



*Hygienic*  
**DH Type  
Diaphragm  
Valves**

High reliable  
products derived  
from advanced  
technologies



## ► Features of DH type diaphragm valves

- Two types of cylinders are available: an ADC (aluminum die cast) lightweight type and a type made of SUS304 with excellent corrosion resistance. Both types have been made compact.
  - \* The outside of ADC cylinder is coated with acrylic urethane paint (pale gray).
  - \* For 4s, only SUS cylinder is used.
- The stem part is outside of liquid contact area, so it secures aseptic condition.
- The design based on the properties of fluororesin maintains sealing strength for a long time.
 

(The in-house standard durability test shows that durability and withstand performance is retained even after operations by 100,000 times or more.)
- Minimizing dead space enhances the CIP effect and provides a structure that prevents contamination from occurring, so it can be used for aseptic lines related to foodstuffs.
- All inner surfaces of the body have been machined and are structured in a geometrical form to prevent liquid pools from being generated.
- When mounting these valves on horizontal pipes, mounting them with the TOP mark facing upward and the body inclined plane facing horizontally prevents liquid pools from being generated and enables easy maintenance.
- Using the metal touch structure for assembling the diaphragm seat enables assembly in stable conditions.
- Forged body enables to achieves favorably sanitary conditions without porosity.

We pursued increased durability of diaphragm valves with excellent aseptic properties and reduced liquid pooling to the utmost limits.

### Material

Body	SUS-316L Forged product (4s: Round bar material)
Other main exterior parts	SUS-304
Cylinder	ADC12 / SUS-304 (Only SUS304 for 4s)

### Production standard

Surface finish	Body internal: #320 to 400 buff polishing + electrolytic polishing finish (0.2Ra) Body external: Electrolytic polishing finish Other parts: Beads shot blast / Pickling finish ADC external: Paint
Dimensional tolerance	Tolerable face to face dimension $\pm 1.5$ Angular tolerance 0.5°
Main body max pressure	1MPa(at water pressure, normal temperature)
Valve seat max pressure	0.6MPa(at water pressure, normal temperature)
Usable temperature range (Temperature of passage fluid)	0~135°C
Operation air pressure	Automatic normally closed: 0.4 to 0.7MPa Automatic normally open: 0.4 to 0.5MPa Automatic double-action: 0.3 to 0.4MPa
Operation air connection hole size	Rc 1/8

### ► Valve selection and ordering

Please use valves according to respective valve specifications.  
If an application exceeds the range of specifications, high safety design is required. We would be pleased to offer consultation if you provide us with information.

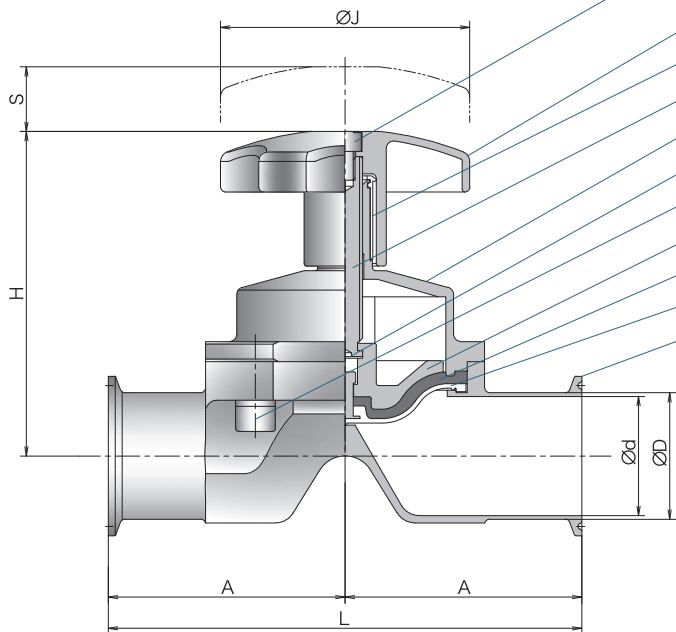
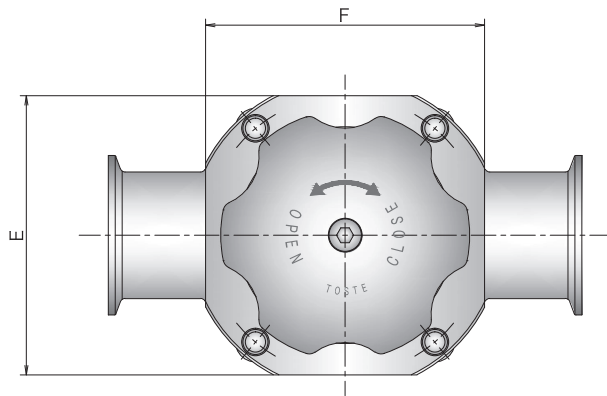
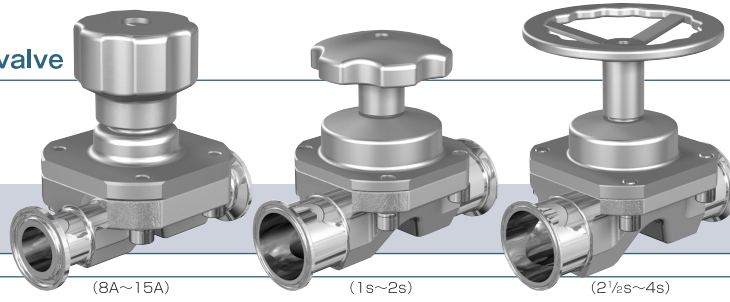
### ► Ordering

If there is any request of surface finish, please specify both internal and external surface.

