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

+

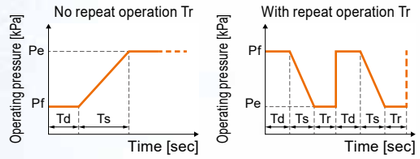
Weir Diaphragm Valve
SWD-C Series

Preset function

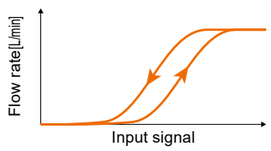
Register any parameters in the preset memory. (Max. 6 patterns). Recall using an external signal.

[Parameters that can be entered]

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

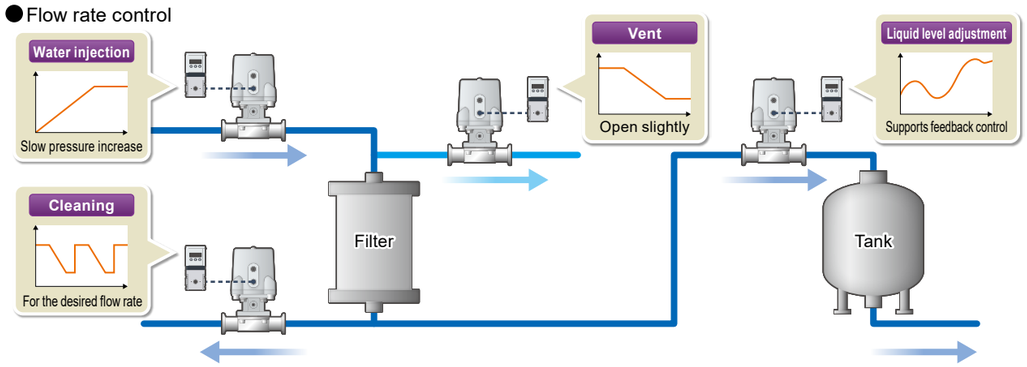


Supports proportional flow rate control with analog input signals



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)				●

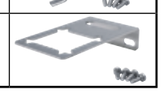
❹ Electro-pneumatic regulator input specifications

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

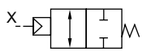
Code	Description
1	NC (normally closed)
2	NO (normally open)

❸ Port size

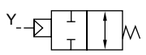
Code	Description		Model No. SWD1	SWD2	SWD3	SWD4
8	Clamp fitting	8 A	●			
10		10 A	●			
15		15 A		●		
25		25 A (1S)			●	
40		40 A (1.5S)				●

Circuit diagram symbol

● NC (normally closed)



● NO (normally open)

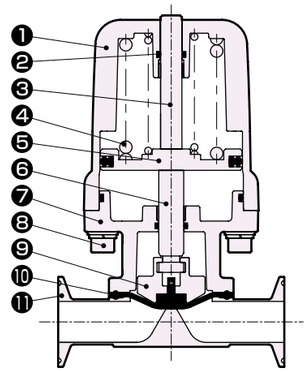


Specifications

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).

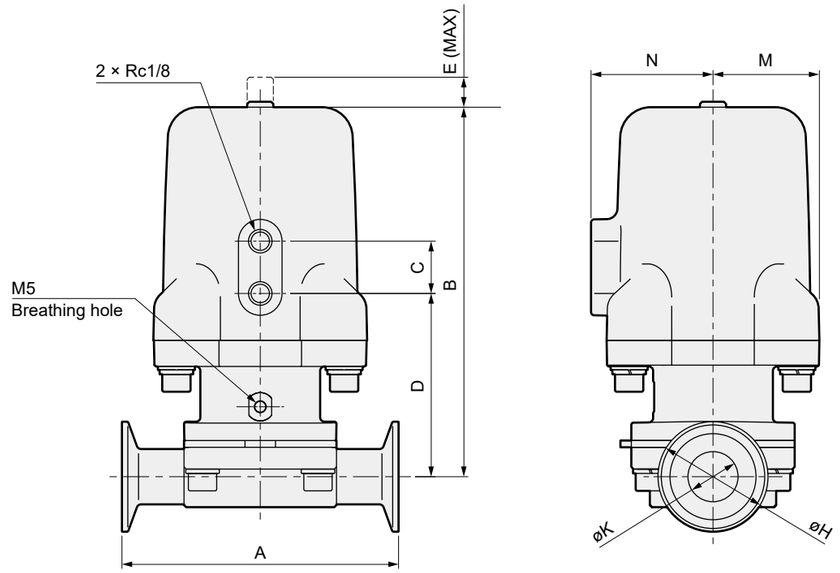
Internal Structure Diagram / Material



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).

