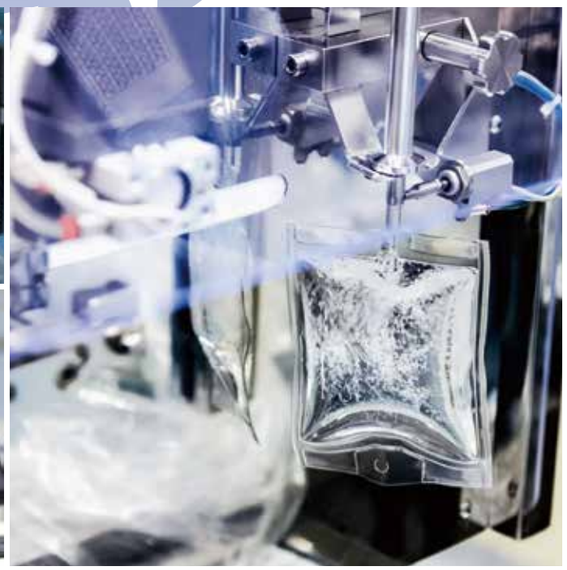
CKD

# Pharmaceutical Manufacturing Process Components

CKD Corporation
CC-1637AA

# We propose to a wide range of pharmaceutical modalities through FA solutions.

CKD's fluid control technology will contribute to new medical product manufacturing processes such as Single Use and Continuous Production.



## Sanitary Valves for Pharmaceutical Manufacturing Processes

Weir Diaphragm Valve

**SWD / MWD**

- Thin diaphragm with high durability
- Spring seal that prevents overtightening is also available

Weir Diaphragm Valve
Flow rate control type

**SWD-T** Japan only release

- Flow rate control valve that can be manufactured by a total FA supplier
- With low friction open loop control preset input

Poppet Diaphragm Valve

**SPD** Japan only release

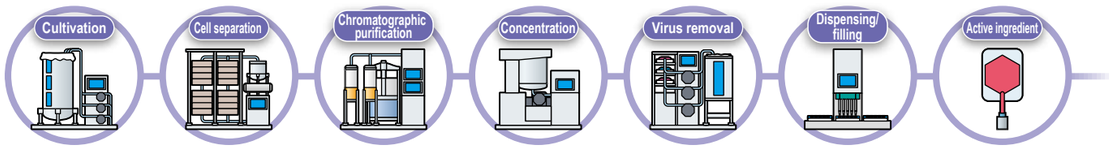
- Diaphragm structure cultivated in semiconductor manufacturing
- Excellent washability against weir diaphragm valves

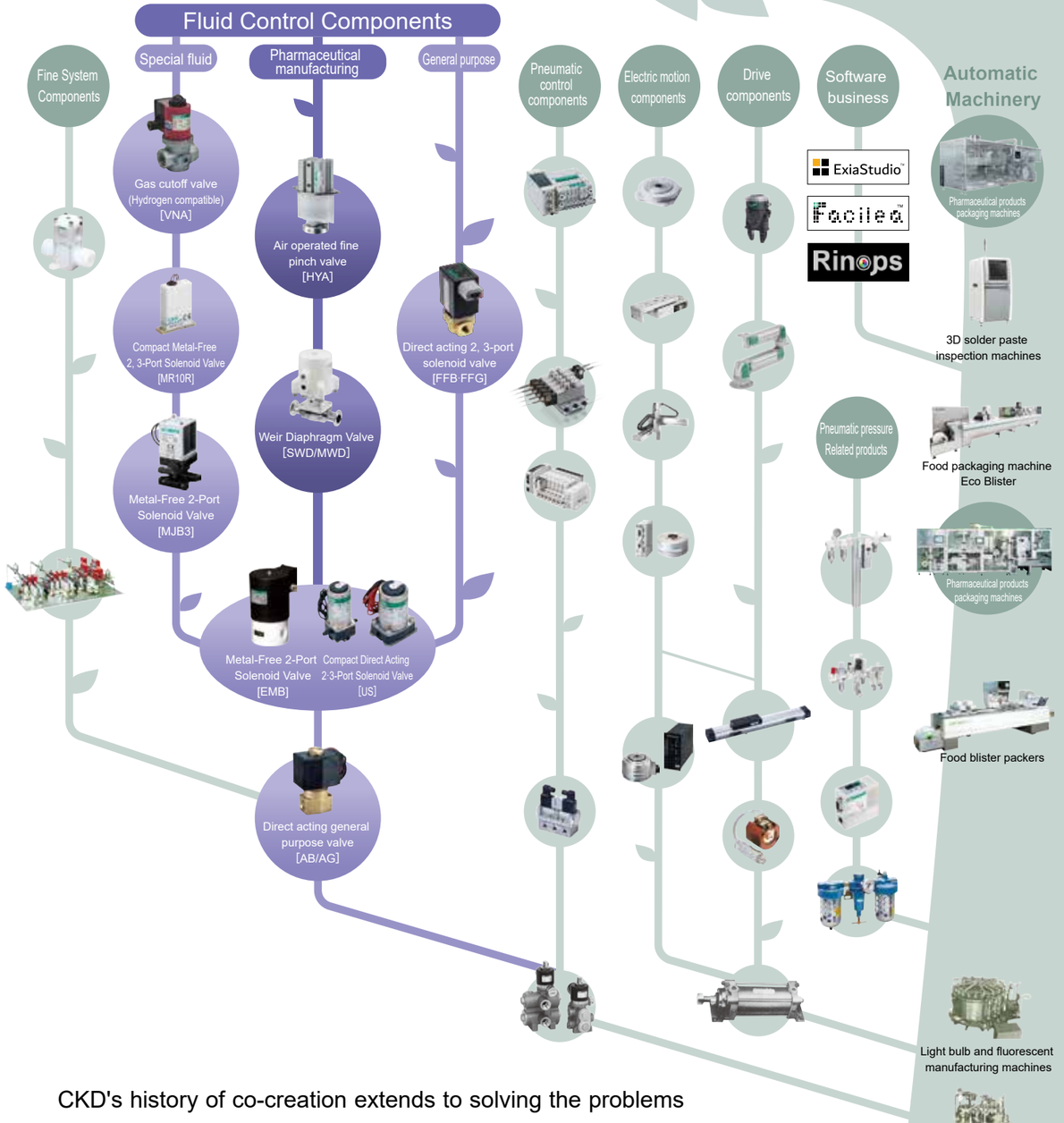
Pinch Valve for High Purity Fluids

**HYN / HYA**

- Air operated ideal for pharmaceuticals and regenerative medicine

**Pharmaceutical manufacturing process example**




CKD's history of co-creation extends to solving the problems of manufacturing with our customers. Today, we provide more than 500,000 automated products and services. CKD's core fluid control technology has been contributing to the stable supply of pharmaceuticals and food safety. And these hardware, combined with digital technology, are trying to create new value in the resolution of social issues.

# Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

## WARNING

**1** This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience.

**2** Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

**3** Observe organization standards and regulations, etc., related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

**4** Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of all systems related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility.Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

**5** Observe warnings and cautions in the following pages to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

| | |
|---|---|
| DANGER: | When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning. |
| WARNING: | If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury. |
| CAUTION: | When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage. |

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
Every item provides important information and must be observed.

## Warranty

**1** Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.

**2** Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
However, following failures are excluded from this warranty:
1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
3) Failure not caused by the product.
4) Failure caused by use not intended for the product.
5) Failure caused by modifications/alterations or repairs not carried out by CKD.
6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
7) Failure caused by acts of nature and disasters beyond control of CKD.
The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.

**3** Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.





# Pharmaceutical Manufacturing Process Components

■ **Water / pure water / chemical liquids (fluids that do not corrode wetted part materials)**

CONTENTS

Diaphragm valve
● SWD 4
● MWD 8
● SWD-T / SWD-C / SWD-EVD 16
● SPD 32
Pinch valve
● HYA 38
● HYN 42

Read the safety precautions before use.

SWD / MWD
SWD-T
SPD
HYA
HYN

# Series Variation

## Pharmaceutical Manufacturing Process Components

| Series name | | | | No. of Ports | Material | | Working fluid | Fluid temperature | Working pressure (MPa) | Port size/compatible tube O.D. | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Body | Seal | | | | | |
| Diaphragm Valve | Weir | Air operated | **SWD**  | 2 | SUS316L (wetted parts/buff polishing #400 or equiv., electrolytic polishing) | PTFE | Water, pure water, chemical liquid (Fluids that do not corrode wetted part materials) | 5 to 90°C (Allowable for 20 minutes or less during steam sterilization of 130°C) | 0 to 0.6 | Clamp fitting: 8 A to 50 A<br>✳ISO ferrule | 4 |
| | | Manual | **MWD**  | 2 | | | | | | Clamp fitting: 8 A to 50 A<br>✳ISO ferrule | 8 |
| | | Flow rate control type | **SWD-T**  | 2 | | | | | | Clamp fitting: 8 A to 40 A<br>✳ISO ferrule | 16 |
| | Poppet | Air operated | **SPD**  | 2 | | | | | 0 to 0.3 | Clamp fitting: 8 A, 15 A<br>✳ISO ferrule | 32 |
| Pinch valve | | Air operated | **HYA**  | 2 | – | – | – | 0 to 40°C (no freezing) | 0 to 0.1[Note] | Applicable tube bore<br>1/8" to 9/16"<br>(ø3 to ø15) | 38 |
| | | Solenoid type | **HYN**  | 2, 3 | – | – | – | 5 to 50°C | 0 to 0.05<br>(Tube O.D. ø3, ø5)<br>0 to 0.02<br>(tube O.D. ø8)[Note] | Applicable tube bore<br>ø3, ø5, ø8 | 42 |

Note: The maximum working pressure varies by tube, so confirm the specifications of the tube in use.

# Perfect for strict cleanliness. Easier to use.


Manual **MWD Series**




## Air operated **SWD Series**

### The **3** key points to achieving **excellent cleanliness and ease of use**

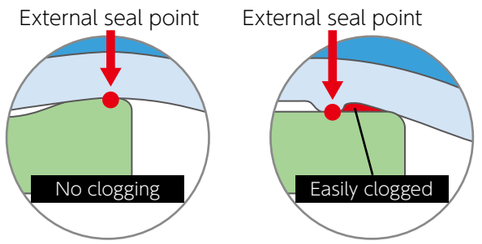
### Clean

#### High washability realized

The external seal of the diaphragm periphery adopts a flat structure eliminating the pocket between the diaphragm and body. There is no accumulation of liquids in the pocket, so the valve stays cleaner.

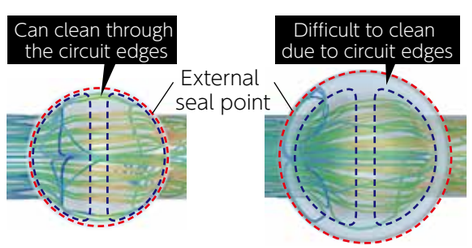
#### High replaceability reduces cleaning time

Designed to have little dead space in which fluid may be trapped, allowing the circuit to be thoroughly cleaned. The high liquid replaceability contributes to reduced cleaning time.




SWD / MWD Series

If using an external seal with a protruding diaphragm



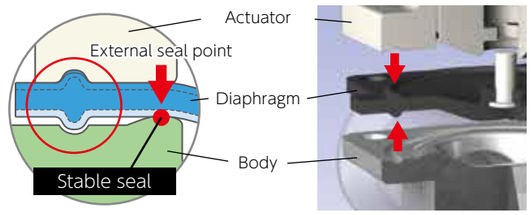

SWD / MWD Series

If using an external seal with a protruding diaphragm

### Maintainability

#### Realizes a reduction in maintenance time

Using a unique mechanism and more appropriate diaphragm enables secure positioning and easy diaphragm replacement. Retains an easily assembled and secure seal to realize a reduction in maintenance time.




Groove matching positioning allows a stable seal

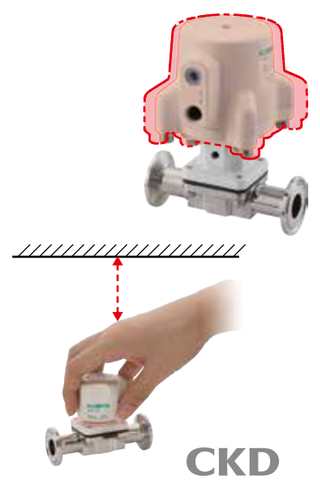
### Compact

#### Space and energy saving of equipment and facilities (Air operated)

Years of pneumatic cylinder production have created unique technologies, with which we keep the actuator compact in relation to the valve bore size and reduce air consumption.

#### Secures maintenance space (Manual type)

Adopts a compact manual handle to secure sufficient space within the device, making valve operation easier.



Weir diaphragm valve Air operated

# SWD Series

●Connection: ISO ferrule

RoHS

## How to Order

**SWD 1 1 - 8 - F**

- SWD: Model No.
- 1: ❶ Series
- 1: ❷ Actuation
- 8: ❸ Port size
- F: Material: ADC12 actuator, PTFE/EPDM diaphragm, SUS316L body

### ❶ Series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |
| 5 | Size 5 |

Note: ❸Refer to the port size table and select the port size.