DHS type manual diaphragm valve

# DHS type

● Manual diaphragm valve



- Hexagonal socket head cap screw (SUS)
- Parallel diaphragm handle (SUS)
- Indicator (silicone rubber)
- Diaphragm plug rod (ABB)
- Parallel diaphragm body end (SUS304)
- Diaphragm bearing (SUS304 + TFE)
- Hexagonal socket head cap screw (SUS)
- Parallel diaphragm retainer (SUS304)
- Backup rubber (silicone rubber containing nylon cloth/EPDM)
- Diaphragm seat (PTFE)
- Parallel diaphragm body (SUS316L)

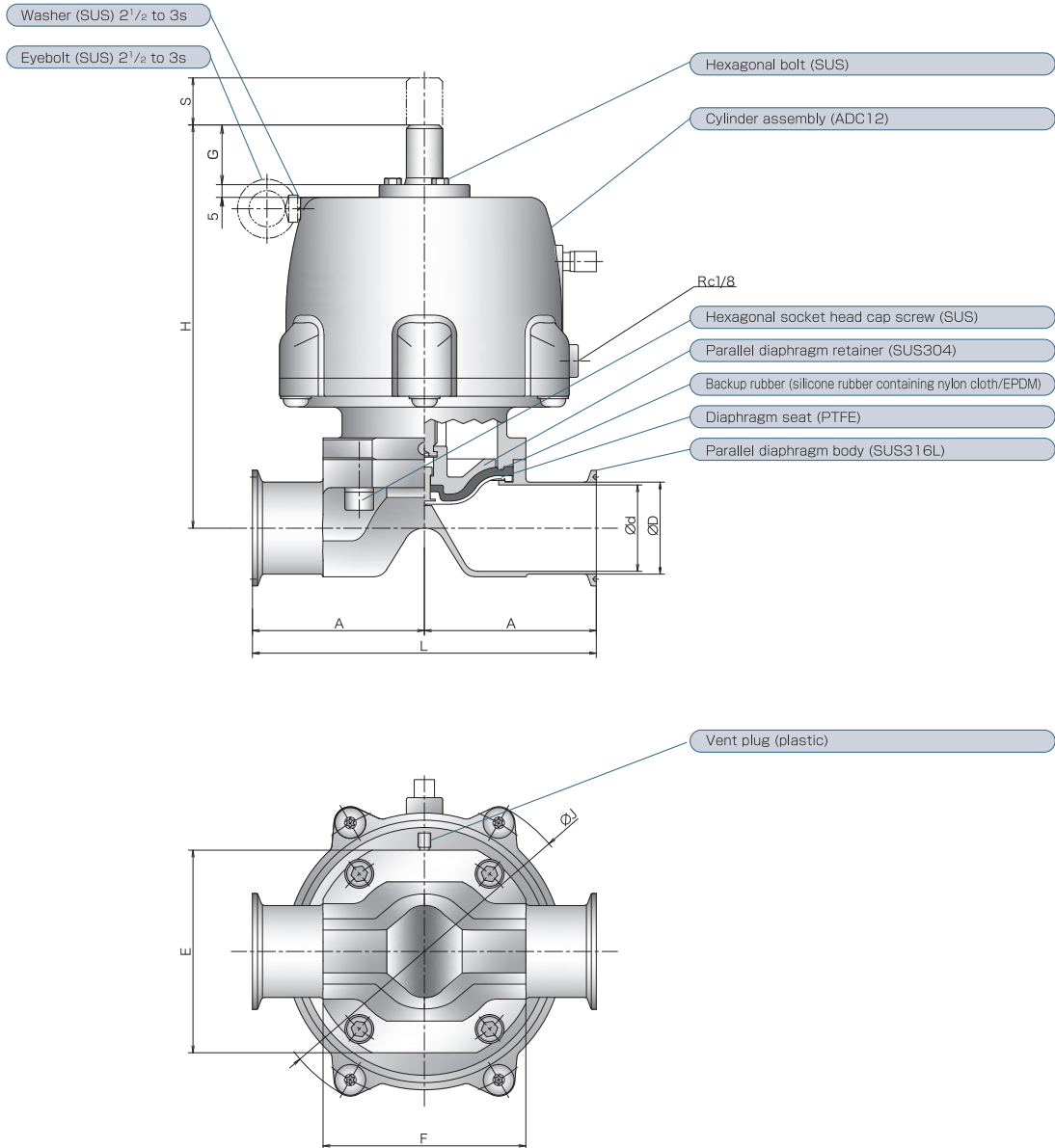
SIZE	ϕ		C: Surface-to-surface dimension of clamp joint		W: Surface-to-surface dimension of welded joint		T: Surface-to-surface dimension of sanitary flange joint		H	E	F	ϕJ	Stroke S	Number of handle rotations (fully-closed to fully-open) N	Weight kg
	d	D	A	L	A	L	A	L							
8A	10.5	13.8	45	90	45	90	—	—	76	50	50	40	7	2.3	0.7
10A	14.0	17.3	45	90	45	90	—	—	77.7	50	50	40	7	2.3	0.8
15A	18.4	21.7	54	108	54	108	—	—	82.7	68	68	50	7	2.3	1.3
1S	23.0	25.4	63.5	127	63.5	127	86	172	88.9	77	77	70	9	3.0	1.5
1 1/2S	35.7	38.1	79.5	159	79.5	159	98.5	197	116.9	102	102	100	16	5.3	2.6
2S	47.8	50.8	95	190	95	190	103.5	207	131.3	112	112	100	26	8.7	3.3
2 1/2S	59.5	63.5	108	216	108	216	117.5	235	192.2	140	140	200	32	10.7	7.3
3S	72.3	76.3	127	254	127	254	130	260	199.6	162	162	200	38	12.7	9.9
4S	97.6	101.6	132.5	265	132.5	265	135.5	271	220.5	ϕ210	174	200	43	14.3	18.0