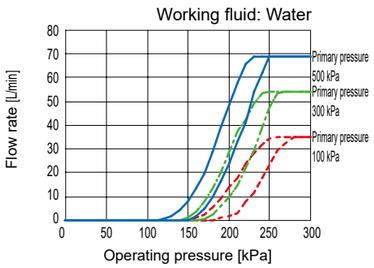
Dimensions



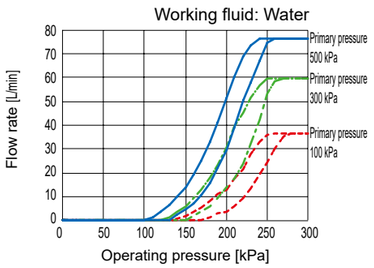
Model No.	A	B	C	D	E	H	K	M	N	Weight [kg] NC	Weight [kg] NO
SWD1✳-8-FC	90	99.5	22	60	7	34	10.5	32	40	0.6	
SWD1✳-10-FC	90	101	22	61.5	7	34	14	32	40	0.6	
SWD2✳-15-FC	108	130	22	73	8.5	34	17.5	38	46.5	1.2	
SWD3✳-25-FC	127	170	24	84	12.5	50.5	23	49	56	2.7	2.3
SWD4✳-40-FC	159	212	28	97	16.5	50.5	35.7	57	66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

Flow Characteristics

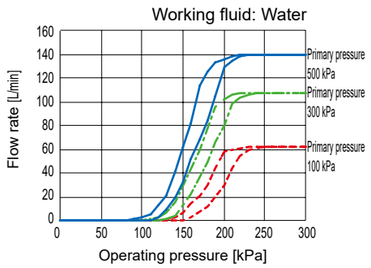
●SWD11-8-FC



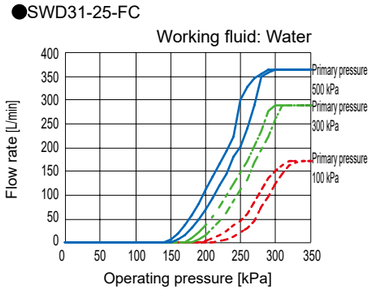
●SWD11-10-FC



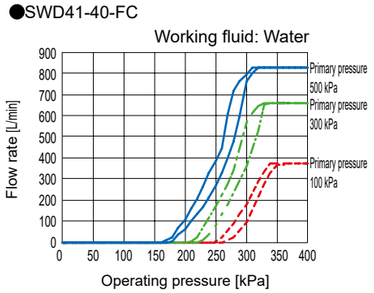
●SWD21-15-FC



●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

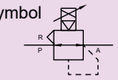
MEMO

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

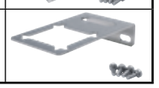
❷ Input signal

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.

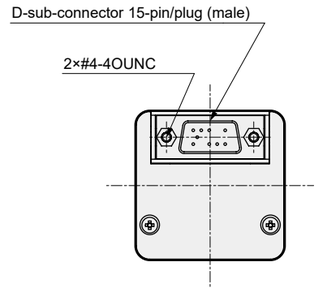
✳5: The characteristics where working pressure is maximum and step amount is
- 50% F.S. → 100% F.S.
- 50% F.S. → 60% F.S.
- 50% F.S. → 40% F.S.

