

DIAPHRAGM VALVES

● Diaphragm Valves
BNW Series, BSW Series, LPS Series



● Angle Seat Valves BY Series
● Single-Use Pinch Valves BPV Series

for Bio Pharma / Food and Beverage / Fine Chemical Process



We incorporate customer suggestions in all areas.





DIAPHRAGM VALVES

Get your life science products from  **Fujikin**.

▶ Diaphragm Valves

These are simple, high-performance valves that are used widely in manufacturing processes for life science products such as pharmaceuticals, beverages, and cosmetics that require complete sealing from the outside as well as manufacturing processes for electronic materials, functional materials, secondary batteries, and other environmental energy materials.

▶ Pinch valves

These are valves for single-use systems introduced into manufacturing processes for biopharmaceuticals and vaccines.




▶ Angle seat valves



These are valves that are ideal for steam and drug solution utilities involving washing and sterilization.



Fujikin® has valves for all kinds of life science applications.

Series lineup

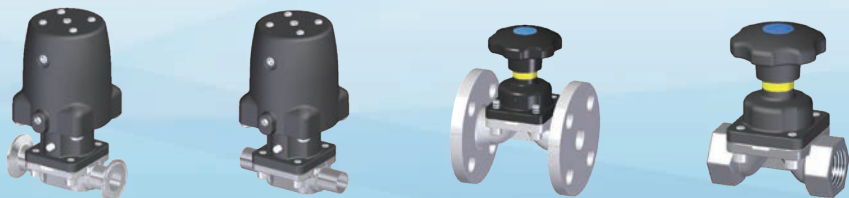
	Diaphragm Valves		
	BNW series	BSW series	LPS series
			
Name	Weir diaphragm valves	Weirless diaphragm valves	Weirless diaphragm valves
Features	Compatible with steam sterilization and chemical cleaning	Compatible with steam sterilization and chemical cleaning	Compatible with steam sterilization and chemical cleaning
	Highly airtight seal structure	Highly airtight seal structure	Highly airtight seal structure
	Self-draining structure	Straight flow path structure	Straight flow path structure
Applications	Manufacturing processes for pharmaceuticals, food products, cosmetics, etc.	Manufacturing processes for pharmaceuticals, food products, cosmetics, etc.	Manufacturing processes for pharmaceuticals, food products, cosmetics, etc.
Size	8A-100A (4S)	8A-25A (1S)	8A-50A (2S)
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	Angle seat valves	Single-use pinch valves
	BY series	BPV series
		
Name	Angle seat valves	Pinch valves
Features	Compatible with utilities	Single-use
	Seal structure with high heat resistance	Compatible with various types of tubes
Applications	Pharmaceutical, food product, and cosmetic manufacturing process utility equipment For steam, air, and water	Pharmaceutical manufacturing single-use processes
Size	15A-50A (2S)	1/50 inch-1.5 inch
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Overview of valve products

		BNW series Weir diaphragm valves					
							
Actuator	Drive method	Manual			Automatic		
	Actuator type	Standard type		Standard type		Low-pressure type	
	Actuator material	Aluminum	Stainless steel	Aluminum	Stainless steel	Aluminum	Stainless steel
Compatible sizes		8A-4S (100A)	8A-2S (50A)	8A-4S (100A)	8A-2S (50A)	8A-10A 2.5S (65A)-3S (80A)	8A-2S (50A)
Working temperature range		-5-150°C					
Maximum working pressure		8A-3S (80A) ΔP = 100% 1 MPa 4S (100A): ΔP = 100% 0.7 MPa			8A, 10A, 2.5S (65A) ΔP = 100% 0.6 MPa 3S (80A): ΔP = 100% 0.5 MPa		
Standard connection		Ferrule, BW, flange, threaded type					
Body material		SUS316L (threaded, flange, SCS14A)					
Surface treatment (inner surface)		#400 buffing + electropolishing					
Diaphragm material		PTFE/EPDM or simple EPDM					
Self-draining mark		Yes					
Options	Body Outer surface polishing (#320)	●	●	●	●	●	●
	Body Passivation treatment	●	●	●	●	●	●
	Opening adjuster	—	—	●	●	●	●
	Closing adjuster	—	—	●	●	●	●
	Limit switch (contact: open/closed/open and closed)	—	—	●*	●*	●*	●*
	Proximity switch (contact: open/closed/open and closed)	△	△	●	●	●	●
	Control valve E/P positioner	—	—	●	●	●	●
	Solenoid valve for instrumentation	—	—	●	●	●	●
Accessories (speed controller/one-touch fitting)		—	—	●	●	●	●
Certifications		USP Class VI, FDA CFR 177.1550, CFR 177.2600, Food Sanitation Act					
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*: Limit switch
Size: 8A and 10A are only compatible with contact: open.



BSW series Weirless diaphragm valves		LPS series Weirless diaphragm valves		
				
Manual	Automatic	Manual		Automatic
Standard type		Standard type		
Aluminum		Stainless steel		
8A-1S (25A)		8A-2S (50A)		
0-150°C		0-140°C		
ΔP = 100% 0.6 MPa		ΔP = 100% 0.8 MPa		
Ferrule, BW type		Ferrule, BW type		
SUS316L		SUS316L		
#400 buffing + electropolishing		Ra 1 μm or less + electropolishing		
PTFE/FKM		PTFE/EPDM		
No		No		
●	●	—	—	—
●	●	●	●	●
—	●	—	—	●
—	●	—	—	●
△	●	△	—	●
—	●	—	—	●
—	●	—	—	●
—	●	—	—	●
USP Class VI, FDA CFR 177.1550, CFR 177.2600, Food Sanitation Act		USP Class VI, FDA CFR 177.2600, Food Sanitation Act		
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		BY series Angle seat valves	
			
Actuator	Drive method	Automatic	
	Actuator type	FO type (reverse flow direction)	FU type (forward flow direction)
	Actuator material	Aluminum	
Compatible sizes		15A-2S (50A)	
Working temperature		0-155°C	
Working pressure		0-0.8 MPa	
Standard connection		Ferrule, BW, flange, threaded type	
Body material		ASTM A351 CF8M	
Surface treatment (inner surface)		Casting surface	
Disk packing material		PTFE (packing) (Food Sanitation Act conformant material)	
Ground packing material		PTFE + graphite (Food Sanitation Act conformant material)	
Options	Opening adjuster	●	●
	Closing adjuster	●	●
	Limit switch (contact: open/closed/ open and closed)	●	●
	Proximity switch (contact: open/closed/ open and closed)	●	●
	Control valve E/P positioner	●	●
	Solenoid valve	●	●
	Accessories (speed controller/ one-touch fitting)	●	●
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BSW series
Weirless diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves



BY series
Angle seat valves

CARTEN™

CARTEN™
BPV series
Single-use punch valves

Pulsin & CARTEN™
Products related to liquid processes

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Creating the “flow” of the era: Fujikin for high-precision fluid control.

Accepting the challenge of cutting-edge technology in high-precision fluid control systems, with a focus on valve devices, Fujikin has opened up new possibilities in craftsmanship in state-of-the-art industrial fields.

These fields include applications in semiconductor manufacturing, space exploration, hydrogen energy, and a variety of other fields that are attracting attention worldwide, and are creating a flow to an attractive and sustainable new era.



▲ Osaka Factory - Kashiwara

High-precision valve devices for semiconductor manufacturing equipment

Japan's semiconductor technology is famed around the world. Semiconductor manufacturing processes demand precise control of gases in trace quantities and are also highly intolerant of even small quantities of impurities (microparticles). The ultra-pure valves used in manufacturing equipment for these processes are produced in class-1 ultra-super-clean rooms that boast world-class purity. Assembly, inspection, and other processes are also carried out in ultra-super-clean rooms, shutting out all impurities and oils. We promise that the products produced there truly are at the highest level of quality available in the world.



Special valve devices for petrochemical plants

Humanity has created a wide variety of substances that do not exist in nature through the magic of chemical synthesis. The production centers for these chemical products are chemical industrial complexes. Fujikin's special valve devices and ultra-low temperature technology are widely used in chemical industrial complexes around the world. Fujikin's ultra-low temperature precision fluid control system devices, which boast "zero leakage," have become indispensable in petrochemical plants and liquefied natural gas plants. For global environmental protection problems as well, our fine ceramic fluid control devices which incorporate antipollution measures have also proven their strength.



Process valve devices for biotechnology (pharmaceuticals and food products)

The development of pharmaceuticals and food products is accelerating and becoming more advanced through the interpretation of human genome information and genetic research. On the other hand, the safety and environmental impact of novel drugs and genetically modified food products have also become concerns. The technical standards required for pharmaceutical and food product manufacturing processes that have high safety and low environmental impact are becoming stricter every year. Fujikin's diaphragm valves are widely used in manufacturing processes for pharmaceuticals and food products that enter the human body. We constantly strive to stay a step ahead in state-of-the-art processes in the biotechnology field.



Valve devices for new energy and secondary batteries

Fluid control devices are also indispensable in new energy fields, including solar power generation and fuel cells, which are steadily expanding. In the field of fuel cells in particular, we are contributing to maintaining and promoting infrastructure for future fuel cell automobiles by adding valve equipment for ultra-high-pressure hydrogen up to 99.9 MPa to our lineup. Our diaphragm valves are also used in the manufacture of lithium-ion batteries, which require perfect sealing from the external environment. Fujikin's know-how, cultivated in fields that include space rockets, semiconductors, pharmaceuticals, and food products, is utilized at every turn.



Production centers

Osaka Factory - Higashiosaka



Osaka Factory - Kashiwara



**Science Expo Memorial Park
Tsukuba Advanced Research Center**




Products manufactured




Osaka High-Tech Innovation Center




Tohoku Factory

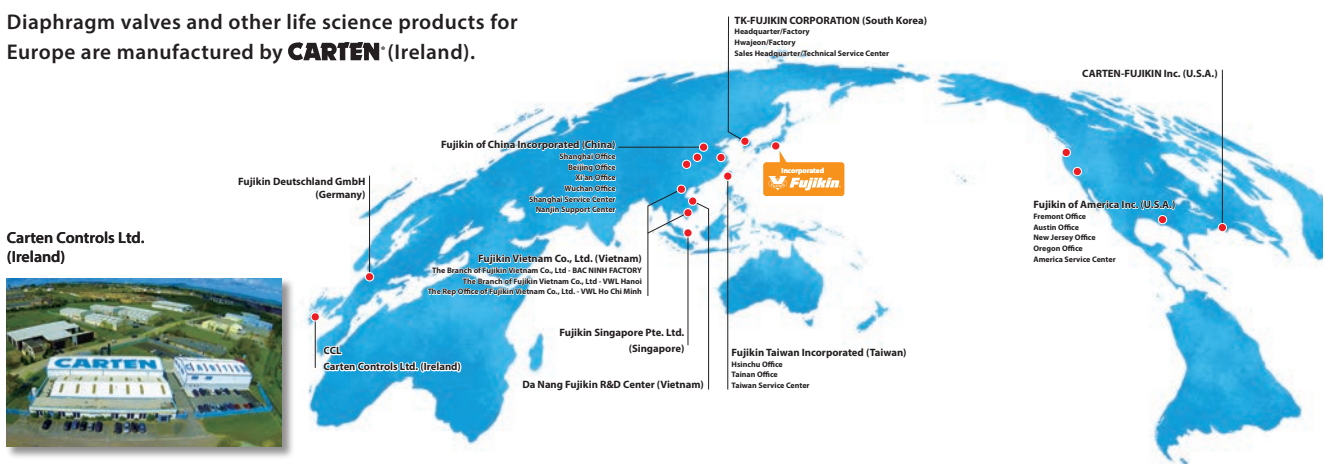


Products manufactured



The Fujikin global network.

Diaphragm valves and other life science products for Europe are manufactured by **CARTEN®** (Ireland).



BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

CARTEN®
BPV series
Single-use punch valves

Fujikin & CARTEN
Products related to liquid processes

Production and testing equipment

Through a fusion of cutting-edge equipment and our cultivated know-how, we continue to refine our technology to the limit, including production methods, mechanical processes, quality checks, and product development, to respond to the needs of our customers.



Clean steam test equipment

In order to evaluate our products at the design stage under conditions close to those of actual use, we have a full complement of clean-steam test equipment, vibration testing equipment, and the like, and strive to improve product quality every day.



High-temperature steam generation equipment

We have full-scale development systems in place to reproduce harsh usage conditions, including a full complement of steam generation equipment.



Ultra-super-clean rooms

We have the largest share worldwide in valves and fittings for the semiconductor industry, which requires advanced cleaning technology, and we also handle assembly, inspection, and packaging in class-1 ultra-super-clean rooms that boast the highest level of cleanliness in the world.



Certifications



ISO 9001



ISO 14000



ISO 13485

Conformity standards



USP Class VI



FDA CFR 177.1550,
CFR 177.2600



Food Sanitation Act

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

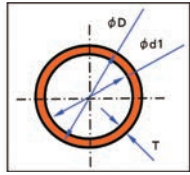
BY series
Angle seat valves

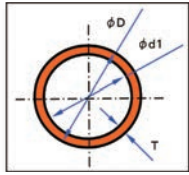
CARTEN®

CARTEN®
BPV series
Single-use punch valves

Fujikin & CARTEN®
Products related to liquid processes

Piping standards

DN	NPS	ASME BPE			JIS G 3447			JIS G 3459			DIN 11850			ISO 1127			IDF			SMS		
		1" and above have the same dimensions as 3A (the US sanitary standard)			Sanitary pipes			Stainless pipes for piping (sch No. 10)			German industrial standard (sanitary)			Stainless steel pipes			International Dairy Federation (= ISO)			Swedish standard (mechanical)		
		D	T	d1	D	T	d1	D	T	d1	D	T	d1	D	T	d1	D	T	d1	D	T	d1
6							10.50	1.20	8.10	8.00	1.00	6.00	10.20	1.60	7.00							
8	1/4"	6.35	0.89	4.57			13.80	1.65	10.50	10.00	1.00	8.00	13.50	1.60	10.30							
10	3/8"	9.53	0.89	7.75			17.30	1.65	14.00	13.00	1.50	10.00	17.20	1.60	14.00							
15	1/2"	12.70	1.65	9.40			21.70	2.10	17.50	19.00	1.50	16.00	21.30	1.60	18.10							
20	3/4"	19.05	1.65	15.75			27.20	2.10	23.00	23.00	1.50	20.00	26.90	1.60	23.70							
25	1"	25.40	1.65	22.10	25.40	1.20	23.00	34.00	2.80	28.40	29.00	1.50	26.00	33.70	2.00	29.70	25.40	1.20	23.00	25.00	1.20	22.60
32	1 1/4"				31.80	1.20	29.40	42.70	2.80	37.10	35.00	1.50	32.00	42.40	2.00	38.40	31.80	1.20	29.40	33.70	1.20	31.30
40	1 1/2"	38.10	1.65	34.80	38.10	1.20	35.70	48.60	2.80	43.00	41.00	1.50	38.00	48.30	2.00	44.30	38.10	1.20	35.70	38.00	1.20	35.60
50	2"	50.80	1.65	47.50	50.80	1.50	47.80	60.50	2.80	54.90	53.00	1.50	50.00	60.30	2.00	56.30	50.80	1.50	47.80	51.00	1.20	48.60
65	2 1/2"	63.50	1.65	60.20	63.50	2.00	59.50	76.30	3.00	70.30	70.00	2.00	66.00	76.10	2.00	72.10	63.50	2.00	59.50	63.50	1.60	60.30
80	3"	76.20	1.65	72.90	76.30	2.00	72.30	89.10	3.00	83.10	85.00	2.00	81.00	88.90	2.30	84.30	76.30	2.00	72.30	76.10	1.60	72.90
100	4"	101.60	2.11	97.38	101.60	2.00	97.60	114.30	3.00	108.30	104.00	2.00	100.00	114.30	2.30	109.70	101.60	2.00	97.60	101.60	2.00	97.60



Cv value calculation

Cv values are calculated for all anticipated usage conditions, and the maximum Cv value is determined.

What is a Cv value?

The Cv value is a capacity coefficient for valves and the like, defined in JIS standards as "a numerical value representing the flow rate of pure water in US gal/min at a temperature of 60°F (15°C) flowing through a valve when the differential pressure at a specific travel (operational range) is 1 lb/inch² (= 1 psi)."

Cv value calculation formulas

Fluid	Differential pressure conditions	
	$P_2 > \frac{P_1}{2}$	$P_2 \leq \frac{P_1}{2}$
Liquid (general)	$Cv = 0.366 Q_L \sqrt{\frac{G_L}{P_1 - P_2}}$	Same as at left
Gas	$Cv = \frac{Q_G}{4140} \sqrt{\frac{G_G (273+t)}{(P_1 - P_2) P_2}}$	$Cv = \frac{Q_G}{2070 P_1} \sqrt{G_G (273+t)}$

Explanation of symbols

Q_L [m ³ /h]	Flow rate of liquid
Q_G [m ³ /h (normal)]	Flow rate of gas in standard state (at 15°C, 0.1013 MPa abs)
Q_S [kg/h]	Flow rate of steam
P_1 [MPa abs]	Primary side absolute pressure *2
P_2 [MPa abs]	Secondary side absolute pressure *2
K_V	Viscosity correction coefficient *1
t [°C]	Fluid temperature
G_L	Liquid specific gravity (when water = 1)
G_G	Gas specific gravity (when air = 1)
S [°C]	Degree of superheating of steam
X	Dryness of steam (dry saturated steam X = 1)

*1: For liquids, if the kinematic viscosity is 20 mPa·s or greater and the calculated Cv value is 0.01 or less, a viscosity correction calculation is required. Please inquire in cases of fluid specifications requiring viscosity correction.
*2: Please use pressure proximal to the valve. If calculation is performed using pressure at a point distant from the valve, large errors may arise in calculation results due to the effects of pressure loss in piping and the like.