### ❷ Actuation

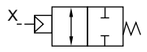
| Code | Description |
|---|---|
| 1 | NC (normally closed) |
| 2 | NO (normally open) |
| 3 | Double acting |

### ❸ Port size

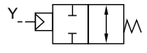
| Code | Description | | Model No. SWD1 | SWD2 | SWD3 | SWD4 | SWD5 |
|---|---|---|---|---|---|---|---|
| 8 | Clamp fitting | 8 A | ● | | | | |
| 10 | | 10A | ● | | | | |
| 15 | | 15A | | ● | | | |
| 25 | | 25 A (1S) | | | ● | | |
| 40 | | 40 A (1.5S) | | | | ● | |
| 50 | | 50 A (2S) | | | | | ● |

## Circuit diagram symbol

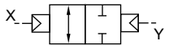
● NC (normally closed)




● NO (normally open)




● Double acting




## Specifications

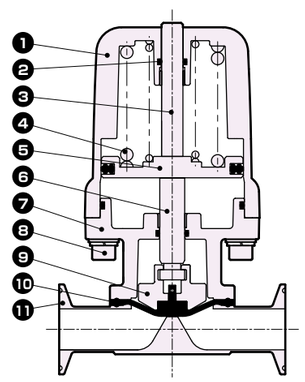
| Item | | SWD✳1 | SWD✳2 | SWD✳3 |
|---|---|---|---|---|
| Actuation | | NC (normally closed) | NO (normally open) | Double acting |
| Working fluid | | Water, pure water, chemical liquids (fluids that do not corrode wetted part materials) | | |
| Working pressure | MPa | 0 to 0.6 | | |
| Proof pressure (water) | MPa | 2.0 | | |
| Fluid temperature | °C | 5 to 90 (Allowable for 20 minutes or less during steam sterilization of 130°C) | | |
| Ambient temperature | °C | 0 to 60 | | |
| Frequency | cycles/min. | SWD1 to 4: 20 or less SWD5:10 or less | | |
| Valve seat leakage | $cm^3$/min | 0 (water pressure) | | |
| Mounting orientation | | Unrestricted (✳1) | | |
| Operating port | | Rc1/8 | | |
| Operating fluid | | Air | | |
| Operating pressure | MPa | SWD1✳-8, SWD1✳-10, SWD2✳-15: 0.35 to 0.7 | 0.25 to 0.35 | 0.2 to 0.3 |
| | | SWD3✳-25: 0.4 to 0.7 | 0.3 to 0.35 | 0.25 to 0.3 |
| | | SWD4✳-40: 0.4 to 0.7 | 0.35 to 0.4 | 0.3 to 0.35 |
| | | SWD5✳-50: 0.4 to 0.7 | 0.27 to 0.32 | 0.2 to 0.25 |
| Cv | | SWD1✳-8 | 2.3 | |
| | | SWD1✳-10 | 2.6 | |
| | | SWD2✳-15 | 4.5 | |
| | | SWD3✳-25 | 13 | |
| | | SWD4✳-40 | 27 | |
| | | SWD5✳-50 | 50 | |
| Kv value (✳2) | | SWD1✳-8 | 2.0 | |
| | | SWD1✳-10 | 2.3 | |
| | | SWD2✳-15 | 3.9 | |
| | | SWD3✳-25 | 11 | |
| | | SWD4✳-40 | 23 | |
| | | SWD5✳-50 | 43 | |
| Material | Diaphragm | PTFE / EPDM | | |
| | Body | SUS316L (buff polishing #400 or equiv., electrolytic polishing) | | |
| | Actuator | ADC12 (fluoro resin coating) | | |

✳1: For horizontal piping, liquid accumulation in the valve can be minimized by piping at the angle described on page 15.
✳2: Refer to the Intro page of "Fluid control valves" (RJ-013AA) for Kv values.





## Internal Structure Diagram / Material

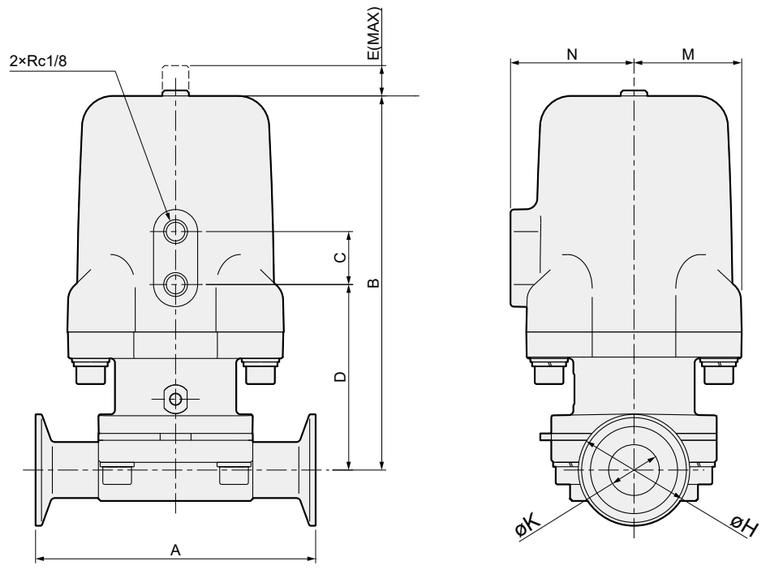



| No. | Part name | Material | |
|---|---|---|---|
| 1 | Cylinder guard | ADC12 | Aluminum die-casting |
| 2 | O-ring | FKM | Fluoro rubber |
| 3 | Indicator | SUS304 | Stainless steel |
| 4 | Spring | SUS304 (or SWP, SWOSC) | Stainless steel (or piano wire, oil temper wire) |
| 5 | Piston | A2017 | Aluminum |
| 6 | Piston rod | SUS304 | Stainless steel |
| 7 | Rod cover, yoke | ADC12 | Aluminum die-casting |
| 8 | Hexagon socket head cap screw | SUS304, SUSXM7 | Stainless steel |
| 9 | Compressor | SCS13 | Stainless steel |
| 10 | Diaphragm | PTFE, EPDM, SUS303, SUS304 | Fluoro resin, ethylene propylene rubber, stainless steel |
| 11 | Body | SUS316L | Stainless steel |

Note: Refer to page 12 for consumable parts. Wetted parts material are of two types: PTFE (diaphragm), SUS316L (body).

## Dimensions

● SWD




| Model No. | A | B | C | D | E | H | K | M | N | Weight [kg] NC | NO | Double acting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWD1✳-8-F | 90 | 99.5 | 22 | 60 | 7 | 34 | 10.5 | 32 | 40 | 0.6 | | |
| SWD1✳-10-F | 90 | 101 | 22 | 61.5 | 7 | 34 | 14 | 32 | 40 | 0.6 | | |
| SWD2✳-15-F | 108 | 130 | 22 | 73 | 8.5 | 34 | 17.5 | 38 | 46.5 | 1.2 | | |
| SWD3✳-25-F | 127 | 170 | 24 | 84 | 12.5 | 50.5 | 23 | 49 | 56 | 2.7 | 2.3 | 2.3 |
| SWD4✳-40-F | 159 | 212 | 28 | 97 | 16.5 | 50.5 | 35.7 | 57 | 66 | 5.1 | 4.1 | 4.0 |
| SWD5✳-50-F | 190 | 241.5 | 47 | 118 | 23 | 64 | 47.8 | 76.5 | 87.5 | 9.5 | 7.8 | 7.5 |

Weir diaphragm valve Manual type

# MWD Series

●Connection: ISO ferrule

RoHS

## How to Order

MWD 1 0 - 8 - F

- MWD: Model No.
- 1: Series
- 0: (blank)
- 8: Port size
- F: Material: A5056 actuator, PTFE/EPDM diaphragm, SUS316L body

### 1 Series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |
| 5 | Size 5 |

Note: ❷Refer to the port size table and select the port size.

### 2 Port size

| Code | Description | | Model No. MWD1 | MWD2 | MWD3 | MWD4 | MWD5 |
|---|---|---|---|---|---|---|---|
| 8 | Clamp fitting | 8 A | ● | | | | |
| 10 | | 10A | ● | | | | |
| 15 | | 15A | | ● | | | |
| 25 | | 25 A (1S) | | | ● | | |
| 40 | | 40 A (1.5S) | | | | ● | |
| 50 | | 50 A (2S) | | | | | ● |



Circuit diagram symbol

## Specifications

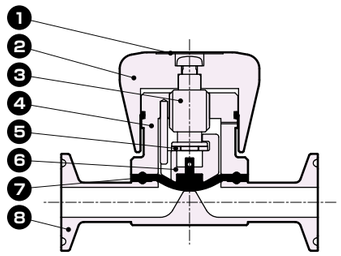
| Item | | MWD 10-8 | MWD 10-10 | MWD 20-15 | MWD 30-25 | MWD 40-40 | MWD 50-50 |
|---|---|---|---|---|---|---|---|
| Working fluid | | Water, pure water, chemical liquids (fluids that do not corrode wetted part materials) | | | | | |
| Working pressure | MPa | 0 to 0.6 | | | | | |
| Proof pressure (water pressure) | MPa | 2.0 | | | | | |
| Fluid temperature | °C | 5 to 90 (Allowable for 20 minutes or less during steam sterilization of 130°C) | | | | | |
| Ambient temperature | °C | 0 to 60 | | | | | |
| Valve seat leakage | $cm^3$/min | 0 (water pressure) | | | | | |
| Mounting orientation | | Unrestricted (✳1) | | | | | |
| Operating torque | N·m | 0.7 to 1.1 | 0.7 to 1.1 | 1.0 to 1.5 | 1.7 to 2.7 | 3.0 to 4.0 | 5.0 to 5.5 |
| Cv | | 2.3 | 2.6 | 4.5 | 13 | 27 | 50 |
| Kv value (✳2) | | 2.0 | 2.3 | 3.9 | 11 | 23 | 43 |
| Material | Diaphragm | PTFE / EPDM | | | | | |
| | Body | SUS316L (buff polishing #400 or equiv., electrolytic polishing) | | | | | |
| | Actuator | A5056 (fluoro resin coating) | | | | | |

✳1: For horizontal piping, liquid accumulation in the valve can be minimized by piping at the angle described on page 15.
✳2: Refer to the Intro page of “Fluid control valves” (RJ-013AA) for Kv values.





## Internal Structure Diagram / Material

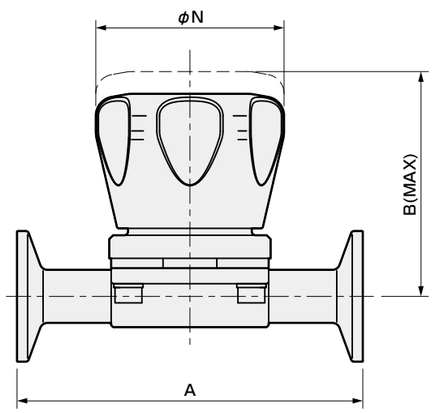


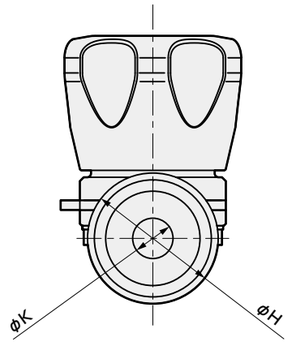

| No. | Part name | Material | |
|---|---|---|---|
| 1 | Indicator | PET | Polyethylene terephthalate |
| 2 | Handle | A5056 | Aluminum |
| 3 | Rod | SUS304 | Stainless steel |
| 4 | Bonnet | A5056 | Aluminum |
| 5 | Bearing | - | - |
| 6 | Compressor | SCS13 | Stainless steel |
| 7 | Diaphragm | PTFE, EPDM, SUS303, SUS304 | Fluoro resin, ethylene propylene rubber, stainless steel |
| 8 | Body | SUS316L | Stainless steel |

Note: Refer to page 12 for consumable parts. Wetted parts material are of two types: PTFE (diaphragm), SUS316L (body).

## Dimensions

● MWD




| Model No. | A | B | H | K | N | Weight [kg] |
|---|---|---|---|---|---|---|
| MWD10-8-F | 90 | 58.5 | 34 | 10.5 | 49 | 0.4 |
| MWD10-10-F | 90 | 60.7 | 34 | 14 | 49 | 0.4 |
| MWD20-15-F | 108 | 71.5 | 34 | 17.5 | 59 | 0.6 |
| MWD30-25-F | 127 | 88.7 | 50.5 | 23 | 69 | 1.2 |
| MWD40-40-F | 159 | 107.6 | 50.5 | 35.7 | 89 | 2.4 |
| MWD50-50-F | 190 | 164.5 | 64 | 47.8 | 89 | 4.6 |

HYN
SWD / MWD
SWD-T
SPD
HYA

Weir diaphragm valve Manual type
Spring seal

# MWD-S Series

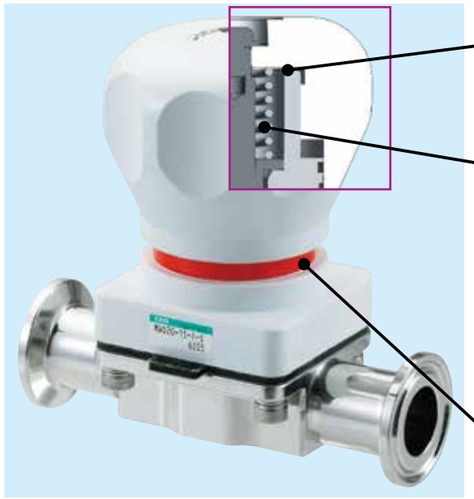
Special-order product

●Connection: ISO ferrule

RoHS

## Features

No more diaphragm damage due to overtightening.



**Handle stopper mechanism**

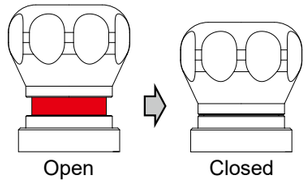
You can tell when it is fully tightened.

**Spring seal**

Just turn the handle until it is fully tightened, for consistently optimal sealing force. No handle tightening torque control required. Significant improvement of diaphragm durability at high temperatures. The spring conforms to loosening due to temperature changes, meaning that no retightening after SIP is required.

**Indicator equipment**

Open/Close status is visually apparent even from a distance.




## How to Order

MWD 1 0 - 8 - F - S

- MWD: Model No.
- 1: ❶ Series
- 8: ❷ Port size
- F: Material: A5056 actuator, PTFE/EPDM diaphragm, SUS316L body

**❶ Series**

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |

Note: ❷Refer to the port size table and select the port size.

**❷ Port size**

| Code | Description | | Model No. MWD1 | MWD2 | MWD3 | MWD4 |
|---|---|---|---|---|---|---|
| 8 | Clamp fitting | 8 A | ● | | | |
| 10 | | 10A | ● | | | |
| 15 | | 15A | | ● | | |
| 25 | | 25 A (1S) | | | ● | |
| 40 | | 40 A (1.5S) | | | | ● |

✳1: Refer to page 12 for consumable parts. Wetted parts material are of two types: PTFE (diaphragm), SUS316L (body).
✳2: Contact your CKD Sales representative for Special-order product, delivery date, price, etc.