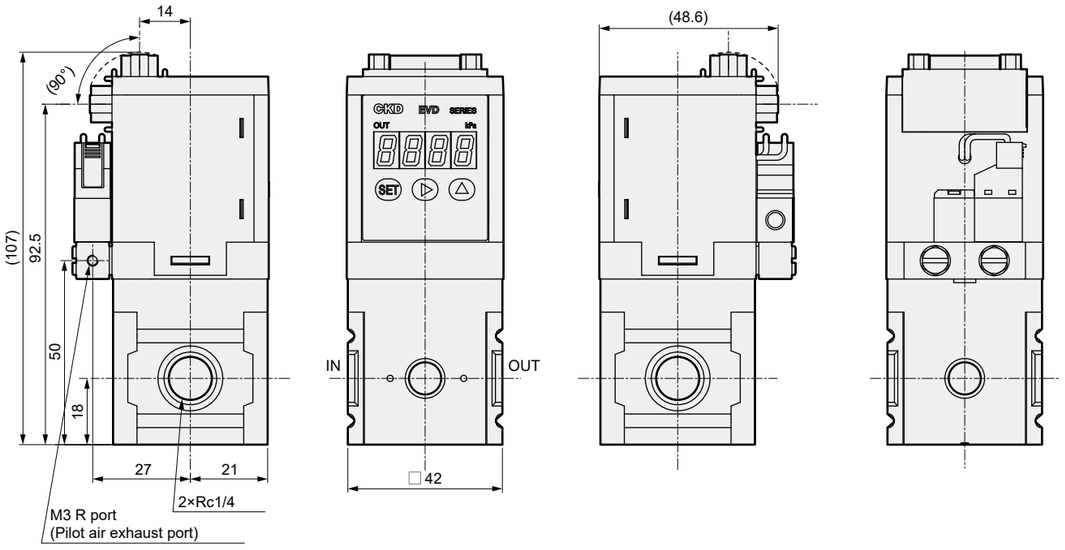
✳Refer to the SM-50829 instruction manual for safety precautions, wiring method, and operation method.

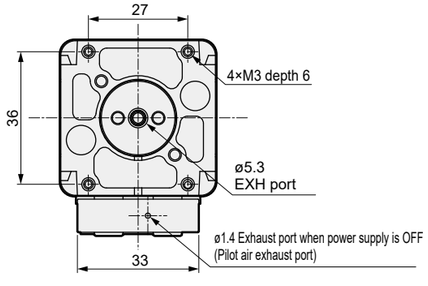
✳Refer to EVD-1500 in "Air Preparation Unit/Auxiliary Components" (RJ-007AA) for input/output characteristics, analog output, flow characteristics, and relief characteristics.