Cv value calculation and flow rate calculation tool site



Outstanding airtightness Dramatic reduction in the number of bolt refastenings!

BNW SERIES
WEIR DIAPHRAGM
VALVES



Video of weir
diaphragm valves

BNW series weir diaphragm valves

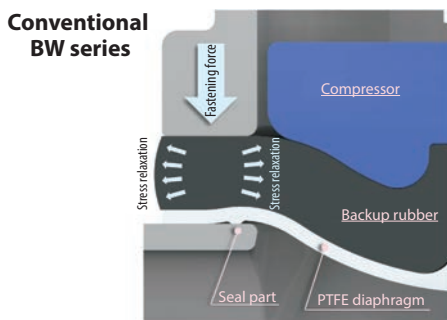
Basic structure of BNW series diaphragm valves

1. Wetted surfaces are streamlined and pocketless, so the structure ensures low flow channel resistance and inhibits residue from process fluids and cleaning solutions, making these valves ideal for sanitary and aseptic applications.
2. Inner and outer seals are structurally integrated.
3. Operating parts and diaphragm can be dismantled and assembled easily while still attached to piping.

BNW series features

1. Proprietary seal structure increases reliability against external leakage by comparison with conventional diaphragm valves. Stable performance is maintained even after steam sterilization. External seal performance is confirmed through helium leak inspection designed to sense minute leaks. Guides are also provided to increase ease of assembly.
2. Types include high-pressure (1 MPa) types for liquid feed systems, compact low-pressure (0.6 MPa) types for processes, and stainless steel types that can accommodate autoclaves.
3. Flow rates are stable even with steam sterilization or increased open/close cycles.
4. Manufactured with wetted surfaces free of oil and moisture.
5. Diaphragms are FDA and USP conformant.
(FDA CFR 177.1550, CFR 177.2600, USP class VI)

BNW series weir diaphragm valve seal structure

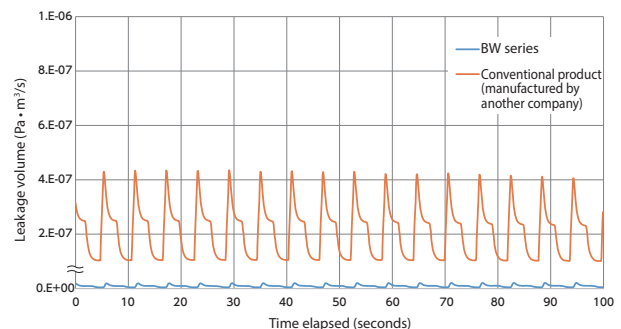


Thick backup rubber absorbs variations in components but have the disadvantage of being prone to loosening.

Structure

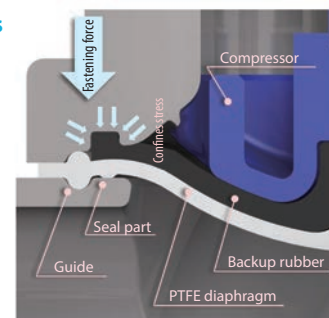


Leakage measurement results with helium leak tester



By measuring helium leakage volume using a helium leak detector, it was confirmed that changes in external leakage volume from opening and closing the valve were suppressed.

BNW series



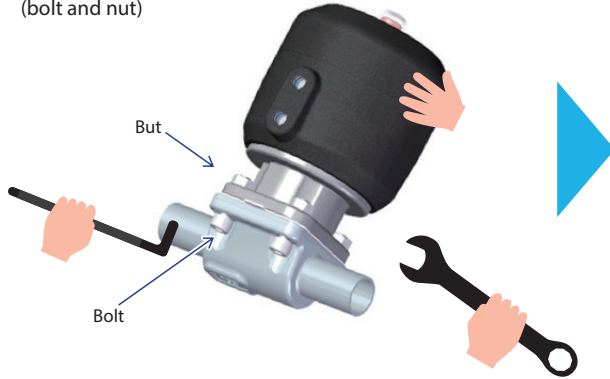
Thin backup rubber and dual protruding parts (guide and seal parts) have increased airtightness and durability. 100,000-cycle opening/closing tests have been cleared in operations in 150°C steam.

Ease of diaphragm replacement

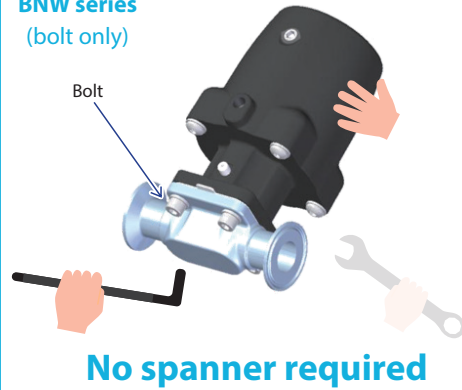
Can be fastened using a single tool (hex wrench).

The diaphragm and body are attached to the actuator by providing a threaded hole in the bonnet side of the actuator and securing the diaphragm and body with a bolt from the reverse side of the body. By comparison with the common method of securing with a bolt and nut using two tools (hex wrench and spanner), fastening can be accomplished with a single tool (hex wrench), so the bolt can be fastened with one hand while the actuator is supported with the other hand, improving ease of assembly.

Conventional product
(bolt and nut)



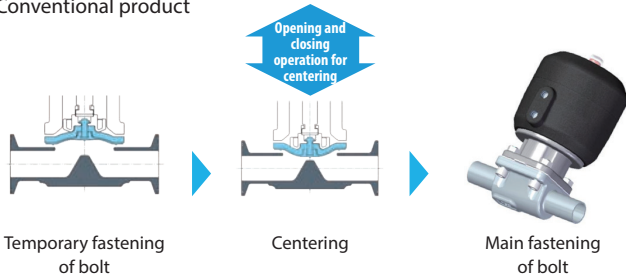
BNW series
(bolt only)



“Centering” during assembly is unnecessary

Providing a circular guide between the diaphragm and the body and bonnet makes it possible to prevent valve seat leakage due to misalignment of center positions. Thus, it was possible to eliminate the “centering” step that conventionally performed during assembly.

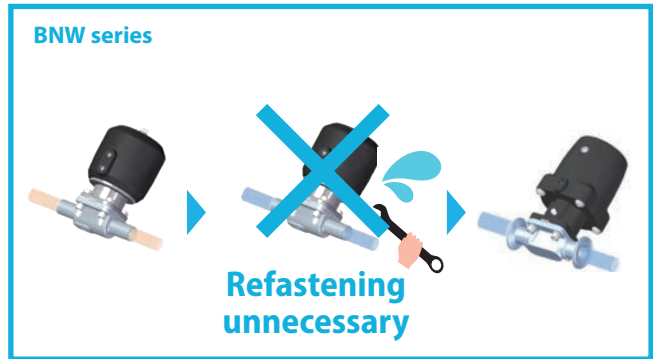
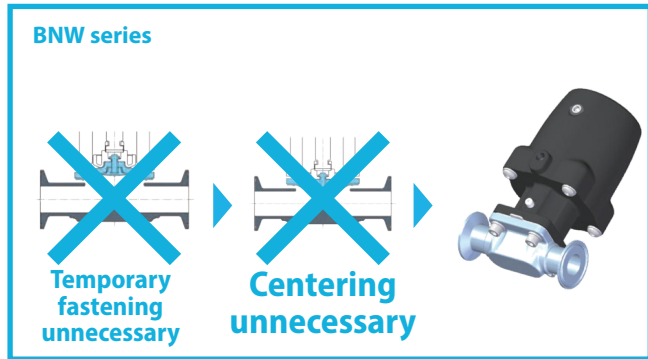
Conventional product



“Refastening” after initial steam sterilization is unnecessary

Implementing this unique airtight structure dramatically improved airtight seal performance, so “refastening after initial steam sterilization” was rendered unnecessary.

Conventional product



Video of diaphragm replacement procedure

Please refer to these videos when replacing the diaphragm.

Automatic valve diaphragm replacement video



Manual valve diaphragm replacement video



Product standard specifications

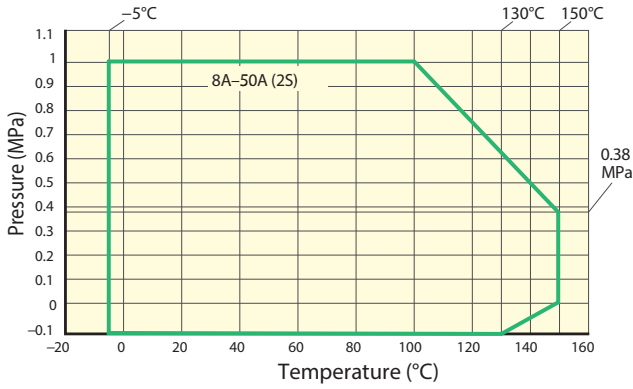
		Product specifications									
Material	Body	SUS316L									
	Bonnet	ADC12 (8A-50A), AC4C (65A-100A)									
	Diaphragm	PTFE/EPDM, EPDM (USP Class VI, FDA CFR 177.1550, 177.2600)									
	Actuator	ADC12, etc. (8A-50A), AC4C, etc. (65A-100A)									
	Manual upper section	ADC12, etc. (8A-50A), AC4C, etc. (65A-100A)									
Maximum working pressure (MPa)		0.6 when $\Delta P = 0\%$ (0.35 for 100A), 1.0 when $\Delta P = 100\%$ (0.7 for 100A)									
Temperature range of working fluid (°C)		-5 to +150 (-5 to +140 for 100A)									
Body internal surface roughness		Internal surfaces: #400 buffing + electropolishing (Ra Max. 0.38 μm ASME-BPE SF4)									
Cleaning treatment		Oil-free and water-free treatment									
Actuator	type	Spring-back (normal close type) (N.C.) Spring-back (normal open type) (N.O.) Double action type (D.A.) Manual									
	Operating pressure feed port	Rc 1/8 (Rc 1/4 for 65A-100A)									
	Operating pressure (MPa)	N.C. type: 0.4-0.7 N.O. type: 0.4-0.44 D.A. type: 0.18-0.31 *1									
Body connection		Ferrule type, butt weld type, flange type, threaded type									
Nominal diameter (DN)		8A	10A	15A	25A (1S)	40A (1.5S)	50A (2S)	65A (2.5S)	80A (3S)	100A (4S)	
Cv value		2.8	2.9	6.2	13	27	50	80	130	200	
Piping installation angle *2		31°	18°	21°	30°	25°	20°	15°	15°	15°	
Stroke (mm)		5	5	7	10	14	20	28	34	43	
Face-to-face dimension (mm)		90	90	108	127	159	190	216	254	305	
Ferrule type product mass (automatic valve) (kg)		0.74	0.73	1.5	2.7	6.3	11.6	24	42	57	
Ferrule type product mass (manual valve) (kg)		0.34	0.33	0.63	1.2	2.7	4.6	8.3	13.7	27.6	

*1: Operating pressure range differs depending on actuator size.

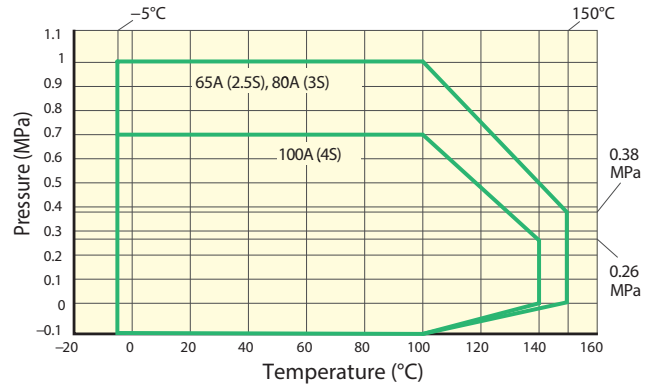
*2: Piping installation angle is listed for ferrule type and butt weld type connections. Angle differs for flange type.

Temperature and pressure charts

Temperature and pressure chart (8A–50A (2S))

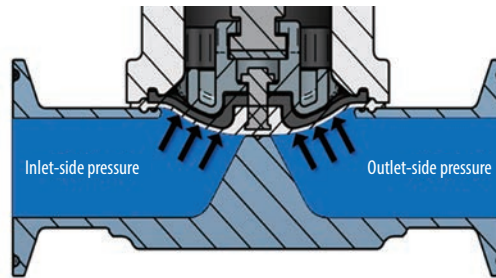
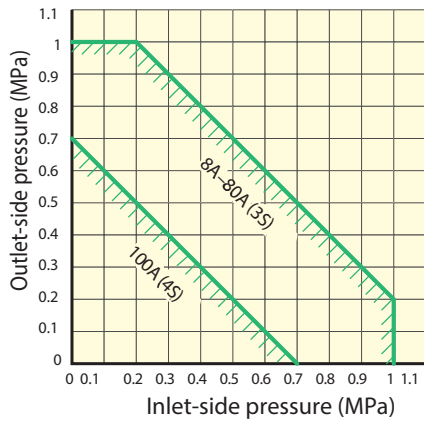


Temperature and pressure chart (65A (2.5S)–100A (4S))



- *: Please feel free to inquire with Fujikin about usage conditions outside of the temperature and pressure charts.
 - *: Durability can vary depending on usage conditions, so please consult with Fujikin.
 - *: Temperature and pressure charts show ranges for valve pressure performance.
- For pressure ranges at which valves can be shut off, see the table below.

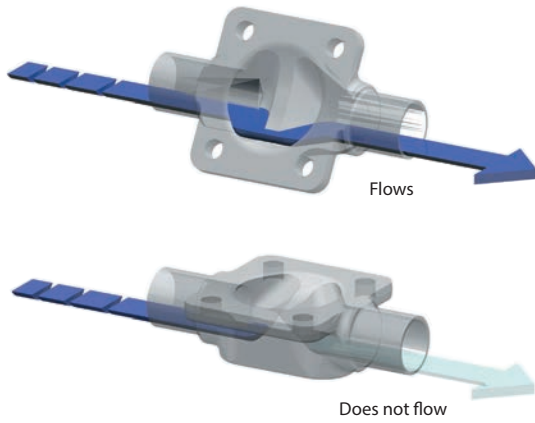
Valve shutoff pressure range (standard type)



- *: If valves are used at low temperatures 0°C or below, valve shutoff performance may decrease, so please consult with Fujikin.

Self-draining piping angle

Self-draining refers to a structure in which fluid flows from the inlet side to the outlet side without fluid retention.



If piping is arranged at the specified angle, liquid retention within piping can be minimized.

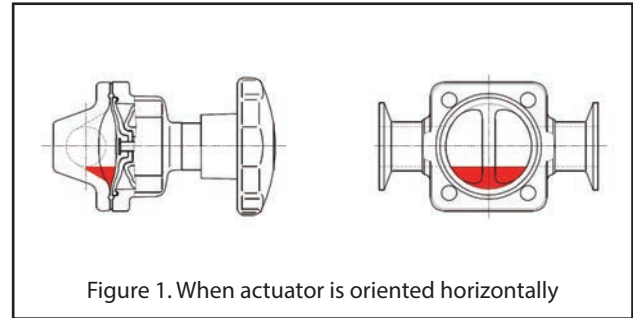


Figure 1. When actuator is oriented horizontally

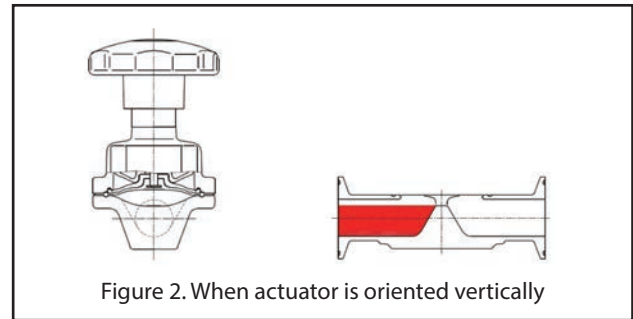


Figure 2. When actuator is oriented vertically

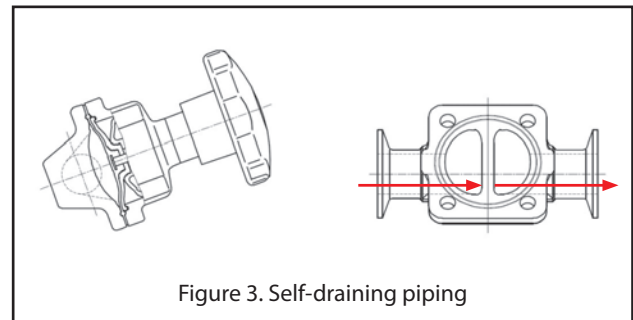
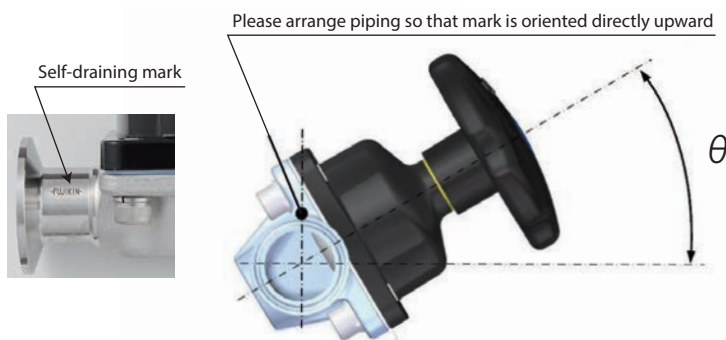


Figure 3. Self-draining piping

Ferrule and butt weld connection types Self-draining piping installation angle



Installation orientation is free, but, for horizontal piping, installing piping at the self-draining piping installation angle will minimize liquid retention within the valve. Please install piping so that the self-draining mark is oriented directly upward.