Circuit diagram symbol

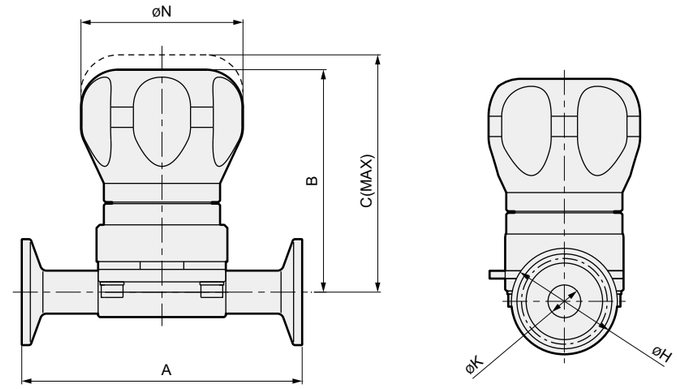
## Specifications

| Item | | MWD10-8 | MWD10-10 | MWD20-15 | MWD30-25 | MWD40-40 |
|---|---|---|---|---|---|---|
| Working fluid | | Water, pure water, chemical liquids (fluids that do not corrode wetted part materials) | | | | |
| Working pressure | MPa | 0 to 0.6 | | | | |
| Proof pressure (water pressure) | MPa | 2.0 | | | | |
| Fluid temperature | °C | 5 to 90 (Allowable for 20 minutes or less during steam sterilization of 130°C) | | | | |
| Ambient temperature | °C | 0 to 60 | | | | |
| Valve seat leakage | $cm^3$/min | 0 (water pressure) | | | | |
| Mounting orientation | | Unrestricted (✳1) | | | | |
| Cv | | 2.3 | 2.6 | 4.5 | 13 | 27 |
| Kv value (✳2) | | 2.0 | 2.3 | 3.9 | 11 | 23 |
| Material | Diaphragm | PTFE / EPDM | | | | |
| | Body | SUS316L (buff polishing #400 or equiv., electrolytic polishing) | | | | |
| | Actuator | A5056 (fluoro resin coating) | | | | |

✳1: For horizontal piping, liquid accumulation in the valve can be minimized by piping at the angle described on page 15.
✳2: Refer to the Intro page of “Fluid control valves” (RJ-013AA) for Kv values.

## Dimensions

● MWD-S




| Model No. | A | B | C | H | K | N | Weight [kg] |
|---|---|---|---|---|---|---|---|
| MWD10-8-F-S | 90 | 71 | 79 | 34 | 10.5 | 52 | 0.4 |
| MWD10-10-F-S | 90 | 74 | 81 | 34 | 14 | 52 | 0.4 |
| MWD20-15-F-S | 108 | 84 | 94 | 34 | 17.5 | 66 | 0.8 |
| MWD30-25-F-S | 127 | 119 | 133 | 50.5 | 23 | 80 | 2.0 |
| MWD40-40-F-S | 159 | 146 | 163 | 50.5 | 35.7 | 89 | 3.6 |

## Consumable parts (diaphragm)

How to Order

SWD - 1 PE

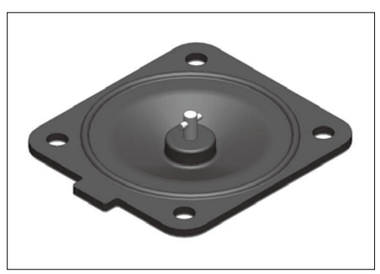
Model No.

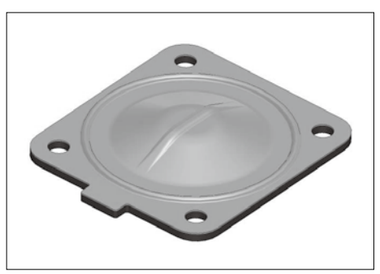
1 Series

**1 Series**

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |
| 5 | Size 5 |

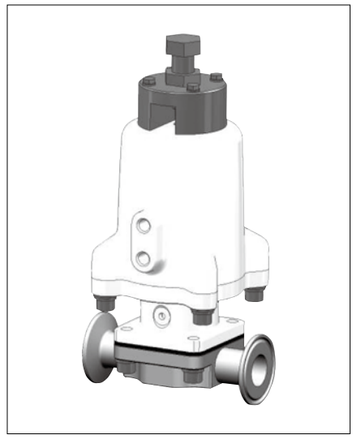
Note: Common model No. for SWD, MWD and MWD-S.





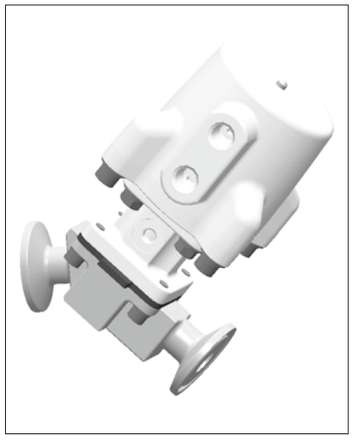
## Special-order product

With opening adjustment mechanism



With open/close detection switch

Specially shaped body



Note: Contact your CKD Sales representative for Special-order product, delivery date, price, etc.

MEMO

Fluid Control Valves

# Safety Precautions

Be sure to read this section before use.

Refer to "Fluid control valves (RJ-013AA)" for general precautions Although the above general catalog states that products are not applicable for medical equipment or direct contact with beverages/foodstuffs, the SWD/MWD Series products can be used in such applications as long as they are within the range of the product specifications.

Product-specific cautions: Weir diaphragm valve: SWD/MWD Series

## Design / Selection

### ⚠WARNING

■This product cannot be used as an emergency shut-off valve.
It is not designed to function as a safety valve, such as an emergency shut-off valve. When using in such a system, always take separate measures that will ensure safety.

■Incorrect equipment selection and handling can cause problems not only in this product, but also to your system. For equipment selection and handling, it is the customer's responsibility to check the specifications of this product and the compatibility with your system before use.

■Take measures to prevent physical harm or property damage in the event of breakdown of this product.

■Liquid ring
When the valve opens and closes, the diaphragm moves up and down, which causes the flow path capacity to change inside the valve. For this reason, if the fluid is an incompressible fluid (liquid), extreme pressures will be created in the valve when operating under conditions that seal the fluid in the valve (liquid ring). In this case, install a release valve on the primary or secondary side of the valve, preventing a liquid ring circuit from forming.

■Working fluids
Check the compatibility of product component materials and working fluids.

■Fluid temperature
Use within the specified fluid temperature range.

■Fluid pressure range
Use within the specified working pressure range.

■Iron rust and foreign materials in the fluid can cause operation faults or leaks and deteriorate product performance. Provide measures to remove foreign matter.

■Use in high temperatures and steam
When hot fluid flows during steam sterilization, the valve body becomes hot, so do not touch with your hand or body. There is a risk of burns if these coils are touched directly. Do not place objects that may deteriorate, melt, or ignite near the unit.

### ⚠CAUTION

■Rapid changes in fluid temperature may cause internal leakage.

■While the upper side of the diaphragm (actuator side) does not come into contact with the fluid, due to changes in fluid type and fluid temperature, fluid may permeate and turn into fluid atmosphere.

■As for compressed air for actuator operation, use air or inert gas passed through a filter with a filtration rating of 5 μm or more.

■If the product has been out of use for one month or more, perform a test run before starting actual operation.

■When the product will not be used for one month or more, completely remove any water left in the product. Water residue will cause rusting and may lead to malfunction or leaks. If residual water cannot be eliminated, operate the valve several times a day and pass water through to ensure ideal use.

■When the operating air supply time or exhaust time is short, the valve actuation may be unable to keep up.

■Do not allow fluid to come into contact with anything other than the fluid passage section of the product.

■Water hammer and vibration may occur in certain fluid pressure and piping conditions. In most cases, this can be resolved by adjusting the open-close speed using a speed controller, etc. If a problem persists, review and revise the fluid pressure and piping conditions.

■If you use the product infrequently, contact CKD.

■Indicator rises during valve opening. Since grease is applied to the indicator part, be careful of adhesion.

■Do not use valves as a footing or place any heavy objects on top of the valves.

■Use the air operated operating air pressure within the specified pressure range.

■Use the manual operating torque within the specified torque range.

■Observe the operating frequency. Operating frequency is 20 cycles/min or less for SWD1 to 4, and 10 cycles/min or less for SWD5.

■For horizontal piping, liquid accumulation in the valve can be minimized by tilting the valve and piping. Pipe so that the "-CKD-" mark stamped on the body piping section is directly above.
(Refer to Table 1, Fig. 1)

Table 1. Port size and valve tilt angle

| Model No. | Port size | Valve tilt angle (θ°) |
|---|---|---|
| SWD1✳-8, MWD10-8 | 8 A | 23 |
| SWD1✳-10, MWD10-10 | 10A | 11 |
| SWD2✳-15, MWD20-15 | 15A | 14 |
| SWD3✳-25, MWD30-25 | 25 A (1S) | 25 |
| SWD4✳-40, MWD40-40 | 40 A (1.5S) | 24 |
| SWD5✳-50, MWD50-50 | 50 A (2S) | 23 |

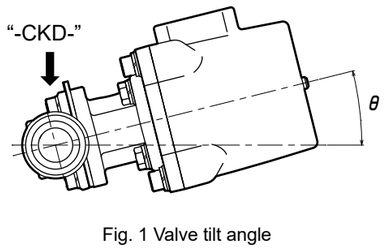



Fig. 1 Valve tilt angle

For cautions for mounting, installation, adjustment, use and maintenance, refer to the CKD components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No.→ Instruction manual for details.

Weir diaphragm valve
Flow rate control type

# SWD-T Series

# Reproducing Craftsmanship

Contributes to the automation of flow rate adjustment that has traditionally been done with a manual valve.

Electro pneumatic regulators
**SWD-EVD**

+

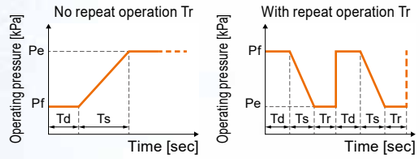
Weir Diaphragm Valve
**SWD-C Series**

## Preset function

Register any parameters in the preset memory. (Max. 6 patterns). Recall using an external signal.

[Parameters that can be entered]

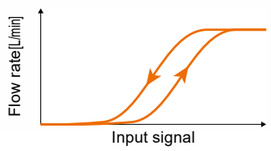
●Pressure: Pf (initial pressure), Pe (ultimate pressure)
●Time parameter:





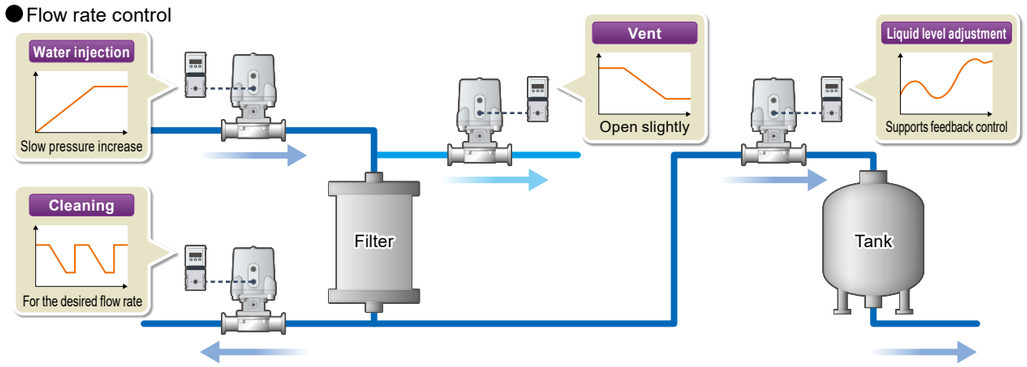


## Supports proportional flow rate control with analog input signals




## Examples of applications

●Flow rate control








Weir diaphragm valve Flow rate control type
Electro-pneumatic regulator set for valve/control

# SWD-T Series

Japan only release

● Connection: ISO ferrule

CE UKCA RoHS

Refer to the CKD website for detailed compatible model Nos.

## Specifications

✳Refer to pages 18 to 20 for specifications of the discrete valve (SWD-C).
✳Refer to pages 22 to 26 for the specifications of the discrete electro-pneumatic regulator (SWD-EVD).

## How to Order

**SWD 1 1 - 8 - F T - 0 AN - C1B1**

- SWD: Model No.
- 1: ❶ Valve series
- 1: ❷ Valve Actuation
- 8: ❸ Valve port size
- F: Valve material: ADC12 actuator, PTFE/EPDM diaphragm, SUS316L body
- T
- 0: ❹ Electro-pneumatic regulator input specifications
- AN: ❺ Electro-pneumatic regulator output specifications
- C1B1: ❻ Electro-pneumatic regulator option

### ❶ Valve series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |

Note: ❸Refer to the valve port size table to select the valve.

### ❷ Valve actuation

| Code | Description |
|---|---|
| 1 | NC (normally closed) |
| 2 | NO (normally open) |

### ❸ Valve port size

| Code | Description | | Model No. SWD1 | SWD2 | SWD3 | SWD4 |
|---|---|---|---|---|---|---|
| 8 | Clamp fitting | 8 A | ● | | | |
| 10 | | 10 A | ● | | | |
| 15 | | 15 A | | ● | | |
| 25 | | 25 A (1S) | | | ● | |
| 40 | | 40 A (1.5S) | | | | ● |

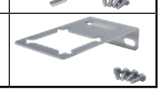
### ❹ Electro-pneumatic regulator input specifications

| Code | Description |
|---|---|
| 0 | 0-10 VDC |
| 1 | 0-5 VDC |
| 2 | 4-20 mA DC |

### ❺ Electro-pneumatic regulator output specifications

| Code | Description |
|---|---|
| AN | 1 to 5 V analog, error (NPN) |
| AP | 1 to 5 V analog, error (PNP) |

### ❻ Electro-pneumatic regulator option

| Code | Description | |
|---|---|---|
| **Cable option** | | |
| Blank | None | |
| C1 | Cable 1 m | |
| C3 | Cable 3 m | |
| **Bracket option** | | |
| Blank | None | |
| B1 | B-bracket, floor mounted |  |
| L11 | L-bracket, wall mounted |  |


SWD / MWD
SWD-T
SPD
HYA
HYN

Weir diaphragm valve Flow rate control type
Discrete valve

# SWD-C Series

Japan only release

●Connection: ISO ferrule

RoHS

## How to Order

SWD 1 1 - 8 - F C

- Model No.
- ❶ Series
- ❷ Actuation
- ❸ Port size
- Material: ADC12 actuator, PTFE/EPDM diaphragm, SUS316L body

### ❶ Series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |

Note: ❸Refer to the valve port size table to select the valve.

