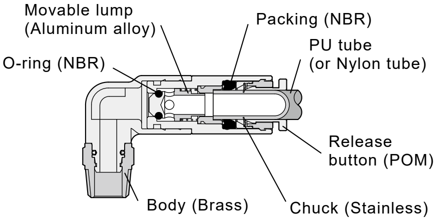
#### SQRC series


PU tube
(or Nylon tube)
Release button (POM)
Chuck (Stainless)
Body (Brass)
Packing (NBR)
Movable lump (Aluminum alloy)
O-ring (NBR)

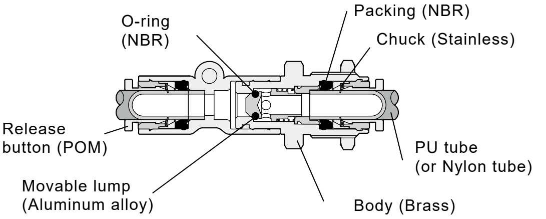
#### SQRH series


Packing (NBR)
O-ring (NBR)
Chuck (Stainless)
Release button (POM)
PU tube (or Nylon tube)
Movable lump (Aluminum alloy)
Body (Aluminum alloy)

#### SQRL series


Movable lump (Aluminum alloy)
Packing (NBR)
PU tube (or Nylon tube)
O-ring (NBR)
Release button (POM)
Body (Brass)
Chuck (Stainless)

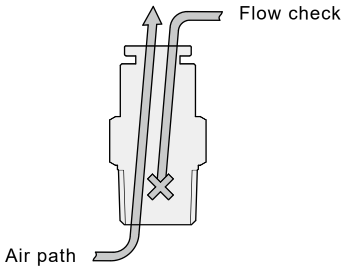
#### SQRM series


Packing (NBR)
O-ring (NBR)
Chuck (Stainless)
Release button (POM)
PU tube (or Nylon tube)
Movable lump (Aluminum alloy)
Body (Brass)

## Control direction for check valve

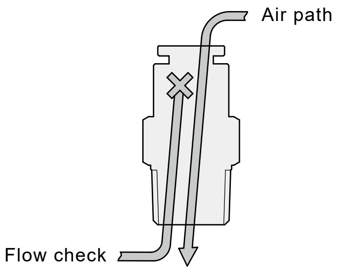
### SQRC series

– **A** Input control from thread point (Standard)


Flow check
Air path

● SQRC – □ – A

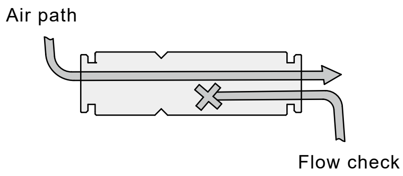
– **B** Input control from hold point


Air path
Flow check

● SQRC – □ – B

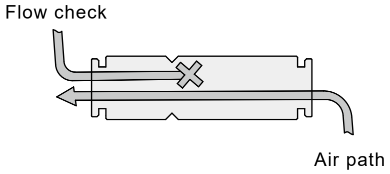
### SQRH series

– **A** Input control from thread point (Standard)


Air path
Flow check

● SQRH – □ – A

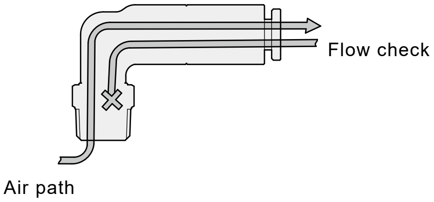
– **B** Input control from hold point


Flow check
Air path

● SQRH – □ – B

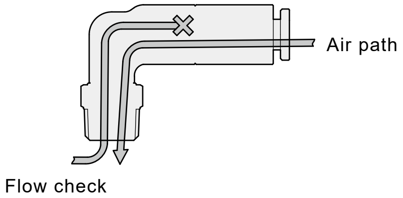
### SQRL series

– **A** Input control from thread point (Standard)


Flow check
Air path

● SQRH – □ – A

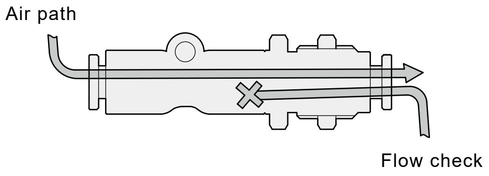
– **B** Input control from hold point


Air path
Flow check

● SQRH – □ – B

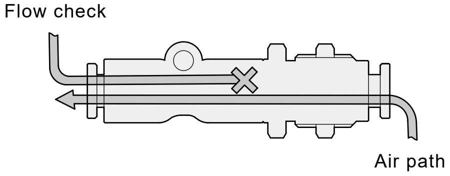
### SQRM series

– **A** Input control from thread point (Standard)


Air path
Flow check

● SQRM – □ – A

– **B** Input control from hold point


Flow check
Air path

● SQRM – □ – B

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

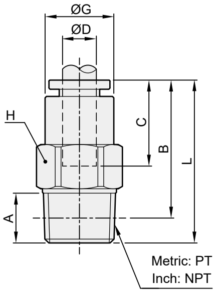
# SQR series Fitting

## Check fitting - SQRC, SQRH series

### SQRC series Self-seal straight male

Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQRC 4 - M5 - ☐ | 3.6 | 30 | 13.9 | 10 | 31.7 | 10 | 3.9 | 11.5 |
| | 1/8" | SQRC 4 - 01 - ☐ | 6 | 24.5 | 13.9 | 10 | 27.5 | 10 | 4.9 | 10.5 |
| Ø6 | 1/8" | SQRC 6 - 01 - ☐ | 6 | 28.8 | 15.6 | 12.4 | 31.8 | 12 | 12.5 | 15.5 |
| | 1/4" | SQRC 6 - 02 - ☐ | 9 | 27.3 | 15.6 | 12.4 | 33.5 | 14 | 12.5 | 22 |
| Ø8 | 1/8" | SQRC 8 - 01 - ☐ | 6 | 30.5 | 16.8 | 14 | 33.5 | 14 | 12.5 | 21 |
| | 1/4" | SQRC 8 - 02 - ☐ | 9 | 29 | 16.8 | 14 | 33.5 | 14 | 19.5 | 21 |
| Ø10 | 3/8" | SQRC 10 - 03 - ☐ | 12 | 56.4 | 20.3 | 25 | 62.4 | 24 | 58 | 45 |
| | 1/2" | SQRC 10 - 04 - ☐ | 15 | 60.5 | 20.3 | 28 | 68.5 | 27 | 58 | 50.5 |
| Ø12 | 3/8" | SQRC 12 - 03 - ☐ | 12 | 58.4 | 22.3 | 25 | 64.4 | 24 | 58 | 42 |
| | 1/2" | SQRC 12 - 04 - ☐ | 15 | 63 | 22.3 | 28 | 71 | 27 | 58 | 47.5 |



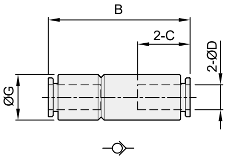
Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B | C | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR10/32” | SQRC 5/32” - 10/32 - ☐ | 3.6 | 30 | 13.9 | 10 | 31.7 | 10 | 3.9 | 11.5 |
| | 1/8" | SQRC 5/32” - 01 - ☐ | 6 | 24.5 | 13.9 | 10 | 27.5 | 10 | 4.9 | 10.5 |
| 1/4” | 1/8" | SQRC 1/4” - 01 - ☐ | 6 | 28.8 | 15.6 | 12.4 | 31.8 | 12 | 12.5 | 15.5 |
| | 1/4" | SQRC 1/4” - 02 - ☐ | 9 | 27.3 | 15.6 | 12.4 | 33.5 | 14 | 12.5 | 22 |
| 5/16” | 1/8" | SQRC 5/16”- 01 - ☐ | 6 | 30.5 | 16.8 | 14 | 33.5 | 14 | 12.5 | 21 |
| | 1/4" | SQRC 5/16”- 02 - ☐ | 9 | 29 | 16.8 | 14 | 33.5 | 14 | 19.5 | 21 |
| 3/8” | 3/8" | SQRC 3/8” - 03 - ☐ | 12 | 56.4 | 20.3 | 25 | 62.4 | 24 | 58 | 45 |
| | 1/2" | SQRC 3/8” - 04 - ☐ | 15 | 60.5 | 20.3 | 28 | 68.5 | 27 | 58 | 50.5 |

### SQRH series Self-seal straight union

Metric specification

| Port size ØD | Model | B | C | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|
| Ø4 | SQRH 4 - 4 | 39.4 | 13.9 | 10 | 4.9 | 6 |
| Ø6 | SQRH 6 - 6 | 45.2 | 15.6 | 12.4 | 12.5 | 10 |
| Ø8 | SQRH 8 - 8 | 48.9 | 16.8 | 14 | 19.6 | 13 |

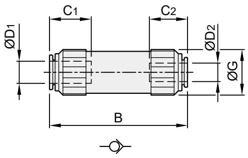


Inch specification

| Port size ØD | Model | B | C | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|
| 5/32” | SQRH 5/32” - 5/32” | 39.4 | 13.9 | 10 | 4.9 | 6 |
| 1/4” | SQRH 1/4” - 1/4” | 45.2 | 15.6 | 12.4 | 12.5 | 10 |
| 5/16” | SQRH 5/16” - 5/16” | 48.9 | 16.8 | 14 | 19.6 | 13 |

Metric specification

| Port size | | Model | B | C1 | C2 | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | |
| Ø10 | Ø10 | SQRH 10 - 10 | 72.6 | 20.3 | 20.3 | 25 | 58 | 61.5 |
| Ø12 | Ø12 | SQRH 12 - 12 | 76.7 | 22.3 | 22.3 | 25 | 58 | 57 |



Inch specification

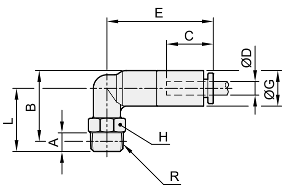
| Port size | | Model | B | C1 | C2 | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ØD1 | ØD2 | | | | | | | |
| 3/8” | 3/8” | SQRH 3/8” - 3/8” | 72.6 | 20.3 | 20.3 | 25 | 58 | 61.5 |
| 1/2” | 1/2” | SQRH 1/2” - 1/2” | 76.7 | 22.3 | 22.3 | 25 | 58 | 57 |

# SQR series Fitting

## Check fitting - SQRL series

CHELIC

### SQRL series Self-seal elbow



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | SQRL 4 - M5 - □ | 3.6 | 19.8 | 13.8 | 31.3 | 10.5 | 16.4 | 10 | 3.9 | 6 |
| | 1/8" | SQRL 4 - 01 - □ | 6 | 22.4 | 13.8 | 31.3 | 10.5 | 20.2 | 10 | 4.9 | 10 |
| | 1/4" | SQRL 4 - 02 - □ | 9 | 24.1 | 13.8 | 31.3 | 10.5 | 23.4 | 14 | 12.5 | 16 |
| Ø6 | M5 | SQRL 6 - M5 - □ | 3.6 | 22.5 | 15.7 | 38 | 12.5 | 19 | 10 | 3.9 | 8.5 |
| | 1/8" | SQRL 6 - 01 - □ | 6 | 25.9 | 15.7 | 38 | 12.5 | 22.8 | 10 | 4.9 | 10.5 |
| | 1/4" | SQRL 6 - 02 - □ | 9 | 27.7 | 15.7 | 38 | 12.5 | 27.1 | 14 | 12.5 | 18 |
| | 3/8" | SQRL 6 - 03 - □ | 9 | 28.4 | 15.7 | 38 | 12.5 | 27.8 | 17 | 12.5 | 22.5 |
| Ø8 | 1/8" | SQRL 8 - 01 - □ | 6 | 27.6 | 16.8 | 41.5 | 14.3 | 24.4 | 12 | 4.9 | 13.5 |
| | 1/4" | SQRL 8 - 02 - □ | 9 | 29.4 | 16.8 | 41.5 | 14.3 | 27.7 | 14 | 19.6 | 19 |
| | 3/8" | SQRL 8 - 03 - □ | 9 | 30.1 | 16.8 | 41.5 | 14.3 | 28.4 | 17 | 19.6 | 24.5 |
| Ø10 | 1/8" | SQRL 10 - 01 - □ | 9 | 31.6 | 20.4 | 75 | 17.8 | 25.7 | 17 | 4.9 | 27 |
| | 1/4" | SQRL 10 - 02 - □ | 9 | 33.4 | 20.4 | 75 | 17.8 | 29 | 17 | 19.6 | 29 |
| | 3/8" | SQRL 10 - 03 - □ | 9 | 34.1 | 20.4 | 75 | 17.8 | 29.7 | 17 | 58 | 31 |
| | 1/2" | SQRL 10 - 04 - □ | 11 | 36.1 | 20.4 | 75 | 17.8 | 32.7 | 21 | 58 | 46 |
| Ø12 | 1/4" | SQRL 12 - 02 - □ | 9 | 38.2 | 23.2 | 78.3 | 21.2 | 32.2 | 17 | 4.9 | 36 |
| | 3/8" | SQRL 12 - 03 - □ | 9 | 36.9 | 23.2 | 78.3 | 21.2 | 32.2 | 17 | 58 | 36 |
| | 1/2" | SQRL 12 - 04 - □ | 11 | 38.9 | 23.2 | 78.3 | 21.2 | 35.2 | 21 | 58 | 50 |

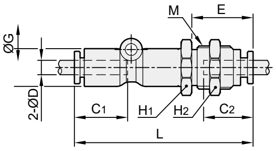
Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B | C | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NR10/32” | SQRL 5/32”-10/32”- □ | 3.6 | 19.8 | 13.8 | 31.3 | 10.5 | 16.4 | 10 | 3.9 | 6 |
| | 1/8" | SQRL 5/32” - 01 - □ | 6 | 22.4 | 13.8 | 31.3 | 10.5 | 20.2 | 10 | 4.9 | 10 |
| | 1/4" | SQRL 5/32” - 02 - □ | 9 | 24.1 | 13.8 | 31.3 | 10.5 | 23.4 | 14 | 12.5 | 16 |
| 1/4” | NR10/32” | SQRL 1/4” - M5 - □ | 3.6 | 22.5 | 15.7 | 38 | 12.5 | 19 | 10 | 3.9 | 8.5 |
| | 1/8" | SQRL 1/4” - 01 - □ | 6 | 25.9 | 15.7 | 38 | 12.5 | 22.8 | 10 | 4.9 | 10.5 |
| | 1/4" | SQRL 1/4” - 02 - □ | 9 | 27.7 | 15.7 | 38 | 12.5 | 27.1 | 14 | 12.5 | 18 |
| | 3/8" | SQRL 1/4” - 03 - □ | 9 | 28.4 | 15.7 | 38 | 12.5 | 27.8 | 17 | 12.5 | 22.5 |
| 5/16” | 1/8" | SQRL 5/16” - 01 - □ | 6 | 27.6 | 16.8 | 41.5 | 14.3 | 24.4 | 12 | 4.9 | 13.5 |
| | 1/4" | SQRL 5/16” - 02 - □ | 9 | 29.4 | 16.8 | 41.5 | 14.3 | 27.7 | 14 | 19.6 | 19 |
| | 3/8" | SQRL 5/16” - 03 - □ | 9 | 30.1 | 16.8 | 41.5 | 14.3 | 28.4 | 17 | 19.6 | 24.5 |
| 3/8” | 1/8" | SQRL 3/8” - 01 - □ | 9 | 31.6 | 20.4 | 75 | 17.8 | 25.7 | 17 | 4.9 | 27 |
| | 1/4" | SQRL 3/8” - 02 - □ | 9 | 33.4 | 20.4 | 75 | 17.8 | 29 | 17 | 19.6 | 29 |
| | 3/8" | SQRL 3/8” - 03 - □ | 9 | 34.1 | 20.4 | 75 | 17.8 | 29.7 | 17 | 58 | 31 |
| | 1/2" | SQRL 3/8” - 04 - □ | 11 | 36.1 | 20.4 | 75 | 17.8 | 32.7 | 21 | 58 | 46 |
| 1/2” | 1/4" | SQRL 1/2” - 02 - □ | 9 | 38.2 | 23.2 | 78.3 | 21.2 | 32.2 | 17 | 4.9 | 36 |
| | 3/8" | SQRL 1/2” - 03 - □ | 9 | 36.9 | 23.2 | 78.3 | 21.2 | 32.2 | 17 | 58 | 36 |
| | 1/2" | SQRL 1/2” - 04 - □ | 11 | 38.9 | 23.2 | 78.3 | 21.2 | 35.2 | 21 | 58 | 50 |

### **SQRM** series Self-seal bulkhead union

Metric specification

| Port size ØD | Thread size M | Model | C1 | C2 | E | ØG | L | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M12x1 | SQRM 4 - 4 | 12.1 | 13.8 | 16.2 | 10.5 | 49 | 14 | 14 | 4.9 | 2 |
| Ø6 | M14x1 | SQRM 6 - 6 | 17 | 15.7 | 17 | 12.5 | 55 | 17 | 17 | 12.5 | 25 |
| Ø8 | M16x1 | SQRM 8 - 8 | 18.8 | 16.8 | 18.8 | 14.3 | 63 | 17 | 19 | 19.6 | 35 |
| Ø10 | M20x1 | SQRM 10 - 10 | 21 | 20.4 | 21 | 17.8 | 98 | 24 | 24 | 58 | 115 |
| Ø12 | M22x1 | SQRM 12 - 12 | 23.6 | 23.2 | 21.2 | 21.2 | 103 | 24 | 27 | 58 | 135 |



Inch specification

| Port size ØD | Thread size M | Model | C1 | C2 | E | ØG | L | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | M14x1 | SQRM 1/4” - 1/4” | 17 | 15.7 | 17 | 12.5 | 55 | 17 | 17 | 12.5 | 25 |
| 5/16” | M16x1 | SQRM 5/16” - 5/16” | 18.8 | 16.8 | 18.8 | 14.3 | 63 | 17 | 19 | 19.6 | 35 |
| 3/8” | M20x1 | SQRM 3/8” - 3/8” | 21 | 20.4 | 21 | 17.8 | 98 | 24 | 24 | 58 | 115 |

# SQ□G series Fitting

## Mini type pressure gauge, Pressure gauge fitting

### Feature

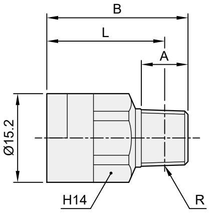
1. Applicable to detect piping pressures.
2. Small and easy to manage in variated occasion.

---

### **SQCG** series  Pressure gauge fitting

Metric specification

| Thread size<br>Rc (PT) | Model | A | B | L | Weight<br>(g) |
|---|---|---|---|---|---|
| 1/8” | SQCG 15 - 01 | 8 | 24 | 20 | 14 |



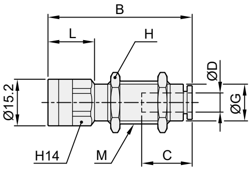
# SQ□G series Fitting

## Pressure gauge fitting - SQMG, SQLG, SQEG series

### SQMG series Bulkhead straight pressure gauge fitting

Metric specification

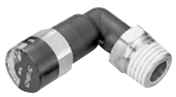
| Port size ØD | Thread size M | Model | B | C | L | ØG | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| Ø6 | M14x1.0 | SQMG 6 - 6 | 47.1 | 16.5 | 15.2 | 12 | 17 | 10 | 22 |



Inch specification

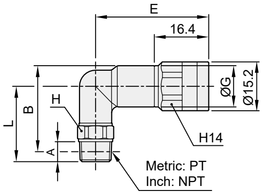
| Port size ØD | Thread size M | Model | B | C | L | ØG | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| 1/4” | M14x1.0 | SQMG 1/4 - 1/4 | 47.1 | 16.5 | 15.2 | 12 | 17 | 10 | 22 |

### SQLG series Male elbow pressure gauge fitting



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø6 | M5 | SQLG 6 - M5 | 3.6 | 22.5 | 34.1 | 12.4 | 19 | 10 | 3.5 | 20 |
| | 1/8" | SQLG 6 - 01 | 6 | 25.9 | 34.1 | 12.4 | 22.8 | 10 | 10 | 22 |
| | 1/4" | SQLG 6 - 02 | 9 | 27.7 | 34.1 | 12.4 | 27.1 | 14 | 10 | 22 |



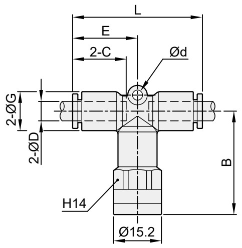
Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B | E | ØG | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/4” | NR10/32” | SQLG 1/4”-10/32” | 3.6 | 22.5 | 34.1 | 12.4 | 19 | 10 | 3.5 | 20 |
| | 1/8" | SQLG 1/4” - 01 | 6 | 25.9 | 34.1 | 12.4 | 22.8 | 10 | 10 | 22 |
| | 1/4" | SQLG 1/4” - 02 | 9 | 27.7 | 34.1 | 12.4 | 27.1 | 14 | 10 | 22 |

### SQEG series Branch tee pressure gauge fitting

Metric specification

| Port size ØD | Model | B | C | Ød | E | ØG | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| Ø6 | SQEG 6 | 32.9 | 17 | 3.2 | 20.6 | 12.4 | 41.2 | 10 | 22 |



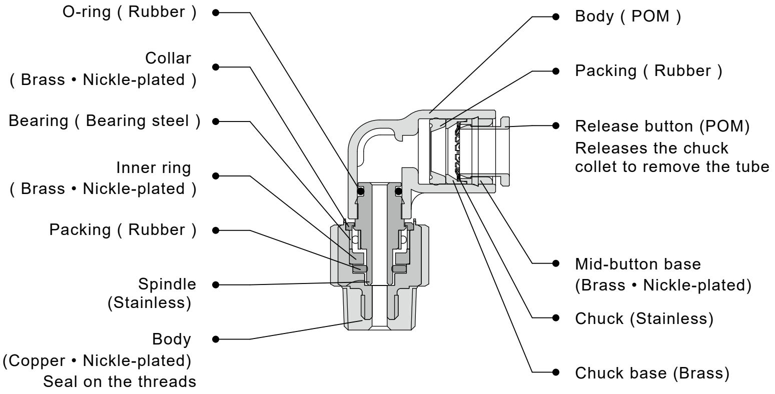
Inch specification

| Port size ØD | Model | B | C | Ød | E | ØG | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| 1/4” | SQEG 1/4” | 32.9 | 17 | 3.2 | 20.6 | 12.4 | 41.2 | 10 | 22 |

# RQL series Rotary Elbow Male

## Product features/ Code of order

### Internal structure


O-ring ( Rubber )
Collar ( Brass • Nickle-plated )
Bearing ( Bearing steel )
Inner ring ( Brass • Nickle-plated )
Packing ( Rubber )
Spindle (Stainless)
Body (Copper • Nickle-plated) Seal on the threads
Body ( POM )
Packing ( Rubber )
Release button (POM) Releases the chuck collet to remove the tube
Mid-button base (Brass • Nickle-plated)
Chuck (Stainless)
Chuck base (Brass)

- Bearings inside the fitting, suitable for use in swinging and rotating positions

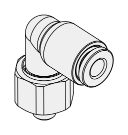
### Specification

| Item | Port size | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32", 1/4", 5/16", 3/8", 1/2" |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm² (kPa) | 0 ~ 9 ( 900 ) |
| Proof pressure | kgf/cm² (kPa) | 10 ( 1000 ) |
| Bearing rotation | (r.p.m) | 500 |
| Ambient and fluid temperature | °C | 0 ~ 60 |
| Material | Body | Brass (Nickle-plated) |
| | Plastic | NYLON, POM |
| Thread | Rc (PT/ NPT) | M5x0.8p, 1/8", 1/4", 3/8", 1/2" |
| Seal on the threads | | With sealant |

### Code of order

**RQL** — **6** — **01**

**Model**



RQL:
Rotary elbow male

**Port size**

Metric:
4 - Ø4 mm
6 - Ø6 mm
8 - Ø8 mm
10 - Ø10 mm
12 - Ø12 mm

Inch:
5/32" - Ø3.97 mm
1/4" - Ø6.35 mm
5/16" - Ø7.94 mm
3/8" - Ø9.53 mm
1/2" - Ø12.7 mm

**Thread**

Metric:
M5 - M5x0.8
01 - PT 1/8"
02 - PT 1/4"
03 - PT 3/8"
04 - PT 1/2"

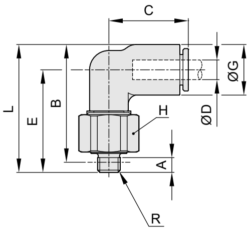
Inch:
10/32 - NR 10/32"
01 - NPT 1/8"
02 - NPT 1/4"
03 - NPT 3/8"
04 - NPT 1/2"

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

# RQL series Rotary Elbow Male

## Dimensions

### **RQL** series Rotary elbow male



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | RQL 4-M5 | 3.2 | 26.1 | 17.1 | 22.2 | 10.5 | 27.2 | 12 | 11.95 |
| | 1/8" | RQL 4-01 | 5.5 | 26.3 | 17.1 | 23.6 | 10.5 | 28.6 | 12 | 14.23 |
| Ø6 | M5 | RQL 6-M5 | 3.2 | 30.0 | 20.2 | 25.3 | 12.5 | 31.5 | 14 | 16.23 |
| | 1/8" | RQL 6-01 | 5.5 | 30.3 | 20.2 | 26.8 | 12.5 | 33.0 | 14 | 17.26 |
| | 1/4" | RQL 6-02 | 8.0 | 31.8 | 20.2 | 29.5 | 12.5 | 35.7 | 14 | 22.28 |
| Ø8 | 1/8" | RQL 8-01 | 5.5 | 34.2 | 23.1 | 29.8 | 14.3 | 37.0 | 17 | 25.88 |
| | 1/4" | RQL 8-02 | 8.0 | 35.7 | 23.1 | 29.8 | 14.3 | 39.7 | 17 | 31.35 |
| | 3/8" | RQL 8-03 | 8.0 | 35.7 | 23.1 | 32.5 | 14.3 | 39.7 | 17 | 36.20 |
| Ø10 | 1/8" | RQL 10-01 | 5.5 | 41.9 | 26.4 | 35.7 | 17.8 | 44.6 | 22 | 49.17 |
| | 1/4" | RQL 10-02 | 8.0 | 43.3 | 26.4 | 38.4 | 17.8 | 47.3 | 22 | 50.52 |
| | 3/8" | RQL 10-03 | 8.0 | 43.3 | 26.4 | 38.4 | 17.8 | 47.3 | 22 | 55.70 |
| | 1/2" | RQL 10-04 | 10.0 | 44.3 | 26.4 | 40.4 | 17.8 | 49.3 | 22 | 67.60 |
| Ø12 | 1/4" | RQL 12-02 | 8.0 | 47.6 | 30.5 | 41.0 | 21.1 | 51.6 | 24 | 68.41 |
| | 3/8" | RQL 12-03 | 8.0 | 47.6 | 30.5 | 41.0 | 21.1 | 51.6 | 24 | 72.35 |
| | 1/2" | RQL 12-04 | 10.0 | 48.6 | 30.5 | 43.0 | 21.1 | 53.6 | 24 | 83.98 |

Inch specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | C | E | ØG | L | Across flats H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32" | NR 10/32" | RQL 5/32-10/32" | 3.2 | 26.1 | 17.1 | 22.2 | 10.5 | 27.2 | 12 | 11.95 |
| | 1/8" | RQL 5/32-01 | 5.5 | 26.3 | 17.1 | 23.6 | 10.5 | 28.6 | 12 | 14.23 |
| 1/4" | NR 10/32" | RQL 1/4"-M5 | 3.2 | 30.0 | 20.2 | 25.3 | 12.5 | 31.5 | 14 | 16.23 |
| | 1/8" | RQL 1/4"-01 | 5.5 | 30.3 | 20.2 | 26.8 | 12.5 | 33.0 | 14 | 17.26 |
| | 1/4" | RQL 1/4"-02 | 8.0 | 31.8 | 20.2 | 29.5 | 12.5 | 35.7 | 14 | 22.28 |
| 5/16" | 1/8" | RQL 5/16"-01 | 5.5 | 34.2 | 23.1 | 29.8 | 14.3 | 37.0 | 17 | 25.88 |
| | 1/4" | RQL 5/16"-02 | 8.0 | 35.7 | 23.1 | 29.8 | 14.3 | 39.7 | 17 | 31.35 |
| | 3/8" | RQL 5/16"-03 | 8.0 | 35.7 | 23.1 | 32.5 | 14.3 | 39.7 | 17 | 36.20 |
| 3/8" | 1/8" | RQL 3/8"-01 | 5.5 | 41.9 | 26.4 | 35.7 | 17.8 | 44.6 | 22 | 49.17 |
| | 1/4" | RQL 3/8"-02 | 8.0 | 43.3 | 26.4 | 38.4 | 17.8 | 47.3 | 22 | 50.52 |
| | 3/8" | RQL 3/8"-03 | 8.0 | 43.3 | 26.4 | 38.4 | 17.8 | 47.3 | 22 | 55.70 |
| 1/2" | 1/4" | RQL 1/2"-02 | 8.0 | 47.6 | 30.5 | 41.0 | 21.1 | 51.6 | 24 | 68.41 |
| | 3/8" | RQL 1/2"-03 | 8.0 | 47.6 | 30.5 | 41.0 | 21.1 | 51.6 | 24 | 72.35 |
| | 1/2" | RQL 1/2"-04 | 10.0 | 48.6 | 30.5 | 43.0 | 21.1 | 53.6 | 24 | 83.98 |

# Micro Fitting series

## Product features/ Code of order

CHELIC

MC: Micro straight fitting

ML: Micro L-type fitting

MT: Micro T-type fitting

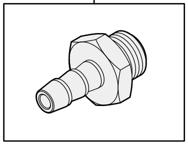
## Specification

| Item / Model | | MC, ML, MT |
|---|---|---|
| Fluid | | Air |
| Max. operating pressure | kgf/cm²(kPa) | 5 (500) |
| Working vacuum | kPa | -100 kPa |
| Ambient and fluid temperature | °C | 0 ~ 50 °C |

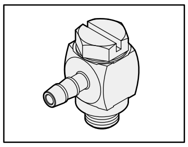
## Code of order

**MC** — **03** — **M5**

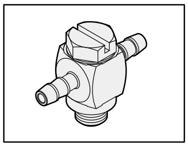
Model



MC:
Micro straight fitting



ML:
Micro L-type fitting



MT:
Micro T-type fitting

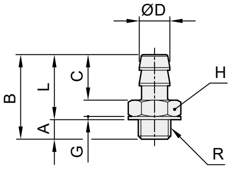
Port size

| Model | Mark | Tube ID (mm) | Tube OD (mm) |
|---|---|---|---|
| MC | 03 | Ø3 | Ø2 |
| | 04 | Ø4 | Ø2.5 |
| | 05 | Ø5 | Ø3 |
| | 06 | Ø6 | Ø4 |
| ML | 03 | Ø3 | Ø2 |
| | 04 | Ø4 | Ø2.5 |
| | 06 | Ø6 | Ø4 |
| MT | 03 | Ø3 | Ø2 |
| | 04 | Ø4 | Ø2.5 |
| | 06 | Ø6 | Ø4 |

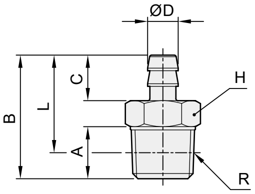
Thread

| Model | Thread |
|---|---|
| MC | M3 - M3x0.5P<br>M5 - M5x0.8P<br>M6 - M6x1.0P<br>01 - PT 1/8” |
| ML | M3 - M3x0.5P<br>M5 - M5x0.8P |
| MT | M3 - M3x0.5P<br>M5 - M5x0.8P |

## MC series Micro straight fitting



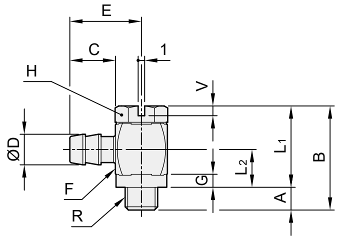
Metric thread



Pipe thread

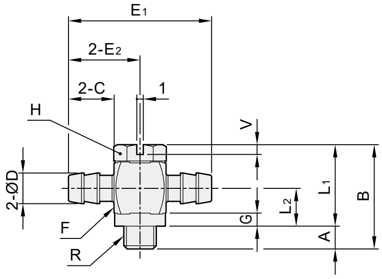
| Model | Port size | ØD | R | A | B | C | L | G | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MC 03 - M3 | 2 | 2.5 | M3x0.5 | 2.5 | 11 | 6 | 8.5 | 0.5 | 5.5 | 0.9 | 0.6 |
| MC 03 - M5 | | | M5x0.8 | 3 | 11.5 | 6 | 8.5 | 0.5 | 7 | 0.9 | 1.5 |
| MC 03 - 01 | | | 1/8" | 8 | 18 | 6 | 14 | - | 10 | 0.9 | 6.9 |
| MC 04 - M3 | 2.5 | 2.9 | M3x0.5 | 2.5 | 12 | 7 | 9.5 | 0.5 | 5.5 | 0.9 | 0.7 |
| MC 04 - M5 | | | M5x0.8 | 3 | 13 | 7 | 10 | 0.5 | 7 | 1.7 | 1.5 |
| MC 04 - M6 | | | M6x1.0 | 4 | 14 | 7 | 10 | 0.5 | 8 | 1.7 | 2.5 |
| MC 04 - 01 | | | 1/8" | 8 | 19 | 7 | 15 | - | 10 | 1.7 | 1.9 |
| MC 05 - M5 | 3 | 3.5 | M5x0.8 | 3 | 13 | 7 | 10 | 0.5 | 7 | 2 | 1.5 |
| MC 06 - M3 | 4 | 4.7 | M3x0.5 | 2.5 | 12 | 7 | 9.5 | 0.5 | 5.5 | 0.9 | 1.1 |
| MC 06 - M5 | | | M5x0.8 | 3 | 13 | 7 | 10 | 0.5 | 7 | 3.8 | 1.5 |
| MC 06 - M6 | | | M6x1.0 | 4 | 14 | 7 | 10 | 0.5 | 8 | 3.8 | 2.5 |
| MC 06 - 01 | | | 1/8" | 8 | 19 | 7 | 15 | - | 10 | 3.8 | 7.5 |

## ML series Micro L-type fitting



| Model | Port size | ØD | R | A | B | L1 | L2 | C | E | G | V | F | ØP | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ML 03-M3 | 2 | 2.5 | M3x0.5 | 2.4 | 11.5 | 9.1 | 4.2 | 6 | 8.8 | 1.5 | 1 | 5.5 | 5 | 5.5 | 0.5 | 1.9 |
| ML 03-M5 | | | M5x0.8 | 3.4 | 16 | 12.6 | 5.9 | 6 | 10 | 2 | 1.5 | 8 | 7.8 | 7 | 0.8 | 5.5 |
| ML 04-M3 | 2.5 | 2.9 | M3x0.5 | 2.4 | 11.5 | 9.1 | 4.2 | 7 | 9.8 | 1.5 | 1 | 5.5 | 5 | 5.5 | 0.5 | 1.9 |
| ML 04-M5 | | | M5x0.8 | 3.4 | 16 | 12.6 | 5.9 | 7 | 11 | 2 | 1.5 | 8 | 7.8 | 7 | 1.2 | 5.5 |
| ML 06-M5 | 4 | 4.7 | M5x0.8 | 3.4 | 16 | 12.6 | 5.9 | 7 | 11 | 2 | 1.5 | 8 | 7.8 | 7 | 1.5 | 6 |

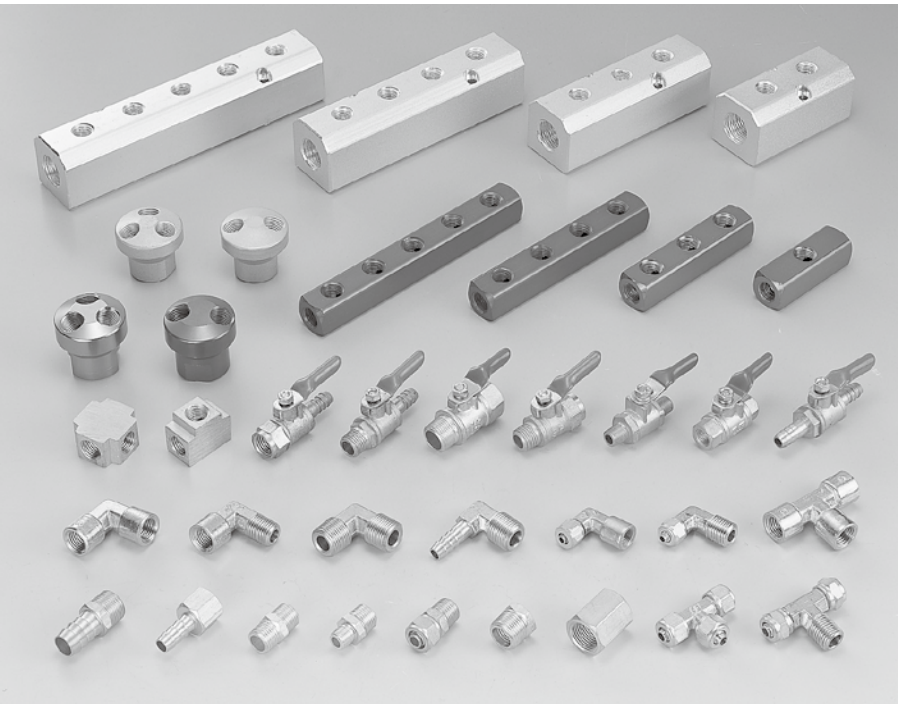
## MT series Micro T-type fitting



| Model | Port size | ØD | R | A | B | L1 | L2 | C | E1 | E2 | G | V | F | ØP | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT 03-M3 | 2 | 2.5 | M3x0.5 | 2.4 | 11.5 | 9.1 | 4.2 | 6 | 17.5 | 8.8 | 1.5 | 1 | 5.5 | 5 | 5.5 | 0.5 | 2 |
| MT 03-M5 | | | M5x0.8 | 3.4 | 16 | 12.6 | 5.9 | 6 | 20 | 10 | 2 | 1.5 | 8 | 7.8 | 7 | 0.8 | 5.3 |
| MT 04-M3 | 2.5 | 2.9 | M3x0.5 | 2.4 | 11.5 | 9.1 | 4.2 | 7 | 19.5 | 9.8 | 1.5 | 1 | 5.5 | 5 | 5.5 | 0.5 | 2.1 |
| MT 04-M5 | | | M5x0.8 | 3.4 | 16 | 12.6 | 5.9 | 7 | 22 | 11 | 2 | 1.5 | 8 | 7.8 | 7 | 1.2 | 5.4 |
| MT 06-M5 | 4 | 4.7 | M5x0.8 | 3.4 | 16 | 12.6 | 5.9 | 7 | 22 | 11 | 2 | 1.5 | 8 | 7.8 | 7 | 1.5 | 6.5 |

# Fittings series

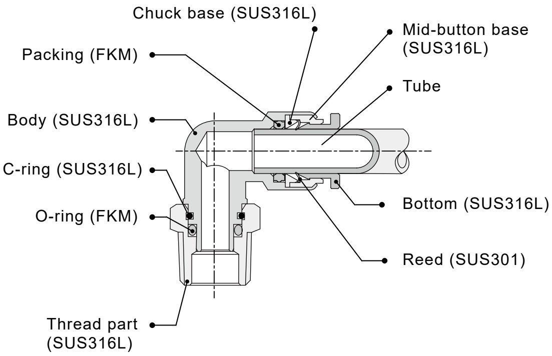
## Brass fitting, Nylon tube fitting, Fork lump, Bronze ball valve, Stainless steel fitting



# Stainless Steel Fittings series

## Product features/ Code of order

### Internal structure



Chuck base (SUS316L)
Packing (FKM)
Body (SUS316L)
C-ring (SUS316L)
O-ring (FKM)
Thread part (SUS316L)
Mid-button base (SUS316L)
Tube
Bottom (SUS316L)
Reed (SUS301)

### Feature

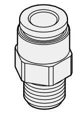
- The materials ensure Anti-Corrosion highly,all of them are made from SUS316L except the seal ring.
- FKM is used as the seal ring, which can ensure Anti-Corrosion and acid resistand, also can be used in high temperature.
- The accessories are oil-free and reach the Food Sanitation Management Law which are applied widely in the range of industry such as food service industry, chemical industry and medical industry.

### Specification

| Item / Port size | | Ø4, Ø6, Ø8, Ø10, Ø12 |
|---|---|---|
| Fluid | | Air, water, steam |
| Pressure range | kgf/cm²(kPa) | 0~15 (0~150) |
| Proof pressure | kgf/cm²(kPa) | 18 (1800) |
| Ambient and fluid temperature | °C | -20 ~ 140 |
| Material | | Stainless steel (SUS316L) |
| Thread | Rc (PT/NPT) | M5x0.8p (10/32”), 1/8”, 1/4”, 3/8”, 1/2” |
| Seal on the threads | | No |

### Code of order

**CSQC** – **6** – **01**

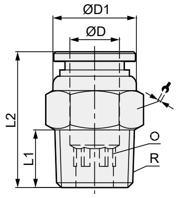
| Model | Port size | Thread |
|---|---|---|
|  | Ø4: Ø4 mm<br>Ø6: Ø6 mm<br>Ø8: Ø8 mm<br>Ø10: Ø10 mm<br>Ø12: Ø12 mm | M5: M5 x 0.8<br>01: PT 1/8”<br>02: PT 1/4”<br>03: PT 3/8”<br>04: PT 1/2” |

CSQC:
Straight fitting

# Stainless Steel Fittings series

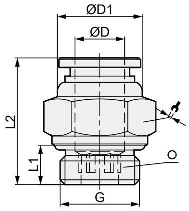
## CSQC, CSQC-G, CSQL series

### ▶ **CSQC** series Male straight



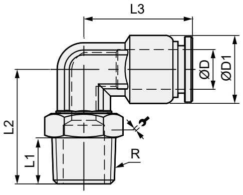
| Model | ØD | R | L1 | L2 | ØD1 | ○ | 🔧 |
|---|---|---|---|---|---|---|---|
| CSQC 04-01 | 4 | R1/8 | 7.5 | 16.8 | 10 | 3 | 10 |
| CSQC 06-01 | 6 | R1/8 | 7.5 | 19.3 | 12 | 4 | 12 |
| CSQC 06-02 | 6 | R1/4 | 9.5 | 19.8 | 12 | 4 | 14 |
| CSQC 08-01 | 8 | R1/8 | 7.5 | 23.7 | 14 | 6 | 14 |
| CSQC 08-02 | 8 | R1/4 | 9.5 | 22.2 | 14 | 6 | 14 |
| CSQC 10-02 | 10 | R1/4 | 9.5 | 26.4 | 17 | 8 | 17 |
| CSQC 10-03 | 10 | R3/8 | 10.5 | 22.9 | 17 | 8 | 17 |
| CSQC 10-04 | 10 | R1/2 | 13.5 | 26.5 | 17 | 8 | 21 |
| CSQC 12-02 | 12 | R1/4 | 9.5 | 30.4 | 20 | 8 | 20 |
| CSQC 12-03 | 12 | R3/8 | 10.5 | 26.4 | 20 | 10 | 20 |
| CSQC 12-04 | 12 | R1/2 | 13.5 | 26.4 | 20 | 10 | 21 |

### ▶ **CSQC-G** series Male straight



| Model | ØD | R | L1 | L2 | ØD1 | ○ | 🔧 |
|---|---|---|---|---|---|---|---|
| CSQC-G-04-M5 | 4 | M5 | 4 | 19.3 | 10 | - | 10 |
| CSQC-G-04-M6 | 4 | M6 | 4 | 19.3 | 10 | - | 10 |
| CSQC-G-04-G01 | 4 | G1/8 | 5.5 | 17.3 | 10 | 3 | 13 |
| CSQC-G-04-G02 | 4 | G1/4 | 6.5 | 17.3 | 10 | 3 | 16 |
| CSQC-G-06-M5 | 6 | M5 | 4 | 20.6 | 12 | - | 12 |
| CSQC-G-06-G01 | 6 | G1/8 | 5.5 | 18.8 | 12 | 4 | 13 |
| CSQC-G-06-G02 | 6 | G1/4 | 6.5 | 18.8 | 12 | 4 | 16 |
| CSQC-G-08-G01 | 8 | G1/8 | 5.5 | 23.2 | 14 | 5 | 14 |
| CSQC-G-08-G02 | 8 | G1/4 | 6.5 | 20.7 | 14 | 6 | 16 |
| CSQC-G-10-G02 | 10 | G1/4 | 6.5 | 26.4 | 17 | 8 | 17 |
| CSQC-G-10-G03 | 10 | G3/8 | 7.5 | 11.9 | 17 | 8 | 20 |
| CSQC-G-10-G04 | 10 | G1/2 | 9 | 25.5 | 17 | 8 | 24 |
| CSQC-G-12-G02 | 12 | G1/4 | 96.5 | 29.4 | 20 | 8 | 20 |
| CSQC-G-12-G03 | 12 | G3/8 | 7.5 | 25.4 | 20 | 10 | 20 |
| CSQC-G-12-G04 | 12 | G1/2 | 9 | 25.4 | 20 | 10 | 24 |

### ▶ **CSQL** series Male elbow

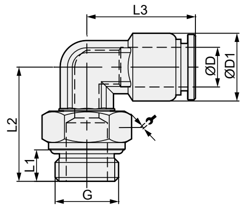


| Model | ØD | R | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| CSQL 04-01 | 4 | R1/8 | 7.5 | 16.8 | 10 | 3 | 10 |
| CSQL 06-01 | 6 | R1/8 | 7.5 | 19.3 | 12 | 4 | 12 |
| CSQL 06-02 | 6 | R1/4 | 9.5 | 19.8 | 12 | 4 | 14 |
| CSQL 08-01 | 8 | R1/8 | 7.5 | 23.7 | 14 | 6 | 14 |
| CSQL 08-02 | 8 | R1/4 | 9.5 | 22.2 | 14 | 6 | 14 |
| CSQL 10-02 | 10 | R1/4 | 9.5 | 26.4 | 17 | 8 | 17 |
| CSQL 10-03 | 10 | R3/8 | 10.5 | 22.9 | 17 | 8 | 17 |
| CSQL 10-04 | 10 | R1/2 | 13.5 | 26.5 | 17 | 8 | 21 |
| CSQL 12-02 | 12 | R1/4 | 9.5 | 30.4 | 20 | 8 | 20 |
| CSQL 12-03 | 12 | R3/8 | 10.5 | 26.4 | 20 | 10 | 20 |
| CSQL 12-04 | 12 | R1/2 | 13.5 | 26.4 | 20 | 10 | 21 |

# Stainless Steel Fittings series

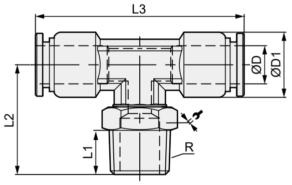
## CSQL-G, CSQT, CSQT-G series

### **CSQL-G** series  Male elbow



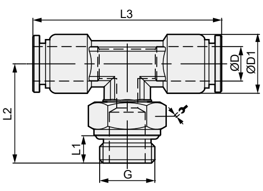
| Model | ØD | G | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| CSQL-G-04-M5 | 4 | M5 | 4 | 17.5 | 18.3 | 10 | 10 |
| CSQL-G-04-G01 | 4 | G1/8 | 5.5 | 20 | 18.3 | 10 | 13 |
| CSQL-G-06-GM5 | 6 | M5 | 4 | 17.5 | 20.3 | 12 | 10 |
| CSQL-G-06-G01 | 6 | G1/8 | 5.5 | 22 | 20.3 | 12 | 13 |
| CSQL-G-06-G02 | 6 | G1/4 | 6.5 | 23 | 20.3 | 12 | 16 |
| CSQL-G-08-G01 | 8 | G1/8 | 5.5 | 22.5 | 22.3 | 14 | 13 |
| CSQL-G-08-G02 | 8 | G1/4 | 6.5 | 23.5 | 22.3 | 14 | 16 |
| CSQL-G-10-G02 | 10 | G1/4 | 6.5 | 31 | 26.4 | 17 | 17 |
| CSQL-G-10-G03 | 10 | G3/8 | 7.5 | 28.5 | 26.4 | 17 | 20 |
| CSQL-G-10-G04 | 10 | G1/2 | 9 | 29 | 26.4 | 17 | 24 |
| CSQL-G-12-G02 | 12 | G1/4 | 6.5 | 32.5 | 29.4 | 20 | 17 |
| CSQL-G-12-G03 | 12 | G3/8 | 7.5 | 30 | 29.4 | 20 | 20 |
| CSQL-G-12-G04 | 12 | G1/2 | 9 | 30.5 | 29.4 | 20 | 24 |

### **CSQT** series  Male branch tee



| Model | ØD | R | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| CSQT 04-01 | 4 | R1/8 | 7.5 | 20 | 36.6 | 10 | 10 |
| CSQT 06-01 | 6 | R1/8 | 7.5 | 23 | 40.6 | 12 | 12 |
| CSQT 06-02 | 6 | R1/4 | 9.5 | 23 | 40.6 | 12 | 14 |
| CSQT 08-01 | 8 | R1/8 | 7.5 | 23.5 | 44.6 | 14 | 12 |
| CSQT 08-02 | 8 | R1/4 | 9.5 | 23.5 | 44.6 | 14 | 14 |
| CSQT 10-02 | 10 | R1/4 | 9.5 | 33 | 52.8 | 17 | 17 |
| CSQT 10-03 | 10 | R3/8 | 10.5 | 30 | 52.8 | 17 | 17 |
| CSQT 10-04 | 10 | R1/2 | 13.5 | 32 | 52.8 | 17 | 21 |
| CSQT 12-02 | 12 | R1/4 | 9.5 | 34.5 | 58.8 | 20 | 17 |
| CSQT 12-03 | 12 | R3/8 | 10.5 | 31.5 | 58.8 | 20 | 17 |
| CSQT12-04 | 12 | R1/2 | 13.5 | 33.5 | 58.8 | 20 | 21 |

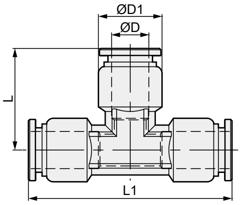
### **CSQT-G** series  Male branch tee



| Model | ØD | G | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| CSQT-G-04-M5 | 4 | M5 | 4 | 17.5 | 36.6 | 10 | 10 |
| CSQT-G-04-G01 | 4 | G1/8 | 5.5 | 20 | 36.6 | 10 | 13 |
| CSQT-G-06-M5 | 6 | M5 | 4 | 17.5 | 40.6 | 12 | 10 |
| CSQT-G-06-G01 | 6 | G1/8 | 5.5 | 22 | 40.6 | 12 | 13 |
| CSQT-G-06-G02 | 6 | G1/4 | 6.5 | 23 | 40.6 | 12 | 16 |
| CSQT-G-08-G01 | 8 | G1/8 | 5.5 | 22.5 | 44.6 | 14 | 13 |
| CSQT-G-08-G02 | 8 | G1/4 | 6.5 | 23.5 | 44.6 | 14 | 16 |
| CSQT-G-10-G02 | 10 | G1/4 | 6.5 | 31 | 52.8 | 17 | 17 |
| CSQT-G-10-G03 | 10 | G3/8 | 7.5 | 28.5 | 52.8 | 17 | 20 |
| CSQT-G-10-G04 | 10 | G1/2 | 9 | 29 | 52.8 | 17 | 24 |
| CSQT-G-12-G02 | 12 | G1/4 | 8.5 | 32.5 | 58.8 | 20 | 17 |
| CSQT-G-12-G03 | 12 | G3/8 | 7.5 | 30 | 58.8 | 20 | 20 |
| CSQT-G-12-G04 | 12 | G1/2 | 9 | 30.5 | 58.8 | 20 | 24 |

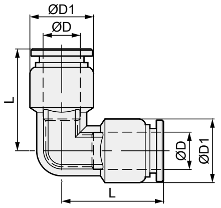
## **CSQE** series Union tee

| Model | ØD | ØD1 | L | L1 |
|---|---|---|---|---|
| CSQE 04 | 4 | 10 | 18.3 | 36.6 |
| CSQE 06 | 6 | 12 | 20.3 | 40.6 |
| CSQE 08 | 8 | 14 | 22.3 | 44.6 |
| CSQE 10 | 10 | 17 | 26.4 | 52.8 |
| CSQE 12 | 12 | 20 | 29.4 | 58.8 |



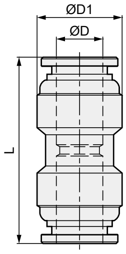
## **CSQV** series Union elbow

| Model | ØD | ØD1 | L |
|---|---|---|---|
| CSQV 04 | 4 | 10 | 18.3 |
| CSQV 06 | 6 | 12 | 20.3 |
| CSQV 08 | 8 | 14 | 22.3 |
| CSQV 10 | 10 | 17 | 26.4 |
| CSQV 12 | 12 | 20 | 29.4 |



## **CSQH** series Straight union

| Model | ØD | ØD1 | L |
|---|---|---|---|
| CSQH 04 | 4 | 11 | 27 |
| CSQH 06 | 6 | 13 | 29.5 |
| CSQH 08 | 8 | 15 | 32.5 |
| CSQH 10 | 10 | 18 | 36.8 |
| CSQH 12 | 12 | 21 | 39.8 |

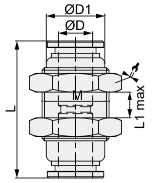


# Stainless Steel Fittings series

## CSQMH, CQSC series

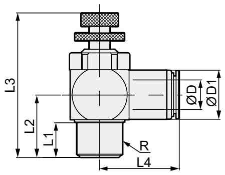
### **CSQMH** series  Bulkhead union

| Model | ØD | ØD1 | L | L1 max | M | 🔧 |
|---|---|---|---|---|---|---|
| CSQMH 04 | 4 | 10 | 27 | 8 | M12X1 | 14 |
| CSQMH 06 | 6 | 12 | 29.5 | 8 | M14X1 | 17 |
| CSQMH 08 | 8 | 14 | 32.5 | 8.5 | M16X1 | 19 |
| CSQMH 10 | 10 | 17 | 36.8 | 9.5 | M20X1 | 24 |
| CSQMH 12 | 12 | 20 | 39.8 | 11.5 | M22X1 | 26 |



### **CQSC** series  Speed controller

| Model | ØD | R | L1 | L2 | L3(Max) | L4 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|---|
| CQSC 06-01 | 6 | R1/8 | 7 | 15.3 | 42 | 21.7 | 12.5 | 12 |
| CQSC 06-02 | 6 | R1/4 | 10.5 | 19.5 | 48.5 | 23.2 | 12.5 | 16 |
| CQSC 08-01 | 8 | R1/8 | 7 | 15.8 | 42 | 22.6 | 13.8 | 12 |
| CQSC 08-02 | 8 | R1/4 | 10.5 | 19.5 | 48.5 | 24.1 | 14.5 | 16 |
| CQSC 08-03 | 8 | R3/8 | 11.5 | 23.8 | 57.5 | 26.1 | 14 | 19 |
| CQSC 10-02 | 10 | R1/4 | 10.5 | 21 | 48.5 | 27.1 | 17 | 16 |
| CQSC 10-03 | 10 | R3/8 | 11.5 | 23.8 | 57.5 | 29.1 | 17 | 19 |
| CQSC 12-03 | 12 | R3/8 | 11.5 | 23.8 | 57.5 | 30 | 19.8 | 19 |



# Stainless Steel Fittings series

## Rapid pneumatic fittings

### Instructions

| Example 1 | CVMC - | 06m | 03T |
|---|---|---|---|
| | Model | mm | PT |

| Example 2 | CVMC - | 20i | 03N |
|---|---|---|---|
| | Model | inch | NPT |

Material mark:
SS304 = Stainless steel #304
SS316 = Stainless steel #316

| Connector | | Thread size | |
|---|---|---|---|
| | | Metric | Inch |
| 03m = 3mm | 10i = 1/8” Ø | 03N = 1/8”NPT | 03T = 1/8”NPT |
| 06m = 6mm | 20i = 1/4” Ø | 06N = 1/4”NPT | 06T = 1/4”NPT |
| 08m = 8mm | 25i = 5/16” Ø | 10N = 3/8”NPT | 10T = 3/8”NPT |
| 10m = 10mm | 30i = 3/8” Ø | 15N = 1/2”NPT | 15T = 1/2”NPT |
| 12m = 12mm | 40i = 1/2” Ø | 20N = 3/4”NPT | 20T = 3/4”NPT |
| 15m = 15mm | 50i = 5/8” Ø | 25N = 1”NPT | 25T = 1”NPT |
| 16m = 16mm | 60i = 3/4” Ø | 32N = 1 1/4”NPT | 32T = 1 1/4”NPT |
| 18m = 18mm | 70i = 7/8” Ø | 40N = 1 1/2”NPT | 40T = 1 1/2”NPT |
| 20m = 20mm | 80i = 1” Ø | 50N = 2”NPT | 50T = 2”NPT |
| 22m = 22mm | | | |
| 25m = 25mm | | | |

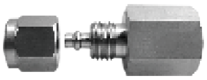
### Rapid pneumatic fittings

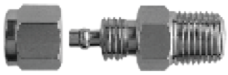
**Feature**

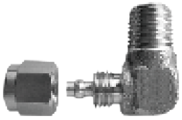
- Material: SUS304 (all parts).
- Withstand pressure 7~10 kg/cm²
- Acid and alkali resistance, high temperature resistance.
- Change transmission direction.
- Used for all kinds of nylon tube, PR, PU tube and other thermoplastic hoses.
- Available in variety of sizes.

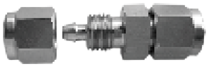
**Applicable**

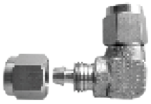
- For liquid fluids (water, oil, acid and alkali... etc.).Gas flow with piping connection.
- Instruments, meters, piping engineering and low pressure,and temperature gas pipelines.
- Medical equipment, agricultural equipment, mechanical parts assembly.
- Suitable for food industry, chemical industry, petrochemical industry and water treatment industry.

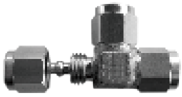
| Model | Specification |
|---|---|
| Female connector - CVFC | |
|  | |
| CVFC - 04m06T | 4 Ø x 1/4” PT |
| CVFC - 06m06T | 6 Ø x 1/4” PT |
| CVFC - 08m06T | 8 Ø x 1/4” PT |
| CVFC - 10m06T | 10 Ø x 1/4” PT |
| CVFC - 10i06T | 1/8” Ø x 1/4” PT |
| CVFC - 20i06T | 1/4” Ø x 1/4” PT |
| CVFC - 25i06T | 5/16” Ø x 1/4” PT |
| CVFC - 30i06T | 3/8” Ø x 1/4” PT |

| Model | Specification |
|---|---|
| Male connector - CVMC | |
|  | |
| CVMC - 04m03T | 4 Ø x 1/8” PT |
| CVMC - 04m06T | 4 Ø x 1/4” PT |
| CVMC - 06m03T | 6 Ø x 1/8” PT |
| CVMC - 06m06T | 6 Ø x 1/4” PT |
| CVMC - 06m10T | 6 Ø x 3/8” PT |
| CVMC - 06m15T | 6 Ø x 1/2” PT |
| CVMC - 08m03T | 8 Ø x 1/8” PT |
| CVMC - 08m06T | 8 Ø x 1/4” PT |
| CVMC - 08m10T | 8 Ø x 3/8” PT |
| CVMC - 08m15T | 8 Ø x 1/2” PT |
| CVMC - 10m06T | 10 Ø x 1/4” PT |
| CVMC - 10m10T | 10 Ø x 3/8” PT |
| CVMC - 10m15T | 10 Ø x 1/2” PT |
| CVMC - 12m06T | 12 Ø x 1/4” PT |
| CVMC - 12m10T | 12 Ø x 3/8” PT |
| CVMC - 12m15T | 12 Ø x 1/2” PT |
| CVMC - 20i03T | 1/4” Ø x 1/8” PT |
| CVMC - 20i06T | 1/4” Ø x 1/4” PT |
| CVMC - 20i10T | 1/4” Ø x 3/8” PT |
| CVMC - 20i15T | 1/4” Ø x 1/2” PT |
| CVMC - 25i03T | 5/16” Ø x 1/8” PT |
| CVMC - 25i06T | 5/16” Ø x 1/4” PT |
| CVMC - 25i10T | 5/16” Ø x 3/8” PT |
| CVMC - 25i15T | 5/16” Ø x 1/2” PT |
| CVMC - 30i06T | 3/8” Ø x 1/4” PT |
| CVMC - 30i10T | 3/8” Ø x 3/8” PT |
| CVMC - 30i15T | 3/8” Ø x 1/2” PT |
| CVMC - 40i06T | 1/2” Ø x 1/4” PT |
| CVMC - 40i10T | 1/2” Ø x 3/8” PT |
| CVMC - 40i15T | 1/2” Ø x 1/2” PT |

| Model | Specification |
|---|---|
| Male elbow - CVME | |
|  | |
| CVME - 04m03T | 4 Ø x 1/8” PT |
| CVME - 04m06T | 4 Ø x 1/4” PT |
| CVME - 06m03T | 6 Ø x 1/8” PT |
| CVME - 06m06T | 6 Ø x 1/4” PT |
| CVME - 06m10T | 6 Ø x 3/8” PT |
| CVME - 06m15T | 6 Ø x 1/2” PT |
| CVME - 08m03T | 8 Ø x 1/8” PT |
| CVME - 08m06T | 8 Ø x 1/4” PT |
| CVME - 08m10T | 8 Ø x 3/8” PT |
| CVME - 08m15T | 8 Ø x 1/2” PT |
| CVME - 10m06T | 10 Ø x 1/4” PT |
| CVME - 10m10T | 10 Ø x 3/8” PT |
| CVME - 10m15T | 10 Ø x 1/2” PT |
| CVME - 12m06T | 12 Ø x 1/4” PT |
| CVME - 12m10T | 12 Ø x 3/8” PT |
| CVME - 12m15T | 12 Ø x 1/2” PT |
| CVME - 20i03T | 1/4” Ø x 1/8” PT |
| CVME - 20i06T | 1/4” Ø x 1/4” PT |
| CVME - 20i10T | 1/4” Ø x 3/8” PT |
| CVME - 20i15T | 1/4” Ø x 1/2” PT |
| CVME - 25i03T | 5/16” Ø x 1/8” PT |
| CVME - 25i06T | 5/16” Ø x 1/4” PT |
| CVME - 25i10T | 5/16” Ø x 3/8” PT |
| CVME - 25i15T | 5/16” Ø x 1/2” PT |
| CVME - 30i06T | 3/8” Ø x 1/4” PT |
| CVME - 30i10T | 3/8” Ø x 3/8” PT |
| CVME - 30i15T | 3/8” Ø x 1/2” PT |
| CVME - 40i06T | 1/2” Ø x 1/4” PT |
| CVME - 40i10T | 1/2” Ø x 3/8” PT |
| CVME - 40i15T | 1/2” Ø x 1/2” PT |

| Model | Specification |
|---|---|
| Union - CVU | |
|  | |
| CVU - 04m | 4 Ø |
| CVU - 06m | 6 Ø |
| CVU - 08m | 8 Ø |
| CVU - 10m | 10 Ø |
| CVU - 12m | 12 Ø |
| CVU - 20i | 1/4” Ø |
| CVU - 25i | 5/16” Ø |
| CVU - 30i | 3/8” Ø |
| CVU - 40i | 1/2” Ø |

| Model | Specification |
|---|---|
| Union elbow 90° - CVUE | |
|  | |
| CVUE - 04m | 4 Ø |
| CVUE - 06m | 6 Ø |
| CVUE - 08m | 8 Ø |
| CVUE - 10m | 10 Ø |
| CVUE - 12m | 12 Ø |
| CVUE - 20i | 1/4” Ø |
| CVUE - 25i | 5/16” Ø |
| CVUE - 30i | 3/8” Ø |
| CVUE - 40i | 1/2” Ø |

| Model | Specification |
|---|---|
| Union Tee - CVUT | |
|  | |
| CVUT - 04m | 4 Ø |
| CVUT - 06m | 6 Ø |
| CVUT - 08m | 8 Ø |
| CVUT - 10m | 10 Ø |
| CVUT - 12m | 12 Ø |
| CVUT - 20i | 1/4” Ø |
| CVUT - 25i | 5/16” Ø |
| CVUT - 30i | 3/8” Ø |
| CVUT - 40i | 1/2” Ø |

## Push-in fitting

**Feature**

- Material: SUS304 (all parts).
- Withstand pressure 7~10 kg/cm²
- Acid and alkali resistance, high temperature resistance.
- Change transmission direction.
- Used for all kinds of nylon tube, PR, PU tube and other thermoplastic hoses.
- Available in variety of sizes.

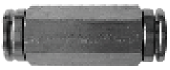
**Applicable**

- For liquid fluids (water, oil, acid and alkali... etc.). Gas flow with piping connection.
- Instruments, meters, piping engineering and low pressure,and temperature gas pipelines.
- Medical equipment, agricultural equipment, mechanical parts assembly.
- Suitable for food industry, chemical industry, petrochemical industry and water treatment industry.

| Model | Specification |
|---|---|
| Female connector - CPFC | |
| | |
| CPFC - 04m06T | 4 Ø x 1/4” PT |
| CPFC - 06m06T | 6 Ø x 1/4” PT |
| CPFC - 08m06T | 8 Ø x 1/4” PT |
| CPFC - 10m06T | 10 Ø x 1/4” PT |

| Model | Specification |
|---|---|
| Male connector - CPMC | |
| | |
| CPMC - 04m03T | 4 Ø x 1/8” PT |
| CPMC - 04m06T | 4 Ø x 1/4” PT |
| CPMC - 06m03T | 6 Ø x 1/8” PT |
| CPMC - 06m06T | 6 Ø x 1/4” PT |
| CPMC - 06m10T | 6 Ø x 3/8” PT |
| CPMC - 06m15T | 6 Ø x 1/2” PT |
| CPMC - 08m03T | 8 Ø x 1/8” PT |
| CPMC - 08m06T | 8 Ø x 1/4” PT |
| CPMC - 08m10T | 8 Ø x 3/8” PT |
| CPMC - 08m15T | 8 Ø x 1/2” PT |
| CPMC - 10m06T | 10 Ø x 1/4” PT |
| CPMC - 10m10T | 10 Ø x 3/8” PT |
| CPMC - 10m15T | 10 Ø x 1/2” PT |
| CPMC - 12m06T | 12 Ø x 1/4” PT |
| CPMC - 12m10T | 12 Ø x 3/8” PT |
| CPMC - 12m15T | 12 Ø x 1/2” PT |

| Model | Specification |
|---|---|
| Male elbow - CPME | |
| | |
| CPME - 04m03T | 4 Ø x 1/8” PT |
| CPME - 04m06T | 4 Ø x 1/4” PT |
| CPME - 06m03T | 6 Ø x 1/8” PT |
| CPME - 06m06T | 6 Ø x 1/4” PT |
| CPME - 06m10T | 6 Ø x 3/8” PT |
| CPME - 06m15T | 6 Ø x 1/2” PT |
| CPME - 08m03T | 8 Ø x 1/8” PT |
| CPME - 08m06T | 8 Ø x 1/4” PT |
| CPME - 08m10T | 8 Ø x 3/8” PT |
| CPME - 08m15T | 8 Ø x 1/2” PT |
| CPME - 10m06T | 10 Ø x 1/4” PT |
| CPME - 10m10T | 10 Ø x 3/8” PT |
| CPME - 10m15T | 10 Ø x 1/2” PT |
| CPME - 12m06T | 12 Ø x 1/4” PT |
| CPME - 12m10T | 12 Ø x 3/8” PT |
| CPME - 12m15T | 12 Ø x 1/2” PT |

| Model | Specification |
|---|---|
| Union - CPU | |
|  | |
| CPU - 04m | 4 Ø |
| CPU - 06m | 6 Ø |
| CPU - 08m | 8 Ø |
| CPU - 10m | 10 Ø |
| CPU - 12m | 12 Ø |

| Model | Specification |
|---|---|
| Union elbow 90° - CPUE | |
| | |
| CPUE - 04m | 4 Ø |
| CPUE - 06m | 6 Ø |
| CPUE - 08m | 8 Ø |
| CPUE - 10m | 10 Ø |
| CPUE - 12m | 12 Ø |

| Model | Specification |
|---|---|
| Union Tee - CPUT | |
| | |
| CPUT - 04m | 4 Ø |
| CPUT - 06m | 6 Ø |
| CPUT - 08m | 8 Ø |
| CPUT - 10m | 10 Ø |
| CPUT - 12m | 12 Ø |

## Insert fittings

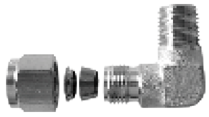
**Feature**

- Material: SUS316 (all parts).
- 1/2”or below Withstand pressure 400 kg/cm²
- Acid and alkali resistance, high temperature resistance.
- The sleeve made by special treatment,resistant to high pressure and shockproof.
- Available in variety of sizes.
- Suitable for various size of metal pipes.