Self-draining piping installation angle, by size

Nominal diameter (DN)	Self-draining piping attachment angle (θ°)	Nominal diameter (DN)	Self-draining piping attachment angle (θ°)
8A	31	1/4"	42
10A	18	3/8"	32
15A	21	1/2"	30
25A (15)	30	3/4"	26
40A (1.5S)	25	1"	30
50A (2S)	20	1.5"	25
65A (2.5S)	15	2"	20
80A (3S)	15	2.5"	15
100A (4S)	15	3"	15
		4"	15

Part number format

BNW C - 25 P E - 7 F - LC - MA -

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

Actuator Diaphragm Body

①	Valve series name
BNW	BNW series weir diaphragm valves

②	Actuator material
None	Aluminum
U	Stainless steel

③	Actuator operation type
C	Spring-back (normal close type) (N.C.)
O	Spring-back (normal open type) (N.O.)
D	Double action type (D.A.)
M	Manual

④	Pressure type
None	Standard type
2	Low-pressure type *1

⑤	Diaphragm size
8	8A
15	15A
25	25A (1S)
40	40A (1.5S)
50	50A (2S)
65	65A (2.5S)
80	80A (3S)
100	100A (4S)

⑥	Diaphragm wetted surface material
P	PTFE
E	EPDM

⑦	Backup rubber material
None	Single rubber diaphragm
E	EPDM

⑧	Body material
None	SUS316L
C	SCS14A (for threaded type and flange type only)

⑨	Connection
1	Threaded type *3
2	Flange type *2, 3
5	Butt weld type (BW)
7	Ferrule type
9	Union type

⑩	Connection piping size				
	Connection	Ferrule type/ butt weld type	ASME standard Ferrule type/ butt weld type	Flange type	Threaded type
A		6A	1/8"		
B		8A	1/4"		1/4B
C		10A	3/8"		
D		15A	1/2"	15A	1/2B
E			3/4"	20A	3/4B
F		25A (1S)	1"	25A	1B
H		40A (1.5S)	1 1/2"	40A	
I		50A (2S)	2"	50A	
J		65A (2.5S)	2 1/2"	65A	
K		80A (3S)	3"	80A	
M		100A (4S)	4"	100A	

⑪	Piping standards
None	ISO/IDF
A	ASME

⑫	Options
None	No options
H	With open-side opening adjustment
HC	With closed-side closing adjustment
LC	With closed-side limit switch
LO	With open-side limit switch
LD	With open/closed dual limit switches
KC	With closed-side proximity switch
KO	With open-side proximity switch
KD	With open/closed dual proximity switches
CKE1D	Open/closed dual-side detection valve sensor
EP1	Electropneumatic positioner
SL	Excessive shutoff prevention

⑬	Body surface finishing
None	Internal surfaces: #400 buffing + electropolishing *3
MD	Internal surfaces: #400 buffing + electropolishing followed by passivation treatment
MA	Internal surfaces: #400 buffing + electropolishing Outer surfaces: #320 buffing
ME	Internal surfaces: #400 buffing + electropolishing Outer surfaces: #320 Polishing followed by passivation treatment

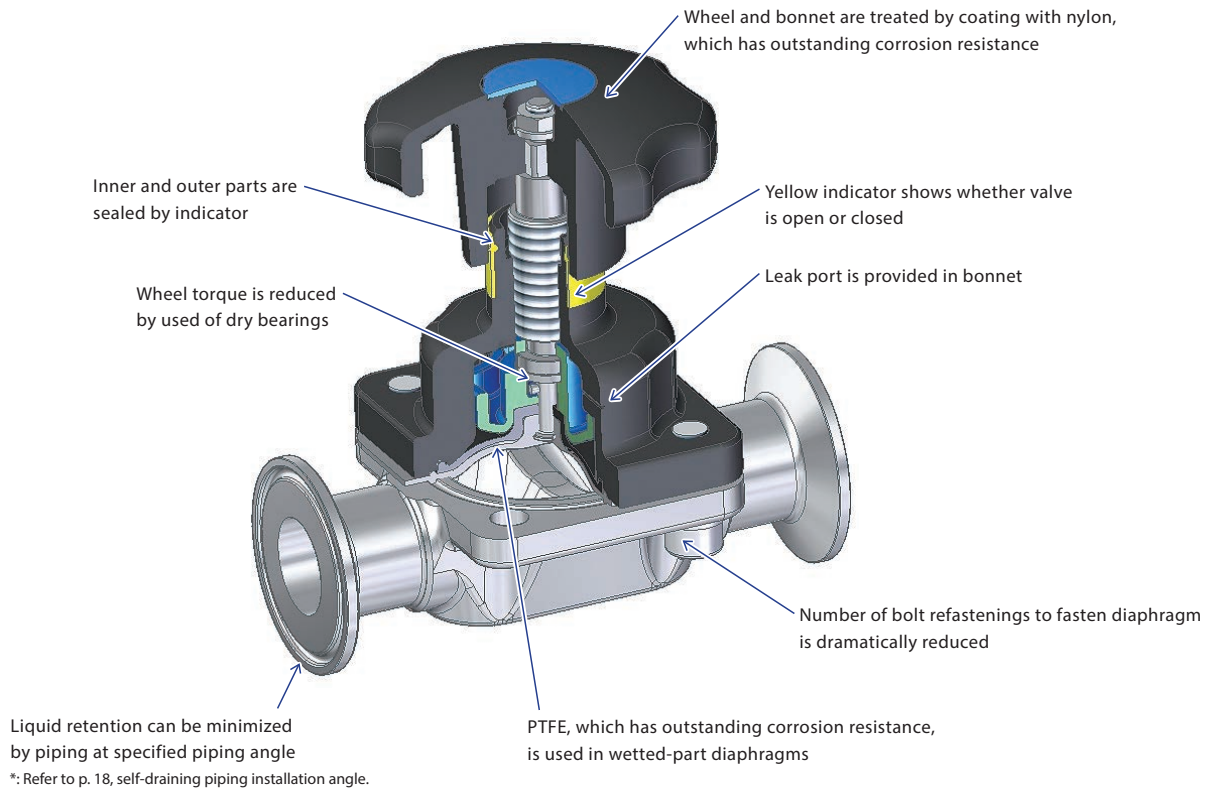
⑭	Other
	Abbreviations are inserted for special products.

*1: Aluminum automatic upper section: Low-pressure type is for 8A, 10A, 65A, and 80A only
Aluminum manual upper section: 65A and 80A are standard type

*2: Flange connection: JIS10KFF flange

*3: Threaded/flange: Body surface for SCS14A body material is finished by polishing to Ra 3.2 for diaphragm mounting surface only.

Manual valve features



BNW series
Weir diaphragm valves

BNW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

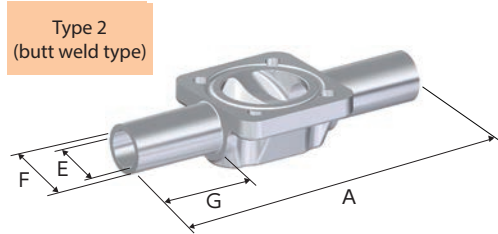
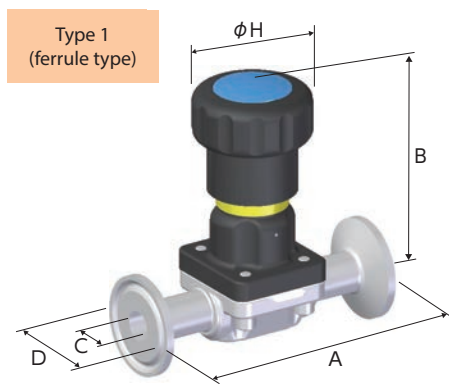
CARTEN[®]

CARTEN[®]
BPV series
Single-use punch valves

Pipelin & CARTEN[®]
Products related to liquid processes

Primary product dimensions

Small-aperture manual valves: Ferrule type and butt weld type (nominal diameter: 8A–10A)



Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (ferrule type)	8A	90	76	10.5	34	40	BNWM-8PE-7B
	10A	90	77	14	34	40	BNWM-8PE-7C

Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (ferrule type)	1/4"	63.5	76	4.57	25	40	BNWM-8PE-7BA
	3/8"	63.5	76	7.75	25	40	BNWM-8PE-7CA
	1/2"	63.5	76	9.4	25	40	BNWM-8PE-7DA

Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	8A	90	76	10.5	13.8	27	40	BNWM-8PE-5B
	10A	90	77	14	17.3	27	40	BNWM-8PE-5C

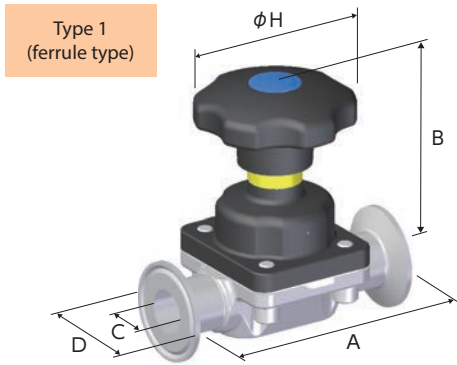
Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	1/4"	90	76	4.57	6.35	27	40	BNWM-8PE-5BA
	3/8"	90	76	7.75	9.52	27	40	BNWM-8PE-5CA
	1/2"	90	76	9.4	12.7	27	40	BNWM-8PE-5DA

Primary product dimensions

Manual valves: Ferrule type and butt weld type (nominal diameter: 15A–50A (2S))

Units (mm)



type	Nominal diameter	A	B	C	D	H	Part No.
1 (ferrule type)	15A	108	95	17.5	34	65	BNWM-15PE-7D
	25A (1S)	127	110	23	50.5	80	BNWM-25PE-7F
	40A (1.5S)	159	145	35.7	50.5	110	BNWM-40PE-7H
	50A (2S)	190	174	47.8	64	110	BNWM-50PE-7I

Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (ferrule type)	3/4"	101.6	96	15.75	25	65	BNWM-15PE-7EA
	1"	114.3	110	22.1	50.4	80	BNWM-25PE-7FA
	1.5"	139.7	145	34.8	50.4	110	BNWM-40PE-7HA
	2"	158.8	174	47.5	63.9	110	BNWM-50PE-7IA

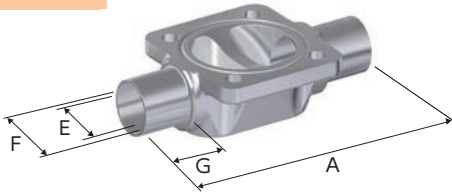
Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	15A	108	95	17.5	21.7	28	65	BNWM-15PE-5D
	25A (1S)	127	110	23	25.4	28	80	BNWM-25PE-5F
	40A (1.5S)	159	145	35.7	38.1	30	110	BNWM-40PE-5H
	50A (2S)	190	174	47.8	50.8	35	110	BNWM-50PE-5I

Units (mm)

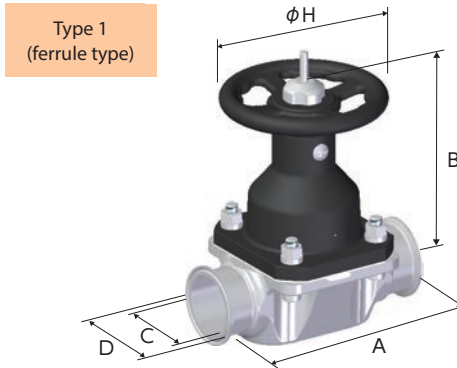
type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	3/4"	108	96	15.75	19.05	30	65	BNWM-15PE-5EA
	1"	120	110	22.1	25.4	26	80	BNWM-25PE-5FA
	1.5"	153	145	34.8	38.1	29.5	110	BNWM-40PE-5HA
	2"	173	174	47.5	50.8	32.5	110	BNWM-50PE-5IA

Type 2
(butt weld type)



Large-aperture manual valves: Ferrule type and butt weld type (nominal diameter: 65A (2.5S)–100A (4S))

Units (mm)



type	Nominal diameter	A	B	C	D	H	Part No.
1 (ferrule type)	65A (2.5S)	216	230	59.5	77.5	200	BNWM2-65PE-7J
	80A (3S)	254	281	72.3	91	250	BNWM2-80PE-7K
	100A (4S)	305	335	97.6	119	250	BNWM-100PE-7M

Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (ferrule type)	2.5"	193.8	230	60.2	77.4	200	BNWM2-65PE-7JA
	3"	222.3	281	72.9	90.9	250	BNWM2-80PE-7KA
	4"	292.1	335	97.38	119	250	BNWM-100PE-7MA

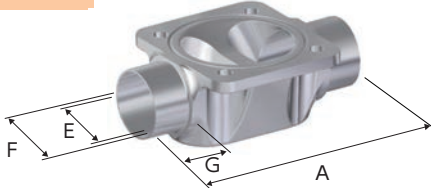
Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	65A (2.5S)	216	230	59.5	63.5	35	200	BNWM2-65PE-5J
	80A (3S)	254	281	72.3	76.3	35	250	BNWM2-80PE-5K
	100A (4S)	305	335	97.6	101.6	35	250	BNWM-100PE-5M

Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	2.5"	216	230	60.2	63.5	41	200	BNWM2-65PE-5JA
	3"	254	281	72.9	76.2	47	250	BNWM2-80PE-5KA
	4"	305	335	97.38	101.6	35	250	BNWM-100PE-5MA

Type 2
(butt weld type)



Stainless steel actuators: Manual valve

BNW series
Weir diaphragm valves

BNW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

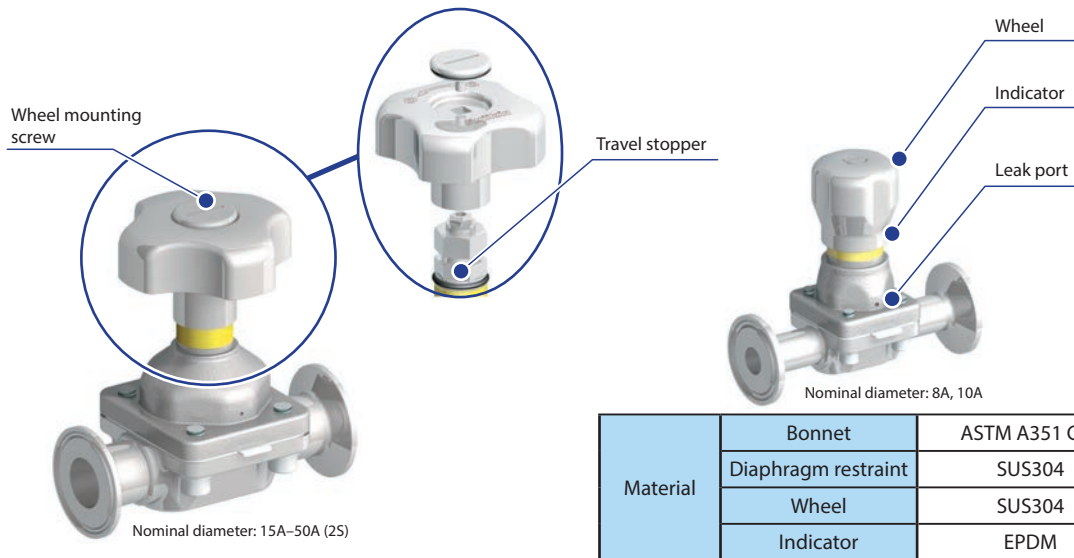
CARTEN®
BPV series
Single-use punch valves

Pipilina & CARTEN®
Products related to liquid processes

Stainless steel actuator features

Use of highly corrosion-resistant stainless steel allows for use in harsh conditions in autoclaves

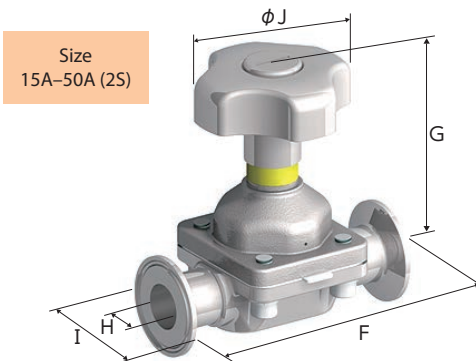
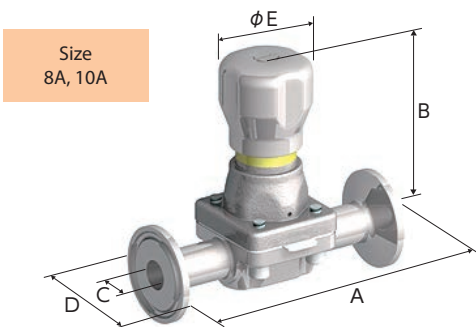
Structure



Material	Bonnet	ASTM A351 CF8
	Diaphragm restraint	SUS304
	Wheel	SUS304
	Indicator	EPDM

Primary product dimensions

Stainless steel upper section: Ferrule type (nominal diameter: 8A-50A (2S))



Units (mm)

Nominal diameter	A	B	C	D	E	Part No.
8A	90	70	10.5	34	32	BNWUM-8PE-7B
10A	90	72	14	34	32	BNWUM-8PE-7C

Units (mm)

Nominal diameter	A	B	C	D	E	Part No.
1/4"	63.5	70	4.57	25	32	BNWUM-8PE-7BA
3/8"	63.5	70	7.75	25	32	BNWUM-8PE-7CA
1/2"	63.5	70	9.4	25	32	BNWUM-8PE-7DA

Units (mm)

Nominal diameter	F	G	H	I	J	Part No.
15A	108	97	17.5	34	60	BNWUM-15PE-7D
25A (1S)	127	115	23	50.5	80	BNWUM-25PE-7F
40A (1.5S)	159	147	35.7	50.5	110	BNWUM-40PE-7H
50A (2S)	190	173	47.8	64	110	BNWUM-50PE-7I

Units (mm)

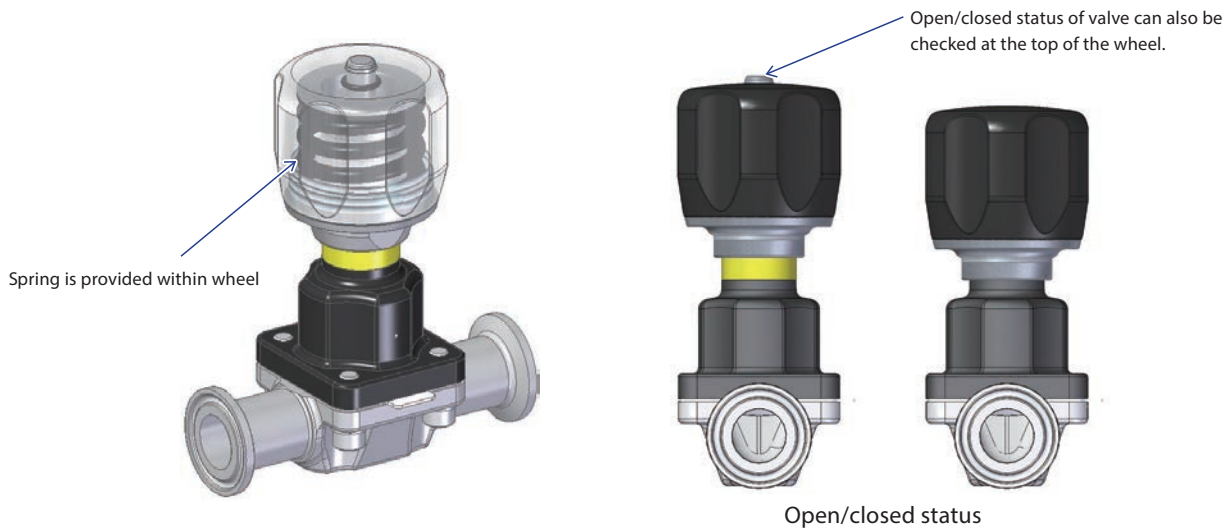
Nominal diameter	F	G	H	I	J	Part No.
3/4"	101.6	97	15.75	25	60	BNWUM-15PE-7EA
1"	114.3	115	22.1	50.4	80	BNWUM-25PE-7FA
1.5"	139.7	147	34.8	50.4	110	BNWUM-40PE-7HA
2"	158.8	173	47.5	63.9	110	BNWUM-50PE-7IA

Excessive shutoff prevention: Manual valves

Excessive shutoff prevention actuator features

Threading is built into the wheel, and the force of the threading makes it possible to close the valve with suitable closing force, so leakage due to insufficient shutoff depending on operating force applied to the wheel by the operator and loss of seal performance due to early failure of the diaphragm caused by excessive shutoff can be reduced.