### ❷ Actuation

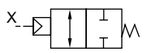
| Code | Description |
|---|---|
| 1 | NC (normally closed) |
| 2 | NO (normally open) |

### ❸ Port size

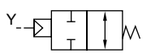
| Code | Description | | Model No. SWD1 | SWD2 | SWD3 | SWD4 |
|---|---|---|---|---|---|---|
| 8 | Clamp fitting | 8 A | ● | | | |
| 10 | | 10 A | ● | | | |
| 15 | | 15 A | | ● | | |
| 25 | | 25 A (1S) | | | ● | |
| 40 | | 40 A (1.5S) | | | | ● |

## Circuit diagram symbol

● NC (normally closed)




● NO (normally open)

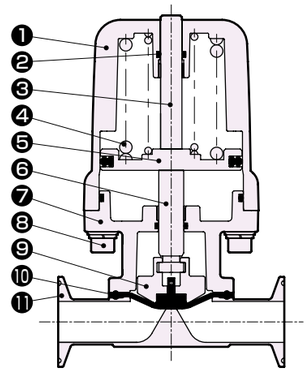



## Specifications

| Item | | SWD✳1 | SWD✳2 |
|---|---|---|---|
| Actuation | | NC | NO |
| Working fluid | | Water, pure water, chemical liquids (fluids that do not corrode wetted part materials) | |
| Working pressure | MPa | 0 to 0.6 | |
| Proof pressure (water pressure) | MPa | 2.0 | |
| Fluid temperature | °C | 5 to 90 (Allowable for 20 minutes or less during steam sterilization of 130°C) | |
| Ambient temperature | °C | 0 to 60 | |
| Frequency | cycles/min. | 20 or less | |
| Valve seat leakage | $cm^3$/min | 0 (water pressure) | |
| Mounting orientation | | Unrestricted (✳1) | |
| Operating port | | Rc1/8 | |
| Operating fluid | | Air | |
| Operating pressure (✳2) MPa | SWD1✳-8 | 0.35 to 0.7 | 0.25 to 0.35 |
| | SWD1✳-10 | | |
| | SWD2✳-15 | | |
| | SWD3✳-25 | 0.4 to 0.7 | 0.3 to 0.35 |
| | SWD4✳-40 | | 0.35 to 0.4 |
| Cv | SWD1✳-8 | 2.3 | |
| | SWD1✳-10 | 2.6 | |
| | SWD2✳-15 | 4.5 | |
| | SWD3✳-25 | 13 | |
| | SWD4✳-40 | 27 | |
| Kv value (✳3) | SWD1✳-8 | 2.0 | |
| | SWD1✳-10 | 2.3 | |
| | SWD2✳-15 | 3.9 | |
| | SWD3✳-25 | 11 | |
| | SWD4✳-40 | 23 | |

✳1: When using horizontal piping, liquid accumulation in the valve can be minimized by piping at the angles described on page 29.
✳2: The above values are the pressure range for fully open or fully closed. The pressure range for flow rate control is less than the min. pressure. For details, refer to the technical data (flow rate characteristics) on our website.
✳3: For Kv values, refer to the Intro pages of “Fluid Control Valves” (RJ-013AA).

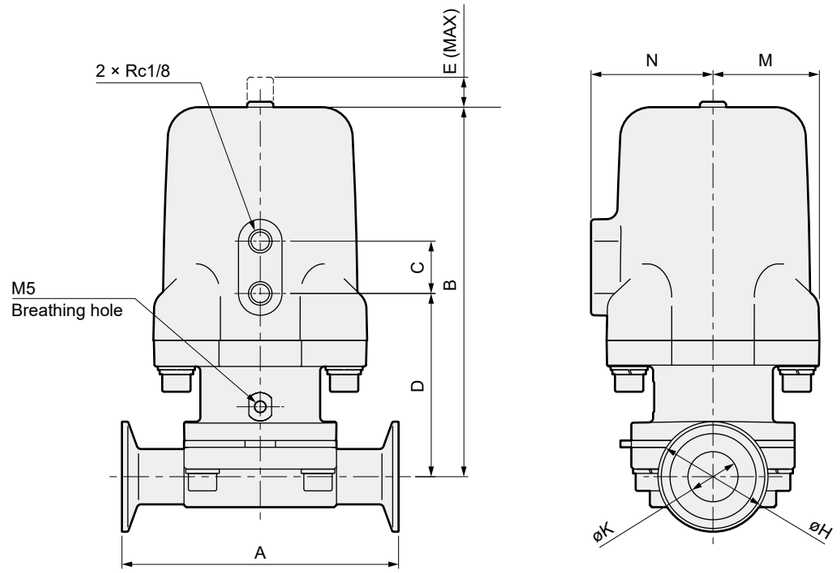
## Internal Structure Diagram / Material




| No. | Part name | Material | |
|---|---|---|---|
| 1 | Cylinder guard | ADC12 | Aluminum die-casting |
| 2 | O-ring | FKM | Fluoro rubber |
| 3 | Indicator | SUS304 | Stainless steel |
| 4 | Spring | SUS304 (or SWP) | Stainless steel (or piano wire) |
| 5 | Piston | A2017 | Aluminum |
| 6 | Piston rod | SUS304 | Stainless steel |
| 7 | Rod cover, yoke | ADC12 | Aluminum die-casting |
| 8 | Hexagon socket head cap screw | SUS304, SUSXM7 | Stainless steel |
| 9 | Compressor | SCS13 | Stainless steel |
| 10 | Diaphragm | PTFE, EPDM, SUS303, SUS304 | Fluoro resin, ethylene propylene rubber, stainless steel |
| 11 | Body | SUS316L | Stainless steel |

Note: Refer to page 20 for consumable parts. Wetted parts material are of two types: PTFE (diaphragm), SUS316L (body).

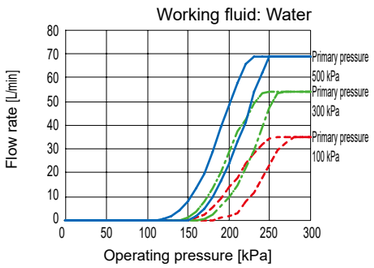
## Dimensions



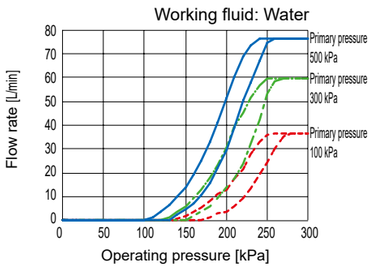

| Model No. | A | B | C | D | E | H | K | M | N | Weight [kg] NC | Weight [kg] NO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SWD1✳-8-FC | 90 | 99.5 | 22 | 60 | 7 | 34 | 10.5 | 32 | 40 | 0.6 | |
| SWD1✳-10-FC | 90 | 101 | 22 | 61.5 | 7 | 34 | 14 | 32 | 40 | 0.6 | |
| SWD2✳-15-FC | 108 | 130 | 22 | 73 | 8.5 | 34 | 17.5 | 38 | 46.5 | 1.2 | |
| SWD3✳-25-FC | 127 | 170 | 24 | 84 | 12.5 | 50.5 | 23 | 49 | 56 | 2.7 | 2.3 |
| SWD4✳-40-FC | 159 | 212 | 28 | 97 | 16.5 | 50.5 | 35.7 | 57 | 66 | 5.1 | 4.1 |

## Flow Characteristics

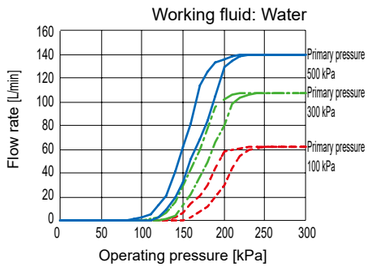
●SWD11-8-FC



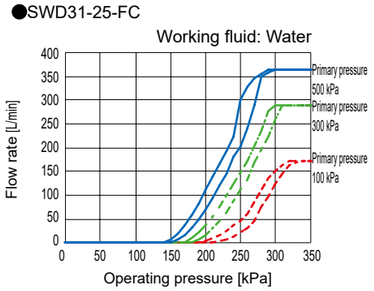

●SWD11-10-FC



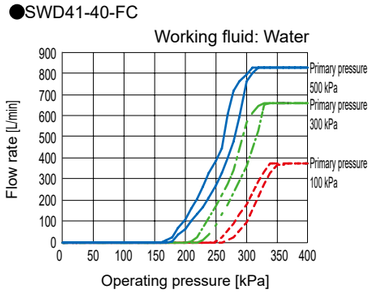

●SWD21-15-FC




●SWD31-25-FC




●SWD41-40-FC




Note: The product performance values are guideline values as they vary and may fluctuate due to the working fluid, temperature, etc. For detailed characteristics data, download from the "Technical Information" on the SWD-T Series page on our website.

## How to order repair parts

SWD - 1 PE C

Model No.
1 Series
2 Option

### 1 Series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |
| 3 | Size 3 |
| 4 | Size 4 |

### 2 Option

| Code | Description |
|---|---|
| Blank | Standard |
| C | Flow rate control type |

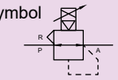
MEMO

Electro-pneumatic regulator for SWD-C

# SWD-EVD Series

Japan only release

Circuit diagram symbol




Refer to the CKD website for detailed compatible model Nos.

## How to Order

SWD - EVD1 - 0 AN - C1B1

- SWD: Model No.
- EVD1: ❶ Identification number
- 0: ❷ Input signal
- AN: ❸ Output signal
- C1B1: ❹ Option

### ❶ Identification number

| Code | Description |
|---|---|
| EVD1 | For SWD12, 22 |
| EVD2 | For SWD32 |
| EVD3 | For SWD11, 21, 42 |
| EVD4 | For SWD31, 41 |

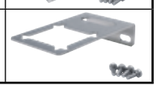
### ❷ Input signal

| Code | Description |
|---|---|
| 0 | 0-10 VDC |
| 1 | 0-5 VDC |
| 2 | 4-20 mA DC |

### ❸ Output signal

| Code | Description |
|---|---|
| AN | 1 to 5 V analog, error (NPN) |
| AP | 1 to 5 V analog, error (PNP) |

### ❹ Option

| Code | Description | |
|---|---|---|
| **Cable option** | | |
| Blank | None | |
| C1 | Cable 1 m | |
| C3 | Cable 3 m | |
| **Bracket option** | | |
| Blank | None | |
| B1 | B-bracket, floor mounted |  |
| L11 | L-bracket, wall mounted |  |

●Option (cable, bracket) Discrete model No.

EVD - C1

❶ Option

EVL - L11

❶ Option

### ❶ Option

| Code | Description |
|---|---|
| **Cable option** | |
| C1 | Cable 1 m |
| C3 | Cable 3 m |
| **Bracket option** | |
| B1 | B-bracket, floor mounted |

### ❶ Bracket option

| Code | Description |
|---|---|
| L11 | L-bracket, wall mounted |







## Specifications

| Item | | SWD-EVD□ |
|---|---|---|
| Actuation ✳1 | | NO |
| Working fluid | | Clean compressed air (ISO 8573-1: 2010 [1:3:2] or equivalent) |
| Max. working pressure | | 700 kPa |
| Min. working pressure | | Set pressure +100 kPa |
| Proof pressure | Inlet | 1050 kPa |
| | Output side | 750 kPa |
| Pressure control range ✳2 | | 0 to 500 kPa |
| Power supply voltage | | 24 VDC ±10% (power supply with ripple rate 1% or less) |
| Current consumption | | 0.18 A or less (0.6 A or less rush current when the power is turned ON) |
| Input signal (input impedance) | | 0 to 10 VDC (6.7 kΩ) |
| | | 0 to 5 VDC (10 kΩ) |
| | | 4 to 20 mADC (250 Ω) |
| Preset input | | 8 points |
| Output signal | | Output accuracy: ±6%F.S. or less, Analog output: 1-5 VDC (connecting load impedance 500 kΩ and over) |
| Error output signal | | NPN or PNP open collector output, 30 V or less 50 mA or less, voltage drop 2.4 V or less, PLC/relay compatible |
| Direct memory setting | | 5 to 500 kPa (Min. setting width 1 kPa/setting resolution 1 kPa) |
| Hysteresis ✳3 | | 0.5% F.S. or less |
| Linearity ✳3 | | ± 0.3% F.S. or less |
| Resolution ✳3 | | 0.2% F.S. or less |
| Repeatability ✳3 | | 0.3% F.S. or less |
| Temperature characteristics | Zero point fluctuation | 0.15% F.S./°C or less |
| | Span point fluctuation | 0.07% F.S./°C or less |
| Max. flow rate (ANR) ✳4 | | 400 L/min |
| Step response ✳5 | No load | 0.2 sec. or less |
| Vibration resistance | | 98 m/s$^2$or less |
| Ambient temperature | | 5 to 45 °C |
| Fluid temperature | | 5 to 45 °C |
| Port size | | Rc1/4 |
| Mounting orientation | | Unrestricted |
| Weight | | 270 g (body only) |
| Protection circuit | | Power supply reverse connection protection |

✳1: The pilot operating pressure of this product is released when the power is OFF, which causes the secondary pressure to drop to atmospheric pressure.

✳2: There is 1%F.S. or less residual pressure when the input signal is 0%. (5 kPa)

✳3: The conditions for the values above are: 24±0.1 VDC power supply voltage, 25±3°C ambient temperature, no load, working pressure of +100 kPa max. control pressure, and 10 to 90% control pressure. In addition, when the secondary side is a closed circuit, pressure fluctuations will occur if the product is used for blowing or for similar applications.

✳4: The characteristics where working pressure is maximum and control pressure is maximum are shown.

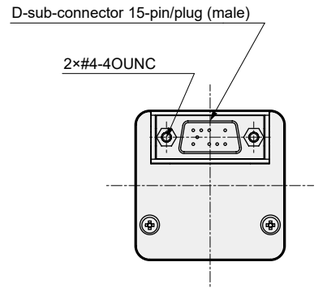
✳5: The characteristics where working pressure is maximum and step amount is
- 50% F.S. → 100% F.S.
- 50% F.S. → 60% F.S.
- 50% F.S. → 40% F.S.