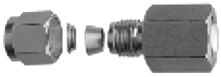
**Applicable**

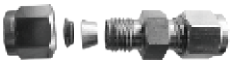
- For liquid fluids (water, oil, acid and alkali... etc.).Gas flow with piping connection.
- Instruments, meters, piping engineering and low pressure, and temperature gas pipelines.
- Seawater environment,Medical equipment, agricultural equipment, mechanical parts assembly.
- Suitable for food industry, chemical industry, petrochemical industry and water treatment industry.

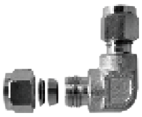
| Model | Specification |
|---|---|
| Male connector - CMC | |
| | |
| CMC - 03m03T | 3 Ø x 1/8” PT |
| CMC - 03m06T | 3 Ø x 1/4” PT |
| CMC - 04m03T | 4 Ø x 1/8” PT |
| CMC - 04m06T | 4 Ø x 1/4” PT |
| CMC - 06m03T | 6 Ø x 1/8” PT |
| CMC - 06m06T | 6 Ø x 1/4” PT |
| CMC - 06m10T | 6 Ø x 3/8” PT |
| CMC - 06m15T | 6 Ø x 1/2” PT |
| CMC - 08m03T | 8 Ø x 1/8” PT |
| CMC - 08m06T | 8 Ø x 1/4” PT |
| CMC - 08m10T | 8 Ø x 3/8” PT |
| CMC - 08m15T | 8 Ø x 1/2” PT |
| CMC - 10m03T | 10 Ø x 1/8” PT |
| CMC - 10m06T | 10 Ø x 1/4” PT |
| CMC - 10m10T | 10 Ø x 3/8” PT |
| CMC - 10m15T | 10 Ø x 1/2” PT |
| CMC - 12m06T | 12 Ø x 1/4” PT |
| CMC - 12m10T | 12 Ø x 3/8” PT |
| CMC - 12m15T | 12 Ø x 1/2” PT |
| CMC - 12m20T | 12 Ø x 3/4” PT |
| CMC - 14m15T | 14 Ø x 1/2” PT |
| CMC - 15m15T | 15 Ø x 1/2” PT |
| CMC - 16m15T | 16 Ø x 1/2” PT |
| CMC - 16m20T | 16 Ø x 3/4” PT |
| CMC - 18m15T | 18 Ø x 1/2” PT |
| CMC - 18m20T | 18 Ø x 3/4” PT |
| CMC - 19m15T | 19 Ø x 1/2” PT |
| CMC - 19m20T | 19 Ø x 3/4” PT |
| CMC - 20m20T | 20 Ø x 3/4” PT |
| CMC - 22m20T | 22 Ø x 3/4” PT |
| CMC - 25m20T | 25 Ø x 3/4” PT |
| CMC - 25m25T | 25 Ø x 1” PT |
| CMC - 10i03T | 1/8” Ø x 1/8” PT |
| CMC - 10i06T | 1/8” Ø x 1/4” PT |
| CMC - 15i03T | 3/16” Ø x 1/8” PT |
| CMC - 20i03T | 1/4” Ø x 1/8” PT |
| CMC - 20i06T | 1/4” Ø x 1/4” PT |
| CMC - 20i10T | 1/4” Ø x 3/8” PT |
| CMC - 20i15T | 1/4” Ø x 1/2” PT |
| CMC - 25i03T | 5/16” Ø x 1/8” PT |
| CMC - 25i06T | 5/16” Ø x 1/4” PT |
| CMC - 25i10T | 5/16” Ø x 3/8” PT |
| CMC - 25i15T | 5/16” Ø x 1/2” PT |
| CMC - 30i03T | 3/8” Ø x 1/8” PT |
| CMC - 30i06T | 3/8” Ø x 1/4” PT |
| CMC - 30i10T | 3/8” Ø x 3/8” PT |
| CMC - 30i15T | 3/8” Ø x 1/2” PT |
| CMC - 40i06T | 1/2” Ø x 1/4” PT |
| CMC - 40i10T | 1/2” Ø x 3/8” PT |
| CMC - 40i15T | 1/2” Ø x 1/2” PT |
| CMC - 40i20T | 1/2” Ø x 3/4” PT |
| CMC - 50i10T | 5/8” Ø x 3/8” PT |
| CMC - 50i15T | 5/8” Ø x 1/2” PT |
| CMC - 50i20T | 5/8” Ø x 3/4” PT |
| CMC - 60i15T | 3/4” Ø x 1/2” PT |
| CMC - 60i20T | 3/4” Ø x 3/4” PT |
| CMC - 80i20T | 1” Ø x 3/4” PT |
| CMC - 80i25T | 1” Ø x 1” PT |

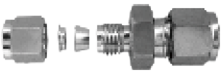
| Model | Specification |
|---|---|
| Male elbow - CME | |
|  | |
| CME - 03m03T | 3 Ø x 1/8” PT |
| CME - 04m03T | 4 Ø x 1/8” PT |
| CME - 06m03T | 6 Ø x 1/8” PT |
| CME - 06m06T | 6 Ø x 1/4” PT |
| CME - 06m10T | 6 Ø x 3/8” PT |
| CME - 06m15T | 6 Ø x 1/2” PT |
| CME - 08m03T | 8 Ø x 1/8” PT |
| CME - 08m06T | 8 Ø x 1/4” PT |
| CME - 08m10T | 8 Ø x 3/8” PT |
| CME - 08m15T | 8 Ø x 1/2” PT |
| CME - 10m03T | 10 Ø x 1/8” PT |
| CME - 10m06T | 10 Ø x 1/4” PT |
| CME - 10m10T | 10 Ø x 3/8” PT |
| CME - 10m15T | 10 Ø x 1/2” PT |
| CME - 12m06T | 12 Ø x 1/4” PT |
| CME - 12m10T | 12 Ø x 3/8” PT |
| CME - 12m15T | 12 Ø x 1/2” PT |
| CME - 15m15T | 15 Ø x 1/2” PT |
| CME - 16m15T | 16 Ø x 1/2” PT |
| CME - 16m20T | 16 Ø x 3/4” PT |
| CME - 18m15T | 18 Ø x 1/2” PT |
| CME - 18m20T | 18 Ø x 3/4” PT |
| CME - 19m15T | 19 Ø x 1/2” PT |
| CME - 19m20T | 19 Ø x 3/4” PT |
| CME - 20m20T | 20 Ø x 3/4” PT |
| CME - 22m20T | 22 Ø x 3/4” PT |
| CME - 25m20T | 25 Ø x 3/4” PT |
| CME - 25m25T | 25 Ø x 1” PT |
| | |
| | |
| | |
| | |
| CME - 10i03T | 1/8” Ø x 1/8” PT |
| CME - 20i03T | 1/4” Ø x 1/8” PT |
| CME - 20i06T | 1/4” Ø x 1/4” PT |
| CME - 20i10T | 1/4” Ø x 3/8” PT |
| CME - 20i15T | 1/4” Ø x 1/2” PT |
| CME - 25i03T | 5/16” Ø x 1/8” PT |
| CME - 25i06T | 5/16” Ø x 1/4” PT |
| CME - 25i10T | 5/16” Ø x 3/8” PT |
| CME - 25i15T | 5/16” Ø x 1/2” PT |
| CME - 30i03T | 3/8” Ø x 1/8” PT |
| CME - 30i06T | 3/8” Ø x 1/4” PT |
| CME - 30i10T | 3/8” Ø x 3/8” PT |
| CME - 30i15T | 3/8” Ø x 1/2” PT |
| CME - 40i06T | 1/2” Ø x 1/4” PT |
| CME - 40i10T | 1/2” Ø x 3/8” PT |
| CME - 40i15T | 1/2” Ø x 1/2” PT |
| CME - 50i15T | 5/8” Ø x 1/2” PT |
| CME - 50i20T | 5/8” Ø x 3/4” PT |
| CME - 60i15T | 3/4” Ø x 1/2” PT |
| CME - 60i20T | 3/4” Ø x 3/4” PT |
| CME - 80i20T | 1” Ø x 3/4” PT |
| CME - 80i25T | 1” Ø x 1” PT |
| | |
| | |
| | |
| | |

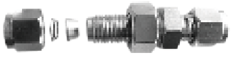
## Insert fittings

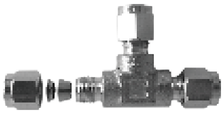
| Model | Specification |
|---|---|
| Female connector - CCF | |
|  | |
| CCF - 03m03T | 3 Ø x 1/8” PT |
| CCF - 03m06T | 3 Ø x 1/4” PT |
| CCF - 04m03T | 4 Ø x 1/8” PT |
| CCF - 04m06T | 4 Ø x 1/4” PT |
| CCF - 06m03T | 6 Ø x 1/8” PT |
| CCF - 06m06T | 6 Ø x 1/4” PT |
| CCF - 06m10T | 6 Ø x 3/8” PT |
| CCF - 06m15T | 6 Ø x 1/2” PT |
| CCF - 08m03T | 8 Ø x 1/8” PT |
| CCF - 08m06T | 8 Ø x 1/4” PT |
| CCF - 08m10T | 8 Ø x 3/8” PT |
| CCF - 08m15T | 8 Ø x 1/2” PT |
| CCF - 10m03T | 10 Ø x 1/8” PT |
| CCF - 10m06T | 10 Ø x 1/4” PT |
| CCF - 10m10T | 10 Ø x 3/8” PT |
| CCF - 10m15T | 10 Ø x 1/2” PT |
| CCF - 12m06T | 12 Ø x 1/4” PT |
| CCF - 12m10T | 12 Ø x 3/8” PT |
| CCF - 12m15T | 12 Ø x 1/2” PT |
| CCF - 15m15T | 15 Ø x 1/2” PT |
| CCF - 16m15T | 16 Ø x 1/2” PT |
| CCF - 16m20T | 16 Ø x 3/4” PT |
| CCF - 18m15T | 18 Ø x 1/2” PT |
| CCF - 18m20T | 18 Ø x 3/4” PT |
| CCF - 19m15T | 19 Ø x 1/2” PT |
| CCF - 19m20T | 19 Ø x 3/4” PT |
| CCF - 20m20T | 20 Ø x 3/4” PT |
| CCF - 22m20T | 22 Ø x 3/4” PT |
| CCF - 25m20T | 25 Ø x 3/4” PT |
| CCF - 25m25T | 25 Ø x 1” PT |
| CCF - 10i03T | 1/8” Ø x 1/8” PT |
| CCF - 10i06T | 1/8” Ø x 1/4” PT |
| CCF - 20i03T | 1/4” Ø x 1/8” PT |
| CCF - 20i06T | 1/4” Ø x 1/4” PT |
| CCF - 20i10T | 1/4” Ø x 3/8” PT |
| CCF - 20i15T | 1/4” Ø x 1/2” PT |
| CCF - 25i03T | 5/16” Ø x 1/8” PT |
| CCF - 25i06T | 5/16” Ø x 1/4” PT |
| CCF - 25i10T | 5/16” Ø x 3/8” PT |
| CCF - 25i15T | 5/16” Ø x 1/2” PT |
| CCF - 30i03T | 3/8” Ø x 1/8” PT |
| CCF - 30i06T | 3/8” Ø x 1/4” PT |
| CCF - 30i10T | 3/8” Ø x 3/8” PT |
| CCF - 30i15T | 3/8” Ø x 1/2” PT |
| CCF - 40i06T | 1/2” Ø x 1/4” PT |
| CCF - 40i10T | 1/2” Ø x 3/8” PT |
| CCF - 40i15T | 1/2” Ø x 1/2” PT |
| CCF - 40i20T | 1/2” Ø x 3/4” PT |
| CCF - 50i10T | 5/8” Ø x 3/8” PT |
| CCF - 50i15T | 5/8” Ø x 1/2” PT |
| CCF - 50i20T | 5/8” Ø x 3/4” PT |
| CCF - 60i15T | 3/4” Ø x 1/2” PT |
| CCF - 60i20T | 3/4” Ø x 3/4” PT |
| CCF - 80i20T | 1” Ø x 3/4” PT |
| CCF - 80i25T | 1” Ø x 1” PT |

| Model | Specification |
|---|---|
| Union - CVU2 | |
|  | |
| CVU2 - 03m | 3 Ø |
| CVU2 - 04m | 4 Ø |
| CVU2 - 05m | 5 Ø |
| CVU2 - 06m | 6 Ø |
| CVU2 - 08m | 8 Ø |
| CVU2 - 10m | 10 Ø |
| CVU2 - 12m | 12 Ø |
| CVU2 - 14m | 14 Ø |
| CVU2 - 15m | 15 Ø |
| CVU2 - 16m | 16 Ø |
| CVU2 - 18m | 18 Ø |
| CVU2 - 19m | 19 Ø |
| CVU2 - 20m | 20 Ø |
| CVU2 - 22m | 22 Ø |
| CVU2 - 25m | 25 Ø |
| CVU2 - 10i | 1/8” Ø |
| CVU2 - 15i | 3/16” Ø |
| CVU2 - 20i | 1/4” Ø |
| CVU2 - 25i | 5/16” Ø |
| CVU2 - 30i | 3/8” Ø |
| CVU2 - 40i | 1/2” Ø |
| CVU2 - 50i | 5/8” Ø |
| CVU2 - 60i | 3/4” Ø |
| CVU2 - 80i | 1” Ø |

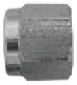
| Model | Specification |
|---|---|
| Union elbow - CUE | |
|  | |
| CUE - 10i | 1/8” Ø |
| CUE - 15i | 3/16” Ø |
| CUE - 20i | 1/4” Ø |
| CUE - 25i | 5/16” Ø |
| CUE - 30i | 3/8” Ø |
| CUE - 40i | 1/2” Ø |
| CUE - 50i | 5/8” Ø |
| CUE - 60i | 3/4” Ø |
| CUE - 80i | 1” Ø |

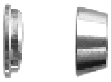
| Model | Specification |
|---|---|
| Reducing union through - CRU | |
|  | |
| CRU - 06m08m | 6 Ø x 6 Ø |
| CRU - 06m10m | 6 Ø x 10 Ø |
| CRU - 08m12m | 8 Ø x 12 Ø |
| CRU - 10m12m | 10 Ø x 12 Ø |
| CRU - 12m14m | 12 Ø x 14 Ø |
| CRU - 12m19m | 12 Ø x 19 Ø |
| CRU - 06m20i | 6 Ø x 1/4” Ø |
| CRU - 06m30i | 6 Ø x 3/8” Ø |
| CRU - 06m40i | 6 Ø x 1/2” Ø |
| CRU - 08m20i | 8 Ø x 1/4” Ø |
| CRU - 08m30i | 8 Ø x 3/8” Ø |
| CRU - 08m40i | 8 Ø x 1/2” Ø |
| CRU - 10m40i | 10 Ø x 1/2” Ø |
| CRU - 10m50i | 10 Ø x 5/8” Ø |
| CRU - 12m20i | 12 Ø x 1/4” Ø |
| CRU - 12m30i | 12 Ø x 3/8” Ø |
| CRU - 12m40i | 12 Ø x 1/2” Ø |
| CRU - 19m40i | 19 Ø x 1/2” Ø |
| CRU - 10i20i | 1/8” Ø x 1/2” Ø |
| CRU - 10i30i | 1/8” Ø x 3/8” Ø |
| CRU - 10i40i | 1/8” Ø x 1/2” Ø |
| CRU - 20i30i | 1/4” Ø x 3/8” Ø |
| CRU - 20i40i | 1/4” Ø x 1/2” Ø |
| CRU - 30i40i | 3/8” Ø x 1/2” Ø |
| CRU - 40i50i | 1/2” Ø x 5/8” Ø |

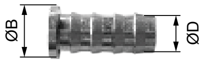
| Model | Specification |
|---|---|
| Bulkhead male connector - CBU | |
|  | |
| CBU - 06m | 6 Ø |
| CBU - 08m | 8 Ø |
| CBU - 10m | 10 Ø |
| CBU - 12m | 12 Ø |
| CBU - 20i | 1/4” Ø |
| CBU - 25i | 5/16” Ø |
| CBU - 30i | 3/8” Ø |
| CBU - 40i | 1/2” Ø |

| Union Tee - CUT | Model | Specification |
|---|---|---|
|  | CUT - 10i | 1/8” Ø |
| | CUT - 15i | 3/16” Ø |
| | CUT - 20i | 1/4” Ø |
| | CUT - 25i | 5/16” Ø |
| | CUT - 30i | 3/8” Ø |
| | CUT - 40i | 1/2” Ø |
| | CUT - 50i | 5/8” Ø |
| | CUT - 60i | 3/4” Ø |
| | CUT - 80i | 1” Ø |

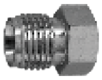
## Insert fittings - parts

| Model | Specification |
|---|---|
| Nut - N | |
|  | |
| N - 03m | 3 Ø |
| N - 04m | 4 Ø |
| N - 05m | 5 Ø |
| N - 06m | 6 Ø |
| N - 08m | 8 Ø |
| N - 10m | 10 Ø |
| N - 12m | 12 Ø |
| N - 14m | 14 Ø |
| N - 15m | 15 Ø |
| N - 16m | 16 Ø |
| N - 18m | 18 Ø |
| N - 19m | 19 Ø |
| N - 20m | 20 Ø |
| N - 22m | 22 Ø |
| N - 25m | 25 Ø |
| N - 10i | 1/8” Ø |
| N - 15i | 3/16” Ø |
| N - 20i | 1/4” Ø |
| N - 25i | 5/16” Ø |
| N - 30i | 3/8” Ø |
| N - 40i | 1/2” Ø |
| N - 50i | 5/8” Ø |
| N - 60i | 3/4” Ø |
| N - 80i | 1” Ø |

| Model | Specification |
|---|---|
| Ferrule-FF | |
|  | |
| FF - 03m | 3 Ø |
| FF - 04m | 4 Ø |
| FF - 05m | 5 Ø |
| FF - 06m | 6 Ø |
| FF - 08m | 8 Ø |
| FF - 10m | 10 Ø |
| FF - 12m | 12 Ø |
| FF - 14m | 14 Ø |
| FF - 15m | 15 Ø |
| FF - 16m | 16 Ø |
| FF - 18m | 18 Ø |
| FF - 19m | 19 Ø |
| FF - 20m | 20 Ø |
| FF - 22m | 22 Ø |
| FF - 25m | 25 Ø |
| FF - 10i | 1/8” Ø |
| FF - 15i | 3/16” Ø |
| FF - 20i | 1/4” Ø |
| FF - 25i | 5/16” Ø |
| FF - 30i | 3/8” Ø |
| FF - 40i | 1/2” Ø |
| FF - 50i | 5/8” Ø |
| FF - 60i | 3/4” Ø |
| FF - 80i | 1” Ø |

| Model | Specification |
|---|---|
| Insert - IN | |
|  | |
| IN06m04m | Ø6 x Ø4 |
| IN08m06m | Ø8 x Ø6 |
| IN10m08m | Ø10 x Ø8 |
| IN12m08m | Ø12 x Ø8 |
| IN12m10m | Ø12 x Ø10 |
| IN16m13m | Ø16 x Ø13 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| IN20i12.5i | Ø1/4" x Ø5/32" |
| IN20i10i | Ø1/4" x Ø1/8" |
| IN20i15i | Ø1/4" x Ø3/16" |
| IN30i20i | Ø3/8" x Ø1/4" |
| IN40i30i | Ø1/2" x Ø3/8" |
| IN60i40i | Ø3/4" x Ø1/2" |
| IN60i50i | Ø3/4" x Ø5/8" |
| IN80i60i | Ø1" x Ø3/4" |
| IN80i70i | Ø1" x Ø7/8" |

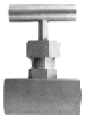
| Model | Specification |
|---|---|
| Head plug - M | |
| | |
| M - 06m | 6 Ø |
| M - 08m | 8 Ø |
| M - 10m | 10 Ø |
| M - 12m | 12 Ø |
| M - 20i | 1/4” Ø |
| M - 25i | 5/16” Ø |
| M - 30i | 3/8” Ø |
| M - 40i | 1/2” Ø |

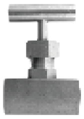
| Model | Specification |
|---|---|
| Male tube cap - CAP | |
|  | |
| CAP - 06m | 6 Ø |
| CAP - 08m | 8 Ø |
| CAP - 10m | 10 Ø |
| CAP - 12m | 12 Ø |
| CAP - 20i | 1/4” Ø |
| CAP - 25i | 5/16” Ø |
| CAP - 30i | 3/8” Ø |
| CAP - 40i | 1/2” Ø |

## Needle valve

### Feature

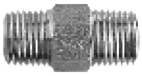
- Material: SUS304 • SUS316
- Acid and alkali resistance, flow rate control.
- Accurately adjust the flow rate.
- Available in variety of sizes.

| Model | Specification |
|---|---|
| SS304-Female needle valve - CVF | |
| <br>Pressure resist<br>400 kg | |
| CVF - 03T | 1/8” PT |
| CVF - 06T | 1/4” PT |
| CVF - 10T | 3/8” PT |
| CVF - 15T | 1/2” PT |
| CVF - 20T | 3/4” PT |
| CVF - 25T | 1” PT |

| Model | Specification |
|---|---|
| SS316-Female needle valve - CVF-3 | |
| <br>Pressure resist<br>400 kg | |
| CVF-3 - 03T | 1/8” PT |
| CVF-3 - 06T | 1/4” PT |
| CVF-3 - 10T | 3/8” PT |
| CVF-3 - 15T | 1/2” PT |
| CVF-3 - 20T | 3/4” PT |
| CVF-3 - 25T | 1” PT |

| Model | Specification |
|---|---|
| SS304-Tube needle valve - CVT | |
| <br>Pressure resist<br>210 kg | |
| CVT - 06m | 6 Ø |
| CVT - 08m | 8 Ø |
| CVT - 10m | 10 Ø |
| CVT - 12m | 12 Ø |
| CVT - 20i | 1/4” Ø |
| CVT - 30i | 3/8” Ø |
| CVT - 40i | 1/2” Ø |

| Model | Specification |
|---|---|
| SS316-Tube ball valve - CBV | |
| <br>Pressure resist<br>70 kg | |
| CBV - 20i | 1/4” Ø |
| CBV - 30i | 3/8” Ø |
| CBV - 40i | 1/2” Ø |
| CBV - 60i | 3/4” Ø |
| | |

| Model | Specification |
|---|---|
| SS304-Male check valve - CVM | |
| <br>Pressure resist<br>30 kg | |
| CVM - 03T | 1/8” PT |
| CVM - 06T | 1/4” PT |
| CVM - 10T | 3/8” PT |
| | |
| | |

| Model | Specification |
|---|---|
| SS304-Female check valve - CVE | |
| <br>Pressure resist<br>30 kg | |
| CVE - 03T | 1/8” PT |
| CVE - 06T | 1/4” PT |
| CVE - 10T | 3/8” PT |
| CVE - 15T | 1/2” PT |
| CVE - 20T | 3/4” PT |

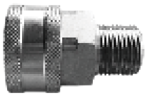
## Straight through quick couplings

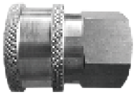
### Feature

- Material: SUS304
- Withstand pressure 60 kg/cm²
- Acid and alkali resistance, high temperature resistance and high air tightness.
- Suitable for various size of metal pipes.
- Valves are all fully open, fluid flow smoothly.
- Available in variety of sizes.

### Applicable

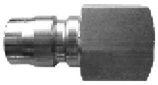
- For liquid fluids (water, oil, acid and alkali... etc.) Gas flow with piping connection.
- Applied to liquid, vapor and powder with large flow and high viscosity.
- Medical equipment, agricultural equipment, mechanical parts assembly.
- Suitable for food industry, chemical industry, petrochemical industry and water treatment industry.

| Model | Specification |
|---|---|
| SS304 - CTSM | |
|  | |
| CTSM - 1 | 1/8" PT |
| CTSM - 2 | 1/4" PT |
| CTSM - 3 | 3/8" PT |
| CTSM - 4 | 1/2" PT |
| CTSM - 6 | 3/4" PT |
| CTSM - 8 | 1" PT |
| CTSM - 10 | 1 1/4" PT |
| CTSM - 12 | 1 1/2" PT |
| CTSM - 16 | 2" PT |

| Model | Specification |
|---|---|
| SS304 - CTSF | |
|  | |
| CTSF - 1 | 1/8" PT |
| CTSF - 2 | 1/4" PT |
| CTSF - 3 | 3/8" PT |
| CTSF - 4 | 1/2" PT |
| CTSF - 6 | 3/4" PT |
| CTSF - 8 | 1" PT |
| CTSF - 10 | 1 1/4" PT |
| CTSF - 12 | 1 1/2" PT |
| CTSF - 16 | 2" PT |

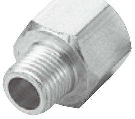
| Model | Specification |
|---|---|
| SS304 - CTSH | |
| | |
| CTSH - 2 | 1/4" |
| CTSH - 25 | 5/16" |
| CTSH - 3 | 3/8" |
| CTSH - 4 | 1/2" |
| CTSH - 6 | 3/4" |
| CTSH - 8 | 1" |
| CTSH - 10 | 1 1/4" |
| CTSH - 12 | 1 1/2" |
| CTSH - 16 | 2" |

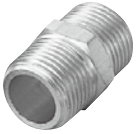
| Model | Specification |
|---|---|
| SS304 - CTPM | |
| | |
| CTPM - 1 | 1/8" PT |
| CTPM - 2 | 1/4" PT |
| CTPM - 3 | 3/8" PT |
| CTPM - 4 | 1/2" PT |
| CTPM - 6 | 3/4" PT |
| CTPM - 8 | 1" PT |
| CTPM - 10 | 1 1/4" PT |
| CTPM - 12 | 1 1/2" PT |
| CTPM - 16 | 2" PT |

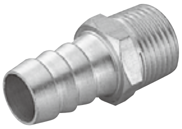
| Model | Specification |
|---|---|
| SS304 - CTPF | |
|  | |
| CTPF - 1 | 1/8" PT |
| CTPF - 2 | 1/4" PT |
| CTPF - 3 | 3/8" PT |
| CTPF - 4 | 1/2" PT |
| CTPF - 6 | 3/4" PT |
| CTPF - 8 | 1" PT |
| CTPF - 10 | 1 1/4" PT |
| CTPF - 12 | 1 1/2" PT |
| CTPF - 16 | 2" PT |

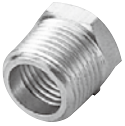
| Model | Specification |
|---|---|
| SS304 - CTPH | |
| | |
| CTPH - 2 | 1/4" |
| CTPH - 25 | 5/16" |
| CTPH - 3 | 3/8" |
| CTPH - 4 | 1/2" |
| CTPH - 6 | 3/4" |
| CTPH - 8 | 1" |
| CTPH - 10 | 1 1/4" |
| CTPH - 12 | 1 1/2" |
| CTPH - 16 | 2" |

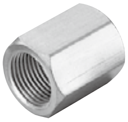
# Brass Normal Fitting series

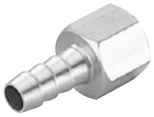
| Model | Specification<br>(Female x Male) |
|---|---|
| Female & Male | |
|  | |
| P005 | 1/8 X 1/8 |
| P005-1 | 1/8 X 1/4 |
| P006-1 | 1/4 X 1/8 |
| P006-2 | 1/4 X 1/4 |
| P006-3 | 1/4 X 3/8 |
| P007 | 3/8 X 1/8 |
| P007-1 | 3/8 X 1/4 |
| P007-2 | 3/8 X 3/8 |
| P007-3 | 3/8 X 1/2 |
| P008-1 | 1/2 X 1/4 |
| P008-2 | 1/2 X 3/8 |
| P008 | 1/2 X 1/2 |

| Model | Specification<br>(Male x Male) |
|---|---|
| Nipple | |
|  | |
| P010 | 1/8 X 1/8 |
| P011 | 1/4 X 1/8 |
| P012 | 1/4 X 1/4 |
| P013-1 | 3/8 X 1/8 |
| P013-2 | 3/8 X 1/4 |
| P013 | 3/8 X 3/8 |
| P014-1 | 1/2 X 1/4 |
| P014-2 | 1/2 X 3/8 |
| P014 | 1/2 X 1/2 |
| P014-3 | 3/4 X 1/2 |
| P014-4 | 3/4 X 3/4 |

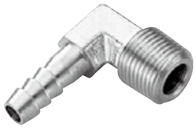
| Model | Specification<br>(Tube x Male) |
|---|---|
| Straight tube | |
|  | |
| P015 | 1/4 X 1/8 |
| P015-0 | 3/16 X 1/8 |
| P017 | 5/16 X 1/8 |
| P017-1 | 3/8 X 1/8 |
| P017-2 | 1/2 X 1/8 |
| P018-1 | 3/16 X 1/4 |
| P018-2 | 1/4 X 1/4 |
| P018 | 5/16 X 1/4 |
| P019 | 3/8 X 1/4 |
| P019-1 | 1/2 X 1/4 |
| P020-1 | 1/4 X 3/8 |
| P020 | 5/16 X 3/8 |
| P021 | 3/8 X 3/8 |
| P021-1 | 1/2 X 3/8 |
| P021-2 | 5/8 X 3/8 |
| P022-0 | 1/4 X 1/2 |
| P022-1 | 3/16 X 1/2 |
| P022 | 5/16 X 1/2 |
| P023 | 3/8 X 1/2 |
| P024 | 1/2 X 1/2 |
| P024-1 | 5/8 X 1/2 |
| P024-2 | 3/4 X 1/2 |
| P024-3 | 3/4 X 3/4 |
| P024-4 | 3/8 X 3/4 |
| P024-5 | 1 X 3/4 |
| P024-6 | 1 X 1 |
| P024-7 | 3/4 X 1 |
| P024-8 | 1/2 X 3/4 |
| P024-10 | 5/8 X 3/4 |

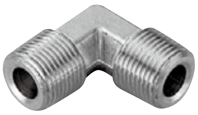
| Model | Specification<br>(Female x Male) |
|---|---|
| Female & Male connector | |
|  | |
| P043 | 1/8 X 1/4 |
| P044 | 1/8 X 3/8 |
| P045 | 1/4 X 3/8 |
| P046 | 1/4 X 1/2 |
| P047 | 3/8 X 1/2 |
| P048 | 3/8 X 3/4 |
| P049 | 1/2 X 3/4 |
| P049-1 | 3/4 X 1 |

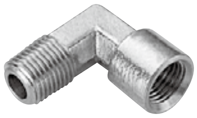
| Model | Specification<br>(Female x Male) |
|---|---|
| Double female | |
|  | |
| P050 | 1/8 X 1/8 |
| P051 | 1/4 X 1/8 |
| P052 | 1/4 X 1/4 |
| P053 | 3/8 X 1/4 |
| P054 | 3/8 X 3/8 |
| P055 | 1/2 X 1/4 |
| P056 | 1/2 X 3/8 |
| P057 | 1/2 X 1/2 |

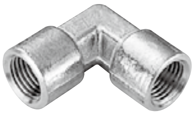
| Model | Specification<br>(Tube x Female) |
|---|---|
| Female tube | |
|  | |
| P058 | 5/16 X 1/4 |
| P058-0 | 5/16 X 1/8 |
| P059 | 3/8 X 1/4 |
| P059-1 | 5/16 X 3/8 |
| P059-2 | 3/8 X 3/8 |
| P059-3 | 5/16 X 1/2 |
| P059-4 | 3/8 X 1/2 |
| P059-5 | 1/2 X 1/2 |
| P059-6 | 5/8 X 1/2 |
| P059-7 | 3/4 X 1/2 |

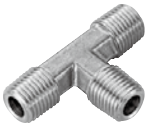
# Brass Special Fitting series

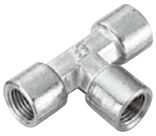
| Model | Specification<br>(Tube x Male) |
|---|---|
| Male tube elbow | |
|  | |
| P060 | 1/4 X 1/8 |
| P061 | 5/16 X 1/8 |
| P061-1 | 3/8 X 1/8 |
| P062 | 1/4 X 1/4 |
| P063 | 5/16 X 1/4 |
| P064 | 3/8 X 1/4 |
| P064-1 | 1/2 X 1/4 |
| P065-0 | 1/4 X 3/8 |
| P065 | 5/16 X 3/8 |
| P066 | 3/8 X 3/8 |
| P066-1 | 1/2 X 3/8 |
| P067 | 5/16 X 1/2 |
| P068 | 3/8 X 1/2 |
| P069 | 1/2 X 1/2 |

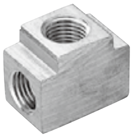
| Model | Specification |
|---|---|
| 90° Double male | |
|  | |
| P070 | 1/8 X 1/8 |
| P071 | 1/4 X 1/8 |
| P072 | 1/4 X 1/4 |
| P073 | 3/8 X 1/4 |
| P074 | 3/8 X 3/8 |
| P075 | 1/2 X 1/4 |
| P076 | 1/2 X 3/8 |
| P077 | 1/2 X 1/2 |

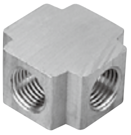
| Model | Specification<br>(Female x Male) |
|---|---|
| Female & Male elbow | |
|  | |
| P078 | 1/8 X 1/8 |
| P079 | 1/4 X 1/4 |
| P080 | 3/8 X 3/8 |
| P081 | 1/2 X 1/2 |
| P082 | 3/4 X 3/4 |

| Model | Specification |
|---|---|
| Double female elbow | |
|  | |
| P083 | 1/8 X 1/8 |
| P084 | 1/4 X 1/8 |
| P085 | 3/8 X 3/8 |
| P086 | 1/2 X 1/2 |

| Model | Specification |
|---|---|
| Male union tee | |
|  | |
| P087 | 1/8 |
| P088 | 1/4 |
| P089 | 3/8 |
| P090 | 1/2 |

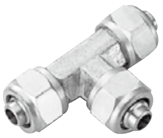
| Model | Specification |
|---|---|
| Female union tee | |
|  | |
| P091 | 1/8 |
| P092 | 1/4 |
| P093 | 3/8 |
| P094 | 1/2 |

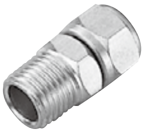
| Model | Specification |
|---|---|
| Female union tee | |
|  | |
| P095-0 | 1/8 |
| P095 | 1/4 |
| P096 | 3/8 |

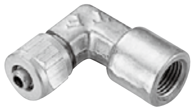
| Model | Specification |
|---|---|
| Female union tee | |
|  | |
| P097 | 1/8 |
| P098 | 1/4 |
| P099 | 3/8 |

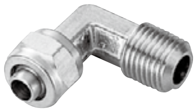
SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

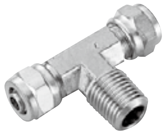
# Nylon tube fitting series

| Model | Specification |
|---|---|
| Union tee | |
|  | |
| A009 | 1/4 |
| A010 | 5/16 |
| A011 | 3/8 |
| A011-1 | 10mm |
| A012 | 1/2 |
| A012-1 | 12mm |

| Model | Specification |
|---|---|
| Straight | |
|  | |
| A013 | 1/4 × 1/8 |
| A014-1 | 5/16 × 1/8 |
| A014-2 | 3/8 × 1/8 |
| A014-3 | 10 × 1/8 |
| A014 | 1/4 × 1/4 |
| A015 | 5/16 × 1/4 |
| A016 | 3/8 × 1/4 |
| A016-0 | 10 × 1/4 |
| A016-1 | 1/2 × 1/4 |
| A016-2 | 12 × 1/4 |
| A017-1 | 1/4 × 3/8 |
| A017-2 | 5/16 × 3/8 |
| A017 | 3/8 × 3/8 |
| A017-3 | 10 × 3/8 |
| A018 | 1/2 × 3/8 |
| A018-1 | 12 × 3/8 |
| A019-1 | 1/4 × 1/2 |
| A019-2 | 5/16 × 1/2 |
| A019-3 | 3/8 × 1/2 |
| A019 | 10 × 1/2 |
| A019-4 | 1/2 × 1/2 |
| A019-5 | 12 × 1/2 |
| A019-6 | 5/8 × 1/2 |

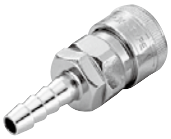
| Model | Specification |
|---|---|
| Female elbow | |
|  | |
| A026 | 1/4 × 1/8 |
| A026-1 | 5/16 × 1/8 |
| A027 | 1/4 × 1/4 |
| A028 | 5/16 × 1/4 |
| A029 | 3/8 × 1/4 |
| A030 | 1/2 × 3/8 |

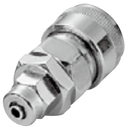
| Model | Specification |
|---|---|
| Elbow | |
|  | |
| A031 | 1/4 × 1/8 |
| A032-1 | 5/16 × 1/8 |
| A032-2 | 3/8 × 1/8 |
| A032-3 | 10 × 1/8 |
| A032 | 1/4 × 1/4 |
| A033 | 5/16 × 1/4 |
| A034 | 3/8 × 1/4 |
| A034-0 | 12 × 1/4 |
| A034-1 | 1/2 × 1/4 |
| A034-2 | 10 × 1/4 |
| A035-1 | 1/4 × 3/8 |
| A035-2 | 5/16 × 3/8 |
| A035 | 3/8 × 3/8 |
| A035-3 | 10 × 3/8 |
| A036-0 | 12 × 3/8 |
| A036-1 | 1/2 × 3/8 |
| A036-2 | 1/4 × 1/2 |
| A036-3 | 5/16 × 1/2 |
| A036-4 | 3/8 × 1/2 |
| A036-5 | 10 × 1/2 |
| A036 | 1/2 × 1/2 |
| A036-6 | 12 × 1/2 |

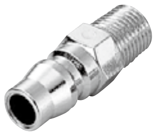
| Model | Specification |
|---|---|
| Female union tee | |
|  | |
| A037 | 1/4 × 1/8 |
| A037-1 | 5/16 × 1/8 |
| A038 | 1/4 × 1/4 |
| A039 | 5/16 × 1/4 |
| A040 | 3/8 × 1/4 |
| A040-0 | 10 × 1/4 |
| A041-1 | 1/4 × 3/8 |
| A041-2 | 5/16 × 3/8 |
| A041 | 3/8 × 3/8 |
| A041-0 | 10 × 3/8 |
| A042-1 | 1/2 × 3/8 |
| A042-2 | 3/8 × 1/2 |
| A042 | 1/2 × 1/2 |

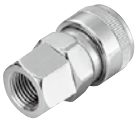
# Quick coupler series

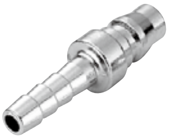
CHELIC

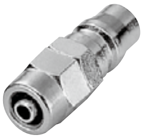
| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| SH-20 | 5/16” ( HOSE ) |
| SH-30 | 3/8” ( HOSE ) |
| SH-40 | 1/2” ( HOSE ) |
| SH-60 | 3/4” ( HOSE ) |
| SH-80 | 1” ( HOSE ) |

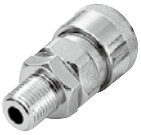
| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| SP-10 | 4m/m × 6m/m ( HOSE ) |
| SP-20 | 5m/m × 8m/m ( HOSE ) |
| SP-30 | 6.5m/m × 10m/m ( HOSE ) |
| SP-40 | 8m/m × 12m/m ( HOSE ) |

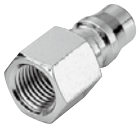
| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| PM-20 | 1/4” ( PT ) |
| PM-30 | 3/8” ( PT ) |
| PM-40 | 1/2” ( PT ) |
| PM-60 | 3/4” ( HOSE ) |
| PM-80 | 1” ( HOSE ) |

| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| SF-20 | 1/4” ( PT ) |
| SF-30 | 3/8” ( PT ) |
| SF-40 | 1/2” ( PT ) |
| SF-60 | 3/4” ( HOSE ) |
| SF-80 | 1” ( HOSE ) |

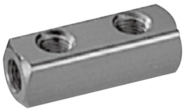
| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| PH-20 | 5/16” ( HOSE ) |
| PH-30 | 3/8” ( HOSE ) |
| PH-40 | 1/2” ( HOSE ) |
| PH-60 | 3/4” ( HOSE ) |
| PH-80 | 1” ( HOSE ) |

| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| PP-10 | 4m/m×6m/m( HOSE ) |
| PP-20 | 5m/m×8m/m( HOSE ) |
| PP-30 | 6.5m/m×10m/m( HOSE ) |
| PP-40 | 8m/m×12m/m( HOSE ) |

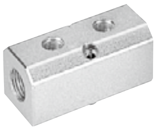
| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| SM-20 | 1/4” ( PT ) |
| SM-30 | 3/8” ( PT ) |
| SM-40 | 1/2” ( PT ) |
| SM-60 | 3/4” ( HOSE ) |
| SM-80 | 1” ( HOSE ) |

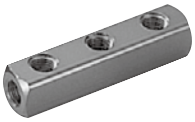
| Model | Specification |
|---|---|
| Quick coupler | |
|  | |
| PF-20 | 1/4” ( PT ) |
| PF-30 | 3/8” ( PT ) |
| PF-40 | 1/2” ( PT ) |
| PF-60 | 3/4” ( HOSE ) |
| PF-80 | 1”( HOSE ) |

# Fork lump  series

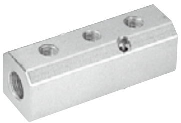
| Model | Specification | Material |
|---|---|---|
| Union staright base | | |
|  | | |
| XW-2A | 1/4 Female × 1/4 Female | Aluminum |

| Model | Specification | Material |
|---|---|---|
| Ball union base | | |
| | | |
| SMV-2Y | 1/4 | Aluminum |

| Model | | Material |
|---|---|---|
| Large flow union (top 2 side 2) | | |
|  | | |
| L2-2Y | 1/2 × 1/4 | Aluminum |

| Model | Specification | Material |
|---|---|---|
| Branch straight base | | |
|  | | |
| XW-3A | 1/4 Female × 1/4 Female | Aluminum |

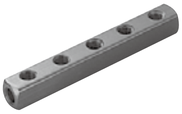
| Model | Specification | Material |
|---|---|---|
| Ball branch base | | |
| | | |
| SMV-3Y | 1/4 | Aluminum |

| Model | | Material |
|---|---|---|
| Large flow union (top 3 side 2) | | |
|  | | |
| L3-2Y | 1/2 × 1/4 | Aluminum |

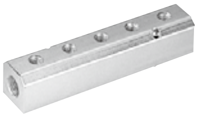
| Model | Specification | Material |
|---|---|---|
| Branch double straight base | | |
| | | |
| XW-4A | 1/4 Female × 1/4 Female | Aluminum |

| Model | Specification | Material |
|---|---|---|
| Ball union | | |
| | | |
| SMY-2Y | 1/4 | Zinc |

| Model | | Material |
|---|---|---|
| Large flow union (top 4 side 2) | | |
| | | |
| L4-2Y | 1/2 × 1/4 | Aluminum |

| Model | Specification | Material |
|---|---|---|
| Union straight base | | |
|  | | |
| XW-5A | 1/4 Female × 1/4 Female | Aluminum |

| Model | Specification | Material |
|---|---|---|
| Ball branch | | |
| | | |
| SMY-3Y | 1/4 | Zinc |

| Model | | Material |
|---|---|---|
| Large flow union (top 5 side 2) | | |
|  | | |
| L5-2Y | 1/2 × 1/4 | Aluminum |

# Bronze ball valve series

**CHELIC**

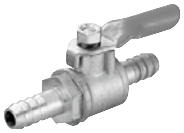
| Model | Specification |
|---|---|
| Bronze ball valve • Double Male | |
| | |
| MM11 | 1/8 Male× 1/8 Male |
| MM22 | 1/4 Male× 1/4 Male |
| MM33 | 3/8 Male× 3/8 Male |
| MM44 | 1/2 Male× 1/2 Male |

| Model | Specification |
|---|---|
| Bronze ball valve • Double Female | |
| | |
| FF11 | 1/8 Female × 1/8 Female |
| FF22 | 1/4 Female × 1/4 Female |
| FF33 | 3/8 Female × 3/8 Female |

| Model | Specification |
|---|---|
| Bronze ball valve • Male & Female | |
| | |
| MF22 | 1/4 Female × 1/4 Male |
| MF33 | 3/8 Female × 3/8 Male |
| MF44 | 1/2 Female × 1/2 Male |

| Model | Specification |
|---|---|
| Bronze ball valve • Male hose | |
| | |
| MH20 | 1/4 Male × 5/16 Tube |
| MH23 | 1/4 Male × 3/8 Tube |
| MH30 | 3/8 Male × 5/16 Tube |
| MH33 | 3/8 Male × 3/8 Tube |
| MH40 | 1/2 Male × 5/16 Tube |
| MH43 | 1/2 Male × 3/8 Tube |

| Model | Specification |
|---|---|
| Bronze ball valve • Female hose | |
| | |
| FH20 | 1/4 Female × 5/16 Tube |
| FH30 | 3/8 Female × 5/16 Tube |

| Model | Specification |
|---|---|
| Bronze ball valve • Hose & hose | |
|  | |
| HH20 | 5/16 Tube × 5/16 Tube |
| HH33 | 3/8 Tube × 3/8 Tube |

| Model | Port size mm | Thread |
|---|---|---|
| Mini straight | | |
| SPA series | | |
| SPA 4 - M3 | Ø 4 | M3 x 0.5 |
| SPA 4 - M5 | Ø 4 | M5 x 0.8 |
| SPA 6 - M3 | Ø 6 | M3 x 0.5 |
| SPA 6 - M5 | Ø 6 | M5 x 0.8 |

| Model | Port size mm | Thread |
|---|---|---|
| Mini universal elbow | | |
| SPT series | | |
| SPT 4 - M5 | Ø 4 | M5 x 0.8 |
| SPT 6 - M5 | Ø 6 | M5 x 0.8 |

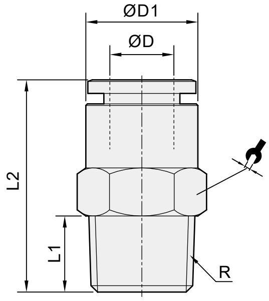
| Model | Specification |
|---|---|
| Plug | |
| SPM series | |
| SPM - M3 | M3 x 0.5 |
| SPM - M5 | M5 x 0.8 |
| SPM - 01 | PT 1/8" |
| SPM - 02 | PT 1/4" |
| SPM - 03 | PT 3/8" |
| SPM - 04 | PT 1/2" |

| Model | Port size mm | Thread |
|---|---|---|
| Mini straight | | |
| SPAB series | | |
| SPAB 4 - M5 | Ø4 | M5 x 0.8 |
| SPAB 6 - M5 | Ø6 | M5 x 0.8 |
| SPAB 6 - 01 | Ø6 | PT 1/8" |

# Full Copper Fitting series

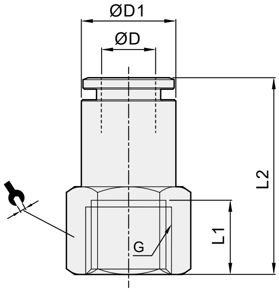
## MPC, MPCF series

### MPC series Male straight



| Model | ØD | R | L1 | L2 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|
| MPC 04-M5 | 4 | M5 | 3.5 | 20.2 | 8 | 8 |
| MPC 04-01 | 4 | R1/8 | 7.5 | 19 | 8.5 | 10 |
| MPC 04-02 | 4 | R1/4 | 9.5 | 20.5 | 8.5 | 14 |
| MPC 06-M5 | 6 | M5 | 3.5 | 24.7 | 12 | 12 |
| MPC 06-01 | 6 | R1/8 | 7.5 | 24.7 | 12 | 12 |
| MPC 06-02 | 6 | R1/4 | 9.5 | 24.5 | 12 | 14 |
| MPC 06-03 | 6 | R3/8 | 10.5 | 23 | 12 | 17 |
| MPC 06-04 | 6 | R1/2 | 13.5 | 26 | 12 | 21 |
| MPC 08-01 | 8 | R1/8 | 7.5 | 28.7 | 14 | 14 |
| MPC 08-02 | 8 | R1/4 | 9.5 | 27.7 | 14 | 14 |
| MPC 08-03 | 8 | R3/8 | 10.5 | 22.7 | 14 | 17 |
| MPC 08-04 | 8 | R1/2 | 13.5 | 26 | 14 | 21 |
| MPC 10-01 | 10 | R1/8 | 7.5 | 31 | 16 | 16 |
| MPC 10-02 | 10 | R1/4 | 9.5 | 33 | 16 | 16 |
| MPC 10-03 | 10 | R3/8 | 10.5 | 27 | 16 | 17 |
| MPC 10-04 | 10 | R1/2 | 13.5 | 26 | 16 | 21 |
| MPC 12-02 | 12 | R1/4 | 9.5 | 35 | 18 | 19 |
| MPC 12-03 | 12 | R3/8 | 10.5 | 31.7 | 18 | 19 |
| MPC 12-04 | 12 | R1/2 | 13.5 | 26.2 | 18 | 21 |

### MPCF series Female connector

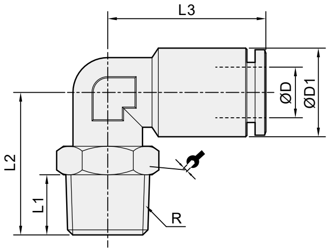


| Model | ØD | G | L1 | L2 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|
| MPCF 04-M5 | 4 | M5 | 5.5 | 20 | 8 | 8 |
| MPCF 04-01 | 4 | G1/8 | 8.5 | 23 | 8.5 | 14 |
| MPCF 04-02 | 4 | G1/4 | 11 | 25.5 | 8.5 | 17 |
| MPCF 06-M5 | 6 | M5 | 5.5 | 25 | 12 | 12 |
| MPCF 06-01 | 6 | G1/8 | 8.5 | 28 | 12 | 14 |
| MPCF 06-02 | 6 | G1/4 | 11 | 30.5 | 12 | 17 |
| MPCF 06-03 | 6 | G3/8 | 12 | 31.5 | 12 | 21 |
| MPCF 06-04 | 6 | G1/2 | 14 | 33.5 | 12 | 24 |
| MPCF 08-01 | 8 | G1/8 | 8.5 | 29 | 14 | 14 |
| MPCF 08-02 | 8 | G1/4 | 11 | 31.5 | 14 | 17 |
| MPCF 08-03 | 8 | G3/8 | 12 | 32.5 | 14 | 21 |
| MPCF 08-04 | 8 | G1/2 | 14 | 34.5 | 14 | 24 |
| MPCF 10-01 | 10 | G1/8 | 8.5 | 31 | 16 | 17 |
| MPCF 10-02 | 10 | G1/4 | 11 | 33.5 | 16 | 17 |
| MPCF 10-03 | 10 | G3/8 | 12 | 34.5 | 16 | 21 |
| MPCF 10-04 | 10 | G1/2 | 14 | 36.5 | 16 | 24 |
| MPCF 12-02 | 12 | G1/4 | 11 | 35 | 18 | 19 |
| MPCF 12-03 | 12 | G3/8 | 12 | 36 | 18 | 21 |
| MPCF 12-04 | 12 | G1/2 | 14 | 38 | 18 | 24 |

# Full Copper Fitting series

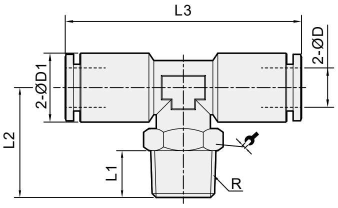
## MPL, MPB series

### **MPL** series Male elbow



| Model | ØD | R | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| MPL 04-M5 | 4 | M5 | 3.5 | 16 | 18.5 | 8.5 | 10 |
| MPL 04-M6 | 4 | M6 | 4 | 16.5 | 18.5 | 8.5 | 10 |
| MPL 04-01 | 4 | R1/8 | 7.5 | 19.5 | 18.5 | 8.5 | 10 |
| MPL 04-02 | 4 | R1/4 | 9.5 | 21.5 | 18.5 | 8.5 | 14 |
| MPL 06-M5 | 6 | M5 | 3.5 | 16 | 23.5 | 12 | 10 |
| MPL 06-M6 | 6 | M6 | 4 | 16.5 | 23.5 | 12 | 10 |
| MPL 06-01 | 6 | R1/8 | 7.5 | 19.5 | 23.5 | 12 | 10 |
| MPL 06-02 | 6 | R1/4 | 9.5 | 21.5 | 23.5 | 12 | 14 |
| MPL 06-03 | 6 | R3/8 | 10.5 | 23.5 | 23.5 | 12 | 17 |
| MPL 06-04 | 6 | R1/2 | 13.5 | 26.5 | 23.5 | 12 | 21 |
| MPL 08-01 | 8 | R1/8 | 7.5 | 21 | 25.7 | 14 | 12 |
| MPL 08-02 | 8 | R1/4 | 9.5 | 23 | 25.7 | 14 | 14 |
| MPL 08-03 | 8 | R3/8 | 10.5 | 24.5 | 25.7 | 14 | 17 |
| MPL 08-04 | 8 | R1/2 | 13.5 | 27.5 | 25.7 | 14 | 21 |
| MPL 10-01 | 10 | R1/8 | 7.5 | 22.5 | 29 | 16 | 14 |
| MPL 10-02 | 10 | R1/4 | 9.5 | 24.5 | 29 | 16 | 14 |
| MPL 10-03 | 10 | R3/8 | 10.5 | 26 | 29 | 16 | 17 |
| MPL 10-04 | 10 | R1/2 | 13.5 | 29 | 29 | 16 | 21 |
| MPL 12-02 | 12 | R1/4 | 9.5 | 26 | 30.7 | 18 | 17 |
| MPL 12-03 | 12 | R3/8 | 10.5 | 27 | 30.7 | 18 | 17 |
| MPL 12-04 | 12 | R1/2 | 13.5 | 30 | 30.7 | 18 | 21 |

### **MPB** series Male branch tee



| Model | ØD | R | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| MPB 04-M5 | 4 | M5 | 3.5 | 16 | 37 | 8.5 | 10 |
| MPB 04-01 | 4 | R1/8 | 7.5 | 19.5 | 37 | 8.5 | 10 |
| MPB 04-02 | 4 | R1/4 | 9.5 | 21.5 | 37 | 8.5 | 14 |
| MPB 06-M5 | 6 | M5 | 3.5 | 17 | 44 | 12 | 10 |
| MPB 06-01 | 6 | R1/8 | 7.5 | 20.5 | 44 | 12 | 10 |
| MPB 06-02 | 6 | R1/4 | 9.5 | 22.5 | 44 | 12 | 14 |
| MPB 06-03 | 6 | R3/8 | 10.5 | 24.5 | 44 | 12 | 17 |
| MPB 06-04 | 6 | R1/2 | 13.5 | 27.5 | 44 | 12 | 21 |
| MPB 08-01 | 8 | R1/8 | 7.5 | 21.5 | 50.5 | 14 | 12 |
| MPB 08-02 | 8 | R1/4 | 9.5 | 23.5 | 50.5 | 14 | 14 |
| MPB 08-03 | 8 | R3/8 | 10.5 | 25 | 50.5 | 14 | 17 |
| MPB 08-04 | 8 | R1/2 | 13.5 | 26 | 50.5 | 14 | 21 |
| MPB 10-01 | 10 | R1/8 | 7.5 | 23 | 64 | 16 | 14 |
| MPB 10-02 | 10 | R1/4 | 9.5 | 25 | 64 | 16 | 14 |
| MPB 10-03 | 10 | R3/8 | 10.5 | 26.5 | 64 | 16 | 17 |
| MPB 10-04 | 10 | R1/2 | 13.5 | 29.5 | 64 | 16 | 21 |
| MPB 12-02 | 12 | R1/4 | 9.5 | 26.5 | 66.5 | 18 | 17 |
| MPB 12-03 | 12 | R3/8 | 10.5 | 27.5 | 66.5 | 18 | 17 |
| MPB 12-04 | 12 | R1/2 | 13.5 | 30.5 | 66.5 | 18 | 21 |

# Full Copper Fitting series

## MPD, MPU series

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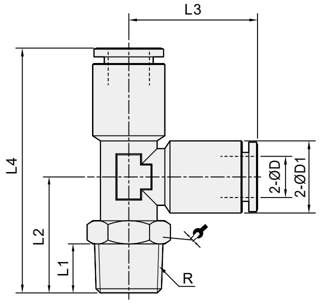
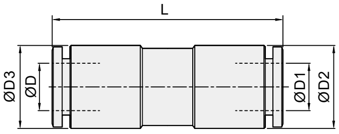
### **MPD** series  Male run tee



| Model | ØD | R | L1 | L2 | L3 | L4 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|---|
| MPD 04-M5 | 4 | M5 | 3.5 | 16.5 | 17.5 | 34 | 8.5 | 10 |
| MPD 04-01 | 4 | R1/8 | 7.5 | 20 | 17.5 | 37.5 | 8.5 | 10 |
| MPD 04-02 | 4 | R1/4 | 9.5 | 22 | 17.5 | 39.5 | 8.5 | 14 |
| MPD 06-M5 | 6 | M5 | 3.5 | 16.5 | 25 | 41.5 | 12 | 10 |
| MPD 06-01 | 6 | R1/8 | 7.5 | 20 | 25 | 45 | 12 | 10 |
| MPD 06-02 | 6 | R1/4 | 9.5 | 22 | 25 | 47 | 12 | 14 |
| MPD 06-03 | 6 | R3/8 | 10.5 | 24 | 25 | 49 | 12 | 17 |
| MPD 06-04 | 6 | R1/2 | 13.5 | 27 | 25 | 52 | 12 | 21 |
| MPD 08-01 | 8 | R1/8 | 7.5 | 21.5 | 27.2 | 48.7 | 14 | 12 |
| MPD 08-02 | 8 | R1/4 | 9.5 | 23.5 | 27.2 | 50.7 | 14 | 14 |
| MPD 08-03 | 8 | R3/8 | 10.5 | 25 | 27.2 | 52.2 | 14 | 17 |
| MPD 08-04 | 8 | R1/2 | 13.5 | 26 | 27.2 | 53.2 | 14 | 21 |
| MPD 10-01 | 10 | R1/8 | 7.5 | 23 | 32 | 55 | 16 | 14 |
| MPD 10-02 | 10 | R1/4 | 9.5 | 25 | 32 | 57 | 16 | 14 |
| MPD 10-03 | 10 | R3/8 | 10.5 | 26.5 | 32 | 58.5 | 16 | 17 |
| MPD 10-04 | 10 | R1/2 | 13.5 | 29.5 | 32 | 61.5 | 16 | 21 |
| MPD 12-02 | 12 | R1/4 | 9.5 | 26.5 | 33.2 | 59.7 | 18 | 17 |
| MPD 12-03 | 12 | R3/8 | 10.5 | 27.5 | 33.2 | 60.7 | 18 | 17 |
| MPD 12-04 | 12 | R1/2 | 13.5 | 30.5 | 33.2 | 63.7 | 18 | 21 |

### **MPU** series  Straight union



| Model | ØD | ØD1 | ØD2 | ØD3 | L |
|---|---|---|---|---|---|
| MPU 04 | 4 | 4 | 8.5 | 8.5 | 30.3 |
| MPU 06 | 6 | 6 | 12 | 12 | 39 |
| MPU 08 | 8 | 8 | 14 | 14 | 41.4 |
| MPU 10 | 10 | 10 | 16 | 16 | 45.3 |
| MPU 12 | 12 | 12 | 18 | 18 | 49 |
| MPU 06-04 | 6 | 4 | 8.5 | 12 | 35 |
| MPU 08-06 | 8 | 6 | 12 | 14 | 40.3 |
| MPU 10-08 | 10 | 8 | 14 | 16 | 43.3 |
| MPU 12-10 | 12 | 10 | 16 | 18 | 47 |

# Full Copper Fitting series

## MPV, MPE, MPZ series

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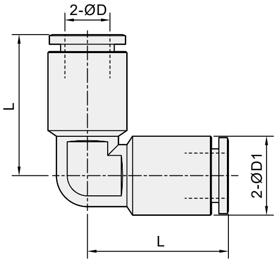
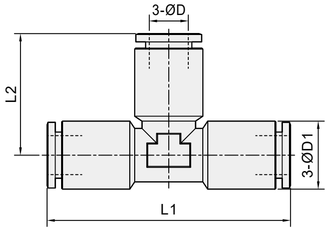
### **MPV** series Union elbow



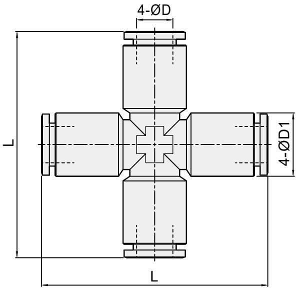
| Model | ØD | ØD1 | L |
|---|---|---|---|
| MPV 04 | 4 | 8.5 | 18.5 |
| MPV 06 | 6 | 12 | 25 |
| MPV 08 | 8 | 14 | 27.5 |
| MPV 10 | 10 | 16 | 32 |
| MPV 12 | 12 | 18 | 33.2 |

### **MPE** series Union tee



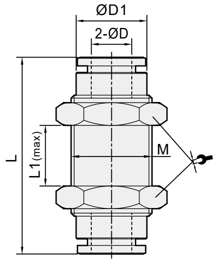
| Model | ØD | ØD1 | L1 | L2 |
|---|---|---|---|---|
| MPE 04 | 4 | 8.5 | 35 | 17.5 |
| MPE 06 | 6 | 12 | 50 | 25 |
| MPE 08 | 8 | 14 | 54.4 | 27.2 |
| MPE 10 | 10 | 16 | 64 | 32 |
| MPE 12 | 12 | 18 | 66.4 | 33.2 |

### **MPZ** series Cross



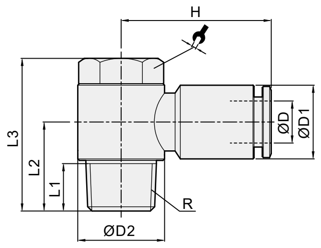
| Model | ØD | ØD1 | L |
|---|---|---|---|
| MPZ 04 | 4 | 8.5 | 35 |
| MPZ 06 | 6 | 12 | 48.5 |
| MPZ 08 | 8 | 14 | 54 |
| MPZ 10 | 10 | 16 | 58 |
| MPZ 12 | 12 | 18 | 63.5 |

## MPM series Bulkhead union



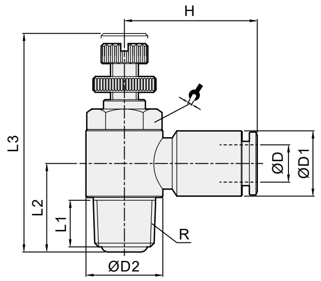
| Model | ØD | ØD1 | L | L1(max) | M | 🔧 |
|---|---|---|---|---|---|---|
| MPM 04 | 4 | 8.5 | 30.3 | 8 | M10x1 | 14 |
| MPM 06 | 6 | 12 | 39 | 13 | M14x1 | 17 |
| MPM 08 | 8 | 14 | 41.4 | 14 | M16x1 | 19 |
| MPM 10 | 10 | 16 | 45.3 | 13 | M18x1 | 21 |
| MPM 12 | 12 | 18 | 49 | 18 | M20x1 | 24 |

## MPH series Male elbow



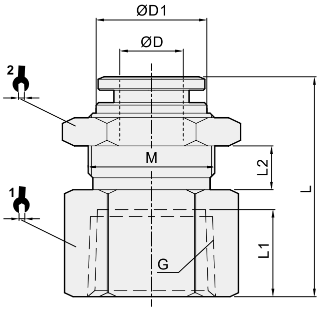
| Model | ØD | R | L1 | L2 | L3 | ØD1 | ØD2 | H | 🔧 |
|---|---|---|---|---|---|---|---|---|---|
| MPH 04-01 | 4 | R1/8 | 7.5 | 15.5 | 26.5 | 8.5 | 13 | 22 | 12 |
| MPH 04-02 | 4 | R1/4 | 9.5 | 17.5 | 30 | 8.5 | 16.5 | 23.5 | 14 |
| MPH 06-01 | 6 | R1/8 | 7.5 | 15.5 | 26.5 | 12 | 13 | 26.5 | 12 |
| MPH 06-02 | 6 | R1/4 | 9.5 | 17.5 | 30 | 12 | 16.5 | 27.5 | 14 |
| MPH 06-03 | 6 | R3/8 | 10.5 | 19 | 32.5 | 14 | 21 | 31 | 19 |
| MPH 08-01 | 8 | R1/8 | 7.5 | 15.5 | 26.5 | 14 | 13 | 27.5 | 12 |
| MPH 08-02 | 8 | R1/4 | 9.5 | 17.5 | 30 | 14 | 16.5 | 30 | 14 |
| MPH 08-03 | 8 | R3/8 | 10.5 | 19 | 32.5 | 14 | 21 | 32 | 19 |
| MPH 08-04 | 8 | R1/2 | 13.5 | 24 | 39 | 14 | 27 | 35 | 24 |
| MPH 10-01 | 10 | R1/8 | 7.5 | 16.5 | 26.5 | 16 | 13 | 30 | 12 |
| MPH 10-02 | 10 | R1/4 | 9.5 | 17.5 | 30 | 16 | 13 | 31 | 14 |
| MPH 10-03 | 10 | R3/8 | 10.5 | 19 | 32.5 | 16 | 21 | 35 | 19 |
| MPH 10-04 | 10 | R1/2 | 13.5 | 24 | 39 | 16 | 27 | 37 | 24 |

## MSC series Speed controller



| Model | ØD | R | L1 | L2 | L3(max) | ØD1 | ØD2 | H | 🔧 |
|---|---|---|---|---|---|---|---|---|---|
| MSC 04-01 | 4 | R1/8 | 6.4 | 15 | 43 | 8.5 | 13 | 22 | 12 |
| MSC 04-02 | 4 | R1/4 | 9 | 17 | 48 | 8.5 | 16.5 | 23.5 | 14 |
| MSC 06-01 | 6 | R1/8 | 6.4 | 15 | 43 | 12 | 13 | 26.5 | 12 |
| MSC 06-02 | 6 | R1/4 | 9 | 17 | 48 | 12 | 16.5 | 27.5 | 14 |
| MSC 06-03 | 6 | R3/8 | 10.5 | 20 | 53 | 12 | 21 | 31 | 19 |
| MSC 08-01 | 8 | R1/8 | 6.4 | 15 | 43 | 14 | 13 | 27.5 | 12 |
| MSC 08-02 | 8 | R1/4 | 9 | 17 | 48 | 14 | 16.5 | 30 | 14 |
| MSC 08-03 | 8 | R3/8 | 10.5 | 20 | 53 | 14 | 21 | 32 | 19 |
| MSC 08-04 | 8 | R1/2 | 14 | 26 | 61 | 14 | 27 | 35 | 24 |
| MSC 10-01 | 10 | R1/8 | 6.4 | 16 | 43 | 16 | 13 | 30 | 12 |
| MSC 10-02 | 10 | R1/4 | 9 | 17 | 48 | 16 | 16.5 | 31 | 14 |
| MSC 10-03 | 10 | R3/8 | 10.5 | 20 | 53 | 16 | 21 | 35 | 19 |
| MSC 10-04 | 10 | R1/2 | 14 | 26 | 61 | 16 | 27 | 37 | 24 |