Structure

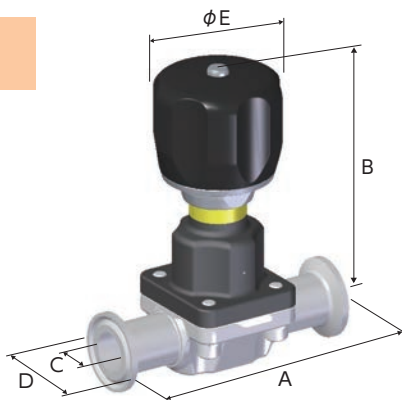


Primary product dimensions

Excessive shutoff prevention upper section: Manual valves: Ferrule type (nominal diameter: 8A-15A)

Units (mm)

Size
8A-15A



Nominal diameter	A	B	C	D	E	Part No.
8A	90	92	10.5	34	40	BNWM-8PE-7B-SL
10A	90	94	14	34	40	BNWM-8PE-7C-SL
15A	108	116	17.5	34	55	BNWM-15PE-7D-SL

Units (mm)

Nominal diameter	A	B	C	D	E	Part No.
1/4"	63.5	91	4.57	25	40	BNWM-8PE-7BA-SL
3/8"	63.5	91	7.75	25	40	BNWM-8PE-7CA-SL
1/2"	63.5	91	9.4	25	40	BNWM-8PE-7DA-SL
3/4"	101.6	119	15.75	25	55	BNWM-15PE-7EA-SL

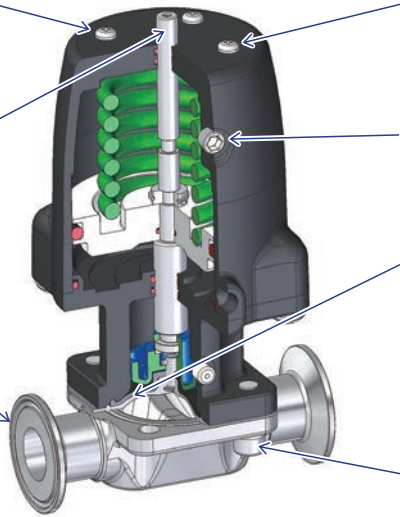
Automatic valve features

The actuator cap and actuator body are treated with a nylon coating that has outstanding corrosion resistance.

Whether the valve is open or closed can be discerned at a glance based on whether the stem is up or down

Liquid retention can be minimized by piping at specified angle

*: Refer to p. 18, self-draining piping installation angle.



A threaded hole is provided for accessory installation

Threading is provided in air vents at top and bottom of piston

PTFE, which has outstanding corrosion resistance, is used in wetted-part diaphragms

Number of bolt fastenings to fasten diaphragm is dramatically reduced

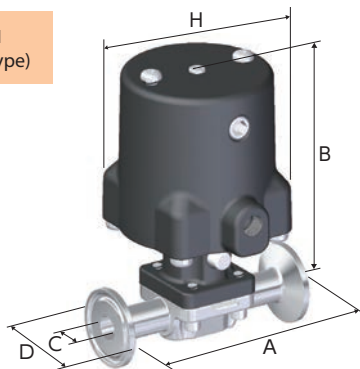
1. There are three actuator operation types: the spring-back types (normal close type, normal open type) and the double action type.
2. Actuator feed port connection sizes are Rc 1/8 for 8A–50A (2S) and Rc 1/4 for 65A (2.5S)–100A (4S). For low-pressure type aluminum automatic actuators, size is Rc 1/8 for 65A (2.5S) and 80A (3S).
3. A threaded hole is provided for installing accessories, so various accessories such as limit switches, proximity switches, and opening adjustment mechanisms can be retrofit.

Primary product dimensions

Small-aperture automatic valves (spring-back normal close type (N.C.), normal open type (N.O.), double action (D.A))
 Ferrule type and butt weld type (nominal diameter: 8A–10A)

Units (mm)

Type 1 (ferrule type)



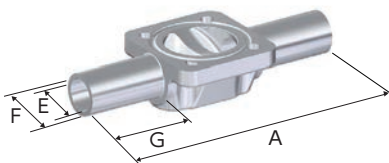
type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	8A	90	114	10.5	34	80	N.C.	0.4–0.7	BNWC-8PE-7B
							N.O.	0.4–0.44	BNWO-8PE-7B
							D.A.	0.18–0.2	BNWD-8PE-7B
	10A	90	115	14	34	80	N.C.	0.4–0.7	BNWC-8PE-7C
							N.O.	0.4–0.44	BNWO-8PE-7C
							D.A.	0.18–0.2	BNWD-8PE-7C

Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	1/4"	63.5	113	4.57	25	66	N.C.	0.4–0.7	BNWC-8PE-7BA
							N.O.	0.4–0.44	BNWO-8PE-7BA
							D.A.	0.18–0.2	BNWD-8PE-7BA
	3/8"	63.5	113	7.75	25	66	N.C.	0.4–0.7	BNWC-8PE-7CA
							N.O.	0.4–0.44	BNWO-8PE-7CA
							D.A.	0.18–0.2	BNWD-8PE-7CA
	1/2"	63.5	113	9.4	25	66	N.C.	0.4–0.7	BNWC-8PE-7DA
							N.O.	0.4–0.44	BNWO-8PE-7DA
							D.A.	0.18–0.2	BNWD-8PE-7DA

Units (mm)

Type 2 (butt weld type)



type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	8A	90	114	10.5	13.8	27	80	N.C.	0.4–0.7	BNWC-8PE-5B
								N.O.	0.4–0.44	BNWO-8PE-5B
								D.A.	0.18–0.2	BNWD-8PE-5B
	10A	90	115	14	17.3	27	80	N.C.	0.4–0.7	BNWC-8PE-5C
								N.O.	0.4–0.44	BNWO-8PE-5C
								D.A.	0.18–0.2	BNWD-8PE-5C

Units (mm)

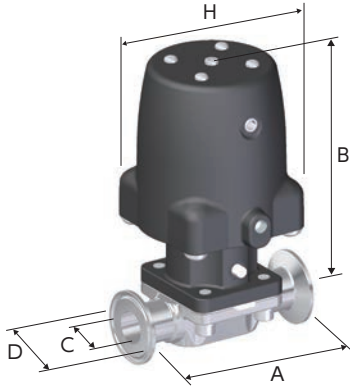
type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	1/4"	90	113	4.57	6.35	27	66	N.C.	0.4–0.7	BNWC-8PE-5BA
								N.O.	0.4–0.44	BNWO-8PE-5BA
								D.A.	0.18–0.2	BNWD-8PE-5BA
	3/8"	90	113	7.75	9.52	27	66	N.C.	0.4–0.7	BNWC-8PE-5CA
								N.O.	0.4–0.44	BNWO-8PE-5CA
								D.A.	0.18–0.2	BNWD-8PE-5CA
	1/2"	90	113	9.4	12.7	27	66	N.C.	0.4–0.7	BNWC-8PE-5DA
								N.O.	0.4–0.44	BNWO-8PE-5DA
								D.A.	0.18–0.2	BNWD-8PE-5DA

Primary product dimensions

Automatic valves (spring-back normal close type (N.C.), normal open type (N.O.), double action (D.A))
 Ferrule type and butt weld type (nominal diameter: 15A–50A (2S))

Units (mm)

Type 1
(ferrule type)



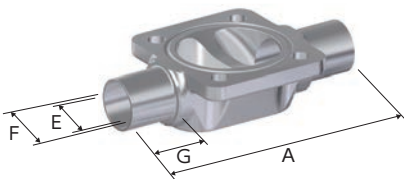
type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	15A	108	135	17.5	34	101	N.C.	0.4–0.7	BNWC-15PE-7D
							N.O.	0.4–0.44	BNWO-15PE-7D
							D.A.	0.18–0.2	BNWD-15PE-7D
	25A (1S)	127	188	23	50.5	123	N.C.	0.4–0.7	BNWC-25PE-7F
							N.O.	0.4–0.44	BNWO-25PE-7F
							D.A.	0.27–0.29	BNWD-25PE-7F
	40A (1.5S)	159	242	35.7	50.5	163	N.C.	0.4–0.7	BNWC-40PE-7H
							N.O.	0.4–0.44	BNWO-40PE-7H
							D.A.	0.29–0.31	BNWD-40PE-7H
	50A (2S)	190	281	47.8	64	203	N.C.	0.4–0.7	BNWC-50PE-7I
							N.O.	0.4–0.44	BNWO-50PE-7I
							D.A.	0.24–0.26	BNWD-50PE-7I

Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	3/4"	101.6	138	15.75	25	83	N.C.	0.4–0.7	BNWC-15PE-7EA
							N.O.	0.4–0.44	BNWO-15PE-7EA
							D.A.	0.18–0.2	BNWD-15PE-7EA
	1"	114.3	188	22.1	50.4	99	N.C.	0.4–0.7	BNWC-25PE-7FA
							N.O.	0.4–0.44	BNWO-25PE-7FA
							D.A.	0.27–0.29	BNWD-25PE-7FA
	1.5"	139.7	242	34.8	50.4	136	N.C.	0.4–0.7	BNWC-40PE-7HA
							N.O.	0.4–0.44	BNWO-40PE-7HA
							D.A.	0.29–0.31	BNWD-40PE-7HA
	2"	158.8	281	47.5	63.9	174	N.C.	0.4–0.7	BNWC-50PE-7IA
							N.O.	0.4–0.44	BNWO-50PE-7IA
							D.A.	0.24–0.26	BNWD-50PE-7IA

Units (mm)

Type 2
(butt weld type)



type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	15A	108	135	17.5	21.7	28	101	N.C.	0.4–0.7	BNWC-15PE-5D
								N.O.	0.4–0.44	BNWO-15PE-5D
								D.A.	0.18–0.2	BNWD-15PE-5D
	25A (1S)	127	188	23	25.4	28	123	N.C.	0.4–0.7	BNWC-25PE-5F
								N.O.	0.4–0.44	BNWO-25PE-5F
								D.A.	0.27–0.29	BNWD-25PE-5F
	40A (1.5S)	159	242	35.7	38.1	30	163	N.C.	0.4–0.7	BNWC-40PE-5H
								N.O.	0.4–0.44	BNWO-40PE-5H
								D.A.	0.29–0.31	BNWD-40PE-5H
	50A (2S)	190	281	47.8	50.8	35	203	N.C.	0.4–0.7	BNWC-50PE-5I
								N.O.	0.4–0.44	BNWO-50PE-5I
								D.A.	0.24–0.26	BNWD-50PE-5I

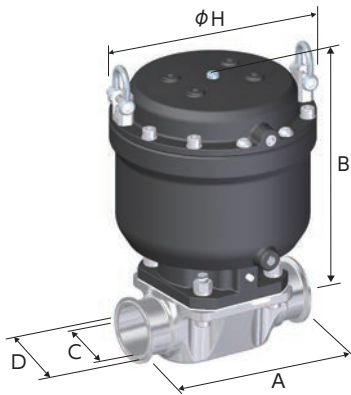
Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	3/4"	108	138	15.75	19.05	30	83	N.C.	0.4–0.7	BNWC-15PE-5EA
								N.O.	0.4–0.44	BNWO-15PE-5EA
								D.A.	0.18–0.2	BNWD-15PE-5EA
	1"	120	188	22.1	25.4	26	99	N.C.	0.4–0.7	BNWC-25PE-5FA
								N.O.	0.4–0.44	BNWO-25PE-5FA
								D.A.	0.27–0.29	BNWD-25PE-5FA
	1.5"	153	242	34.8	38.1	29.5	136	N.C.	0.4–0.7	BNWC-40PE-5HA
								N.O.	0.4–0.44	BNWO-40PE-5HA
								D.A.	0.29–0.31	BNWD-40PE-5HA
	2"	173	281	47.5	50.8	32.5	174	N.C.	0.4–0.7	BNWC-50PE-5IA
								N.O.	0.4–0.44	BNWO-50PE-5IA
								D.A.	0.24–0.26	BNWD-50PE-5IA

**Large-aperture automatic valves (spring-back normal close type (N.C.), normal open type (N.O.), double action (D.A))
Ferrule type and butt weld type (nominal diameter: 65A (2.5S)–100A (4S))**

Units (mm)

Type 1
(ferrule type)

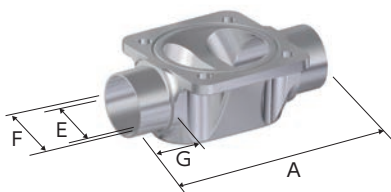


type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	65A (2.5S)	216	320	59.5	77.5	234	N.C.	0.4–0.7	BNWC-65PE-7J
							N.O.	0.4–0.44	BNWO-65PE-7J
							D.A.	0.23–0.25	BNWD-65PE-7J
	80A (3S)	254	381	72.3	91	290	N.C.	0.4–0.7	BNWC-80PE-7K
							N.O.	0.4–0.44	BNWO-80PE-7K
							D.A.	0.23–0.25	BNWD-80PE-7K
	100A (4S)	305	435	97.6	119	290	N.C.	0.4–0.7	BNWC-100PE-7M
							N.O.	0.4–0.44	BNWO-100PE-7M
							D.A.	0.21–0.23	BNWD-100PE-7M

Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	2.5"	193.8	320	60.2	77.4	234	N.C.	0.4–0.7	BNWC-65PE-7JA
							N.O.	0.4–0.44	BNWO-65PE-7JA
							D.A.	0.23–0.25	BNWD-65PE-7JA
	3"	222.3	381	72.9	90.9	290	N.C.	0.4–0.7	BNWC-80PE-7KA
							N.O.	0.4–0.44	BNWO-80PE-7KA
							D.A.	0.23–0.25	BNWD-80PE-7KA
	4"	292.1	435	97.38	119	290	N.C.	0.4–0.7	BNWC-100PE-7MA
							N.O.	0.4–0.44	BNWO-100PE-7MA
							D.A.	0.21–0.23	BNWD-100PE-7MA

Type 2
(butt weld type)



Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	65A (2.5S)	216	320	59.5	63.5	35	234	N.C.	0.4–0.7	BNWC-65PE-5J
								N.O.	0.4–0.44	BNWO-65PE-5J
								D.A.	0.23–0.25	BNWD-65PE-5J
	80A (3S)	254	381	72.3	76.3	35	290	N.C.	0.4–0.7	BNWC-80PE-5K
								N.O.	0.4–0.44	BNWO-80PE-5K
								D.A.	0.23–0.25	BNWD-80PE-5K
	100A (4S)	305	435	97.6	101.6	35	290	N.C.	0.4–0.7	BNWC-100PE-5M
								N.O.	0.4–0.44	BNWO-100PE-5M
								D.A.	0.21–0.23	BNWD-100PE-5M

Units (mm)

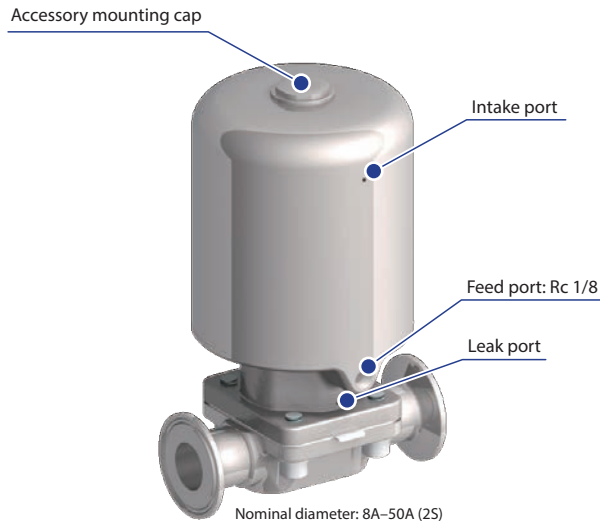
type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	2.5"	216	320	60.2	63.5	41	234	N.C.	0.4–0.7	BNWC-65PE-5JA
								N.O.	0.4–0.44	BNWO-65PE-5JA
								D.A.	0.23–0.25	BNWD-65PE-5JA
	3"	254	381	72.9	76.2	47	290	N.C.	0.4–0.7	BNWC-80PE-5KA
								N.O.	0.4–0.44	BNWO-80PE-5KA
								D.A.	0.23–0.25	BNWD-80PE-5KA
	4"	305	435	97.38	101.6	35	290	N.C.	0.4–0.7	BNWC-100PE-5MA
								N.O.	0.4–0.44	BNWO-100PE-5MA
								D.A.	0.21–0.23	BNWD-100PE-5MA

Stainless steel actuators: Automatic valve

Stainless steel actuator features

Use of **highly corrosion-resistant stainless steel** allows for use in harsh conditions in autoclaves

Structure (automatic type)



Material	Bonnet	ASTM A351 CF8
	Diaphragm restraint	SUS304
	Cylinder exterior	SUS304

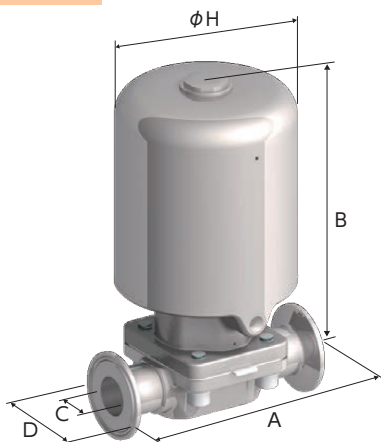
Primary product dimensions

Stainless steel upper section: Automatic valves (spring-back normal close type (N.C.))