SWD / MWD
SWD-T
SPD
HYA
HYN

Dimensions

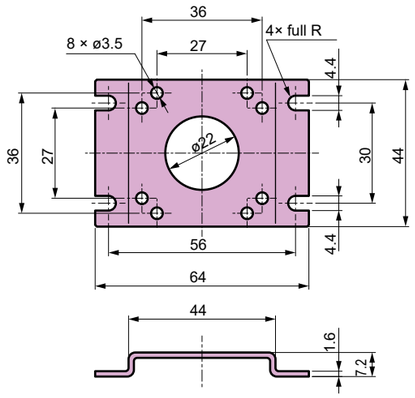






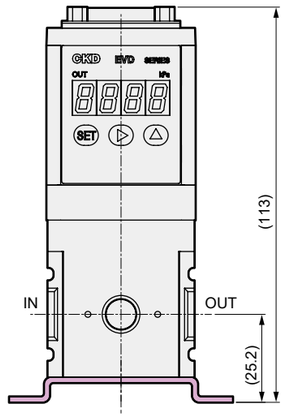
Optional dimensions

● B-bracket (-B1): Floor mounted

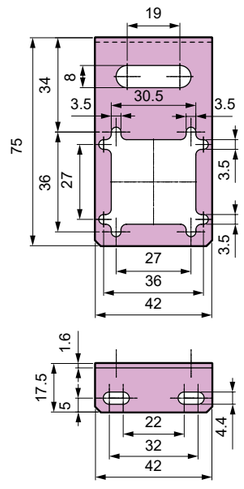


Material: SPCC
Ni plated
Weight: 32 g

● B-bracket assembly

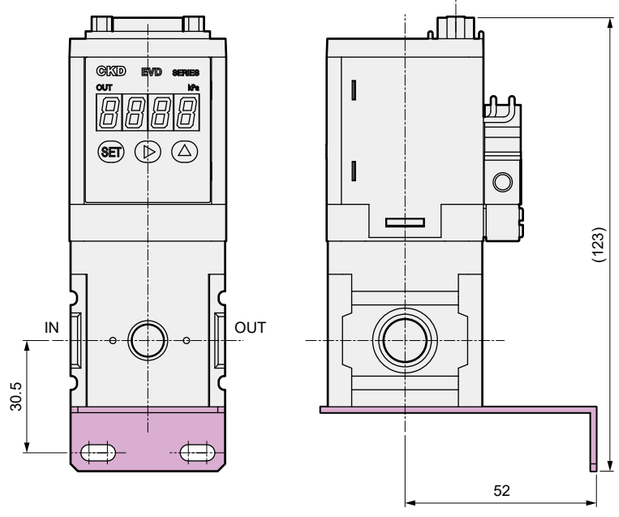


● L-bracket (-L11): Wall mounted



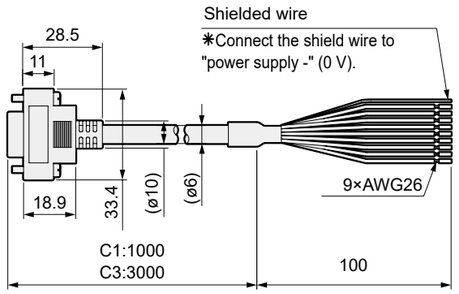
Material: SPCC
Ni plated
Weight: 31 g

● L-bracket assembly



Optional dimensions

● Cable dimensions (-C1, C3)



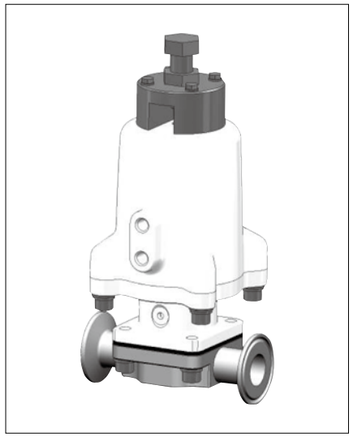
Wire material	Tinned annealed copper wire
Conductor O.D.	Approx. 0.48
Outer diameter of insulator	0.88

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).

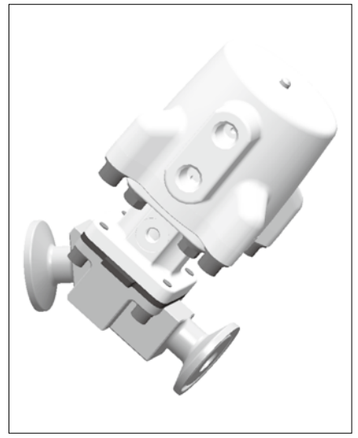
Special-order product

With opening adjustment mechanism

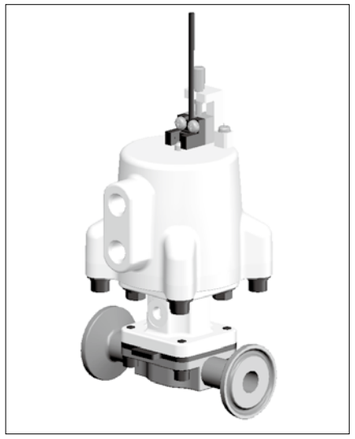


With open/close switch

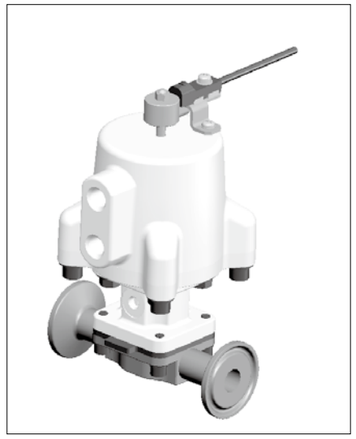
Specially shaped body



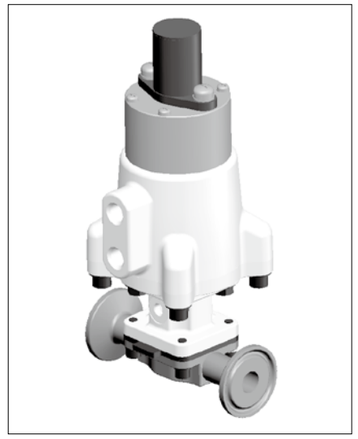
With photo sensor for detecting valve opening



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

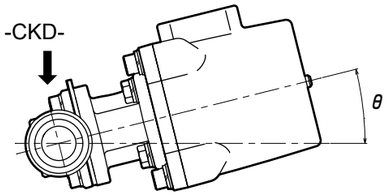


Fig. 1 Valve tilt angle

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.