### MPMF series  Female bulkhead union

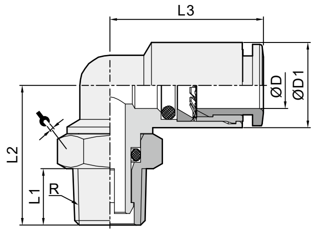


| Model | ØD | G | L | L1 | L2 | ØD1 | 🔧1 | 🔧2 | M |
|---|---|---|---|---|---|---|---|---|---|
| MPMF 04-01 | 4 | G1/8 | 23 | 8.5 | 6 | 8.5 | 14 | 14 | M10x1 |
| MPMF 04-02 | 4 | G1/4 | 25.5 | 11 | 6 | 8.5 | 17 | 14 | M10x1 |
| MPMF 06-01 | 6 | G1/8 | 28 | 8.5 | 7 | 12 | 17 | 17 | M14x1 |
| MPMF 06-02 | 6 | G1/4 | 30.5 | 11 | 7 | 12 | 17 | 17 | M14x1 |
| MPMF 06-03 | 6 | G3/8 | 31.5 | 12 | 7 | 12 | 21 | 17 | M14x1 |
| MPMF 08-01 | 8 | G1/8 | 29 | 8.5 | 7.5 | 14 | 19 | 19 | M16x1 |
| MPMF 08-02 | 8 | G1/4 | 31.5 | 11 | 7.5 | 14 | 19 | 19 | M16x1 |
| MPMF 08-03 | 8 | G3/8 | 32.5 | 12 | 7.5 | 14 | 21 | 19 | M16x1 |
| MPMF 08-04 | 8 | G1/2 | 34.5 | 14 | 7.5 | 14 | 24 | 19 | M16x1 |
| MPMF 10-01 | 10 | G1/8 | 31 | 8.5 | 9.5 | 16 | 21 | 21 | M18x1 |
| MPMF 10-02 | 10 | G1/4 | 33.5 | 11 | 9.5 | 16 | 21 | 21 | M18x1 |
| MPMF 10-03 | 10 | G3/8 | 34.5 | 12 | 9.5 | 16 | 21 | 21 | M18x1 |
| MPMF 10-04 | 10 | G1/2 | 36.5 | 14 | 9.5 | 16 | 24 | 21 | M18x1 |
| MPMF 12-02 | 12 | G1/4 | 35 | 11 | 10 | 18 | 24 | 24 | M20x1 |
| MPMF 12-03 | 12 | G3/8 | 36 | 12 | 10 | 18 | 24 | 24 | M20x1 |
| MPMF 12-04 | 12 | G1/2 | 38 | 14 | 10 | 18 | 24 | 24 | M20x1 |

# Full Copper Fitting series

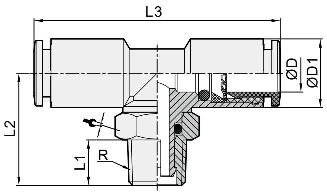
## PPL, PPB series

### **PPL** series Male elbow



| Model | ØD | R | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| PPL 04-01 | 4 | R1/8 | 7.5 | 18.5 | 19 | 11.3 | 12 |
| PPL 04-02 | 4 | R1/4 | 9.5 | 20.5 | 19 | 11.3 | 14 |
| PPL 06-01 | 6 | R1/8 | 7.5 | 18.5 | 20.5 | 11.3 | 12 |
| PPL 06-02 | 6 | R1/4 | 9.5 | 20.5 | 20.5 | 11.3 | 14 |
| PPL 08-01 | 8 | R1/8 | 7.5 | 20.5 | 23.5 | 13.3 | 12 |
| PPL 08-02 | 8 | R1/4 | 9.5 | 22 | 23.5 | 13.3 | 16 |
| PPL 08-03 | 8 | R3/8 | 10.5 | 23 | 23.5 | 13.3 | 17 |
| PPL 10-02 | 10 | R1/4 | 9.5 | 27 | 28.5 | 16.3 | 16 |
| PPL 10-03 | 10 | R3/8 | 10.5 | 27 | 28.5 | 16.3 | 17 |
| PPL 10-04 | 10 | R1/2 | 13.5 | 29 | 28.5 | 16.3 | 21 |
| PPL 12-02 | 12 | R1/4 | 9.5 | 27 | 31.5 | 19.3 | 16 |
| PPL 12-03 | 12 | R3/8 | 10.5 | 29.5 | 31.5 | 19.3 | 17 |
| PPL 12-04 | 12 | R1/2 | 13.5 | 31.5 | 31.5 | 19.3 | 21 |

### **PPB** series Male branch tee



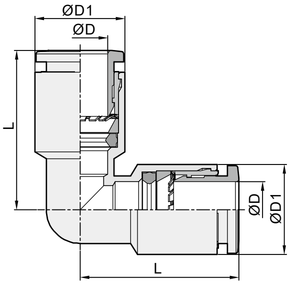
| Model | ØD | R | L1 | L2 | L3 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|
| PPB 04-01 | 4 | R1/8 | 7.5 | 18.5 | 38 | 11.3 | 12 |
| PPB 04-02 | 4 | R1/4 | 9.5 | 20.5 | 38 | 11.3 | 14 |
| PPB 06-01 | 6 | R1/8 | 7.5 | 18.5 | 41 | 11.3 | 12 |
| PPB 06-02 | 6 | R1/4 | 9.5 | 20.5 | 41 | 11.3 | 14 |
| PPB 08-01 | 8 | R1/8 | 7.5 | 20.5 | 47 | 13.3 | 12 |
| PPB 08-02 | 8 | R1/4 | 9.5 | 22 | 47 | 13.3 | 16 |
| PPB 08-03 | 8 | R3/8 | 10.5 | 23 | 47 | 13.3 | 17 |
| PPB 10-02 | 10 | R1/4 | 9.5 | 27 | 57 | 16.3 | 16 |
| PPB 10-03 | 10 | R3/8 | 10.5 | 27 | 57 | 16.3 | 17 |
| PPB 10-04 | 10 | R1/2 | 13.5 | 29 | 57 | 16.3 | 21 |
| PPB 12-02 | 12 | R1/4 | 9.5 | 27 | 63 | 19.3 | 16 |
| PPB 12-03 | 12 | R3/8 | 10.5 | 29.5 | 63 | 19.3 | 17 |
| PPB 12-04 | 12 | R1/2 | 13.5 | 31.5 | 63 | 19.3 | 21 |

# Full Copper Fitting series

## PPV, PPU, PPE series

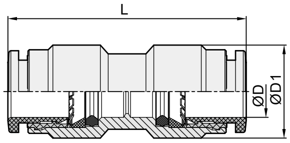
### **PPV** series Union elbow

| Model | ØD | ØD1 | L |
|---|---|---|---|
| PPV 04 | 4 | 11.3 | 19 |
| PPV 06 | 6 | 11.3 | 20.5 |
| PPV 08 | 8 | 13.3 | 23.5 |
| PPV 10 | 10 | 16.3 | 28.5 |
| PPV 12 | 12 | 19.3 | 31.5 |



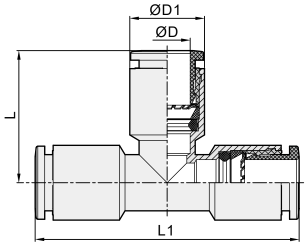
### **PPU** series Straight union

| Model | ØD | ØD1 | L |
|---|---|---|---|
| PPU 04 | 4 | 10.8 | 31.5 |
| PPU 06 | 6 | 12.8 | 34.5 |
| PPU 08 | 8 | 14.8 | 37.5 |
| PPU 10 | 10 | 17.8 | 42 |
| PPU 12 | 12 | 20.8 | 45 |

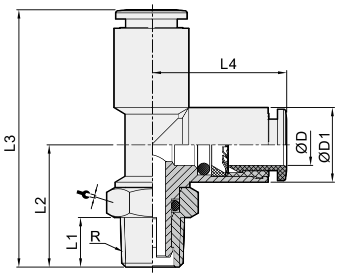


### **PPE** series Union tee

| Model | ØD | ØD1 | L | L1 |
|---|---|---|---|---|
| PPE 04 | 4 | 11.3 | 19 | 38 |
| PPE 06 | 6 | 11.3 | 20.5 | 41 |
| PPE 08 | 8 | 13.3 | 23.5 | 47 |
| PPE 10 | 10 | 16.3 | 28.5 | 57 |
| PPE 12 | 12 | 19.3 | 31.5 | 63 |



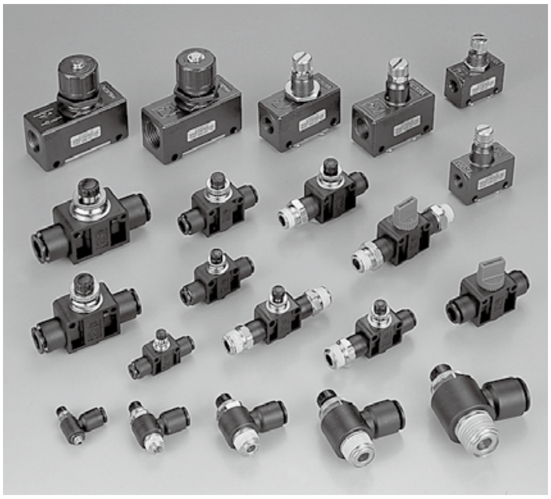
## **PPD** series Male run tee

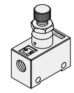


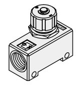
| Model | ØD | R | L1 | L2 | L3 | L4 | ØD1 | 🔧 |
|---|---|---|---|---|---|---|---|---|
| PPD 04-01 | 4 | R1/8 | 7.5 | 18.5 | 36.5 | 18 | 11.3 | 12 |
| PPD 04-02 | 4 | R1/4 | 9.5 | 20.5 | 38.5 | 18 | 11.3 | 14 |
| PPD 06-01 | 6 | R1/8 | 7.5 | 18.5 | 38.5 | 20 | 11.3 | 12 |
| PPD 06-02 | 6 | R1/4 | 9.5 | 20.5 | 40.5 | 20 | 11.3 | 14 |
| PPD 08-01 | 8 | R1/8 | 7.5 | 20.5 | 44 | 23.5 | 13.3 | 12 |
| PPD 08-02 | 8 | R1/4 | 9.5 | 22 | 45.5 | 23.5 | 13.3 | 16 |
| PPD 08-03 | 8 | R3/8 | 10.5 | 23 | 46.5 | 23.5 | 13.3 | 17 |
| PPD 10-02 | 10 | R1/4 | 9.5 | 27 | 55.5 | 28.5 | 16.3 | 16 |
| PPD 10-03 | 10 | R3/8 | 10.5 | 27 | 55.5 | 28.5 | 16.3 | 17 |
| PPD 10-04 | 10 | R1/2 | 13.5 | 29 | 57.5 | 28.5 | 16.3 | 21 |
| PPD 12-02 | 12 | R1/4 | 9.5 | 27 | 59 | 32 | 19.3 | 16 |
| PPD 12-03 | 12 | R3/8 | 10.5 | 29.5 | 61.5 | 32 | 19.3 | 17 |
| PPD 12-04 | 12 | R1/2 | 13.5 | 31.5 | 63.5 | 32 | 19.3 | 21 |

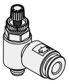
# Controller - Speed controller series

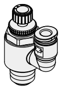
## Speed controller, Hand valve



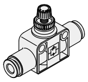

**ASC,BSC** series -- Speed controller ( 1/8", 1/4", 3/8" ) ---------------- P.4-2.4

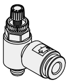

**CSC** series ----- Speed controller ( 3/8", 1/2" ) ---------------------- P.4-2.4

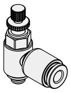

**QSC** series ----- Speed controller ( Ø4, Ø6, Ø8, Ø10, Ø12 ) ------------ P.4-2.6


**QSU** series ----- Speed controller - Universal type ( Ø4, Ø6, Ø8, Ø10, Ø12 ) --- P.4-2.10

**QSB** series ----- Speed controller - Large flow type ( Ø4, Ø6, Ø8, Ø10, Ø12 ) --- P.4-2.13

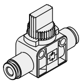

**QSS** series ----- Speed controller - Low flow type ( Ø4, Ø6, Ø8, Ø10 ) -------- P.4-2.16

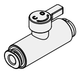

**QSM** series ----- Speed controller - Mini type ( Ø4, Ø6 ) --------------- P.4-2.9

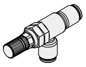

**QSN** series ----- Speed controller in-line ( Ø4, Ø6, Ø8, Ø10, Ø12 ) ---------- P.4-2.19

**QMC** series ----- Speed controller with metal body ( Ø4, Ø6, Ø8, Ø10, Ø12 ) ---- P.4-2.22

**QT** series ----- Speed control silencer ( M5, 01, 02, 03, 04 ) ------------ P.4-2.25


**QHV** series ----- Switching type in-line ( Ø4, Ø6, Ø8, Ø10, Ø12 ) ---------- P.4-2.27


**QVA** series ----- Ball type switch in-line ( Ø4, Ø6, Ø8, Ø10, Ø12 ) ---------- P.4-2.32


**QST** series ----- Speed controller - Panel type ( Ø4, Ø6, Ø8, Ø10 ) --------- P.4-2.35

# Safety Notice/ Speed Controller/ Caution For Application

Please read this safety notice carefully, and pay attention to safety item while using this product, to prevent injury to human body and damage of property; Hence, there are divided into three classes of " **DANGER** ", " **WARNING** ", and " **CAUTION** " according to the extend of prevention.

| | |
|---|---|
| ⚠ DANGER | Obvious situated at " **DANGER** " state, may cause casualty if not avoided; take special safety protection and management to prevent the occurrence of " **DANGER** " |
| ⚠ WARNING | Condition of operation is situated at " **WARNING** " state, may cause casualty if not avoided; take special safety protection and manager to prevent the occurrence of " **WARNING** " |
| ⚠ CAUTION | Condition of operation is situated at " **CAUTION** " state, may cause minor or moderate injury and damage of property if not avoided; take special safety protection and management. |

- For safety protection and prevention of accident, please understand the condition of application and know the design, installation, procedure of usage and essential safety condition before using this product.

- Please use within the specification and requirement of this product; application beyond the specification may cause hazard. In case of special condition of application, take the confirmation of safety into account and then use it; in case of doubt in reading this information and related data, contact us before using.

- It is hazardous in error assemble and operation of compressed air and its accessories; so, while selecting the product, the related personnel of design, assemble, operating and service should possess sufficient knowledge and experience, and follow normal operating procedure, in order to maintain safe operation and good effect.

- The safety notice is made according to ISO 4414; pneumatic fluid power and JSI B 8370 general requirement of air system.

※ There will not be any notification if any change of this safety notice.

# Safety Notice/ Speed Controller/ Caution For Application

Please read the safety notice carefully before using and pay attention to the safety caution of this product.

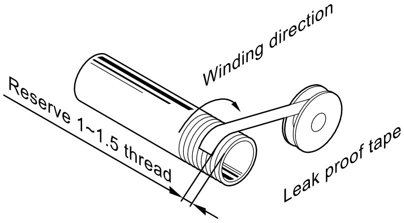
- Pay attention to the individual caution for carious model series (read the caution and safety notice in P.06 for common cautions).

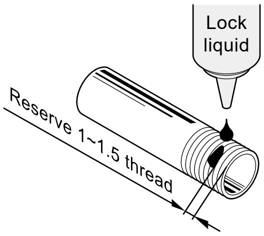
## Caution for design, selection

### WARNING

Prevent debris and dust from entering the pipe and joint while laying, keep clean.

- Pay attention to the direction of the air source while installing, never used in reversed air direction.
- Prevent debris and leak proof tape residue from entering the pipe while pipe laying and assembling the connector. Reserve 1~1.5 thread without tape while tying the tape.





- If the fitting is locked by using fluid fixing glue (anoxic glue), avoid excessive amount and fluid glue from flowing in the body, which may cause jammed and poor movement.
- Follow the torque in table below while laying the pipe (tighten the fitting), never exceed the range of application to avoid damage of product.

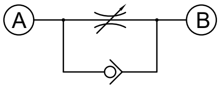
**Torque chart for piping**

| Size of piping | Appropriate turning torque N • m (kgf • cm) |
|---|---|
| M5 | 1.5 ~ 2 (15 ~ 20) |
| Rc (PT) 1/8 | 7 ~ 9 (70 ~ 90) |
| Rc (PT) 1/4 | 12 ~ 14 (120 ~ 140) |
| Rc (PT) 3/8 | 22 ~ 24 (220 ~ 240) |
| Rc (PT) 1/2 | 28 ~ 30 (280 ~ 300) |

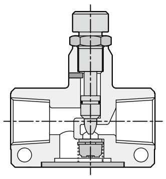
- Avoid to supply fast and high pressure at initial supply of compressed air after completion of pipe laying, prevent incomplete pipe laying, pipe loosen and fly off affect the safety; leakage check of the piping may us leakage detection liuid to smear of the pipe and check.
- The rotating adjusting of the governor at initial supply of compressed air after completion of pipe laying should be started from full close or small amount to large amount to the flow required, and then secured; avoid start at large amount position which will cause impulsive hazard.
- For the caution for quick joint types, please read the warning and caution for connectors.

# ☐ SC series Speed Controller

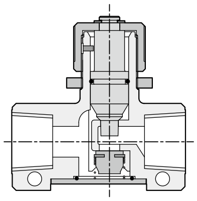
## Product features



### Internal structure



ASC - 150 series
BSC - 300 series



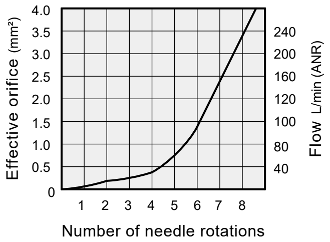
CSC - 400 series

### Specification

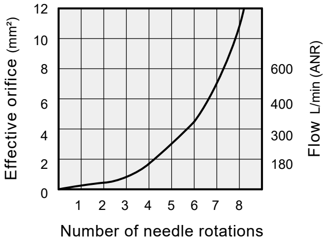
| Item \ Model | | ASC-150-01(N) | ASC-150-02(N) | BSC-300-02(N) | BSC-300-03(N) | CSC-400-03 | CSC-400-04 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size Rc (PT) | | 1/8” | 1/4” | 1/4” | 3/8” | 3/8” | 1/2” |
| Pressure range kgf/cm² (kPa) | | 0.5 ~ 9 ( 50 ~ 900 ) | | | | | |
| Max. service pressure kgf/cm² (kPa) | | 9.5 ( 950 ) | | | | | |
| Air flow L/min | Controlled flow | 240 | 240 | 800 | 800 | 1600 | 1600 |
| | Free flow | 320 | 320 | 800 | 800 | 1600 | 1600 |
| Applicable bore size mm | | Ø12, Ø16, Ø20, Ø25, Ø32 | | Ø32, Ø40, Ø50, Ø63 | | Ø50, Ø63, Ø80, Ø100 | |

### Flow rate characteristic graph

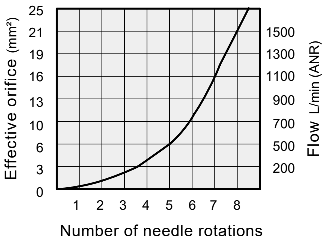
**ASC-150 (01, 02)**



**BSC-300 (02, 03)**



**CSC-400 (03, 04)**

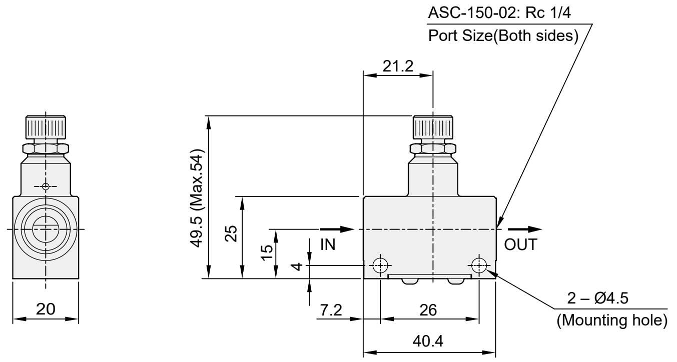


# □ SC series Speed Controller

## Dimensions

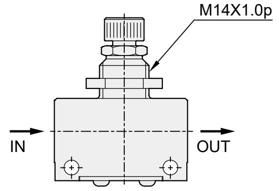
### ASC – 150 – 01 (02)

Standard


ASC-150-01: Rc 1/8
ASC-150-02: Rc 1/4
Port Size(Both sides)
21.2
49.5 (Max.54)
25
15
4
IN
OUT
20
7.2
26
40.4
2 – Ø4.5
(Mounting hole)

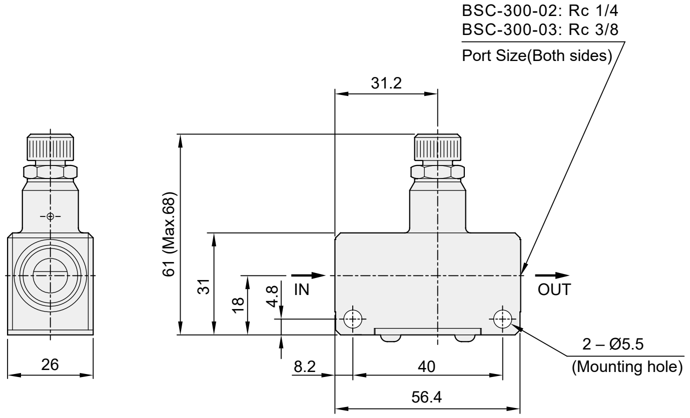
### ASC – 150 – 01 – N (02)

Panel mounting


M14X1.0p
IN
OUT

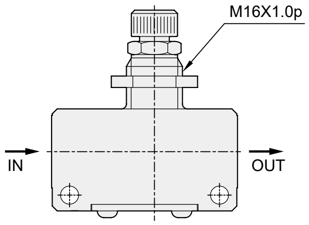
### BSC – 300 – 02 (03)

Standard


BSC-300-02: Rc 1/4
BSC-300-03: Rc 3/8
Port Size(Both sides)
31.2
61 (Max.68)
31
18
4.8
IN
OUT
26
8.2
40
56.4
2 – Ø5.5
(Mounting hole)

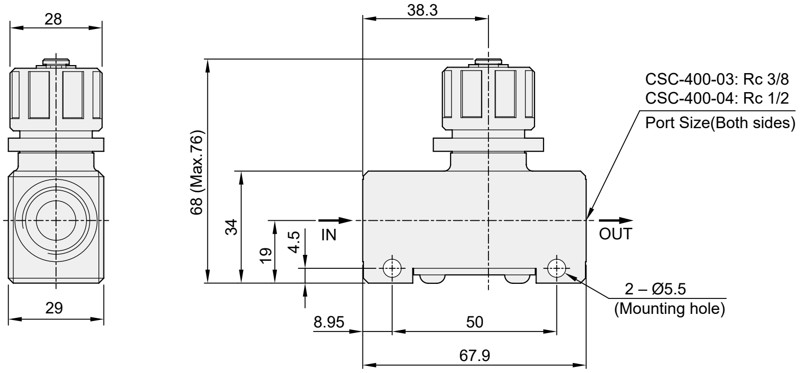
### BSC – 300 – 02 – N (03)

Panel mounting


M16X1.0p
IN
OUT

### CSC – 400 – 03 (04)

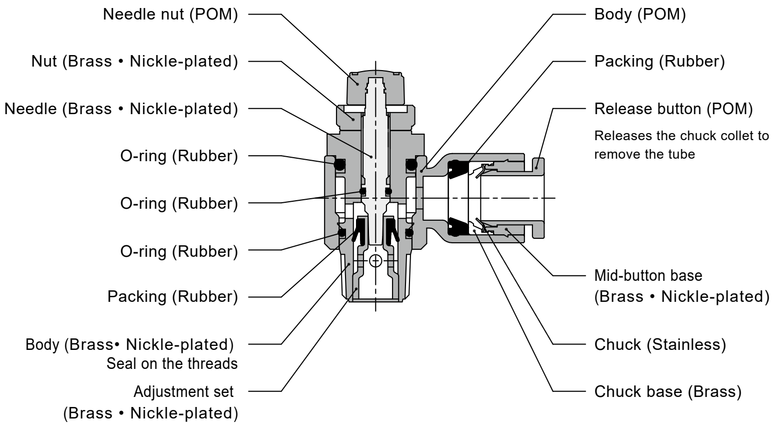
Standard


28
29
38.3
CSC-400-03: Rc 3/8
CSC-400-04: Rc 1/2
Port Size(Both sides)
68 (Max.76)
34
19
4.5
IN
OUT
8.95
50
67.9
2 – Ø5.5
(Mounting hole)

# QS □ series Speed Controller

## Product features/ Code of order

### Internal structure


Needle nut (POM)
Nut (Brass • Nickle-plated)
Needle (Brass • Nickle-plated)
O-ring (Rubber)
O-ring (Rubber)
O-ring (Rubber)
Packing (Rubber)
Body (Brass• Nickle-plated)
Seal on the threads
Adjustment set
(Brass • Nickle-plated)
Body (POM)
Packing (Rubber)
Release button (POM)
Releases the chuck collet to remove the tube
Mid-button base
(Brass • Nickle-plated)
Chuck (Stainless)
Chuck base (Brass)

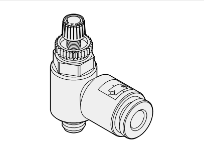
### Specification

| Item | Port size | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32”, 1/4”, 5/16”, 3/8”, 1/2” |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm$^2$ (kPa) | 0 ~ 9 ( 0 ~ 900 ) |
| Proof pressure | kgf/cm$^2$ (kPa) | 10 ( 1000 ) |
| Number of needle rotation | | 10 ( 8 ) round |
| Ambient and fluid temperature | °C | ( 0 ~ 60 ) |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |
| Thread | Rc (PT/NPT) | M3x0.5p, M5x0.8p (10/32”), 1/8”, 1/4”, 3/8”, 1/2” |
| Seal on the threads | | With sealant |

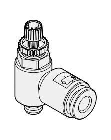
### Code of order

**QSC** – **6** – **01** – **A**

**Model**



QSC: Speed Controller



QSM:
Speed Controller - Mini Type

**Port size**

Metric

4 - Ø4 mm
6 - Ø6 mm
8 - Ø8 mm
10 - Ø10 mm
12 - Ø12 mm

Inch

5/32”- Ø3.97 mm
1/4” - Ø6.35 mm
5/16” - Ø7.94 mm
3/8” - Ø9.53 mm
1/2” - Ø12.7 mm

**Thread**

Metric

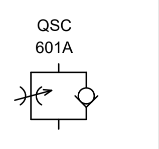
M3 - M3x0.5p
M5 - M5x0.8p
01 - PT 1/8”
02 - PT 1/4”
03 - PT 3/8”
04 - PT 1/2”

Inch

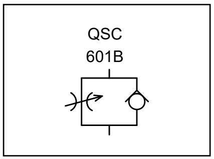
10/32”- NR 10/32”
01 - NPT 1/8”
02 - NPT 1/4”
03 - NPT 3/8”
04 - NPT 1/2”

M3 is the specific item for QSM.

**Control direction**



A : Meter-in controller (standard)



B : Meter-out controller (special)

# QS□ series Speed Controller

## Product features

### Specification

- Metric

Unit: mm

| Model | Port size | Thread size (PT) | | | | |
|---|---|---|---|---|---|---|
| | | M5 | 1/8” | 1/4” | 3/8” | 1/2” |
| QSC 4 — □ | Ø4 | ● | ● | ● | | |
| QSC 6 — □ | Ø6 | ● | ● | ● | ● | |
| QSC 8 — □ | Ø8 | | ● | ● | ● | |
| QSC 10 — □ | Ø10 | | | ● | ● | ● |
| QSC 12 — □ | Ø12 | | | | ● | ● |

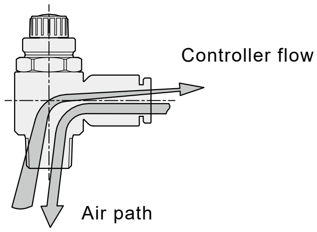
- Imperial

Unit: Inch

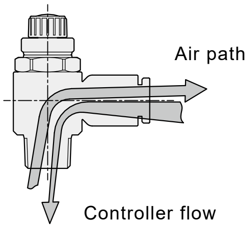
| Model | Port size | Thread size (NR / NPT) | | | | |
|---|---|---|---|---|---|---|
| | | 10/32" | 1/8" | 1/4" | 3/8" | 1/2" |
| QSC 5/32" — □ | 5/32" | ● | ● | ● | | |
| QSC 1/4" — □ | 1/4" | ● | ● | ● | ● | |
| QSC 5/16" — □ | 5/16" | | ● | ● | ● | |
| QSC 3/8" — □ | 3/8" | | | ● | ● | ● |
| QSC 1/2" — □ | 1/2" | | | | ● | ● |

### Control direction for speed controller

- A Meter-out controller(standard)

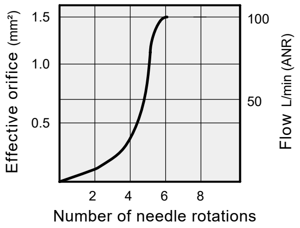


- B Meter-in controller

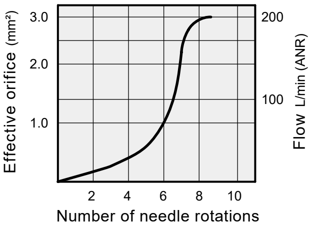


### Flow rate characteristic graph

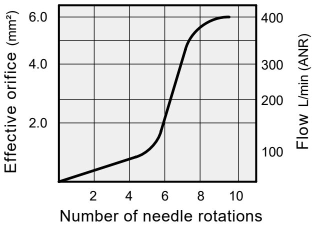
- QSC 4 — M5



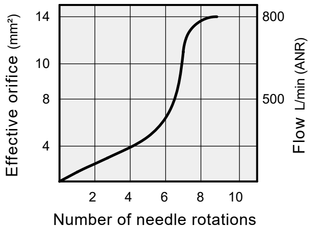
- QSC 6 — 01



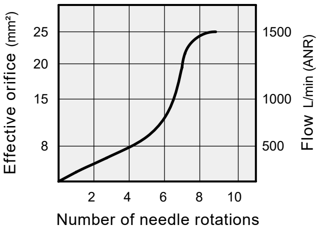
- QSC 8 — 02



- QSC 10 — 03



- QSC 12 — 04



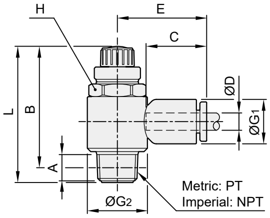
# QSC series Speed Controller

## Dimensions

### QSC series Speed controller

Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | | |
| Ø4 | M5 | QSC 4 - M5 | 3.8 | 27.8 | 24.8 | 14.8 | 19.9 | 29.7 | 26.7 | 10.5 | 10 | 8 | 4 | 10 |
| | 1/8" | QSC 4 - 01 | 6 | 35.4 | 31.6 | 14.6 | 21.6 | 38.4 | 34.6 | 10.5 | 14.2 | 12 | 5.5 | 20 |
| | 1/4" | QSC 4 - 02 | 9 | 37 | 33.4 | 14.6 | 21.6 | 41.5 | 37.9 | 10.5 | 18.6 | 17 | 12.5 | 34 |
| Ø6 | M5 | QSC 6 - M5 | 3.8 | 27.8 | 24.8 | 17.1 | 21.8 | 29.7 | 26.7 | 12.4 | 10 | 8 | 4 | 10 |
| | 1/8" | QSC 6 - 01 | 6 | 35.4 | 31.6 | 17.1 | 23.7 | 38.4 | 34.6 | 12.4 | 14.2 | 12 | 5.5 | 20 |
| | 1/4" | QSC 6 - 02 | 9 | 37 | 33.4 | 17.1 | 25.9 | 41.5 | 37.9 | 12.4 | 18.6 | 17 | 12.5 | 36 |
| | 3/8" | QSC 6 - 03 | 10 | 45.3 | 40.2 | 17.1 | 28 | 50.3 | 45.2 | 12.4 | 23 | 19 | 20 | 60 |
| Ø8 | 1/8" | QSC 8 - 01 | 6 | 35.4 | 31.6 | 18.9 | 25.5 | 38.4 | 34.6 | 14.3 | 14.2 | 12 | 5.5 | 20 |
| | 1/4" | QSC 8 - 02 | 9 | 37 | 33.4 | 18.9 | 27.7 | 41.5 | 37.9 | 14.3 | 18.6 | 17 | 12.5 | 36 |
| | 3/8" | QSC 8 - 03 | 10 | 45.3 | 40.2 | 18.9 | 29.9 | 50.3 | 45.2 | 14.3 | 23 | 19 | 20 | 60 |
| Ø10 | 1/4" | QSC 10 - 02 | 9 | 37 | 33.4 | 20.4 | 29.6 | 41.5 | 37.9 | 17.8 | 18.6 | 17 | 12.5 | 40 |
| | 3/8" | QSC 10 - 03 | 10 | 45.3 | 40.2 | 20.4 | 31.7 | 50.3 | 45.2 | 17.8 | 23 | 19 | 20 | 64 |
| | 1/2" | QSC 10 - 04 | 14 | 55 | 46.6 | 20.3 | 34.6 | 62 | 53.6 | 17.8 | 28.8 | 24 | 35 | 98 |
| Ø12 | 3/8" | QSC 12 - 03 | 10 | 45.3 | 40.2 | 22.8 | 35 | 50.3 | 45.2 | 21.5 | 21.2 | 19 | 20 | 68 |
| | 1/2" | QSC 12 - 04 | 14 | 55 | 46.6 | 22.8 | 37.2 | 62 | 53.6 | 21.5 | 28.8 | 24 | 35 | 102 |



Inch specification

| Port size ØD | Thread size NR(NPT) | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | | |
| 5/32” | NR10/32” | QSC 5/32 - 10/32 | 3.8 | 27.8 | 24.8 | 14.8 | 19.9 | 29.7 | 26.7 | 10.5 | 10 | 8 | 4 | 10 |
| | 1/8" | QSC 5/32 - 01 | 6 | 35.4 | 31.6 | 14.6 | 21.6 | 38.4 | 34.6 | 10.5 | 14.2 | 12 | 5.5 | 20 |
| | 1/4" | QSC 5/32 - 02 | 9 | 37 | 33.4 | 14.6 | 21.6 | 41.5 | 37.9 | 10.5 | 18.6 | 17 | 12.5 | 34 |
| 1/4” | NR10/32” | QSC 1/4 - 10/32 | 3.8 | 27.8 | 24.8 | 17.1 | 21.8 | 29.7 | 26.7 | 12.4 | 10 | 8 | 4 | 10 |
| | 1/8" | QSC 1/4 - 01 | 6 | 35.4 | 31.6 | 17.1 | 23.7 | 38.4 | 34.6 | 12.4 | 14.2 | 12 | 5.5 | 20 |
| | 1/4" | QSC 1/4 - 02 | 9 | 37 | 33.4 | 17.1 | 25.9 | 41.5 | 37.9 | 12.4 | 18.6 | 17 | 12.5 | 36 |
| | 3/8" | QSC 1/4 - 03 | 10 | 45.3 | 40.2 | 17.1 | 28 | 50.3 | 45.2 | 12.4 | 23 | 19 | 20 | 60 |
| 5/16” | 1/8" | QSC 5/16 - 01 | 6 | 35.4 | 31.6 | 18.9 | 25.5 | 38.4 | 34.6 | 14.3 | 14.2 | 12 | 5.5 | 20 |
| | 1/4" | QSC 5/16 - 02 | 9 | 37 | 33.4 | 18.9 | 27.7 | 41.5 | 37.9 | 14.3 | 18.6 | 17 | 12.5 | 36 |
| | 3/8" | QSC 5/16 - 03 | 10 | 45.3 | 40.2 | 18.9 | 29.9 | 50.3 | 45.2 | 14.3 | 23 | 19 | 20 | 60 |
| 3/8” | 1/4" | QSC 3/8 - 02 | 9 | 37 | 33.4 | 20.4 | 29.6 | 41.5 | 37.9 | 17.8 | 18.6 | 17 | 12.5 | 40 |
| | 3/8" | QSC 3/8 - 03 | 10 | 45.3 | 40.2 | 20.4 | 31.7 | 50.3 | 45.2 | 17.8 | 23 | 19 | 20 | 64 |
| | 1/2" | QSC 3/8 - 04 | 14 | 55 | 46.6 | 20.3 | 34.6 | 62 | 53.6 | 17.8 | 28.8 | 24 | 35 | 98 |
| 1/2” | 3/8" | QSC 1/2 - 03 | 10 | 45.3 | 40.2 | 22.8 | 35 | 50.3 | 45.2 | 21.5 | 21.2 | 19 | 20 | 68 |
| | 1/2" | QSC 1/2 - 04 | 14 | 55 | 46.6 | 22.8 | 37.2 | 62 | 53.6 | 21.5 | 28.8 | 24 | 35 | 102 |

# QSM series Speed Controller - Mini Type

## Product features

### Specification

- Metric

Unit: mm

| Model | Port size | Thread size (PT) | | |
|---|---|---|---|---|
| | | M3 | M5 | 1/8” |
| QSM 4 — □ | Ø4 | ● | ● | ● |
| QSM 6 — □ | Ø6 | ● | ● | ● |

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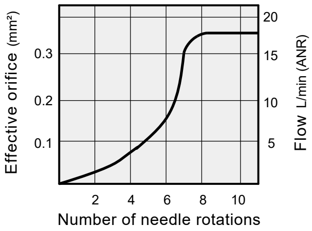
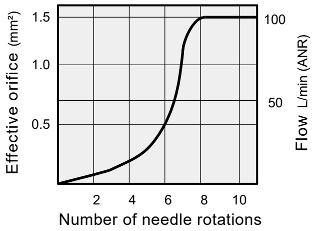
### Flow rate characteristic graph

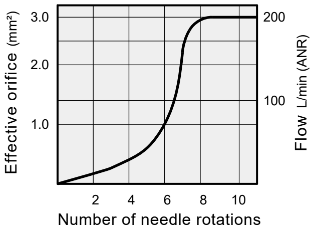
**QSM 4 — M3**



**QSM 4 — M5**



**QSM 6 — 01**



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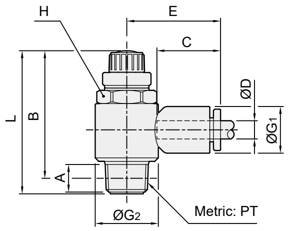
### QSM series Speed controller - Mini type



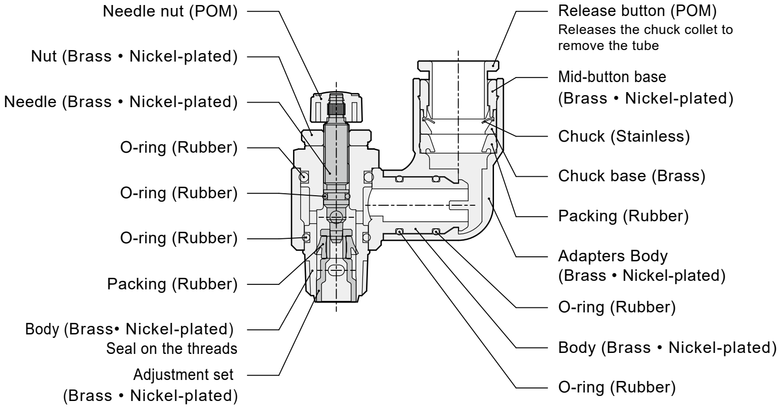
Metric specification

| Port size ØD | Thread size PT | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | | |
| Ø4 | M3 | QSM 4 - M3 | 3.3 | 24.5 | 23.5 | 10.5 | 15.5 | 26.3 | 25.3 | 9 | 10 | 8 | 0.3 | 3.7 |
| | M5 | QSM 4 - M5 | 3 | 24.6 | 23.6 | 10.5 | 15.5 | 26.2 | 25.3 | | 10 | 8 | 1.5 | 4 |
| | PT 1/8" | QSM 4 - 01 | 6.5 | 29.1 | 27.6 | 10.4 | 17.5 | 32.8 | 31.4 | | 13.2 | 12 | 3.5 | 7.9 |
| Ø6 | M3 | QSM 6 - M3 | 3.3 | 24.5 | 23.5 | 12.6 | 17.3 | 26.3 | 25.3 | 11.4 | 10 | 8 | 0.3 | 6.8 |
| | M5 | QSM 6 - M5 | 3 | 24.6 | 23.6 | 12.6 | 17.3 | 26.2 | 25.3 | | 10 | 8 | 1.5 | 7.1 |
| | PT 1/8" | QSM 6 - 01 | 6.5 | 29.1 | 27.6 | 11.9 | 18.5 | 32.5 | 31.4 | | 13.2 | 12 | 3.5 | 7.8 |

# QSU series Speed Controller - Universal Type

## Product features

### Internal structure


Needle nut (POM)
Nut (Brass • Nickel-plated)
Needle (Brass • Nickel-plated)
O-ring (Rubber)
O-ring (Rubber)
O-ring (Rubber)
Packing (Rubber)
Body (Brass• Nickel-plated)
Seal on the threads
Adjustment set
(Brass • Nickel-plated)
Release button (POM)
Releases the chuck collet to remove the tube
Mid-button base
(Brass • Nickel-plated)
Chuck (Stainless)
Chuck base (Brass)
Packing (Rubber)
Adapters Body
(Brass • Nickel-plated)
O-ring (Rubber)
Body (Brass • Nickel-plated)
O-ring (Rubber)

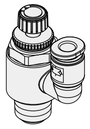
### Specification

| Item | Port size | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32”, 5/16”, 3/8” |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm² (kPa) | 0 ~ 9 ( 0 ~ 900 ) |
| Proof pressure | kgf/cm² (kPa) | 10 ( 1000 ) |
| Number of needle rotation | | 10 ( 8 ) round |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |
| Thread | Rc (PT/NPT) | M5x0.8p, (10/32"), 1/8", 1/4", 3/8", 1/2" |
| Seal on the threads | | With sealant |

### Code of order

**QSU** — **6** — **6** — **A**

**Model**



QSU: Speed controller - universal type

**Port size**

Metric

4 - Ø 4 mm
6 - Ø 6 mm
8 - Ø 8 mm
10 - Ø 10 mm
12 - Ø 12 mm

Inch

5/32” - Ø3.97 mm
5/16” - Ø7.94 mm
3/8” - Ø9.53 mm

**Thread**

Metric

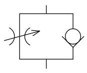
M5 - M5 x 0.8
01 - PT 1/8”
02 - PT 1/4”
03 - PT 3/8”
04 - PT 1/2”

Inch

10/32 - NR 10/32"
01 - NPT 1/8”
02 - NPT 1/4”
03 - NPT 3/8”
04 - NPT 1/2”

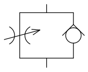
**Controller direction**

QSU
06-A



A : Meter-out controller (standard)

QSU
06-B



B : Meter-in controller (special)

# QSU series Speed Controller - Universal Type

## Product features

## Specification

- Metric

Unit: mm

| Model | Port size | Thread size (PT) | | | | |
|---|---|---|---|---|---|---|
| | | M5 | 1/8” | 1/4” | 3/8” | 1/2” |
| QSU 4 – ☐ | Ø4 | ● | ● | ● | | |
| QSU 6 – ☐ | Ø6 | ● | ● | ● | ● | |
| QSU 8 – ☐ | Ø8 | | ● | ● | ● | |
| QSU 10 – ☐ | Ø10 | | | ● | ● | ● |
| QSU 12 – ☐ | Ø12 | | | | ● | ● |

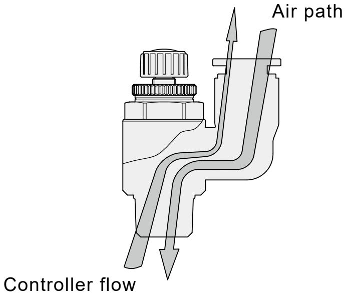
- Imperial

Unit: Inch

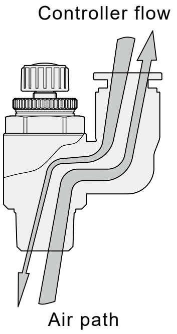
| Model | Port size | Thread size (NR / NPT) | | | | |
|---|---|---|---|---|---|---|
| | | 10/32" | 1/8" | 1/4" | 3/8" | 1/2" |
| QSU 5/32" – ☐ | 5/32" | ● | ● | ● | | |
| QSU 5/16" – ☐ | 5/16" | | ● | ● | ● | |
| QSU 3/8" – ☐ | 3/8" | | | ● | ● | ● |

## Control direction for speed controller

- A Meter-out controller(standard)

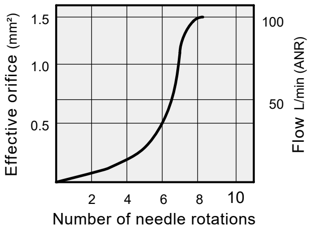


- B Meter-in controller

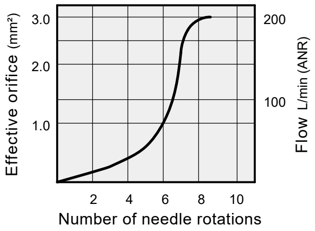


## Flow rate characteristic graph

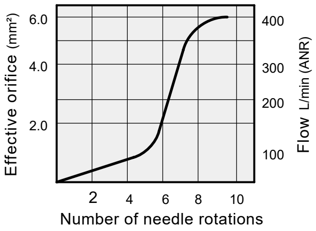
- QSU 4 – M5



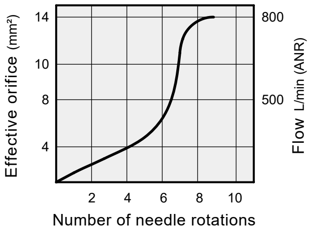
- QSU 6 – 01



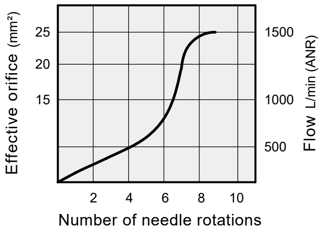
- QSU 8 – 02



- QSU 10 – 03



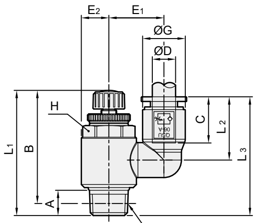
- QSU 12 – 04



# QSU series Speed Controller - Universal Type

## Dimensions

### **QSU** series Speed controller - Universal type



Metric: PT
Imperial: NPT

Metric specification

| Port size ØD | Thread size PT | Model | A | B | | C | E1 | E2 | ØG | L1 | | L2 | L3 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | | | max | min | | | | | |
| Ø4 | M5 | QSU 4 - M5 | 3.8 | 27.8 | 24.8 | 10.2 | 10.9 | 5 | 9 | 29.7 | 26.7 | 14 | 24.3 | 8 | 4 | 10 |
| | 1/8" | QSU 4 - 01 | 6 | 35.4 | 31.6 | | 13 | 7.1 | | 38.4 | 34.6 | | 28.3 | 12 | 5.5 | 20 |
| | 1/4" | QSU 4 - 02 | 9 | 37 | 33.4 | | 15.2 | 9.3 | | 41.5 | 37.9 | | 31.5 | 17 | 12.5 | 34 |
| Ø6 | M5 | QSU 6 - M5 | 3.8 | 27.8 | 24.8 | 11.9 | 12.1 | 5 | 11 | 29.7 | 26.7 | 16.3 | 26.6 | 8 | 4 | 10 |
| | 1/8" | QSU 6 - 01 | 6 | 35.4 | 31.6 | | 14.2 | 7.1 | | 38.4 | 34.6 | | 30.6 | 12 | 5.5 | 20 |
| | 1/4" | QSU 6 - 02 | 9 | 37 | 33.4 | | 16.4 | 9.3 | | 41.5 | 37.9 | | 33.8 | 17 | 12.5 | 36 |
| | 3/8" | QSU 6 - 03 | 10 | 45.3 | 40.2 | | 18.6 | 11.5 | | 50.3 | 45.2 | | 39 | 19 | 20 | 60 |
| Ø8 | 1/8" | QSU 8 - 01 | 6 | 35.4 | 31.6 | 17 | 19.3 | 7.1 | 14.3 | 38.4 | 34.6 | 22.8 | 37.1 | 12 | 5.5 | 20 |
| | 1/4" | QSU 8 - 02 | 9 | 37 | 33.4 | | 21.5 | 9.3 | | 41.5 | 37.9 | | 39.8 | 17 | 12.5 | 36 |
| | 3/8" | QSU 8 - 03 | 10 | 45.3 | 40.2 | | 23.7 | 11.5 | | 50.3 | 45.2 | | 45.5 | 19 | 20 | 60 |
| Ø10 | 1/4" | QSU 10 - 02 | 9 | 37 | 33.4 | 20 | 23.8 | 9.3 | 17.8 | 41.5 | 37.9 | 26.5 | 43.1 | 17 | 12.5 | 40 |
| | 3/8" | QSU 10 - 03 | 10 | 45.3 | 40.2 | | 26 | 11.5 | | 50.3 | 45.2 | | 49.2 | 19 | 20 | 64 |
| | 1/2" | QSU 10 - 04 | 14 | 55 | 46.6 | | 28.9 | 14.4 | | 62 | 53.6 | | 53.3 | 24 | 35 | 98 |
| Ø12 | 3/8" | QSU 12 - 03 | 10 | 45.3 | 40.2 | 21.3 | 28.4 | 10.6 | 21.1 | 50.3 | 45.2 | 29.6 | 51.3 | 19 | 20 | 68 |
| | 1/2" | QSU 12 - 04 | 14 | 55 | 46.6 | | 31.3 | 14.4 | | 62 | 53.6 | | 56.4 | 24 | 35 | 102 |

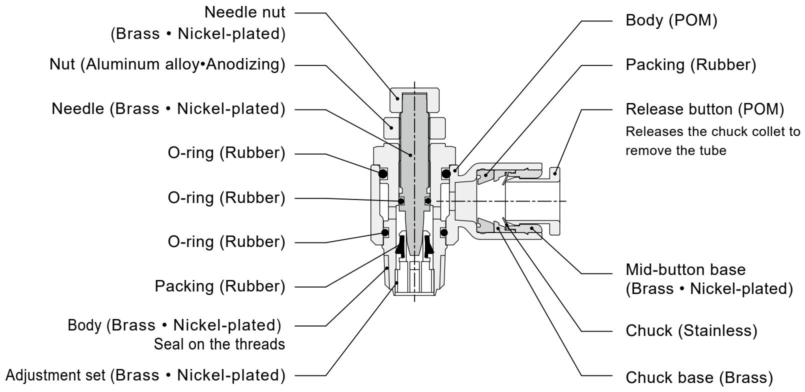
Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B | | C | E1 | E2 | ØG | L1 | | L2 | L3 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | | | max | min | | | | | |
| 5/32" | 10/32" | QSU 5/32 - M5 | 3.8 | 27.8 | 24.8 | 10.2 | 10.9 | 5 | 9 | 29.7 | 26.7 | 14 | 24.3 | 8 | 4 | 10 |
| | 1/8" | QSU 5/32 - 01 | 6 | 35.4 | 31.6 | | 13 | 7.1 | | 38.4 | 34.6 | | 28.3 | 12 | 5.5 | 20 |
| | 1/4" | QSU 5/32 - 02 | 9 | 37 | 33.4 | | 15.2 | 9.3 | | 41.5 | 37.9 | | 31.5 | 17 | 12.5 | 34 |
| 5/16" | 1/8" | QSU 5/16 - 01 | 6 | 35.4 | 31.6 | 17 | 19.3 | 7.1 | 14.3 | 38.4 | 34.6 | 22.8 | 37.1 | 12 | 5.5 | 20 |
| | 1/4" | QSU 5/16 - 02 | 9 | 37 | 33.4 | | 21.5 | 9.3 | | 41.5 | 37.9 | | 39.8 | 17 | 12.5 | 36 |
| | 3/8" | QSU 5/16 - 03 | 10 | 45.3 | 40.2 | | 23.7 | 11.5 | | 50.3 | 45.2 | | 45.5 | 19 | 20 | 60 |
| 3/8" | 1/4" | QSU 3/8 - 02 | 9 | 37 | 33.4 | 20 | 23.8 | 9.3 | 17.8 | 41.5 | 37.9 | 26.5 | 43.1 | 17 | 12.5 | 40 |
| | 3/8" | QSU 3/8 - 03 | 10 | 45.3 | 40.2 | | 26 | 11.5 | | 50.3 | 45.2 | | 49.2 | 19 | 20 | 64 |
| | 1/2" | QSU 3/8 - 04 | 14 | 55 | 46.6 | | 28.9 | 14.4 | | 62 | 53.6 | | 53.3 | 24 | 35 | 98 |

# QSB series  Speed Controller - Large Flow Type

## Product features/ Code of order

### Internal structure


Needle nut
(Brass • Nickel-plated)
Nut (Aluminum alloy•Anodizing)
Needle (Brass • Nickel-plated)
O-ring (Rubber)
O-ring (Rubber)
O-ring (Rubber)
Packing (Rubber)
Body (Brass • Nickel-plated)
Seal on the threads
Adjustment set (Brass • Nickel-plated)
Body (POM)
Packing (Rubber)
Release button (POM)
Releases the chuck collet to remove the tube
Mid-button base
(Brass • Nickel-plated)
Chuck (Stainless)
Chuck base (Brass)

- For controlling large flow rate, suitable for high speed actuating cylinder.

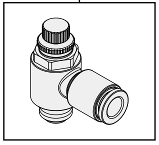
### Specification

| Item \ Port size | | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32", 1/4", 5/16", 3/8", 1/2" |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm² (kPa) | 0 ~ 9 ( 900 ) |
| Proof pressure | kgf/cm² (kPa) | 10 ( 1000 ) |
| Number of needle rotation | | 10 ( 8 ) round |
| Ambient and fluid temperature | °C | 0 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, POM |
| Thread | Rc (PT/ NPT) | 1/8", 1/4", 3/8", 1/2" |
| Seal on the threads | | With sealant |

### Code of order

**QSB** — **6** — **01** — **A**

**Model**



QSB :
Speed Controller -
Large flow type

**Port size**

Metric

4 - Ø4 mm
6 - Ø6 mm
8 - Ø8 mm
12 - Ø12 mm
10 - Ø10 mm

Inch

5/32” - Ø3.97 mm
1/4” - Ø6.35 mm
5/16” - Ø7.94 mm
3/8” - Ø9.53 mm
1/2” - Ø12.7 mm

**Thread**

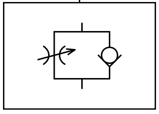
Metric

01 - PT 1/8”
02 - PT 1/4”
03 - PT 3/8”
04 - PT 1/2”

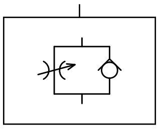
Inch

01 - NPT 1/8”
02 - NPT 1/4”
03 - NPT 3/8”
04 - NPT 1/2”

**Control direction**



A : Meter-out controller
(standard)



B : Meter-in controller
(special)

# QSB series  Speed Controller - Large Flow Type

## Product features

### Specification

● Metric

Unit: mm

| Model | Port size | Thread size (PT) | | | |
|---|---|---|---|---|---|
| | | 1/8" | 1/4" | 3/8" | 1/2" |
| QSB 4 – ☐ | Ø4 | ● | ● | | |
| QSB 6 – ☐ | Ø6 | ● | ● | ● | |
| QSB 8 – ☐ | Ø8 | ● | ● | ● | |
| QSB 10 – ☐ | Ø10 | | ● | ● | ● |
| QSB 12 – ☐ | Ø12 | | | ● | ● |

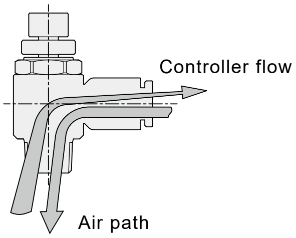
● Imperial

Unit: Inch

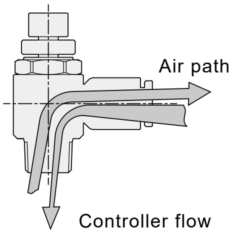
| Model | Port size | Thread size (NR / NPT) | | | |
|---|---|---|---|---|---|
| | | 1/8" | 1/4" | 3/8" | 1/2" |
| QSB 5/32" – ☐ | 5/32" | ● | ● | | |
| QSB 1/4" – ☐ | 1/4" | ● | ● | ● | |
| QSB 5/16" – ☐ | 5/16" | ● | ● | ● | |
| QSB 3/8" – ☐ | 3/8" | | ● | ● | ● |
| QSB 1/2" – ☐ | 1/2" | | | ● | ● |

### Control direction for speed controller

- A Meter-out controller(standard)

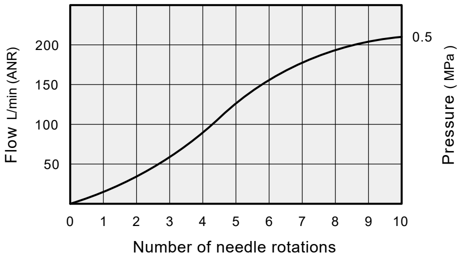


- B Meter-in controller

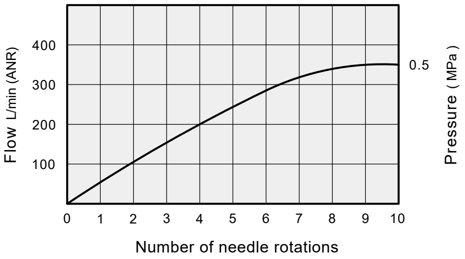


### Flow rate characteristic graph

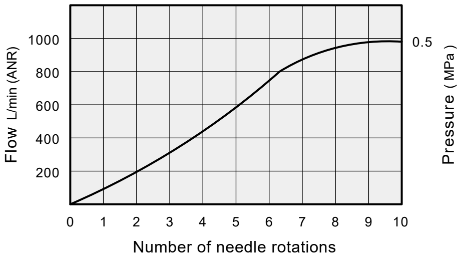
● QSB **04** – 01 ● QSB **08** – 01
● QSB **06** – 01



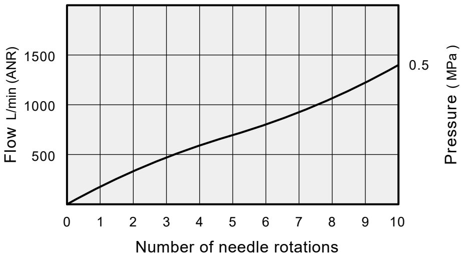
● QSB **04** – 02 ● QSB **08** – 02
● QSB **06** – 02 ● QSB **10** – 02



● QSB **06** – 03 ● QSB **10** – 03
● QSB **08** – 03 ● QSB **12** – 03



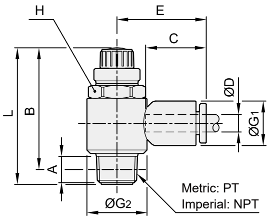
● QSB **10** – 04
● QSB **12** – 04



# QSB series  Speed Controller - Large Flow Type

## Dimensions

### **QSB** series Speed controller - Large flow type



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | |
| Ø4 | 1/8" | QSB 4 - 01 | 5.5 | 34.5 | 29.4 | 14.6 | 21.5 | 38.5 | 33.4 | 10.5 | 14.2 | 12 | 19 |
| | 1/4" | QSB 4 - 02 | 8.5 | 34.6 | 30.4 | 14.6 | 24 | 41.6 | 37.4 | 12.4 | 18.6 | 17 | 34 |
| Ø6 | 1/8" | QSB 6 - 01 | 5.5 | 34.5 | 29.4 | 17 | 23.6 | 38.5 | 33.4 | 12.4 | 14.2 | 12 | 20 |
| | 1/4" | QSB 6 - 02 | 8.5 | 34.6 | 30.4 | 17 | 25.8 | 41.6 | 37.4 | 12.4 | 18.6 | 17 | 35 |
| | 3/8" | QSB 6 - 03 | 11 | 40.6 | 35.5 | 17 | 27.9 | 50.3 | 45.2 | 12.4 | 23 | 19 | 58 |
| Ø8 | 1/8" | QSB 8 - 01 | 5.5 | 34.5 | 29.4 | 18.6 | 25.4 | 38.5 | 33.4 | 14.3 | 14.2 | 12 | 21 |
| | 1/4" | QSB 8 - 02 | 8.5 | 34.6 | 30.4 | 18.6 | 27.6 | 41.6 | 37.4 | 14.3 | 18.6 | 17 | 36 |
| | 3/8" | QSB 8 - 03 | 11 | 40.6 | 35.5 | 18.6 | 29.8 | 50.3 | 45.2 | 14.3 | 23 | 19 | 59 |
| Ø10 | 1/4" | QSB 10 - 02 | 8.5 | 34.6 | 30.4 | 20.4 | 29.5 | 41.6 | 37.4 | 17.8 | 18.6 | 17 | 39 |
| | 3/8" | QSB 10 - 03 | 11 | 40.6 | 35.5 | 20.4 | 31.6 | 50.3 | 45.2 | 17.8 | 23 | 19 | 63 |
| | 1/2" | QSB 10 - 04 | 12.5 | 47.8 | 40.2 | 20.4 | 34.6 | 58.2 | 50.6 | 17.8 | 28.8 | 24 | 101 |
| Ø12 | 3/8" | QSB 12 - 03 | 8.5 | 40.6 | 35.5 | 22.8 | 34.2 | 50.3 | 45.2 | 21.5 | 23 | 19 | 68 |
| | 1/2" | QSB 12 - 04 | 12.5 | 47.8 | 40.2 | 22.8 | 37.2 | 58.2 | 50.6 | 21.5 | 28.8 | 24 | 106 |

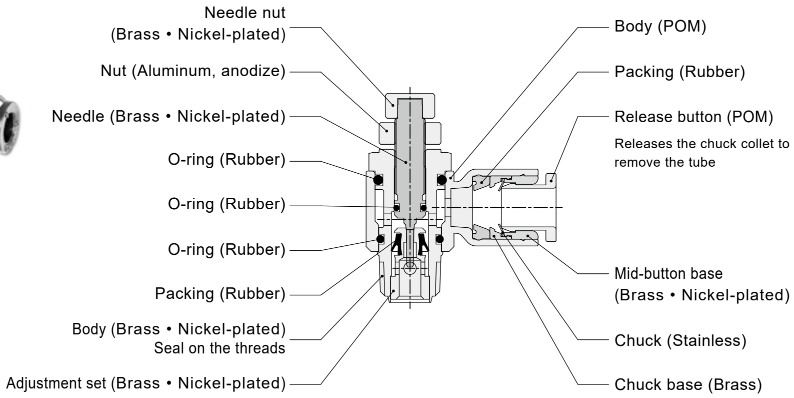
Inch specification

| Port size ØD | Thread size NR(NPT) | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | |
| 5/32" | 1/8" | QSB 5/32 - 01 | 5.5 | 34.5 | 29.4 | 14.6 | 21.5 | 38.5 | 33.4 | 10.5 | 14.2 | 12 | 19 |
| | 1/4" | QSB 5/32 - 02 | 8.5 | 34.6 | 30.4 | 14.6 | 24 | 41.6 | 37.4 | 12.4 | 18.6 | 17 | 34 |
| 1/4" | 1/8" | QSB 1/4 - 01 | 5.5 | 34.5 | 29.4 | 17 | 23.6 | 38.5 | 33.4 | 12.4 | 14.2 | 12 | 20 |
| | 1/4" | QSB 1/4 - 02 | 8.5 | 34.6 | 30.4 | 17 | 25.8 | 41.6 | 37.4 | 12.4 | 18.6 | 17 | 35 |
| | 3/8" | QSB 1/4 - 03 | 11 | 40.6 | 35.5 | 17 | 27.9 | 50.3 | 45.2 | 12.4 | 23 | 19 | 58 |
| 5/16" | 1/8" | QSB 5/16 - 01 | 5.5 | 34.5 | 29.4 | 18.6 | 25.4 | 38.5 | 33.4 | 14.3 | 14.2 | 12 | 21 |
| | 1/4" | QSB 5/16 - 02 | 8.5 | 34.6 | 30.4 | 18.6 | 27.6 | 41.6 | 37.4 | 14.3 | 18.6 | 17 | 36 |
| | 3/8" | QSB 5/16 - 03 | 11 | 40.6 | 35.5 | 18.6 | 29.8 | 50.3 | 45.2 | 14.3 | 23 | 19 | 59 |
| 3/8" | 1/4" | QSB 3/8 - 02 | 8.5 | 34.6 | 30.4 | 20.4 | 29.5 | 41.6 | 37.4 | 17.8 | 18.6 | 17 | 39 |
| | 3/8" | QSB 3/8 - 03 | 11 | 40.6 | 35.5 | 20.4 | 31.6 | 50.3 | 45.2 | 17.8 | 23 | 19 | 63 |
| | 1/2" | QSB 3/8 - 04 | 12.5 | 47.8 | 40.2 | 20.4 | 34.6 | 58.2 | 50.6 | 17.8 | 28.8 | 24 | 101 |
| 1/2" | 3/8" | QSB 1/2 - 03 | 8.5 | 40.6 | 35.5 | 22.8 | 34.2 | 50.3 | 45.2 | 21.5 | 23 | 19 | 68 |
| | 1/2" | QSB 1/2 - 04 | 12.5 | 47.8 | 40.2 | 22.8 | 37.2 | 58.2 | 50.6 | 21.5 | 28.8 | 24 | 106 |

# QSS series Speed Controller - Low Flow Type

## Product features/ Code of order

### Internal structure


Needle nut
(Brass • Nickel-plated)
Nut (Aluminum, anodize)
Needle (Brass • Nickel-plated)
O-ring (Rubber)
O-ring (Rubber)
O-ring (Rubber)
Packing (Rubber)
Body (Brass • Nickel-plated)
Seal on the threads
Adjustment set (Brass • Nickel-plated)
Body (POM)
Packing (Rubber)
Release button (POM)
Releases the chuck collet to remove the tube
Mid-button base
(Brass • Nickel-plated)
Chuck (Stainless)
Chuck base (Brass)

- For controlling small flow rate, suitable for low speed actuating cylinder.