Ferrule type (nominal diameter: 8A-50A (2S))

Units (mm)

Size
8A-50A (2S)



Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
8A	90	84	10.5	34	44	N.C.	0.4-0.7	BNWUC-8PE-7B
10A	90	85	14	34	44	N.C.	0.4-0.7	BNWUC-8PE-7C
15A	108	141	17.5	34	83	N.C.	0.4-0.7	BNWUC-15PE-7D
25A (1S)	127	179	23	50.5	103	N.C.	0.4-0.7	BNWUC-25PE-7F
40A (1.5S)	159	232	35.7	50.5	128	N.C.	0.4-0.7	BNWUC-40PE-7H
50A (2S)	190	167	47.8	64	164	N.C.	0.4-0.7	BNWUC-50PE-7I

Units (mm)

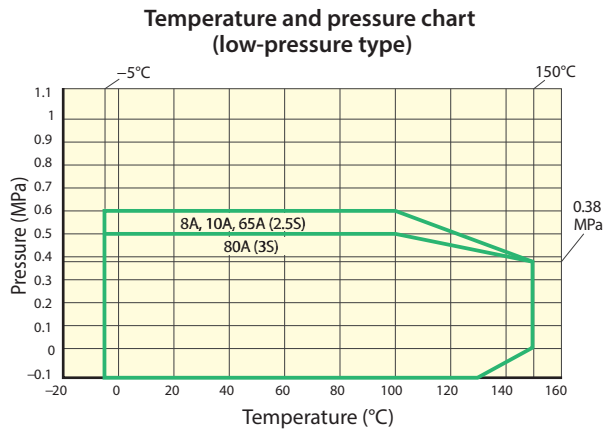
Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1/4"	63.5	85	4.57	25	44	N.C.	0.4-0.7	BNWUC-8PE-7BA
3/8"	63.5	85	7.75	25	44	N.C.	0.4-0.7	BNWUC-8PE-7CA
1/2"	63.5	85	9.4	25	44	N.C.	0.4-0.7	BNWUC-8PE-7DA
3/4"	101.6	101	15.75	25	68	N.C.	0.4-0.7	BNWUC-15PE-7EA
1"	114.3	148	22.1	50.4	83	N.C.	0.4-0.7	BNWUC-25PE-7FA
1 1/2"	139.7	194	34.8	50.4	103	N.C.	0.4-0.7	BNWUC-40PE-7HA
2"	158.8	247	47.5	63.9	128	N.C.	0.4-0.7	BNWUC-50PE-7IA

Low-pressure type automatic valves

Low-pressure type automatic valve product specifications

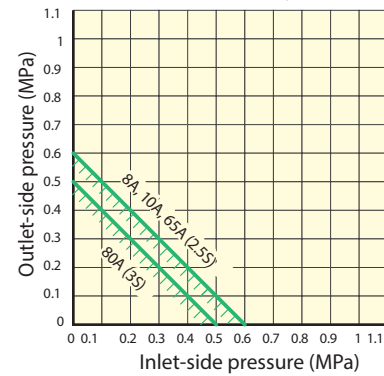
		Product specifications
Maximum working pressure		100% ΔP 0.6 MPa, 80A (3S): 100% ΔP 0.5 MPa
Working fluid temperature range		-5°C to +150°C
Actuator	type	Spring-back (normal close type) (N.C.)
	Operating pressure feed port size	Rc 1/8
	Operating pressure	N.C. type: 0.5–0.8 MPa

Temperature and pressure charts



*: Please feel free to inquire with Fujikin about usage conditions outside of the temperature and pressure charts.
 *: Durability can vary depending on usage conditions, so please consult with Fujikin.
 *: Temperature and pressure charts show ranges for valve pressure performance.
 For pressure ranges at which valves can be shut off, see the table to the right.

Range of pressure to shut off valve (low-pressure type)

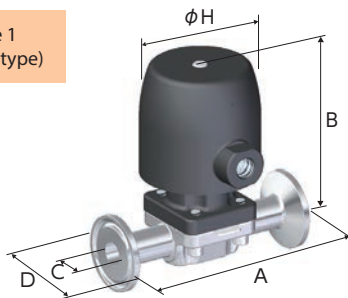


*: If valves are used at low temperatures 0°C or below, valve shutoff performance may decrease, so please consult with Fujikin.

Primary product dimensions

Low-pressure type: Aluminum upper section: Automatic valves (spring-back normal close type (N.C.))
 Ferrule type and butt weld type (nominal diameter: 8A–10A)

Type 1 (ferrule type)



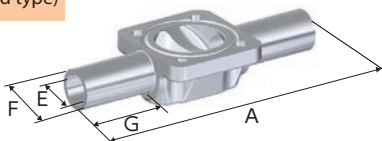
Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	8A	90	84	10.5	34	52	N.C.	0.4–0.7	BNWC2-8PE-7B
	10A	90	85.5	14	34	52	N.C.	0.4–0.7	BNWC2-8PE-7C

Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	1/4"	63.5	84	4.57	25	52	N.C.	0.4–0.7	BNWC2-8PE-7BA
	3/8"	63.5	84	7.75	25	52	N.C.	0.4–0.7	BNWC2-8PE-7CA
	1/2"	63.5	84	9.4	25	52	N.C.	0.4–0.7	BNWC2-8PE-7DA

Type 2 (butt weld type)



Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	8A	90	84	10.5	13.8	27	52	N.C.	0.4–0.7	BNWC2-8PE-5B
	10A	90	85.5	14	17.3	27	52	N.C.	0.4–0.7	BNWC2-8PE-5C

Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	1/4"	90	84	4.57	6.35	27	52	N.C.	0.4–0.7	BNWC2-8PE-5BA
	3/8"	90	84	7.75	9.52	27	52	N.C.	0.4–0.7	BNWC2-8PE-5CA
	1/2"	90	84	9.4	12.7	27	52	N.C.	0.4–0.7	BNWC2-8PE-5DA

BNW series Weir diaphragm valves

BNW series Weirless diaphragm valves

LPS series Weirless diaphragm valves

BY series Angle seat valves

CARTEN

CARTEN BPV series Single-use punch valves

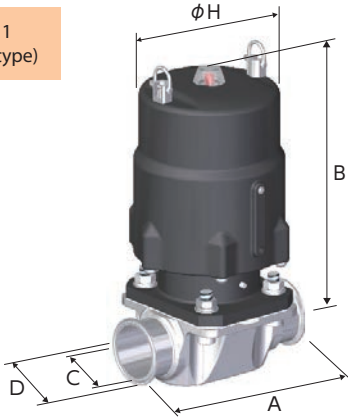
Fujikin & CARTEN Products related to liquid processes

Primary product dimensions

Low-pressure type: Large-aperture: Aluminum upper section: Automatic valves (spring-back normal close type (N.C.), normal open type (N.O.))
Ferrule type and butt weld type (nominal diameter: 65A (2.5S)–80A (3S))

Units (mm)

Type 1
(ferrule type)

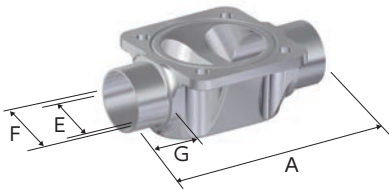


type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	65A (2.5S)	216	306	59.5	77.5	176	N.C.	0.5–0.8	BNWC2-65PE-7J
							N.O.	0.5–0.55	BNWO2-65PE-7J
	80A (3S)	254	370	72.3	91	200	N.C.	0.5–0.8	BNWC2-80PE-7K
							N.O.	0.5–0.55	BNWO2-80PE-7K

Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (ferrule type)	2.5"	193.8	306	60.2	77.4	176	N.C.	0.5–0.8	BNWC2-65PE-7JA
							N.O.	0.5–0.55	BNWO2-65PE-7JA
	3"	222.3	370	72.9	90.9	200	N.C.	0.5–0.8	BNWC2-80PE-7KA
							N.O.	0.5–0.55	BNWO2-80PE-7KA

Type 2
(butt weld type)



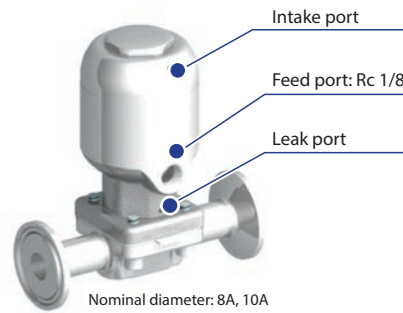
Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	65A (2.5S)	216	306	59.5	63.5	35	176	N.C.	0.5–0.8	BNWC2-65PE-5J
								N.O.	0.5–0.55	BNWO2-65PE-5J
	80A (3S)	370	85.5	72.3	76.3	35	200	N.C.	0.5–0.8	BNWC2-80PE-5K
								N.O.	0.5–0.55	BNWO2-80PE-5K

Units (mm)

type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	2.5"	216	306	60.2	63.5	41	176	N.C.	0.5–0.8	BNWC2-65PE-5JA
								N.O.	0.5–0.55	BNWO2-65PE-5JA
	3"	254	85.5	72.9	76.2	47	200	N.C.	0.5–0.8	BNWC2-80PE-5KA
								N.O.	0.5–0.55	BNWO2-80PE-5KA

Structure (automatic type)



Material	Bonnet	ASTM A351 CF8
	Diaphragm restraint	SUS304
	Cylinder exterior	SUS304

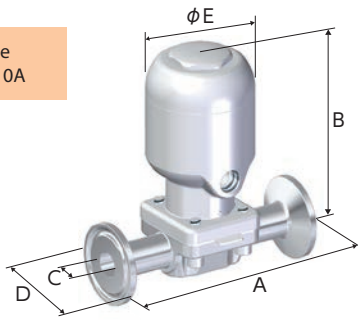
Primary product dimensions

Low-pressure type: Stainless steel upper section: Automatic valves (spring-back normal close type (N.C.))

Ferrule type (nominal diameter: 8A-50A (2S))

Units (mm)

Size
8A, 10A

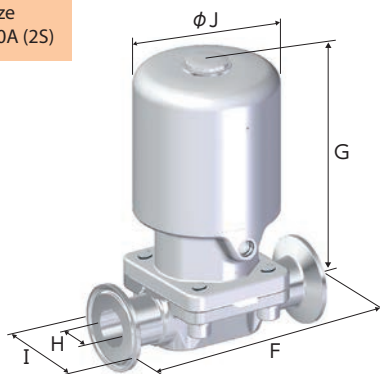


Nominal diameter	A	B	C	D	E	Actuator Operation type	Operating pressure (MPa)	Part No.
8A	90	84	10.5	34	44	N.C.	0.45-0.7	BNWUC2-8PE-7B
10A	90	85	14	34	44	N.C.	0.45-0.7	BNWUC2-8PE-7C

Units (mm)

Nominal diameter	A	B	C	D	E	Actuator Operation type	Operating pressure (MPa)	Part No.
1/4"	63.5	85	4.57	25	44	N.C.	0.45-0.7	BNWUC2-8PE-7BA
3/8"	63.5	85	7.75	25	44	N.C.	0.45-0.7	BNWUC2-8PE-7CA
1/2"	63.5	85	9.4	25	44	N.C.	0.45-0.7	BNWUC2-8PE-7DA

Size
15A-50A (2S)



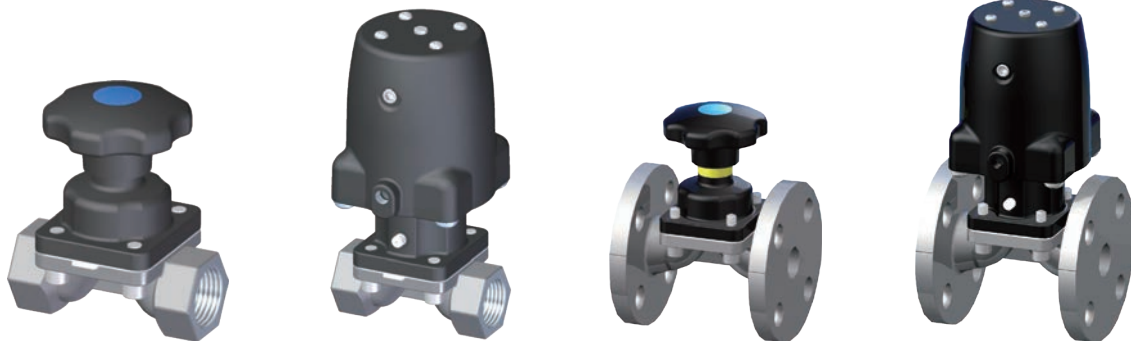
Units (mm)

Nominal diameter	F	G	H	I	J	Actuator Operation type	Operating pressure (MPa)	Part No.
15A	108	104	17.5	34	68	N.C.	0.45-0.7	BNWUC2-15PE-7D
25A (1S)	127	148	23	50.5	83	N.C.	0.45-0.7	BNWUC2-25PE-7F
40A (1.5S)	159	194	35.7	50.5	103	N.C.	0.45-0.7	BNWUC2-40PE-7H
50A (2S)	190	247	47.8	64	128	N.C.	0.45-0.7	BNWUC2-50PE-7I

Units (mm)

Nominal diameter	F	G	H	I	J	Actuator Operation type	Operating pressure (MPa)	Part No.
3/4"	101.6	101	15.75	25	68	N.C.	0.45-0.7	BNWUC2-15PE-7EA
1"	114.3	148	22.1	50.4	83	N.C.	0.45-0.7	BNWUC2-25PE-7FA
1.5"	139.7	194	34.8	50.4	103	N.C.	0.45-0.7	BNWUC2-40PE-7HA
2"	158.8	247	47.5	63.9	128	N.C.	0.45-0.7	BNWUC2-50PE-7IA

Economy series threaded connection Flange connection



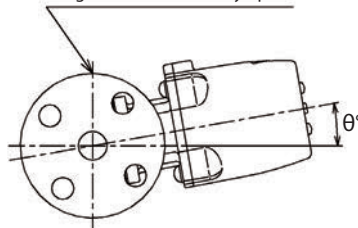
Economy series product specification

		Product specifications									
Connection		JIS10K flange type and JIS B0203 (pipe threading) tapered threading									
Material	Body	SCS14A									
Working fluid		Water, fluids such as water vapor that do not corrode wet members of valve, and inert gases such as air or nitrogen									
Maximum working pressure		1 MPa (0.6 MPa for 8A, 0.7 MPa for 100A)									
Working fluid temperature range		-5°C to +150°C (differs depending on diaphragm material))									
Actuator type		<ul style="list-style-type: none"> • Spring-back type • Normal close type (N.C.) • Normal open type (N.O.) • Double action type (D.A.) • Manual type 									
Actuator series		8A	15A	25A	40A	50A	65A	80A	100A		
Connection	Threading (Rc)	1/4	1/2	3/4	1	—	—	—	—		
Connection	Flange (JIS10K)	—	15A	20A	25A	40A	50A	65A	80A	100A	

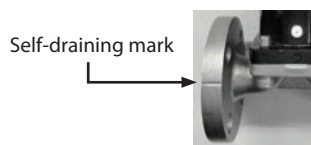
*: Polishing of internal surfaces of body can also be accommodated. Please consult with Fujikin if this is required.

Flange connection type Self-draining piping installation angle

Liquid retention will be minimized if the “—” mark on the side of the flange is oriented directly upward.



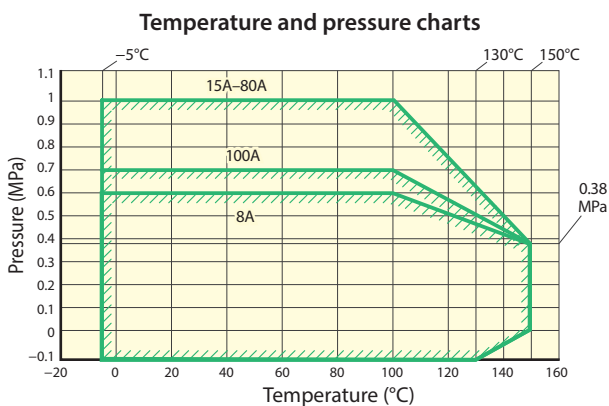
*: We recommend that a loose flange be used as the connection flange on the opposing side.