DHC type diaphragm valve (ADC cylinder type)

# DHC type



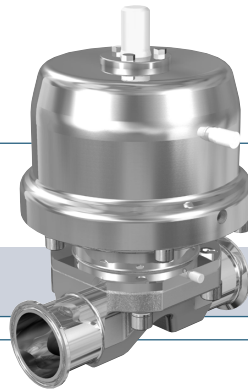
● Automatic diaphragm valve (ADC cylinder type)



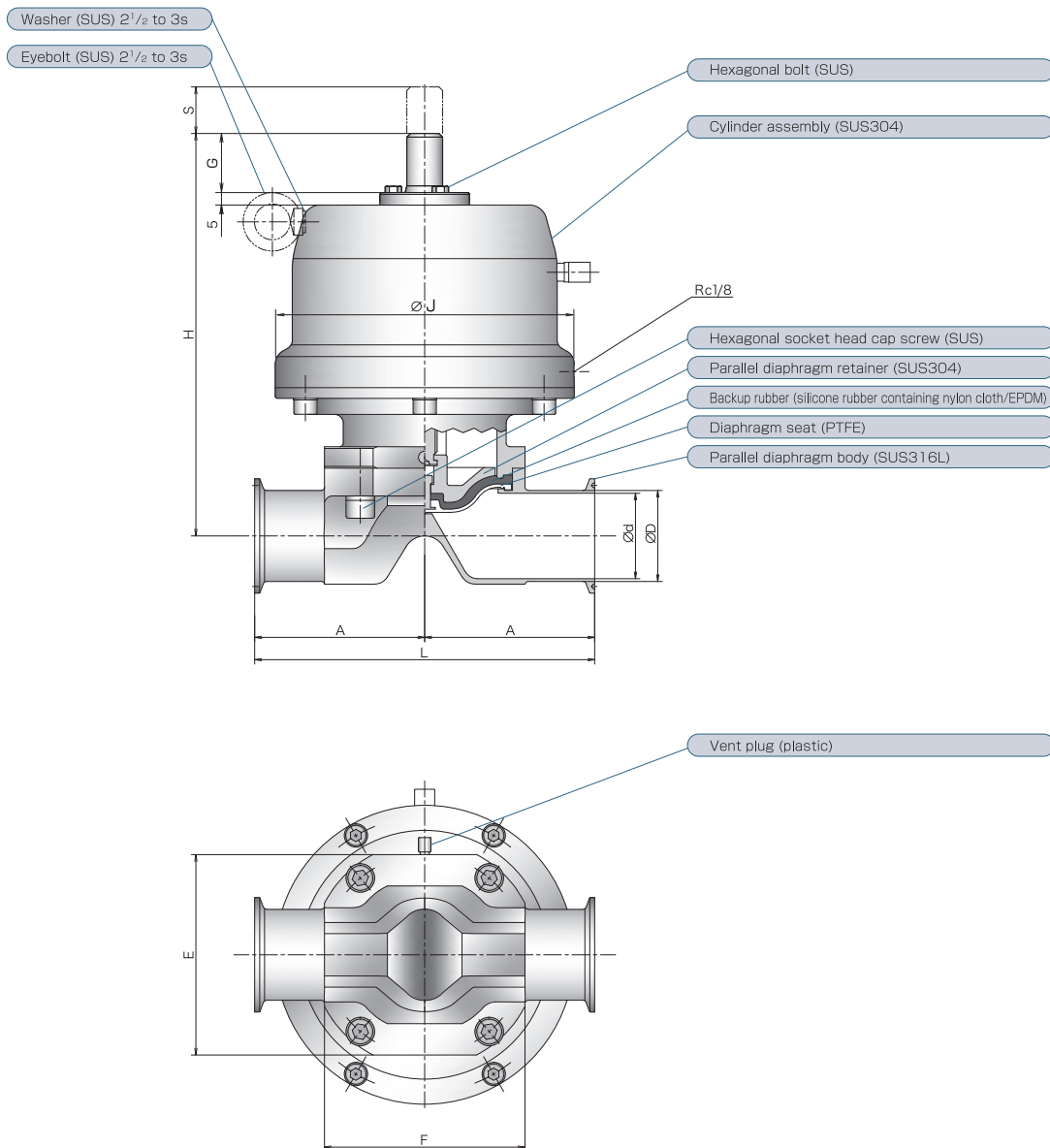
SIZE	ϕ		C: Surface-to-surface dimension of clamp joint		W: Surface-to-surface dimension of welded joint		T: Surface-to-surface dimension of sanitary flange joint		H	E	F	G	ϕJ	Stroke	Cylinder capacity	Weight
	d	D	A	L	A	L	A	L						S	I	kg
8A	10.5	13.8	45	90	45	90	—	—	138.9	50	50	25	94	7	0.1	1.3
10A	14.0	17.3	45	90	45	90	—	—	140.6	50	50	25	94	7	0.1	1.3
15A	18.4	21.7	54	108	54	108	—	—	152.7	68	68	25	108	7	0.2	1.8
1S	23.0	25.4	63.5	127	63.5	127	86	172	148	77	77	25	135	9	0.3	2.7
1½S	35.7	38.1	79.5	159	79.5	159	98.5	197	181.9	102	102	25	150	16	0.5	4.7
2S	47.8	50.8	95	190	95	190	103.5	207	222.9	112	112	33	182	26	0.8	7.3
2½S	59.5	63.5	108	216	108	216	117.5	235	261.3	140	140	33	212	32	1.3	13.3
3S	72.3	76.3	127	254	127	254	130	260	279.9	162	162	33	212	38	1.5	15.4

DHC type diaphragm valve (SUS cylinder type)

# DHC type



- Automatic diaphragm valve (SUS cylinder type)