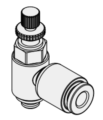
### Specification

| Item | Port size | Ø4, Ø6, Ø8, Ø10, 5/32”, 1/4”, 5/16”, 3/8” |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm² (kPa) | 0 ~ 9 ( 900 ) |
| Proof pressure | kgf/cm² (kPa) | 10 ( 1000 ) |
| Number of needle rotation | | 10 ( 12 ) round |
| Ambient and fluid temperature | °C | 0 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, POM |
| Thread | Rc (PT/ NPT) | M5x0.8p (10/32”), 1/8”, 1/4” |
| Seal on the threads | | With sealant |

### Code of order

**QSS** — **6** — **01** — **A**

**Model**



QSS :
Speed controller -
Low Flow Type

**Port size**

Metric
4 - Ø4 mm
6 - Ø6 mm
8 - Ø8 mm
10 - Ø10 mm

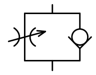
Inch
5/32” - Ø3.97 mm
1/4” - Ø6.35 mm
5/16”- Ø7.94 mm
3/8” - Ø9.53 mm

**Thread**

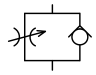
Metric
M5 - M5x0.8p
01 - PT 1/8”
02 - PT 1/4”

Inch
10/32” - NR10/32”
01 - NPT1/8”
02 - NPT1/4”

**Control direction**



A : Meter-out controller
(standard)



B : Meter-in controller
(special)

# QSS series Speed Controller - Low Flow Type

## Product features

**CHELIC.**

### Specification

● Metric

Unit: mm

| Model | Port size | Thread size (PT) | | |
|---|---|---|---|---|
| | | M5 | 1/8" | 1/4" |
| QSS 4 – □ | Ø4 | ● | ● | |
| QSS 6 – □ | Ø6 | ● | ● | ● |
| QSS 8 – □ | Ø8 | | ● | ● |
| QSS 10 – □ | Ø10 | | | ● |

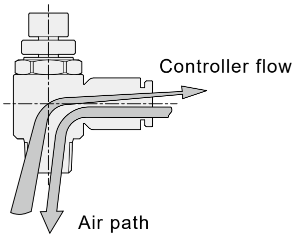
● Imperial

Unit: Inch

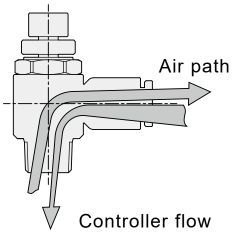
| Model | Port size | Thread size (NR / NPT) | | |
|---|---|---|---|---|
| | | 10/32" | 1/8" | 1/4" |
| QSS 5/32" – □ | 5/32" | ● | ● | |
| QSS 1/4" – □ | 1/4" | ● | ● | ● |
| QSS 5/16" – □ | 5/16" | | ● | ● |
| QSS 3/8" – □ | 3/8" | | | ● |

### Control direction for speed controller

- A Meter-out controller(standard)



- B Meter-in controller



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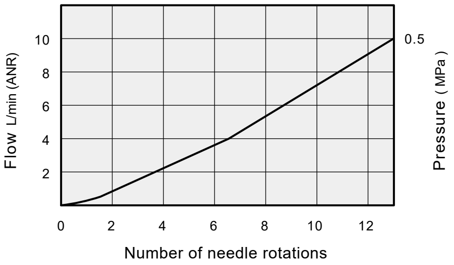
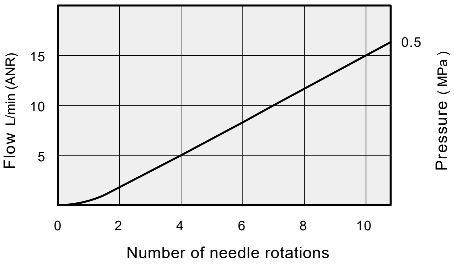
### Flow rate characteristic graph

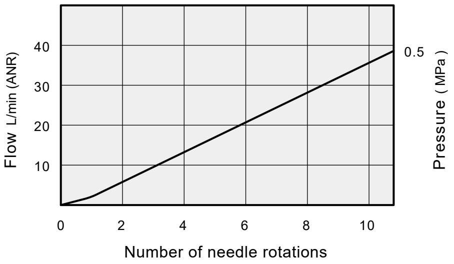
● QSS **04** – M5
● QSS **06** – M5



● QSS **04** – 01 ● QSS **08** – 01
● QSS **06** – 01



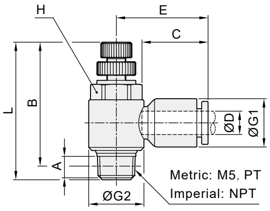
● QSS **06** – 02 ● QSS **10** – 02
● QSS **08** – 02



# QSS series Speed Controller - Low Flow Type

## Dimensions

### **QSS** series Speed controller - Low flow type



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | | |
| Ø4 | M5 | QSS 4 - M5 | 3.2 | 31.8 | 27.3 | 14.6 | 19.9 | 35 | 30.5 | 10.5 | 10 | 8 | 0.1 | 9 |
| | 1/8" | QSS 4 - 01 | 5.5 | 34.6 | 29.4 | 14.6 | 21.5 | 38.4 | 33.4 | 10.5 | 14.2 | 12 | 0.2 | 19 |
| Ø6 | M5 | QSS 6 - M5 | 3.2 | 32.3 | 27.8 | 17 | 21.7 | 35 | 30.5 | 12.4 | 10 | 8 | 0.1 | 10 |
| | 1/8" | QSS 6 - 01 | 5.5 | 34.6 | 29.4 | 17 | 23.6 | 38.4 | 33.4 | 12.4 | 14.2 | 12 | 0.1 | 20 |
| | 1/4" | QSS 6 - 02 | 8.5 | 34.5 | 30.3 | 17 | 25.8 | 41.6 | 37.4 | 12.4 | 18.6 | 17 | 0.6 | 35 |
| Ø8 | 1/8" | QSS 8 - 01 | 5.5 | 34.6 | 29.4 | 18.6 | 25.4 | 38.4 | 33.4 | 14.3 | 14.2 | 12 | 0.1 | 21 |
| | 1/4" | QSS 8 - 02 | 8.5 | 34.5 | 30.3 | 18.6 | 27.6 | 41.6 | 37.4 | 14.3 | 18.6 | 17 | 0.6 | 36 |
| Ø10 | 1/4" | QSS 10 - 02 | 8.5 | 34.5 | 30.3 | 20.9 | 29.5 | 41.6 | 37.4 | 17.8 | 18.6 | 17 | 0.6 | 39 |

Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B | | C | E | L | | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | max | min | | | max | min | | | | | |
| 5/32" | NR10/32" | QSS 5/32 - 10/32 | 3.2 | 31.8 | 27.3 | 14.6 | 19.9 | 35 | 30.5 | 10.5 | 10 | 8 | 0.1 | 9 |
| | 1/8" | QSS 5/32 - 01 | 5.5 | 34.6 | 29.4 | 14.6 | 21.5 | 38.4 | 33.4 | 10.5 | 14.2 | 12 | 0.2 | 19 |
| 1/4" | NR10/32" | QSS 1/4 - 10/32 | 3.2 | 32.3 | 27.8 | 17 | 21.7 | 35 | 30.5 | 12.4 | 10 | 8 | 0.1 | 10 |
| | 1/8" | QSS 1/4 - 01 | 5.5 | 34.6 | 29.4 | 17 | 23.6 | 38.4 | 33.4 | 12.4 | 14.2 | 12 | 0.1 | 20 |
| | 1/4" | QSS 1/4 - 02 | 8.5 | 34.5 | 30.3 | 17 | 25.8 | 41.6 | 37.4 | 12.4 | 18.6 | 17 | 0.6 | 35 |
| 5/16" | 1/8" | QSS 5/16 - 01 | 5.5 | 34.6 | 29.4 | 18.6 | 25.4 | 38.4 | 33.4 | 14.3 | 14.2 | 12 | 0.1 | 21 |
| | 1/4" | QSS 5/16 - 02 | 8.5 | 34.5 | 30.3 | 18.6 | 27.6 | 41.6 | 37.4 | 14.3 | 18.6 | 17 | 0.6 | 36 |
| 3/8" | 1/4" | QSS 3/8 - 02 | 8.5 | 34.5 | 30.3 | 20.9 | 29.5 | 41.6 | 37.4 | 17.8 | 18.6 | 17 | 0.6 | 39 |

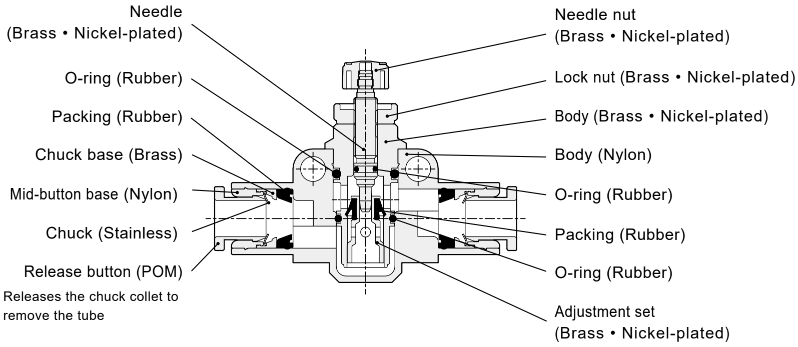
# QSN series Speed Controller In-line

## Product features/ Code of order

**CHELIC**

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

### Internal structure


Needle
(Brass • Nickel-plated)
O-ring (Rubber)
Packing (Rubber)
Chuck base (Brass)
Mid-button base (Nylon)
Chuck (Stainless)
Release button (POM)
Releases the chuck collet to remove the tube
Needle nut
(Brass • Nickel-plated)
Lock nut (Brass • Nickel-plated)
Body (Brass • Nickel-plated)
Body (Nylon)
O-ring (Rubber)
Packing (Rubber)
O-ring (Rubber)
Adjustment set
(Brass • Nickel-plated)

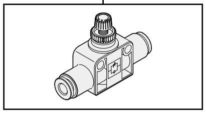
### Specification

| Item / Port size | | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32”, 1/4”, 5/16”, 3/8”, 1/2” |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm$^2$ (kPa) | 0 ~ 9 ( 0 ~ 900 ) |
| Proof pressure | kgf/cm$^2$ (kPa) | 10 ( 1000 ) |
| Number of needle rotation | | 10 ( 8 ) round |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |
| Thread | Rc (PT/NPT) | 1/8”, 1/4”, 3/8” |
| Seal on the threads | | With sealant |

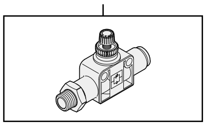
### Code of order

**QSN** – **6** – **01** – **A**

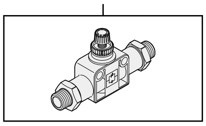
**Model**



QSN: Speed controller in-line



QSMN: Speed controller-
One side port thread



QSNN: Speed controller-
Tow side port thread

**Port size**

Metric

4 - Ø4 mm
6 - Ø6 mm
8 - Ø8 mm
10 - Ø10 mm
12 - Ø12 mm

Inch

5/32” - Ø3.97 mm
1/4” - Ø6.35 mm
5/16” - Ø7.94 mm
3/8” - Ø9.53 mm
1/2” - Ø12.7 mm

None: No option for QSNN

**Thread**

Metric

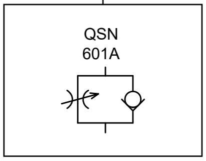
01 - PT 1/8”
02 - PT 1/4”
03 - PT 3/8”

Inch

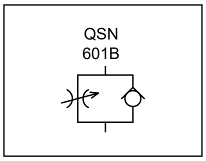
01 - NPT 1/8”
02 - NPT 1/4”
03 - NPT 3/8”

None: No option for QSN

**Controller direction**



A: Meter-out controller
(standard)



B: Meter-in controller
(special)

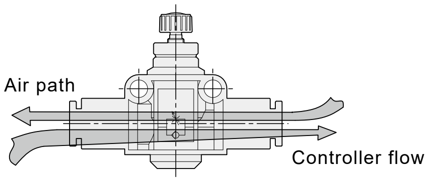
# QSN series Speed Controller In-line

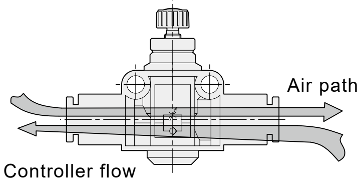
## Product features

**CHELIC.**

### Control direction for speed controller

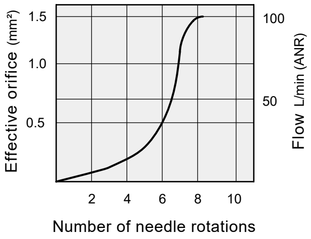
- A Meter-out controller(standard)
- B Meter-in controller


Air path
Controller flow

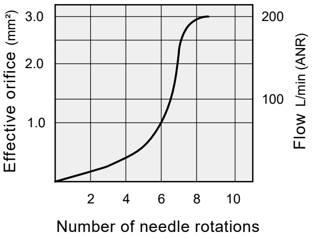

Air path
Controller flow

### Flow rate characteristic graph

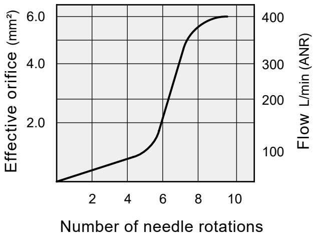
**QSN 4 , 5/32”**



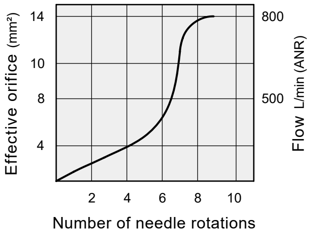
**QSN 6 , 1/4”**



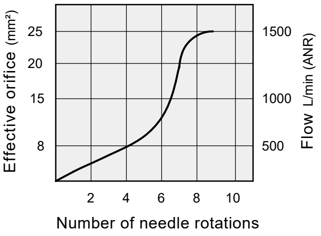
**QSN 8 , 5/16”**



**QSN 10 , 3/8”**



**QSN 12 , 1/2”**



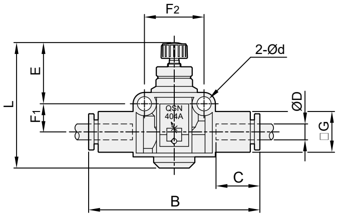
# QSN series Speed Controller In-line

## Dimensions

### QSN series Speed controller in-line

Metric specification

| Port size ØD1 | Port size ØD2 | Model | B | C | Ød | E | | F₁ | F₂ | L | | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | max | min | | | max | min | | | |
| Ø4 | Ø4 | QSN 4 | 41.4 | 14.6 | 3.2 | 14.2 | 11 | 6.9 | 14 | 26.5 | 25.3 | 10.5 | 4 | 12 |
| Ø6 | Ø6 | QSN 6 | 49.2 | 16.6 | 4.3 | 19.7 | 14.9 | 8.5 | 18 | 39.3 | 34.5 | 12.8 | 5.5 | 26 |
| Ø8 | Ø8 | QSN 8 | 55.1 | 17.9 | 4.3 | 21.3 | 18.5 | 9.6 | 22 | 45 | 42.2 | 14.5 | 12.5 | 42 |
| Ø10 | Ø10 | QSN 10 | 62.9 | 19.3 | 4.3 | 23.7 | 18.8 | 11.6 | 26 | 45.2 | 43.3 | 17.8 | 20 | 70 |
| Ø12 | Ø12 | QSN 12 | 73.5 | 21.8 | 4.3 | 28.9 | 22.3 | 11.7 | 32 | 54.8 | 48.2 | 21.2 | 35 | 115 |



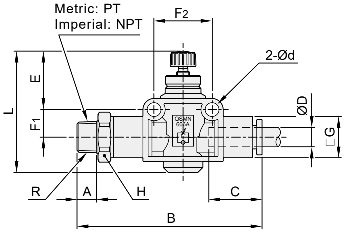
Inch specification

| Port size ØD1 | Port size ØD2 | Model | B | C | Ød | E | | F₁ | F₂ | L | | ØG | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | max | min | | | max | min | | | |
| 5/32" | 5/32" | QSN 5/32 | 41.4 | 14.6 | 3.2 | 14.2 | 11 | 6.9 | 14 | 26.5 | 25.3 | 10.5 | 4 | 12 |
| 1/4" | 1/4" | QSN 1/4 | 49.2 | 16.6 | 4.3 | 19.7 | 14.9 | 8.5 | 18 | 39.3 | 34.5 | 12.8 | 5.5 | 26 |
| 5/16" | 5/16" | QSN 5/16 | 55.1 | 17.9 | 4.3 | 21.3 | 18.5 | 9.6 | 22 | 45 | 42.2 | 14.5 | 12.5 | 42 |
| 3/8" | 3/8" | QSN 3/8 | 62.9 | 19.3 | 4.3 | 23.7 | 18.8 | 11.6 | 26 | 45.2 | 43.3 | 17.8 | 20 | 70 |
| 1/2" | 1/2" | QSN 1/2 | 73.5 | 21.8 | 4.3 | 28.9 | 22.3 | 11.7 | 32 | 54.8 | 48.2 | 21.2 | 35 | 115 |

### QSMN series Speed controller - One side port thread

Metric specification

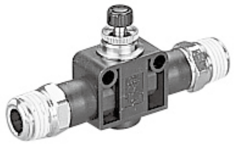
| Port size ØD | Thread size Rc(PT) | Model | A | B | C | Ød | E | | F₁ | F₂ | L | | ØG | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | max | min | | | max | min | | | | |
| Ø4 | 1/8" | QSMN 4 - 01 | 6 | 49 | 14.6 | 3.2 | 14.2 | 11 | 6.9 | 14 | 28.5 | 25.3 | 10.5 | 14 | 5.5 | 22 |
| | 1/4" | QSMN 4 - 02 | 9 | 52 | | | | | | | | | | 14 | | 26 |
| Ø6 | 1/8" | QSMN 6 - 01 | 6 | 56.9 | 16.6 | 4.3 | 19.7 | 14.9 | 8.5 | 18 | 39.3 | 34.5 | 12.8 | 14 | 12 | 34 |
| | 1/4" | QSMN 6 - 02 | 9 | 60.3 | | | | | | | | | | 14 | | 36 |
| Ø8 | 1/4" | QSMN 8 - 02 | 9 | 66.7 | 17.9 | 4.3 | 21.3 | 18.5 | 9.6 | 22 | 45 | 42.2 | 14.5 | 19 | 16 | 62 |
| | 3/8" | QSMN 8 - 03 | 9 | 66.7 | | | | | | | | | | 19 | | 70 |



Inch specification

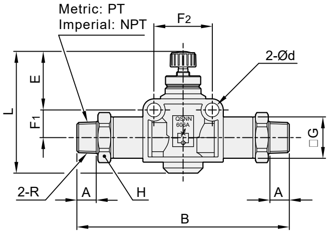
| Port size ØD | Thread size NPT | Model | A | B | C | Ød | E | | F₁ | F₂ | L | | ØG | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | max | min | | | max | min | | | | |
| 5/32" | 1/8" | QSMN 5/32 -1/8 | 6 | 49 | 14.6 | 3.2 | 14.2 | 11 | 6.9 | 14 | 28.5 | 25.3 | 10.5 | 14 | 5.5 | 22 |
| | 1/4" | QSMN 5/32 -1/4 | 9 | 52 | | | | | | | | | | 14 | | 26 |
| 1/4" | 1/8" | QSMN 1/4 - 1/8 | 6 | 56.9 | 16.6 | 4.3 | 19.7 | 14.9 | 8.5 | 18 | 39.3 | 34.5 | 12.8 | 14 | 12 | 34 |
| | 1/4" | QSMN 1/4 - 1/4 | 9 | 60.3 | | | | | | | | | | 14 | | 36 |
| 5/16" | 1/4" | QSMN 5/16 -1/4 | 9 | 66.7 | 17.9 | 4.3 | 21.3 | 18.5 | 9.6 | 22 | 45 | 42.2 | 14.5 | 19 | 16 | 62 |
| | 3/8" | QSMN 5/16 -3/8 | 9 | 66.7 | | | | | | | | | | 19 | | 70 |

### QSNN series Speed controller - Tow side port thread



Metric specification

| Thread size Rc (PT) | Model | A | B | Ød | E | | F₁ | F₂ | L | | ØG | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | max | min | | | max | min | | | | |
| 1/8" | QSNN 01 | 6 | 56.9 | 3.2 | 14.2 | 11 | 6.9 | 14 | 29.8 | 27.4 | 10.5 | 14<br>14 | 5.5 | 30<br>38 |
| 1/4" | QSNN 02 | 9 | 71.4 | 4.3 | 19.7 | 14.9 | 8.5 | 18 | 41.9 | 37.7 | 12.8 | 14<br>14 | 12 | 42<br>48 |
| 3/8" | QSNN 03 | 9 | 78.3 | 4.3 | 21.3 | 18.5 | 9.6 | 22 | 47.6 | 40.3 | 14.5 | 19<br>19 | 16 | 78<br>82 |



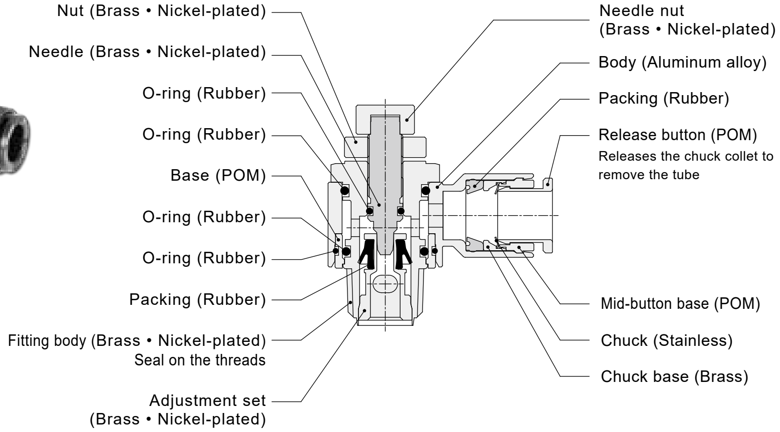
Inch specification

| Thread size NPT | Model | A | B | Ød | E | | F₁ | F₂ | L | | ØG | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | max | min | | | max | min | | | | |
| 1/8" | QSNN 1/8 | 6 | 56.9 | 3.2 | 14.2 | 11 | 6.9 | 14 | 29.8 | 27.4 | 10.5 | 14<br>14 | 5.5 | 30<br>38 |
| 1/4" | QSNN 1/4 | 9 | 71.4 | 4.3 | 19.7 | 14.9 | 8.5 | 18 | 41.9 | 37.7 | 12.8 | 14<br>14 | 12 | 42<br>48 |
| 3/8" | QSNN 3/8 | 9 | 78.3 | 4.3 | 21.3 | 18.5 | 9.6 | 22 | 47.6 | 40.3 | 14.5 | 19<br>19 | 16 | 78<br>82 |

# QMC series  Speed Controller With Metal Body

## Product features/ Code of order

### Internal structure


Nut (Brass • Nickel-plated)
Needle (Brass • Nickel-plated)
O-ring (Rubber)
O-ring (Rubber)
Base (POM)
O-ring (Rubber)
O-ring (Rubber)
Packing (Rubber)
Fitting body (Brass • Nickel-plated)
Seal on the threads
Adjustment set
(Brass • Nickel-plated)
Needle nut
(Brass • Nickel-plated)
Body (Aluminum alloy)
Packing (Rubber)
Release button (POM)
Releases the chuck collet to remove the tube
Mid-button base (POM)
Chuck (Stainless)
Chuck base (Brass)

- Suitable for flammable place.

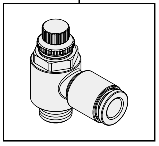
### Specification

| Item / Port size | | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32", 1/4", 5/16", 3/8" |
|---|---|---|
| Fluid | | Air |
| Pressure range kgf/cm² (kPa) | | 0 ~ 9 ( 900 ) |
| Proof pressure kgf/cm² (kPa) | | 10 ( 1000 ) |
| Number of needle rotation | | 10 ( 8 ) round |
| Ambient and fluid temperature °C | | 5 ~ 60 |
| Material | Body | Die-casting alloy |
| | Fitting body | Brass (Nickel-plated) |
| | Plastic | POM |
| Thread Rc (PT/ NPT) | | M5x0.8p ( 10/32” ), 1/8", 1/4", 3/8", 1/2" |
| Seal on the threads | | With sealant |

### Code of order

**QMC** – **6** – **01** – **A**

**Model**



QMC:
Speed controller with metal body

**Port size**

Metric

| | |
|---|---|
| 4 | Ø4 mm |
| 6 | Ø6 mm |
| 8 | Ø8 mm |
| 10 | Ø10 mm |
| 12 | Ø12 mm |

Inch

| | |
|---|---|
| 5/32” | Ø3.97 mm |
| 1/4” | Ø6.35 mm |
| 5/16” | Ø7.94 mm |
| 3/8” | Ø9.53 mm |

**Thread**

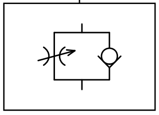
Metric

| | |
|---|---|
| M5 | M5x0.8p |
| 01 | PT 1/8” |
| 02 | PT 1/4” |
| 03 | PT 3/8” |
| 04 | PT 1/2” |

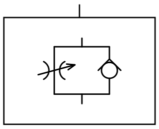
Inch

| | |
|---|---|
| 10/32” | NR10/32” |
| 01 | NPT1/8” |
| 02 | NPT1/4” |
| 03 | NPT3/8” |
| 04 | NPT1/2” |

**Control direction**



A: Meter-out controller (standard)



B: Meter-in controller (special)

# QMC series Speed Controller With Metal Body

## Product features

## Specification

- Metric

Unit: mm

| Model | Port size | Thread size (PT) | | | | |
|---|---|---|---|---|---|---|
| | | M5 | 1/8” | 1/4” | 3/8” | 1/2” |
| QMC 4 — □ | Ø4 | ● | | | | |
| QMC 6 — □ | Ø6 | ● | ● | ● | | |
| QMC 8 — □ | Ø8 | | ● | ● | ● | |
| QMC 10 — □ | Ø10 | | | | ● | ● |
| QMC 12 — □ | Ø12 | | | | | ● |

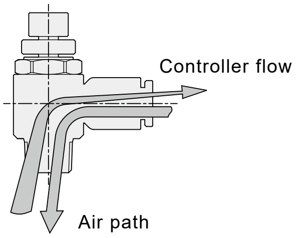
- Imperial

Unit: Inch

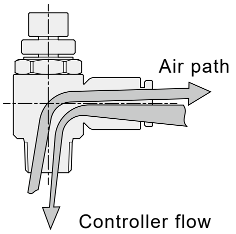
| Model | Port size | Thread size (NR / NPT) | | | | |
|---|---|---|---|---|---|---|
| | | 10/32" | 1/8" | 1/4" | 3/8” | 1/2” |
| QMC 5/32" — □ | 5/32" | ● | | | | |
| QMC 1/4" — □ | 1/4" | ● | ● | ● | | |
| QMC 5/16" — □ | 5/16" | | ● | ● | ● | |
| QMC 3/8" — □ | 3/8" | | | | ● | ● |

## Control direction for speed controller

- A Meter-out controller(standard)

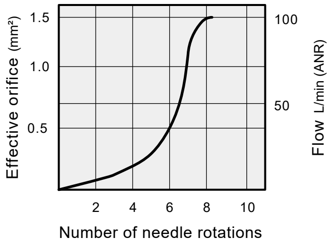


- B Meter-in controller

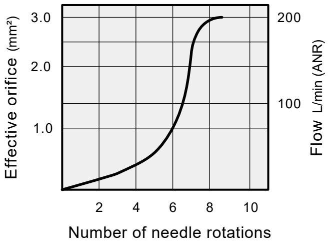


## Flow rate characteristic graph

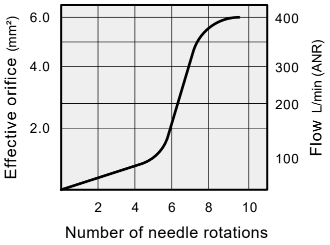
- QMC 4 — M5



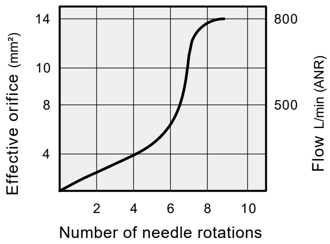
- QMC 6 — 01



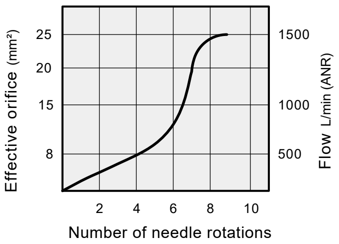
- QMC 8 — 02



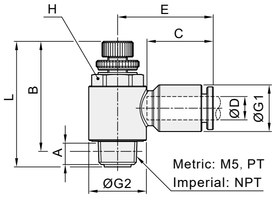
- QMC 10 — 03



- QMC 12 — 04



## **QMC** series Speed controller with metal body



Metric specification

| Port size ØD | Thread size Rc (PT) | Model | A | B |  | C | E | L |  | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | max | min |  |  | max | min |  |  |  |  |  |
| Ø4 | M5 | QMC 4 - M5 | 3.2 | 25.8 | 23.3 | 14.4 | 21.8 | 29 | 26.5 | 10 | 12.4 | 8 | 4 | 10 |
| Ø6 | M5 | QMC 6 - M5 | 3.2 | 25.8 | 23.3 | 16.6 | 21.8 | 29 | 26.5 | 10 | 12.4 | 8 | 4 | 9 |
|  | 1/8" | QMC 6 - 01 | 5.5 | 33 | 29 | 17 | 26.1 | 37 | 33 | 15.2 | 14.3 | 12 | 5.5 | 22 |
|  | 1/4" | QMC 6 - 02 | 8.5 | 34.2 | 30 | 17 | 28.4 | 41.2 | 37 | 19.6 | 14.3 | 17 | 12.5 | 21 |
| Ø8 | 1/8" | QMC 8 - 01 | 5.5 | 33 | 29 | 18.6 | 26.3 | 37 | 33 | 15.2 | 14.3 | 12 | 5.5 | 38 |
|  | 1/4" | QMC 8 - 02 | 8.5 | 34.2 | 30 | 18.6 | 28.6 | 41.2 | 37 | 19.6 | 14.3 | 17 | 12.5 | 36 |
|  | 3/8" | QMC 8 - 03 | 11 | 39.4 | 35.4 | 18.6 | 32.7 | 49.1 | 45.1 | 24.4 | 17.8 | 19 | 20 | 72 |
| Ø10 | 3/8" | QMC 10 - 03 | 11 | 39.4 | 35.4 | 20.9 | 33.2 | 49.1 | 45.1 | 24.4 | 17.8 | 19 | 20 | 70 |
|  | 1/2" | QMC 10 - 04 | 12.5 | 48.1 | 41.1 | 20.9 | 37.7 | 58.7 | 51.7 | 28.6 | 21.2 | 24 | 35 | 118 |
| Ø12 | 1/2" | QMC 12 - 04 | 12.5 | 48.1 | 41.1 | 22.8 | 37.1 | 58.7 | 51.7 | 28.6 | 21.2 | 24 | 35 | 116 |

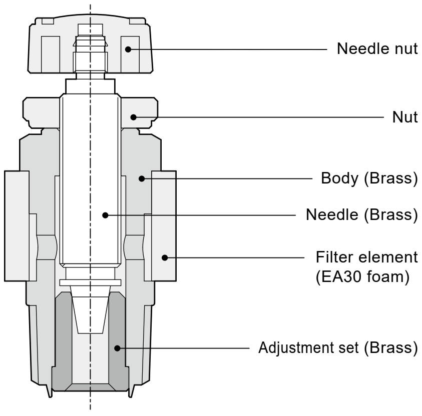
Inch specification

| Port size ØD | Thread size NR/ NPT | Model | A | B |  | C | E | L |  | ØG1 | ØG2 | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | max | min |  |  | max | min |  |  |  |  |  |
| 5/32" | M5 | QMC 5/32-10/32 | 3.2 | 25.8 | 23.3 | 14.4 | 21.8 | 29 | 26.5 | 10 | 12.4 | 8 | 4 | 10 |
| 1/4" | M5 | QMC 1/4-10/32 | 3.2 | 25.8 | 23.3 | 16.6 | 21.8 | 29 | 26.5 | 10 | 12.4 | 8 | 4 | 9 |
|  | 1/8" | QMC 1/4 - 01 | 5.5 | 33 | 29 | 17 | 26.1 | 37 | 33 | 15.2 | 14.3 | 12 | 5.5 | 22 |
|  | 1/4" | QMC 1/4 - 02 | 8.5 | 34.2 | 30 | 17 | 28.4 | 41.2 | 37 | 19.6 | 14.3 | 17 | 12.5 | 21 |
| 5/16" | 1/8" | QMC 5/16 - 01 | 5.5 | 33 | 29 | 18.6 | 26.3 | 37 | 33 | 15.2 | 14.3 | 12 | 5.5 | 38 |
|  | 1/4" | QMC 5/16 - 02 | 8.5 | 34.2 | 30 | 18.6 | 28.6 | 41.2 | 37 | 19.6 | 14.3 | 17 | 12.5 | 36 |
|  | 3/8" | QMC 5/16 - 03 | 11 | 39.4 | 35.4 | 18.6 | 32.7 | 49.1 | 45.1 | 24.4 | 17.8 | 19 | 20 | 72 |
| 3/8" | 3/8" | QMC 3/8 - 03 | 11 | 39.4 | 35.4 | 20.9 | 33.2 | 49.1 | 45.1 | 24.4 | 17.8 | 19 | 20 | 70 |
|  | 1/2" | QMC 3/8 - 04 | 12.5 | 48.1 | 41.1 | 20.9 | 37.7 | 58.7 | 51.7 | 28.6 | 21.2 | 24 | 35 | 118 |

# QT series  Speed Control Silencer

## Product features/ Code of order

### Internal structure


Needle nut
Nut
Body (Brass)
Needle (Brass)
Filter element
(EA30 foam)
Adjustment set (Brass)

### Specification

| Item / Model | | QT-M5 | QT-01 | QT-02 | QT-03 | QT-04 |
|---|---|---|---|---|---|---|
| Thread | Rc(PT) | M5x0.8 | Rc1/8 | Rc1/4 | Rc3/8 | Rc1/2 |
| Fluid | | Air | | | | |
| Pressure range | kg/cm² (kPa) | 8(800) | | | | |
| Ambient and fluid temperature | °C | 5 ~ 60 | | | | |

### Code of order

**QT** — **01**

| Model | Thread |
|---|---|
| | see table below |

QT:
Speed control
silencer

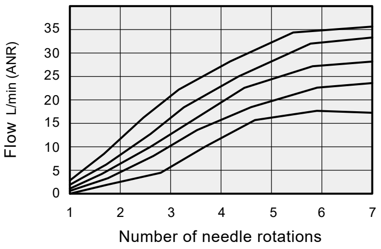
| Mark | Thread |
|---|---|
| M5 | M5x0.8 |
| 01 | Rc1/8 |
| 02 | Rc1/4 |
| 03 | Rc3/8 |
| 04 | Rc1/2 |

# QT series  Speed Control Silencer

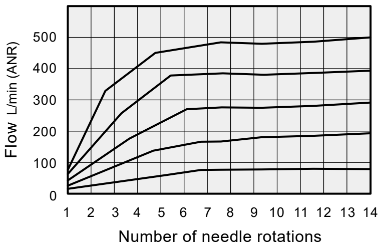
## Product features

### Flow rate characteristic graph

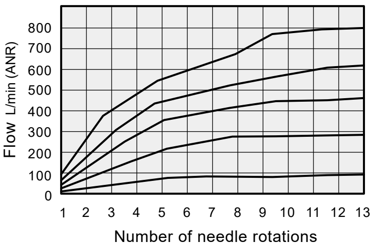
**QT M5**



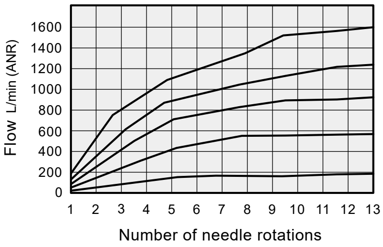
**QT-01**



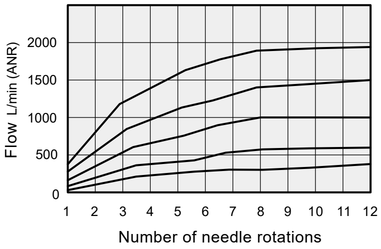
**QT-02**



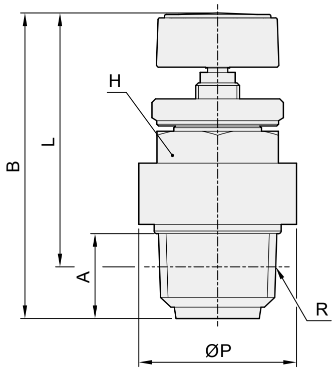
**QT-03**



**QT-04**



### QT series



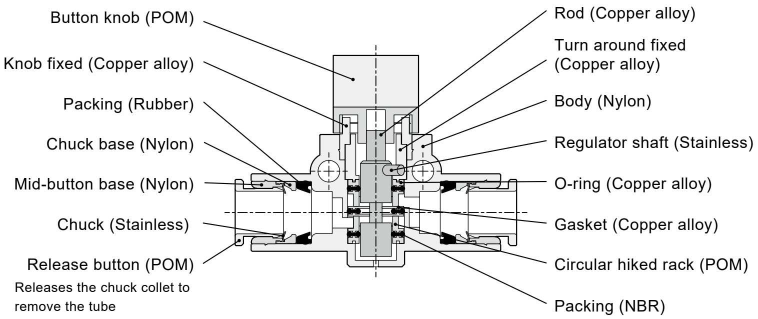
| Model | R | A | B |  | L |  | ØP | H | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  | max | min | max | min |  |  |  |
| **QT M5** | M5x0.8 | 3.5 | 23 | 19 | 21 | 17 | 10 | 08 | 4.6 |
| **QT 01** | Rc1/8 | 7.5 | 38 | 30 | 35 | 26 | 14 | 10 | 16 |
| **QT 02** | Rc1/4 | 9.7 | 39 | 34 | 34 | 28 | 18 | 14 | 30 |
| **QT 03** | Rc3/8 | 12 | 43 | 35 | 37 | 29 | 22 | 17 | 54 |
| **QT 04** | Rc1/2 | 13 | 47 | 40 | 40 | 33 | 27 | 21 | 84 |

# QHV series Switching Type In-line

## Product features/ Code of order

**CHELIC.**

## Internal structure


Button knob (POM)
Knob fixed (Copper alloy)
Packing (Rubber)
Chuck base (Nylon)
Mid-button base (Nylon)
Chuck (Stainless)
Release button (POM)
Releases the chuck collet to remove the tube
Rod (Copper alloy)
Turn around fixed (Copper alloy)
Body (Nylon)
Regulator shaft (Stainless)
O-ring (Copper alloy)
Gasket (Copper alloy)
Circular hiked rack (POM)
Packing (NBR)

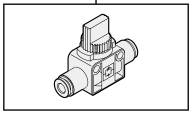
## Specification

| Item \ Port size | | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32”, 1/4”, 5/16”, 3/8”, 1/2” |
|---|---|---|
| Fluid | | Air |
| Pressure range kgf/cm² (kPa) | | 0 ~ 9 ( 0 ~ 900 ) |
| Proof pressure kgf/cm² (kPa) | | 10 ( 1000 ) |
| Proof vacuum pressure kPa(Torr) | | -100 (10) |
| Ambient and fluid temperature °C | | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |
| Thread Rc (PT/NPT) | | 1/8”, 1/4”, 3/8” |
| Seal on the threads | | With sealant |

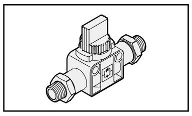
## Code of order

**QHV** — **6** — **3** —

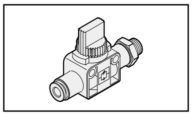
**Model**



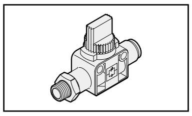
QHV



QHVN-N



QHVN-R



QHVN-L

**Port size**

Metric

4 - Ø4 mm
6 - Ø6 mm
8 - Ø8 mm
10 - Ø10 mm
12 - Ø12 mm

Inch

5/32” - Ø3.97 mm
1/4” - Ø6.35 mm
5/16” - Ø7.94 mm
3/8” - Ø9.53 mm
1/2” - Ø12.7 mm

※ None:
No option for QHVN-N

**Position**

0: 2/2 Solenoid valve

3: 3/2-position

**Thread**

Metric

01 - PT 1/8”
02 - PT 1/4”
03 - PT 3/8”

Inch

01 - NPT 1/8”
02 - NPT 1/4”
03 - NPT 3/8”

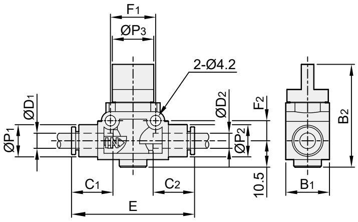
※ None:
No option for QHV

SQ□
MSQ□
SP□
SQ□J
SQR□
SQ□G
RQL
M□
Stainless steel fitting
Brass Fitting
Full copper fitting
□SC
QS□
QMC
QT
QH□
QV□
QST
PU Tube

## ◆ **QHV** series Switching type in-line

Metric specification

| Port size ØD1 | Port size ØD2 | Model | B1 | B2 | ØP1 | ØP2 | ØP3 | C1 | C2 | E | F1 | F2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | Ø4 | QHV 4 | 17.4 | 41 | 10.5 | 10.5 | 16.5 | 14.5 | 14.5 | 49 | 18 | 8 | 3.4 | 23 |
| Ø6 | Ø6 | QHV 6 | 17.4 | 41 | 12.4 | 12.4 | 16.5 | 16.5 | 16.5 | 49 | 18 | 8 | 7.2 | 24 |
| Ø8 | Ø8 | QHV 8 | 17.4 | 41 | 15 | 15 | 16.5 | 18.5 | 18.5 | 54 | 18 | 8 | 8.7 | 26.5 |
| Ø10 | Ø10 | QHV 10 | 21.2 | 41 | 17.8 | 17.8 | 19.5 | 20.5 | 20.5 | 64 | 24 | 11 | 17.4 | 49 |
| Ø12 | Ø12 | QHV 12 | 21.2 | 41 | 21.2 | 21.2 | 19.5 | 22.3 | 22.3 | 69.2 | 24 | 11 | 18.1 | 54.5 |



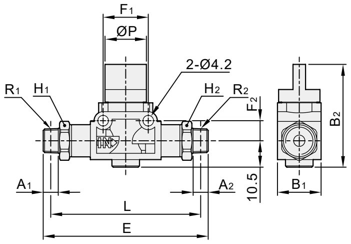
Inch specification

| Port size ØD1 | Port size ØD2 | Model | B1 | B2 | ØP1 | ØP2 | ØP3 | C1 | C2 | E | F1 | F2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32" | 5/32" | QHV 5/32 | 17.4 | 41 | 10.5 | 10.5 | 16.5 | 14.5 | 14.5 | 49 | 18 | 8 | 3.4 | 23 |
| 1/4" | 1/4" | QHV 1/4 | 17.4 | 41 | 12.4 | 12.4 | 16.5 | 16.5 | 16.5 | 49 | 18 | 8 | 7.2 | 24 |
| 5/16" | 5/16" | QHV 5/16 | 17.4 | 41 | 15 | 15 | 16.5 | 18.5 | 18.5 | 54 | 18 | 8 | 8.7 | 26.5 |
| 3/8" | 3/8" | QHV 3/8 | 21.2 | 41 | 17.8 | 17.8 | 19.5 | 20.5 | 20.5 | 64 | 24 | 11 | 17.4 | 49 |

## ◆ **QHVN-N** series Switching type in-line

Metric specification

| Thread size R1(PT) | Thread size R2(PT) | Model | A1 | A2 | B1 | B2 | E | L | ØP | F1 | F2 | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8" | 1/8" | QHVN - N 01 | 6 | 6 | 17.4 | 41 | 73.2 | 67.2 | 16.5 | 18 | 8 | 19 | 19 | 5.5 | 64 |
| 1/4" | 1/4" | QHVN - N 02 | 9 | 9 | 21.2 | 41 | 80.2 | 19.5 | 16.5 | 18 | 8 | 19 | 19 | 15.8 | 68 |
| 3/8" | 3/8" | QHVN - N 03 | 9 | 9 | 21.2 | 41 | 80.2 | 19.5 | 16.5 | 18 | 8 | 19 | 19 | 15.7 | 72 |



Inch specification

| Thread size R1(NPT) | Thread size R2(NPT) | Model | A1 | A2 | B1 | B2 | E | L | ØP | F1 | F2 | Across flats H1 | Across flats H2 | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8" | 1/8" | QHVN - N 1/8 | 6 | 6 | 17.4 | 41 | 73.2 | 67.2 | 16.5 | 18 | 8 | 19 | 19 | 5.5 | 64 |
| 1/4" | 1/4" | QHVN - N 1/4 | 9 | 9 | 21.2 | 41 | 80.2 | 19.5 | 16.5 | 18 | 8 | 19 | 19 | 15.8 | 68 |
| 3/8" | 3/8" | QHVN - N 3/8 | 9 | 9 | 21.2 | 41 | 80.2 | 19.5 | 16.5 | 18 | 8 | 19 | 19 | 15.7 | 72 |

# QHV series Switching Type In-line

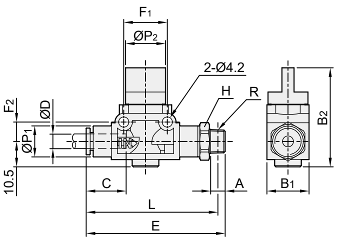
## Dimensions

**CHELIC**

### ➊ **QHVN-R** series Switching type in-line

Metric specification

| Port size ØD | Thread size R(PT) | Model | A | $B_1$ | $B_2$ | C | E | L | $ØP_1$ | $ØP_2$ | $F_1$ | $F_2$ | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | QHVN-R 4 - 01 | 6 | 17.4 | 41 | 14.5 | 57.7 | 54.7 | 10.5 | 16.5 | 18 | 8 | 14 | 3.4 | 34 |
| Ø6 | 1/8" | QHVN-R 6 - 01 | 6 | 17.4 | 41 | 16.5 | 57.4 | 54.4 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 35 |
| | 1/4" | QHVN-R 6 - 02 | 9 | 17.4 | 41 | 16.5 | 61 | 56.5 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 36 |
| Ø8 | 1/8" | QHVN-R 8 - 01 | 6 | 17.4 | 41 | 18.5 | 63.6 | 60.6 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 1/4" | QHVN-R 8 - 02 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 3/8" | QHVN-R 8 - 03 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 49.5 |



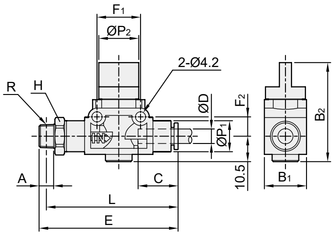
Inch specification

| Port size ØD | Thread size R(NPT) | Model | A | $B_1$ | $B_2$ | C | E | L | $ØP_1$ | $ØP_2$ | $F_1$ | $F_2$ | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32" | 1/8" | QHVN-R 5/32－01 | 6 | 17.4 | 41 | 14.5 | 57.7 | 54.7 | 10.5 | 16.5 | 18 | 8 | 14 | 3.4 | 34 |
| 1/4" | 1/8" | QHVN-R 1/4－01 | 6 | 17.4 | 41 | 16.5 | 57.4 | 54.4 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 35 |
| | 1/4" | QHVN-R 1/4－02 | 9 | 17.4 | 41 | 16.5 | 61 | 56.5 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 36 |
| 5/16" | 1/8" | QHVN-R 5/16－01 | 6 | 17.4 | 41 | 18.5 | 63.6 | 60.6 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 1/4" | QHVN-R 5/16－02 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 3/8" | QHVN-R 5/16－03 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 49.5 |

### ➊ **QHVN-L** series Switching type in-line

Metric specification

| Port size ØD | Thread size R(PT) | Model | A | $B_1$ | $B_2$ | C | E | L | $ØP_1$ | $ØP_2$ | $F_1$ | $F_2$ | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | 1/8" | QHVN-L 4－01 | 6 | 17.4 | 41 | 14.5 | 57.7 | 54.7 | 10.5 | 16.5 | 18 | 8 | 14 | 3.4 | 34 |
| Ø6 | 1/8" | QHVN-L 6－01 | 6 | 17.4 | 41 | 16.5 | 57.4 | 54.4 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 35 |
| | 1/4" | QHVN-L 6－02 | 9 | 17.4 | 41 | 16.5 | 61 | 56.5 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 36 |
| Ø8 | 1/8" | QHVN-L 8－01 | 6 | 17.4 | 41 | 18.5 | 63.6 | 60.6 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 1/4" | QHVN-L 8－02 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 3/8" | QHVN-L 8－03 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 49.5 |



Inch specification

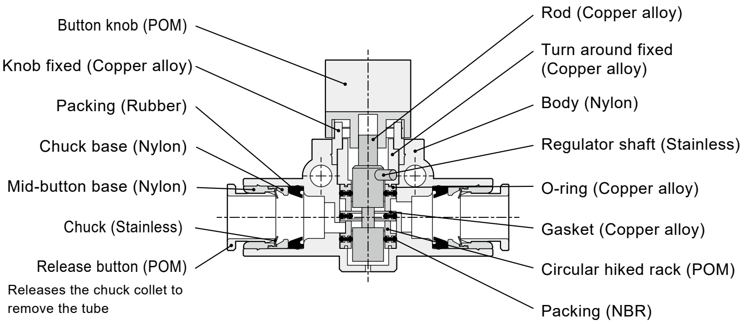
| Port size ØD | Thread size R(NPT) | Model | A | $B_1$ | $B_2$ | C | E | L | $ØP_1$ | $ØP_2$ | $F_1$ | $F_2$ | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32" | 1/8" | QHVN-L 5/32－01 | 6 | 17.4 | 41 | 14.5 | 57.7 | 54.7 | 10.5 | 16.5 | 18 | 8 | 14 | 3.4 | 34 |
| 1/4" | 1/8" | QHVN-L 1/4－01 | 6 | 17.4 | 41 | 16.5 | 57.4 | 54.4 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 35 |
| | 1/4" | QHVN-L 1/4－02 | 9 | 17.4 | 41 | 16.5 | 61 | 56.5 | 12.4 | 16.5 | 18 | 8 | 14 | 7.5 | 36 |
| 5/16" | 1/8" | QHVN-L 5/16－01 | 6 | 17.4 | 41 | 18.5 | 63.6 | 60.6 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 1/4" | QHVN-L 5/16－02 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 46 |
| | 3/8" | QHVN-L 5/16－03 | 9 | 17.4 | 41 | 18.5 | 66.6 | 62.1 | 15 | 16.5 | 18 | 8 | 19 | 8.6 | 49.5 |

# QHV3 series Switching Type In-line

## Product features/ Code of order

CHELIC

### Internal structure

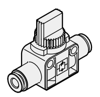

Button knob (POM)
Knob fixed (Copper alloy)
Packing (Rubber)
Chuck base (Nylon)
Mid-button base (Nylon)
Chuck (Stainless)
Release button (POM)
Releases the chuck collet to remove the tube
Rod (Copper alloy)
Turn around fixed (Copper alloy)
Body (Nylon)
Regulator shaft (Stainless)
O-ring (Copper alloy)
Gasket (Copper alloy)
Circular hiked rack (POM)
Packing (NBR)

### Specification

| Item \ Port size | | | Ø6, Ø8, Ø10, Ø12 |
|---|---|---|---|
| Fluid | | | Air |
| Pressure range | | kgf/cm²(kPa) | 0 ~ 9 ( 0 ~ 900 ) |
| Proof pressure | | kgf/cm²(kPa) | 10 ( 1000 ) |
| Proof vacuum pressure | | kPa(Torr) | -100 (10) |
| Ambient and fluid temperature | | °C | 5 ~ 60 |
| Material | Body | | Brass (Nickel-plated) |
| | Plastic | | NYLON, PBT, PP |
| Thread | | Rc(PT) | 1/8”, 1/4”, 3/8” |
| Seal on the threads | | | With sealant |

### Code of order

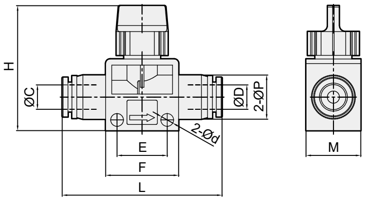
QHV3 — 6 — 3

| Model | Port size | Position |
|---|---|---|
|  | Metric<br>6 - Ø6 mm<br>8 - Ø8 mm<br>10 - Ø10 mm<br>12 - Ø12 mm | 0: 2 port 2-position<br>3: 3 port 2-position |

# QHV3 series Switching Type In-line

## Dimensions

### QHV3 series Switching type in-line



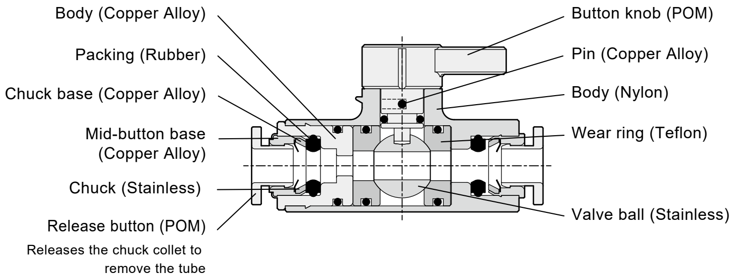
Metric specification

| Port size ØC | Port size ØD | Model | ØP | Ød | E | F | L | H | F1 | M |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø6 | Ø6 | QHV3 6-6 | 15 | 4.2 | 16.5 | 24 | 52 | 41 | 18 | 18 |
| Ø8 | Ø6 | QHV3 8-6 | 15 | 4.2 | 16.5 | 24 | 52 | 41 | | 18 |
| Ø8 | Ø8 | QHV3 8-8 | 15 | 4.2 | 16.5 | 24 | 52 | 41 | | 18 |
| Ø10 | Ø8 | QHV3 10-8 | 21.5 | 4.2 | 21.5 | 29 | 63 | 45 | 24 | 22 |
| Ø10 | Ø10 | QHV3 10-10 | 21.5 | 4.2 | 21.5 | 29 | 63 | 45 | | 22 |
| Ø12 | Ø10 | QHV3 12-10 | 21.5 | 4.2 | 21.5 | 29 | 63 | 45 | | 22 |
| Ø12 | Ø12 | QHV3 12-12 | 21.5 | 4.2 | 21.5 | 29 | 63 | 45 | | 22 |

# QVA series Ball Type Switch In-line

## Product features/ Code of order

### Internal structure


Body (Copper Alloy)
Packing (Rubber)
Chuck base (Copper Alloy)
Mid-button base (Copper Alloy)
Chuck (Stainless)
Release button (POM)
Releases the chuck collet to remove the tube
Button knob (POM)
Pin (Copper Alloy)
Body (Nylon)
Wear ring (Teflon)
Valve ball (Stainless)

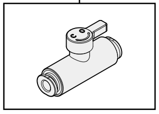
### Specification

| Item | Port size | Ø4, Ø6, Ø8, Ø10, Ø12, 5/32”, 5/16”, 3/8” |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm²(kPa) | 0 ~ 9 ( 0 ~ 900 ) |
| Proof pressure | kgf/cm²(kPa) | 10 ( 1000 ) |
| Proof vacuum pressure | kPa(Torr) | -100 (10) |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |
| Thread | Rc (PT/NPT) | M5x0.8p (10/32”), 1/8”, 1/4”, 3/8” |
| Seal on the threads | | With sealant |

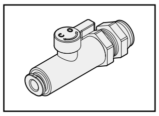
### Code of order

**QVA** – **6** –

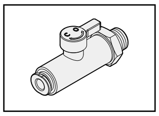
**Model**



QVA:
Ball type switch in-line



QVAH:
Bulkhead switch in-line



QVAB:
Ball type switch male straight

**Port size**

Metric

4 - Ø4 mm
6 - Ø6 mm

Inch

5/32” - Ø3.97 mm

Inch 1/4” is not produce right now.

**Thread**

Metric

M5 - M5x0.8p
01 - PT 1/8”

Inch

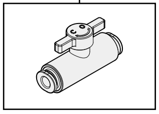
10/32 - 10/32”

QVAB limited specification option.

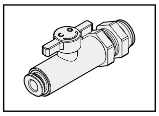
### Code of order

**QVA** – **8** –

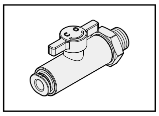
**Model**



QVA:
Ball type switch in-line



QVAH:
Bulkhead switch in-line



QVAB:
Ball type switch male straight

**Port size**

Metric

8 - Ø8 mm
10 - Ø10 mm
12 - Ø12 mm

Inch

5/16” - Ø7.94 mm
3/8” - Ø9.53 mm

Inch 1/4” is not produce right now.

**Thread**

Metric

02 - PT 1/4”
03 - PT 3/8”
04 - PT 1/2”

Inch

01 - NPT 1/8”
02 - NPT 1/4”
03 - NPT 3/8”
04 - NPT 1/2”

QVAB limited specification option.

# QVA series Ball Type Switch In-line

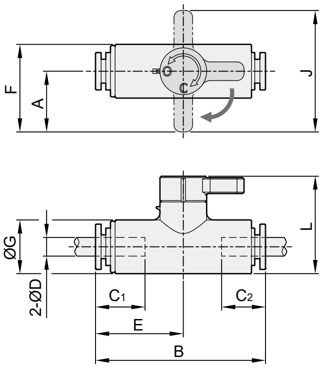
## Dimensions

### QVA series

Ball type switch in-line

Metric: Ø4, Ø6
Imperial: 5/32”

Metric: Ø8, Ø10, Ø12
Imperial: 5/16”, 3/8”



Metric specification

| Port size ØD | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | QVA 4 - 4 | 13 | 36.4 | 10.6 | 11.5 | 18.8 | 18.8 | 11.5 | – | 20.9 | 9.6 | 10 |
| Ø6 | QVA 6 - 6 | 13 | 37.1 | 11.6 | 11.8 | 19.2 | 18.8 | 11.5 | – | 20.9 | 9.6 | 15 |

Inch specification

| Port size ØD | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | QVA 5/32 - 5/32 | 13 | 36.4 | 10.6 | 11.5 | 18.8 | 18.8 | 11.5 | – | 20.9 | 9.6 | 10 |

Metric specification

| Port size ØD | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø8 | QVA 8 - 8 | 18 | 46.8 | 16.7 | 16.7 | 22.7 | 26.5 | 17 | 36 | 27.7 | 19.6 | 25 |
| Ø10 | QVA 10 - 10 | 18 | 50.9 | 18.7 | 18.7 | 29.2 | 30 | 24 | 36 | 34 | 50.2 | 60 |
| Ø12 | QVA 12 - 2 | 18 | 61.5 | 21.2 | 19.8 | 31.6 | 30 | 24 | 36 | 34 | 50.2 | 55 |

Inch specification

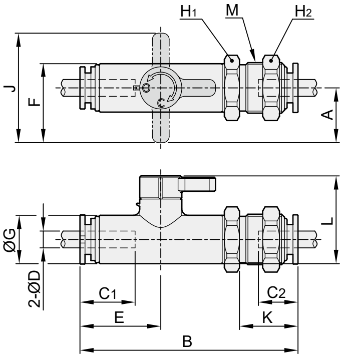
| Port size ØD | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | L | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/16” | QVA 5/16 - 5/16 | 18 | 46.8 | 16.7 | 13.5 | 22.7 | 26.5 | 17 | 36 | 27.7 | 19.6 | 25 |
| 3/8” | QVA 3/8 - 3/8 | 18 | 50.9 | 18.7 | 18.3 | 29.2 | 30 | 24 | 36 | 34 | 50.2 | 60 |

### QVAH series

Bulkhead switch in-line

Metric: Ø4, Ø6
Imperial: 5/32”

Metric: Ø8, Ø10, Ø12
Imperial: 5/16”, 3/8”



Metric specification

| Port size ØD | Thread size M | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | K | L | Across flats $H_1$ | Across flats $H_2$ | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M12 x 1 | QVAH 4 - 4 | 13 | 51.1 | 10.6 | 11.2 | 18.8 | 18.8 | 11.5 | – | 13.6 | 20.9 | 14 | 14 | 9.6 | 35 |
| Ø6 | M12 x 1 | QVAH 6 - 6 | 13 | 51.8 | 11.6 | 11.6 | 19.2 | 18.8 | 11.5 | – | 13.9 | 20.9 | 14 | 14 | 9.6 | 47 |

Inch specification

| Port size ØD | Thread size M | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | K | L | Across flats $H_1$ | Across flats $H_2$ | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | M12x1 | QVAH 5/32-5/32 | 13 | 51.1 | 10.6 | 11.2 | 18.8 | 18.8 | 11.5 | – | 13.6 | 20.9 | 14 | 14 | 9.6 | 35 |

Metric specification

| Port size ØD | Thread size M | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | K | L | Across flats $H_1$ | Across flats $H_2$ | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø8 | M16x1 | QVAH 8- 8 | 18 | 67.7 | 16.6 | 18.6 | 22.7 | 26.5 | 17 | 36 | 20.2 | 27.7 | 19 | 19 | 19.6 | 60 |
| Ø10 | M20x1 | QVAH 10 -10 | 18 | 80.8 | 18.7 | 20.9 | 22.8 | 30 | 24 | 36 | 21 | 34 | 24 | 24 | 50.2 | 100 |
| Ø12 | M22x1 | QVAH 12 -12 | 18 | 84.4 | 19.2 | 23.7 | 31.6 | 30 | 24 | 36 | 22.2 | 34 | 24 | 24 | 50.2 | 110 |

Inch specification

| Port size ØD | Thread size M | Model | A | B | $C_1$ | $C_2$ | E | F | ØG | J | K | L | Across flats $H_1$ | Across flats $H_2$ | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/16” | M16x1 | QVAH 5/16-5/16 | 18 | 67.7 | 16.6 | 18.6 | 22.7 | 26.5 | 17 | 36 | 20.2 | 27.7 | 19 | 19 | 19.6 | 60 |
| 3/8” | M20x1 | QVAH 3/8-3/8 | 18 | 80.8 | 18.7 | 20.9 | 22.8 | 30 | 24 | 36 | 21 | 34 | 24 | 24 | 50.2 | 100 |

# QVA series Ball Type Switch In-line

## Dimensions

### QVAB series Ball type switch male straight

Metric: Ø4, Ø6
Imperial: 5/32”

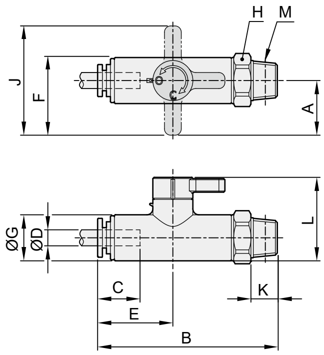
Metric specification

| Port size ØD | Thread size M | Model | A | B | C | E | F | ØG | J | K | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | M5 | QVAB 4 - M5 | 13 | 42.4 | 10.6 | 18.8 | 18.8 | 11.5 | – | 4.1 | 20.9 | 12 | 9.6 | 12 |
| | PT 1/8” | QVAB 4 - 01 | 13 | 44.9 | 10.6 | 18.8 | 18.8 | 11.5 | – | 6 | 20.9 | 12 | 9.6 | 13 |
| Ø6 | M5 | QVAB 6 - M5 | 13 | 42.8 | 11.6 | 19.2 | 18.8 | 11.5 | – | 4.1 | 20.9 | 12 | 9.6 | 18 |
| | PT1/8” | QVAB 6 - 01 | 13 | 45.3 | 11.6 | 19.2 | 18.8 | 11.5 | – | 6 | 20.9 | 12 | 9.6 | 20 |

Metric: Ø8, Ø10, Ø12
Imperial: 5/16”, 3/8”

Inch specification

| Port size ØD | Thread size M | Model | A | B | C | E | F | ØG | J | K | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | NPT 10/32 | QVAB 5/32-10/32 | 13 | 42.4 | 10.6 | 18.8 | 18.8 | 11.5 | – | 4.1 | 20.9 | 12 | 9.6 | 12 |
| | NPT 1/8” | QVAB 5/32 - 01 | 13 | 44.9 | 10.6 | 18.8 | 18.8 | 11.5 | – | 6 | 20.9 | 12 | 9.6 | 13 |



Metric specification

| Port size ØD | Thread size M | Model | A | B | C | E | F | ØG | J | K | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø8 | PT 1/8” | QVAB 8 - 01 | 18 | 55 | 16.6 | 22.7 | 26.5 | 17 | 36 | 6 | 27.7 | 19 | 19.6 | 42 |
| | PT 1/4” | QVAB 8 - 02 | 18 | 58 | 16.6 | 22.7 | 26.5 | 17 | 36 | 9 | 27.7 | 19 | 19.6 | 45 |
| | PT 3/8” | QVAB 8 - 03 | 18 | 58 | 16.6 | 22.7 | 26.5 | 17 | 36 | 9 | 27.7 | 19 | 19.6 | 50 |
| Ø10 | PT 1/4” | QVAB 10 - 02 | 18 | 69.6 | 18.7 | 22.8 | 30 | 24 | 36 | 9 | 34 | 24 | 50.2 | 91 |
| | PT 3/8” | QVAB 10 - 03 | 18 | 69.6 | 18.7 | 22.8 | 30 | 24 | 36 | 9 | 34 | 24 | 50.2 | 95 |
| | PT 1/2” | QVAB 10 - 04 | 18 | 71.6 | 18.7 | 22.8 | 30 | 24 | 36 | 11 | 34 | 24 | 50.2 | 99 |
| Ø12 | PT 1/4” | QVAB 12 - 02 | 18 | 71.6 | 19.2 | 31.6 | 30 | 24 | 36 | 9 | 34 | 24 | 50.2 | 90 |
| | PT 3/8” | QVAB 12 - 03 | 18 | 71.6 | 19.2 | 31.6 | 30 | 24 | 36 | 9 | 34 | 24 | 50.2 | 95 |
| | PT 1/2” | QVAB 12 - 04 | 18 | 73.6 | 19.2 | 31.6 | 30 | 24 | 36 | 11 | 34 | 24 | 50.2 | 100 |

Inch specification

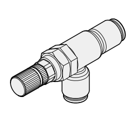
| Port size ØD | Thread size M | Model | A | B | C | E | F | ØG | J | K | L | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/16” | NPT 1/8” | QVAB 5/16 - 01 | 18 | 55 | 16.6 | 22.7 | 26.5 | 17 | 36 | 6 | 27.7 | 19 | 19.6 | 42 |
| | NPT 1/4” | QVAB 5/16 - 02 | 18 | 58 | 16.6 | 22.7 | 26.5 | 17 | 36 | 9 | 27.7 | 19 | 19.6 | 45 |
| | NPT 3/8” | QVAB 5/16 - 03 | 18 | 58 | 16.6 | 22.7 | 26.5 | 17 | 36 | 9 | 27.7 | 19 | 19.6 | 50 |
| 3/8” | NPT 1/4” | QVAB 3/8 - 02 | 18 | 69.6 | 18.7 | 22.8 | 30 | 24 | 36 | 9 | 34 | 24 | 50.2 | 91 |
| | NPT 3/8” | QVAB 3/8 - 03 | 18 | 69.6 | 18.7 | 22.8 | 30 | 24 | 36 | 9 | 34 | 24 | 50.2 | 95 |
| | NPT 1/2” | QVAB 3/8 - 04 | 18 | 71.6 | 18.7 | 22.8 | 30 | 24 | 36 | 11 | 34 | 24 | 50.2 | 99 |

# QST series  Speed Controller - Panel Type

## Product features/ Code of order

### Code of order

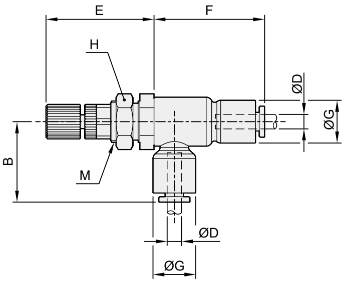
**QST** – **6** – **6**

| Model | Port size | Port size |
|---|---|---|
| <br>QST:<br>Speed controller -<br>Panel type | Metric<br>4 - Ø4 mm<br>6 - Ø6 mm<br>8 - Ø8 mm<br>10 - Ø10 mm | Metric<br>4 - Ø4 mm<br>6 - Ø6 mm<br>8 - Ø8 mm<br>10 - Ø10 mm |
| | Inch<br>5/32” - Ø3.97 mm<br>1/4” - Ø6.35 mm<br>5/16” - Ø7.94 mm<br>3/8” - Ø9.53 mm | Inch<br>5/32” - Ø3.97 mm<br>1/4” - Ø6.35 mm<br>5/16” - Ø7.94 mm<br>3/8” - Ø9.53 mm |

### Specification

| Item | Port size | Ø4, Ø6, Ø8, Ø10, 5/32”, 1/4”, 5/16”, 3/8” |
|---|---|---|
| Fluid | | Air |
| Pressure range | kgf/cm² (kPa) | 0 ~ 9 ( 900 ) |
| Proof pressure | kgf/cm² (kPa) | 10 ( 1000 ) |
| Number of needle rotation | | 10 (8) round |
| Ambient and fluid temperature | °C | 5 ~ 60 |
| Material | Body | Brass (Nickel-plated) |
| | Plastic | NYLON, PBT, PP |

### QST series  Speed controller - Panel type



Metric specification

| Port size ØD | Thread size ØD | Model | B | E | F | ØG | M | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø4 | Ø4 | QST 4 – 4 | 23.4 | 31.3 | 32.1 | 12.4 | M12x1.0p | 14 | 3.4 | 35 |
| Ø6 | Ø6 | QST 6 – 6 | 23.7 | 31.3 | 32.4 | 12.4 | M12x1.0p | 14 | 7.2 | 35 |
| Ø8 | Ø8 | QST 8 – 8 | 29.5 | 36.5 | 37.6 | 17.8 | M14x1.0p | 17 | 8.7 | 70 |
| Ø10 | Ø10 | QST 10 – 10 | 30.1 | 36.5 | 38.2 | 17.8 | M14x1.0p | 17 | 17.4 | 75 |

Inch specification

| Port size ØD | Thread size ØD | Model | B | E | F | ØG | M | Across flats H | Effective orifice mm² | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32” | 5/32” | QST 5/32 – 5/32 | 23.4 | 31.3 | 32.1 | 12.4 | M12x1.0p | 14 | 3.4 | 35 |
| 1/4” | 1/4” | QST 1/4 – 1/4 | 23.7 | 31.3 | 32.4 | 12.4 | M12x1.0p | 14 | 7.2 | 35 |
| 5/16” | 5/16” | QST 5/16 – 5/16 | 29.5 | 36.5 | 37.6 | 17.8 | M14x1.0p | 17 | 8.7 | 70 |
| 3/8” | 3/8” | QST 3/8 – 3/8 | 30.1 | 36.5 | 38.2 | 17.8 | M14x1.0p | 17 | 17.4 | 75 |

# PU series PU Tube

## Product features/ Code of order

### Code of order

**PU** — **06** — **40** — **BK**

**Model**

PU: PU tube
PN: PN tube

**Outer dimension**

| Mark | Out-side diam (mm) |
|---|---|
| 03 | Ø3 |
| 04 | Ø4 |
| 06 | Ø6 |
| 08 | Ø8 |
| 10 | Ø10 |
| 12 | Ø12 |

**Inner dimension**

| Mark | In-side diam | Model | |
|---|---|---|---|
| | | PU | PN |
| 20 | Ø2.0 | ● | – |
| 25 | Ø2.5 | ● | ● |
| 40 | Ø4.0 | ● | ● |
| 50 | Ø5.0 | ● | – |
| 60 | Ø6.0 | – | ● |
| 65 | Ø6.5 | ● | – |
| 75 | Ø7.5 | – | ● |
| 80 | Ø8.0 | ● | – |
| 90 | Ø9.0 | – | ● |

**Color**

| Mark | Color | Model | |
|---|---|---|---|
| | | PU | PN |
| BK | Black | ● | – |
| BU | Blue | ● | – |
| TR | Trans-parent | ● | – |
| OR | Orange | ● | – |
| WH | White | – | ● |

Also available in other color.