Valve size (DN)	Self-draining Piping angle (θ°)
15A	11
20A	13
25A	10
40A	8
50A	7
65A	6
80A	6
100A	10

Table. Flange connection types
Self-draining piping installation angle

Temperature and pressure charts

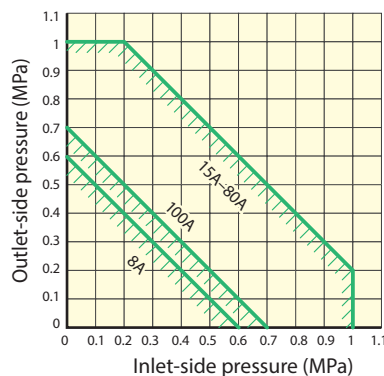


*: Please feel free to inquire with Fujikin about usage conditions outside of the temperature and pressure charts.

*: Durability can vary depending on usage conditions, so please consult with Fujikin.

*: Temperature and pressure charts show ranges for valve pressure performance. For pressure ranges at which valves can be shut off, see the table to the right.

Valve shutoff pressure range



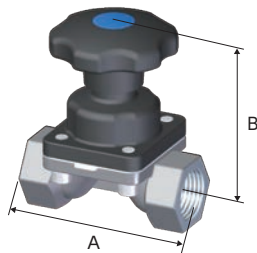
*: If valves are used at low temperatures 0°C or below, valve shutoff performance may decrease, so please consult with Fujikin.

Primary product dimensions

Manual valves

Threaded type (nominal diameter: Rc 1/4–1)

Units (mm)



	Connection	Nominal diameter	A	B	Connection section hex face-to-face dimension HEX	Cv value	Part No.
Manual	Threaded	1/4	50	73	22	2	BNWM2-8PE-C1B
		1/2	64	101	33	6	BNWM-15PE-C1D
		3/4	108	117	38	12	BNWM-25PE-C1E
		1	108	120	46	13	BNWM-25PE-C1F

Automatic valve (spring-back normal close type (N.C.))

Threaded type (nominal diameter: Rc 1/4–1)

Units (mm)

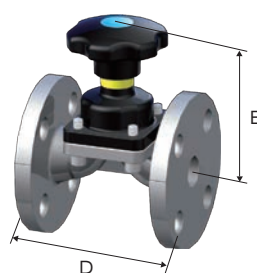


	Connection	Nominal diameter	A	C	Connection section hex face-to-face dimension HEX	Cv value	Part No.
Manual	Threaded	1/4	50	88	22	2	BNWC2-8PE-C1B
		1/2	64	141	33	6	BNWC-15PE-C1D
		3/4	108	195	38	12	BNWC-25PE-C1E
		1	108	198	46	13	BNWC-25PE-C1F

Manual valves

Flange type (nominal diameter: 15A–100A)

Units (mm)

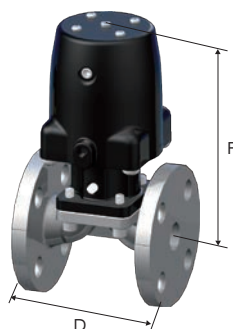


	Connection	Nominal diameter	D	E	Internal diameter	Cv value	Part No.
Manual	Flange	15A	108	99	15	6.2	BNWM-15PE-C2D
		20A	127	117	20	13	BNWM-25PE-C2E
		25A	127	119.5	25	13	BNWM-25PE-C2F
		40A	159	155	40	27	BNWM-40PE-C2H
		50A	190	185	50	50	BNWM-50PE-C2I
		65A	216	244	65	80	BNWM2-65PE-C2J
		80A	254	297	80	130	BNWM2-80PE-C2K
		100A	305	344	100	200	BNWM-100PE-C2M

Automatic valve (spring-back normal close type (N.C.))

Flange type (nominal diameter: 15A–100A)

Units (mm)



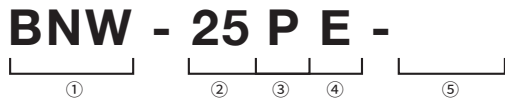
	Connection	Nominal diameter	D	F	Internal diameter	Cv value	Part No.
Automatic	Flange	15A	108	139	15	6.2	BNWC-15PE-C2D
		20A	127	195	20	13	BNWC-25PE-C2E
		25A	127	197.5	25	13	BNWC-25PE-C2F
		40A	159	252	40	27	BNWC-40PE-C2H
		50A	190	292	50	50	BNWC-50PE-C2I
		65A	216	333	65	80	BNWC-65PE-C2J
		80A	254	396.5	80	130	BNWC-80PE-C2K
		100A	305	444	100	200	BNWC-100PE-C2M

Low-pressure type can also be accommodated.

Components (diaphragm)

Fujikin backup rubber (EPDM) and PTFE diaphragms are manufactured using rubber and fluorine-based resin conformant to FDA (US Food and Drug Administration) CFR 177.1550 and CFR 177.2600 and USP Class VI.

BNW series diaphragm unit: Part number format



①	Valve series name
BNW	BNW series weir diaphragm valves

②	Diaphragm size
8	8A
15	15A
25	25A (1S)
40	40A (1.5S)
50	50A (2S)
65	65A (2.5S)
80	80A (3S)
100	100A (4S)

③	Diaphragm wetted surface material
P	PTFE
E	EPDM

④	Backup rubber material
None	Single rubber diaphragm
E	EPDM

*: Diaphragm material: PTFE/EPDM is standard.

⑤	Other
	Abbreviations are inserted for special products.

Standard diaphragm (PTFE/EPDM)



Wet side: PTFE

Reverse side: EPDM

Nominal diameter	Part No.
8A	BNW-8PE
15A	BNW-15PE
25A (1S)	BNW-25PE
40A (1.5S)	BNW-40PE
50A (2S)	BNW-50PE
65A (2.5S)	BNW-65PE
80A (3S)	BNW-80PE
100A (4S)	BNW-100PE

Single rubber diaphragm (EPDM)



Wet side: EPDM

Reverse side

Nominal diameter	Part No.
8A	BNW-8E
15A	BNW-15E
25A (1S)	BNW-25E
40A (1.5S)	BNW-40E
50A (2S)	BNW-50E

Specifications differ from those for standard diaphragms (PTFE/EPDM), so please consult with us Fujikin when selecting.

Components (actuator)

BNW series actuators: Part number format



①	Valve series name
BNW	BNW series weir diaphragm valves

②	Actuator material
None	Aluminum
U	Stainless steel

③	Actuator operation type
C	Spring-back (normal close type) (N.C.)
O	Spring-back (normal open type) (N.O.)
D	Double action type (D.A.)
M	Manual

④	Pressure type
None	Standard type
2	Low-pressure type

⑤	Actuator type
None	For two-way valves
T	For T valves and block valves

⑥	Diaphragm size
8	8A
15	15A
25	25A (1S)
40	40A (1.5S)
50	50A (2S)
65	65A (2.5S)
80	80A (3S)
100	100A (4S)

⑦	Other
	Abbreviations are inserted for special products.

*: Aluminum automatic upper section: Low-pressure type is for 8A, 10A, 65A, and 80A only
 Aluminum manual upper section: 65A and 80A are standard type

Manual type



Nominal diameter:
8A–50A (2S)



Nominal diameter:
65A (2.5S)–100A (4S)

■ Upper section for two-way valves

Actuator Size	Part No.
8A	BNWM-8-B
15A	BNWM-15-B
25A (1S)	BNWM-25-B
40A (1.5S)	BNWM-40-B
50A (2S)	BNWM-50-B
65A (2.5S)	BNWM2-65-B
80A (3S)	BNWM2-80-B
100A (4S)	BNWM-100-B

■ Upper section for T valves and block valves

Actuator Size	Part No.
8A	BNWMT-8-B
15A	BNWMT-15-B
25A (1S)	BNWMT-25-B
40A (1.5S)	BNWMT-40-B
50A (2S)	BNWMT-50-B

Automatic standard type

(Spring-back normal close type (N.C.), normal open type (N.O.), double action (D.A))



Nominal diameter:
8A–50A (2S)



Nominal diameter:
65A (2.5S)–100A (4S)

■ Upper section for two-way valves

Actuator Size	Actuator Operation type	Part No.
8A	N.C.	BNWC-8-B
	N.O.	BNWO-8-B
	D.A.	BNWD-8-B
10A	N.C.	BNWC-8-B
	N.O.	BNWO-8-B
	D.A.	BNWD-8-B
15A	N.C.	BNWC-15-B
	N.O.	BNWO-15-B
	D.A.	BNWD-15-B
25A (1S)	N.C.	BNWC-25-B
	N.O.	BNWO-25-B
	D.A.	BNWD-25-B
40A (1.5S)	N.C.	BNWC-40-B
	N.O.	BNWO-40-B
	D.A.	BNWD-40-B
50A (2S)	N.C.	BNWC-50-B
	N.O.	BNWO-50-B
	D.A.	BNWD-50-B
65A (2.5S)	N.C.	BNWC-65-B
	N.O.	BNWO-65-B
	D.A.	BNWD-65-B
80A (3S)	N.C.	BNWC-80-B
	N.O.	BNWO-80-B
	D.A.	BNWD-80-B
100A (4S)	N.C.	BNWC-100-B
	N.O.	BNWO-100-B
	D.A.	BNWD-100-B

■ Upper section for T valves and block valves

Actuator Size	Actuator Operation type	Part No.
8A	N.C.	BNWCT-8-B
	N.O.	BNWOT-8-B
	D.A.	BNWDT-8-B
10A	N.C.	BNWCT-8-B
	N.O.	BNWOT-8-B
	D.A.	BNWDT-8-B
15A	N.C.	BNWCT-15-B
	N.O.	BNWOT-15-B
	D.A.	BNWDT-15-B
25A (1S)	N.C.	BNWCT-25-B
	N.O.	BNWOT-25-B
	D.A.	BNWDT-25-B
40A (1.5S)	N.C.	BNWCT-40-B
	N.O.	BNWOT-40-B
	D.A.	BNWDT-40-B
50A (2S)	N.C.	BNWCT-50-B
	N.O.	BNWOT-50-B
	D.A.	BNWDT-50-B

Stainless steel manual type



Nominal diameter:
8A-10A



Nominal diameter:
15A-50A (2S)

■ Upper section for two-way valves

Nominal diameter	Part No.
8A	BNWUM-8-B
10A	BNWUM-8-B
15A	BNWUM-15-B
25A (1S)	BNWUM-25-B
40A (1.5S)	BNWUM-40-B
50A (2S)	BNWUM-50-B

■ Upper section for T valves and block valves

Nominal diameter	Part No.
8A	BNWUMT-8-B
10A	BNWUMT-8-B
15A	BNWUMT-15-B
25A (1S)	BNWUMT-25-B
40A (1.5S)	BNWUMT-40-B
50A (2S)	BNWUMT-50-B

Stainless steel automatic standard type (Spring-back normal close type (N.C.))



Nominal diameter:
8A-10A



Nominal diameter:
15A-50A (2S)

■ Upper section for two-way valves

Nominal diameter	Actuator Operation type	Part No.
8A	N.C.	BNWUC-8-B
10A	N.C.	BNWUC-8-B
15A	N.C.	BNWUC-15-B
25A (1S)	N.C.	BNWUC-25-B
40A (1.5S)	N.C.	BNWUC-40-B
50A (2S)	N.C.	BNWUC-50-B

■ Upper section for T valves and block valves

Nominal diameter	Actuator Operation type	Part No.
8A	N.C.	BNWUCT-8-B
10A	N.C.	BNWUCT-8-B
15A	N.C.	BNWUCT-15-B
25A (1S)	N.C.	BNWUCT-25-B
40A (1.5S)	N.C.	BNWUCT-40-B
50A (2S)	N.C.	BNWUCT-50-B

Low-pressure compact aluminum automatic type (Spring-back normal close type (N.C.))



Nominal diameter:

■ Upper section for two-way valves

Nominal diameter	Actuator Operation type	Part No.
8A	N.C.	BNWC2-8-B
10A	N.C.	BNWC2-8-B

■ Upper section for T valves and block valves

Nominal diameter	Actuator Operation type	Part No.
8A	N.C.	BNWC2T-8-B
10A	N.C.	BNWC2T-8-B

Low-pressure type aluminum large-aperture automatic type (Spring-back normal close type (N.C.), normal open type (N.O.))

Nominal diameter:
65A (2.5S)Nominal diameter:
80A (3S)

Nominal diameter	Actuator Operation type	Part No.
65A (2.5S)	N.C.	BNWC2-65-B
	N.O.	BNWO2-65-B
80A (3S)	N.C.	BNWC2-80-B
	N.O.	BNWO2-80-B

Low-pressure type stainless steel automatic type (Spring-back normal close type (N.C.))

Nominal diameter:
8A-10ANominal diameter:
15A-50A (2S)

■ Upper section for two-way valves

Nominal diameter	Actuator Operation type	Part No.
8A	N.C.	BNWUC2-8-B
10A	N.C.	BNWUC2-8-B
15A	N.C.	BNWUC2-15-B
25A (1S)	N.C.	BNWUC2-25-B
40A (1.5S)	N.C.	BNWUC2-40-B
50A (2S)	N.C.	BNWUC2-50-B

■ Upper section for T valves and block valves

Nominal diameter	Actuator Operation type	Part No.
8A	N.C.	BNWUC2T-8-B
10A	N.C.	BNWUC2T-8-B
15A	N.C.	BNWUC2T-15-B
25A (1S)	N.C.	BNWUC2T-25-B
40A (1.5S)	N.C.	BNWUC2T-40-B
50A (2S)	N.C.	BNWUC2T-50-B

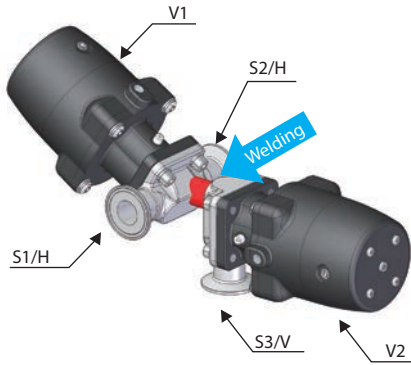
Three-way branch valves

Branched piping using fitting



For branched piping on which a horizontal valve and a vertical valve are arranged, a T fitting like that shown in the drawing is used. However, this results in a large dead leg.



Branched piping directly welded to valve body

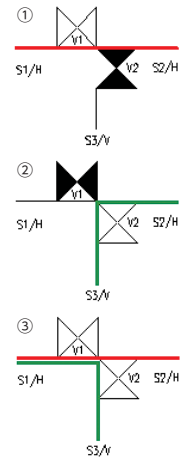


In order to reduce the size of this dead leg, the T fitting is removed, another valve is welded directly to the valve body, and the dead leg is reduced in size.

Operation pattern table

Pattern No.	Valve operation	
	V1	V2
①	O	C
②	C	C
③	O	O

O: Open, valve open 
C: Close, valve closed 



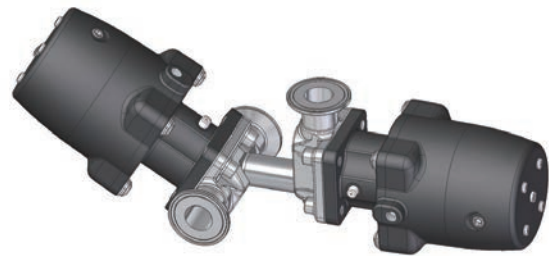
V: Vertical H: Horizontal

Representative piping examples

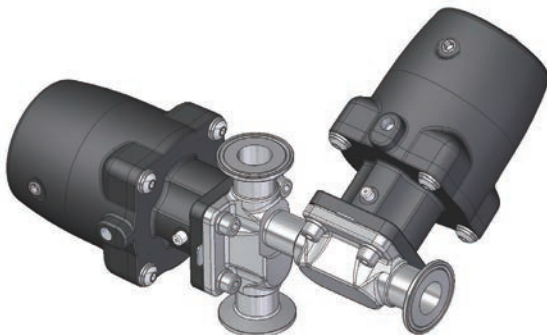
Horizontal-vertical (direct downward outlet) piping
TV type



Horizontal-vertical (direct upward outlet) piping
TVU type



Vertical-horizontal piping
VH type



Horizontal-horizontal piping
HH type



Valve piping orientation pattern drawings

① List of horizontal-vertical valve piping orientation patterns

Drawing				
	Left branch valve attachment	Right branch valve attachment	Left branch valve attachment	Right branch valve attachment
type	TV1	TV2	TVU1	TVU2

② List of vertical-horizontal valve piping orientation patterns

Drawing				
	Lower branch valve attachment	Lower branch valve attachment	Upper branch valve attachment	Upper branch valve attachment
type	VHL1	VHL2	VHU1	VHU2

③ List of horizontal-horizontal valve piping orientation patterns

Drawing				
	Left branch valve attachment	Right branch valve attachment	Left branch valve attachment	Right branch valve attachment
type	HH1	HH2	HH3	HH4

④ Vertical-horizontal branch piping orientation pattern

Drawing	
	H0

⑤ List of horizontal-vertical branch piping orientation patterns

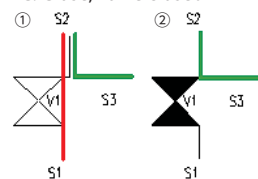
Left branch piping attachment	Right branch piping attachment
H1	H2

Operation pattern table

Pattern No.	Valve operation
	V1
①	O
②	C

O: Open, valve open

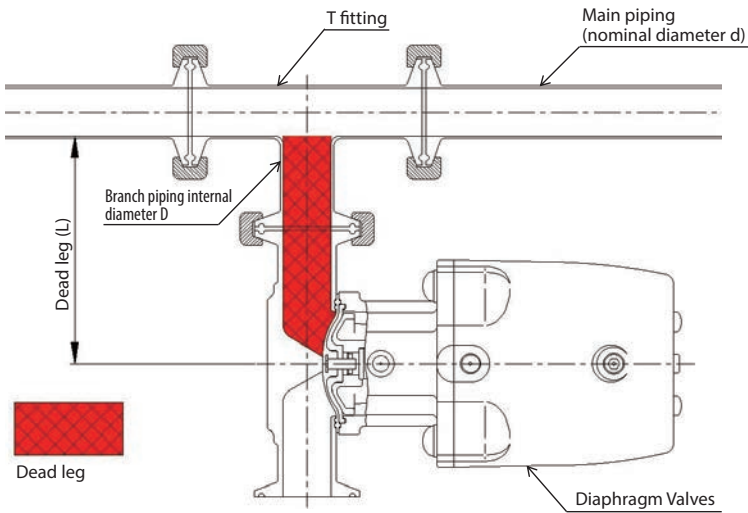
C: Close, valve closed



V: Vertical H: Horizontal

*: If you are considering other piping orientation patterns, combinations of multiple valves, or the like, we will suggest the optimal valves. Please consult with Fujikin.