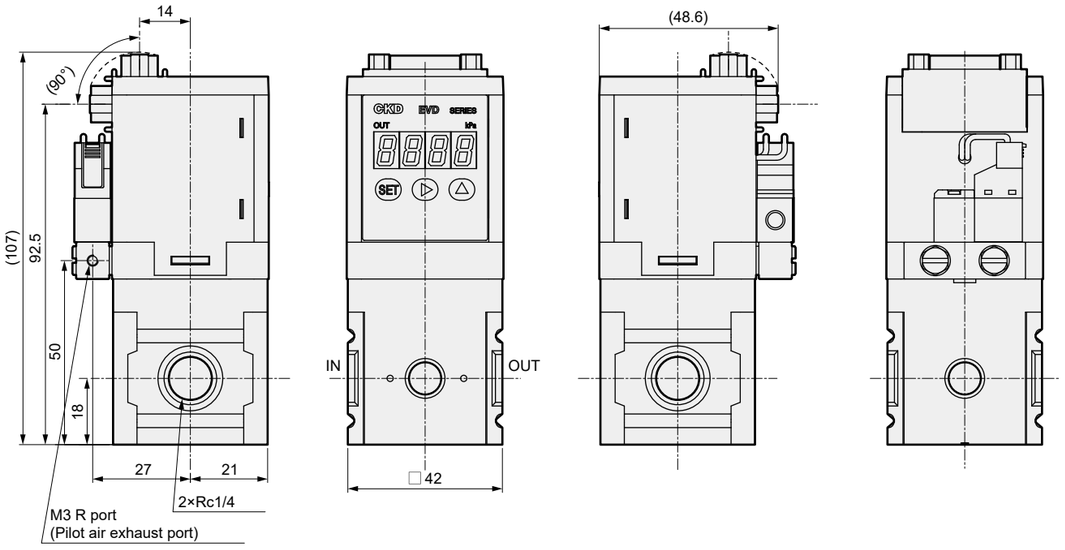
✳Refer to the SM-50829 instruction manual for safety precautions, wiring method, and operation method.

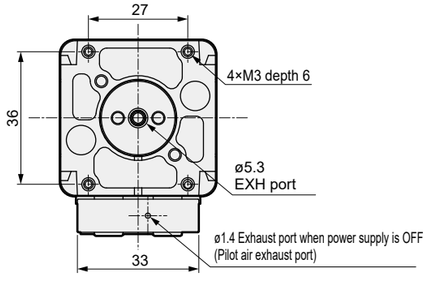
✳Refer to EVD-1500 in "Air Preparation Unit/Auxiliary Components" (RJ-007AA) for input/output characteristics, analog output, flow characteristics, and relief characteristics.


SWD / MWD
SWD-T
SPD
HYA
HYN

## Dimensions



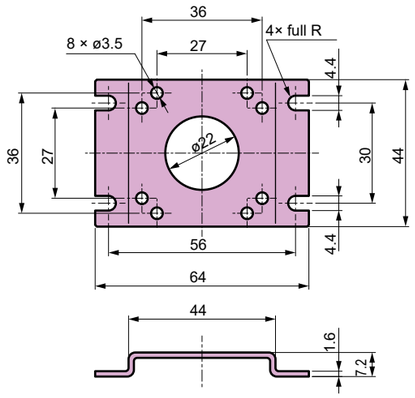






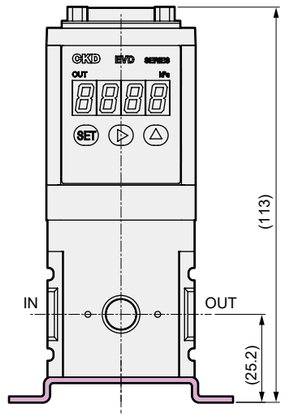

## Optional dimensions

● B-bracket (-B1): Floor mounted

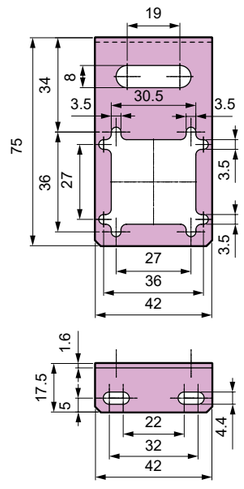



Material: SPCC
Ni plated
Weight: 32 g

● B-bracket assembly

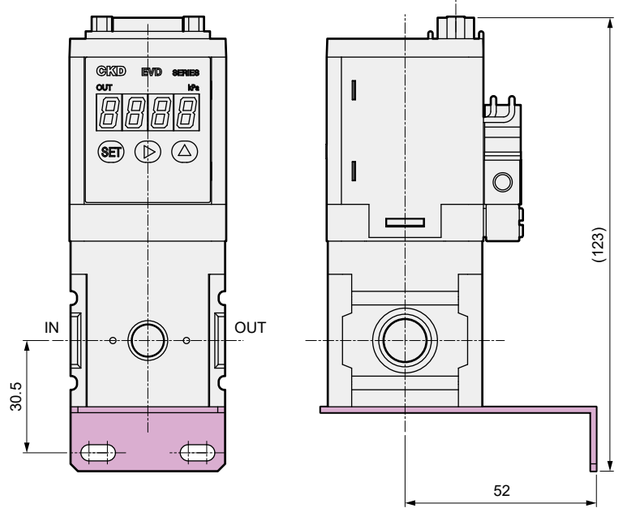



● L-bracket (-L11): Wall mounted



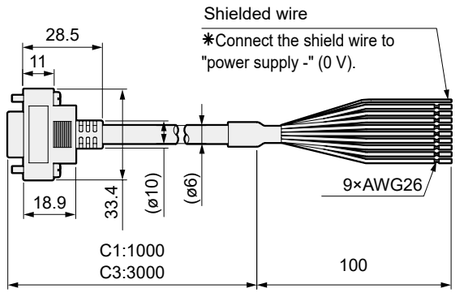

Material: SPCC
Ni plated
Weight: 31 g

● L-bracket assembly



## Optional dimensions

● Cable dimensions (-C1, C3)




| | |
|---|---|
| **Wire material** | Tinned annealed copper wire |
| **Conductor O.D.** | Approx. 0.48 |
| **Outer diameter of insulator** | 0.88 |

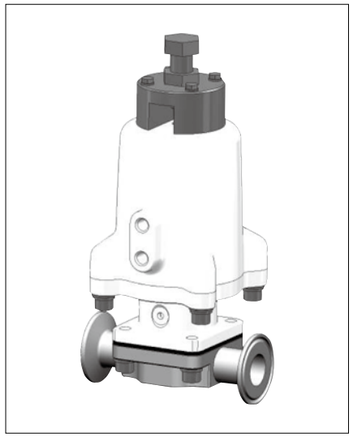
| D sub-socket pin No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | 12 | 13 | 14 | 15 | Weight g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Insulator color | Brown | Orange | Yellow | - | Red | - | - | - | - | Gray | White | | | - | Green | Blue | Black | C1: 67 C3: 166 |
| Name | Preset input signal | | | Vacant | Power supply + | Vacant | Vacant | Vacant | Vacant | Common | Input signal | | | Vacant | Analog Output | Error output | Power supply - (0V) | |
| Input | Bit 1 | Bit 2 | Bit 3 | | +24V DC | | | | | | 0-10V DC | 0-5V DC | 4-20 mA DC | | Output 1-5V DC | NPN or PNP output | | |

Note: The No. 10 pin common is the common for the preset input (pin No. 1 to 3).



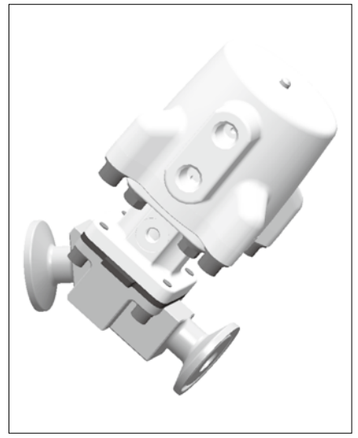
## Special-order product

With opening adjustment mechanism

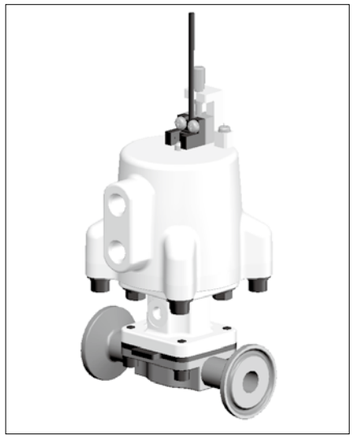


With open/close switch

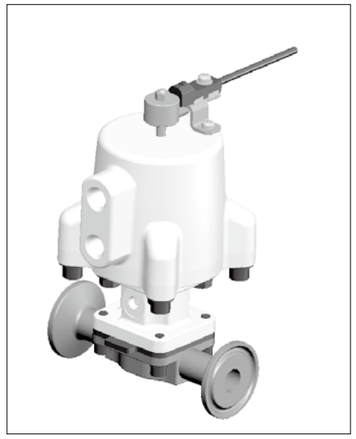
Specially shaped body



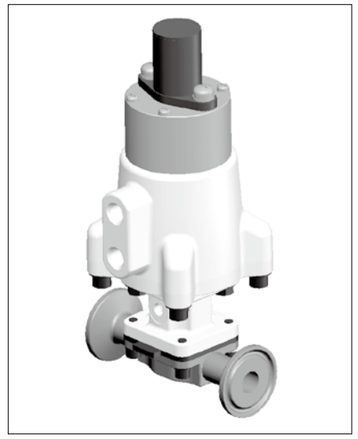
With photo sensor for detecting valve opening



With proximity sensor for detecting valve opening



With potentiometer for stroke detection



Note: Contact your CKD sales representative for Special-order products, delivery date, price, etc.

Fluid Control Valves

# Safety Precautions

Be sure to read this section before use.

Refer to the "General Purpose Valves (RJ-013AA)" catalog for general precautions. Although the above general catalog states that products are not applicable for medical equipment or direct contact with beverages/foods, the SWD-T Series products can be used in such applications as long as they are within the range of the product specifications.

Product-specific cautions: Flow rate control valve SWD-T Series

## Design / Selection

### ⚠WARNING

■This product cannot be used as an emergency shut-off valve.
It is not designed to function as a safety valve, such as an emergency shut-off valve. When using in such a system, always take separate measures that will ensure safety.

■Incorrect equipment selection and handling can cause problems not only in this product, but also to your system. For component selection and handling, it is the customer's responsibility to check the specifications of this product and the compatibility with your system before use.

■Take measures to prevent physical harm or property damage in the event of breakdown of this product.

■Liquid ring
When the valve opens and closes, the diaphragm moves up and down, which causes the flow path capacity to change inside the valve. For this reason, if the fluid is an incompressible fluid (liquid), extreme pressures will be created in the valve when operating under conditions that seal the fluid in the valve (liquid ring). In this case, install a release valve on the primary or secondary side of the valve, preventing a liquid ring circuit from forming.

■Working fluids
Check the compatibility of product component materials and working fluids.

■Fluid temperature
Use within the specified fluid temperature range.

■Fluid pressure range
Use within the specified working pressure range.

■Iron rust and debris in the fluid can cause operation faults or leaks and deteriorate product performance. Provide measures to remove foreign matter.

■Use in high temperatures and steam
When hot fluid flows during steam sterilization, the valve body becomes hot, so do not touch with your hand or body. There is a risk of burns if these coils are touched directly.

### ⚠CAUTION

■Rapid changes in fluid temperature may cause internal leakage.

■While the upper side of the diaphragm (actuator side) does not come into contact with the fluid, due to changes in fluid type and fluid temperature, fluid may permeate and turn into fluid atmosphere.

■As for compressed air for actuator operation, use air or inert gas passed through a filter with a filtration rating of 5 μm or more.

■If the product has been out of use for one month or more, perform a test run before starting actual operation.

■When the product will not be used for one month or more, completely remove any water left in the product. Water residue will cause rusting and may lead to malfunction or leaks. If residual water cannot be eliminated, operate the valve several times a day and pass water through to ensure ideal use.

■When the operating air supply time or exhaust time is short, the valve actuation may be unable to keep up.

■Do not allow fluid to come into contact with the product body.

■Water hammer and vibration may occur in certain fluid pressure and piping conditions. In most cases, this can be resolved by adjusting the open-close speed using a speed controller, etc. If a problem persists, review and revise the fluid pressure and piping conditions.

■If you use the product infrequently, contact CKD.

■Indicator rises during valve opening. Since grease is applied to the indicator part, be careful of adhesion.

■Do not use valves as a footing or place any heavy objects on top of the valves.

■Use the operating air pressure within the specified working pressure range.

■Observe the operating frequency. Operating frequency is 20 cycles/min or less.

■For horizontal piping, liquid accumulation in the valve can be minimized by tilting the valve and piping. Pipe so that the "-CKD-" mark stamped on the body piping section is directly above.
(Refer to Table 1, Fig. 1)

Table 1. Port size and valve tilt angle

| Model No. | Port size | Valve tilt angle (θ°) |
|---|---|---|
| SWD1✳-8 | 8 A | 23 |
| SWD1✳-10 | 10 A | 11 |
| SWD2✳-15 | 15 A | 14 |
| SWD3✳-25 | 25 A (1S) | 25 |
| SWD4✳-40 | 40 A (1.5S) | 24 |

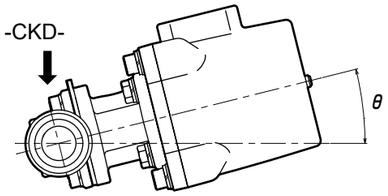



Fig. 1 Valve tilt angle

For cautions for mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No.→ Instruction manual for details.

# Compact and high durability

The technology developed for the semiconductor manufacturing process is applied to pharmaceuticals and foodstuffs for high cleanliness, durability, and maintainability. Ideal for the production process of pharmaceuticals and foods.

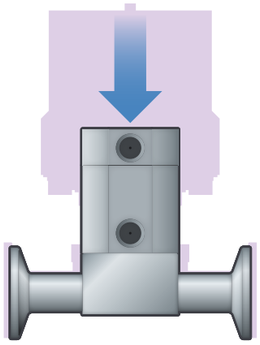
8 A

15 A



## Lightweight and compact

Adopts a simple poppet structure, and is even lighter and more compact than the conventional weir diaphragm valve. Contributes to space and energy savings of equipment.



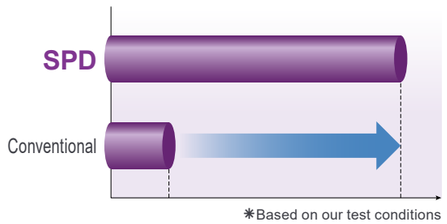
Height 35% Reduced*

*8A size

Weight 20% Reduced*

## High durability

Applying liquid control technology from the semiconductor industry, which requires high cleanliness and durability. The durability of the diaphragm has been greatly improved from the conventional weir diaphragm valve, and stable operation realized for long periods.