### Specification

- PU tube & Water resistant PU tube & Polyethylene tube

| Model | OD x ID (mm) | Burst pressure (kgf/cm²) | Working pressure (kgf/cm²) | Min bending raids (mm) | Standard length (m) | Temperature (°C) |
|---|---|---|---|---|---|---|
| PU0320 | 3 × 2 | 10 | < 10 | 06 | 500 | -10 ~ +60 |
| PU0425 | 4 × 2.5 | 24 | < 10 | 10 | 200 | -10 ~ +60 |
| PU0640 | 6 × 4 | 24 | < 10 | 20 | 200 | -10 ~ +60 |
| PU0850 | 8 × 5 | 24 | < 10 | 30 | 100 | -10 ~ +60 |
| PU1065 | 10 × 6.5 | 28 | < 10 | 35 | 100 | -10 ~ +60 |
| PU1280 | 12 × 8 | 28 | < 10 | 40 | 100 | -10 ~ +60 |

※ Standard color: Black, Blue, Orange, Transparent (Also available in other color).

- Nylon tube & Polyethylene tube

| Model | OD x ID (mm) | Burst pressure (kgf/cm²) | Working pressure (kgf/cm²) | Min bending raids (mm) | Standard length (m) | Temperature (°C) |
|---|---|---|---|---|---|---|
| PN0425 | 4 × 2.5 | 80 | < 20 | 13 | 200 | -20 ~ +85 |
| PN0640 | 6 × 4 | 80 | < 20 | 24 | 100 | -20 ~ +85 |
| PN0860 | 8 × 6 | 60 | < 20 | 48 | 100 | -20 ~ +85 |
| PN1075 | 10 × 7.5 | 60 | < 15 | 60 | 100 | -20 ~ +85 |
| PN1290 | 12 × 9 | 60 | < 15 | 75 | 100 | -20 ~ +85 |

※ Standard color: White.

### Code of order

**PUL** — **08** — **50** — **6** — **BK**

**Model**

PUL:
Spiral tube

**Outer dimension**

| Mark | Out-side diam (mm) |
|---|---|
| 06 | Ø6 |
| 08 | Ø8 |
| 10 | Ø10 |
| 12 | Ø12 |

**Inner dimension** (mm)

| Mark | In-side diam | | | |
|---|---|---|---|---|
| | Ø4 | Ø5 | Ø6.5 | Ø8 |
| 40 | ● | – | – | – |
| 50 | – | ● | – | – |
| 65 | – | – | ● | – |
| 80 | – | – | – | ● |

**Length**

| Mark | Length (m) |
|---|---|
| 6 | 6 |
| 9 | 9 |
| 12 | 12 |
| 15 | 15 |

**Color**

| Mark | Color | Note |
|---|---|---|
| BK | Block | custom |
| BU | Blue | custom |
| OR | Orange | standard |

※ Also available in other color.

- PU Spiral tube

| Model | OD x ID (mm) | Burst pressure (kgf/cm²) | Working pressure (kgf/cm²) | Min bending raids (mm) | Standard length (m) | Temperature (°C) |
|---|---|---|---|---|---|---|
| PUL0640 | 6 × 4 | 24 | < 10 | 20 | 6、9、12、15 | -10 ~ +60 |
| PUL0850 | 8 × 5 | 32 | < 10 | 30 | 6、9、12、15 | -10 ~ +60 |
| PUL1065 | 10 × 6.5 | 30 | < 10 | 28 | 6、9、12、15 | -10 ~ +60 |
| PUL1280 | 12 × 8 | 28 | < 10 | 37 | 6、9、12、15 | -10 ~ +60 |

※ Standard color: Orange. (Also available in other color)

# Pressure Switch series

CHELIC

850
PS-600
CHELIC
001
1.000

| Model | Power supply voltage | Pressure Range kPa (MPa) | Output | Response time | Connection port | Page |
|---|---|---|---|---|---|---|
| PS-01-G-02 | 12 to 24 VDC (±10%) | 250 ~ 350 kPa | NPN<br>PNP | — | 1/8 (Rc) | P.5-1.3 |
| PS-01-G-04 | | | | | | |
| PS N – 05 | 12 to 24 VDC (±10%) | -0.1 ~ 1 .0 MPa | — | — | Ø6, M5, 1/8" (G, PT, NPT) | P.5-1.6 |
| PS V – 05 | | 0 ~ -101.3 kPa | | | | |
| PS N – 10 | 12 to 24 VDC (±10%) | 0 ~ 1.0 MPa | NPN<br>PNP | 5 ms or less | M5, 1/8" (G, PT, NPT) | P.5-1.9 |
| PS L – 10 | | 0 ~ 100 kPa | | | | |
| PS V – 10 | | -101 ~ 0 kPa | | | | |
| PS N – 30 | 12 to 24 VDC (±10%) | -0.1 ~ 1.0 MPa | NPN<br>PNP | ≦ 2.5 ms<br>Function: 24ms, 192ms and 768ms (selectable) | M5, 1/8" (G, PT, NPT) | P.5-1.11 |
| PS C – 30 | | -100 ~ 100 kPa | | | | |
| PS V – 30 | | 10 ~ -101.3 kPa | | | | |
| PS N – 40 | 12 to 24 VDC (±10%) | -0.1 ~ 1.0 MPa | NPN<br>PNP | ≦ 2.5 ms<br>Function: 24ms, 192ms and 768ms (selectable) | 1/8" (G, PT, NPT) | P.5-1.13 |
| PS C – 40 | | -100 ~ 100 kPa | | | | |
| PS V – 40 | | 10 ~ -101.3 kPa | | | | |
| PS N – 41 | 12 to 24 VDC (±10%) | -0.1 ~ 1.0 MPa | NPN<br>PNP | 0.05s, 0.25s, 0.5s, 1s, 2s, 3s (selectable) | — | P.5-1.16 |
| PS N – 42 | 12 to 24 VDC (±10%) | -0.1 ~ 1.0 MPa | NPN<br>PNP | ≦ 2.5 ms<br>Function: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms (selectable) | 1/8" (G, PT, NPT) | P.5-1.18 |
| PS C – 42 | | -101 ~ 101 kPa | | | | |
| PS V – 42 | | 10 ~ -101.3 kPa | | | | |
| PS N – 43 | 12 to 24 VDC (±10%) | -0.1 ~ 1.0 MPa | — | — | 1/8" (G, PT, NPT) | P.5-1.21 |
| PS C – 43 | | -100 ~ 100 kPa | | | | |
| PS N – 45 | 12 to 24 VDC (±10%) | -0.1 ~ 1.0 MPa | NPN<br>PNP | ≦ 2.5 ms<br>Function: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms (selectable) | M5, 1/8" (G, R, NPT) (GC, Rc, NPTC) | P.5-1.24 |
| PS C – 45 | | -101.0 ~ 101.0 kPa | | | | |
| PS V – 45 | | 10.0 ~ 101.3 kPa | | | | |
| PS N – 47 | 12 to 24 VDC (±10%) | -0.103 ~ 0.103 MPa | | | M5, 1/8" (G, R, NPT) | P.5-1.31 |
| PS C – 47 | | -103.0 ~ 103.0 kPa | | | | |
| PS V – 47 | | 10 ~ 103.0 kPa | | | | |
| PS N – 50 | 12 to 24 VDC (±10%) | -0.100 ~ 1.000MPa | | | M5, 1/4" (G, R, NPT) | P.5-1.35 |
| PS H – 50 | | -0.100 ~ 2.00 MPa | | | | |
| PS V – 50 | | 10.0 ~ -101.3 kPa | | | | |
| PS C – 50 | | -101.0 ~ 101.0 kPa | | | | |

# Pressure Switch series

| Model | Power supply voltage | Pressure Range kPa (MPa) | Output | Response time | Connection port | Page |
|---|---|---|---|---|---|---|
| PS $\boxed{N}$ – 70 | 12 to 24 VDC ( ±10% ) | -0.100 ~ 1.000 MPa | NPN<br>PNP | ≤ 2.5 ms Function: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms, 2000ms, 5000ms(selectable) | M5, 1/8”<br>(G, R, NPT) | P.5-1.44 |
| PS $\boxed{C}$ – 70 | | -101.0 ~ 101.0 kPa | | | | |
| PS $\boxed{V}$ – 70 | | -101.3 ~ 10.0 kPa | | | | |
| PS $\boxed{N}$ – 75 | 12 to 24 VDC ( ±10% ) | -0.100 ~ 1.000MPa | NPN<br>PNP | ≤ 2.5 ms Function: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms, (selectable) | M5, 1/4”<br>(G, R, NPT) | P.5-1.48 |
| PS $\boxed{C}$ – 75 | | -101.0 ~ 101.0 kPa | | | | |
| PS $\boxed{H}$ – 75 | | -0.100 ~ 2.00 MPa | | | | |
| PS-400-S-1 | 12 to 24 VDC ( ±10% ) | 10 ~ -101.3 kPa | NPN<br>PNP | ≤ 2.5 ms<br>Function: 25ms, 100ms, 250ms, 500ms, 1000ms, 1500ms(selectable) | — | P.5-1.52 |
| PS-400-S-2 | | -10 ~ 100 kPa | | | | |
| PS-400-S-3 | | -0.2 ~ 2 kPa | | | | |
| PS-400-S-4 | | -0.5 ~ 5 kPa | | | | |
| PS-400-S-5 | | -100 ~ 100 kPa | | | | |
| PS-400-S-6 | | -101 ~ 500 MPa | | | | |
| PS-400-S-7 | | -0.100 ~ 1 MPa | | | | |
| PS-400-S-8 | | -0.100 ~ 2 MPa | | | | |
| PS-400-S-9 | | -0.100 ~ 2.5 MPa | | | | |
| PS-400-S-10 | | 0 ~ 10 MPa | | | | |
| PS-400-S-11 | | 0 ~ 25 MPa | | | | |
| PS-400-S-12 | | 0 ~ 40 MPa | | | | |
| PS-61□ | 12 to 24 VDC ( ±10% ) | -50 ~ 50 kPa | NPN<br>PNP | — | — | P.5-1.56 |
| PS-8 $\boxed{01}$ | 12 to 24 VDC ( ±10% ) | -100 ~ 1000 Pa | — | ≤ 2.0 ms<br>Function: 32ms, 128ms, 1024ms(selectable) | M5 | P.5-1.59 |
| PS-8 $\boxed{11}$ | | -1000 ~ 1000 Pa | | | | |
| PS-8 $\boxed{02}$ | | -0.20 ~ 2.00 kPa | | | | |
| PS-8 $\boxed{12}$ | | -2.00 ~ 2.00 kPa | | | | |
| PS-8 $\boxed{05}$ | | -0.50 ~ 5.00 kPa | | | | |
| PS-8 $\boxed{15}$ | | -5.00 ~ 5.00 kPa | | | | |
| PSS-01 | 24 VDC ( ±10% ) | 0 ~ 0.1 MPa | — | — | 1/4”<br>(PT, PF, NPT) | P.5-1.63 |
| PSS-02 | | 0 ~ 0.2 MPa | | | | |
| PSS-07 | | 0 ~ 0.7 MPa | | | | |
| PSS-10 | | 0 ~ 1.0 MPa | | | | |
| MCS-9D | DC 5~120V<br>AC 5~120V | 1~7bar<br>(1.02~7.14 kgf/cm$^2$) | — | — | 1/8” | P.5-1.66 |

# PS - 01 series - Gap sensor

## Features

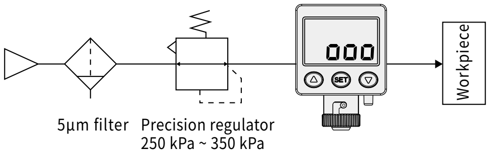
- Digital LCD display, easy readout
- IP65 enclosure
- Detection distance: 0.01 ~ 0.10 mm
- Repeatability: ±0.005mm

## Specification

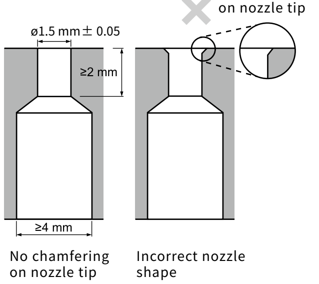
| Item \ Model | | PS-01-G-02 | PS-01-G-04 |
|---|---|---|---|
| Detection distance | | 0.01 ~ 0.10 mm | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | |
| Withstand Pressure | | 600 kPa | |
| Operating pressure range | | 250 to 350 kPa | |
| Power supply voltage | | 12 to 24V DC ±10%, Ripple ( P-P ) 10 % or less | |
| Current consumption | | ≤ 20mA | |
| Switch Output | | NPN: open collector outputs<br>Max. Load Current: 125mA<br>Max. Supply Voltage: 30V DC<br>Residual Voltage: ≤1.5V | NPN: open collector outputs<br>Max. Load Current: 125mA<br>Max. Supply Voltage: 24V DC<br>Residual Voltage: ≤1.5V |
| Vacuum consumption | | ≤ 8 L/min @ 300kPa | |
| Repeatability | | ± 5 μm | |
| Hysteresis | | Adjustable 1~30 digits | |
| Output short circuit protection | | Yes | |
| Display | | 3 ½ digital, 7 segment LCD display ( White )( Sampling rate : 5 times/ sec. ) | |
| Switch on Indicator | | White Indicator 1 : OUT | |
| Detection nozzle | | ø1.5 mm Note: 2 | |
| Piping Specifications | Supply port | Rc1/8 Note: 3 | |
| | Detection port | Rc1/8 Note: 3 | |
| Environ-mental Resistance | Enclosure | IP65 | |
| | Ambient temp. range | Operation: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | |
| | Ambient humidity range | Operation/ Storage: 35 ~ 85 % RH ( No condensation ) | |
| | Vibration | Total amplitude 1.5 mm, 10 Hz - 55Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | |
| Lead wire | | Ø4 Oil-resistance cable ( PVC ) - 26 AWG ( 0.15 mm² ) - 3 cores | |
| Weight ( With 2 meter lead wire ) | | Approx. 115g | |

Note:

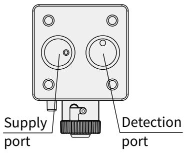
1. Please use air filter to clean air (5μm or less) and install precision regulator.


000
SET
Workpiece
5μm filter
Precision regulator
250 kPa ~ 350 kPa

2. Detection nozzle


No chamfering
on nozzle tip
ø1.5 mm± 0.05
≥2 mm
≥4 mm
No chamfering
on nozzle tip
Incorrect nozzle
shape

3. Back side of product, please refer to product dimension.


Supply
port
Detection
port

# PS - 01 series - Gap sensor

**CHELIC**

## Code of Order

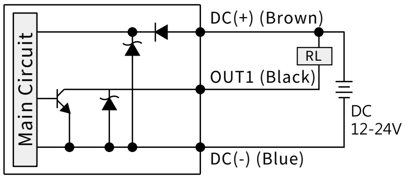
**PS - 01** – **G** – **02** – **Rc** – **BT18**

| Model | Rated distance range | Output | Connection port | Mounting type |
|---|---|---|---|---|
| 250 ~ 350 kPa | **G:** 0.01 ~ 0.10 mm | **02:** 1 NPN Output<br>**04:** 1 PNP Output | **Rc:** Rc1/8 | **None:** Without accessory<br>**BT18** : Stand mounting type<br>**BT19** : Vertical mounting type<br>**PA-E** : Panel adapter<br>**PA-F** : Panel adapter + Front protective lid |

## Circuit wiring diagrams

### PS - 01 - G - 02

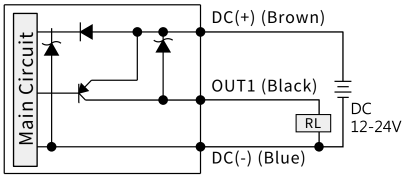
1NPN output



Main Circuit
DC(+) (Brown)
RL
OUT1 (Black)
DC
12-24V
DC(-) (Blue)

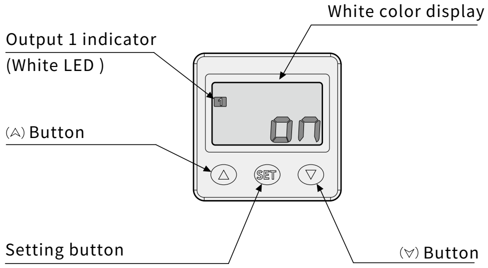
### PS - 01 - G - 04

1NPN output

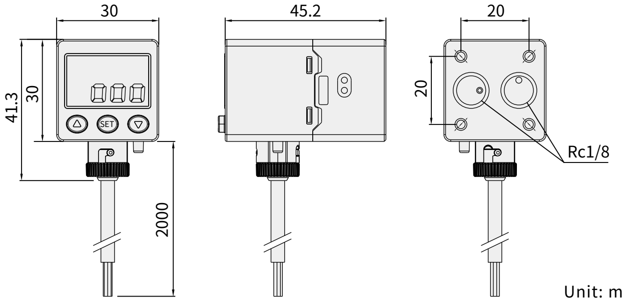


Main Circuit
DC(+) (Brown)
OUT1 (Black)
RL
DC
12-24V
DC(-) (Blue)

## External dimensions and panel description



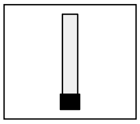
White color display
Output 1 indicator
(White LED )
(⋀) Button
Setting button
(⋎) Button
SET



30
45.2
20
41.3
30
20
2000
Rc1/8
SET

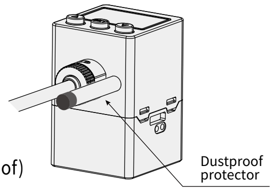
Unit: mm

## IP65 Compliance



⚠ **CAUTION:**

This device must be installed to maintain IP 65 (Dust and splash proof) enclosure rating.

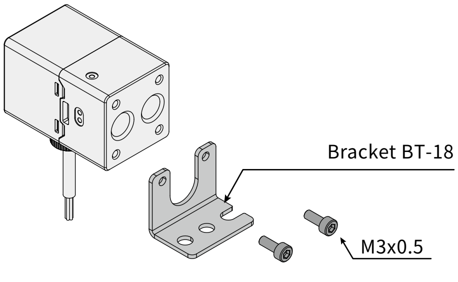


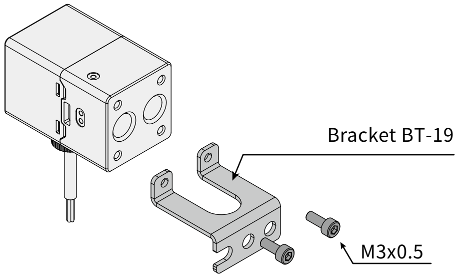
Dustproof protector

# PS - 01 series - Gap sensor

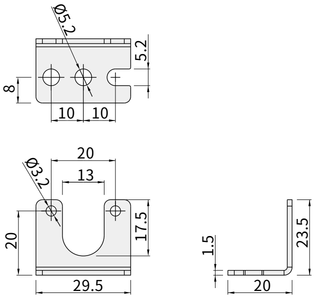
CHELIC

## Mounting bracket

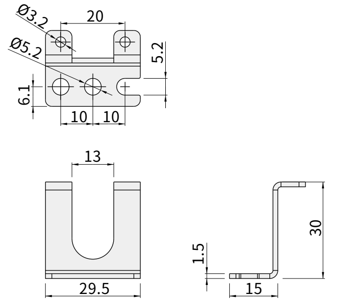

Bracket BT-18
M3x0.5


Bracket BT-19
M3x0.5

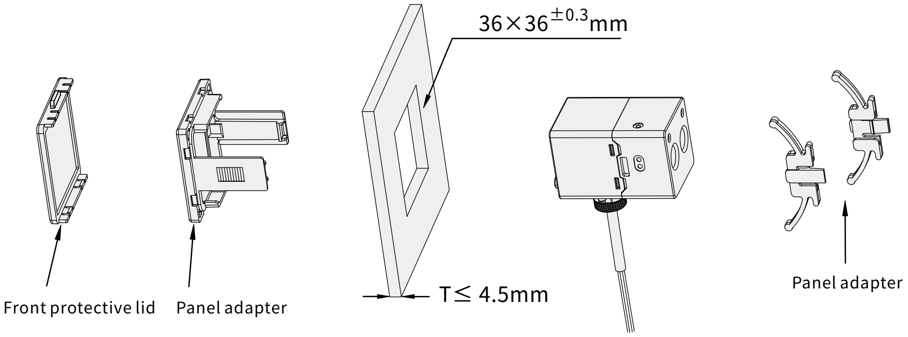
## BT - 18 Stand mounting type


Ø5.2
5.2
8
10
10
20
13
Ø3.2
20
17.5
29.5
1.5
23.5
20

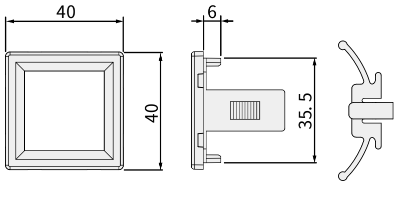
## BT - 19 Vertical mounting type


Ø3.2
20
Ø5.2
5.2
6.1
10
10
13
29.5
1.5
30
15

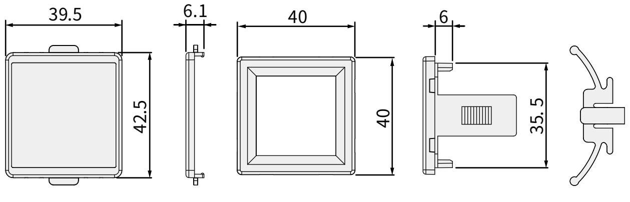
## Panel mount adapter + Front protective lid


36×36$^{\pm0.3}$mm
Front protective lid
Panel adapter
T≤ 4.5mm
Panel adapter

### PA - E Panel adapter



### PA - F Panel ldapter + Front protective lid


39.5
42.5
6.1
40
40
6
35.5

PS-01
PS□-05
PS□-10
PS□-30
PS□-40
PS□-41
PS□-42
PS□-43
PS□-45
PS□-47
PS□-50
PS□-70
PS□-75
PS-400
PS-600
PS-800
PSS
MCS-9D

# PSN(V) - 05 series - Pressure Switch

## Code of Order

**PS N – 05** – **02** – **NPT** –

| Model | Output | Connection port | Cable type |
|---|---|---|---|
| **N:** Positive (0 ~ 0.6 MPa)<br>**V:** Negative (0 ~ -101.3 kPa) | **02:** 2 NPN output<br>**04:** 2 PNP output | **C4** : Ø4<br>**C6** : Ø6<br>**PT** : 1/8"<br>**NPT** : 1/8"<br>**G** : 1/8"<br>**M5** : M5x0.8p | **None:** Cable length is 3M<br>**QD**: M8, 3 PIN Male connector |

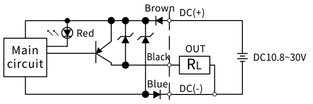
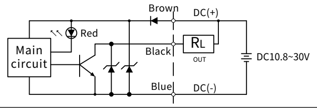
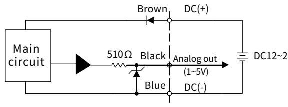
**PS N – 05** – **01** – **NPT** –

| Model | Output | Connection port | Cable type |
|---|---|---|---|
| **C** : Compound (-100 ~ 100 MPa)<br>R : Compound (-101 ~ 500 kPa)<br>**L** : Low (0 ~ 100 kPa)<br>**V** : Negative (0 ~ -101.3 kPa)<br>**N** : Positive (0 ~ 1.0 MPa) | **01 :** Anglog output | **C4** : Ø4<br>**C6** : Ø6<br>**PT** : 1/8"<br>**NPT**: 1/8"<br>**G** : 1/8"<br>**M5** : M5x0.8p | **None:** Cable length is 3M<br>**QD**: M8, 3 PIN Male connector |

## Specification

| Item \ Model | PSV-05-02/04 | PSN-05-02/04 | PSC-05-01 | PSL-05-01 | PSV-05-01 | PSR-05-01 | PSN-05-01 |
|---|---|---|---|---|---|---|---|
| Rated pressure range | 0 ~ - 101.3 kPa | 0 ~ 0.6 MPa | — | | | | |
| Set pressure range | — | | -100 ~ 100 kPa | 0 ~ 100 kPa | 0 ~ -101.3 kPa | -101~ 500 kPa | 0 ~ 1.0 MPa |
| Withstand pressure | 0.6 MPa | 1.5 MPa | 0.2 MPa | | | 1.5 MPa | |
| Applicable fluid | Filtered air, Non-corrosive/ Non-flammable gas | | | | | | |
| Power supply voltage | 10.8 to 30V DC(Included ripple value) | | 12 to 24V DC (5% Ripple ( P-P )) | | | | |
| Load current | 80mA max | | — | | | | |
| Internal voltage drop | NPN ≤ 0.8V, PNP ≤ 0.8V | | — | | | | |
| Current consumption | 10mA max | | | | | | |
| Switch output | NPN or PNP | | — | | | | |
| Analog output | — | | 1 ~ 5 V ±1% F. S./ Linearity ±0.5% F. S. | | | | |
| Output short circuit protection | Yes | | — | | | | |
| Setting method | Adjusting by VR | | — | | | | |
| Response time | Approx. 1ms | | — | | | | |
| Repeatability | ±1% F.S. | | — | | | | |
| Hysteresis | 3% F.S. max | | — | | | | |
| Switch on Indicator | ON: Red indicator | | — | | | | |
| Enclosure | IP 40 | | | | | | |
| Temperature characteristic | ±3 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C | | ±2 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C | | | | |
| Ambient temp. range | Operation: 0 ~ 60 °C, Storage: -20 ~ 70 °C ( No condensation or freezing ) | | Operation: 0 ~ 50 °C, Storage: -20 ~ 70 °C ( No condensation or freezing ) | | | | |
| Ambient humidity range | Operation/ Storage: 35 ~ 85 % RH ( No condensation ) | | | | | | |
| Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z | | | | | | |
| Impact | 980m/s² ( 100 G ) , 3 times each in direction of X, Y and Z | | | | | | |
| Connection port | C4, C6, PT, NPT, G, M5 | | | | | | |
| Lead wire | Ø2.6 Oil-resistance cable ( 0.15 mm² )- 3 cores | | | | | | |
| Weight (With 3 meter lead wire) | Approx. 50g | | | | | | |

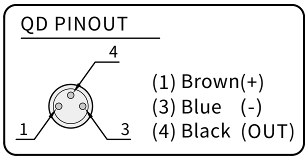
## Circuit wiring diagrams

| Internal circuit / Characteristics | PS □ -05-02 | PS □ -05-04 | PS □ -05-01 |
|---|---|---|---|
| |  Brown<br>DC(+)<br>Red<br>Main circuit<br>Black<br>OUT<br>RL<br>Blue<br>DC(-)<br>DC10.8~30V |  Brown<br>DC(+)<br>Red<br>Main circuit<br>Black<br>RL<br>OUT<br>Blue<br>DC(-)<br>DC10.8~30V |  Brown<br>DC(+)<br>Main circuit<br>510Ω<br>Black<br>Analog out (1~5V)<br>Blue<br>DC(-)<br>DC12~24V |
| Output | NPN open collector 30V 80 mA | PNP open collector 80 mA | — |
| Accuracy | Pressure range 1~10% | | — |
| Switch output | One | | — |
| Indicator light | Red indicator light (light up when output is on) | | — |

# PSN(V) - 05 series - Pressure Switch

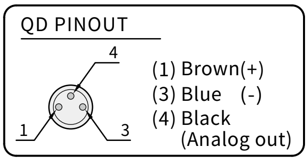
## Pressure setting

- PS □ - 05 - 02
- PS □ - 05 - 04

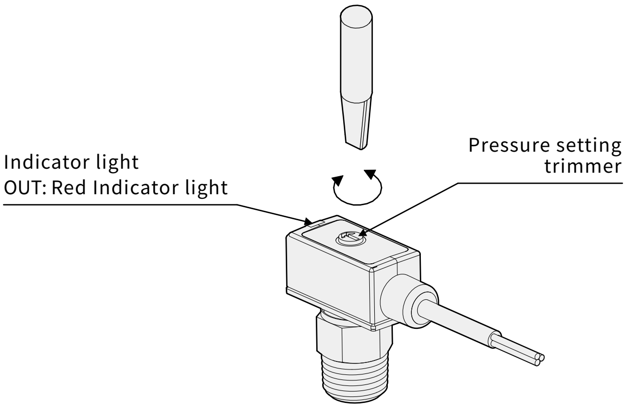


(1) Brown(+)
(3) Blue (-)
(4) Black (OUT)

- PS □ - 05 - 01



(1) Brown(+)
(3) Blue (-)
(4) Black (Analog out)

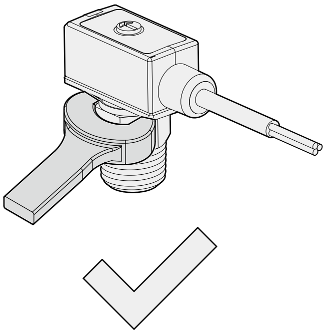


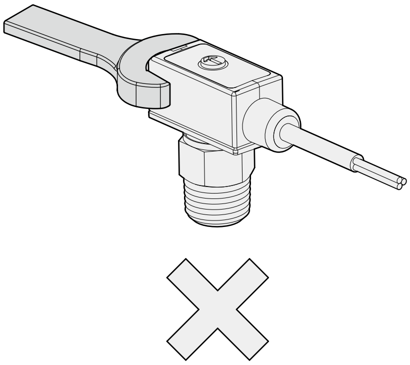
### How to set pressure :

- Lock the pressure switch to the piping and adjust the pressure.
  When the indicator light up, it means finish setting.
- Use the pressure setting trimmer to set ON pressure.
  Rotate counter - clockwise to decrease pressure set point.
  On the other hand, rotate clockwise to increase pressure set point.
- Use appropriate size screwdriver for the setting trimmers.
  Gently turn the screwdriver to make adjustments.
  To prevent damage to the pressure setting trimmer, do not force the trimmer when it comes to a stop.

---

## Installation precautions



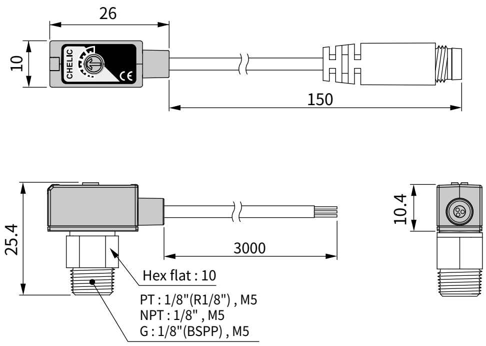


- When mounting, always use the wrench on the metallic area near the pressure port .
  Never apply a wrench to the plastic body, it will damage the sensor.
- Over tightening may cause damages to the port thread, mounting bracket and pressure sensor.
  Under tightening may result loosen or leakage.
- Apply pressure and power after installation and make necessary adjustments and inspect any possible signs of leakage to ensure proper installation.

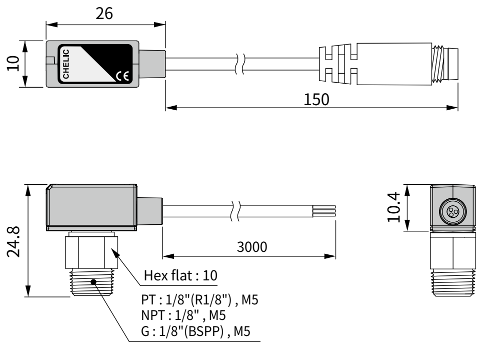
# PSN(V) - 05 series - Pressure Switch

## External dimensions

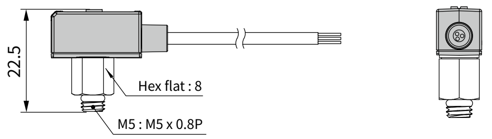
**PS ☐ – 05 – ☐ – ☐ – ☐**


26
10
CHELIC
CE
150
25.4
3000
Hex flat : 10
PT : 1/8"(R1/8") , M5
NPT : 1/8" , M5
G : 1/8"(BSPP) , M5
10.4

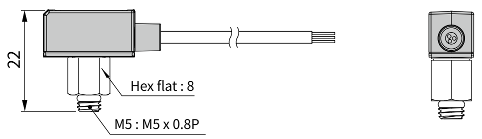
**PS ☐ – 05 – 01 – ☐**


26
10
CHELIC
CE
150
24.8
3000
Hex flat : 10
PT : 1/8"(R1/8") , M5
NPT : 1/8" , M5
G : 1/8"(BSPP) , M5
10.4

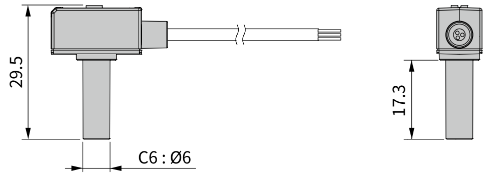
**PS ☐ – 05 – ☐ – M5 – ☐**


22.5
Hex flat : 8
M5 : M5 x 0.8P

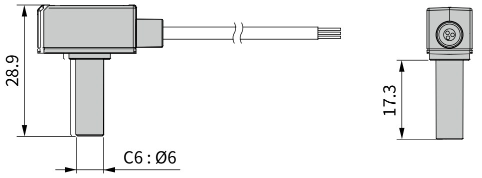
**PS ☐ – 05 – 01 – M5**


22
Hex flat : 8
M5 : M5 x 0.8P

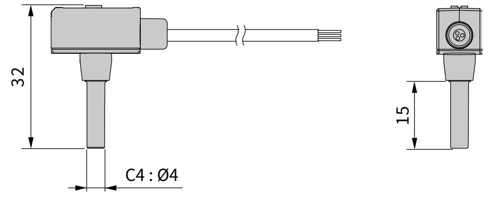
**PS ☐ – 05 – ☐ – C6 – ☐**


29.5
C6 : Ø6
17.3

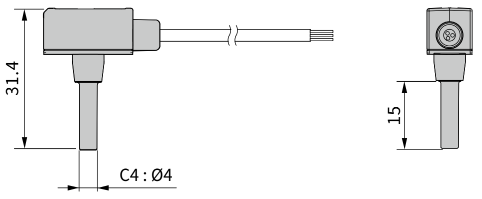
**PS ☐ – 05 – 01 – C6**


28.9
C6 : Ø6
17.3

**PS ☐ – 05 – ☐ – C4 – ☐**



**PS ☐ – 05 – 01 – C4**



# PSN(L, V) - 10 series - Pressure Switch

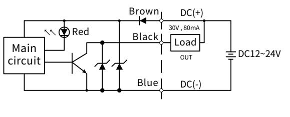
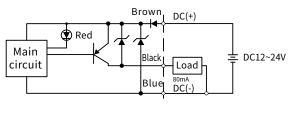
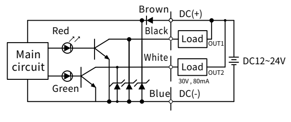
## Code of Order

| PS N – 10 | 01 | NPT | 1 |
|---|---|---|---|
| Model | Output | Connection port | Cable type |
| **N:** Positive ( 0 ~ 1 MPa )<br>**L:** Low ( 0 ~ 100 kPa )<br>**V:** Negative ( -101 ~ 0 kPa ) | **01:** NPN output<br>**02:** PNP output<br>**03:** 2 NPN output | **PT** : 1/8"<br>**NPT**: 1/8"<br>**G** : 1/8" | **1:** With 1M cable<br>**3:** With 3M cable<br>**C:** M8 male connector |

## Specification

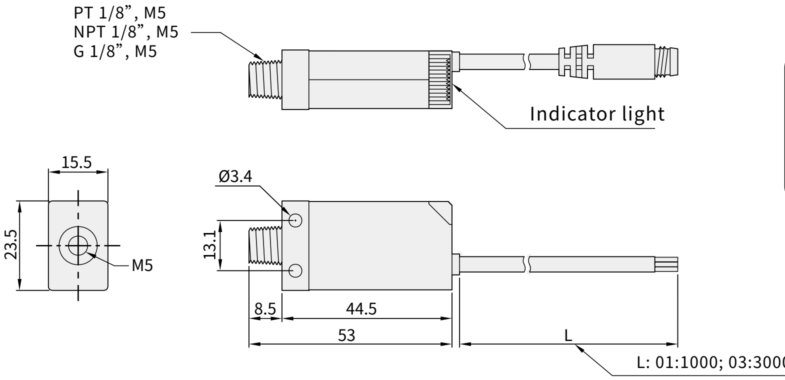
| Item \ Model | | PSN - 10 (Positive) | PSL - 10 (Low ) | PSV - 10 (Negative) |
|---|---|---|---|---|
| Set Pressure Range | | 0 ~ 1 MPa | 0 ~ 100 KPa | - 101 ~ 0 KPa |
| Withstand Pressure | | 1.5 MPa | 300 KPa | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | |
| Power supply voltage | | 12 to 24 VDC ±10%, Ripple ( P-P ) 10 % or less | | |
| Response time | | 5 ms or less | | |
| Repeatability | | ± 1 % F.S. or less | | |
| Current consumption | | 1 Output: NPN & PNP: 31mA MAX, 2 Output: 25mA MAX. | | |
| Environ-mental Resistance | Enclosure | IP 40 | | |
| | Ambient temp. range | Operation: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient humidity range | Operation/ Storage: 35 ~ 85 % RH ( No condensation ) | | |
| | Withstand voltage | 100 VAC 1-min ( between case and lead wire ) | | |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) | | |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | | |
| | Impact | 980 m/s² ( 100 G ), 3 times each in direction of X, Y and Z | | |
| Temperature characteristic | | ≤ ± 3 % F.S. or less ( ambient temperature: 25± 3 °C) | | |
| Connection Port | | PT 1/8”; NPT 1/8”; G 1/8” | | |
| Lead wire | | Ø4 Oil-resistance cable ( PVC ) - 26 AWG ( 0.22 mm² ) - 3 cores | | |
| Weight ( With 1 meter lead wire ) | | Approx. 50 g | | |

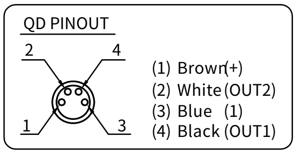
## Circuit wiring diagrams

| Characteristics \ Internal circuit | PS□ -10-01 | PS□ -10-02 | PS□ -10-03 |
|---|---|---|---|
| Internal circuit |  Brown<br>DC(+)<br>Red<br>30V , 80mA<br>Black<br>Load<br>Main circuit<br>OUT<br>DC12~24V<br>Blue<br>DC(-) |  Brown<br>DC(+)<br>Red<br>Main circuit<br>Black<br>Load<br>DC12~24V<br>80mA<br>Blue<br>DC(-) |  Brown<br>DC(+)<br>Red<br>Black<br>Load<br>OUT1<br>Main circuit<br>White<br>Load<br>OUT2<br>DC12~24V<br>30V , 80mA<br>Green<br>Blue<br>DC(-) |
| Output | NPN open collector 30V 80 mA | NPN open collector 80 mA | NPN open collector 30V 80 mA |
| Accuracy | Pressure range 1 ~ 10 % ( Adjustment ) | | ± 3 % F.S. or less (Fixed) |
| Switch output | One | | Two |
| Indicator light | Red indicator light (light up when output is on) | | OUT1 : Red indicator light,<br>OUT2 : Green indicator light<br>(light up when output is on) |

# PSN(L, V) - 10 series - Pressure Switch

## External dimension


PT 1/8", M5
NPT 1/8", M5
G 1/8", M5
Indicator light
15.5
23.5
M5
Ø3.4
13.1
8.5
44.5
53
L
L: 01:1000; 03:3000


QD PINOUT
2
4
1
3
(1) Brown(+)
(2) White (OUT2)
(3) Blue (1)
(4) Black (OUT1)

## Pressure setting

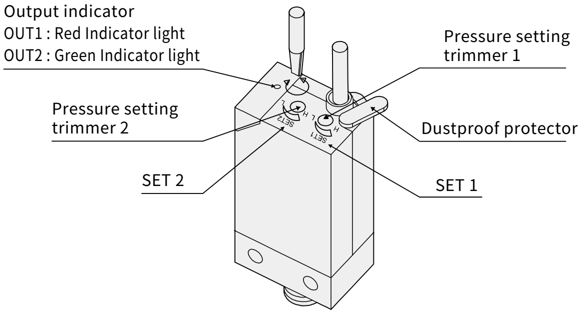
### PS □ - 10 - 03

- Remove dustproof protector to make any adjustments.
  Replace dustproof protector when finished to prevent foreign object from entering.
- Pressure setting trimmer ( SET1 , SET2 ) is for setting the output ( ON ) pressure.
  Rotate SET trimmer counter-clockwise to increase (pressure or vacuum) the ON point.
  Rotate clockwise will decrease will decrease the setting pressure.
- Hysteresis for models with two outputs is 3% fixed.

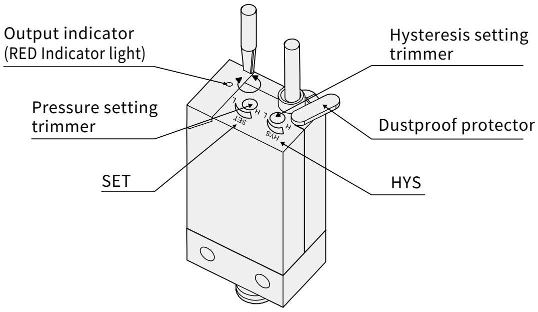
### PS □ - 10 - 01, PS □ - 10 - 02

- Remove dustproof protector to make any adjustments.
  Replace dustproof protector when finished to prevent foreign object from entering.
- Pressure setting trimmer ( SET ) is for setting the output ( ON ) pressure.
  Rotate SET trimmer counter - clockwise to increase ( pressure or vacuum ) the ON point.
  Rotate clockwise will decrease will decrease the setting pressure.
- Hysteresis setting trimmer ( HYS ) is for changing the hysteresis.
  Rotate trimmer counter-clockwise to increase the range 1~10%.
- Use appropriate size screwdriver for the setting trimmers.
  Gently turn the screwdriver to make adjustments.
  Do not force the trimmer when it comes to a stop to prevent damage to the setting trimmer.

**PS □ - 10 - 03**


Output indicator
OUT1 : Red Indicator light
OUT2 : Green Indicator light
Pressure setting trimmer 1
Pressure setting trimmer 2
Dustproof protector
SET 2
SET 1
SET2
SET1
H
L

**PS □ - 10 - 01, PS □ - 10 - 02**


Output indicator
(RED Indicator light)
Hysteresis setting trimmer
Pressure setting trimmer
Dustproof protector
SET
HYS
H
L

# PSN(C, V) - 30 series - Pressure Switch

## Code of Order

PS N – 30 — 01 — NPT —

| Model | Output | Connection port | Cable type |
|---|---|---|---|
| **N:** Positive (-0.1~1 MPa)<br>**C:** Compound (-100~100 kPa)<br>**V:** Negative (0 ~ -101.3 kPa) | **01:** 2 NPN output & 1 Analog output<br>**02:** NPN output<br>**03:** 2 PNP output & 1 Analog output<br>**04:** 2 PNP output | **PT:** 1/8"<br>**NPT:** 1/8"<br>**G:** 1/8" | **None:** Cable length is 2M<br>**QD:** M8, 4 PIN Male connector<br>(Only type 02, 04) |

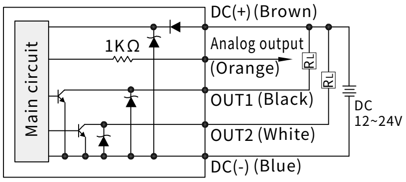
## Specification

| Item | Model | PSN - 30 (Positive) | PSC - 30 (Compound) | PSV - 30 (Negative) |
|---|---|---|---|---|
| Rated Pressure Range | | 0.000 ~ 1.000 MPa | -100.0 ~ 100.0 KPa | 0.0 ~ -101.3 KPa |
| Set Pressure Range | | -0.100 ~ 1.000 MPa | -100.0 ~ 100.0 KPa | 10.0 ~ - 101.3 KPa |
| Withstand Pressure | | 1.5 MPa | 300 kPa | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | |
| Set pressure resolution | KPa | — | 0.1 | |
| | MPa | 0.001 | — | |
| | kgf/cm² | 0.01 | 0.001 | |
| | bar | 0.01 | 0.001 | |
| | psi | 0.1 | 0.01 | |
| | inHg | — | 0.1 | |
| | mmHg | — | 1 | |
| | mmH$_2$O | — | 0.1 | |
| Power supply voltage | | 12 to 24 VDC ±10%, Ripple ( P-P ) ±10% | | |
| Current consumption | | 55mA or less | | |
| Switch Output | | 2NPN open collector outputs<br>Max. Load Current: 100 mA<br>Max. Supply Voltage: 30 V DC<br>Residual Voltage: ≤ 1 V<br>2PNP open collector outputs<br>Max. Load Current: 100 mA<br>Max. Supply Voltage: 24 V DC<br>Residual Voltage: ≤ 1 V | | |
| Repeatability | | ± 0.2 % F.S. ± 1 digi or less | | |
| Hysteresis | Hysteresis mode | Adjustable | | |
| | Window comparator mode | Mounting (3digit) | | |
| Response time | | 2.5ms or less (chattering-proof function: 24 ms, 192 ms and 768 ms selectable) | | |
| Output short circuit protection | | Yes | | |
| Display | | 3 ½ digit LED or less(Sampling rate: 5 time / sec.) | | |
| Indicator accuracy | | ± 0.2 % F.S. ± 1 digi or less (ambient temperature 25±3°C) | | |
| Switch on Indicator | | Green indicator 1: OUT1 , Red indicator 2: OUT2 | | |
| Analog output (within rated pressure range) (only type 01,03) | | Output voltage: 1~5V ± 2.5 %F.S.or less<br>(within rated pressure range)<br>Linearity: ± 1 %F.S.or less | Output voltage: 1~5V ± 5 %F.S.or less<br>(within rated pressure range)<br>Linearity: ± 1 %F.S.or less | Output voltage: 1~5V ± 2.5 %F.S.or less<br>(within rated pressure range)<br>Linearity: ± 1 %F.S.or less |
| Environ-mental Resistance | Enclosure | IP 40 | | |
| | Ambient temp. range | Operating: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient humidity range | Operating & Storage: 35 ~ 85 % RH (No condensation) | | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | | |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) | | |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | | |
| | Impact | 980 m/s² ( 100 G ), 3 times each in direction of X, Y and Z | | |
| Temperature characteristic | | ± 2 % F.S. or less ( based on 0 ~ 50 ° ) | | |
| Connection Port | | PT 1/8”; NPT 1/8”; G 1/8” | | |
| Lead wire | | oil-resistant cable (0.15 mm²) | | |
| Weight | | Approx. 67 g ( With 2 meter lead wire ); Approx.35 g ( With M8 4PIN male connector ) | | |

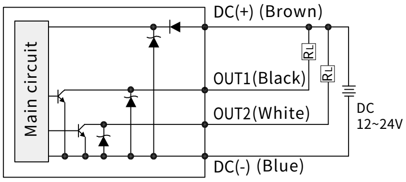
# PSN(C, V) - 30 series - Pressure Switch

## Circuit wiring diagrams

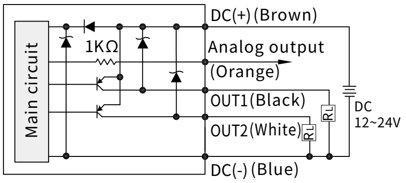
### PS ☐ - 30 - 01
NPN Output & Analog Output


Main circuit
1KΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1 (Black)
OUT2 (White)
DC(-) (Blue)
RL
RL
DC
12~24V

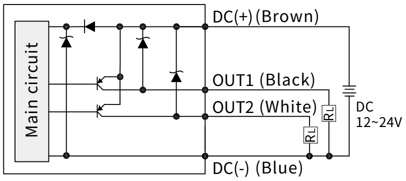
### PS ☐ - 30 - 02
NPN output


Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC
12~24V

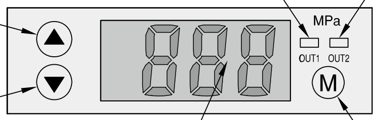
### PS ☐ - 30 - 03
PNP Output & Analog Output


Main circuit
1KΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC
12~24V

### PS ☐ - 30 - 04
PNP output


Main circuit
DC(+) (Brown)
OUT1 (Black)
OUT2 (White)
DC(-) (Blue)
RL
RL
DC
12~24V

## Pressure setting


MPa
OUT1
OUT2
M

Display
(Green Indicator light)

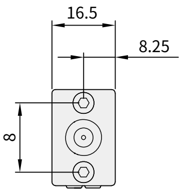
Display
(Red Indicator light)

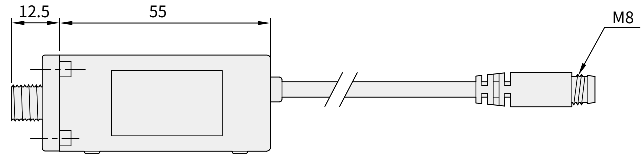
(▲) Button
Change setting mode and pre-test desired value

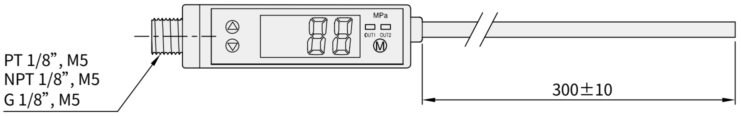
(▼) Button
Change setting mode and pre-test desired value

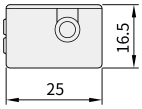
3 1/2 digit Indicator light
Display the measured pressure value ◦
Each set content and error code ◦

Setting button
Change setting mode and pre-set final desired value






MPa
OUT1
OUT2
M
PT 1/8", M5
NPT 1/8", M5
G 1/8", M5
300±10



# PSN(C, V) - 40 series - Pressure Switch

## Code of Order

| PS N – 40 | 01 | NPT |  | BT02 |
|---|---|---|---|---|
| Model | Output | Connection port | Cable type | Mounting type |
| **N:** Positive (-0.1~1 MPa)<br>**C:** Compound (-100~100 KPa)<br>**V:** Negative (0 ~ -101.3 KPa) | **01 :** 2 NPN output & 1 Analog output<br>**02 :** NPN output<br>**03 :** 2 PNP output & 1 Analog output<br>**04 :** 2 PNP output | **PT** : 1/8"<br>**NPT**: 1/8"<br>**G** : 1/8" | **None :** Cable length is 2M<br>**QD :** M8 , 4 PIN Male connector<br>(Only type 02,04) | **None :** Without accessory<br>**BT01 :** Stand mounting type<br>**BT02 :** Vertical mounting type<br>**FC :** Panel mounting type |

## Specification

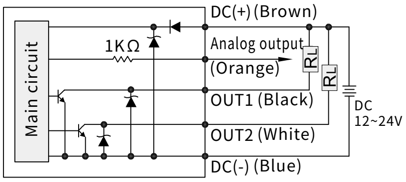
| Item \ Model | | PSN - 40 (Positive) | PSC - 40 (Compound) | PSV - 40 (Negative) |
|---|---|---|---|---|
| Rated Pressure Range | | 0.000 ~ 1.000 MPa | -100.0 ~ 100.0 KPa | 0.0 ~ -101.3 KPa |
| Set Pressure Range | | -0.100 ~ 1.000 MPa | -100.0 ~ 100.0 KPa | 10.0 ~ - 101.3 KPa |
| Withstand Pressure | | 1.5 MPa | 300 kPa | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | |
| Set pressure resolution | kPa | — | — | |
| | MPa | 0.001 | 0.1 | |
| | kgf/cm² | 0.01 | 0.001 | |
| | bar | 0.01 | 0.001 | |
| | psi | 0.1 | 0.01 | |
| | inHg | — | 0.1 | |
| | mmHg | — | 1 | |
| | mmH$_2$O | — | 0.1 | |
| Power supply voltage | | 12 to 24 VDC ±10%, ( Ripple ( P-P ) ±10% or less ) | | |
| Current consumption | | 55mA or less | | |
| Switch Output | | The max. load output for NPN or PNP : 80mA<br>Max. Supply voltage: 30VDC , Residual voltage: 1V or less (with load current of 80mA) | | |
| Repeatability | | ± 0.2 % F.S. ± 1 digi or less | | |
| Hysteresis | Hysteresis mode | Adjustable | | |
| | Window comparator mode | Mounting (3digit) | | |
| Response time | | 2.5ms or less (chattering-proof function: 24 ms , 192 ms and 768 ms selectable) | | |
| Output short circuit protection | | Yes | | |
| Display | | 3 ½ digital, 7 segment LCD display(Sampling rate: 5 times / sec.) | | |
| Indicator accuracy | | ± 2 % F.S. ± 1 digi or less (ambient temperature 25±3°C ~ 50°C) | | |
| Switch on Indicator | | Green indicator 1: OUT1 , Red indicator 2: OUT2 | | |
| Analog output (within rated pressure range) (only type 01,03) | | Output voltage: 1~5V ± 2.5 %F.S.or less (within rated pressure range) Linearity: ± 1 %F.S.or less | Output voltage: 1~5V ± 5 %F.S.or less (within rated pressure range) Linearity: ± 1 %F.S.or less | Output voltage: 1~5V ± 2.5 %F.S.or less (within rated pressure range) Linearity: ± 1 %F.S.or less |
| Environmental Resistance | Enclosure | IP 40 | | |
| | Ambient temp. range | Operating: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient humidity range | Operating & Storage: 35 ~ 85 % RH (No condensation) | | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | | |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) | | |
| | Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z | | |
| | Impact | 980 m/s² ( 100G ) , 3 times each in direction of X, Y and Z | | |
| Temperature characteristic | | ± 2 % F.S. or less (Range of 0 ~ 50 °C) | | |
| Connection Port | | PT 1/8” ; NPT 1/8” ; G 1/8” | | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | | |
| Weight | | Approx. 105 g ( With 2 meter lead wire ) ; Approx. 71 g ( With M8 4PIN male connector ) | | |

# PSN(C, V) - 40 series - Pressure Switch

## Circuit wiring diagrams

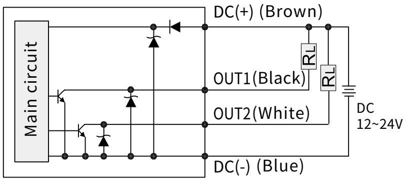
### PS ☐ - 40 - 01

NPN output


Main circuit
1KΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1 (Black)
OUT2 (White)
DC(-) (Blue)
RL
RL
DC
12~24V

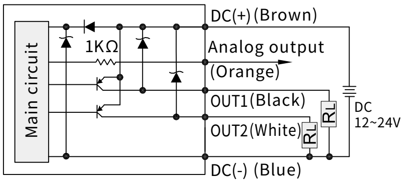
### PS ☐ - 40 - 02

NPN output


Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC
12~24V

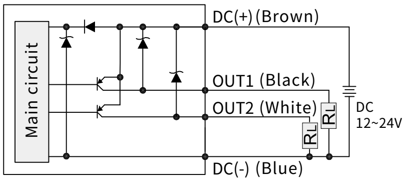
### PS ☐ - 40 - 03

PNP output

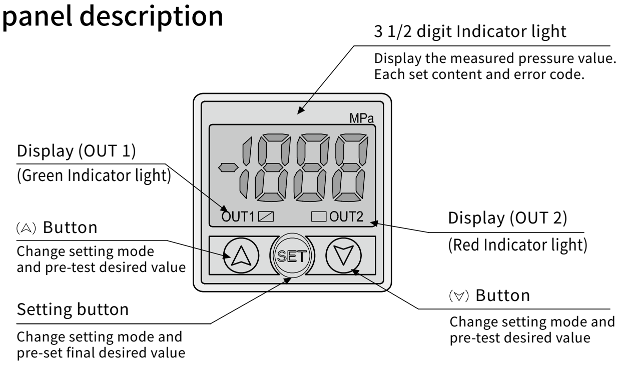

Main circuit
1KΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC
12~24V

### PS ☐ - 40 - 04

PNP output


Main circuit
DC(+) (Brown)
OUT1 (Black)
OUT2 (White)
DC(-) (Blue)
RL
RL
DC
12~24V

## External dimensions and panel description


MPa
-1888
OUT1
OUT2
SET

3 1/2 digit Indicator light

Display the measured pressure value.
Each set content and error code.

Display (OUT 1)

(Green Indicator light)

(⩓) Button

Change setting mode
and pre-test desired value

Setting button

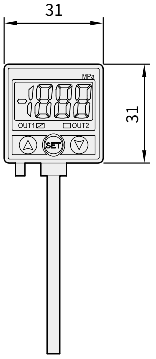
Change setting mode and
pre-set final desired value

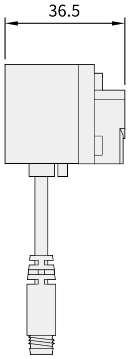
Display (OUT 2)

(Red Indicator light)

(⩔) Button

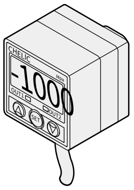
Change setting mode and
pre-test desired value

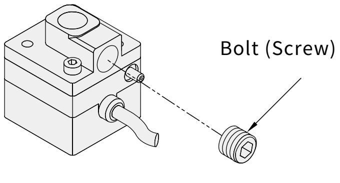

31
31
MPa
OUT1
OUT2
SET

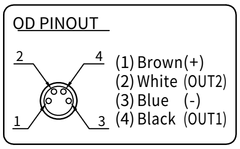


## Installation

1. This product has two inlet pressure ports.
   Select the one most convenient for installation.
2. Please plug the unused inlet port with supplied port plug.
   Use seal tape to prevent pressure leak.


CHELIC
-1000
OUT1
OUT2
SET

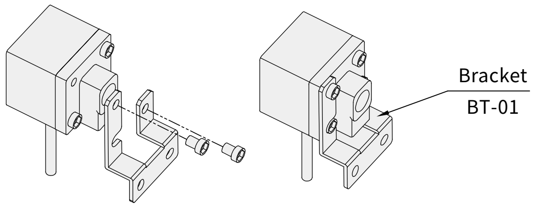


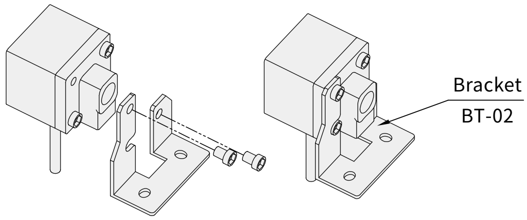

OD PINOUT
2
4
1
3

(1) Brown(+)
(2) White (OUT2)
(3) Blue (-)
(4) Black (OUT1)

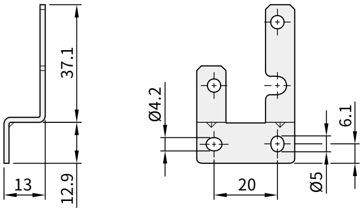
# PSN(C, V) - 40 series - Pressure Switch

## Mounting bracket

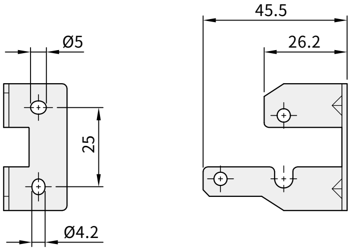

Bracket
BT-01


Bracket
BT-02

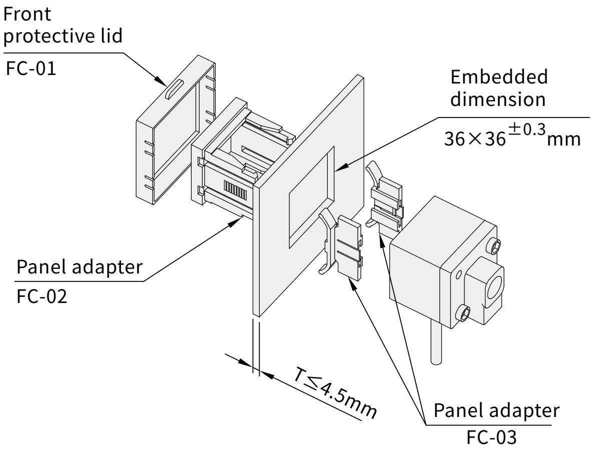
## BT – 01 Stand mounting type


37.1
12.9
13
Ø4.2
6.1
20
Ø5

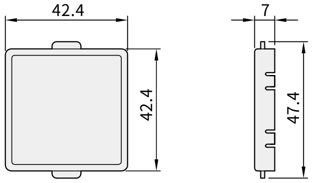
## BT – 02 Vertical mounting type


Ø5
25
Ø4.2
45.5
26.2

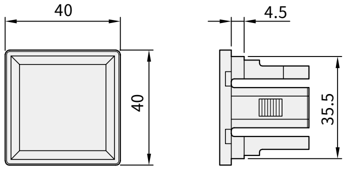
## Panel mount adapter + front protective lid – FC


Front
protective lid
FC-01
Embedded
dimension
36×36±0.3mm
Panel adapter
FC-02
T≤4.5mm
Panel adapter
FC-03

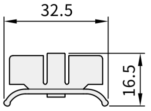
## FC- 01 Front protective lid


42.4
42.4
7
47.4

## FC- 02 Mounting holder



## FC- 03 Mounting slice



# PSN - 41 series - Pressure Switch

## Specification

| Model<br>Item | | PSN - 41 (Positive) | |
|---|---|---|---|
| Rated Pressure Range | | 0 ~ 1 MPa | |
| Set Pressure Range | | - 0.100 ~ 1.000 MPa | |
| Withstand Pressure | | 1.5 MPa | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | |
| Set pressure resolution | kPa | — | |
| | MPa | 0.001 | |
| | kgf / cm² | 0.01 | |
| | bar | 0.01 | |
| | psi | 0.1 | |
| Power supply voltage | | 12 to 24 VDC ±10%, ( Ripple (P-P) ±10% or less ) | |
| Current consumption | | ≤ 40 mA (With no load) | |
| Switch Output | | NPN open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 30 V DC<br>Residual voltage: ≤ 1.5 V or less<br>(with load current of 125mA) | PNP open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 30 V DC<br>Residual voltage: ≤ 1.5 V or less<br>(with load current of 125mA) |
| Repeatability | | ≤ ± 0.2 % F.S. ± 1 digit | |
| Hysteresis | Hysteresis mode | Adjustable | |
| | Window comparator mode | | |
| Response time | | 0.05s, 0.25s, 0.5s, 1s, 2s, 3s selectable | |
| Output short circuit protection | | Yes | |
| Display | | 3 ½ digital, LCD display (Red/ Green)(Sampling rate: 5 times / sec.) | |
| Indicator accuracy | | ≤ ± 2 % F.S. ± 1 ( Ambient temperature: 25 ± 3 °C ) | |
| Switch on Indicator | | Red(1 Red) OUT1 | |
| Environmental Resistance | Enclosure | IP 40 | |
| | Ambient temp. range | Operating: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | |
| | Ambient humidity range | Operating & Storage: 35 ~ 85 % RH (No condensation) | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) | |
| | Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z | |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z | |
| Temperature characteristic | | ±2.5% F.S. of detected pressure ( 25 °C ) at temp. (Range of 0 ~ 50 °C) | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | |
| Weight (With M8 4PIN male connector) | | Approx. 30 g | |

# PSN - 41 series - Pressure Switch

## Code of Order

PS **N** - 41 — 02 —

**Model**

**N:** Positive
( - 0.100 ~ 1.000 MPa )

**Output**

**022:** 2 NPN output
**042:** 2 PNP output

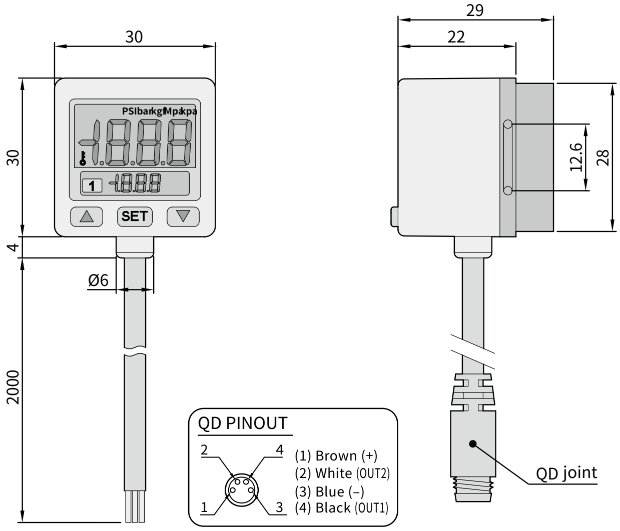
**Cable type**

**None:**
Cable length is 2M
**QD:** M8, 4 PIN
Male connector

### Suitable series

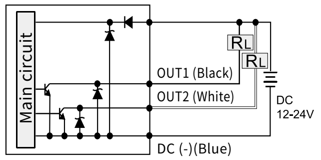
| Model | Model series |
|---|---|
| NC | N200, N300, N400, N450, N500 |
| NFC | |
| NFR | |
| NR | |

## External dimensions

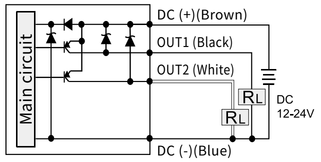

30
30
PSI bar kgf Mpa kpa
SET
4
Ø6
2000
29
22
12.6
28
QD joint
QD PINOUT
2
4
1
3
(1) Brown (+)
(2) White (OUT2)
(3) Blue (−)
(4) Black (OUT1)

## Circuit wiring diagrams

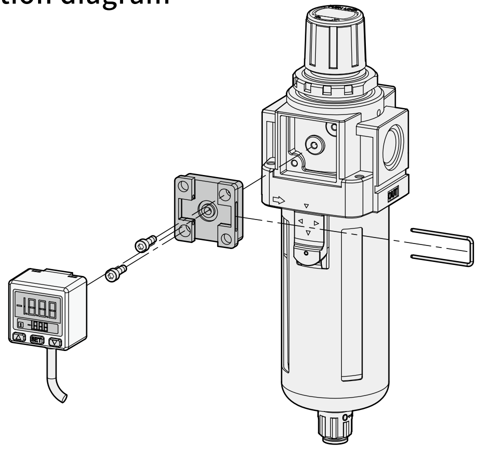
### PSN - 41 - 022
2 NPN output


Main circuit
RL
RL
OUT1 (Black)
OUT2 (White)
DC
12-24V
DC (-)(Blue)

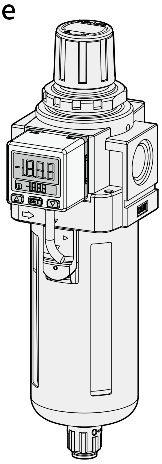
### PSN - 41 - 042
2 PNP output


Main circuit
DC (+)(Brown)
OUT1 (Black)
OUT2 (White)
RL
RL
DC
12-24V
DC (-)(Blue)

## Installation diagram



## Complete



# PSN(C、V) - 42 series - Pressure Switch (three colors)

## Code of Order

**PS N – 42** — **010** — **R** — **BT12**

| Model | Output | Connection port | Mounting type |
|---|---|---|---|
| **N:** Positive<br>(-0.100 ~ 1.000 MPa)<br>**V:** Negative<br>(10.0 ~ -101.3 kPa)<br>**C:** Compound<br>(-100.0 ~ 100.0 kPa) | **010:** 2 NPN output + 1 Analog output (1-5V)<br>**011:** 2 NPN output + 1 Analog output (4-20mA)<br>**030:** 2 PNP output + 1 Analog output (1-5V)<br>**031:** 2 PNP output + 1 Analog output (4-20mA) | **R** : R1/8" , M5<br>**NPT** : NPT1/8", 10-32UNF<br>**G** : G1/8" , M5 | **None :** Without accessory<br>**BT12** : Stand mounting type<br>**BT13** : Vertical mounting type<br>**FD** : Panel mounting type |

## Specification

| Item \ Model | | PSN - 42 (Positive) | PSV - 42 (Negative) | PSC - 42 (Compound) |
|---|---|---|---|---|
| Rated Pressure Range | | 0.0 ~ 1.000 MPa | -101.3 ~ 0.0 KPa | -100.0 ~ 100.0 KPa |
| Set Pressure Range | | -0.100 ~ 1.000 MPa | -101.3 ~ 10.0 KPa | -101.0 ~ 101.0 KPa |
| Withstand Pressure | | 1.5 MPa | 300 KPa | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | |
| Set pressure resolution | KPa | — | 0.1 | |
| | MPa | 0.001 | — | |
| | kgf/cm² | 0.01 | 0.001 | |
| | bar | 0.01 | 0.001 | |
| | psi | 0.1 | 0.01 | |
| | inHg | — | 0.1 | |
| | mmHg | — | 1 | |
| Power supply voltage | | 12 to 24 V DC ±10 %, Ripple ( P-P ) 10 % or less | | |
| Current consumption | | ≤ 40 mA ( With no load ) | | |
| Switch output | | 2NPN open collector outputs<br>Max. Load Current: 125 mA<br>Max. Supply Voltage: 30 V DC<br>Residual Voltage: ≤ 1.5 V | 2PNP open collector outputs<br>Max. Load Current: 125 mA<br>Max. Supply Voltage: 24 V DC<br>Residual Voltage: ≤ 1.5 V | |
| Repeatability | | ±0.2%F.S.±1 digit or less | | |
| Hysteresis | OPS mode | Adjustable Note: 1 | | |
| | Hysteresis mode | | | |
| | Window comparator mode | | | |
| Response time | | ≦ 2.5 ms ( chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms and 1500 ms selectable ) | | |
| Output short circuit protection | | Yes | | |
| Display | | 3 colors display ( Red, Green, Orange) ( Sampling rate : 5 time / sec.) | | |
| Indicator accuracy | | ±2%F.S.±1 digit (ambient temperature25±3°C) | | |
| Switch on Indicator | | Orange indicator 1: OUT1 & Orange indicator 2: OUT2 | | |
| Analog output ( Voltage output ) Note: 2 | | Output voltage: 1 ~ 5V ± 2.5 % F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Output impedance: approx. 1 kΩ | | |
| Analog output ( Current output ) Note: 3 | | Output current: 4 ~ 20mA ± 2.5 % F.S. (within rated pressure range) Linearity: ± 1 % F.S.<br>Max.Load Impedance : 300Ω at power supply of 12V / 600Ω at power supply of 24V<br>Min.Load Impedance : 50Ω | | |
| Environmental Resistance | Enclosure | IP40 | | |
| | Ambient temp. range | Operation : 0 ~ 50 °C, Storage : -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient humidity range | Operation / Storage : 35 ~ 85 % RH ( No condensation ) | | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | | |
| | Insulation | 50 MΩ ( at 500 V DC, between case and lead wire ) | | |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | | |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z | | |
| Temperature characteristic | | ±2.5 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C | | |
| Connection Port | | R : R1/8” ; M5 ; NPT : NPT 1/8” , 10-32 UNF ; G : G1/8” ; M5 | | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | | |
| Weight ( With 2 meter lead wire ) | | Approx. 80 g | | |

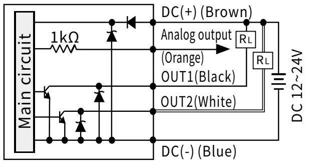
NOTE:1.Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.