SIZE	ϕ		C: Surface-to-surface dimension of clamp joint		W: Surface-to-surface dimension of welded joint		T: Surface-to-surface dimension of sanitary flange joint		H	E	F	G	ϕJ	Stroke	Cylinder capacity	Weight
	d	D	A	L	A	L	A	L						S	I	
8A	10.5	13.8	45	90	45	90	—	—	138.9	50	50	25	82	7	0.1	2.0
10A	14.0	17.3	45	90	45	90	—	—	140.6	50	50	25	82	7	0.1	2.0
15A	18.4	21.7	54	108	54	108	—	—	152.7	68	68	25	94	7	0.2	2.8
1S	23.0	25.4	63.5	127	63.5	127	86	172	148	77	77	25	122	9	0.3	4.0
1 1/2S	35.7	38.1	79.5	159	79.5	159	98.5	197	181.9	102	102	25	137	16	0.5	6.4
2S	47.8	50.8	95	190	95	190	103.5	207	222.9	112	112	33	167	26	0.8	10.4
2 1/2S	59.5	63.5	108	216	108	216	117.5	235	251.3	140	140	33	197	32	1.3	17.0
3S	72.3	76.3	127	254	127	254	130	260	273.9	162	162	33	197	38	1.5	20.4
4S	97.6	101.6	132.5	265	132.5	265	135.5	271	342.5	ϕ210	174	33	237	43	1.8	37.0

Highly-durable automatic diaphragm valve

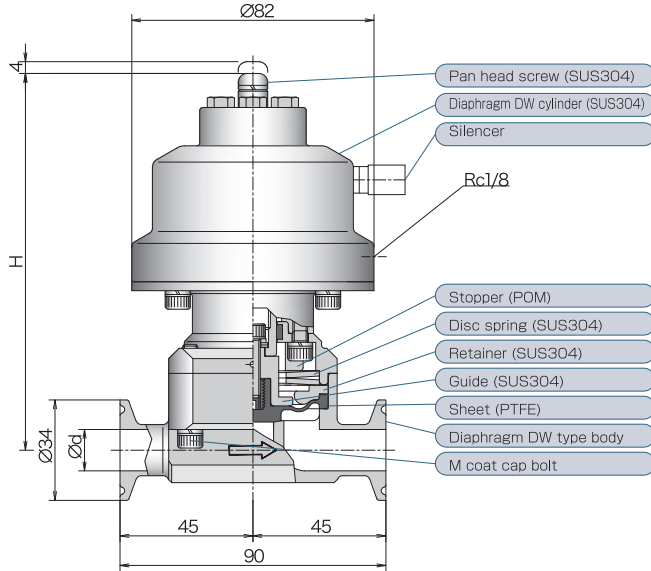
Option

# DW type

- On-off valve

We achieved not only the high durability (100 times or higher than our conventional products) but also high Cv value.

· Basic specifications: Withstand pressure: 0.6MPa; Heat resistance: 135°C

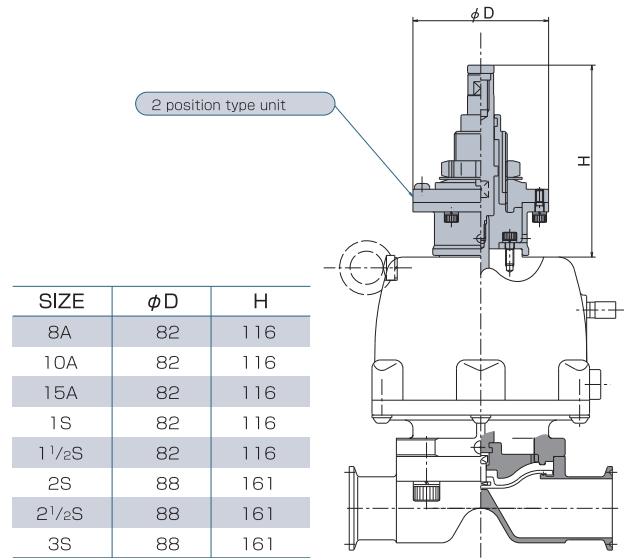


SIZE	H	Ød	Cv value
6A(8A)	126	8(10.5)*1	1.1
8A	127.5	10.5	1.6
10A	127.5	14.0	3.2
15A	129.5	18.4	4.8

\*1 Joint part of 6A (8A) is 8A.

## 2-position type unit

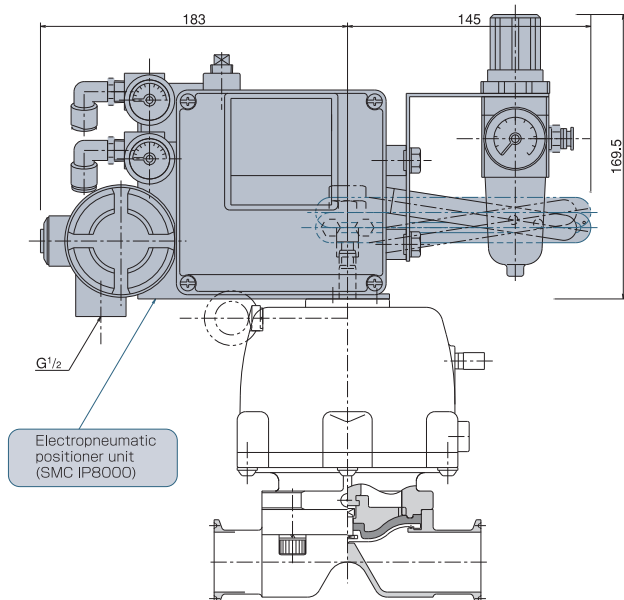
- Option symbol **W** When adjusting (throttling) the valve opening, attach this unit. The valve opening can be set arbitrarily between 0 to 100%.