Piping dead leg (L/D)

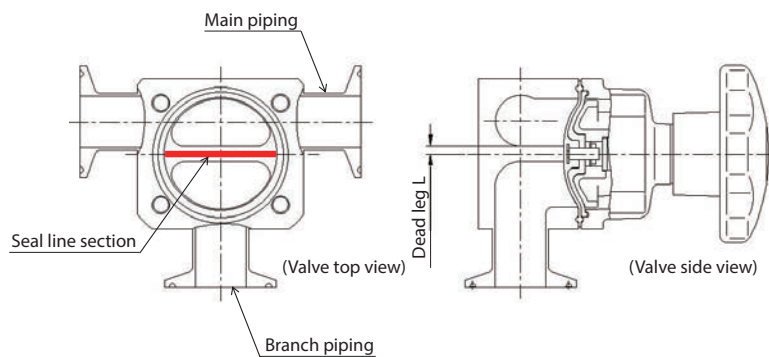


Branched piping using T fitting

In pharmaceutical manufacturing processes, piping dead legs must be small.

The red area of branch piping from the main piping in the drawing is a dead leg.

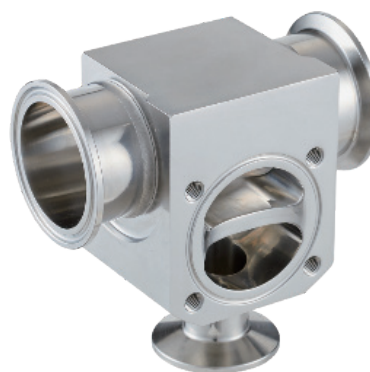
In ASME BPE, the dead leg L is considered to be the distance from the inner wall of the main piping to the central part of the internal seal of the diaphragm valve.



Structure of T-type sampling diaphragm

In the structure of a T-shaped sampling diaphragm, as shown in the drawing, the dead leg can be minimized by integrating the T fitting and the valve (forming a block).

As can be seen by looking at the seal line section, the dead leg is reduced all the way to zero.



T-shaped sampling valves

Using BNW series block valves for branched piping design makes it possible to make dead legs extremely small.



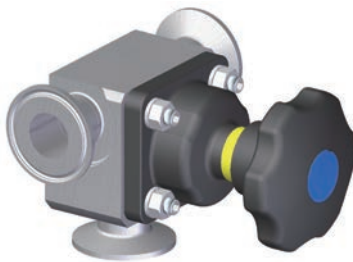
Sampling piping using fitting

1. T fitting and a valve are used as shown in the drawing for downward extraction or sampling to a use point from horizontal piping in which pure water or a drug solution is circulating.
2. However, this results in a large dead leg.



Sampling piping with valve welded to T fitting

1. In order to make this dead leg smaller, the T fitting is directly welded to the valve.
2. However, even in this case, a short pipe section remains as a dead leg because of the welding.





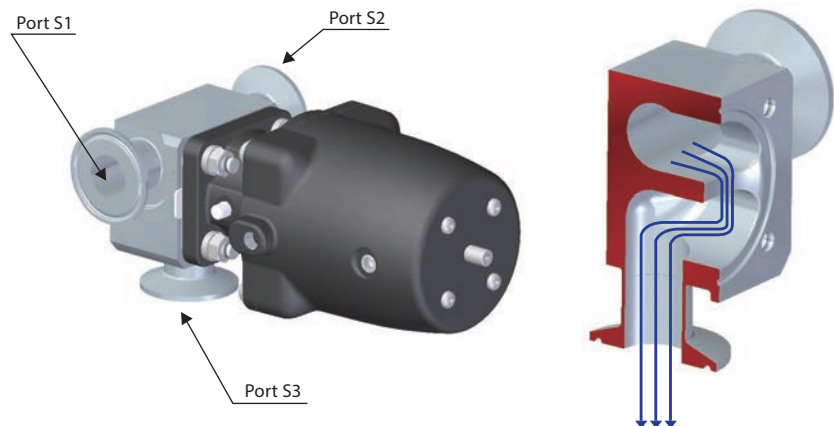
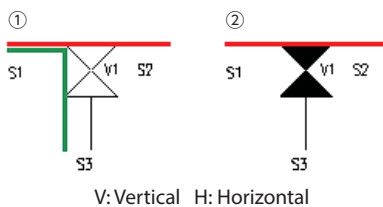
Sampling piping formed into a block

1. If a block is formed using a T-shaped sampling valve, the short pipe section can be eliminated, minimizing the dead leg and bringing it all the way to zero.

Operation pattern table

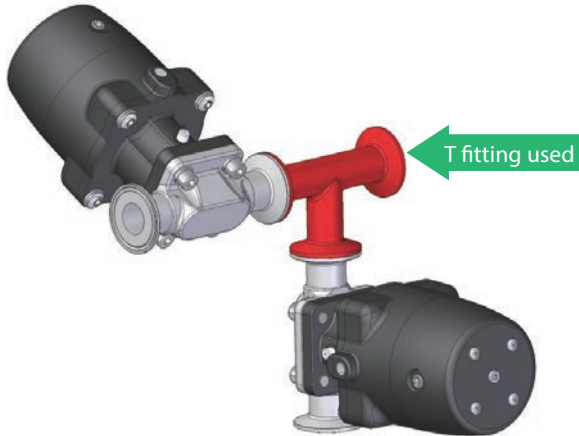
Pattern No.	Valve operation	
	V1	
①	O	
②	C	

O: Open, valve open 
 C: Close, valve closed 



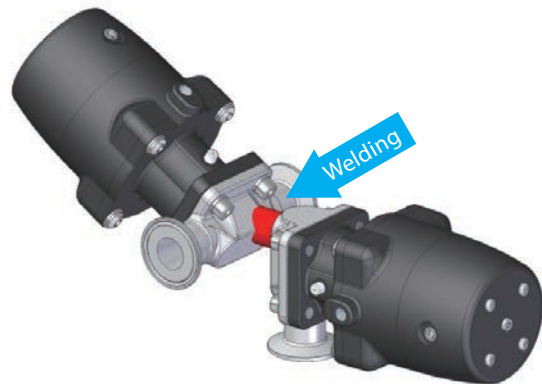
Block valves

Branched piping using fitting



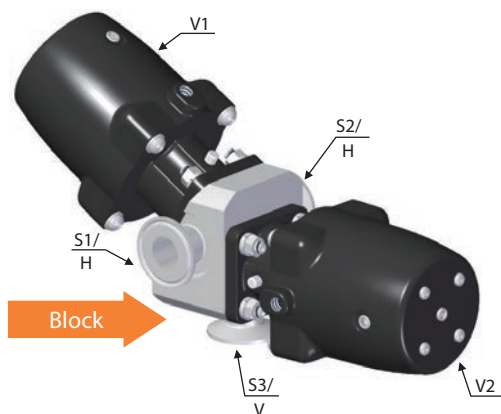
For branched piping on which a horizontal valve and a vertical valve are arranged, a T fitting like that shown in the drawing is used. However, this results in a large dead leg.

Branched piping directly welded to valve body

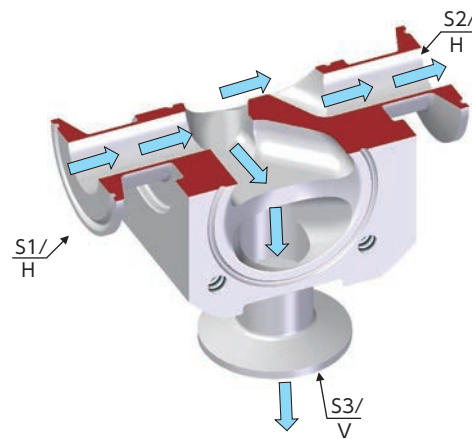


In order to reduce the size of this dead leg, the T fitting is eliminated, another valve is welded directly to the valve body, and the dead leg is made smaller.

Branched piping formed into block



Furthermore, when a block is formed, the short pipe section is eliminated, and the dead leg is minimized.



Fluid channels in block valve

How to select block valves

1. Decide on the required number of ports and number of valves.
2. Confirm the arrangement of ports and valves using a P&ID (piping and instrumentation diagram).
3. Please select the type based on the P&ID and the block valve illustrations.
4. Please enter the type and information on connections, actuators, and accessories on the block valve selection specifications.
5. If the desired type is not available, note information on the P&ID, size, etc. on the block valve selection specification and submit an inquiry to Fujikin.

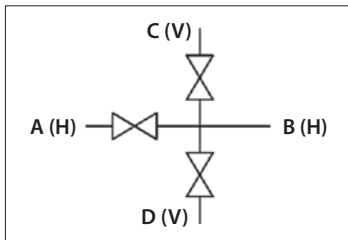
Number of ports and number of valves

Type name

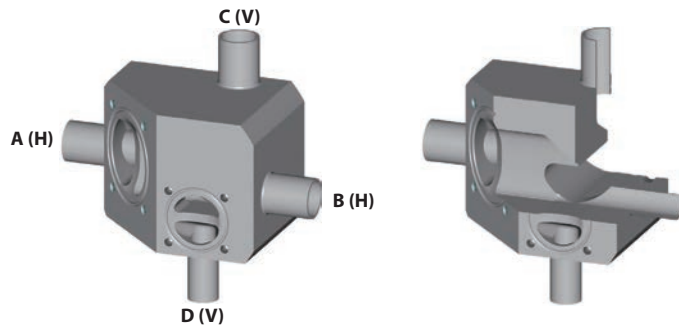
4 ports 3 valves

type **MB43E**

V: Vertical H: Horizontal



P&ID



Block valve illustration diagram

Block valve selection specifications Entry example

Refer to p. 59

Type: MB43E

Please sketch the associated drawing or record the P&ID.

P&ID (piping and instrumentation diagram) section

Piping ports: A, B, C, ...

Piping orientation: V = vertical piping, H = horizontal piping

Flow direction: →

Valve symbol:

Working pressure: 0.7 MPa

Working temperature: 130 °C

Body material: SUS316L

Diaphragm wetted surface material:
 PTFE
 EPDM

Piping standards:
 ISO/IDF
 ASME BPE
 OTHER

Actuator description codes

Actuation type:
 • Manual: M
 • Automatic: A
 • Automatic (normal open): N.O.
 • Automatic (normal closed): C.A.

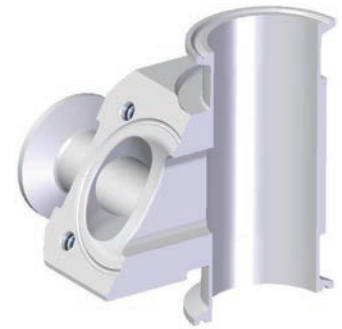
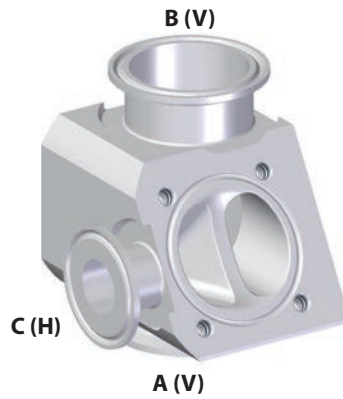
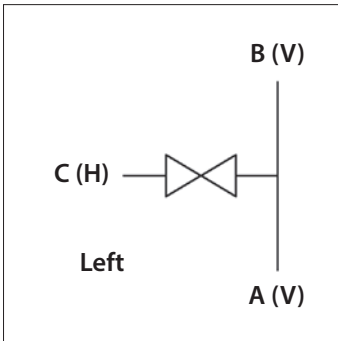
Actuator types:
 • Standard type, aluminum material: A
 • Standard type, stainless steel material: U
 • Low-pressure type, aluminum material: LA
 • Low-pressure type, stainless steel material: LU

Port No.	Connection			Actuator			Others	
	Piping orientation (C/A)	Piping size	Connection type	Valve No.	Drive type	Actuator type		Actuator size
A	H	1.5S	Ferrule	V1	NC	A	40	With limit switch
B	H	1.5S	Ferrule	V2	M	U	40	
C	V	1.5S	SB	V3	NC	LA	25	
D	V	1S	BB	V4				
E				V5				
F				V6				
G				V7				
H				V8				
I				V9				
J				V10				

3 ports 1 valve

type **S31AL**

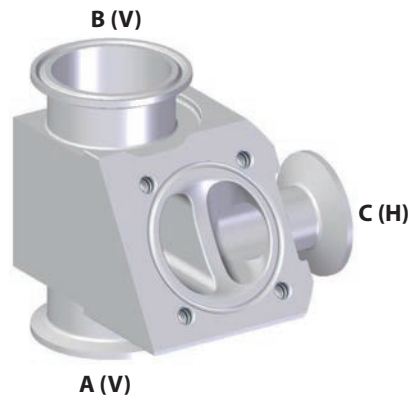
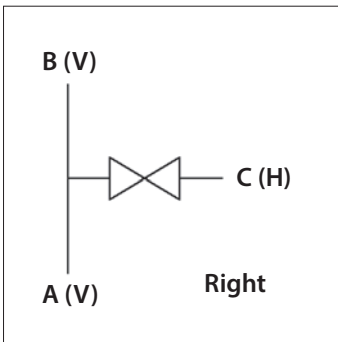
V: Vertical H: Horizontal



3 ports 1 valve

type **S31AR**

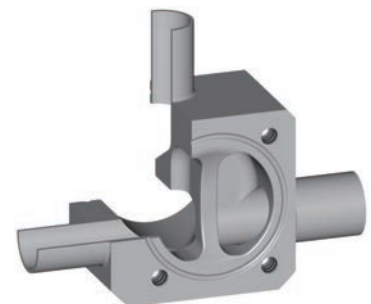
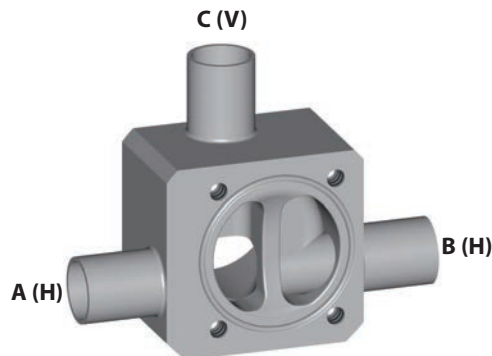
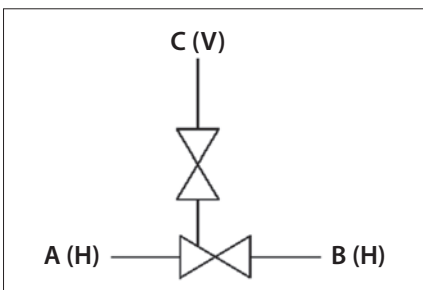
V: Vertical H: Horizontal



3 ports 2 valves

type **B32AL**

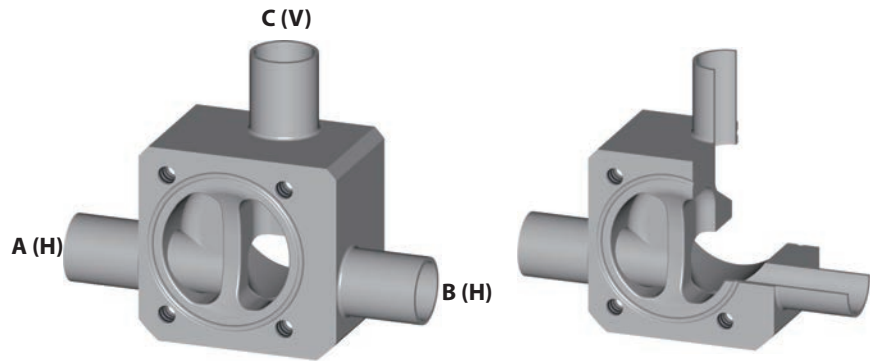
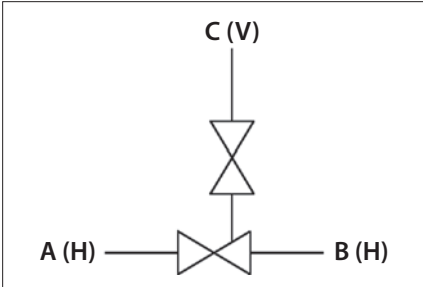
V: Vertical H: Horizontal