2. If analog voltage output is selected, the analog current output cannot be selected at the same time.
3. If analog current output is selected, the analog voltage output cannot be selected at the same time.

## Circuit wiring diagrams

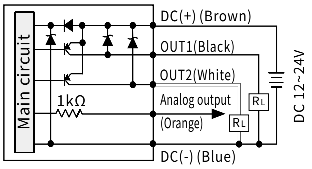
### PS ☐ - 42 - 010 - ☐

2NPN + Analog output ( 1 ~ 5V )


Main circuit
1kΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC 12~24V

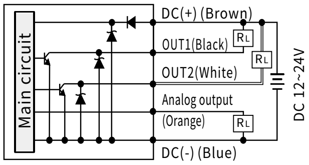
### PS ☐ - 42 - 030 - ☐

2PNP + Analog output ( 1 ~ 5V )


Main circuit
1kΩ
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
DC 12~24V

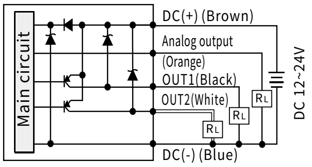
### PS ☐ - 42 - 011 - ☐

2NPN + Analog output ( 4 ~ 20 mA )

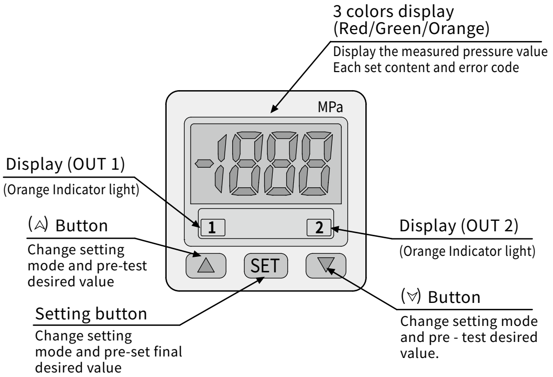

Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

### PS ☐ - 42 - 031 - ☐

2PNP + Analog output ( 4 ~ 20 mA )


Main circuit
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

## External dimensions and panel description



3 colors display (Red/Green/Orange)
Display the measured pressure value
Each set content and error code

Display (OUT 1)
(Orange Indicator light)

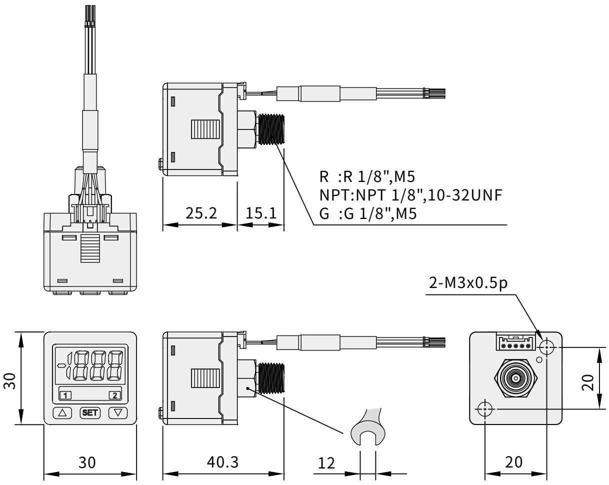
(⩓) Button
Change setting mode and pre-test desired value

Setting button
Change setting mode and pre-set final desired value

Display (OUT 2)
(Orange Indicator light)

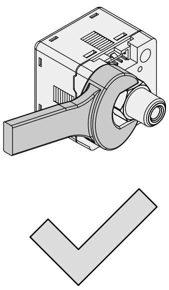
(⩔) Button
Change setting mode and pre - test desired value.

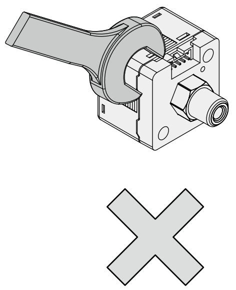
### PS ☐ - 42 - ☐ - ☐


25.2
15.1
R :R 1/8",M5
NPT:NPT 1/8",10-32UNF
G :G 1/8",M5
2-M3x0.5p
30
30
40.3
12
20
20

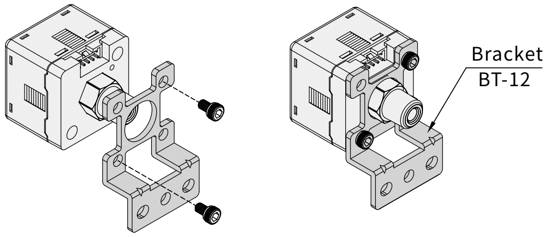
## Installation

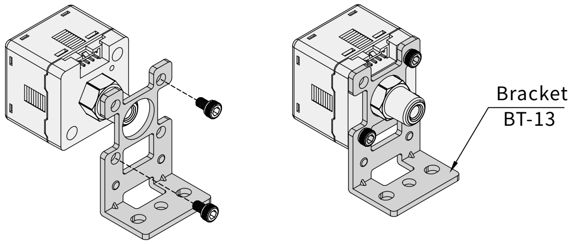
- When installing pressure switch, please use wrench to effort force and mount in metal section.
  Please do not use wrench to effort force and mount in plastic section to avoid damaged pressure switch.
- When metal section lock tightly , screws mounting bracket and pressure switch may damage.
  If metal section lock slackly , pressure switch may slide or leakage.
- After installation , it will put in fluid and electric to test operating and leakage to check installation is correct or not.



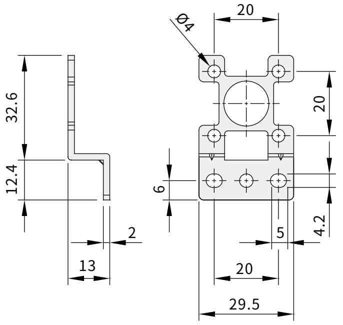


## Mounting bracket

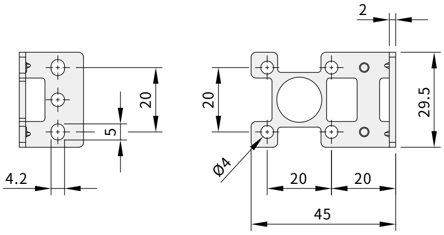

Bracket
BT-12


Bracket
BT-13

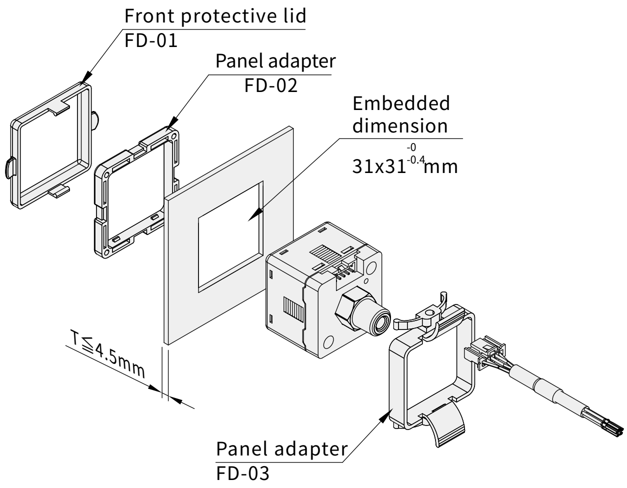
## BT – 12 Stand mounting type


Ø4
20
32.6
12.4
2
13
20
6
5
4.2
20
29.5

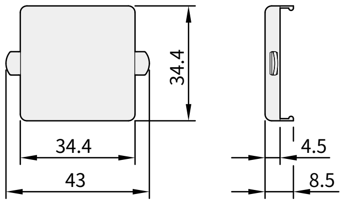
## BT – 13 Vertical mounting type


2
20
5
4.2
20
29.5
Ø4
20
20
45

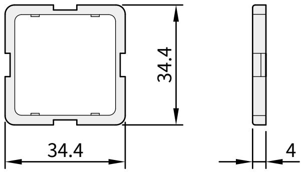
## Panel mount adapter + Front protective lid – FD


Front protective lid
FD-01
Panel adapter
FD-02
Embedded dimension
31x31 $^{-0}_{-0.4}$ mm
T≦4.5mm
Panel adapter
FD-03

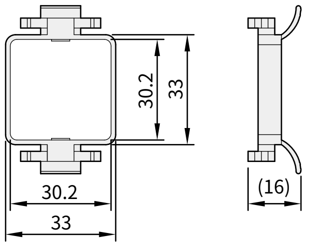
## FD - 01 Front protective lid


34.4
34.4
43
4.5
8.5

## FD - 02 Panel adapter



## FD - 03 Mounting slice


30.2
33
30.2
33
(16)

# PSN(C) - 43 series - Pressure Switch

## Code of Order

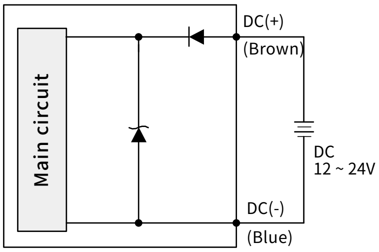
| PS C – 43 | NPT | | BT02 |
|---|---|---|---|
| Model | Connection port | Cable type | Mounting type |
| **N:** Positive<br>(-0.1 ~ 1 MPa)<br>**C:** Compound<br>(-100~100 kPa) | **PT** : 1/8"<br>**NPT**: 1/8"<br>**G** : 1/8" | **None:**<br>Cable length is 2M<br>**QD**: M8, 4 PIN<br>Male connector<br>(Only type 02, 04) | **None:** Standard<br>**BT01** :<br>Stand mounting type<br>**BT02** :<br>Vertical mounting type<br>**FC** :<br>Panel mounting type |

## Specification

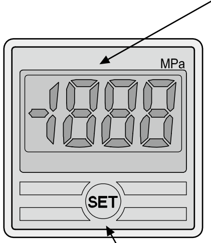
| Item | | PSN - 43 (Positive) | PSC - 43 (Compound) |
|---|---|---|---|
| Pressure range | | -0.100 ~ 1.000 MPa | -100.0 ~ 100.0 kPa |
| Withstand pressure | | 1.5 rated pressure range | 3 rated pressure range |
| Applicable fluid | | Filtered air, Non-corrosive/ Non-flammable gas | |
| Power supply voltage | | 12 to 24 V DC ±10 %, Ripple ( P-P ) 10 % or less | |
| Current consumption | | ≤ 55 mA | |
| Display | | 3 ½ digit LED or less(Sampling rate：5 time / sec.) | |
| Indicator accuracy | | ±0.2%F.S.±1 digit or less (ambient temperature25±3°C) | |
| Environmental resistance | Enclosure | IP40 | |
| | Ambient temp. range | Operation: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | |
| | Ambient humidity range | Operation / Storage: 35 ~ 85 % RH ( No condensation ) | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | |
| | Insulation | 50 MΩ ( at 500 V DC, between case and lead wire ) | |
| | Vibration | Total amplitude 1.5 mm , 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | |
| | Impact | 980 m/s² ( 100 G ), 3 times each in direction of X, Y and Z | |
| Temperature characteristic | | ±2 % F.S. or less( Ambient temperature: 25 ±3 °C ) | |
| Connection port | | PT 1/8”; NPT 1/8”; G 1/8” | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | |
| Weight ( With 2 meter lead wire ) | | Approx. 105 g ( With 2 meter lead wire ); Approx. 71 g ( With M8 4PIN male connector ) | |

# PSN(C) - 43 series - Pressure Switch

## Circuit wiring diagrams


Main circuit
DC(+)
(Brown)
DC
12 ~ 24V
DC(-)
(Blue)

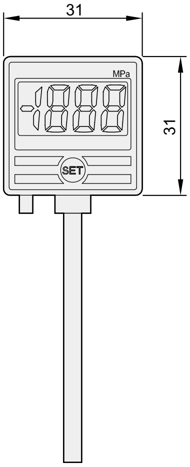
## External dimensions and panel description

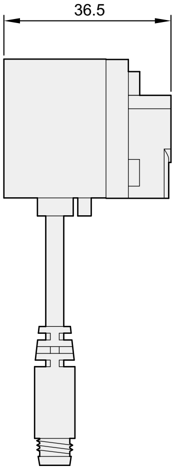

MPa
-1888
SET

31/2 digit Indicator light display

Display the measured pressure value.
Each set content and error code.

Display returning to the zero & unit setting button

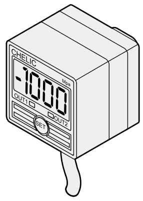

31
31
MPa
-1888
SET

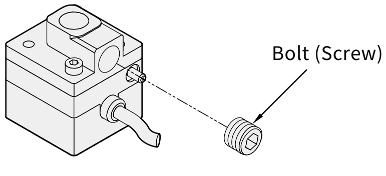


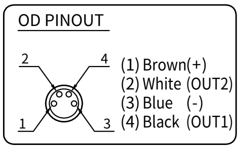
## Installation

1. This product has two inlet pressure ports.
   Select the one most convenient for installation.

2. Please plug the unused inlet port with supplied port plug.
   Use seal tape to prevent pressure leak.


CHELIC
-1000
SET
OUT1
OUT2

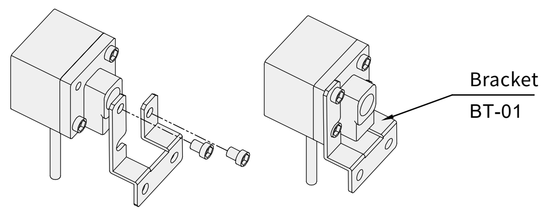


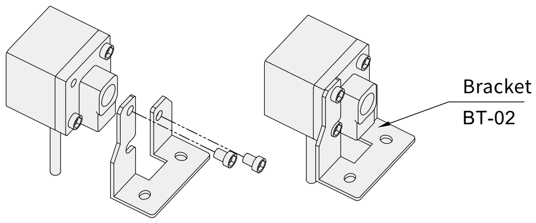

OD PINOUT
2
4
1
3

(1) Brown(+)
(2) White (OUT2)
(3) Blue (-)
(4) Black (OUT1)

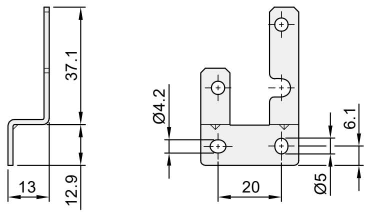
PS-01
PS□-05
PS□-10
PS□-30
PS□-40
PS□-41
PS□-42
PS□-43
PS□-45
PS□-47
PS□-50
PS□-70
PS□-75
PS-400
PS-600
PS-800
PSS
MCS-9D

## Mounting bracket

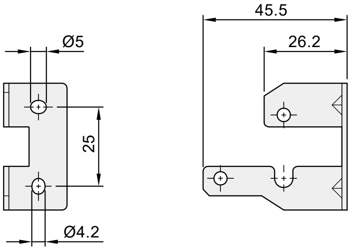

Bracket
BT-01


Bracket
BT-02

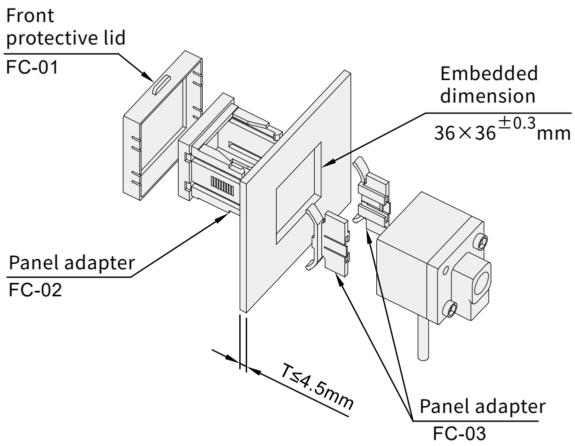
## BT – 01 Stand mounting type


37.1
12.9
13
Ø4.2
6.1
20
Ø5

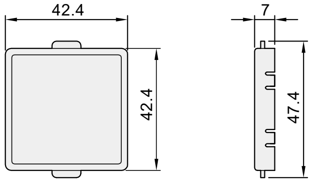
## BT – 02 Vertical mounting type


Ø5
25
Ø4.2
45.5
26.2

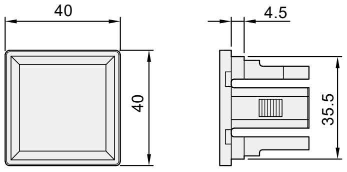
## Panel mount adapter + Front protective lid – FC


Front protective lid
FC-01
Embedded dimension
36×36±0.3mm
Panel adapter
FC-02
T≤4.5mm
Panel adapter
FC-03

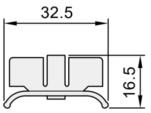
## FC- 01 Front protective lid


42.4
42.4
7
47.4

## FC- 02 Mounting holder



## FC- 03 Mounting slice



# PSN ( V, C ) - 45 series - Pressure Switch

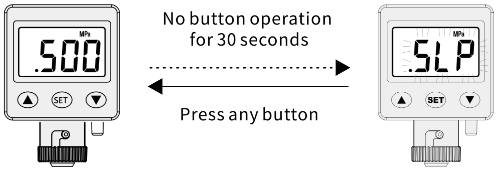
88.5
88.5
SET
SET

## Features

- 2-color digital LCD display
- Copy function
- Programmable pressure unit: kPa, MPa, kgf/cm$^2$, bar, psi, inHg
- IP65 enclosure

## Power-save mode

- During Power-Save mode, the main display will turned off if no buttons is pressed after 30 seconds.
- During Power-Save mode, the output LCD may not be synchronize with the output. It is normal and will not affect output operation.
- Press any button to turn-on main display temporarily.


MPa
.500
SET
No button operation
for 30 seconds
Press any button
MPa
.SLP
SET

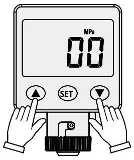
Measure mode

Power-Save mode

(Main display will flash "SLP")

## Zero point setting

Press the ▲ + ▼ button at the same time until the "00" is shown.
Release the button to end zero setting.



## IP65 Compliance

- Can withstand low-pressure waterspout to prevent product damage.

## Environmental Protection Design

- RoHS Compliance / Without Harmful Substance

# PSN ( V, C ) - 45 series - Pressure Switch

CHELIC

## 2-Color Display

- User programmable color mode, for different setting conditions.

|  | SoG | Sor | Grn | rEd |
|---|---|---|---|---|
| **ON** | Green | Red | Green | Red |
| **OFF** | Red | Green | Green | Red |

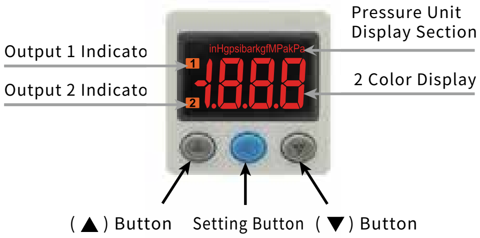
## Easy Unit Identification

- Conversion unit is on display and easy to read.

inHg psi bar kgf/cm² MPa kPa

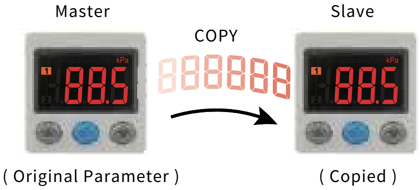
inHgpsibarkgfMPakPa
1
1888

## Panel Description

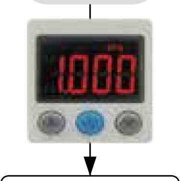
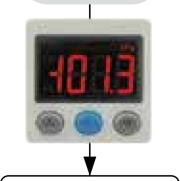
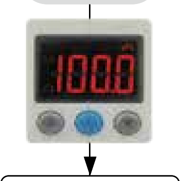

Output 1 Indicato
Output 2 Indicato
Pressure Unit Display Section
2 Color Display
( ▲ ) Button
Setting Button
( ▼ ) Button

## Copy Setting

- Avoid setting errors
- Reduce setting time


Master
COPY
Slave
( Original Parameter )
( Copied )

## Specificatio

| **Pressure switch** | PSN-45<br>( Positive ) | PSV-45<br>( Negative ) | PSC-45<br>( Compound ) |
|---|---|---|---|
| **Rated pressure range** | 0.000 ~ 1.000MPa | 0.0 ~ -101.3 kPa | -100.0 ~ 100.0 kPa |
| **Pressure range** | 1.000 MPa<br>0<br>-0.100 MPa | 10.0 kPa<br>0<br>-101.3 kPa | 101.0 kPa<br>0<br>-101.0 kPa |
| **Withstand pressure** | 1.5 MPa | 300 kPa | 300 kPa |
| **Set pressure resolution** | 0.001 MPa | 0.1 kPa | 0.1 kPa |

**Output**

2NPN: open collector 2 outputs
Max. Load Current: 125 mA
Max. Supply Voltage: 30 V DC
Residual Voltage: ≤ 1.5 V

2PNP: open collector 2 outputs
Max. Load Current: 125 mA
Max. Supply Voltage: 24 V DC
Residual Voltage: ≤ 1.5 V

**Connection port**

R: R1/8", M5; NPT: NPT1/8", #10-32UNF; G: G1/8"(BSPP), M5
RC: Rc1/8"; NPTC: NPT1/8"; GC: G1/8"(BSPP)

# PSN ( V, C ) - 45 series - Pressure Switch

## For your safety, please read the following before using.

1. Do not use corrosive or flammable gas or liquid with this product.
2. Please use within the rating pressure range. Do not apply pressure beyond recommended maximum withstand pressure, permanent damage to thepressure sensor may occur.
3. Do not drop, hit or allow excessive shock. Even if switch body appears undamaged, internal components may be broken and can cause malfunction.
4. Turn power off before connecting wiring. Wrong wiring or short circuit will damage and/or cause malfunction.
5. Do not use in environment containing steam or oil vapor.
6. This product is not explosion-proof rated. Do not use in atmosphere containing flammable or explosive gases.
7. Wiring for pressure sensor should avoid power source line and high voltage line. If use in the same circuit, noise may cause malfunction.

## Specification

| Item Model | | | PSN - 45 ( Positive ) | PSV - 45 ( Negative ) | PSC - 45 ( Compound ) |
|---|---|---|---|---|---|
| Rated Pressure Range | | | 0.000 ~ 1.000 MPa | 0.0 ~ -101.3 kPa | -100.0 ~ 100.0 kPa |
| Set Pressure Range | | | -0.100 ~ 1.000 MPa | 10.0 ~ -101.3 kPa | -101.0 ~ 101.0 kPa |
| Withstand Pressure | | | 1.5 MPa | 300 kPa | |
| Fluid | | | Filtered air, Non-corrosive, Non-flammable gas | | |
| Set Pressure Resolution | kPa | | – | 0.1 | |
| | MPa | | 0.001 | – | |
| | kgf/cm$^2$ | | 0.01 | 0.001 | |
| | bar | | 0.01 | 0.001 | |
| | psi | | 0.1 | 0.01 | |
| | inHg | | – | 0.1 | |
| Power Supply Voltage | | | 12 to 24V DC ±10% , Ripple 10% | | |
| Current Consumption | | | ≤ 40mA ( With no load ) | | |
| Repeatability ( Switch Output ) | | | ±0.2% F.S. ±1 digit 以下 | | |
| Switch output | Output | | 2 NPN or 2 PNP open collector 2 outputs | | |
| | Max. Load Current | | 125mA | | |
| | Max. Supply Voltage | | 2 NPN 30V DC, 2 PNP 24V DC | | |
| | Residual Voltage | | ≤ 1.5V | | |
| | Response Time | | ≤ 2.5 ms<br>( chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms and 1500 ms selectable ) | | |
| | Output Short Circuit Protection | | Yes | | |
| Display | Display | | 3 ½ digital, 7 segment LCD display ( Red / Green ) | | |
| | Indicator Accuracy | | ±2 % F.S. ±1 digit ( ambient temperature: 25 ±3 °C ) | | |
| | Switch on Indicator | | Orange indicator 1: OUT1 & Orange indicator 2: OUT2 | | |
| | Renewing | | About 0.2 seconds | | |
| Analog output | Voltage | Output Voltage | 1 ~ 5V ( ± 2.5% ) | | |
| | | Output Impedance | About 1 kΩ | | |
| | Current | Output Current | 4 ~ 20mA ( ± 2.5% ) | | |
| | | Load Impedance | Max.Load Impedance : 250 Ω at power supply of 12 V<br>600 Ω at power supply of 24 V Min.Load Impedance : 50 Ω | | |
| | Linearity | | ± 1% F.S. | | |
| Enviro-nment | Enclosure | | IP65 | | |
| | Ambient Temp. Range | | Operation: 0 ~ 50 °C | | |
| | Ambient Temp. Range | | Storage: -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient Humidity Range | | Operation / Storage : 35 ~ 85 % RH ( No condensation ) | | |
| | Withstand Voltage | | 1000 V AC in 1-min ( between case and lead wire ) | | |
| | Insulation Resistance | | 50 MΩ ( at 500 V DC, between case and lead wire ) | | |
| | Vibration | | Total amplitude 1.5 mm, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | | |
| | Shock | | 100 m/s$^2$ ( 10 G ), 3 times each in direction of X, Y and Z | | |
| Temperature Characteristic | | | ±2 % F.S. of detected pressure ( 25 °C ) at temp. Range of 0 ~ 50 °C | | |
| **Connection Port** | | | R:R1/8", M5; NPT: NPT1/8", #10-32UNF; G: G1/8"(BSPP), M5<br>RC:Rc1/8"; NPTC: NPT1/8"; GC: G1/8"(BSPP) | | |
| Lead Wire | | | Oil-resistance cable ( 0.15 mm$^2$ ) | | |
| Weight ( With 2 Meter Lead Wire ) | | | Approx. 86g | | |

# PSN ( V, C ) - 45 series - Pressure Switch

## Code of Order

| PS N – 45 | – 010 | – R | – BT-10 |
|---|---|---|---|
| Model | Output | Connection port | Mounting type |

**N:** Positive
(-0.100 ~ 1.000 MPa)

**V:** Negative
(10.0 ~ -101.3 kPa)

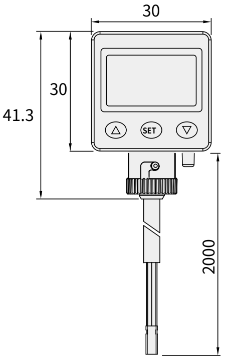
**C:** Compound
(-101.0 ~ 101.0 kPa)

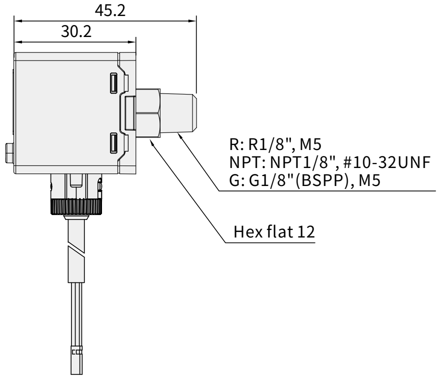
**010:** 2 NPN output + 1 Analog output ( 1 ~ 5V )
**011:** 2 NPN output + 1 Analog output ( 4 ~ 20mA )
**02:** 2 NPN output + Copy function
**030:** 2 PNP output + 1 Analog output ( 1 ~ 5V )
**031:** 2 PNP output + 1 Analog output ( 4 ~ 20mA )
**04:** 2 PNP output + Copy function

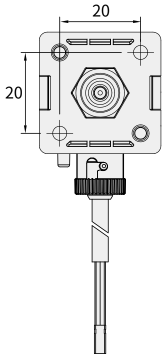
**R:** R1/8", M5 , with external threads
**NPT:** NPT1/8", #10-32UNF, with external threads
**G:** G1/8" (BSPP), M5, with external threads
**RC:** Rc1/8", with internal threads
**NPTC:** NPT1/8", with internal threads
**GC:** G1/8" (BSPP), with internal threads

**None:** Without accessory
**BT-10:** Mounting bracket ( for Pressure Port R, NPT, G )
**BT-11:** Mounting bracket ( for Pressure Port R, NPT, G )
**BT- 1:** Mounting bracket ( for Pressure Port RC, NPTC, GC )
**BT-17:** Mounting bracket ( for Pressure Port RC, NPTC, GC )
**PA-E:** Panel adapter
**PA-F:** Panel adapter + Front protective lid

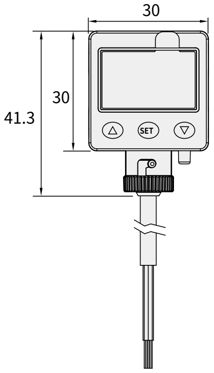
## Male thread type dimensions

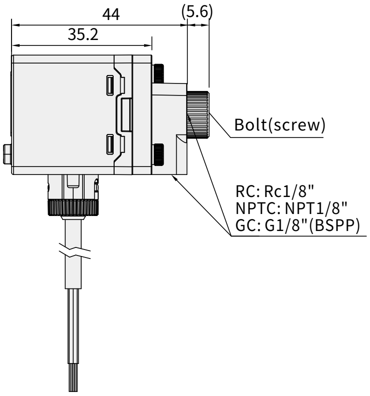

30
30
41.3
SET
2000

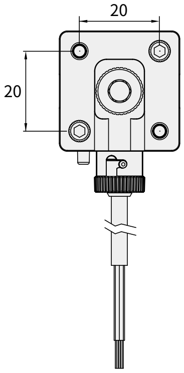

45.2
30.2
R: R1/8", M5
NPT: NPT1/8", #10-32UNF
G: G1/8"(BSPP), M5
Hex flat 12



## Female thread type dimensions

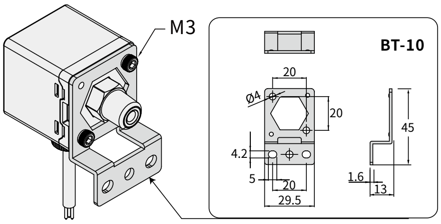

30
30
41.3
SET


44
(5.6)
35.2
Bolt(screw)
RC: Rc1/8"
NPTC: NPT1/8"
GC: G1/8"(BSPP)

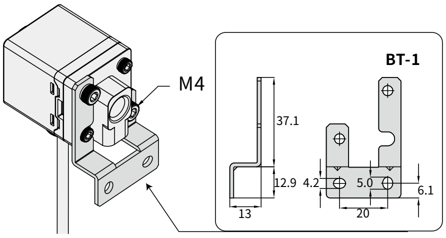


## Optional parts dimensions

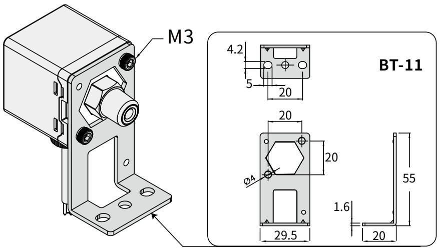
**BT-10**


M3
BT-10
20
Ø4
20
45
4.2
5
20
29.5
1.6
13

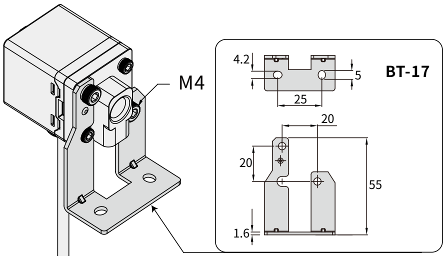
**BT-1**


M4
BT-1
37.1
12.9
4.2
5.0
6.1
13
20

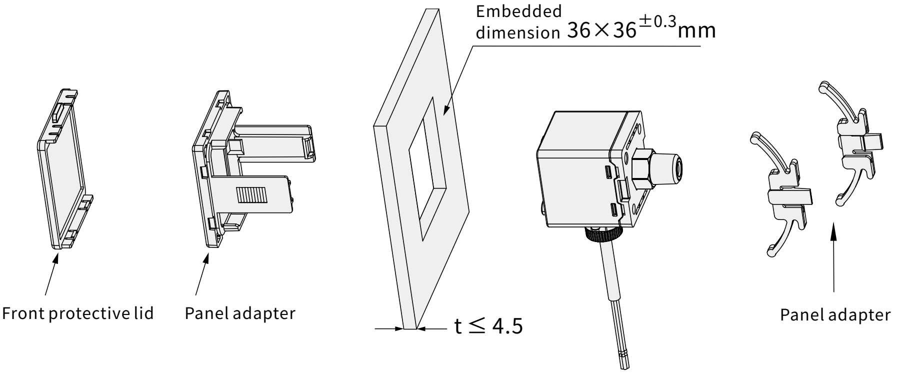
**BT-11**


M3
BT-11
4.2
5
20
20
20
Ø4
55
1.6
29.5
20

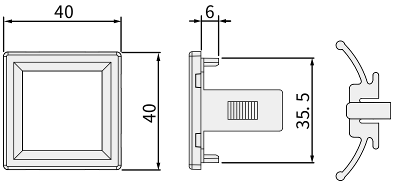
**BT-17**


M4
BT-17
4.2
5
25
20
20
55
1.6

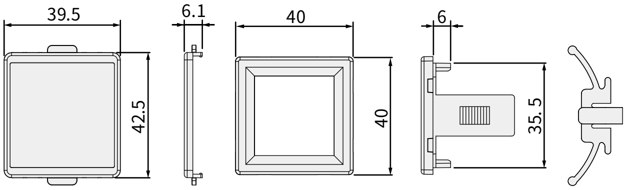
## Panel mount adapter + Front protective lid


Embedded dimension 36×36±0.3mm
Front protective lid
Panel adapter
t≤4.5
Panel adapter

**PA - E Panel adapter**



**PA - F Panel ldapter + Front protective lid**

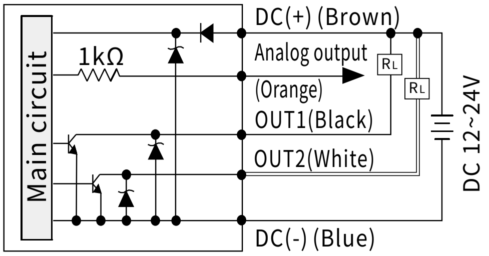

39.5
42.5
6.1
40
40
6
35.5

# PSN ( V, C ) - 45 series - Pressure Switch

## Circuit wiring diagrams

### PS □ - 45 - 010 - □

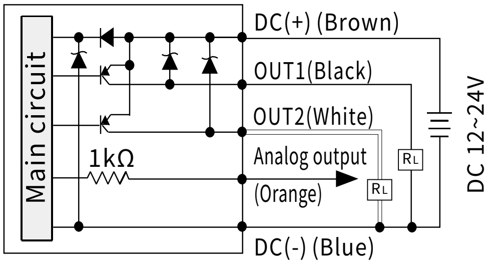
2 NPN + Analog output ( 1 ~ 5V )



Main circuit
1kΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC 12~24V

### PS □ - 45 - 030 - □

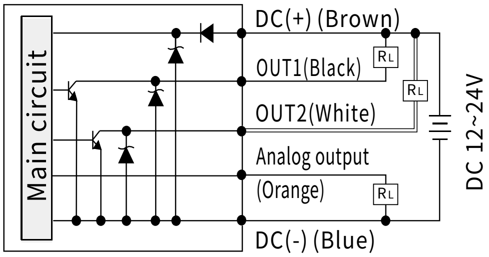
2 PNP + Analog output ( 1 ~ 5V )



Main circuit
1kΩ
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
DC 12~24V

### PS □ - 45 - 011 - □

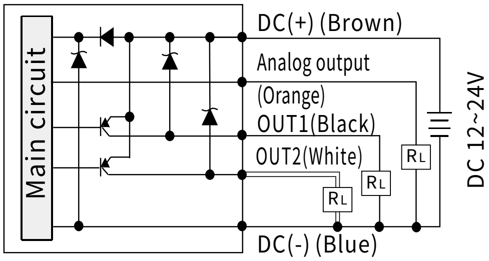
2 NPN + Analog output ( 4 ~ 20mA )



Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

### PS □ - 45 - 031 - □

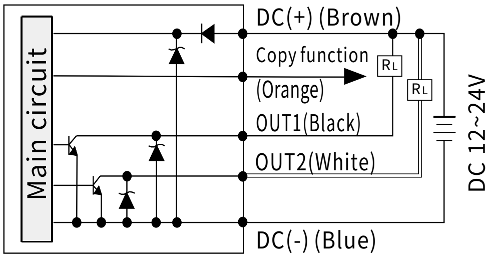
2 PNP + Analog output ( 4 ~ 20mA )



Main circuit
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

### PS □ - 45 - 02 - □

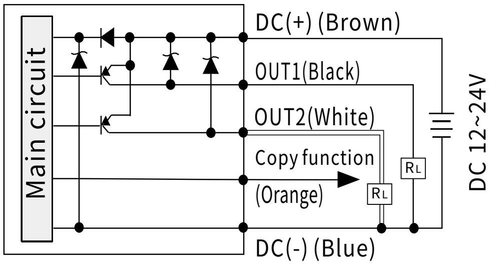
2 NPN + Copy function



Main circuit
DC(+) (Brown)
Copy function
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC 12~24V

### PS □ - 45 - 04 - □

2 PNP + Copy function



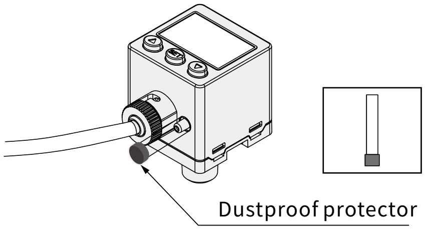
Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Copy function
(Orange)
DC(-) (Blue)
RL
RL
DC 12~24V

PS-01
PS□-05
PS□-10
PS□-30
PS□-40
PS□-41
PS□-42
PS□-43
PS□-45
PS□-47
PS□-50
PS□-70
PS□-75
PS-400
PS-600
PS-800
PSS
MCS-9D

# PSN ( V, C ) - 45 series - Pressure Switch

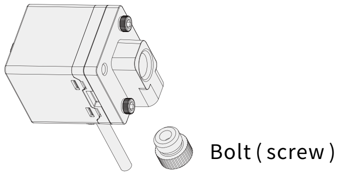
## IP65 Protector

⚠ CAUTION:
This device must be installed to maintain IP 65 ( Dust and splash proof ) enclosure rating.



## Accessory for pressure port RC, NPTC, GC

- This product has two inlet pressure ports, select the one most convenient for installation.
- Please plug the bolt in unused port to prevent pressure leakage.

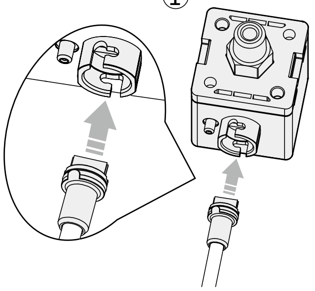


## Wire installation instruction

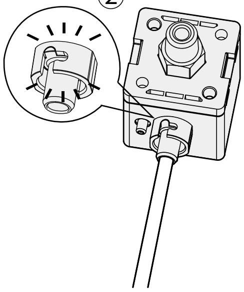
Please install the wire as the following step.

- Turn upward the salient point by terminal. (See figure )
- Install to the terminal to the groove by pressure sensor. (See figure )
- Terminal cover install to the products. (See figure )
- Turn the terminal cover to lock. (See figure )

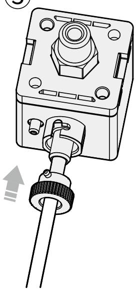
①



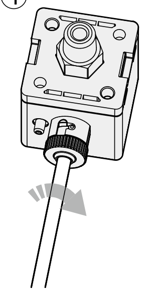
②



③



④



NOTE: Recommend not insert-extract over 20 times.

# PSN(C, V) - 47 series - Pressure Switch

CHELIC

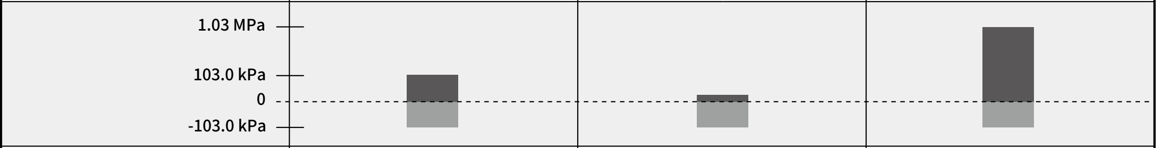
PS-01
PS□-05
PS□-10
PS□-30
PS□-40
PS□-41
PS□-42
PS□-43
PS□-45
PS□-47
PS□-50
PS□-70
PS□-75
PS-400
PS-600
PS-800
PSS
MCS-9D

## Features

- 3-color digital LCD display
- Main / Sub-Display, 4 digits 7 segment LCD display
- Programmable pressure unit : kPa, MPa, kgf/cm$^2$, bar, psi, inHg, mmHg
- Dual LCD display allows setting value to be displayed
- Key lock indicator
- Power-save mode
- Fine adjustment mode

CHELIC
mmHg inHg psi bar kgf MPa kPa
8.8.8.8
LOCK
8.8.8.8
SET

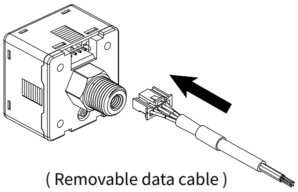
## Specification

| Type | Compound | Negative | Positive |
|---|---|---|---|
| Model | PSC - 47 | PSV - 47 | PSN - 47 |
|  1.03 MPa<br>103.0 kPa<br>0<br>-103.0 kPa | | | |
| Rated pressure range | -100.0 ~ 100.0 kPa | 0.0 ~ -101.3 kPa | -0.100 ~ 1.000 MPa |
| Set pressure range | -103.0 ~ 103.0 kPa | 10.0 ~ -103.0 kPa | -0.103 ~ 1.030 MPa |

## Features

### 1. Quick Installation

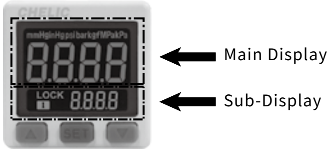
- Save installation time
- Easy removal



( Removable data cable )

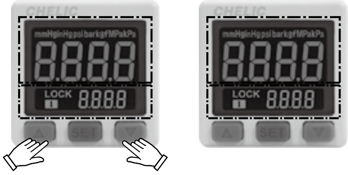
### 2. Setting Value Easy Indication

- User can easily observe the setting value from sub-display



### 3. OPS Quick Setting

- Sub-display allows changing the parameter directly, reduce setting step by 3/4



( Up / Down quick setting ) ( Finished setting )

### 4. 2-Color Main Display

- User programmable color mode, for different setting conditions

| | SoG | Sor | Grn | rEd |
|---|---|---|---|---|
| ON | Green | Red | Green | Red |
| OFF | Red | Green | Green | Red |

### 5. Easy Unit Identification

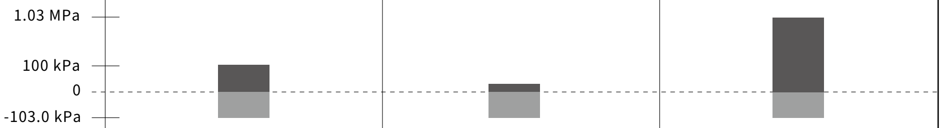
- Conversion unit is on display and easy to read

mmHg | inHg | psi | bar | kgf/cm$^2$ | MPa | kPa

CHELIC
mmHg inHg psi bar kgf MPa kPa

# PSN(C, V) - 47 series - Pressure Switch

## Specification

| Model | | PSC - 47 (Compound) | PSV - 47 (Negative) | PSN - 47 (Positive) |
|---|---|---|---|---|
|  | | | | |
| Rated pressure range | | -100.0 ~ 100.0 kPa | 0.0 ~ -101.3 kPa | -0.100 ~ 1.000 MPa |
| Set pressure range | | -103.0 ~ 103.0 kPa | 10.0 ~ -103.0 kPa | -0.103 ~ 1.030 MPa |
| Withstand pressure | | 500 kPa | | 1.5 MPa |
| Applicable fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | |
| Set pressure resolution | kPa | 0.1 | | - |
| | MPa | - | | 0.001 |
| | kgf⁄cm² | 0.001 | | 0.01 |
| | bar | 0.001 | | 0.01 |
| | psi | 0.01 | | 0.1 |
| | inHg | 0.1 | | - |
| | mmHg | 1 | | - |
| Power supply voltage | | 12 to 24 V DC ±10 %, Ripple ( P-P ) 10 % or less | | |
| Current consumption | | ≤ 40 mA ( With no load ) | | |
| Switch output | | NPN open collector outputs<br>Max. Load Current: 80 mA<br>Max. Supply Voltage: 30 V DC<br>Residual Voltage: ≤ 1 V<br>PNP open collector outputs<br>Max. Load Current: 80 mA<br>Max. Supply Voltage: 24 V DC<br>Residual Voltage: ≤ 1 V | | |
| Repeatability | | ±3%F.S.±1 digit | | |
| Hysteresis | One point set mode | Adjustable Note: 1 | | |
| | Hysteresis mode | | | |
| | Window comparator mode | | | |
| Response time | | ≤ 2.5 ms( chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms and 1500 ms selectable ) | | |
| Output short circuit protection | | Yes | | |
| Display | | LCD display ( Red/ Green/ Orange ) (Sampling rate：0.2, 0.5, 1 times/ sec.) | | |
| Indicator accuracy | | ±1%F.S.±1 digit (ambient temperature25±3°C) | | |
| Switch on Indicator | | Orange indicator 1: OUT1 | | |
| Analog output ( Voltage output ) | | Output Voltage: 1 to 5 V ±2.5 % F.S.<br>( within rated pressure range )<br>Linearity : ±1 % F.S. Output Impedance : approx. 1 kΩ | | Output Voltage: 0.6 to 5 V ±2.5 % F.S.<br>( within rated pressure range )<br>Linearity: ±1 % F.S.<br>Output Impedance: approx. 1 kΩ |
| Environmental Resistance | Enclosure | IP40 | | |
| | Ambient temp. range | Operation: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient humidity range | Operation/ Storage: 35 ~ 85 % RH ( No condensation ) | | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | | |
| | Insulation | 50 MΩ ( at 500 V DC, between case and lead wire ) | | |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 150 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | | |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z | | |
| Temperature characteristic | | ±3 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C | | |
| Connection Port | | R1/8, M5 | | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | | |
| Weight ( With 2 meter lead wire ) | | Approx. 67 g | | |

NOTE:1. Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.

# PSN(C, V) - 47 series - Pressure Switch

## Code of Order

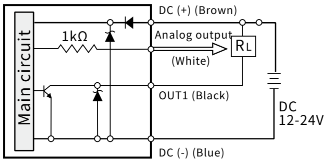
PS N - 47 — 03 — BT05

| Model | Output | Mounting type |
|---|---|---|
| **N:** Positive<br>( - 0.103 ~ 1.030 MPa ) | **01:** 1 NPN output + Analog output (1-5V) | **None:** Without accessory |
| **V:** Negative<br>( 10.0 ~ -103.0 kPa ) | **03:** 1 PNP output + Analog output (1-5V) | **BT14**: Stand mounting type |
| **C:** Compound<br>( - 103.0 ~ 103.0 kPa ) | | **BT15**: Vertical mounting type |
| | | **FD** : Panel mounting type |

## Circuit wiring diagrams

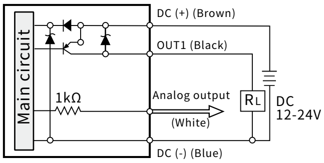
● PS ☐ - 47 - 01 - ☐

1NPN + Analog output ( 1 ~ 5 V )
( 0.6 ~ 5 V only positive )

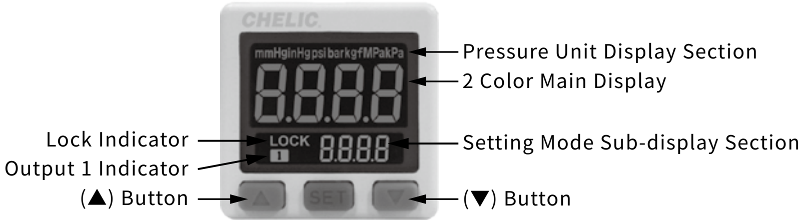

Main circuit
1kΩ
DC (+) (Brown)
Analog output
(White)
RL
OUT1 (Black)
DC
12-24V
DC (-) (Blue)

● PS ☐ - 47 - 03 - ☐

1PNP + Analog output ( 1 ~ 5 V )
( 0.6 ~ 5 V only positive )


Main circuit
DC (+) (Brown)
OUT1 (Black)
1kΩ
Analog output
(White)
RL
DC
12-24V
DC (-) (Blue)

## Panel description


CHELIC
mmHg inHg psi bar kgf MPa kPa
8.8.8.8
LOCK
1
8.8.8.8
SET
Pressure Unit Display Section
2 Color Main Display
Lock Indicator
Output 1 Indicator
Setting Mode Sub-display Section
(▲) Button
(▼) Button

## Optional Parts

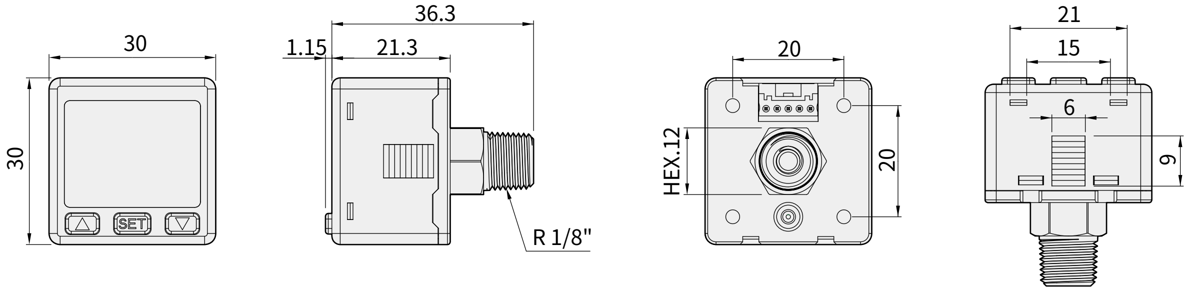
BT - 14
Stand mounting type

BT - 15
Vertical mounting type

FD
Panel Adapter + Front Protective Lid

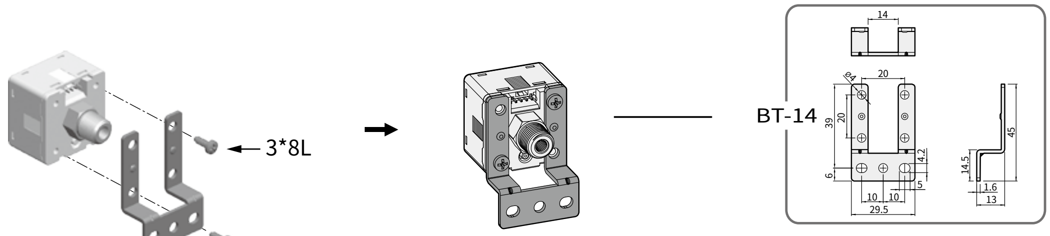
# PSN(C, V) - 47 series - Pressure Switch

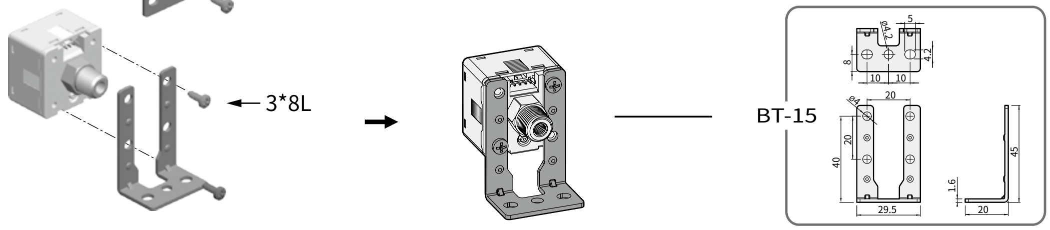
## External dimensions


30
30
SET
36.3
1.15
21.3
R 1/8"
20
HEX.12
20
21
15
6
9

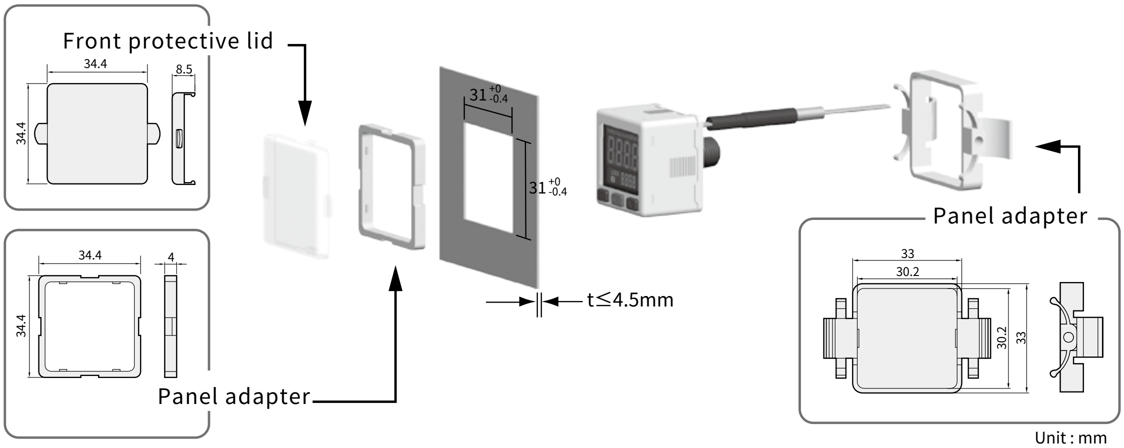
## Optional parts dimensions

### Mounting bracket


3*8L
BT-14
14
20
Ø4
39
20
6
4.2
5
10
10
29.5
45
14.5
1.6
13


3*8L
BT-15
5
Ø4.2
8
10
10
4.2
20
Ø4
40
20
45
1.6
29.5
20

### Panel mount adapter + front protective lid


Front protective lid
34.4
8.5
34.4
34.4
4
34.4
Panel adapter
$31^{+0}_{-0.4}$
$31^{+0}_{-0.4}$
t≤4.5mm
Panel adapter
33
30.2
30.2
33

Unit : mm

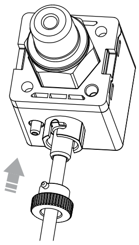
# PSN (H, C, V) - 50 series - Pressure Switch

## Features

- Corrosive fluid or gas available(in the pipeline)
- Sensor parts & Fitting parts: SUS316L
- Copy function
- 2 NPN/ 2 PNP open collector 2 outputs + Analog Output ( 1 ~ 5V or 4 ~ 20mA )
- 2-Color digital LCD display
- Repeatability ±0.3% F.S. ±1 digit

## Quick installation

- Save installation time
- Easy removal



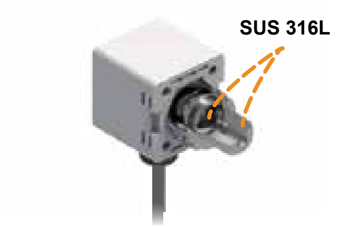
Removable data cable

Cable port

Assembled

## Applicable for corrosive fluid or gas

- Sensor parts & Fitting parts are SUS 316L, applicable for corrosive fluid or gas equipment.

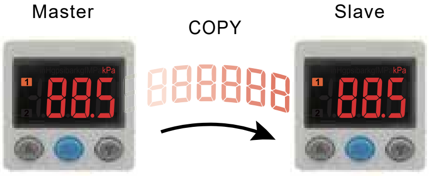


## IP65 Compliance

- Can withstand low-pressure waterspout to prevent product damage.

## Copy setting

- Avoid setting errors
- Reduce setting time



Original parameter

Copied

## Environmental protection design

- RoHS compliance/ Without Harmful substance

RoHS

# PSN (H, C, V) - 50 series - Pressure Switch

## 2-Color Display

- User programmable color mode, for different setting conditions.

-1888
-1888
-1888

| | SoG | Sor | Grn | rEd |
|---|---|---|---|---|
| **ON** | Green | Red | Green | Red |
| **OFF** | Red | Green | Green | Red |

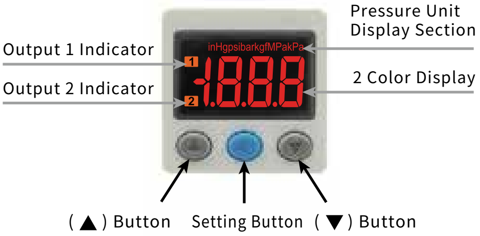
## Easy Unit Identification

- Conversion unit is on display and easy to read.

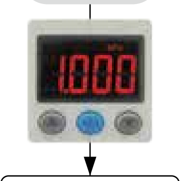
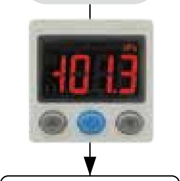
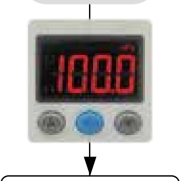
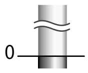
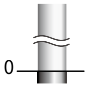
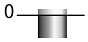
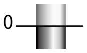
inHg | psi | bar | kgf/cm² | MPa | kPa

CHELIC
inHgpsibarkgfMPakPa
1
-1888

## Panel Description


Pressure Unit Display Section
Output 1 Indicator
2 Color Display
Output 2 Indicator
inHgpsibarkgfMPakPa
1
2
-1888
( ▲ ) Button
Setting Button
( ▼ ) Button

## Specification

| ▶ Pressure switch | PSN-50 ( Positive ) | PSH-50 ( High ) | PSV-50 ( Negative ) | PSC-50 ( Compound ) |
|---|---|---|---|---|
| |  | |  |  |
| ▶ Rated pressure range | 0.000 ~ 1.000MPa | 0.000 ~ 2.00 MPa | 0.0 ~ -101.3 kPa | -100.0 ~ 100.0 kPa |
| ▶ Pressure range | 1.000 MPa<br><br>-0.100 MPa | 2.00 MPa<br><br>-0.100 MPa | 10.0 kPa<br><br>-101.3 kPa | 101.0 kPa<br><br>-101.0 kPa |
| ▶ Withstand pressure | 3 MPa | 3 MPa | 300 kPa | 300 kPa |
| ▶ Set pressure resolution | 0.001 MPa | 0.001(~1.999)<br>0.01(2.00~)MPa | 0.1 kPa | 0.1 kPa |
| ▶ Output | 2NPN : open collector 2 outputs<br>Max. Load Current : 125 mA<br>Max. Supply Voltage : 30 V DC<br>Residual Voltage : ≤ 1.5 V | | 2PNP : open collector 2 outputs<br>Max. Load Current : 125 mA<br>Max. Supply Voltage : 24 V DC<br>Residual Voltage : ≤ 1.5 V | |
| ▶ Connection port | R: R1/4” , M5 ; NPT: NPT1/4” , #10-32UNF ; G: G1/4” (BSPP) , M5 | | | |

1.000
2.00
-101.3
100.0
0
0
0
0

# PSN (H, C, V) - 50 series - Pressure Switch

## Specification

| Model<br>Item | | PSN - 50 (Positive) | PSH - 50 (High) | PSV - 50 (Negative) | PSC - 50 (Compound) |
|---|---|---|---|---|---|
| Rated pressure range | | 0.000 ~ 1.000 MPa | 0.000 ~ 2.00 MPa | 0.0 ~ -101.3 kPa | -100.0 ~ 100.0 kPa |
| Set pressure range | | -0.100 ~ 1.000 MPa | -0.100 ~ 2.00 MPa | 10.0 ~ -101.3 kPa | -101.0 ~ 101.0 kPa |
| Withstand pressure | | 3 MPa | | 300 kPa | |
| Fluid | | Non-corrode gas SUS 316L | | | |
| Sealed liquid | | Silicon oil | | | |
| Set pressure resolution | KPa | – | – | 0.1 | |
| | MPa | 0.001 | 0.001(~1.999) / 0.01(2.00~) | – | |
| | kgf/cm² | 0.01 | 0.01(~19.99) / 0.1(20.0~) | 0.001 | |
| | bar | 0.01 | 0.01(~19.99) / 0.1(20.0~) | 0.001 | |
| | psi | 0.1 | 0.1(~199.9) / 1(200~) | 0.01 | |
| | inHg | – | – | 0.1 | |
| Power supply voltage | | 12 to 24 V DC ±10 %, Ripple ( P-P ) 10 % or less | | | |
| Current consumption | | ( With no load ) | | | |
| Switch output | | 2NPN : open collector 2 outputs<br>Max. Load current : 125 ma<br>Max. Supply voltage : 30 v dc<br>Residual voltage : ≤ 1.5 v | | 2PNP : open collector 2 outputs<br>Max. Load current : 125 ma<br>Max. Supply voltage : 24 v dc<br>Residual voltage : ≤ 1.5 v | |
| Repeatability | | ±0.3% F.S. ±1 digit or less | | | |
| Hysteresis | One point set mode | Adjustable Note: 1 | | | |
| | Hysteresis mode | | | | |
| | Window comparator mode | | | | |
| Response time | | ≦ 2.5 ms<br>( chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms and 1500 ms selectable ) | | | |
| Output short circuit protection | | Yes | | | |
| Display | | 3 ½ digital, 7 segment LCD display (Red/ Green/ Orange)(Sampling rate: 5 times / sec.) | | | |
| Indicator accuracy | | ± 2% F.S. ±1 digit ( Ambient temperature: 25 ± 3°C ) | | | |
| Switch on Indicator | | Orange indicator 1: OUT1 & Orange indicator 2: OUT2 | | | |
| Analog output ( Voltage output ) Note: 2 | | Output voltage: 1 ~ 5V ± 2.5% F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Output impedance: approx. 1 kΩ | | | |
| Analog output ( Current output ) Note: 3 | | Output current: 4 ~ 20mA ± 2.5% F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Max.Load Impedance : 250Ω at power supply of 12V / 600Ω at power supply of 24V<br>Min.Load Impedance : 50Ω | | | |
| Environmental Resistance | Enclosure | IP65 | | | |
| | Ambient temp. range | 0 ~ 50 °C | | | |
| | Ambient temp. range | -10 ~ 60 °C ( No condensation or freezing ) | | | |
| | Ambient humidity range | 35 ~ 85% RH (No condensation) | | | |
| | Withstand voltage | 250 V AC in 1-min ( between case and lead wire ) | | | |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) | | | |
| | Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z | | | |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z | | | |
| Temperature characteristic | | ±3% F.S. of detected pressure ( 25 °C ) at temp. (Range of 0 ~ 50 °C) | | | |
| Connection Port | | R : R1/4” , M5 ; NPT : NPT1/4” , #10-32UNF ; G : G1/4” (BSPP) , M5 | | | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | | | |
| Weight ( With 2 meter lead wire ) | | Approx. 110 g ( Rear ported); Approx. 150 g( Bottom ported ) | | | |

NOTE: 1.Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.
2. If analog voltage output is selected, the analog current output cannot be selected at the same time.
3. If analog current output is selected, the analog voltage output cannot be selected at the same time.