SIZE	ØD	H
8A	82	116
10A	82	116
15A	82	116
1S	82	116
1½S	82	116
2S	88	161
2½S	88	161
3S	88	161

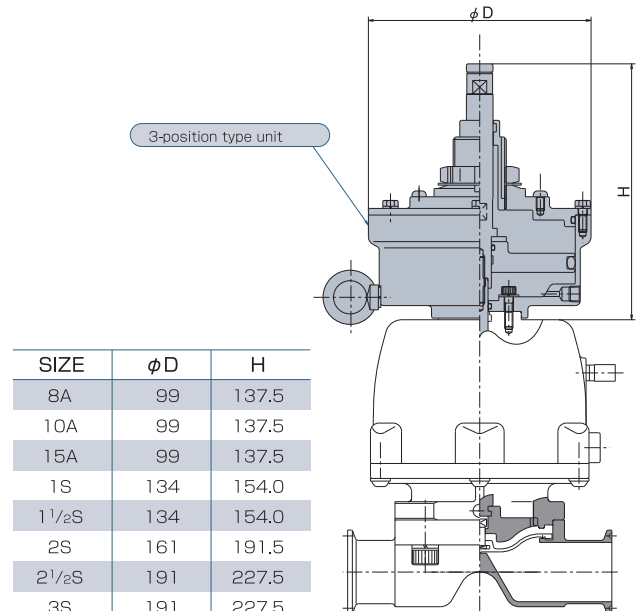
## Electropneumatic positioner unit

- Option symbol **P** Valve with electropneumatic positioner This valve can control pressure, flow rate, temperature, etc. \* Set operational air original pressure to 0.5MPa to 0.6MPa.



## 3-position type unit

- Option symbol **T** Attaching this unit enables control at 3 positions: fully closed, fully open, and arbitrary intermediate position. For example, it is possible to perform 3-stage flow rate control by flowing product liquid with the valve fully closed and half-open and flowing CIP liquid with the valve fully open. (Fully open - Half open - Fully closed) \* Normally-closed only.



SIZE	ØD	H
8A	99	137.5
10A	99	137.5
15A	99	137.5
1S	134	154.0
1½S	134	154.0
2S	161	191.5
2½S	191	227.5
3S	191	227.5

Option

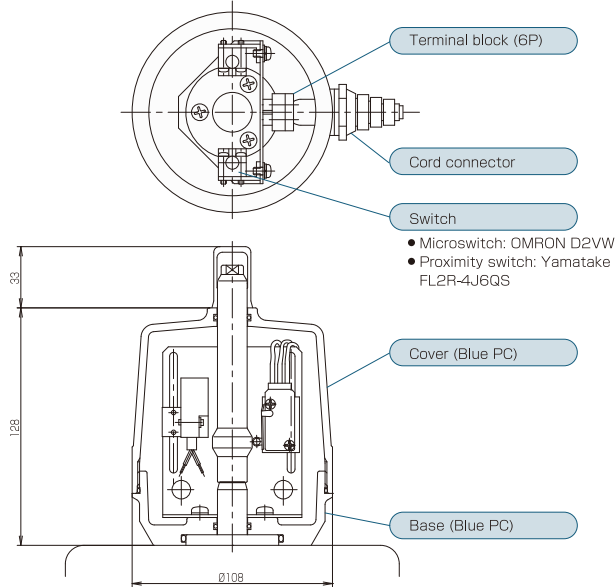
► Switch-incorporated feedback unit

- C2 type Microswitch type
- A2 type Proximity switch type

A polycarbonate-resin-based injection-molded limit base and a watertight microswitch are incorporated in the cover, which enhances the insulation withstand characteristics. Furthermore, a terminal block is provided to simplify instrumentation. Perform adjustment by loosening the limit switch attachment screw and moving it up and down.

Mechanical specifications

- Proximity switch 2-wire type DC24V 100mA
- Limit switch NC, NO, 250V 4A
- Cord connector PF 1/2
- Terminal block 6P



- Microswitch: OMRON D2VW
- Proximity switch: Yamatake FL2R-4J6QS

Application

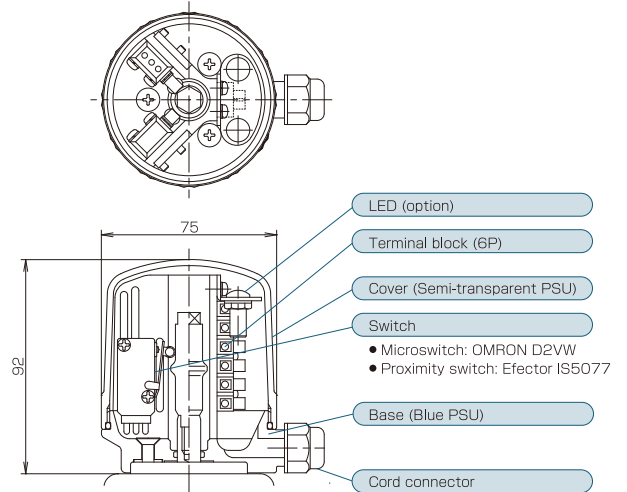
- 8A - 3s: Equipped with 1 or 2 microswitches
- 8A - 3s: Equipped with 1 or 2 proximity switches

- CF type Microswitch type
- AF type Proximity switch type

A microswitch/proximity switch is incorporated in the compact case formed by rigid polysulfone resin, which enhances the waterproof property. The cover is transparent, allowing the inside conditions to be viewed.