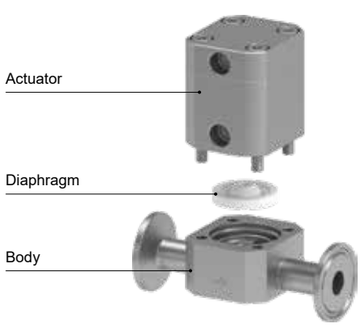



*Based on our test conditions

Durability 5 times or more

## Maintainability

The diaphragm can be replaced. It can be easily replaced in a short time, reducing maintenance time.




Easy replacement

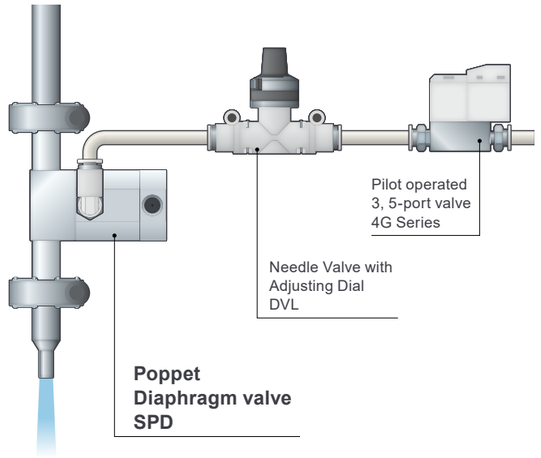
## System image of related products

Use DVL to change the operation speed when closing the valve. The nozzle tip drainage can be adjusted.

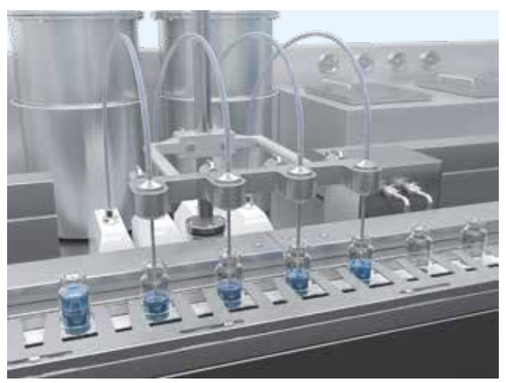
Liquid discharge

Before adjusting the liquid drainage

After adjusting the liquid drainage




## Application



Pharmaceutical manufacturing process

Food manufacturing process

Poppet Diaphragm Valve

# SPD Series

●Connection: ISO ferrule

Japan only release

RoHS

## How to Order

SPD - 1 1 08 Y F 1

- SPD: Model No.
- 1: ❶ Series
- 1: Actuation: NC (normally closed)
- 08: ❷ Connection Bore size
- Y: Connection: Clamp fitting
- F: Material: Actuator A5056, diaphragm PTFE, body SUS316L
- 1: ❸ Operating port direction

### ❶ Series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |

Note: ❷Refer to the port size table and select the port size.

### ❷ Port size

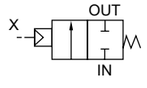
| Code | Description | Model No. SPD-1 | Model No. SPD-2 |
|---|---|---|---|
| 08 | 8 A | ● | |
| 15 | 15 A | | ● |

### ❸ Operating port direction

| Code | Description |
|---|---|
| 1 | Direction 1: With valve viewed from above, ⇨ indicates fluid flow direction and ➡ indicates operating port direction. (1) |

## Circuit diagram Code Specifications

● NC (normally closed)




| Item | | SPD-1108 | SPD-2115 |
|---|---|---|---|
| Actuation | | NC (normally closed) | |
| Working fluid | | Water, pure water, chemical liquids (fluids that do not corrode wetted part materials) | |
| Working pressure | MPa | 0 to 0.3 | |
| Back pressure | MPa | 0 to 0.1 | |
| Proof pressure (water pressure) | MPa | 0.9 | |
| Fluid temperature | °C | 5 to 90 (Allowable for 20 minutes or less during steam sterilization of 130°C) | |
| Ambient temperature | °C | 0 to 60 | |
| Frequency | cycles/min. | 30 or less | |
| Valve seat leakage | $cm^3$/min | 0 (water pressure) | |
| Operating port | | Rc1/8 | |
| Operating fluid | | Air | |
| Operating pressure | MPa | 0.3 to 0.5 | |
| Cv | | 1.9 | 4.6 |
| Kv value (✳1) | | 1.6 | 4.0 |
| Material | Diaphragm | PTFE | |
| | Body | SUS316L (buff polishing #400 or equiv., electrolytic polishing) | |
| | Actuator | A5056 (anodization) | |

✳1: Kv value is refer to the Intro page of "Fluid control valves" (RJ-013AA).





## How to order repair parts (diaphragm)

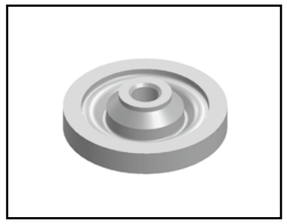
SPD - 1 PT

- 1: ❶ Series

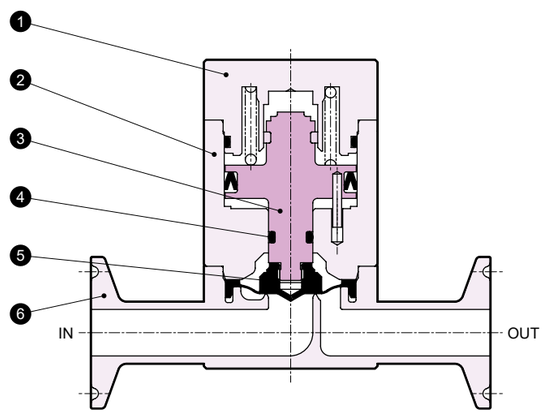
### ❶ Series

| Code | Description |
|---|---|
| 1 | Size 1 |
| 2 | Size 2 |

Note: Hexagon socket head cap screw included

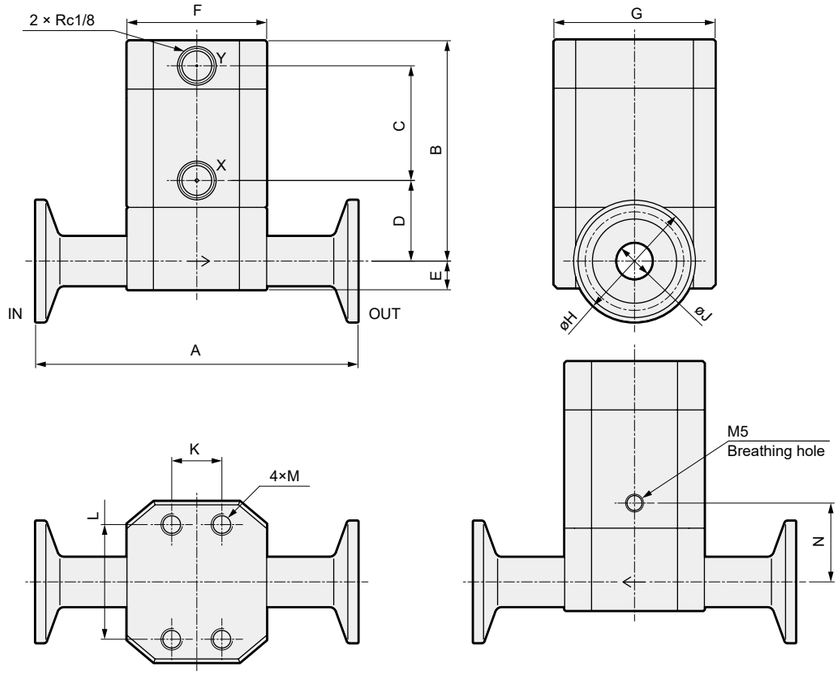


## Internal Structure Diagram / Material




| Part No. | Part name | Material | |
|---|---|---|---|
| 1 | Cover | A5056 | Aluminum |
| 2 | Cylinder | A5056 | Aluminum |
| 3 | Piston rod | A5056 | Aluminum |
| 4 | O-ring | FKM | Fluoro rubber |
| 5 | Diaphragm | PTFE | Fluororesin |
| 6 | Body | SUS316L | Stainless steel |

## Dimensions




| Model No. | A | B | C | D | E | F | G | H | J | K | L | M | N | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPD-1108 | 90 | 61.5 | 32 | 22.5 | 8 | 39 | 45 | 34 | 10.5 | 14 | 32 | M6 depth 9 | 22 | 0.5 |
| SPD-2115 | 108 | 81.9 | 39 | 30.9 | 12 | 48.4 | 56 | 34 | 17.5 | 20 | 42 | M8 depth 12 | 23.9 | 0.9 |

# Safety Precautions

Be sure to read this section before use.
Read safety precautions for "Fluid control valves (RJ-013AA)" as well

Product-Specific Cautions: Poppet diaphragm valve SPD Series

## Design / Selection

### ⚠ WARNING

■ This product cannot be used as an emergency shut-off valve.
It is not designed to function as a safety valve, such as an emergency shut-off valve. When using in such a system, always take separate measures that will ensure safety.

■ Incorrect equipment selection and handling can cause problems not only in this product, but also to your system. For component selection and handling, it is the customer's responsibility to check the specifications of this product and the compatibility with your system before use.

■ Take measures to prevent physical harm or property damage in the event of breakdown of this product.

■ Liquid ring
When the valve opens and closes, the diaphragm moves up and down, which causes the flow path capacity to change inside the valve. For this reason, if the fluid is an incompressible fluid (liquid), extreme pressures will be created in the valve when operating under conditions that seal the fluid in the valve (liquid ring). In this case, install a release valve on the primary or secondary side of the valve, preventing a liquid ring circuit from forming.

■ Working fluids
Check the compatibility of product component materials and working fluids.

■ Fluid temperature
Use within the specified fluid temperature range.

■ Fluid pressure range
Use within the specified working pressure range.

■ Iron rust and debris in the fluid can cause operation faults or leaks and deteriorate product performance. Provide measures to remove foreign matter.

■ Use in high temperatures and steam
When hot fluid flows during steam sterilization, the valve body becomes hot, so do not touch with your hand or body. There is a risk of burns if these coils are touched directly.

### ⚠ CAUTION

■ Rapid changes in fluid temperature may cause internal leakage.

■ While the upper side of the diaphragm (actuator side) does not come into contact with the fluid, due to changes in fluid type and fluid temperature, fluid may permeate and turn into fluid atmosphere.

■ As for compressed air for actuator operation, use air or inert gas passed through a filter with a filtration rating of 5 μm or more.

■ If the product has been out of use for one month or more, perform a test run before starting actual operation.

■ When the product will not be used for one month or more, completely remove any water left in the product. Water residue will cause rusting and may lead to malfunction or leaks. If residual water cannot be eliminated, operate the valve several times a day and pass water through to ensure ideal use.

■ When the operating air supply time or exhaust time is short, the valve actuation may be unable to keep up.

■ Do not allow fluid to come into contact with the product body.

■ Water hammer and vibration may occur in certain fluid pressure and piping conditions. In most cases, this can be resolved by adjusting the open-close speed using a speed controller, etc. If a problem persists, review and revise the fluid pressure and piping conditions.

■ Do not use valves as a footing or place any heavy objects on top of the valves.

■ Use the operating air pressure within the specified working pressure range.

■ Observe the operating frequency. Operating frequency is 30 cycles/min or less.

For cautions for mounting, installation, adjustment, use and maintenance, refer to the CKD components Product Site (https://www.ckd.co.jp/kiki/jp/en/) → "Model No.→ Instruction manual for details.

MEMO





SWD / MWD
SWD-T
SPD
HYA
HYN

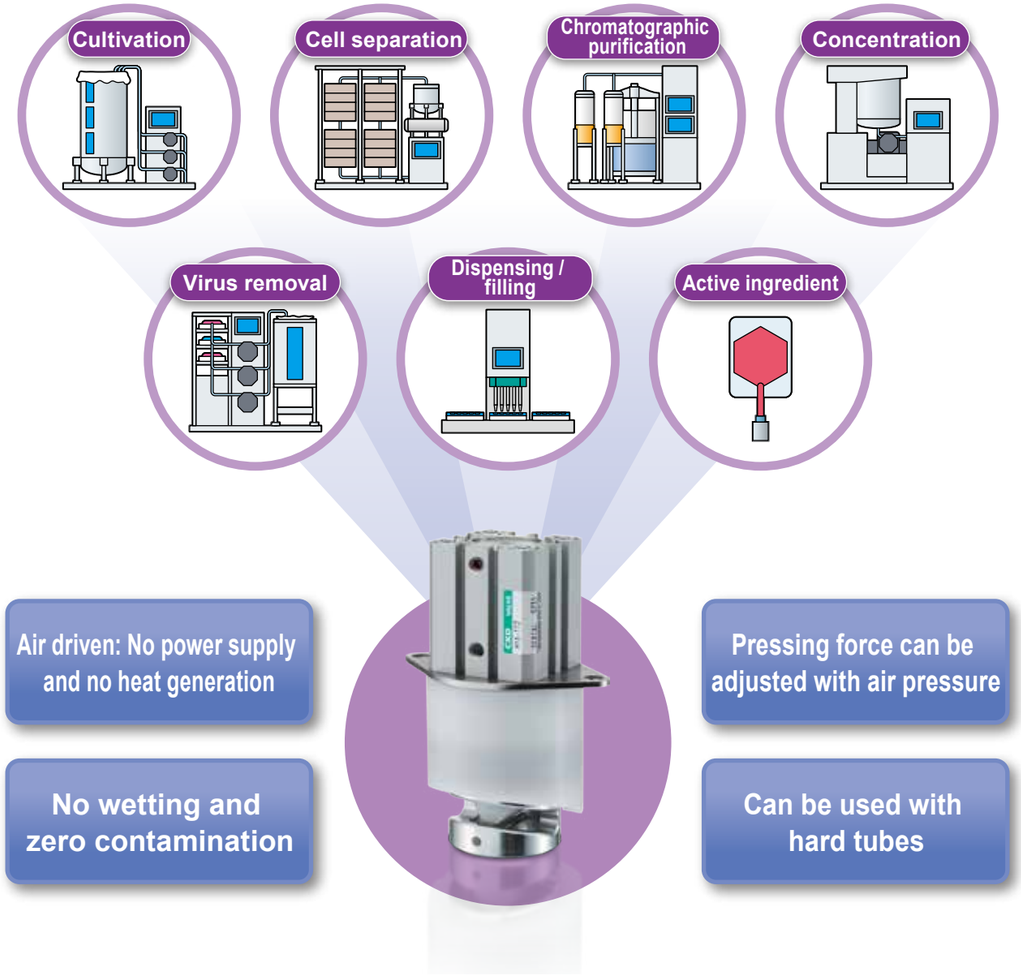
# Fine pinch valve with applied pneumatic technology

Ideal for single use

Fluids can be controlled with no thermal effect on the ambient environment



## Can be used in various processes




## CKD contributes to pharmaceutical manufacturing with its accumulated fluid control and automation technologies.

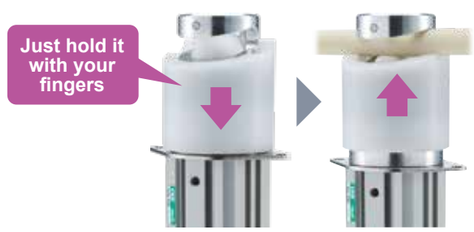
### Compatible with a wide range of tubes

| Model No. | HYA-✳1✳ | HYA-✳2✳ | HYA-✳3✳ |
|---|---|---|---|
| Applicable tube size (O.D.) | 1/8" to 7/32" (ø3 to ø6) | 1/4" to 3/8" (ø6 to ø10) | 7/16" to 9/16" (ø10 to ø15) |
| Recommended tube | Silicone tube hardness (Shore A) 50 to 64 (guideline)<br>PharMed BPT Tubing<br>TYGON 3350 Tubing | | |
| Working fluid | Water/pure water/chemical liquids (Fluids that do not corrode working tubes) | | |

Be careful of tubing sticking when using silicone tubing.