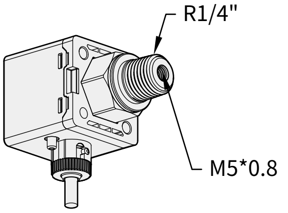
# PSN (H, C, V) - 50 series - Pressure Switch

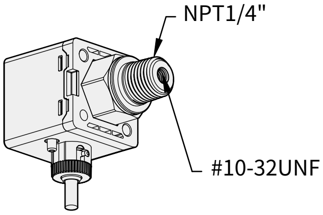
## Code of Order

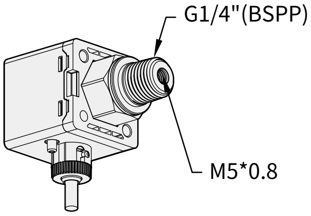
| PS C 50 | 010 | R | L | |
|---|---|---|---|---|
| **Model** | **Output** | **Connection Port** | **Piping Direction** | **Mounting Type** |
| **C**: Compound<br>(-101.0 ~ 101.0 kPa)<br>**N**: Positive<br>(-0.100 ~ 1.000 MPa)<br>**V**: Negative<br>(10.0 ~ 101.3 kPa)<br>**H**: High<br>(-0.100~ 2.00 MPa) | **010:** 2 NPN output + 1 Analog output ( 1 ~ 5V )<br>**011:** 2 NPN output + 1 Analog output ( 4 ~ 20mA )<br>**02:** 2 NPN output + Copy function<br>**030:** 2 PNP output + 1 Analog output ( 1 ~ 5V )<br>**031:** 2 PNP output + 1 Analog output ( 4 ~ 20mA )<br>**04:** 2 PNP output + Copy function | **R:** R1/4", M5<br>**NPT:** NPT1/4", #10-32UNF<br>**G:** G1/4" (BSPP), M5 | **None:**<br>Rear ported<br>**L:**<br>Bottom ported | **None:** Without accessory<br>**BT-10**: Bracket<br>**BT-11**: Bracket<br>**PA-E**: Panel adapter<br>**PA-F**: Panel adapter +Front protective lid<br>**I-0360** Valve (Connection port applicable toR&G)<br>**I-0379**: Valve (Connection port applicable to NPT)<br>*PSN-50 & PSH-50 are recommended to install a snubber to reduce shock effects. |

## Specification

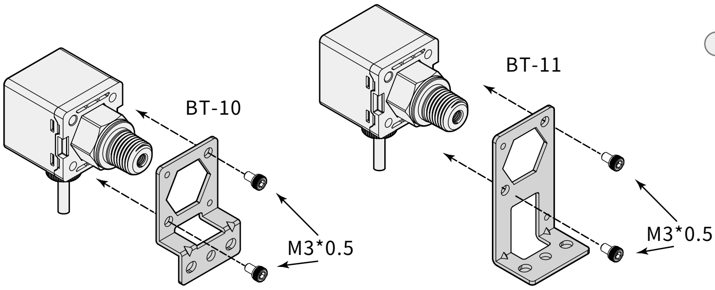
### Thread type

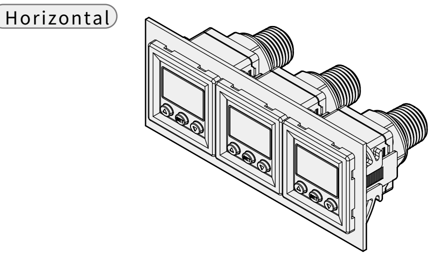






## Panel mount adapter + Front protective lid



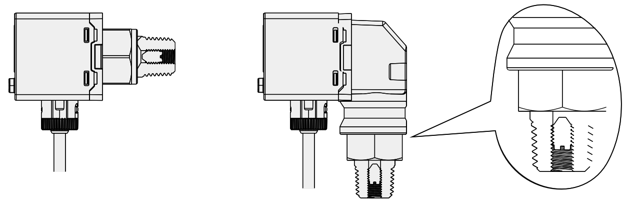


## Removeable snubber installed

Pressure port equipped with sunbber can avoid damage caused by sudden pressure surge or oil, improve product durability.

* When snubber is clogged with contaminants, please use a flat head screwdirver to remove the snubber, clean and reinstall.

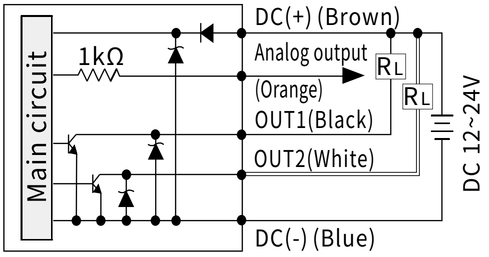
*A sunbber is not applied to Rc1/8.



## Circuit wiring diagrams

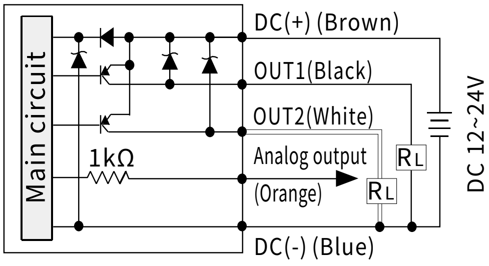
### PS□- 50 - 010 - □ - □

2 NPN + Analog output ( 1 ~ 5V )


Main circuit
1kΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC 12~24V

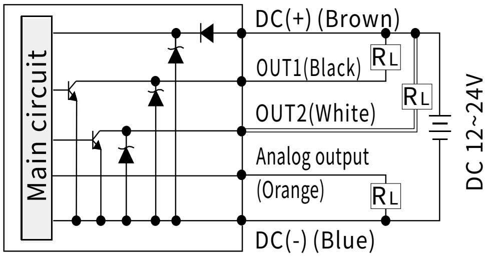
### PS□- 50 - 030 - □ - □

2 PNP + Analog output ( 1 ~ 5V )


Main circuit
1kΩ
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
DC 12~24V

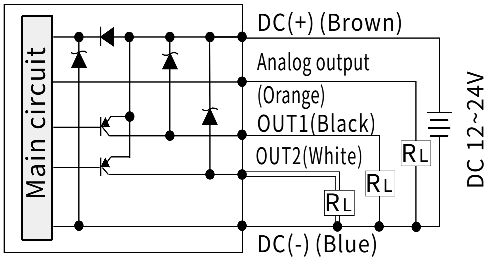
### PS□- 50 - 011 - □ - □

2 NPN + Analog output ( 4 ~ 20mA )


Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

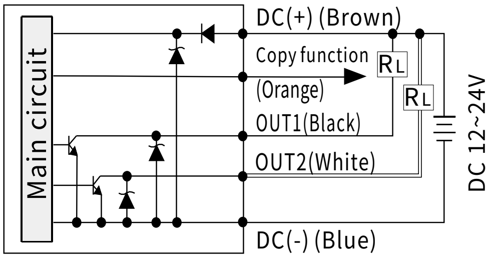
### PS□- 50 - 031 - □ - □

2 PNP + Analog output ( 4 ~ 20mA )


Main circuit
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

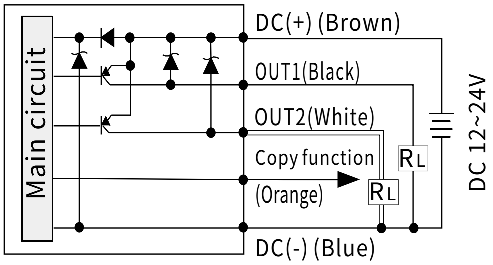
### PS□- 50 - 02 - □ - □

2 NPN + Copy function


Main circuit
DC(+) (Brown)
Copy function
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC 12~24V

### PS□- 50 - 04 - □ - □

2 PNP + Copy function

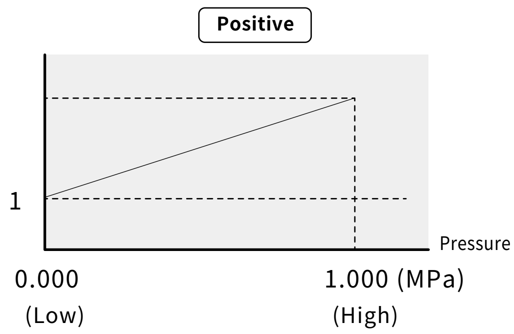

Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Copy function
(Orange)
DC(-) (Blue)
RL
RL
DC 12~24V

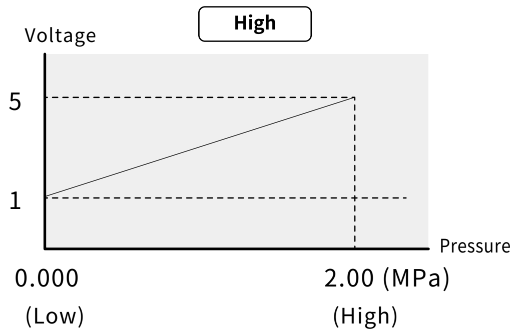
PS-01
PS□-05
PS□-10
PS□-30
PS□-40
PS□-41
PS□-42
PS□-43
PS□-45
PS□-47
PS□-50
PS□-70
PS□-75
PS-400
PS-600
PS-800
PSS
MCS-9D

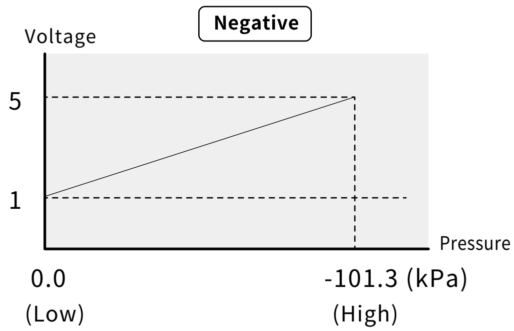
## Analog output description

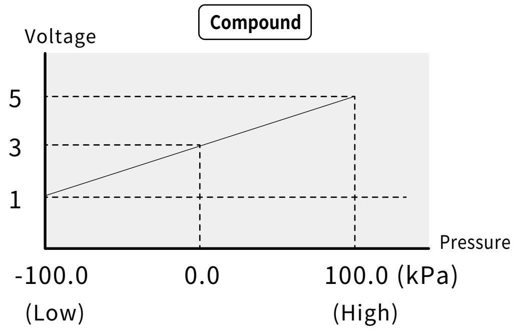
Analog output range 1~5V or 4~20mA, proportional to the pressure range.

**Voltage**

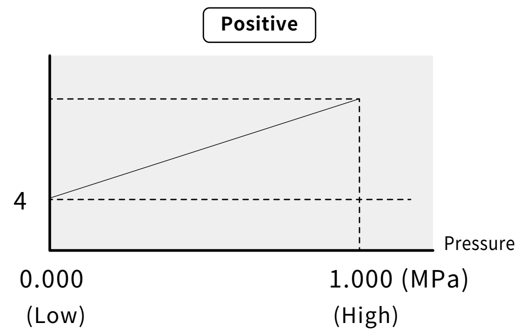


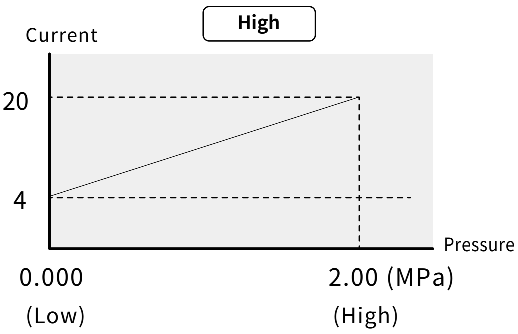


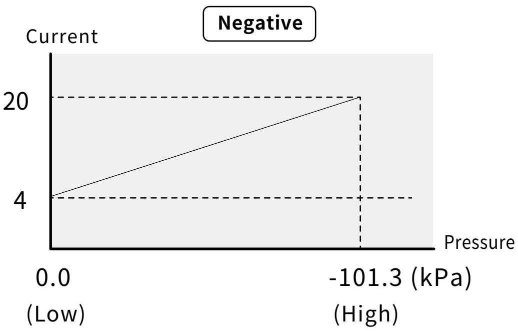


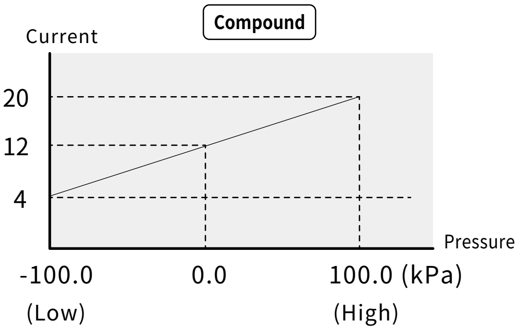


**Current**



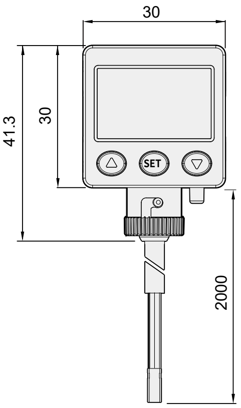


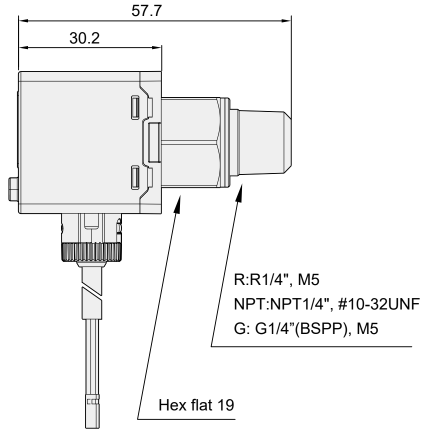


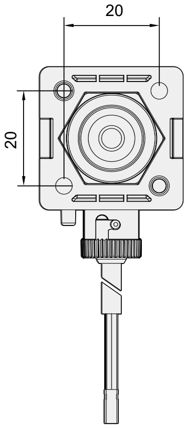


# PSN (H, C, V) - 50 series - Pressure Switch

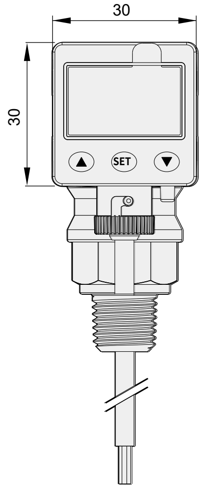
## PS □ External dimensions

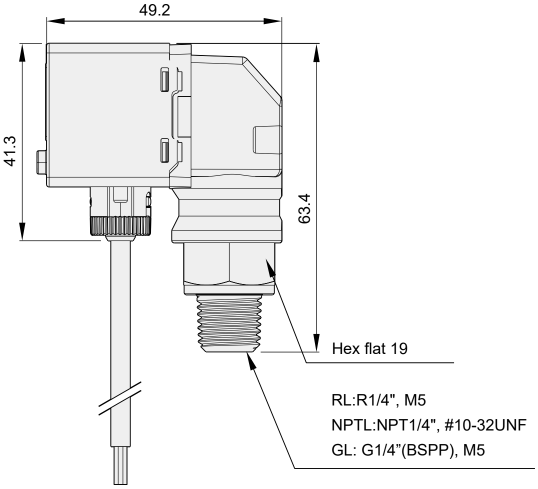

30
41.3
30
SET
2000

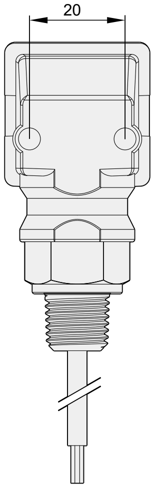

57.7
30.2
R:R1/4", M5
NPT:NPT1/4", #10-32UNF
G: G1/4"(BSPP), M5
Hex flat 19



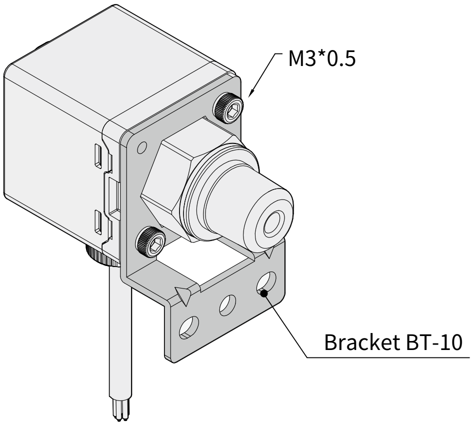
## PS □ L External dimensions

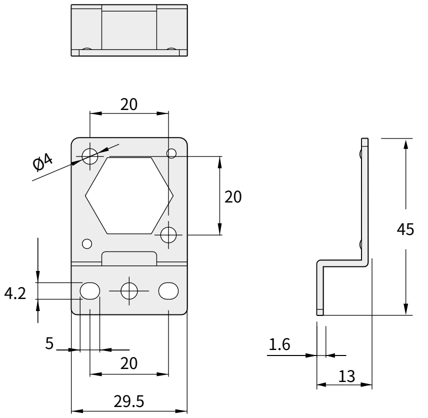



49.2
41.3
63.4
Hex flat 19
RL:R1/4", M5
NPTL:NPT1/4", #10-32UNF
GL: G1/4"(BSPP), M5

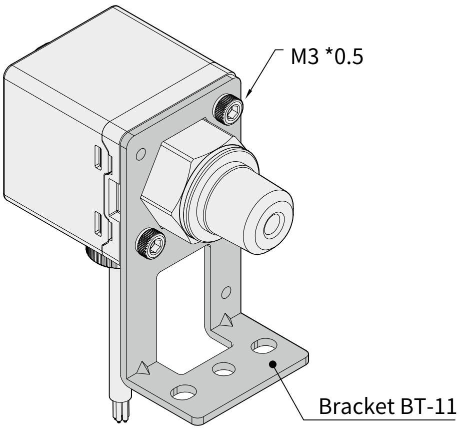


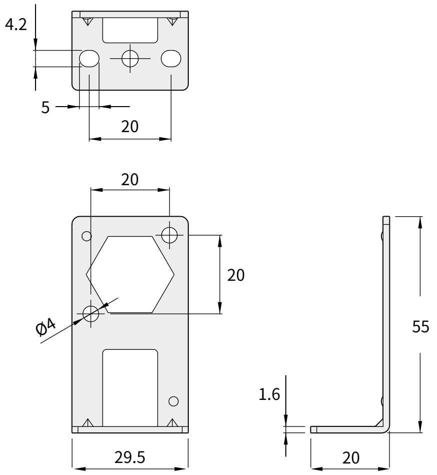
## BT-10 ( Stand mounting type )


M3*0.5
Bracket BT-10

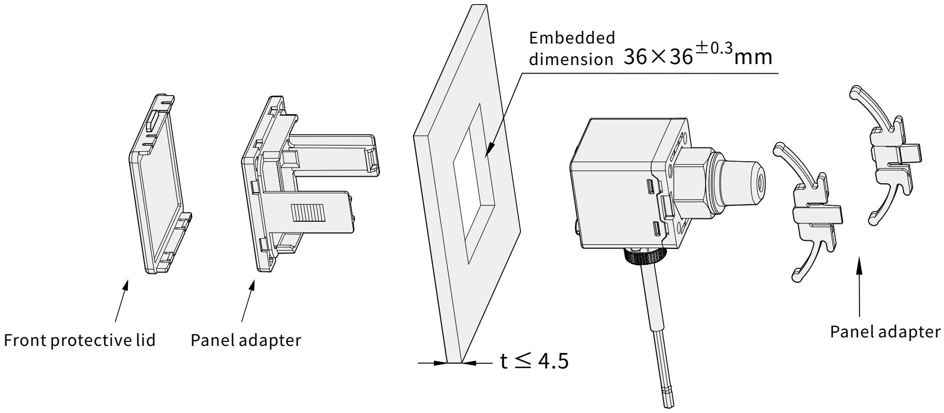

20
Ø4
20
45
4.2
5
20
1.6
13
29.5

## BT-11 ( Vertical mounting type )

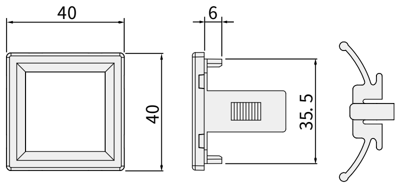

M3 *0.5
Bracket BT-11


4.2
5
20
20
20
Ø4
55
1.6
29.5
20

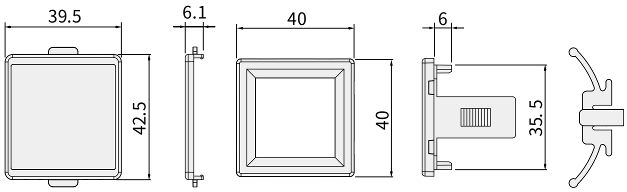
## Panel mount adapter + Front protective lid


Embedded dimension $36\times36^{\pm0.3}$mm
Front protective lid
Panel adapter
t ≤ 4.5
Panel adapter

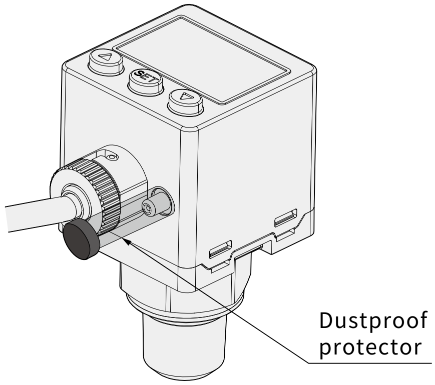
### PA - E Panel adapter

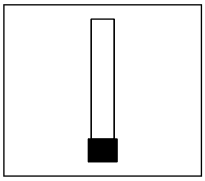


### PA - F Panel adapter + Front protective lid


39.5
6.1
42.5
40
6
40
35.5

## Dustpro of protector


Dustproof protector



### ⚠ CAUTION:

This device must be installed to maintain IP 65 (Dust and splash proof) enclosure rating.

# PS - 70 series - Pressure Switch

OPS
MPa
1.000
001 0.700
WIN
MPa
0.600
002 0.700

## Features

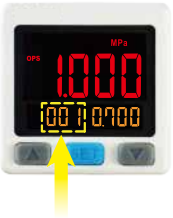
- Smart pressure sensor
- Remote control
- Real-time monitoring
- RS-485 Modbus RTU/ ASCII
- 4 digits, 7 segment LCD display

Suction | Pressure Dectection | Leakage | F.R.L | Tank | IOT

## Features expression

### Station Setting Display

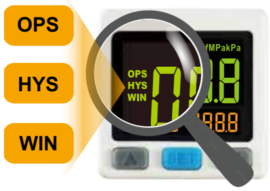
- Provide 0 ~ 255 station to set the sensor


OPS
MPa
1.000
001 0.700

ID Number Display

### Modes Display

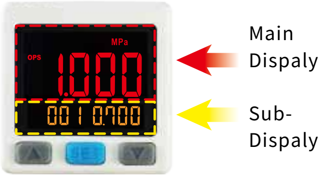
- Three modes show on the screen


OPS
HYS
WIN
OPS
HYS
WIN
fMPakPa
888

### Setting Value Easy Indication

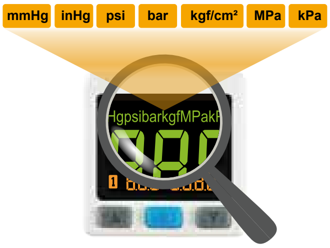
- User can easily observe the seitting value from sub-display

Main/ Sub-Display


OPS
MPa
1.000
001 0.700
Main
Dispaly
Sub-
Dispaly

### Easy Unit Identification

- Easy to read the conversion unit on display.


mmHg
inHg
psi
bar
kgf/cm²
MPa
kPa
HgpsibarkgfMPakP

### 2-Color Display

- User programmable color mode, for different setting conditions

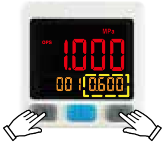
OPS
MPa
1.000
001 0.700

| | SoG | Sor | Grn | rEd |
|---|---|---|---|---|
| **ON** | **Green** | **Red** | **Green** | **Red** |
| **OFF** | **Red** | **Green** | **Green** | **Red** |

### OPS Quick Setting

- Sub-display allows changing the parameter directly, reduce setting step by 3/4

Up/ Down
Quick Setting


OPS
MPa
1.000
001 0.600

Finished
Setting

OPS
MPa
1.000
001 0.700

# PS - 70 series - Pressure Switch

## Specification

| Model | | PSC - 70 | PSV - 70 | PSN - 70 |
|---|---|---|---|---|
| | | (Compound) | (Negative) | (Positive) |
| Rated Pressure Range | | -100.0 ~ 100.0 kPa | -101.3 ~ 0.0 kPa | 0.000 ~ 1.000 MPa |
| Set Pressure Range | | -101.0 ~ 101.0 kPa | -101.3 ~ 10.0 kPa | -0.100 ~ 1.000 MPa |
| Withstand Pressure | | 500 kPa | | 1.5 MPa |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | |
| Set Pressure Resolution | kPa | 0.1 | | - |
| | MPa | - | | 0.001 |
| | kgf / cm² | 0.001 | | 0.01 |
| | bar | 0.001 | | 0.01 |
| | psi | 0.01 | | 0.1 |
| | inHg | 0.1 | | - |
| | mmHg | 1 | | - |
| Power Supply Voltage | | 12 to 24 V DC ± 10 %, Ripple ( P-P ) ≤ 10 % | | |
| Current Consumption | | ≤ 40 mA (With no load) | | |
| Switch Output | | 1 NPN open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 30 V DC<br>Residual voltage: ≤ 1.5 V | 1 PNP open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 24 V DC<br>Residual voltage: ≤ 1.5 V | |
| Repeatability | | ± 0.2 % F.S. ± 1 digit | | |
| Hysteresis | One point set mode | Adjustable Note: 1 | | |
| | Hysteresis mode | | | |
| | Window comparator mode | | | |
| Response Time | | ≤ 2.5 ms (chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms , 1000 ms, 1500 ms, 2000 ms and 5000 ms selectable) | | |
| Output Short Circuit Protection | | Yes | | |
| Display | | 4 digital, 7 segment LCD display (Red/ Green/ Orange)(Sampling rate: 0.2, 0.5, 1 times / sec.) | | |
| Indicator Accuracy | | ± 2 % F.S. ± 1 digit ( Ambient temperature: 25 ± 3 °C ) | | |
| Switch on Indicator | | Orange (1 Indicator) OUT1 | | |
| Environ-mental Resistance | Enclosure | IP40 | | |
| | Ambient Temp. Range | Operating: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) | | |
| | Ambient Humidity Range | Operating & Storage: 35 ~ 85 % RH (No condensation) | | |
| | Withstand Voltage | 1000 V AC in 1-min ( between case and lead wire ) | | |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) | | |
| | Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z | | |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z | | |
| Temperature Characteristic | | ±2.5% F.S. of detected pressure ( 25 °C ) at temp. (Range of 0 ~ 50 °C) | | |
| Communication Interface | | RS-485 | | |
| Connection Port | | R: R1/8", M5; NPT: NPT1/8", #10-32 UNF; G: G1/8"(BSPP), M5 | | |
| Lead Wire | | Oil-resistance cable ( 0.15 mm² ) | | |
| Weight ( With 2 meter lead wire ) | | Approx. 80 g | | |

NOTE: 1.Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.

# PS - 70 series - Pressure Switch

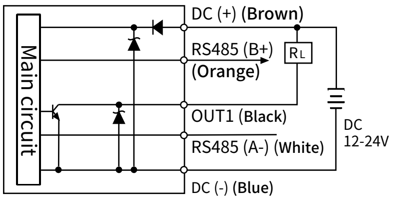
## Code of Order

| PS C 70 | 02 | R | |
|---|---|---|---|
| Model | Output | Connection Port | Mounting Type |
| **C:** Compound ( -101.0 ~ 101.0 kPa )<br>**V:** Negative ( -101.3 ~ 10.0 kPa )<br>**N:** Positive ( -0.100 ~ 1.000 MPa ) | **02:** 1 NPN Output + RS485<br>**04:** 1 PNP Output + RS485 | **R:** R 1/8, M5<br>**N:** NPT 1/8, #10-32UNF<br>**G:** G 1/8 (BSPP), M5 | **None:** Without accessory<br>**BT-12:** Bracket<br>**BT-13:** Bracket<br>**PA-C:** Panel adapter<br>**PA-D:** Panel adapter+ Front protective lid |

## Circuit wiring diagrams

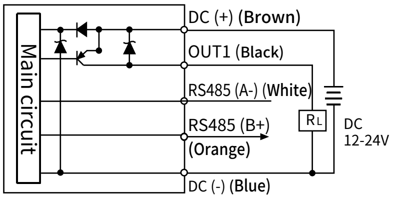
### PS☐70 - 02

NPN Output+ RS485


Main circuit
DC (+) (Brown)
RS485 (B+)
(Orange)
RL
OUT1 (Black)
RS485 (A-) (White)
DC
12-24V
DC (-) (Blue)

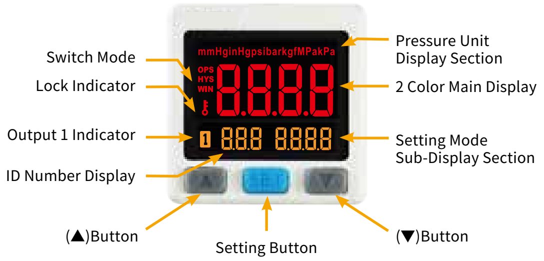
### PS☐70 - 04

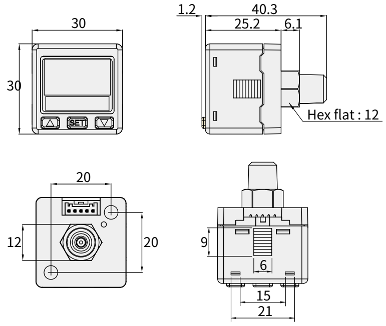
PNP Output+ RS485


Main circuit
DC (+) (Brown)
OUT1 (Black)
RS485 (A-) (White)
RS485 (B+)
(Orange)
RL
DC
12-24V
DC (-) (Blue)

* Procedure to wiring RS485 products: To prevent product damage due to short circuit, MUST to RS485 line connection BEFORE power line connection.

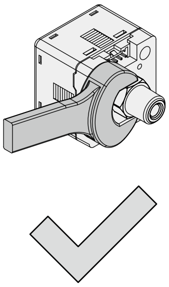
## External dimensions and panel description

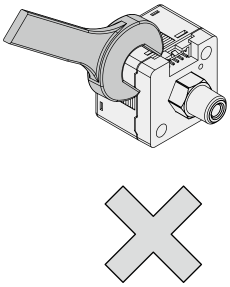

Switch Mode
Lock Indicator
Output 1 Indicator
ID Number Display
(▲)Button
Setting Button
(▼)Button
Pressure Unit
Display Section
2 Color Main Display
Setting Mode
Sub-Display Section
mmHginHgpsibarkgfMPakPa
OPS
HYS
WIN
8.8.8.8
1
8.8.8
8.8.8.8


30
30
1.2
40.3
25.2
6.1
Hex flat : 12
SET
20
12
20
9
6
15
21

## Installation precations

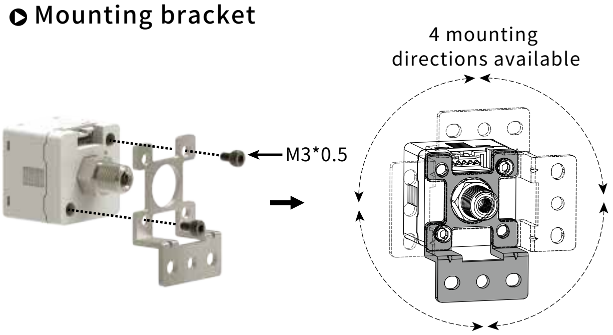
- When mounting, always use the wrench on the metallic area near the pressure port. Never apply a wrench to the plastic body, it will damage the sensor.
- Over tightening may cause damage to the port thread, mounting bracket and pressure sensor.Under tightening may result loosen or leakage.
- Apply air pressure and power after installation, make necessary adjustments and inspect any possible signs of leakage to ensure proper installation.



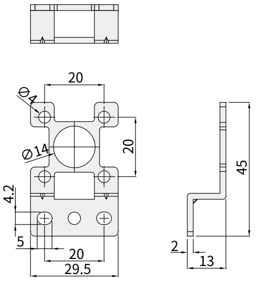


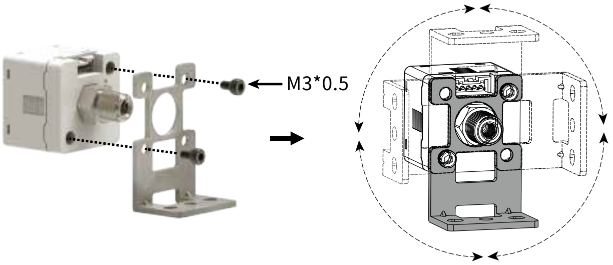
# PS - 70 series - Pressure Switch

## Mounting bracket

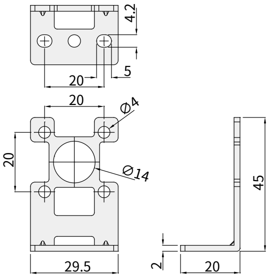

4 mounting directions available
M3*0.5

## BT - 12 Stand mounting type

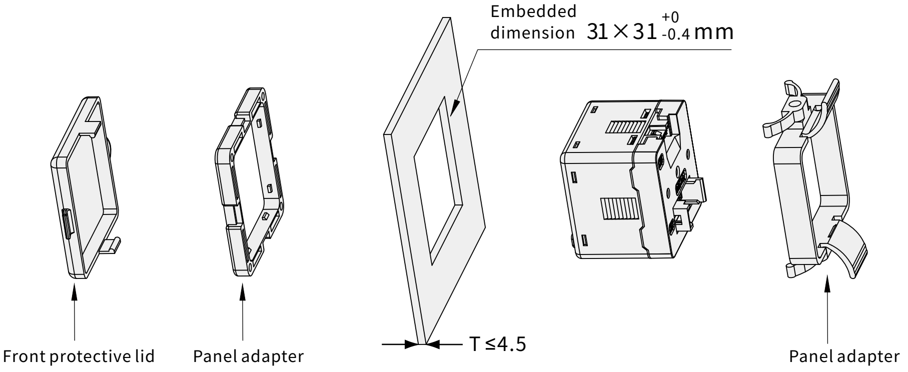

20
Ø4
Ø14
20
45
4.2
5
20
29.5
2
13



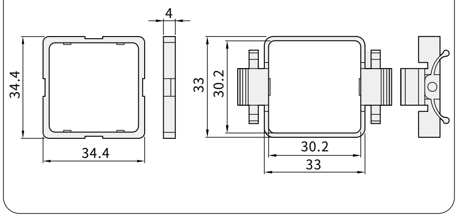
## BT - 13 Vertical mounting type


4.2
20
5
20
Ø4
20
Ø14
45
29.5
2
20

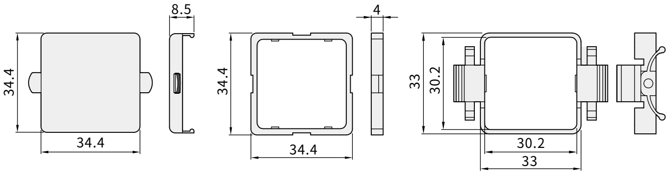
## Panel mount adapter + Front protective lid


Embedded dimension $31\times31^{+0}_{-0.4}$ mm
Front protective lid
Panel adapter
T ≤4.5
Panel adapter

### PA - C Panel adapter


4
34.4
34.4
33
30.2
30.2
33

### PA - D Panel adapter + Front protective lid


8.5
4
34.4
34.4
34.4
34.4
33
30.2
30.2
33

# PS - 75 series - Pressure Switch

## Features

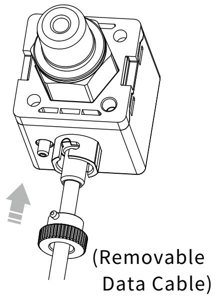
- Corrosive fluid or gas available(in the pipeline)
- Sensor parts & Fitting parts: SUS316L
- 2-Color digital LCD display
- Remote control/ Real-time monitoring
- RS-485 Modbus RTU/ ASCII
- 3½ digit, 7 segment LCD display
- IP65 enclosure

IOT | Pressure Dectection | Exhaust Gas Treatment | semi-conductor | Hydraulic | Chemical

## Features Expression

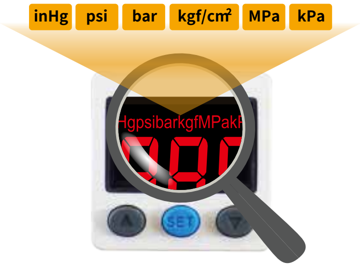
### Quick Installation

- Save installation time
- Easy removal



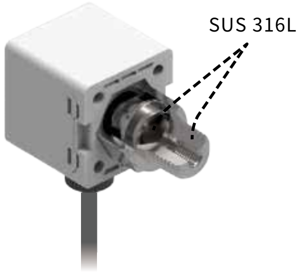
### Easy Unit Identification

- Easy to read the conversion unit on display.



### Applicable for Corrosive Fluid or Gas

- Sensor parts & Fitting parts are SUS 316L, applicable for corrosive fluid or gas equipment.

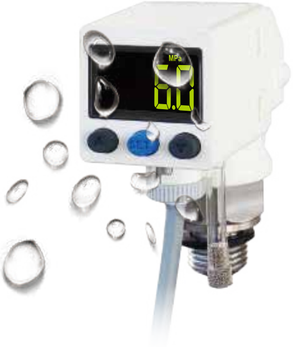


### 2-Color Display

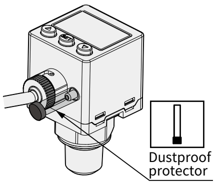
- User programmable color mode, for different setting conditions.

| | SoG | Sor | Grn | rEd |
|---|---|---|---|---|
| ON | Green | Red | Green | Red |
| OFF | Red | Green | Green | Red |

### IP65 Compliance



Dustproof protector

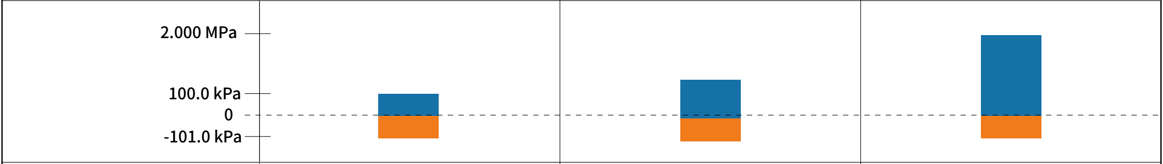


**⚠ CAUTION:**

This device must be installed to maintain IP 65 (Dust and splash proof) enclosure rating.

# PS - 75 series - Pressure Switch

## Specification

| Item | | PS75C (Compound) | PS75N (Positive) | PS75H (High) |
|---|---|---|---|---|
|  | | | | |
| Rated pressure range | | -100.0 ~ 100.0kPa | 0.000 ~ 1.000MPa | 0.000 ~ 2.00MPa |
| Set pressure range | | -101.0 ~ 101.0kPa | -0.100 ~ 1.000MPa | -0.100 ~ 2.00MPa |
| Withstand pressure | | 300kPa | 3MPa | |
| Applicable fluid | | Non-corrode gas SUS 316L | | |
| Sealed liquid | | Silicon oil | | |

| Set pressure resolution | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | kPa | 0.1 | - | - | - | - | - | - |
| | MPa | - | 0.001 | 0.001 ( ~ 1.999 )<br>0.01 ( 2.00 ~ ) | 0.01 | 0.01 | 0.1 | 0.1 |
| | kgf / cm² | 0.001 | 0.01 | 0.01 ( ~ 19.99 )<br>0.1 ( 20.0 ~ ) | 0.1 | 0.1 | 1 | 1 |
| | bar | 0.001 | 0.01 | 0.01 ( ~ 19.99 )<br>0.1 ( 20.0 ~ ) | 0.1 | 0.1 | 1 | 1 |
| | psi | 0.01 | 0.1 | 0.1 ( ~ 199.9 )<br>1 ( 200 ~ ) | 1 | 1 | 1 Note: 1 | 1 Note: 1 |
| | inHg | 0.1 | - | - | - | - | - | - |

| Item | | PS75C / PS75N / PS75H |
|---|---|---|
| Power supply voltage | | 12 to 24 V DC ± 10 %, Ripple ( P-P ) 10 % or less |
| Current consumption | | ≤ 40 mA ( With no load ) |
| Switch output | | 1NPN or 1PNP open collector output<br>Max. Load current: 125 mA<br>Max. Supply voltage: 1 NPN 30 V DC, 1 PNP 24 V DC<br>Residual voltage: ≤1.5 V |
| Repeatability | | ± 0.3 % F.S. ± 1 digit |
| Response time | | ≤ 2.5 ms ( chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms and 1500 ms selectable ) |
| Output short circuit protection | | Yes |
| Display | | 3 ½ digital, 7 segment LCD display (Red/ Green/ Orange)(Sampling rate: 5 times / sec.) |
| Indicator accuracy | | ±2 % F.S. ±1 digit ( Ambient temperature: 25 ±3 °C ) |
| Switch on indicator | | Orange (1 Indicator) OUT1 |
| Environmental Resistance | Enclosure | IP65 Note: 2 |
| | Ambient temp. range | Operating: 0 ~ 50 °C, Storage: -10 ~ 60 °C ( No condensation or freezing ) |
| | Ambient humidity range | 35 ~ 85 % RH (No condensation) |
| | Withstand voltage | 250 V AC in 1-min ( between case and lead wire ) |
| | Insulation | ≥ 50 MΩ ( at 500 V DC between case and lead wire ) |
| | Vibration | Total amplitude 1.5 mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z |
| | Impact | 100 m/s² ( 10 G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | ±3% F.S. of detected pressure ( 25 °C ) at temp. (Range of 0 ~ 50 °C) |
| Communication interface | | RS-485 |
| Connection Port Note: 3 | | F1: R1/4", M5 ; F2:NPT1/4", #10-32UNF; F3: G1/4" ( BSPP ) , M5 |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) |
| Weight ( With 2 meter lead wire ) | | Approx. 110 g ( Rear ported); Approx. 150 g( Bottom ported ) |

NOTE: 1. When using a uni1 psi, 1he actual value is display value multiply by ten (x10).
2. Dustproof protector must be installed to maintain IP65.
3. G port O-Ring material is NBR. if any special request, please contact CHELIC.
4. Please refer to P.5-1.46 for installation instructions.

# PS - 75 series - Pressure Switch

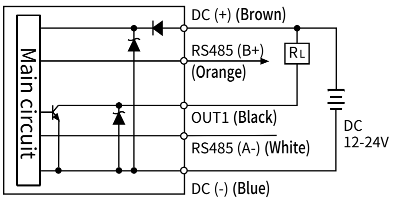
## Code of Order

| PS C 75 | 02 | R | | |
|---|---|---|---|---|
| **Model** | **Output** | **Connection Port** | **Piping Direction** | **Mounting Type** |
| **C:** Compound<br>(-101.0 ~ 101.0 kPa)<br>**N:** Positive<br>(-0.100 ~ 1.000 MPa)<br>**H:** High (-0.100 ~ 2.00 MPa) | **02:** NPN Output+ RS485<br>**04:** PNP Output+ RS485 | **R:** R 1/4 , M5<br>**NPT:** NPT 1/4, #10-32UNF<br>**G:** G 1/4 (BSPP), M5 | **None:**<br>Rear ported<br>**L :**<br>Bottom ported | **None:** Without accessory<br>**BT-10:** Bracket<br>**BT-11:** Bracket<br>**PA-E:** Panel adapter<br>**PA-F:** Panel adapter +Front protective lid<br>**I-0360:** Valve (Connection port applicable toR&G)<br>**I-0379:** Valve (Connection port applicable to NPT)<br>*PSN-75 & PSH-75 are recommended to install a snubber to reduce shock effects. |

## Circuit wiring diagrams

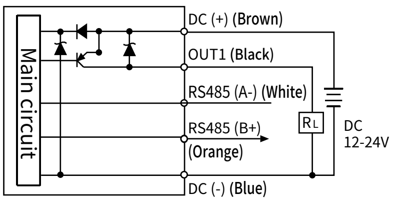
### PS ☐ 75- 02

NPN Output+ RS485


Main circuit
DC (+) (Brown)
RS485 (B+)
(Orange)
RL
OUT1 (Black)
RS485 (A-) (White)
DC (-) (Blue)
DC
12-24V

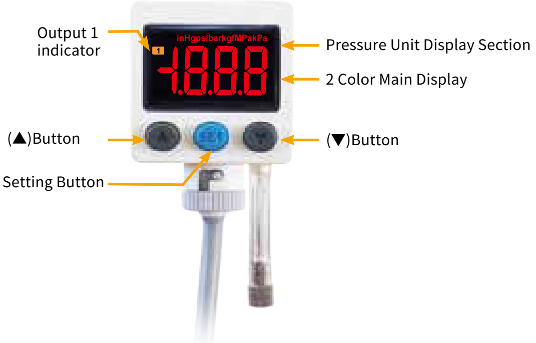
### PS ☐ 75- 04

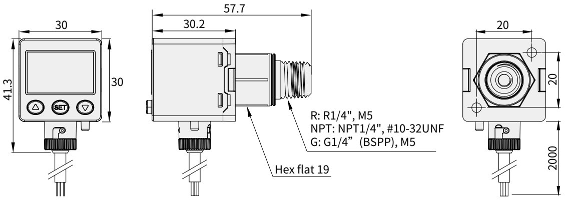
PNP Output+ RS485


Main circuit
DC (+) (Brown)
OUT1 (Black)
RS485 (A-) (White)
RS485 (B+)
(Orange)
RL
DC (-) (Blue)
DC
12-24V

* Procedure to wiring RS485 products: To prevent product damage due to short circuit, MUST to RS485 line connection BEFORE power line connection.

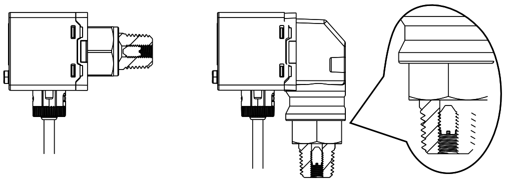
## External dimensions and panel description


Output 1 indicator
Pressure Unit Display Section
2 Color Main Display
(▲)Button
(▼)Button
Setting Button
inHgpsibarkgfMPakPa
1
-1.8.8.8

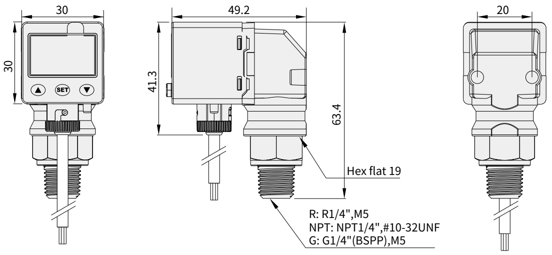

30
41.3
30
SET
57.7
30.2
R: R1/4", M5
NPT: NPT1/4", #10-32UNF
G: G1/4” (BSPP), M5
Hex flat 19
20
20
2000

## Removeable snubber installed

Pressure port equipped with sunbber can avoid damage caused by sudden pressure surge or oil, improve product durability

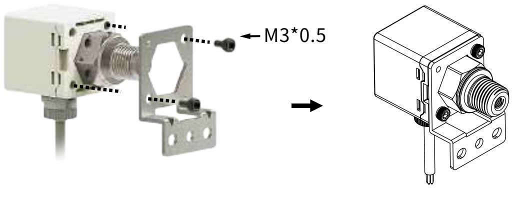


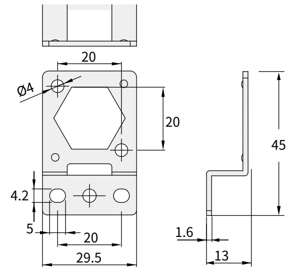
* When snubber is clogged with contaminants, please use a flat head screwdirver to remove the snubber, clean and reinstall.


30
30
SET
49.2
41.3
63.4
Hex flat 19
R: R1/4",M5
NPT: NPT1/4",#10-32UNF
G: G1/4"(BSPP),M5
20

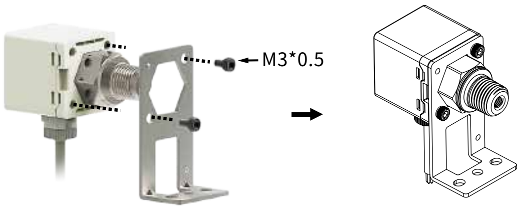
## Mounting bracket

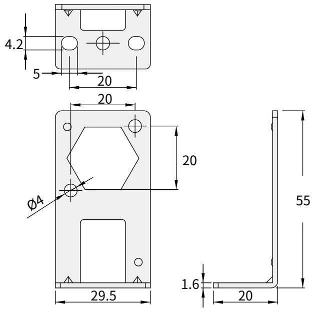
## BT - 10 Stand mounting type



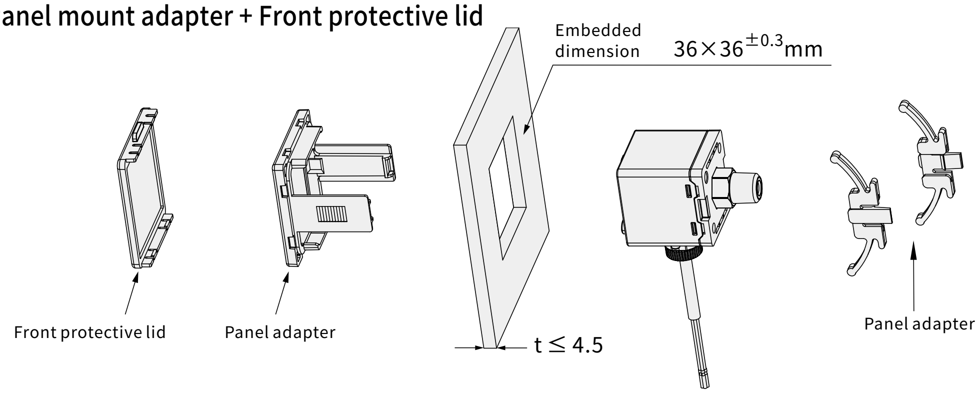

20
Ø4
20
45
4.2
5
20
29.5
1.6
13

## BT - 11 Vertical mounting type

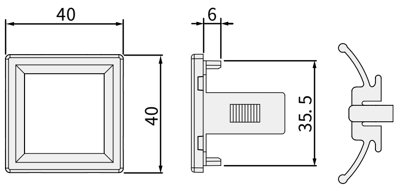



4.2
5
20
20
20
Ø4
55
29.5
1.6
20

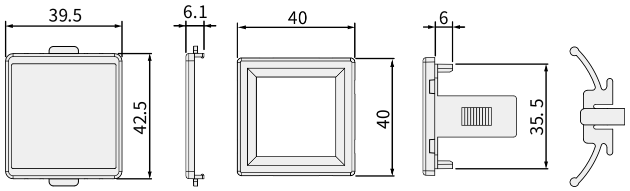
## Panel mount adapter + Front protective lid


Embedded dimension
36×36$^{\pm0.3}$mm
Front protective lid
Panel adapter
t ≤ 4.5
Panel adapter

### PA - E Panel adapter

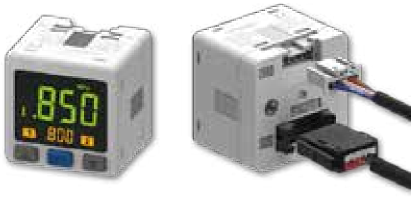


### PA - F Panel ldapter + Front protective lid


39.5
42.5
6.1
40
40
6
35.5

# PS - 400 series - Pressure Switch

**CHELIC**



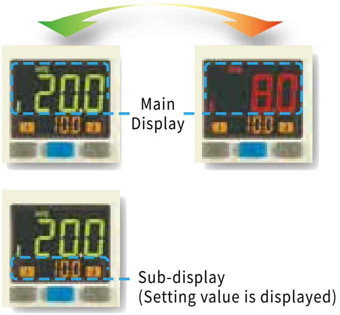
## Features

- 3-color digital LCD display
- Programmable pressure unit:
  kPa, MPa, kgf/cm², bar, psi, inHg, mmHg
- Dual LCD display allows setting value to be displayed
- Key lock indicator
- Analog output: 1 ~ 5V or 4 ~ 20mA
- Sensor input: 1 ~ 5V or 4 ~ 20mA
- 12 pressure ranges for transducer

## Features highlight

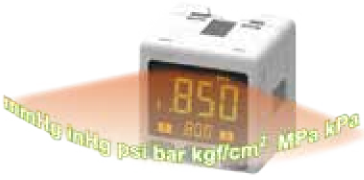
### 3-Color Digital LCD Display

- Main display color change with output status
  Green ↔ Red


200
100
Main
Display
80
100
200
100
Sub-display
(Setting value is displayed)

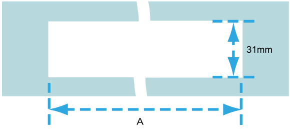
### Programmable pressure unit

- User selectable pressure unit is indicated on the sub-display section, eliminate pressure unit label
- 7 user programmable pressure units available


850
800
mmHg inHg psi bar kgf/cm² MPa kPa

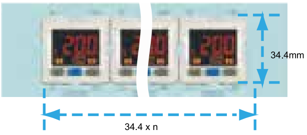
### Save installation space

- Panel opening for multiple pressure controller



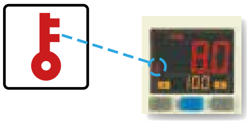
Calculation factor (A) = (34.4 x n) - 3.4
n = number of controller

- Actual dimension after installation

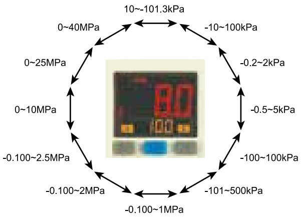

200
200
34.4mm
34.4 x n

### Key lock function

Key lock icon is shown on the Transducer display when the function is enabled



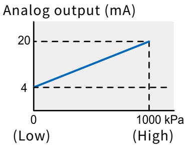
### 12 pressure ranges for transducer


10~-101.3kPa
-10~100kPa
-0.2~2kPa
-0.5~5kPa
-100~100kPa
-101~500kPa
-0.100~1MPa
-0.100~2MPa
-0.100~2.5MPa
0~10MPa
0~25MPa
0~40MPa
80
100

### Analog output/ sensor input

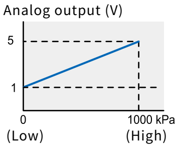
Current output or voltage output is available

(Current output)



Positive

(Voltage output)



Positive

# PS - 400 series - Pressure Switch

**CHELIC.**

## Specification

| Item / Model | | PS-400 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sensor type | | S-0 | S-1 | S-2 | S-3 | S-4 | S-5 | S-6 | S-7 | S-8 | S-9 | S-10 | S-11 | S-12 |
| Rated pressure range | | Self-Setting Note: 1 | 0~-101.3 kPa | 0~100 kPa | 0~2 kPa | 0~5 kPa | -100~100 kPa | -101~500 kPa | 0~1 MPa | 0~2 MPa | 0~2.5 MPa | 0~10 MPa | 0~25 MPa | 0~40 MPa |
| Set pressure range | | | 10~-101.3 kPa | -10~100 kPa | -0.2~2 kPa | -0.5~5 kPa | -100~100 kPa | -101~500 kPa | -0.100~1 MPa | -0.100~2 MPa | -0.100~2.5 MPa | 0~10 MPa | 0~25 MPa | 0~40 MPa |
| Set pressure range(Auto-shift input) | | — | 101.3 ~ -101.3 kPa | -100~100 kPa | -2~2 kPa | -5~5 kPa | -100~100 kPa | -500~500 kPa | -1~1 MPa | -2~2 MPa | -2.5~2.5 MPa | -10~10 MPa | -25~25 MPa | -40~40 MPa |
| Set pressure resolution | kPa | | 0.1 | 0.1 | 0.01 | 0.01 | 0.1 | 1 | — | — | — | — | — | — |
| | MPa | Self-Setting Note: 1 | — | — | — | — | — | — | 0.001 | 0.01 | 0.01 | 0.01 | 0.1 | 0.1 |
| | kgf/cm$^2$ | | 0.001 | 0.001 | — | — | 0.001 | 0.01 | 0.01 | 0.1 | 0.1 | 0.1 | 1 | 1 |
| | bar | | 0.001 | 0.001 | — | — | 0.001 | 0.01 | 0.01 | 0.1 | 0.1 | 0.1 | 1 | 1 |
| | psi | | 0.01 | 0.01 | — | — | 0.01 | 0.1 | 0.1 | 1 | 1 | 1 | 1 Note: 5 | 1 Note: 5 |
| | inHg | | 0.1 | — | — | — | 0.1 | — | — | — | — | — | — | — |
| | mmHg | | 1 | — | 0.1 | 0.1 | 1 | — | — | — | — | — | — | — |

| Item | | PS-400 |
|---|---|---|
| Power supply voltage | | 12 to 24 V DC ± 10 %, Ripple ( P-P ) 10 % or less |
| Current consumption | | ≤ 40 mA ( With no load ) |
| Sensor input | | 1 ~ 5V or 4 ~ 20 mA |
| Switch output | | 2NPN open collector outputs<br>Max. Load Current: 125 mA<br>Max. Supply Voltage: 30 V DC<br>Residual Voltage: ≤ 1.5 V<br>2PNP open collector outputs<br>Max. Load Current: 125 mA<br>Max. Supply Voltage: 24 V DC<br>Residual Voltage: ≤ 1.5 V |
| Repeatability | | ±0.1% F.S. ±1 digit or less |
| Hysteresis | One point set mode | Adjustable Note:2 |
| | Hysteresis mode | |
| | Window comparator mode | |
| Response time | | ≦ 2.5 ms ( chattering-proof function: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms and 1500 ms selectable ) |
| Output short circuit protection | | Yes |
| Display | | 3 ½ digital, 3 color display (Red/ Green/ Orange)(Sampling rate: 5 times / sec.) |
| Indicator accuracy | | ± 1% F.S. ±1 digit ( Ambient temperature: 25 ± 3°C ) |
| Switch on Indicator | | Orange indicator 1: OUT1 & Orange indicator 2: OUT2 |
| Analog output ( Voltage output ) Note: 4 | | Output voltage: 1 ~ 5V ± 2 % F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Output impedance: approx. 1 kΩ |
| Analog output ( Current output ) Note: 3 | | Output current: 4 ~ 20mA ± 2 % F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Max.Load Impedance : 300Ω at power supply of 12V / 600Ω at power supply of 24V<br>Min.Load Impedance : 50Ω |
| Environmental Resistance | Enclosure | IP40 |
| | Ambient temp. range | Operation : 0 ~ 50 °C, Storage : -10 ~ 60 °C ( No condensation or freezing ) |
| | Ambient humidity range | Operation / Storage : 35 ~ 85 % RH ( No condensation ) |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) |
| | Insulation | 50 MΩ ( at 500 V DC, between case and lead wire ) |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z |
| | Impact | 100 m/s$^2$ ( 10 G ), 3 times each in direction of X, Y and Z |
| Temperature characteristic | | ±0.5 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C |
| Lead wire | | oil-resistant cable (0.15 mm$^2$) |
| Weight ( With 2 meter lead wire ) | | Approx. 67 g |

NOTE: 1. S-0: Set the sensor range (1999~-1999) by self. The decimal place can be adjusted.
2. Hysteresis value is adjustable within 1 ~ 8 digits for one point set mode and window comparator mode.
3. If analog voltage output is selected, the analog current output cannot be selected at the same time.
4. If analog current output is selected, the analog voltage output cannot be selected at the same time.
5. When using a uni1 psi, 1he actual value is display value multiply by ten (x10).

# PS - 400 series - Pressure Switch

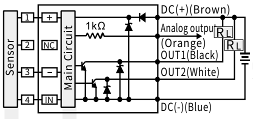
## Code of Order

| PS - 4 1 | 0 | 010 | CN46A | BT08 |
|---|---|---|---|---|
| Model | Output | Output | Sensor connector | Mounting Type |
| 1 : Voltage input<br>2 : Current input | 0 : 1 Channel | 010: 2 NPN outputs & Analog output (1 ~ 5 V)<br>011: 2 NPN outputs & Analog output (4 ~ 20 mA)<br>030: 2 PNP outputs & Analog output (1 ~ 5 V)<br>031: 2 PNP outputs & Analog output (4 ~ 20 mA)<br>05: 2 NPN outputs & Auto-shift input<br>07: 2 PNP outputs & Auto-shift input | Standard: 2M wires<br>CN46A : Sensor connector (Ø8 ~ Ø1.0 mm, 24~26AWG)<br>CN46B : Sensor connector (Ø8 ~ Ø1.2 mm, 24~26AWG)<br>CN46C : Sensor connector (Ø8 ~ Ø1.6 mm, 24~26AWG)<br>PS☐-05-01 : Sensor | None: Without accessory<br>BT08 : Stand mounting type<br>BT09 : Vertical mounting type<br>PA-C : Panel adapter<br>PA-D : Panel adapter + Front protective lid |

## Circuit wiring diagrams

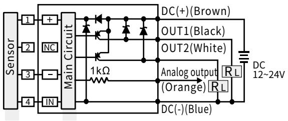
### PS-4☐ 0-010

2 NPN + Analog Output ( 1 ~ 5 V )


Sensor
Main Circuit
1 +
2 NC
3 −
4 IN
1kΩ
DC(+)(Brown)
Analog output (Orange)
OUT1(Black)
OUT2(White)
RL
DC 12~24V
DC(-)(Blue)

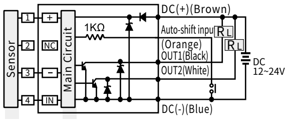
### PS-4☐ 0-030

2 PNP + Analog Output ( 1 ~ 5 V )


Sensor
Main Circuit
1 +
2 NC
3 −
4 IN
1kΩ
DC(+)(Brown)
OUT1(Black)
OUT2(White)
Analog output (Orange)
RL
DC 12~24V
DC(-)(Blue)

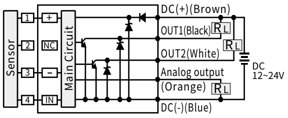
### PS-4☐ 0-05

2 NPN Output + Auto-shift input


Sensor
Main Circuit
1 +
2 NC
3 −
4 IN
1KΩ
DC(+)(Brown)
Auto-shift input (Orange)
OUT1(Black)
OUT2(White)
RL
DC 12~24V
DC(-)(Blue)

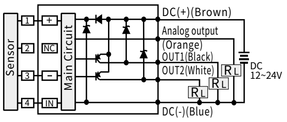
### PS-4☐ 0-011

2 NPN + Analog Output ( 4 ~ 20 mA )


Sensor
Main Circuit
1 +
2 NC
3 −
4 IN
DC(+)(Brown)
OUT1(Black)
OUT2(White)
Analog output (Orange)
RL
DC 12~24V
DC(-)(Blue)

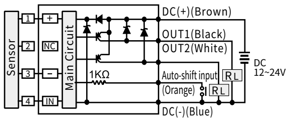
### PS-4☐ 0-031

2 PNP + Analog Output ( 4 ~ 20 mA )

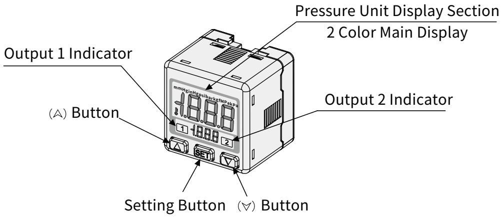

Sensor
Main Circuit
1 +
2 NC
3 −
4 IN
DC(+)(Brown)
Analog output (Orange)
OUT1(Black)
OUT2(White)
RL
DC 12~24V
DC(-)(Blue)

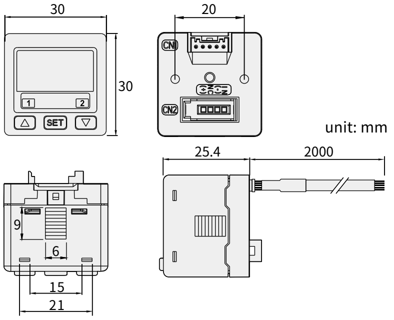
### PS-4☐ 0-07

2 PNP Output + Auto-shift input


Sensor
Main Circuit
1 +
2 NC
3 −
4 IN
1KΩ
DC(+)(Brown)
OUT1(Black)
OUT2(White)
Auto-shift input (Orange)
RL
DC 12~24V
DC(-)(Blue)

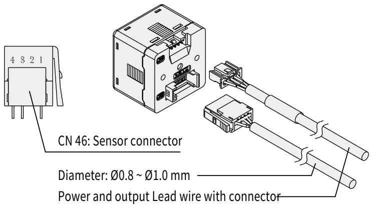
## External dimensions and panel description


Pressure Unit Display Section
2 Color Main Display
Output 1 Indicator
(∧) Button
Output 2 Indicator
Setting Button
(∨) Button
SET

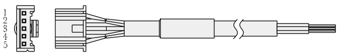

30
30
20
CN1
CN2
1
2
SET
unit: mm
25.4
2000
9
6
15
21

## Sensor connector

| PIN No. | Wire color |
|---|---|
| 1 | Brown (DC+) |
| 2 | NC |
| 3 | Blue (DC-) |
| 4 | Black (IN) |

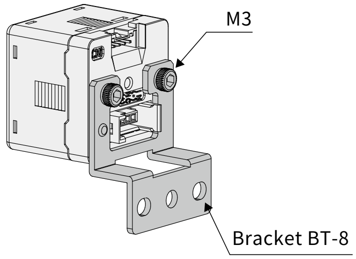

4 3 2 1
CN 46: Sensor connector
Diameter: Ø0.8 ~ Ø1.0 mm
Power and output Lead wire with connector

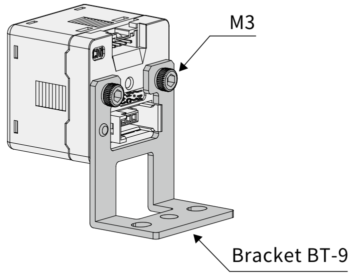
| PIN No. | Wire Color |
|---|---|
| 1 | Brown (DC+) |
| 2 | Orange (Analog or Auto Shift) |
| 3 | White (OUT2) |
| 4 | Black (OUT1) |
| 5 | Blue (DC-) |



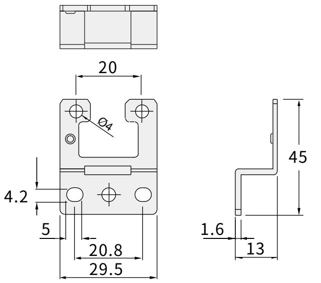
# PS - 400 series - Pressure Switch

## Mounting bracket

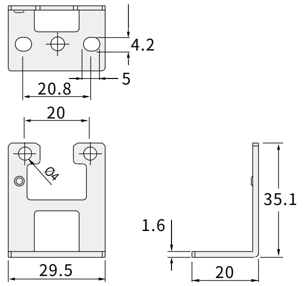

M3
Bracket BT-8


M3
Bracket BT-9

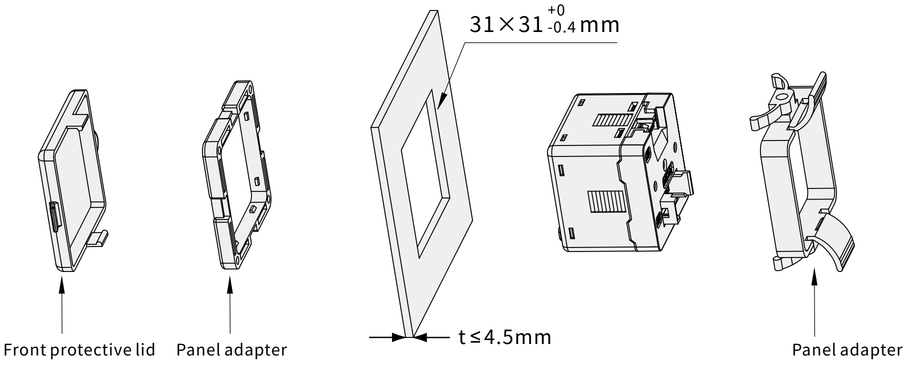
## BT – 08 Stand mounting type


20
Ø4
45
4.2
5
20.8
29.5
1.6
13

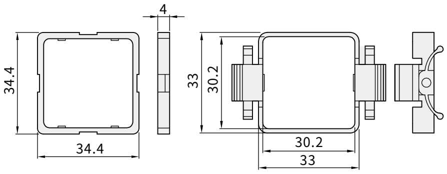
## BT – 09 Vertical mounting type


4.2
5
20.8
20
Ø4
35.1
1.6
29.5
20

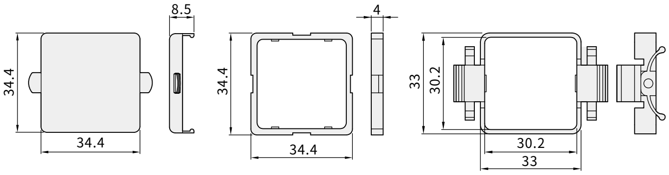
## Panel mount adapter + Front protective lid


$31 \times 31^{+0}_{-0.4}$ mm
Front protective lid
Panel adapter
t≤4.5mm
Panel adapter

### PA - C Panel adapter


4
34.4
34.4
33
30.2
30.2
33

### PA - D Panel ldapter + Front protective lid


8.5
4
34.4
34.4
34.4
34.4
33
30.2
30.2
33

# PS - 600 series - Differential Pressure Sensor

CHELIC

PS-600
CHELIC

## Features

- Differential pressure sensor
- Analog output: 1 ~ 5 V or 4 ~ 20 mA
- Pressure range: 0 ~ 2 kPa or 0 ~ 5 kPa
- Simple installation, applicable to Ø6 air tubing
- IP40 enclosure

## Specification

| Item | | PS-611 | PS-612 |
|---|---|---|---|
| Rated pressure range | | 0 ~ 5 kPa | 0 ~ 2 kPa |
| Set pressure range | | -50 ~50 kPa Note: 1 | |
| Withstand pressure | | 65 kPa | |
| Applicable fluid | | Filtered air, Non-corrosive/ Non-flammable gas | |
| Power supply voltage | | 12 to 24 V DC ±10 %, Ripple ( P-P ) 10 % or less | |
| Current consumption | | ≤ 15 mA ( With no load ) | |
| Analog output ( Voltage output ) | | Output voltage: 1 ~ 5V ± 1 % F.S. (within rated pressure range)<br>Linearity: ± 0.5 % F.S.<br>Output impedance: approx. 1 kΩ | |
| Analog output ( Current output ) | | Output current: 4 ~ 20mA ± 1 % F.S. (within rated pressure range)<br>Linearity: ± 0.5 % F.S.<br>Max.Load Impedance : 250Ω at power supply of 12V / 600Ω at power supply of 24V | |
| Environmental Resistance | Enclosure | IP40 | |
| | Ambient temp. range | Operation : 0 ~ 50 °C, Storage : -10 ~ 70 °C ( No condensation or freezing ) | |
| | Ambient humidity range | Operation / Storage : 35 ~ 85 % RH ( No condensation ) | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | |
| | Insulation | 50 MΩ ( at 500 V DC, between case and lead wire ) | |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 150 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | |
| | Impact | 300 m/s² ( 30 G ), 3 times each in direction of X, Y and Z | |
| Temperature characteristic | | ±3 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C | |
| Connection port | | ϕ4.8(ϕ4.4 in the end)resin pipe (Applicable to ϕ6 air tube) | |
| Lead wire | | Oil-resistance cable ( 0.15 mm² ) | |
| Weight ( With 2 meter lead wire ) | | Approx. 75 g | |

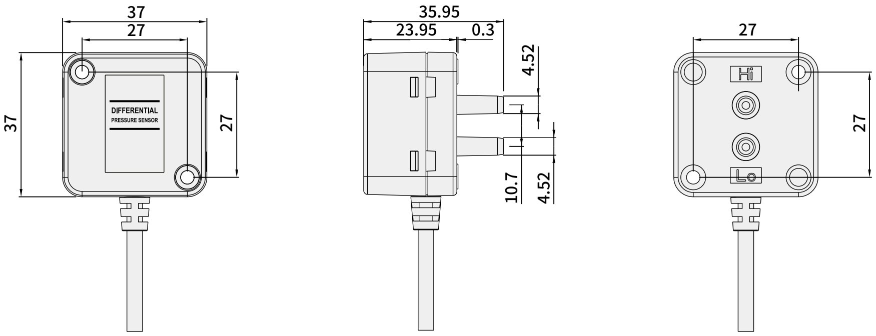
NOTE: 1. To detect differential pressure from 0 ~ 2 kPa or 0 ~ 5 kPa within the range of -50 ~ 50 kPa.