Mechanical specifications

- Proximity switch 2-wire type DC24V 100mA
- Microswitch NC, NO, 250V 4A
- Cord connector  $\varnothing 4.5 \sim \varnothing 8.0$
- Terminal block 6P

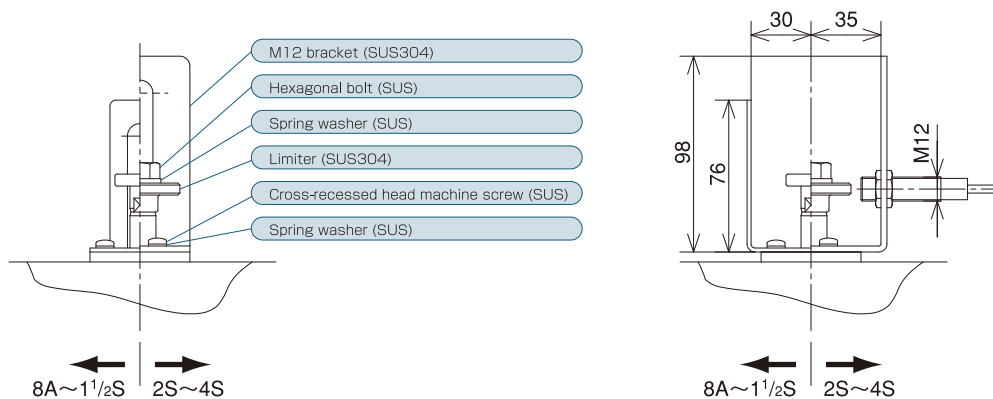


- Microswitch: OMRON D2VW
- Proximity switch: Efcator IS5077

Application

- 8A - 1 1/2s: Equipped with 1 or 2 microswitches
- 8A - 1 1/2s: Equipped with 1 or 2 proximity switches
- 2s - 4s: Equipped with 1 or 2 proximity switch (Excluding 4s)

Proximity switch assembly (stay attachment type)

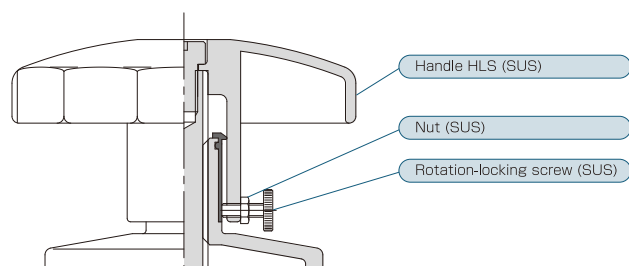


8A~1 1/2S    2S~4S

8A~1 1/2S    2S~4S

► Handle-lock mechanism

Prevent the handle loosening by the rotation-locking screw When using the valve in the situation with piping vibration or at a position on the way of the stroke.