### Easy maintenance

Tube attachment/removal is easy. With tube fall prevention holder.



Air operated fine pinch valve

# HYA Series

- NC (normally closed), NO (normally open), double acting
- Applicable tube bore: 1/8" to 7/32", 1/4" to 3/8", 7/16" to 9/16"

RoHS

## How to Order

HYA - 1 1 1

- HYA: Model No.
- 2 Applicable tube bore
- 1 Actuation
- 3 Tube wall thickness

### 1 Actuation

| Code | Description |
|---|---|
| 1 | Normally closed |
| 2 | Normally open |
| 3 | Double acting |

### 2 Applicable tube bore

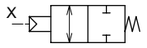
| Code | Description |
|---|---|
| 1 | 1/8" to 7/32" (ø3 to ø6) |
| 2 | 1/4" to 3/8" (ø6 to ø10) |
| 3 | 7/16" to 9/16" (ø10 to ø15) |

### 3 Tube wall thickness

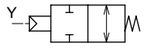
| Code | Description | 2 Applicable tube bore 1 | 2 | 3 |
|---|---|---|---|---|
| 1 | 1/32" (0.79 mm) | ● | ● | |
| 2 | 1/16" (1.59 mm) | ● | ● | ● |
| 3 | 3/32" (2.38 mm) | | ● | ● |
| 4 | 1/8" (3.18 mm) | | | ● |

## Circuit diagram symbol

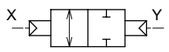
● NC (normally closed)




● NO (normally open)




● Double acting




## Specifications

| Item | | HYA-1 | HYA-2 | HYA-3 |
|---|---|---|---|---|
| Actuation | | NC (Normally closed) | NO (Normally open) | Double acting |
| Working pressure | MPa | 0 to 0.1 (✳1) | | |
| Fluid temperature | °C | 0 to 40 (no freezing) | | |
| Ambient temperature | °C | 5 to 40 | | |
| Frequency | cycles/min. | 30 or less | | |
| Mounting orientation | | Unrestricted | | |
| Pilot fluid | | Compressed air | | |
| Pilot fluid pressure | MPa | 0.35 to 0.5 | | 0.2 to 0.4 |
| Recommended tube (✳2) | | Silicone tube "hardness (Shore A) 50 to 64 (guideline)" PharMed BPT Tubing TYGON 3350 Tubing | | |

✳1: The maximum working pressure varies by tube, so confirm the specifications of the tube in use.
✳2: Be careful of tubing sticking when using a silicone tube.

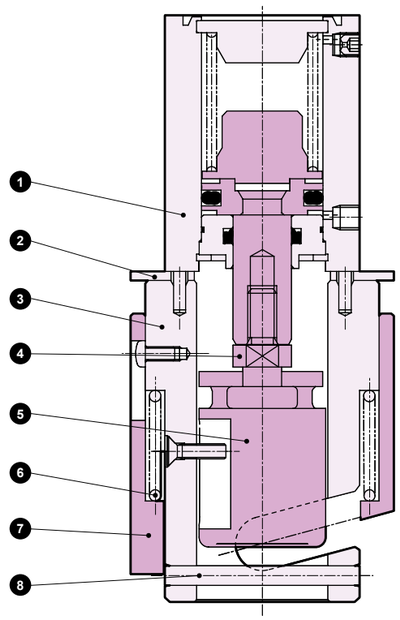
## Individual specifications

| Model No. | Applicable tube bore | Pilot port size | Weight (kg) |
|---|---|---|---|
| HYA-11✳ | 1/8" to 7/32" (ø3 to ø6) | M5 | 0.32 |
| HYA-21✳ | | | 0.2 |
| HYA-31✳ | | | 0.2 |
| HYA-12✳ | 1/4" to 3/8" (ø6 to ø10) | | 0.5 |
| HYA-22✳ | | | 0.3 |
| HYA-32✳ | | | 0.3 |
| HYA-13✳ | 7/16" to 9/16" (ø10 to ø15) | Rc1/8 | 0.83 |
| HYA-23✳ | | M5 | 0.42 |
| HYA-33✳ | | | 0.42 |



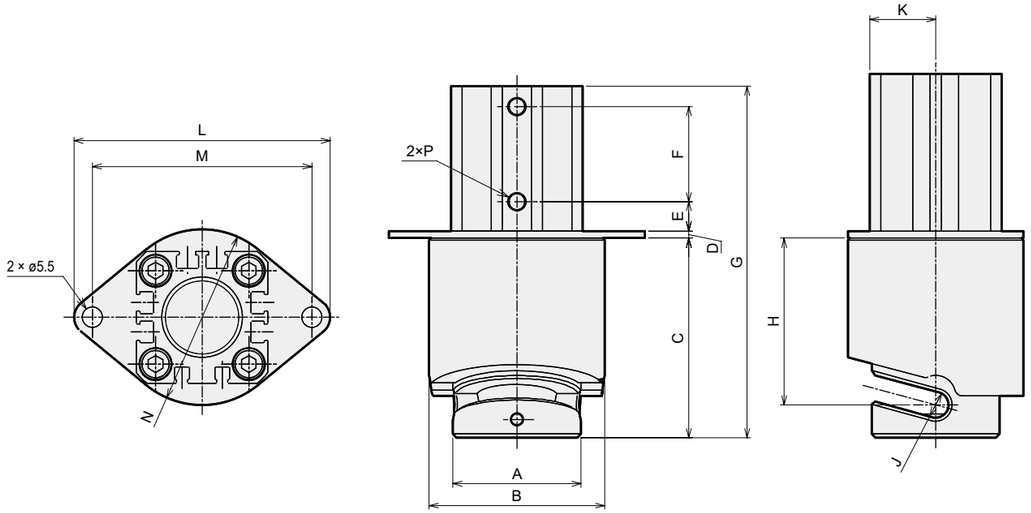


## Internal Structure Diagram / Material




| Part No. | Part name | Material | |
|---|---|---|---|
| 1 | Actuator assembly | - | SSD2 |
| 2 | Bracket | SUS304 | Stainless steel |
| 3 | Valve A | A5056 | Aluminum |
| 4 | Fitting | SUS303 | Stainless steel |
| 5 | Valve B | POM | Polyacetal resin |
| 6 | Holder spring | SUS304 | Stainless steel |
| 7 | Holder | POM | Polyacetal resin |
| 8 | Parallel pin | SUS303 | Stainless steel |

## Dimensions




| Model No. | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYA-11✳ | ø35 | ø48 | 54.5 | 2 | 8 | 26 | 96 | 45.5 | ø7 | 18 | 70 | 60 | ø48 | M5 |
| HYA-12✳ | ø40 | ø54 | 66 | 2 | 11 | 35.5 | 120.5 | 54 | ø11 | 20 | 80 | 70 | ø54 | M5 |
| HYA-13✳ | ø50 | ø66 | 77.5 | 3 | 8 | 57 | 153.5 | 61 | ø16 | 27 | 90 | 80 | ø66 | Rc1/8 |
| HYA-21✳ | ø28 | ø39 | 49 | 2 | 5.5 | 16 | 78 | 40 | ø7 | 14.5 | 60 | 50 | ø39 | M5 |
| HYA-22✳ | ø35 | ø48 | 57.5 | 2 | 8 | 16 | 89 | 45 | ø11 | 18 | 70 | 60 | ø48 | M5 |
| HYA-23✳ | ø40 | ø54 | 73.5 | 2 | 11 | 25.5 | 118 | 58 | ø16 | 20 | 80 | 70 | ø54 | M5 |
| HYA-31✳ | ø28 | ø39 | 49 | 2 | 5.5 | 16 | 78 | 40 | ø7 | 14.5 | 60 | 50 | ø39 | M5 |
| HYA-32✳ | ø35 | ø48 | 57.5 | 2 | 8 | 16 | 89 | 45 | ø11 | 18 | 70 | 60 | ø48 | M5 |
| HYA-33✳ | ø40 | ø54 | 73.5 | 2 | 11 | 20.5 | 113 | 58 | ø16 | 20 | 80 | 70 | ø54 | M5 |

Fluid Control Valves

# Safety Precautions

Be sure to read this section before use.
Refer to "Fluid control valves (RJ-013AA)" for general precautions

Product-specific cautions: Air operated fine pinch valve HYA Series

## Design / Selection

### ⚠CAUTION

■Pilot Air

(1)Drain Countermeasures
Compressed air contains a large amount of drainage (water, oil oxides, tar, foreign matter, etc.). This is a factor that significantly reduces the reliability of the pneumatic components. For drainage measures, improve air quality (clean air) by dehumidifying with an after cooler or dryer, removing foreign matter with a filter, using a tar removal filter, etc.

(2)No lubrication used
This valve is pre-lubricated, so no lubricator is required. However, once lubrication has been started, it must be continued so that the lubricant does not run out. Use turbine oil Class 1 ISOVG32 (#90) or equivalent for lubrication.

(3)Filter
Mount a filter with a 5 μm or less filter element.

■The actuator sliding section is greased, so the grease may spatter when air is discharged.

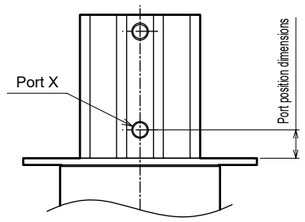
■Securely insert the tube to the prescribed position.




■The performance may not be satisfied if a tube other than the recommended ones is used.

■As compatible piping fittings on the port X side are limited, refer to the table below to select the fitting.

| Model No. | Port size | Port position dimensions | Usable fitting O.D. | Inapplicable fittings |
|---|---|---|---|---|
| HYA-11✳ | M5 | 8 | ø15 or less | - |
| HYA-12✳ | | 11 | | |
| HYA-13✳ | Rc1/8 | 8 | | GWS 10-6<br>GML8-6<br>GWL10-6 |
| HYA-21✳ | M5 | 5.5 | ø11 or less | GWS6-M5 |
| HYA-22✳ | | 8 | ø15 or less | - |
| HYA-23✳ | | 11 | | |
| HYA-31✳ | | 5.5 | ø11 or less | GWS6-M5 |
| HYA-32✳ | | 8 | ø15 or less | - |
| HYA-33✳ | | 11 | | |




■When using CKD's recommended tubes in products, the Export Trade Control Ordinance does not apply; however, the Ordinance may apply to tubes prepared by the customer depending on their material. When exporting products of this kind, please note that an application for export permission to the Minister of Economy, Trade and Industry is required. (Refer to Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism, Article 2, Paragraph 2, Item 7, (a).)

For cautions for mounting, installation, adjustment, use and maintenance, refer to the CKD components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No.→ Instruction manual for details.

MEMO





SWD / MWD
SWD-T
SPD
HYA
HYN

Direct acting 2, 3-port valve
(pinch valve for high purity fluids)

# HYN Series

- NO (closed when energized), NC (open when energized), Universal
- Working fluid: Water / pure water / chemical liquids
- Tube attachment/removal method, compatible tube: ø3 × ø1, ø5 × ø3, ø8 × ø6

RoHS

## How to Order

HYN - 3 - 12 VDC

- HYN: Model No.
- 3: ❶ Tube used
- 12 VDC: ❷ Rated voltage

### ❶ Tube used

| Code | Description |
|---|---|
| 3 | ø3 × ø1 |
| 5 | ø5 × ø3 |
| 8 | ø8 x ø6 |

### ❷ Rated voltage

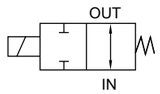
| Code | Description |
|---|---|
| AC100V | 100 VAC (50/60 Hz) |
| DC12V | 12 VDC |
| DC24V | 24 VDC |

### ● Tube model No.

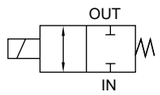
| Tube model No. | Tube size (O.D.) × (I.D.) × (Length) |
|---|---|
| HYN-3-1-5000 | ø3 × ø1 × 5 m |
| HYN-5-3-5000 | ø5 × ø3 × 5 m |
| HYN-8-6-5000 | ø8 × ø6 × 5 m |

## Circuit diagram Code

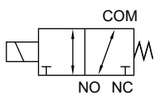
● 2-port valve
: NO (closed when energized)




● 2-port valve
: NC (open when energized)




● 3-port
: Universal




## Common specifications

| Item | HYN-3 | | HYN-5 | | HYN-8 | |
|---|---|---|---|---|---|---|
| | AC | DC | AC | DC | AC | DC |
| Working fluid | Water / pure water / chemical liquids (fluids that do not corrode wetted part materials) | | | | | |
| Working pressure MPa | 0 to 0.05 (refer to working pressure in individual specifications.) | | | | | |
| Fluid temperature °C | 5 to 50 | | | | | |
| Ambient temperature°C | 0 to 40 (no freezing) | | | | | |
| Frequency cycles/min. | 60 or less | | | | | |
| Mounting orientation | Unrestricted (✳1) | | | | | |
| **Electrical Specifications** | | | | | | |
| Rating | Continuous | Continuous | Intermittent (✳2) | Continuous | Intermittent (✳2) | Continuous |
| Rated voltage | 100 V (50/60 Hz) | 12 V 24 V | 100 V (50/60 Hz) | 12 V 24 V | 100 V (50/60 Hz) | 12 V 24 V |
| Voltage fluctuation range | ±10% | | | | | |
| Leakage current mA | 2 or less (✳3) | | | | | |

✳1: Avoid vertical mounting with the coil down to prevent fluid intrusion into the coil during abnormalities such as tube rupture.
✳2: When using intermittent rating, keep the max. continuous power ON time within 10 minutes and the DUTY ratio one half or less.
✳3: The leakage current from the control circuit must be equal to or less than the values shown in the table.
✳4: For tightening torque of the mounting screw, refer to the recommended tightening torque below. Recommended tightening torque: HYN-3, N·m 0.2 to 0.4, HYN-5, N·m 8, port 0.5 to 0.7
✳5: The performance may not be satisfied if a tube other than the recommended ones is used.
✳6: When starting and switching retention, noise is generated temporarily. Check the compatibility of the control circuit.
✳7: Solenoid valve has polarity. Connect the red lead wire to the plus (+) side.
✳8: After the solenoid valve is completely switched ON or OFF, set an interval of 0.5 seconds or more before switching it the next time.