## Code of Order

| PS - 61 | – | 1 | – | 10 | – | BT16 |
|---|---|---|---|---|---|---|
| Model | | Pressure range | | Output | | Mounting type |
| -50 ~ 50 kPa | | **1:** 0 ~ 5 kPa<br>**2:** 0 ~ 2 kPa | | **10:** Analog output (1~5V)<br>**11:** Analog output (4~20mA) | | **None:** Standard<br>**BT16** : Stand mounting type |

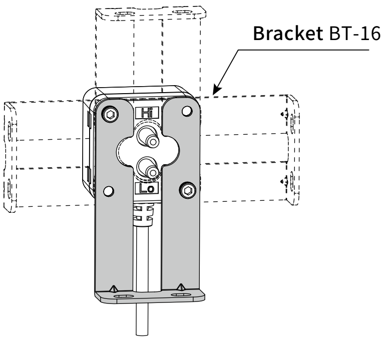
# PS - 600 series - Differential Pressure Sensor

## External dimensions

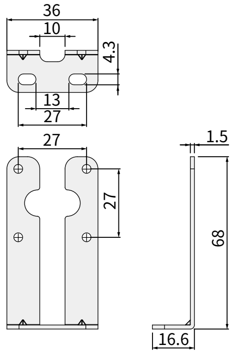

37
27
37
27
DIFFERENTIAL
PRESSURE SENSOR
35.95
23.95
0.3
4.52
10.7
4.52
27
Hi
Lo
27

unit: mm

## Optional parts dimensions


Bracket BT-16
Hi
Lo

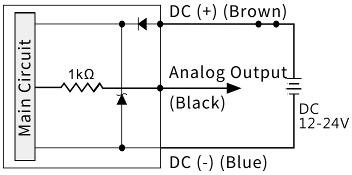
## BT - 16 Stand mounting type


36
10
4.3
13
27
27
1.5
27
68
16.6

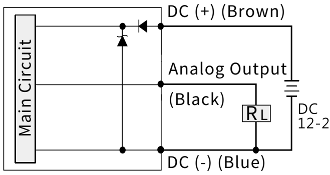
unit: mm

## Circuit wiring diagrams

- PS - 61 ☐ - 10 - R6
  Analog output ( 1 ~ 5V )

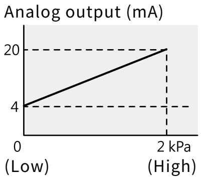

Main Circuit
1kΩ
DC (+) (Brown)
Analog Output
(Black)
DC
12-24V
DC (-) (Blue)

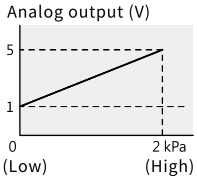
- PS - 61 ☐ - 11 - R6
  Analog output ( 4 ~ 20mA )

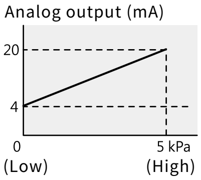

Main Circuit
DC (+) (Brown)
Analog Output
(Black)
RL
DC
12-24V
DC (-) (Blue)

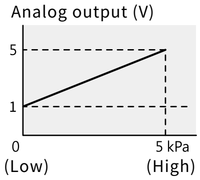
## Analog output

- Output range 1 ~ 5V or 4 ~ 20mA, proportional to the pressure range.





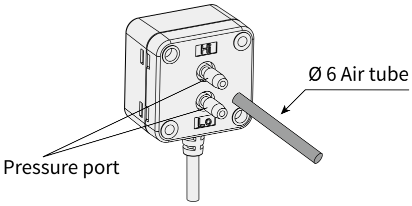




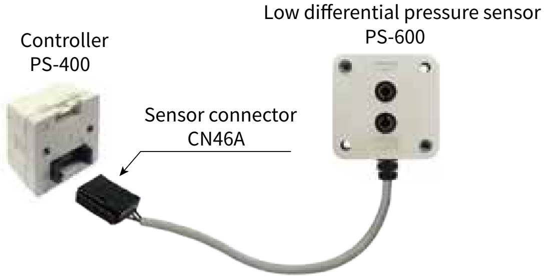
# PS - 600 series - Differential Pressure Sensor

## Installation

- Plug-in port for air tube


Hi
Lo
Ø 6 Air tube
Pressure port

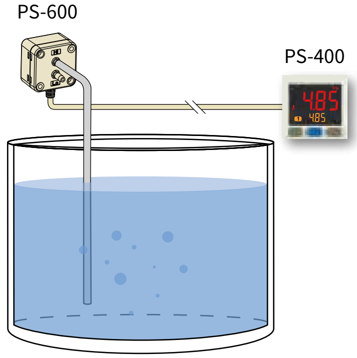
- Plug connect with controller


Controller
PS-400
Low differential pressure sensor
PS-600
Sensor connector
CN46A

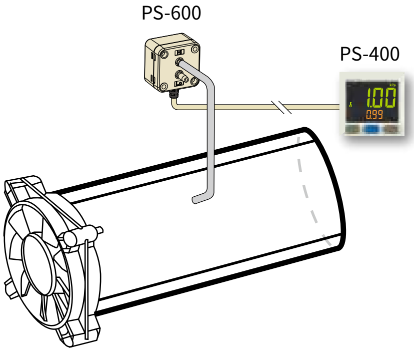
## Application

- **Liquid level detection**

To detect the liquid level by sensing the change of line pressure.

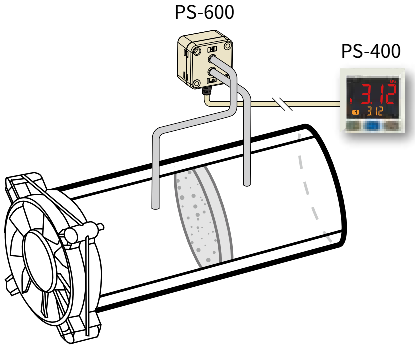

PS-600
PS-400
4.85
485

- **Air flow detection**


PS-600
PS-400
1.00
0.99

- **Filter air monitoring**

To monitor the clogging of filter by detecting the differential pressure.


PS-600
PS-400
3.12
3.12

# PS - 800 series - Differential Pressure Sensor

## Features

- Digital LCD display, easy readout
- Analog output: 1 ~ 5 V or 4 ~ 20 mA
- IP40 enclosure
- Pressure range: 0 ~ 1kPa, 0 ~ 2kPa, 0 ~ 5kPa
  -1 ~ 1kPa, -2 ~ 2kPa, -5 ~ 5kPa

## Specification

| Model<br>Item | | PS-801 | PS-811 | PS-802 | PS-812 | PS-805 | PS-815 |
|---|---|---|---|---|---|---|---|
| Rated Pressure Range | | 0~1000 Pa | -1000~1000 Pa | 0.00~2.00 kPa | -2.00~2.00 kPa | 0.0~5.00 kPa | -5.00~5.00 kPa |
| Set Pressure Range | | -100~1000 Pa | -1000~1000 Pa | -0.20~2.00 kPa | -2.00~2.00 kPa | -0.50~5.00 kPa | -5.00~5.00 kPa |
| Withstand Pressure | | 3 kPa | | 6 kPa | | 15 kPa | |
| Applicable Fluid | | Filtered air, Non-corrosive/ Non-flammable gas | | | | | |
| Set pressure resolution | Pa | 1 | | — | | — | |
| | kPa | — | | 0.01 | | 0.01 | |
| Power supply voltage | | 12 to 24 V DC ±10 %, Ripple ( P-P ) 10 % or less | | | | | |
| Current consumption | | ≤ 40 mA ( With no load ) | | | | | |
| Switch Output | | 2NPN open collector outputs<br>Max. Load Current: 125 mA<br>Max. Supply Voltage: 30 V DC<br>Residual Voltage: ≤ 1.5 V | | | 2PNP open collector outputs<br>Max. Load Current: 125 mA<br>Max. Supply Voltage: 24 V DC<br>Residual Voltage: ≤ 1.5 V | | |
| Repeatability | | ±0.5%F.S.±1 digit | | | | | |
| Hysteresis | Hysteresis mode | Adjustable | | | | | |
| | Window comparator mode | | | | | | |
| Response time | | ≤ 2.0 ms ( chattering-proof function: 32 ms, 128 ms, 1024 ms selectable ) | | | | | |
| Output short circuit protection | | Yes | | | | | |
| Display | | 3 ½ digital, 7 segment LCD display ( white ) (Sampling rate：0.1~3 sec.設定) | | | | | |
| Indicator accuracy | | ±2%F.S.±1 digit (ambient temperature25±3°C) | | | | | |
| Switch on Indicator | | White indicator 1: OUT1 & White indicator 2: OUT2 | | | | | |
| Analog output ( Voltage output ) Note: 1 | | Output voltage: 1 ~ 5V ± 2.5 % F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Output impedance: approx. 1 kΩ | | | | | |
| Analog output ( Current output ) Note: 2 | | Output current: 4 ~ 20mA ± 2.5 % F.S. (within rated pressure range)<br>Linearity: ± 1 % F.S.<br>Max.Load Impedance : 250Ω at power supply of 12V / 600Ω at power supply of 24V<br>Min.Load Impedance : 50Ω | | | | | |
| Environmental Resistance | Enclosure | IP40 | | | | | |
| | Ambient temp. range | Operation : 0 ~ 50 °C, Storage : -10 ~ 60 °C ( No condensation or freezing ) | | | | | |
| | Ambient humidity range | Operation / Storage : 35 ~ 85 % RH ( No condensation ) | | | | | |
| | Withstand voltage | 1000 V AC in 1-min ( between case and lead wire ) | | | | | |
| | Insulation | 50 MΩ ( at 500 V DC, between case and lead wire ) | | | | | |
| | Vibration | Total amplitude 1.5 mm or 10 G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, two hours each direction of X, Y and Z | | | | | |
| | Impact | 100 $m/s^2$ ( 10 G ), 3 times each in direction of X, Y and Z | | | | | |
| Temperature characteristic | | ±3 % F.S. of detected pressure ( 25°C ) at temp. Range of 0 ~ 50°C | | | | | |
| Connection Port | | M5 ：M5 thread | | | | | |
| Lead wire | | Oil-resistance cable ( 0.15 $mm^2$ ) | | | | | |
| Weight ( With 2 meter lead wire ) | | Approx. 75 g | | | | | |

NOTE: 1. If analog voltage output is selected, the analog current output cannot be selected at the same time.
2. If analog current output is selected, the analog voltage output cannot be selected at the same time.

# PS - 800 series - Differential Pressure Sensor

## Code of Order

**PS - 8 01** – **010** – **M5** – **BT20**

**Model**

- **01:** (-100~1000 Pa)
- **02:** (-0.20~2.00 kPa)
- **05:** (-0.50~5.00 kPa)
- **11:** (-1000~1000 Pa)
- **12:** (-2.00~2.00 kPa)
- **15:** (-5.00~5.00 kPa)

**Output**

- **010:** 2 NPN outputs & Analog output (1 ~ 5 V)
- **011:** 2 NPN outputs & Analog output (4 ~ 20 mA)
- **030:** 2 PNP outputs & Analog output (1 ~ 5 V)
- **031:** 2 PNP outputs & Analog output (4 ~ 20 mA)

**Connection port**

- M5

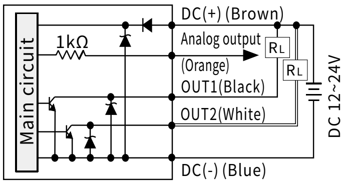
**Mounting Type**

- **None:** Standard
- **BT20**: Stand mounting type
- **BT21**: Vertical mounting type
- **PA-C**: Panel adapter
- **PA-D**: Panel adapter + Front protective lid

## Circuit wiring diagrams

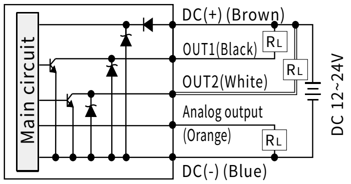
- PS - 8 ☐ - 010 - M5

2 NPN + Analog output ( 1 ~ 5V )


Main circuit
1kΩ
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
DC 12~24V

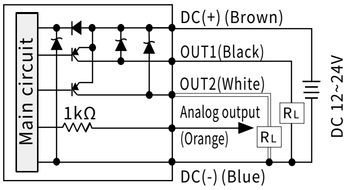
- PS - 8 ☐ - 011 - M5

2 NPN + Analog output ( 4 ~ 20mA )


Main circuit
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

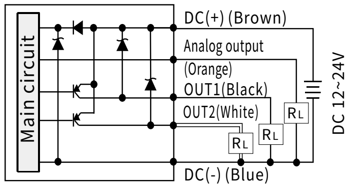
- PS - 8 ☐ - 030 - M5

2 PNP + Analog output ( 1 ~ 5V )

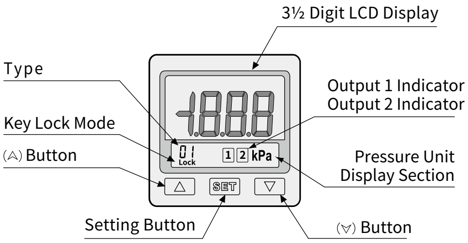

Main circuit
1kΩ
DC(+) (Brown)
OUT1(Black)
OUT2(White)
Analog output
(Orange)
DC(-) (Blue)
RL
RL
DC 12~24V

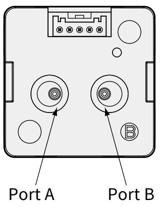
- PS - 8 ☐ - 031 - M5

2 PNP + Analog output ( 4 ~ 20mA )

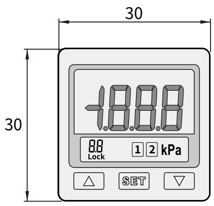

Main circuit
DC(+) (Brown)
Analog output
(Orange)
OUT1(Black)
OUT2(White)
DC(-) (Blue)
RL
RL
RL
DC 12~24V

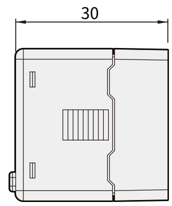
## External dimensions and panel description

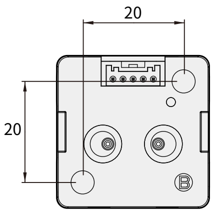

3½ Digit LCD Display
Type
Key Lock Mode
(△) Button
Output 1 Indicator
Output 2 Indicator
Pressure Unit
Display Section
Setting Button
(▽) Button
-1888
01
Lock
1 2 kPa
△
SET
▽


Port A
Port B
B

Please use port Bas high pressure side and Port A as low pressure side.


30
30
-1888
88
Lock
1 2 kPa
△
SET
▽

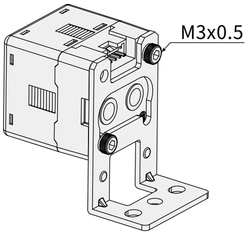




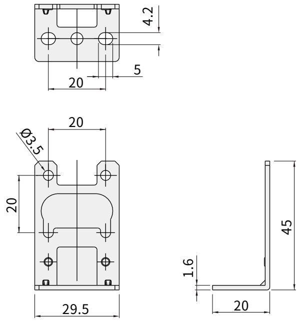
unit: mm

## Mounting bracket

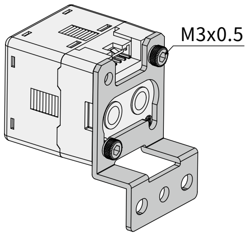
Bracket BT-20



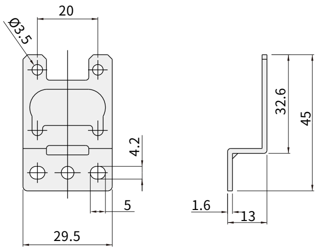
### BT – 20 Stand mounting type


4.2
5
20
20
Ø3.5
20
45
1.6
29.5
20

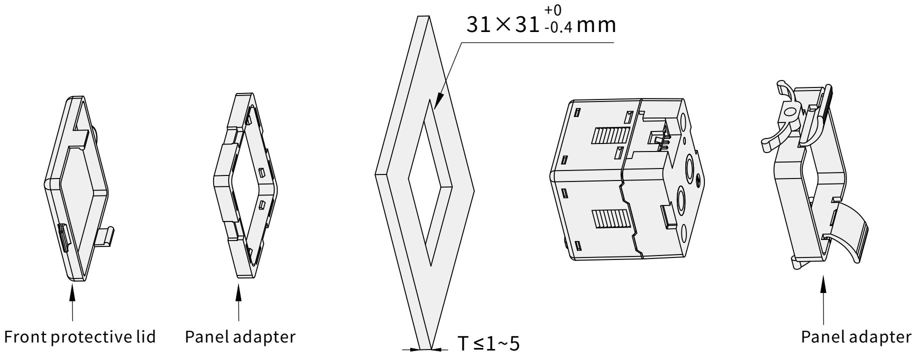
Bracket BT-21



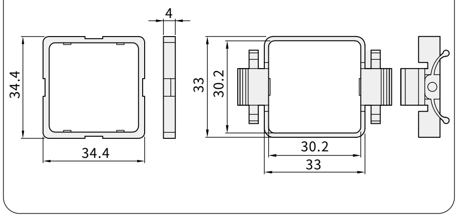
### BT – 21 Vertical mounting type


20
Ø3.5
32.6
45
4.2
5
1.6
13
29.5

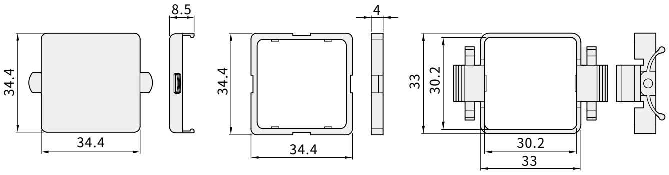
## Panel mount adapter + Front protective lid


31×31 $^{+0}_{-0.4}$ mm
Front protective lid
Panel adapter
T ≤1~5
Panel adapter

### PA - C Panel adapter


4
34.4
34.4
33
30.2
30.2
33

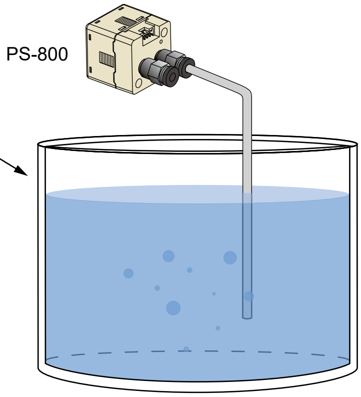
### PA - D Panel ldapter + Front protective lid


8.5
4
34.4
34.4
34.4
34.4
33
30.2
30.2
33

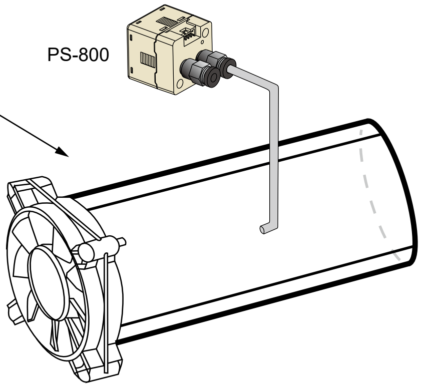
## Application

### Liquid Level Detection

To detect the liquid level by sensing the change of line pressure.

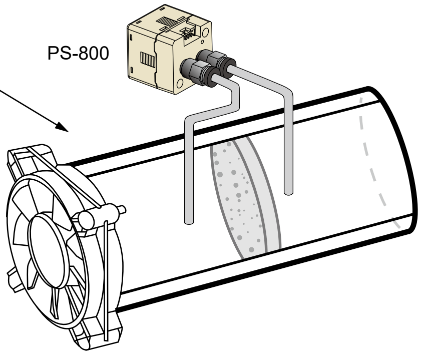


### Air Flow Detection



### Filter Air Monitoring

To monitor the clogging of filter by detecting the differential pressure.



# PSS Series - Precision Pressure Switch/ Oil-Filled Type

## Product description

- Oil-filled type design, can be isolated measurement special gas.
- Can be measurable special components fluid (gas)
- High precision 0.5% F.S.
- High repeatability < ±0.1% F.S
- Stainless steel exterior design, rust and corrosion resistant, and can be used in special environments

## Code of Order

**PSS** – **N** – **10** – **R** – **2** – **W**

Model

PSS series :
Precision pressure
switch / Oil-filled type

Pressure form

| | |
|---|---|
| N | Positive pressure |

Pressure options

| | |
|---|---|
| 01 | 0.1 MPa |
| 02 | 0.2 MPa |
| 07 | 0.7 MPa |
| 10 | 1.0 MPa |

Port size

| | |
|---|---|
| R | PT 1/4" |
| G | PF 1/4" |
| N | NPT 1/4" |

Monitor output

| | |
|---|---|
| 2 | DC0.5~4.5V |
| 4 | 4~20mA |

Cable type

| | |
|---|---|
| W | 2M Grommet |
| K | With fitting |

## Specification

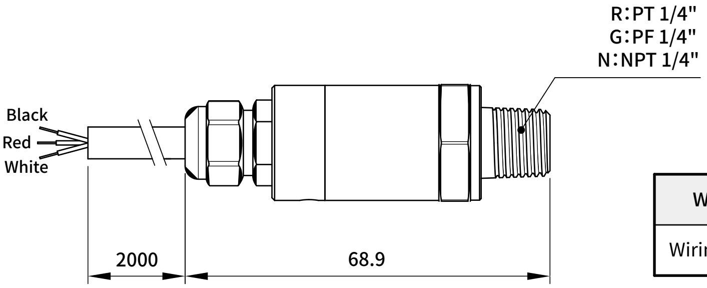
| Item | Positive Pressure |
|---|---|
| Pressure Range | 0 ~ 0.1 MPa<br>0 ~ 0.2 MPa<br>0 ~ 0.7 MPa<br>0 ~ 1.0 MPa |
| Fluid | Air |
| Operation Temperature | -10~60℃ |
| Accuracy | 0.5% F.S.（25℃） |
| Repeatability | < ± 0.1% F.S.(25℃) |
| Power supply voltage | 24VDC, Ripple(p-p)<=10% |
| Voltage Output | 0.5 to 4.5 Vdc（Output impedance 1k ） |
| Above Current output | 4 to 20mA（Load impedance lower than 500（24 VDC）or Load impedance lower than 100（12 VDC）） |
| Enclosure | IP65 |
| Connector Thread | 1/4 NPT-18std，1/4 PT-19std，1/4 BSPF-19std |
| Material | C3604+EN（Shell）；SS#316L（Connector/Sensor） |
| Appearance and Cable | 3-wire AWG#24 PVC cable |

# PSS Series - Precision Pressure Switch/ Oil-Filled Type

## Action principle

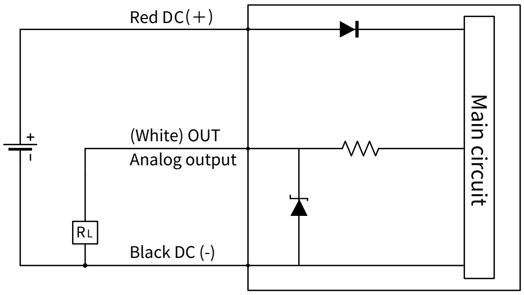
The precision pressure switch of PSS series with hydraulic isolating gas and silicon wafer chip sensor. The gas does not direct contact with the pressure switch and can measure gases with temperature differences and special components. Stainless steel shell metal material, corrosion and heat, suitable for use in special environments. The oil has an incompressible character, so when using a fully charged design, The hydraulic design can attribute to oil's incompressibility, so the air pressure can be measured more accurately and stably.

## Appearance dimension and wiring instructions

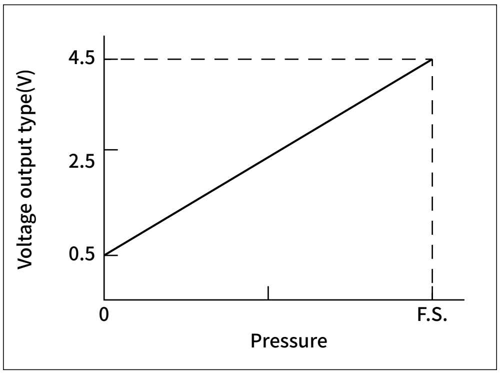

R：PT 1/4"
G：PF 1/4"
N：NPT 1/4"
Black
Red
White
2000
68.9

| Wire color | White | Red | Black |
|---|---|---|---|
| Wiring function | Output signal | Power (+) | Power (-) |

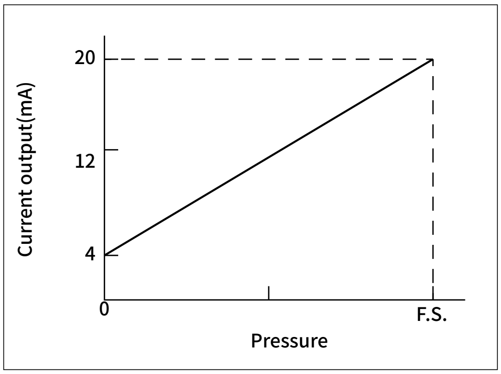
## PSS Series - Voltage output circuit


Red DC(＋)
+
-
(White) OUT
Analog output
RL
Black DC (-)
Main circuit

## Voltage output type



## Current output type



PS-01
PS□-05
PS□-10
PS□-30
PS□-40
PS□-41
PS□-42
PS□-43
PS□-45
PS□-47
PS□-50
PS□-70
PS□-75
PS-400
PS-600
PS-800
PSS
MCS-9D

## ⚠ CAUTION For your safe use of this product, be sure to read before using the product Precautions.

- When designing and assembling equipment using our products, it is necessary to ensure the safety of the equipment, such as mechanical structure, air pressure, control circuits and electrical systems, and fulfill the obligation of safe use of the equipment.
- For your safe use of our products, product selection, use, operation and maintenance of norms of understanding and management is very important.
- In order to ensure the safety of the device, strictly observe the warnings and cautions.
- And want to ensure that the safety of the device, the safe assembly and operation.

## ⚠ WARNING This product is designed and manufactured as a device and component for general industrial machinery, Therefore, the operator must have the appropriate expertise and experience.

- Please use this product within the specifications of the product.
- This product can not be used outside the original specifications. In addition, this product must not be modified and reprocessed.
- Meanwhile, the scope of the present product is used as a device and a general industrial components. Therefore, it is not suitable for outdoor use and under the following conditions and in the environment :

  1. When using this product, it will directly contact with atomic energy, railway, aviation, ships, vehicles, medical equipment, food and beverage, entertainment equipment, emergency circuit breaking circuit. Stamping machinery, brake circuits, safety devices, etc., need to consider and ensure its safety purposes.

  2. Used in the impact on people and property, especially in the use of safety requirements.(If the use of special circumstances, please consult the company. However, please develop a safety precaution to avoid danger in the event of a malfunction)
- Please confirm the safety of all the systems related to this product before mechanical assembly, inspection and maintenance of the equipment, etc.
- Even if the machine stops, there will still be high pressure, high temperature and charged situation, be sure to take note.
- When inspecting or refurbishing the machine, be sure to cut off the energy sources such as the air source, the water source and the power of the corresponding equipment, and eliminate the compressed air in the system. Pay attention to water leakage or leakage.
- When using air compressor machinery and equipment for start-up or restart, take precautions such as preventing flight and ensure the safety of the system before proceeding.
- In the use of this product, the product failure may lead to major accidents in the use, be sure to set the self-protection components.

Be sure to follow the warnings and cautions noted in the datasheet to prevent accidents.

| | |
|---|---|
| ⚠ DANGER | Indicates a dangerous situation that could result in death or serious injury if performed incorrectly. |
| ⚠ WARNING | Ndicates a dangerous situation that could result in death or serious injury if performed incorrectly. |
| ⚠ CAUTION | Indicates that, in the event of an incorrect operation, there is a risk of minor injuries or property damage. |

＊Even matters in the Caution can have significant consequences depending on the circumstances. Are an important part of the above, be sure to follow the implementation.

### Exemption from liability matters

1.The Company is not responsible for any loss of production, loss of profits, personal injury, delay in costs and any incidental, consequential damages, costs and damages arising out of the use or failure of the product.

2. The Company does not take all responsibility for the following matters.

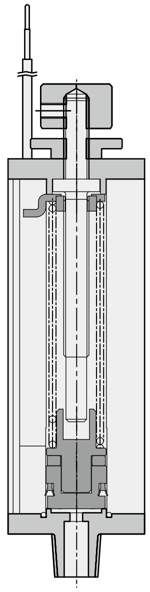
- Due to natural disasters, non-the product caused by fire, the third party or the customer caused by fault or negligence caused by the loss.
- When using this product on your company's machines, your company's machines may have avoided the loss of functionality and construction that is generally expected in the industry.
- Losses caused by actions other than those specified in our catalog or the instruction manual, as well as installation, installation, adjustment, maintenance, etc.

3. Losses due to malfunctions due to unacceptable modifications of our company, combined with other software and other connected machines.

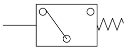
# MCS-9D series Pressure Switch

1
2
3
4
5
6
7
Bar
MAX.PRESS.
8 Bar
ADJUST PRESS.
1~7 Bar
VOLTAGE
CURRENT
CHELIC

## Internal structure



Symbol:



## Specification

| Item Model | MCS-9D |
|---|---|
| Fluid | Air |
| Proof pressure Bar (Kgf/cm$^2$) | 10 (10.2) |
| Max. operating pressure Bar (Kgf/cm$^2$) | 8 (8.16) |
| Pressure range Bar (Kgf/cm$^2$) | 1 ~ 7 (1.02~7.14) |
| Repeatability Bar (Kgf/cm$^2$) | ±0.15 (0.15) |
| Pressure switch CS-9D-S | Wiring type: Two-wire |
| | Withstand voltage: DC 5~120V AC 5~120V |
| | Max. switching power supply: 100mA MAX. |
| | Reed operation: Normal open |
| Port size Rc(PT) | 1/8" |
| Ambient and fluid temperature ℃ | -5 ~ +60 |
| Weight g | 120 |

## Code of Order

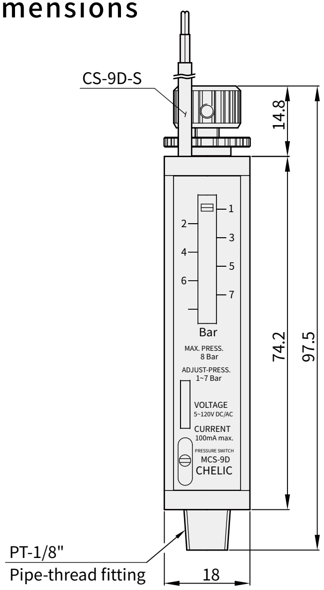
**MCS-9D** —

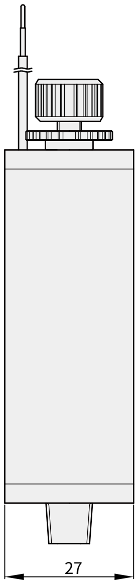
| Model | Electrical entry |
|---|---|
| Pressure switch | None: 2M wires |

# MCS-9D series Pressure Switch

**CHELIC.**

## External dimensions


CS-9D-S
14.8
74.2
97.5
2
4
6
1
3
5
7
Bar
MAX. PRESS.
8 Bar
ADJUST-PRESS.
1~7 Bar
VOLTAGE
5~120V DC/AC
CURRENT
100mA max.
PRESSURE SWITCH
MCS-9D
CHELIC
PT-1/8"
Pipe-thread fitting
18

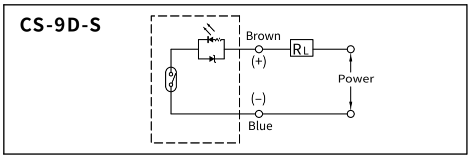


## Specification

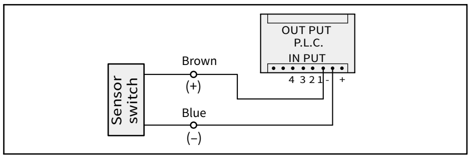
| Item Model | CS-9D-S |
|---|---|
| Wiring type | Two-wire |
| Withstand voltage V | DC: 5 ~ 120V; AC: 5 ~ 120V |
| Max. switching power supply mA | 100mA MAX. |
| Contact capacity | 6W MAX. |
| Reaction rate | < 2ms (500Hz) |
| Contact type | Normal open |
| Protection level | IP-67 |
| Indicator light colcr | Red |
| Power line | ϕ2.8 wire x 2m |
| Internal voltage drop | 3.5V MAX. |
| Sensitivity level | High |
| Contact protection circuit | None |
| Ambient temperature °C | -10° ~ 70° |
| Weight g | 20 ± 2 |

## Sensor circuit and wiring diagram

### General load: such as relay or other resistive load

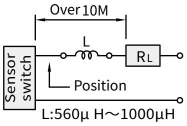

CS-9D-S
Brown
(+)
RL
Power
(–)
Blue

### Programmable controller wiring diagram


OUT PUT
P.L.C.
IN PUT
4 3 2 1 - +
Brown
(+)
Blue
(–)
Sensor switch

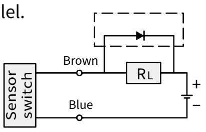
## Product Precautions

1. It's necessary to install an inductor near the sensor to prevent pulses and prevent the contact being released when the sensor is connected to the load and line length over 10 meters.
2. Do not use the sensor with voltage and current exceeding the specifications.
3. Please add protection current if the connection is an inductive load.

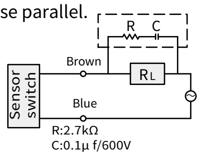

Over 10M
L
RL
Sensor switch
Position
L:560µ H～1000µH

## Circuit protection

DC load: at both ends of the load, a diode is connected in reverse parallel.


Brown
RL
+
–
Blue
Sensor switch

AC load: at both ends of theload, an RC circuit is connected in reverse parallel.


R C
Brown
RL
Blue
Sensor switch
R:2.7kΩ
C:0.1µ f/600V

# Generality of pneumatics

## Generality of pneumatic technology

- Air pressure is a device to compress the air and transform the fluid dynamic into mechanical power and generates mechanical energy.

## Property of air

- Under common conditions, the absolute pressure of air is 760 mmHg, 75% relative humidity and weight of 1.293 kgf/m$^2$, named as atmosphere.

  The property of air is divided into pressure, density, specific gravity, air viscosity and the moisture contain is the air and dew point.

## Advantages of drawback of pneumatic

### A. Advantages:

1. Compressed air is easy to get
2. Storage easily
3. Easy to transmission
4. Stageless speed variations
5. Low cost
6. Action fast
7. Low danger
8. Able to be used in the temperature range of -20 ~ 200°C
9. Meet the requirement of environment protection and no pollution
10. Simple operation, easy maintenance and management.

### B. Drawbacks:

1. Unable to obtain maximum output: the maximum output is about one ton.
2. Poor speed control and difficult to stop immediately.
3. Moisture in the air leads to corrosion of components.
4. Pipe line can not be too long, could easily lead to pressure loss.
5. Making a lot of noise

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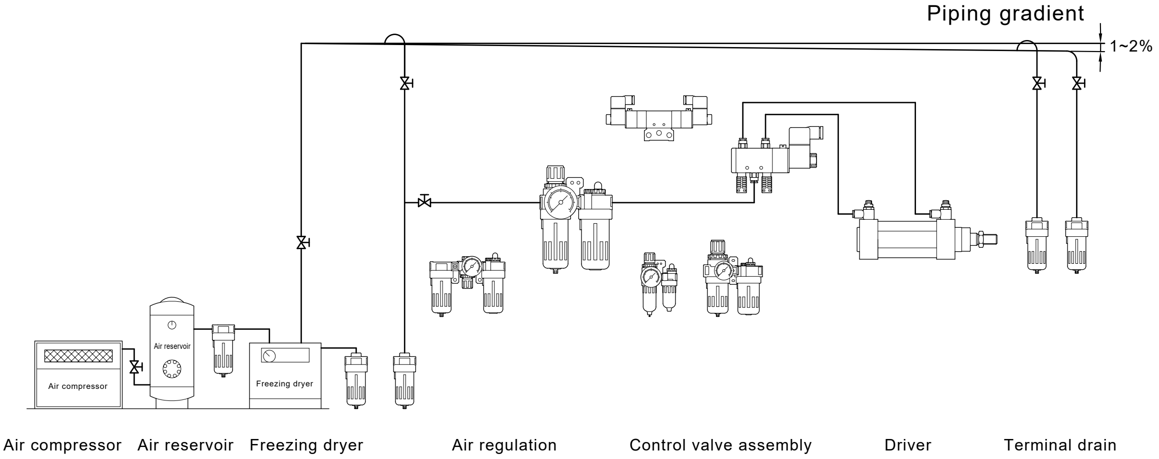
## Pneumatic system


Piping gradient
1~2%
Air compressor
Air reservoir
Freezing dryer
Air compressor
Air reservoir
Freezing dryer
Air regulation
Control valve assembly
Driver
Terminal drain

# Conditions for selection of pneumatic source

## Selection of air compressor

- The air compressor compresses the air into pressurized gas(air) and the mode and the size of air compressor used in pneumatic system is depended primarily on the air consumption and working pressure of the system. In additions, the economic factor is also the point of consideration. The condition with less air consumption application, the reciprocal air compressor is less expansive.

- Output of the air compressor

  Refer to the volume of compressed air output by the air compressor; there are two different methods to rule the output.

  (1) Theoretical output
  (2) Valid output

  Theoretical output equals to the product displacement volume and revolving number.

  The valid output is differ according to type of air compressor. Generally, the user uses the valid output because valid output is directly used in transmission and control pneumatic equipment. The output is in Nm3/min or Nm3/h unit.

- Pressure

  Generally divided into working pressure and operating pressure and the working pressure is the pressure in all the pipeline of the user equipment after outlet of the air compressor.

  The operating pressure is the pressure required in working. General operating pressure is 6 kg/cm$^2$ and all pneumatic components may be designed based on the pressure.

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## Piping conditions of pneumatic source pipeline :

- While conducting whole plant air pipeline design, it can be divided into centralized air supply piping and individual air supply piping. The piping of the individual air supply pipeline may be connected to each other, in order to prevent failure of certain air compressor, the supply can be picked up by other air compressor. Possess the advantages of smaller piping is allowed in each individual air supply system and less pressure loss. However, it is troublesome in installation if the individual air supply system require large horsepower air compressor and difficult to service.

- The main pipeline of the air compressor adopts ring and interconnection piping if possible.
  The pipeline should have a gradient of 1/2 or 1 ~ 2% toward end of the pipeline in order to facilitate drainage and provide with strainer at the end. The pneumatic equipment is mainly connected to main pipeline; the compressed air must be connected from main line when using in order to prevent condensate water from flow into pneumatic equipment.

- The selection of pipe diameter should be as follows:

  (1) Flow
  (2) Length of the line
  (3) Pressure consumption
  (4) Pressure used
  (5) The bore of switch. Bend, tee piping passing the line

- The major requirement of the pipeline is easy installation, corrosion resistance and material. In the pipeline for long duration usage, the installation is preferable using welding or soldering in connection. It is a simplest connection of the pneumatic system to quip with quick connector.

# Description of pneumatic fundamental system

## Function of pneumatic system and fundamental component

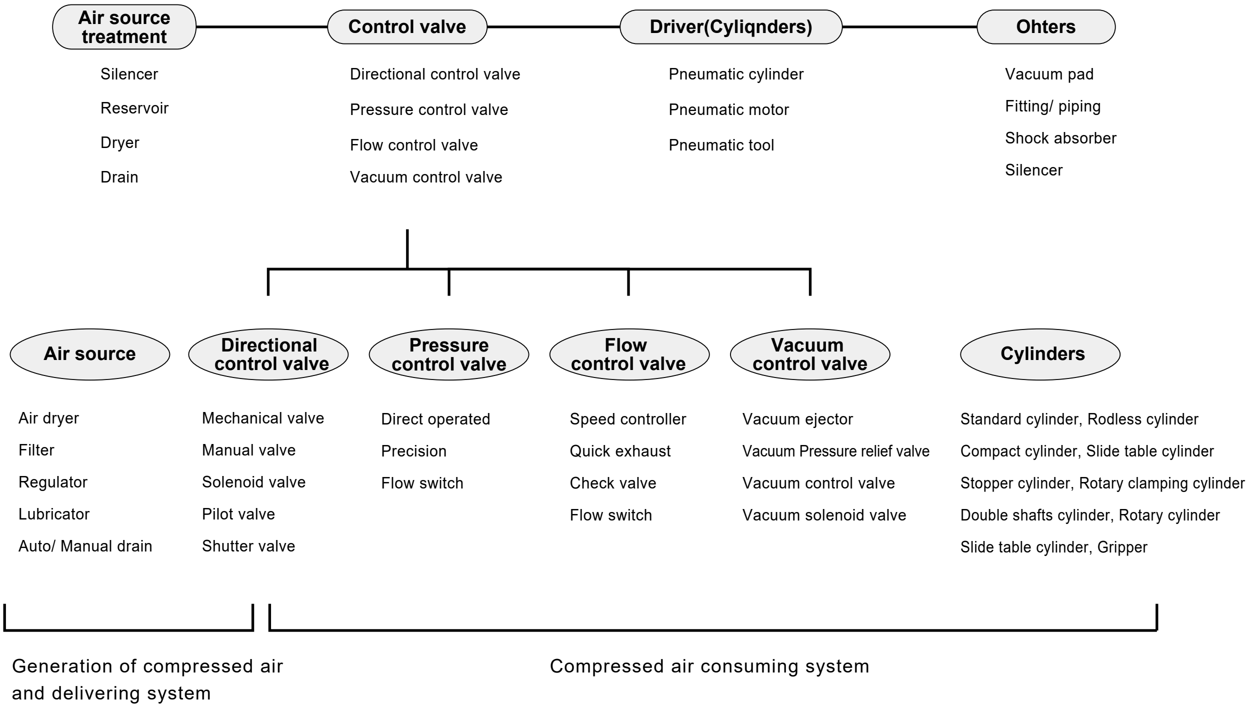
- Pneumatic control system is to corporate series of pneumatic components and applied on system and equipment. Select different component combination according to the equipment, and select the specification and model according to size of output, combine the movement with electrical control, widely used in industrial machines.

- Pneumatic source is compress the air in atmosphere by using air compressor and transform into pressurized energy; in any speaking, the power media is compressed air the pressure is stronger than atmosphere, serving as moving power of the system. Because the compressed air contains moisture, dust particle and oil from air compressor, it should be purified before air output, in order to prevent the pipeline and all components being blocked and damage and fill in lubricant to increase the efficiency of pneumatic components in application.

- There are two major portions in the basic pneumatic system structure:

(1) Generation of compressed air and delivering system.

(2) Compressed air consuming system and the illustration of the major components and related system are as followings.



**Air source treatment**
Silencer
Reservoir
Dryer
Drain

**Control valve**
Directional control valve
Pressure control valve
Flow control valve
Vacuum control valve

**Driver(Cyliqnders)**
Pneumatic cylinder
Pneumatic motor
Pneumatic tool

**Ohters**
Vacuum pad
Fitting/ piping
Shock absorber
Silencer

**Air source**
Air dryer
Filter
Regulator
Lubricator
Auto/ Manual drain

**Directional control valve**
Mechanical valve
Manual valve
Solenoid valve
Pilot valve
Shutter valve

**Pressure control valve**
Direct operated
Precision
Flow switch

**Flow control valve**
Speed controller
Quick exhaust
Check valve
Flow switch

**Vacuum control valve**
Vacuum ejector
Vacuum Pressure relief valve
Vacuum control valve
Vacuum solenoid valve

**Cylinders**
Standard cylinder, Rodless cylinder
Compact cylinder, Slide table cylinder
Stopper cylinder, Rotary clamping cylinder
Double shafts cylinder, Rotary cylinder
Slide table cylinder, Gripper

Generation of compressed air and delivering system

Compressed air consuming system

# Description of pneumatic fundamental system

## Description of the function of the pneumatic control system and major component and their function

(1) **Compressor:** The Air at atmospheric pressure being compressed and deliver to supply system in higher pressure, transforming the mechanical energy into pneumatic energy.

(2) **Reservoir:** Store the compressed air into cylindrical structure, serving as storage of pneumatic source.

(3) **Freezing dryer:** Freeze the compressed air to condensate the moisture in the air and expel to make the dry air source in the following pipeline.

(4) **Filter:** Separate and discharge the moisture, oil content in the air source and filter the debris to make the pipeline as clean air source.

(5) **Regulator:** The function which regulate the pressure of the air source to make the pressure in the pipeline as the required pressure.

(6) **Lubricator:** Equipment filling appropriate amount of lubricator in the air source to add the efficiency of application of the pneumatic components.

(7) **Direction control valve:** Change or stop the flow direction of air source to make the effective supply of air source to the driver such as cylinder, perform different direction mechanical control, various control are mechanical valve, manual valve, solenoid valve, pilot valve, shutter valve and so on.

(8) **Flow control Valve:** Use the mechanical control to change the flow of air source speed with the direct stay put in order to achieve the control of moving speed of driver such as cylinder effectively, various control are governor, quick exhaust valve, check valve and so on.

(9) **Pneumatic cylinder:** The appliance outputting power from air source, mechanism use the air source to push the piston and connection to perform the reciprocal movement and connecting mechanism make line, revolving, and clamping movement; various cylinders are common cylinder, stop cylinder, slide table cylinder, twin rod cylinder, rodless cylinder, slide base cylinder, revolving cylinder, mechanical gripper and so on.

(10) **Vacuum ejector:** Discharge the air source from nozzle and dispersion chamber, there is a gap between nozzle and dispersion chamber and the air discharge from this gap via dispersion chamber and generate suction.

(11) **Vacuum pad:** Vacuum pad is rubber elastic material secure the work piece by using attaching action of the vacuum; there are various pattern and shape of vacuum pad depend on the size and shape of the work piece.

(12) **Fitting/ piping:** Fitting is fixed to each component used to connecting the piping; there are various pattern and shape of fitting, namely: straight type, L type, T type, Y type, Tee and multiple connection type suitable for various shape and size.

(13) **Shock absorber:** It is the piston rod in the internal hydraulic structure and the orifice of the inner steel tube can adjust the return hydraulic fluid speed, absorb transient impact dynamic energy when the pressure impact the piston rod, eliminating shock, reduce noise and obtain better mechanical performance; to take the scale of transient impact force as guideline in selecting the shock absorber.

(14) **Silencer:** The used air source is exhausted into atmosphere and the gas friction due to different pressure to cause noise.
The silencer is the device reducingthe exhausting speed and pressure, decreasing the friction of the gas and noise.

## ( 1 ) Cylinder

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Cylinder fail to move | No air pressure or insufficient air pressure | Make sure the pressure is functioning.<br>Check the fitting at supply port of cylinder or not connected. | Ensure proper pressure source.<br>Appropriate use and securing of mechanical accessories. |
| | Direction control valve failto move. | Check control circuit.<br>Confirm the state of detection signal, switch, mechanical valve. | Correct the control circuit.<br>Correct the mounting position of the limit switch and normal position of machine. |
| | Rod separates from piston. | The rod can be removed easily. | Replace the set of rod and piston. |
| | Skew shaft due to misalign in installing. | Loosen the fixing screw of the cylinder to check and install an extra floating joint. | Correct error.<br>Replace the mounting clap depend on condition. |
| | Insufficient lubrication | There is serious vibration or big noise from rubber friction when the cylinder moving. | Apply oil into cylinder.<br>Set suitable lubricator.<br>Mount the lubricator close to cylinder. |
| | Broken bearing packing. | There is a lot of leakage from the exhaust port of direction control valve. | Disassemble the cylinder and replace packing. |
| | Over load | Measure load.<br>Reduce load and try again. | Reduce load weight.<br>Enlarge the size of cylinder.<br>Increase the air source if possible. |
| | Over volume or the setting position far from cylinder. | Cylinder vibrating when working or load slanting. | Add the slideway and set the load on it to avoid loading directly on the cylinder. |
| Cylinder broken | Mechanical impact | Confirm the strength of the cylinder with stand the impact.<br>When viewing a pneumatic cylinder actuator to the upper and lower dead point, the load which there is an obvious shaking or rebound situation. | Installation cushion device.<br>Reduce the action speed. |
| | Crush with another cylinder. | Simulate the moving path to check if there is the crush by another cylinder. | Adjust the working order or path to make sure there will not any crush in the process. |

## ( 2 ) Direction control valve

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Valve fail to work after signal sending | Insufficient pressure | Confirm the pressure pin.<br>Confirm min pressure (Indirect valve operation). | Re-adjust the reducer valve.<br>Increase original pressure.<br>Ensure appropriate pressure source. |
| | Insufficient flow | Dissemble the piping and make sure there is flow restriction from jetting of air (ensure there is min pressure required in indirect valve movement and the flow required). | Remove the flow restriction hole and small size machine in the piping.<br>Ensure appropriate pressure source.<br>Review the type and size of the directional control valve if necessary. |
| | Rated signal fail to input | Confirm there no 110V signal serving and rated 220V and existence of air pressure.<br>Check for leakage of pilot pressure. | Increase rated signal.<br>Ensure suitable pressure source. |
| | Solenoid valve disconnected | Check for switching sound while energizing. (Metal striking sound) | Repair |
| | Valve fail to work | Manual check.<br>Disassemble and check. | Disassemble and clean.<br>Lubricating. |
| | Valve damage | Check for air leakage.<br>Disassemble and check. | Repair |
| Solenoid valve overheat | Valve or magnet stock | Check for normal switching valve while energizing. | Disassemble and clean. |
| Solenoid valve vibration(Buzzing) | The sucking side of magnet attach with foreign object or insufficient flatness. | Insufficient flatness of magnet.<br>Confirm whether to use 110V as the rated voltage of 220V, and whether the voltage has dropped or not. | Remove foreign object, repair or replace.<br>Increase rated signal. |

### ( 3 ) Filter

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Unable to exhaust | The air pressure source hasn't opened. | Check whether the pipe in front of the inlet is normally supply with air. | Check whether the pipe from the inlet to the air source is separated or the air source valve is closed. |
| | Filter blocked with too much oil. | The filter is solidified with accumulated oil due to not using for long time. | Remove the filter and wash the surface with soapy water. Replace the filter if it cannot be improved. |
| Insufficient air pressure | Filter blocked with too much oil. | Check the filter | Remove the filter and wash the surface with soapy water. Replace the filter if it cannot be improved. |
| Unable to drain manually | The drain hole under the PC cup is blocked. | Check the drain hole | Rotate the drain knob to fully open, use air gun to adjust the pressure to 1~2 kgf/cm², pour air from the drain hole into the PC cup (there is no pressure inside the cup right now), remove the PC cup for cleaning and then put it back. |
| | Broken drain | Check the drain hole | Rotate the drain to airtight. If it cannot be locked to prevent leakage, it will need to be disassembled and repaired. |
| | Drainage without pressure | Check whether the air source is closed. | Open the drain to drain water when keeping the air pressure in the cup at 1~2 kgf/cm². |
| Unable to drain automatically | Unable to drain automatically. | Check the air source and float. | Remove the PC cup and rinse the auto drain with clean water, then turn it upside down. Use clean water to flush in from the drain hole, and reinstall the PC cup after the blockage being flushed out. |
| | Unable to stop the drainage. | Check the air source and float. | Remove the PC cup and shake it up and down two to three times to return the internal positioning pin to its position. If it can't be improved, just clean it then it can be used again. |

### ( 4 ) Pressure relief valve

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Unstable air flow after adjustment. | Too small secondary pressure piping. | Enlarge the pipe diameter and try. | Enlarge piping or the size of machine used intermediate. |
| | Too small primary pressure piping or block by dust. | Measure primary side pressure.<br>Disassemble and check. | Enlarge orifice of piping or joint<br>Remove dust. |
| | Low pressure source. | Measure primary side pressure.<br>Disassemble and check. | Increase pressure source. |
| Not sensitive pressure drop. | Damaged diaphragm. (or broken piston seal) | Large amount of air leakage from air supply port. | Disassemble and repair. |
| Not smooth secondary flow. | Foreign object in valve seat or O-ring damage. | Large amount of air leakage from air supply port. | Disassemble and repair. |
| Reducer valve fail to open. | Broken regulating spring poor air supply valve. | Feel light when turning the regulating spring. | Disassemble and repair. |
| Always air leakage from supply port. | Poor air supply valve. | Block the secondary side port and block the air supply port to confirm. | Disassemble and repair. |
| | Damaged diaphragm. (or broken piston seal) | Block the secondary side port and block the air supply port to confirm. | |
| Keep leaking and can't be adjusted. | Wrong installation direction | Check whether the primary side is installed in the "IN" direction of the main body. | Change the direction of the inlet and outlet. |

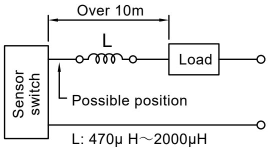
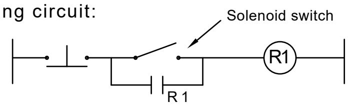
## ( 5 ) Lubricator

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Oil fail to reduce in oil bowl. | Poor adjustment button. | Repair the adjustment button while air flowing.<br>Confirm drip amount from sight glass. | Adjust the adjustment button properly. |
| | Air volume used corresponding to oil fed. | Check air volume consumed. | Select lubricator with appropriate size and performance. |
| | Too large size lubricator. | Check characteristic of air flow and oil fed. | Replace to the lubricator with different principle depend on condition |
| | Oil viscosity is to high. | | Use the appropriate oil. |
| Too much oil consumption. | Poor adjustment button. Too much lubrication from adjustment button. | There is often a large amount of air leakage from the air supply port. Check the adjustment button scale. | Adjust the adjustment button properly. |
| Oil fail to reach machine set. | Mounting position of lubricator is too low. | Touch the exhaust port of the machine to confirm the oil content | Close to the lubricator.<br>Mount the lubricator at position higher than machine.<br>Select the lubricator with minute spraying mist.<br>Use extra lubricator to apply oil when necessary. |

## ( 6 ) Mist Separator

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Insufficient flow | The air pressure source hasn't opened | Check whether the pipe in front of the inlet is normally supply with air. | Check whether the pipe from the inlet to the air source is separated or the air source valve is closed. |
| | Filter blocked with too much oil | The filter is solidified with accumulated oil due to not using for long time. | Remove the filter and wash the surface with soapy water. Replace the filter if it cannot be improved. |
| Uncertain filtering | Filter blocked with too much oil | Check the filter | Remove the filter and wash the surface with soapy water. Replace the filter if it cannot be improved. |
| Unable to drain manually | The drain hole under the PC cup is blocked | Check the drain hole | Rotate the drain knob to fully open, use air gun to adjust the pressure to 1~2 kgf/cm$^2$, pour air from the drain hole into the PC cup (there is no pressure inside the cup right now), remove the PC cup for cleaning and then put it back. |
| | Broken drain | Check the drain hole | Rotate the drain to airtight. If it cannot be locked to prevent leakage, it will need to be disassembled and repaired. |
| | Drainage without pressure | Check whether the air source is closed. | Open the drain to drain water when keeping the air pressure in the cup at 1~2 kgf/cm$^2$. |
| Unable to drain automatically | Unable to drain automatically | Check the air source and float. | Remove the PC cup and rinse the auto drain with clean water, then turn it upside down.<br>Use clean water to flush in from the drain hole, and reinstall the PC cup after the blockage being flushed out. |
| | Unable to stop the drainage | Check the air source and float. | Remove the PC cup and shake it up and down two to three times to return the internal positioning pin to its position. If it can't be improved, just clean it then it can be used again. |
| Perspective window cleanup | Too much oil | Excessive oil accumulation in the pipe. | Remove the cup (aluminum or PC), rinse with water and use non-volatile solvent, such as alcohol. |

## ( 7 ) Sensor switch

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Indicator light not working. | Please confirm for AC or DC power. | AC<br>Check for movement. | With movement: Might be the switch indicator light failure so please mail to us for check.<br>Without movement: Please refer to the cause and trouble shooting for fail to work. |
| | | DC<br>Check for movement. | With movement: Check for reverse polarity<br>Correct polarity: This switch is failed and please mail to us for check.<br>Incorrect polarity: Correction<br>Without movement: Please refer to the cause and trouble shooting for fail to work. |
| Magnet induce switch fail to activate. | Check carefully for connection. | Wire fail to connect or correctly. | Correction |
| | | Circuit connected properly. | Please remove the switch from cylinder and take a magnet to perform direct test for movement.<br>With movement: Might be insufficient magnetic force or insufficient sensitivity and please contact our technical division.<br>Without movement: Please refer to the cause and trouble shooting for fail to work. |
| Contact hold and fail to release. | Check for exceeding rated voltage, current and contact capacity. | Exceeding rated limit | Please improve to the allowable range. |
| | | Not exceeding rated limit. | Please check if the length connect the solenoid switch to load exceed 10m.<br>Not exceed 10m: The solenoid switch might be failure and please mail to us for check.<br>Over 10m:<br>Add a capacitor (about 1000uH) to eliminate the capacitor impulse induce by excessive length of cable, the wiring diagram is as.<br>Following:   Over 10m<br>L<br>Load<br>Sensor switch<br>Possible position<br>L: 470μ H～2000μH |
| Indicator light lid and then gone off for good. | Check for excessive load. | Yes | This switch may be burnt and please correct the control circuit to make it meet the allowable load capacity of the switch. |
| | | No | Check if the self holding circuit of the control circuit make the indicator light lid once and then gone off for good.<br>Self holding circuit:  <br>Yes: Change the circuit<br>No: Switch has problem and please return it for checking. |

### ( 7 ) Sensor switch

| Defect | Cause | Check | Countermeasure |
|---|---|---|---|
| Make two movement or more. | Too strong magnet force or too sensitive magnetic switch induction. | | Please contact our technical division. |
| No screen display on OLED | Abnormal power input | Confirm the power supply of the product. | Ensure the power supply meets product specifications. |
| OLED display pressure is wrong | Pressure base offset | Confirm whether the OLED screen display is zero when there is no control signal. | Refer to the operating instructions to set to zero and calibrate. |
| Insufficient air pressure output | Insufficient air pressure | Check whether the pipe in front of the inlet is normally supply with air. | Ensure proper air pressure input. |

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| SRK | Body Ported Solenoid Valve | SRK-500, SRK-700 | P.2-1.148 |
| SRM | Base Mounted Solenoid Valve | SRM 500 | P.2-1.4 |
| SRU | 3/2 Solenoid Valve | SRU-500, SRU-700 | P.2-1.235 |
| SRUB | 3/2 Base Mounted Solenoid Valve | SRUB-500, SRUB-700 | P.2-1.242 |
| SRVB | Direct Ported Solenoid Valve | SRVB-300, SRVB-500 | P.2-1.11 |
| SU | 2/2 Solenoid Valve | SU-12~SU-22 | P.2-2.6 |

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| SUD2 | Direct Operated (General) | SUD-8~SUD-10 | P.2-2.23 |
| SUG | 2/2 Solenoid Valve | SUG-10~SUG-50 | P.2-2.21 |
| SUS | Direct Operated(High temperature steam) | SUS-15~SUS-50 | P.2-2.25 |
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| SV310 | 3/2 Solenoid Valve | SV-300 | P.2-1.294 |
| SWB | 3/2 High Frequency Solenoid Valve | SWBA500, SWBB500 | P.2-1.296 |
| SZB | Base Mounted Solenoid Valve | SZB-2000, SZBC-2000 | P.2-1.175 |

**U**

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| UF | Air Filter | UF-200~400 | P.1-1.17 |
| UFC | FR.L. Combinations | UFC-200~400 | P.1-1.11 |
| UFM | Mist Separator | UFM/UFD-200~400 | P.1-1.20 |
| UFR | Filter Regulator | UFR-200~400 | P.1-1.14 |
| UHS | Shut-off Valve | UHS-200~400 | P.1-1.34 |
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| UR | Regulator | UR-200~400 | P.1-1.26 |
| UV-400 | Soft Start-up Valve | UV-400 | P.1-1.38 |

**V**

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| VABS | Vacuum Ejector/ All-in-One | VABS-0704~VABS-1510 | P.3-1.18 |
| VAS | Vacuum Pressure Switch | VAS-04~VAS-10 | P.3-1.18 |
| VCK | DIN Rail Type Vacuum Ejector | VCK-Ø8 | P.3-1.77 |
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| VKMT | Module Type Energy-saving Vacuum Ejector | VKMT | P.3-1.64 |
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| VMD | Air Release Type Vacuum Ejector | VMD-05~VMD-15 | P.3-1.22 |
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| VMT | Central Exhaust Type Vacuum Ejector | VMT-05~VMT-20 | P.3-1.22 |
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| VQ20 | Energy-saving Vacuum Ejector | VQ20B, VQ20S, VQ20T, VQ20ST | P.3-1.100 |
| VSL | Compact Vacuum Ejector | VSLA, VSLB | P.3-1.39 |

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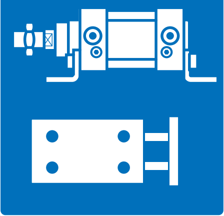
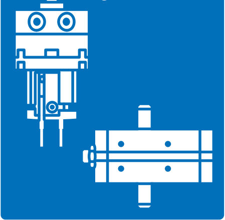
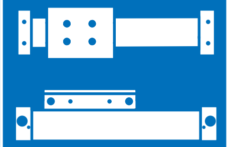
Actuator



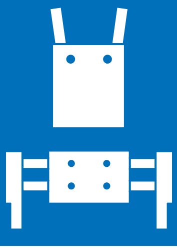
Rotary Cylinder



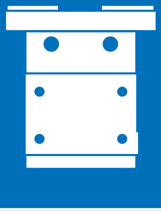
Rodless Cylinder



Air Grippers



Electric Actuator



The specification are subject to change without advance notice.