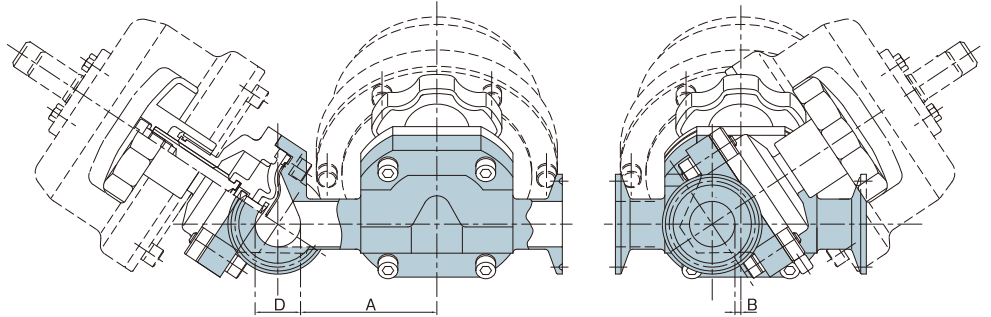
Option

Horizontal piping - horizontal branch

● Main body classification symbol

**3A [3B]**

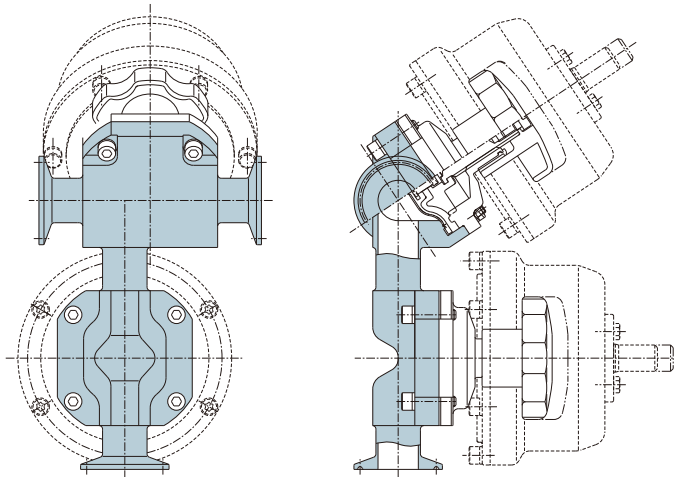
A, B : dead leg  $\leq 3D$



Horizontal piping - vertical branch

● Main body classification symbol

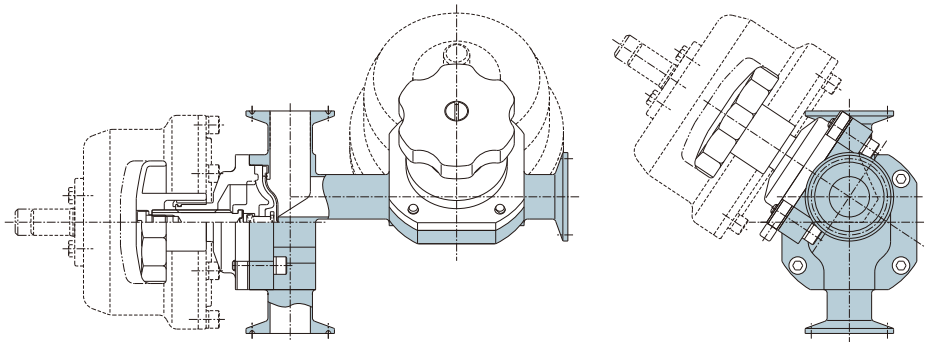
**3C [3D]**



Vertical piping - horizontal branch

● Main body classification symbol

**3E [3F]**

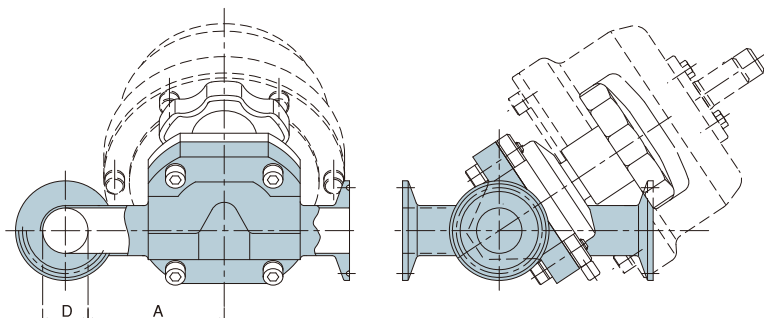


Horizontal piping - horizontal branch

● Main body classification symbol

**3G [3H]**

A : dead leg  $\leq 3D$



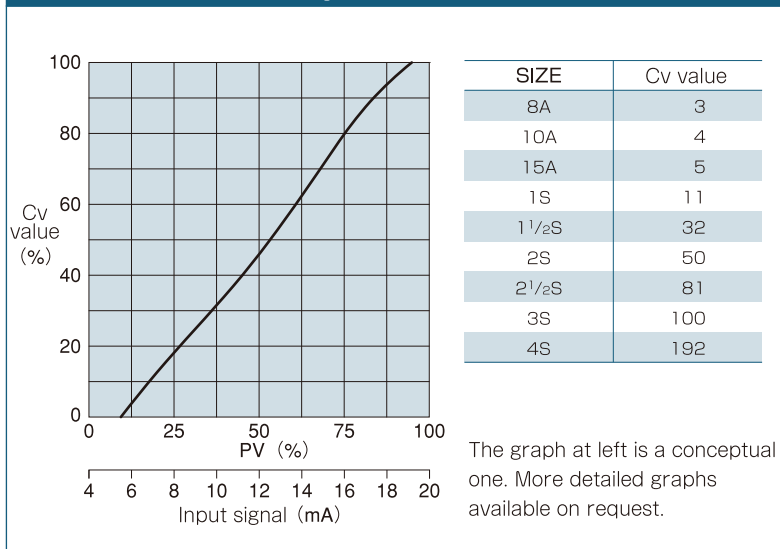
※ 1 : Main body code in [ ] show opposite structure of these above drawings.

Technical material(DH type)

► Specifications

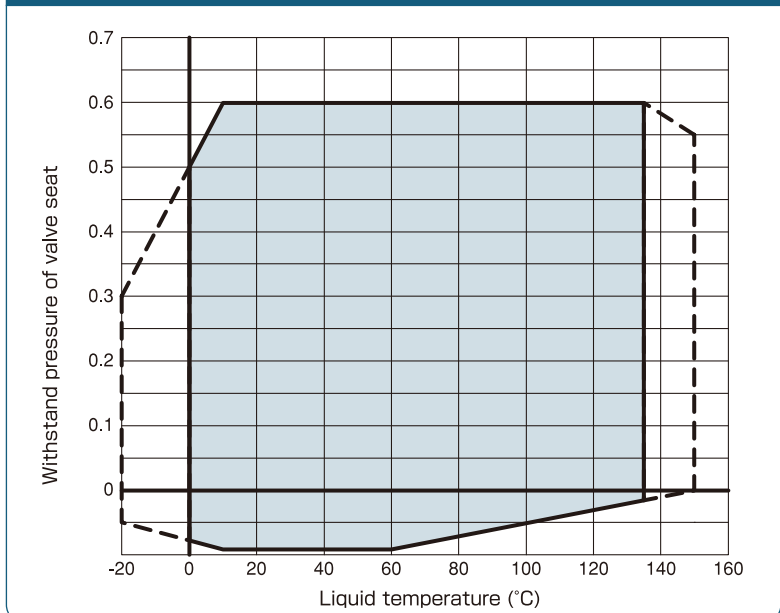
Material	Liquid contact area	Body	SUS316L Forged product (4s: Round bar material)	
		Diaphragm seat	PTFE SUS304 Fluororesin with SUS304 metal core	
	Main components other than wetted area	Bonnet part	SUS304 manual (body end), automatic (bracket):ADC12/SUS304	
		Operation part	SUS304 manual (handle), ADC12/SUS304 automatic (cylinder) SU304	
		Backup rubber	Silicone rubber containing nylon cloth	Option EPDM(containig mylon cloth)
Heat resistance	Liquid temperature	Standard : 0 to 135°C (According to the temperature-pressure rating below)		
Max pressure	Max pressure of main body	10Torr~1MPa		
	Max pressure of valve seat	Standard : 0.6MPa (According to the temperature-pressure rating below)		
Cylinder operation air pressure		Automatic normally-closed : 0.4~0.7MPa Automatic normally-open : 0.4~0.5MPa Automatic double-action : 0.3~0.4MPa		
Cylinder operation air connection		Rc1/8		
Cylinder exhausting part		Standard: With 1/8 silencer		
Durability of diaphragm seat (reference)		In-house standard durability: 100,000 times or more (RT: Fresh water up to 150°C steam, continuous operation durability times at 0.2 to 0.5MPa)		

► Cv value table by size



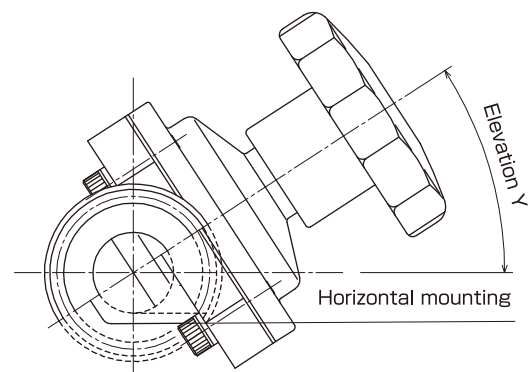
When flow rate pressure pulsation is observed, hunting may occur.