## Individual specifications

| Item / Model No. | Compatible tube (✳1) (Silicone tube) | Working pressure (MPa) | Power consumption 12/24 VDC (w) Starting (✳2) | Power consumption 12/24 VDC (w) Holding | Max. current 100 VAC (A) Starting (✳2) | Max. current 100 VAC (A) Holding | Heat resistance Class | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| HYN-3 | ø3 × ø1 | 0 to 0.05 | 15 | 4 | 0.26 | 0.06 | Class 120 (E) | 0.18 |
| HYN-5 | ø5 × ø3 | | 30 | 8 | 0.55 | 0.14 | Class 130 (B) | 0.36 |
| HYN-8 | ø8 x ø6 | 0 to 0.02 | 30 | 8 | | | | 0.37 |

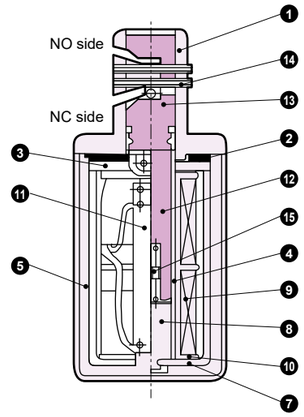
✳1: Use the above tube model No. for compatible tubes.
✳2: Time from energizing to 200 ms.

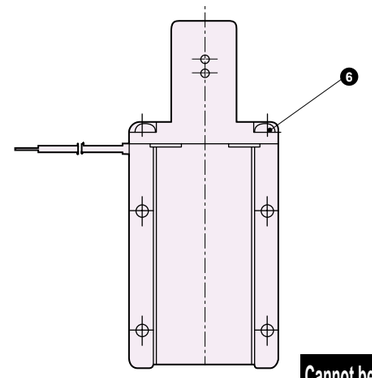




## Internal Structure Diagram / Material

● HYN



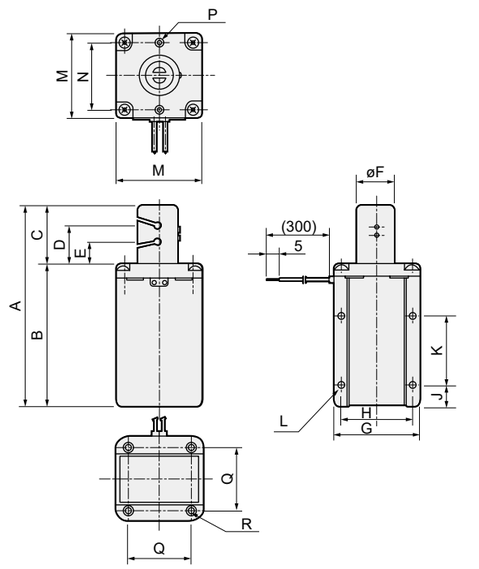




Cannot be disassembled

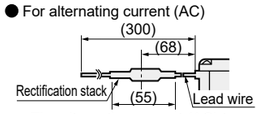
| Part No. | Part name | Material | | Part No. | Part name | Material | |
|---|---|---|---|---|---|---|---|
| 1 | Valve A | POM | Acetal resin | 9 | Coil | - | - |
| 2 | Packing | NBR | Nitrile Rubber | 10 | Bobbin | PET | Polyethylene |
| 3 | Frame B | SPC | Steel | 11 | Wiring section assembly | - | - |
| 4 | Plunger guide | C2700 | Copper | 12 | Plunger | SUS405 | Stainless steel |
| 5 | Cover | PA | Polyamide | 13 | Valve B | POM | Polyacetal resin |
| 6 | Tapping screw | SUS304 | Stainless steel | 14 | Spring pin | SUS420 | Stainless steel |
| 7 | Frame A | SPC | Steel | 15 | Return spring | SUS304 | Stainless steel |
| 8 | Stopper | SUS405 | Stainless steel | | | | |

## Dimensions

● HYN




● For alternating current (AC)




The alternating current (AC) type has a rectification stack assembled into the lead wire.

| Model No. | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYN-3 | 81.5 | 57.5 | 24 | 17 | 10 | 16 | 34 | 28 | 9 | 28 | 4×M3 depth 7 | 34 | 28 | 2×M3 depth 5 | – | – |
| HYN-5 | 98 | 65 | 33 | 23 | 13 | 25 | 43 | 36.5 | 11 | 36.5 | 4×M4 depth 7 | 43 | – | – | 36.5 | 4×M4 depth 7 |
| HYN-8 | 103 | 65 | 38 | 27 | 14 | 30 | 43 | 36.5 | 11 | 36.5 | 4×M4 depth 7 | 43 | – | – | 36.5 | 4×M4 depth 7 |

Fluid Control Valves

# Safety Precautions

Be sure to read this section before use.
Refer to "Fluid control valves (RJ-013AA)" for general precautions

Product-specific cautions: Direct acting 2, 3-port valve (fine pinch valve) HYN Series

## Design / Selection

### ⚠WARNING

■Ambient environment
Take appropriate safeguards when using this product in places where it may be exposed to water drops.

■Do not disassemble
Once disassembled, the product may not satisfy the required performance any longer even if reassembled.

### ⚠CAUTION

■Check the compatibility of product component materials and working fluids. Also, do not allow fluid to come into contact with the product body.

■Do not use for strong acids such as hydrochloric acid, hydrofluoric acid or nitric acid.

■Do not use for sodium hypochlorite (soda). (Compatible models only)

■Carefully select the solenoid valve, taking the chemical liquid characteristics into consideration. (Presence of crystal deposits when chemical liquids dry, effect on solenoid valve component materials if chemical liquids evaporate, etc.)

■When using these components for a chemical liquid having a low boiling point, such as hexane, the chemical liquid in the solenoid valve could evaporate due to heating of the coils, and cause bubbles, etc., in the solenoid valve and pipe. Use an AMD type air operated valve for chemical liquids if formation of bubbles, etc., poses a problem.

■When using the solenoid valve with negative pressure, such as for dispensing control, air may be sucked into the solenoid valve depending on the type of chemical liquid, type of connection fitting, and type of tube, etc. Check carefully before starting use.

■Use a smoothed power source with sufficient margin against power consumption for the power supply.

■For the DC type, use a high-capacity power supply. A full-wave or half wave rectified bridge is affected by ripples, so always use a stabilized power supply.

■Securely insert the tube to the prescribed position.

■Depending on the working fluid, the silicone tube may not be resistant to chemical liquids, or chemical liquids may adhere to it. Check this before use.

■Do not expose the coil to water.

■If a silicone tube is left attached for long periods, it could stick and prevent the tube from opening. If the tube sticks, replace the tube or un-stick the tube by applying pressure or by hand.

■Do not apply higher pressure than the working pressure. Otherwise the tube may dislocate.

■Working pressure and proof pressure

- Working pressure and proof pressure are as listed below. Carefully select the model with full understanding.
- Working pressure: Pressure at which the valve opens and closes normally.
- Proof pressure: Pressure which the valve withstands without any decrease in its functions or performance.
- The catalog specifications are satisfied, even when pressure exceeding the working pressure is temporarily applied, upon return to the working pressure.

For precautions regarding Installation and Adjustment, Use and Maintenance, CKD components product website (https://www.ckd.co.jp/kiki/en/) → "Model No.→ Instruction manual for details.



MEMO

SWD / MWD
SWD-T
SPD
HYA
HYN

## Related products

### 3, 5-port pilot operated valve, plug-in block manifold TVG Series

Catalog No.RJ-011AA

- Plug-in valve that pursues carbon neutrality, high reliability, and ease of use
- Durability count 120 million cycles. Air leakage is minimized even after long-term use.
- Minimizes air leaks during equipment non-operation, and helps reduce $CO_2$ emissions.
- Serial communication supported: EtherNet/IP, DeviceNet, EtherCAT, CC-Link, CC-Link IE Field Basic, CC-Link IE Field, CC-Link IE TSN, PROFINET, IO-Link. Other common terminal blocks and I/O cable connectors are also available.
- Valve width 10 mm width and 16 mm width are available.

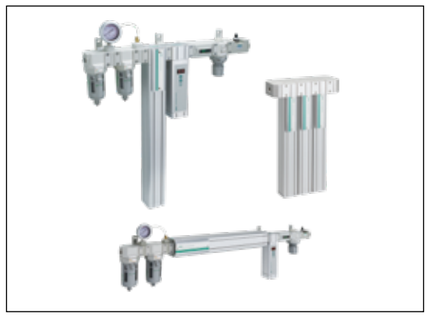
### Remote I/O RT Series

Catalog No.RJ-011AA

- Update cycle as fast as 0.5 ms
  High-speed internal communication enables high-speed device control and status monitoring. Contributes to increased speed of production tact.
- Max. of 18 connection units
  Supports a total of 512 bytes (4096 points) of I/O. The type and number of units can be selected according to the equipment specifications.
- IP65/IP67 design for tough use
  IP65/IP67 (dust-proof/jet-proof) design. Ready to be installed near the actuator. Control panel is not required, improving flexibility in layout.

### Nitrogen gas extraction unit NS Series

Catalog No. RJ-009AA



- Flexibility in design
  Installation in dead spaces.
  Built-in installation on equipment.
- Freedom of Concentration
  Wide range of nitrogen concentration from 90% to 99.9%.
  Nitrogen supply to low oxygen concentration environments for anti-oxidation and explosion-proof applications.
- Freedom of Choice
  The optimum model can be selected from a lineup of 25 models with 17 flow rates.

### Compact Flow Rate Controller, RAPIFLOW® FCM Series

Catalog No.RJ-008AA

- Applicable fluids/flow rate range
  Air, nitrogen: 0.015 to 50 L/min
  Argon: 0.015 to 50 L/min
  Oxygen, city gas, methane, propane: 0.015 to 10 L/min
  Hydrogen, helium: 0.06 to 20 L/min
- High-speed control for 0.5 seconds
  The platinum sensor chip manufactured with silicon micromachining realizes a high-speed control of 0.5 sec.
- IO-Link compatible
  IO-Link communication enables remote operation from the host as well as data collection.





### Intrinsically safe Pilot operated 3, 5-port valve 4GD/E✱✱0E✱ Series

Catalog No.RJ-012AA

- Usable in Class 1 hazardous areas (Type 1 locations) and Class 2 hazardous locations (Type 2 locations).
- The explosion-proof solenoid valve supports various flow rate variations of 4 sizes including the smallest class valve width of 10 mm.
- Can be used in hydrogen, acetylene, and city gas atmospheres.

| Model No. | 4GD/E✱✱0EJ | 4GD/E✱✱0EX | 4GD/E✱✱0EA |
|---|---|---|---|
| Certification | DEK19.0049<br>IECEx IBE 19.0008 | (CCC)2020322307000310<br>(NEPSI)GYJ19.1311X<br>20-KA4B0-0766<br>TD040272<br>IECEx IBE 19.0008 | IBExU 19ATEX1035<br>IECEx IBE 19.0008 |
| Catalog No. | CC-1445A | CC-1459A | CC-1458A |

Explosion-proof performance: Ex ib IIC T4 Gb

### Digital electro-pneumatic regulator EVD Series

Catalog No.RJ-007AA

- Superior operability and installability.
  - Equipped digital display makes control status visible at a glance
  - Parallel input type equipped as standard Compact design
  - Two-way connection possible with D-sub-connector
  - Enabling module connection
- Built-in microcomputer for higher functionality.
  Error display function Zero/span adjustment function
  Direct memory function Switch output function
- High accuracy, quick response pressure control.
- Eco-friendly design.
  Lead-free/PVC-free Materials display
  Energy saving with auto power OFF function
- IO-Link compatible.

### Needle valve with adjusting dial DVL Series

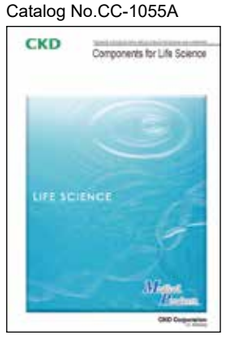
Catalog No.RJ-007AA

- Linear flow characteristics.
- Numerical control of flow rate is possible visually.
- Needle rotation speed is displayed numerically on a dial.
- Fixing of needle is easy with sliding type lock lever.
  Easy adjustment work.
- Can be used as a speed controller.
- Oil prohibited available.
- Unrestricted mounting.


## Catalog introduction

### Life Science components

Catalog No.CC-1055A




- Our Fluid control components respond to the requirements of medical care devices. Controlling every-type of fluid with high purity and high precision for culturing, collecting, dispensing, washing and waste liquid.

### Equipment for food manufacturing processes FP Series

Catalog No.CC-1271A


- Satisfies a variety of needs for food processing. Support for the entire food processing process based on advanced engineering technologies in packaging machines, air pressure/liquid control, and motors. An extensive lineup of everything from air filters to actuators allows for secure and safe use in food processing.

FP Food Process™ This logo represents our commitment to support food manufacturing processes with safe CKD products.

# WORLD-NETWORK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