► Withstand pressure (temperature - pressure rating)



► Mounting angle to horizontal pipe

When mounting these valves on horizontal pipes, mounting them with the TOP mark facing upward or the body inclined plane facing horizontally prevents liquid pools from being generated and enables easy maintenance.



SIZE	Elevation Y°
8A	31°
10A	19°
15A	24°
1S	33°
1 1/2S	33°
2S	27°
2 1/2S	27°
3S	23°
4S	17°

DH.DW type diaphragm valve type symbol table

Name	JIS material classification	Finish classification	Pipe end classification	Size classification	Product name/type						
Symbol	<b>3 1 6 L</b>	<b>E P</b>	<b>C</b>								
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

**① Material classification (main body/packing)**

Category	Symbol	Material
Standard	<b>316L</b>	Body :SUS316L
		Diaphragm :PTFE
		Backup rubber :Silicone rubber (containing nylon cloth)
Standard	<b>316L-E</b>	Body :SUS316L
		Diaphragm :PTFE
		Backup rubber :EPDM (containing nylon cloth)
Special	—	—

**② Finish classification (Body)**

Category	Symbol	Finish	
		Internal finish	External finish
Standard	<b>EP</b>	Electrolytic polishing	Electrolytic polishing

**③ Pipe end classification**

Category	Symbol	Details
Standard	<b>C</b>	ISO ferrule
	<b>W</b>	Weld
Option	<b>T</b>	Sanitary flange

**④ Size classification**

Symbol	Details
<b>01</b>	Inner diameter 8.0 6A *1
<b>02</b>	Inner diameter 10.5 8A
<b>03</b>	Inner diameter 14.0 10A
<b>04</b>	Inner diameter 18.4 15A
<b>10</b>	Inner diameter 23.0 1S
<b>15</b>	Inner diameter 35.7 1.5S
<b>20</b>	Inner diameter 47.8 2S
<b>25</b>	Inner diameter 59.5 2.5S
<b>30</b>	Inner diameter 72.7 3S
<b>40</b>	Inner diameter 97.6 4S

**⑤ Type Classification**

Symbol	Details
<b>DH</b>	Standard diaphragm valve
<b>DW</b>	Highly durable automatic diaphragm valve

**⑥ Drive classification**

Symbol	Details
<b>C</b>	Automatic normally-closed 0.4 to 0.7MPa specifications
<b>O</b>	Automatic normally-open 0.4 to 0.5MPa specifications
<b>W</b>	Automatic double-action 0.3 to 0.4MPa specifications
<b>S</b>	Manual handle type

**⑦ Main body classification**

Category	Symbol	Material
Standard	<b>2S</b>	2 parallel same-diameter nozzles
	<b>2A</b>	DW type only
Option	<b>3A</b>	Tandem valve Refer to page 8
	<b>3B</b>	
	<b>3C</b>	
	<b>3D</b>	
	<b>3E</b>	
	<b>3F</b>	
Special	<b>3G</b>	Use point valve
	<b>3H</b>	Refer to page 8
Special	<b>X</b>	—

\*1: The size symbol 01 is applicable to only DW.  
(Clamp ferrule size is 8A)

**⑧ Cylinder classification (automatic)**

Symbol		Details
ADC	SUS	
<b>06A</b>	<b>06R</b>	For 8A,10A φ63
<b>08A</b>	<b>08R</b>	For 15A φ80
<b>10A</b>	<b>10R</b>	For 1s φ100
<b>11A</b>	<b>11R</b>	For 1.5s φ110
<b>14A</b>	<b>14R</b>	For 2s φ140
<b>17A</b>	<b>17R</b>	For 2.5s,3s φ170
<b>—</b>	<b>21R</b>	For 4s φ210

**⑨ Feedback switches classification**

Category	Symbol	Type/manufacturer	Usable power voltage range	Operation style	Type or attachment
Standard	<b>D</b>	No feedback switch	—	—	—
	<b>C</b>	D2VW-5L2A-1M Limit switch made by OMRON	AC,DC250V以下	NO,NC	With cover
	<b>A</b>	FL2R-4J6SD Proximity switch made by Azbil	DC10~30V	NO	With cover
	<b>J</b>	IFC2002-ARKG/UP Proximity switch made by Efector	DC10~36V	NO	With M12 bracket
Option	<b>Z</b>	Non-standard specification proximity switch and/or supplied by customer.			With cover
	<b>P</b>				With M12 bracket
	<b>B</b>	In case of Asi, uni-wire system, and solenoid valve : For the detail, please refer to catalog No.18 "Valve control head".			

Note) In case of model change by switch manufacturer, the above parts may be changed to substitution or equivalent parts. Please select a standard model as much as possible.

**⑩ Quantity of feedback switches used**

Symbol	Details
<b>0</b>	No switch
<b>A</b>	With switch mounting bracket
<b>B</b>	One on closed side
<b>C</b>	Two on open and closed side
<b>D</b>	One on open side
<b>X</b>	Other

**⑪ Option**

Symbol	Details
<b>00</b>	No switch
<b>0S</b>	With speed controller
<b>0W</b>	2-position type
<b>0T</b>	3-position type (NC)
<b>0P</b>	With electropneumatic positioner (mechanical type)
<b>AK</b>	With an Asi

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