3 ports 2 valves

type **B32AR**

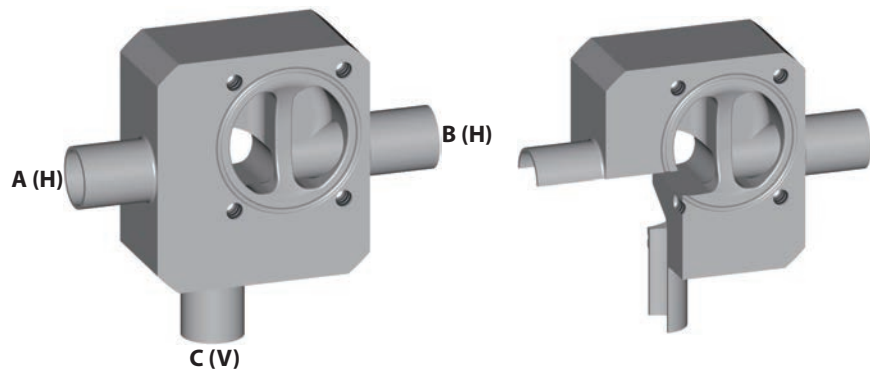
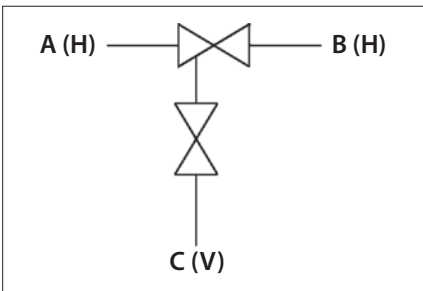
V: Vertical H: Horizontal



3 ports 2 valves

type **B32BL**

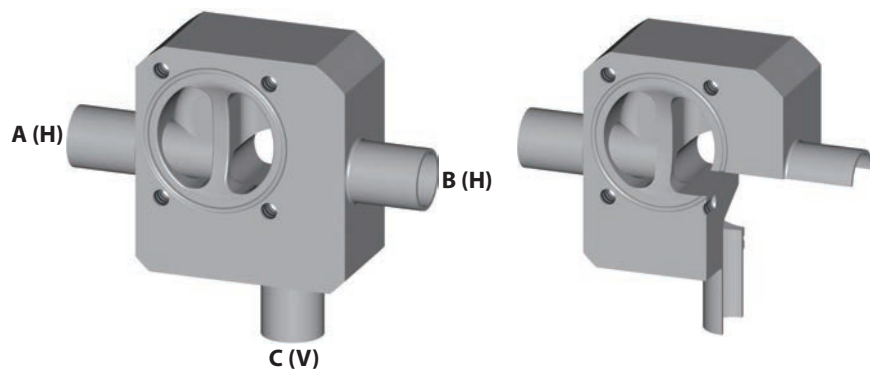
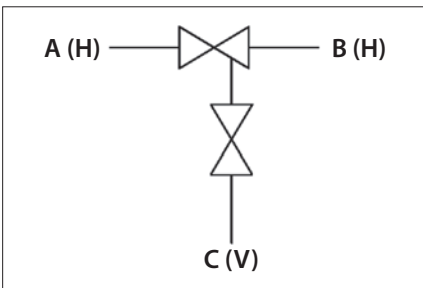
V: Vertical H: Horizontal



3 ports 2 valves

type **B32BR**

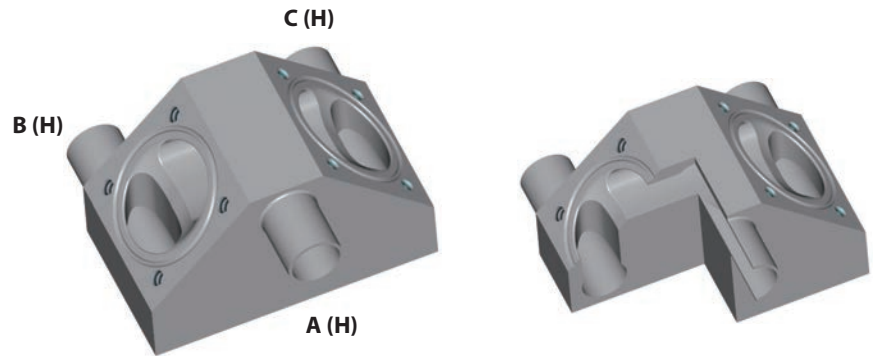
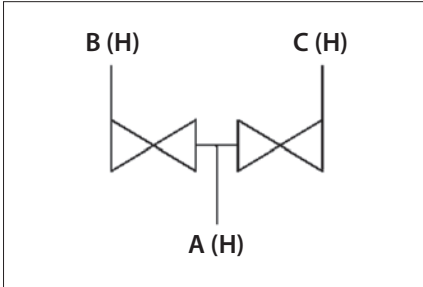
V: Vertical H: Horizontal



3 ports 2 valves

type **B32C**

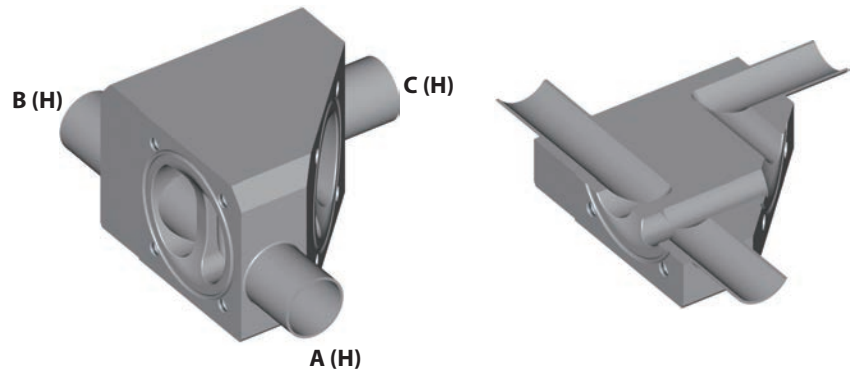
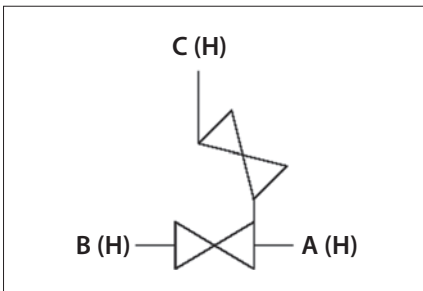
V: Vertical H: Horizontal



3 ports 2 valves

type **B32DR**

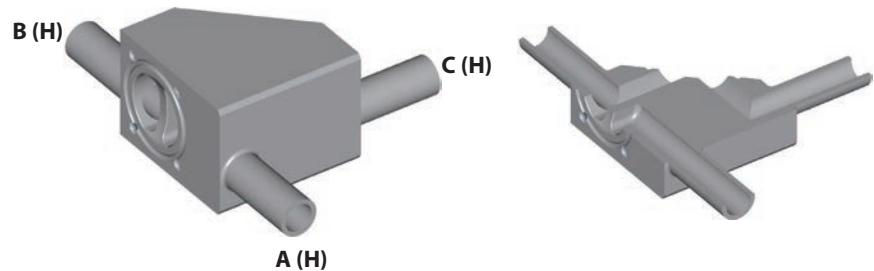
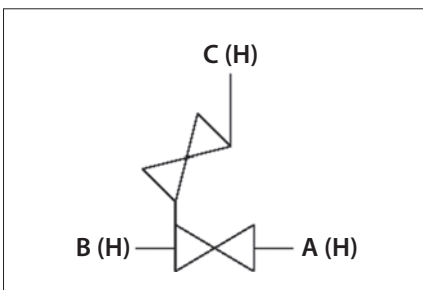
V: Vertical H: Horizontal



3 ports 2 valves

type **B32DL**

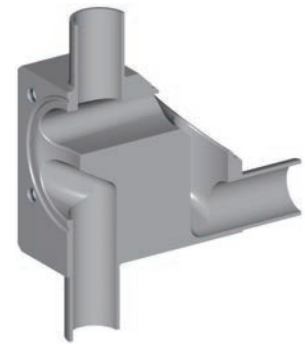
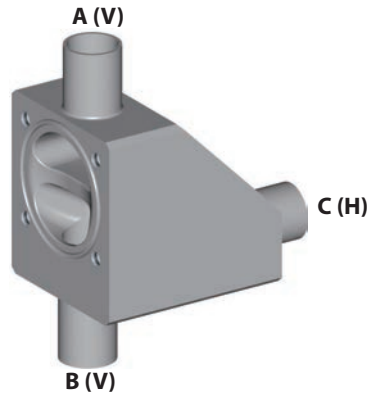
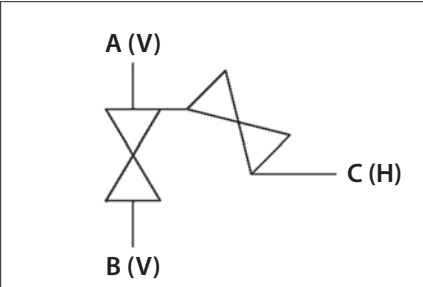
V: Vertical H: Horizontal



3 ports 2 valves

type **B32ET**

V: Vertical H: Horizontal

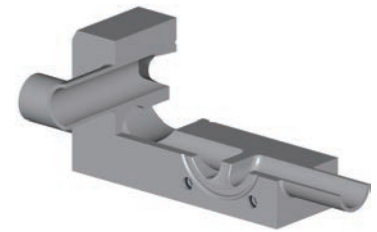
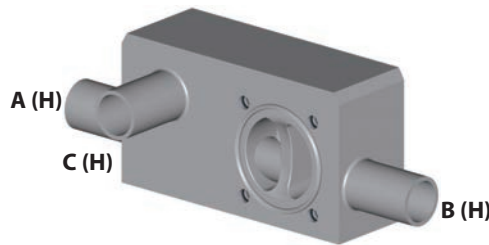
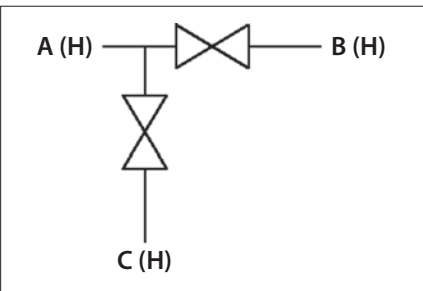


*: Blocks with downward ports (type B32EB) can also be produced

3 ports 2 valves

type **B32FT**

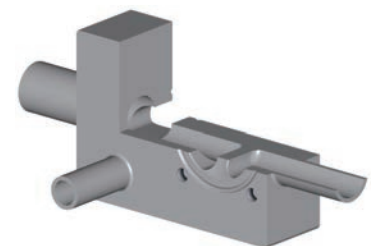
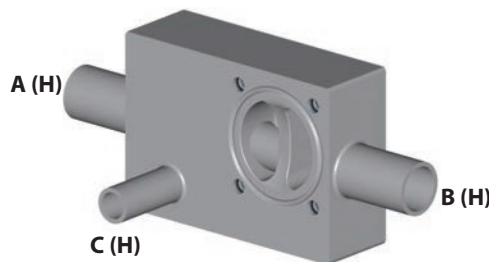
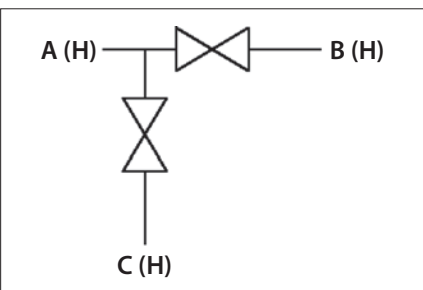
V: Vertical H: Horizontal



3 ports 2 valves

type **B32FB**

V: Vertical H: Horizontal



BNW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

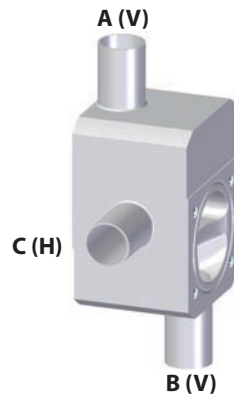
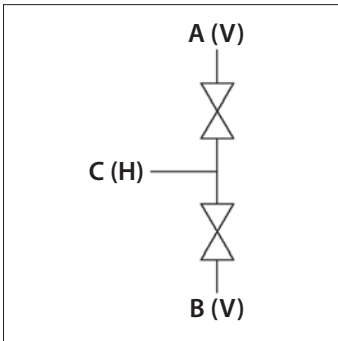
CARTEN®
BPV series
Single-use punch valves

Pijlma & CARTEN
Products related to liquid processes

3 ports 2 valves

type **B32G**

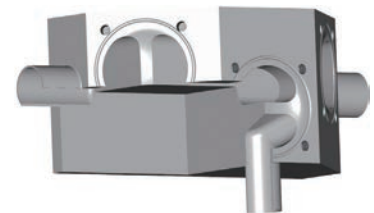
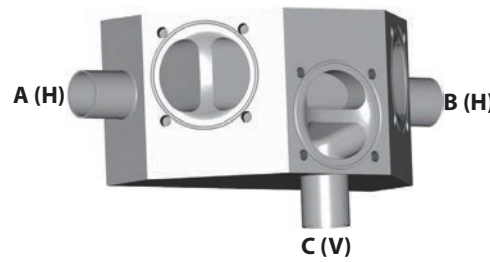
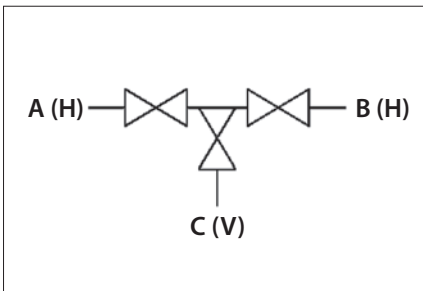
V: Vertical H: Horizontal



3 ports 3 valves

type **MB33A**

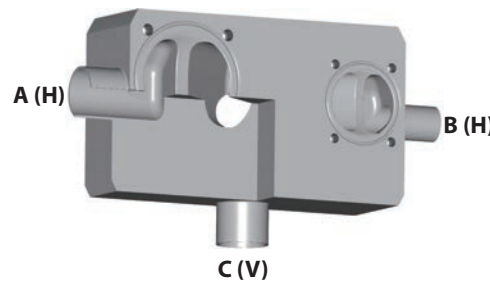
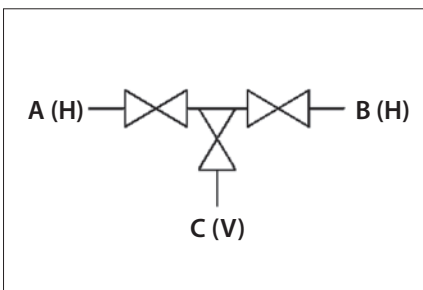
V: Vertical H: Horizontal



3 ports 3 valves

type **MB33B**

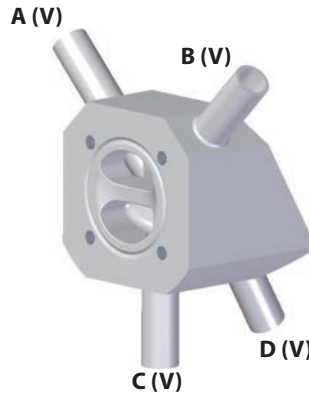
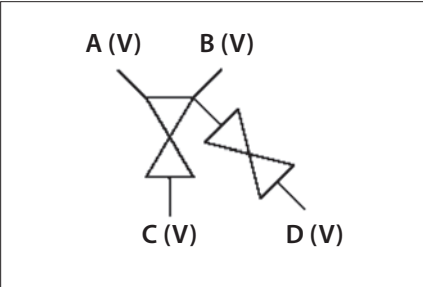
V: Vertical H: Horizontal



4 ports 2 valves

type **MY42AT**

V: Vertical H: Horizontal

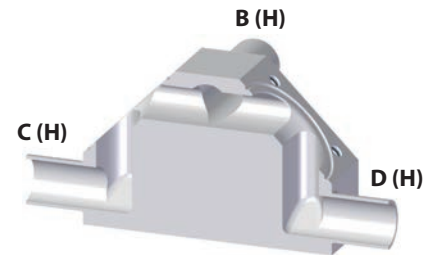
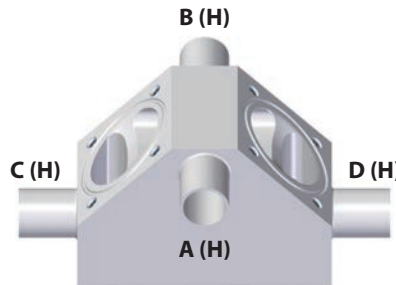
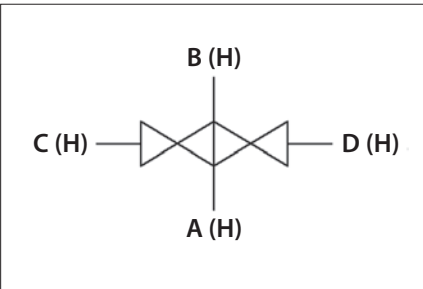


*: Blocks with downward ports (type B42AB) can also be produced

4 ports 2 valves

type **MB42A**

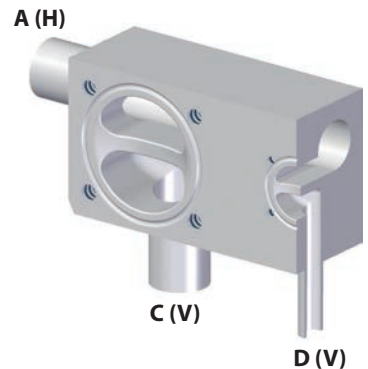
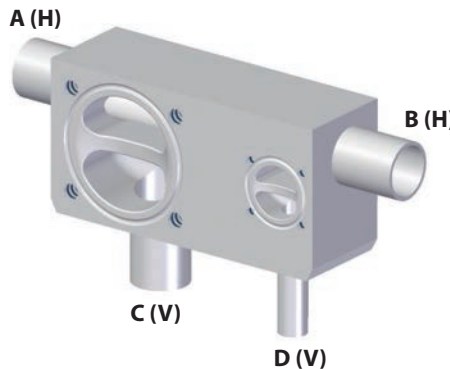
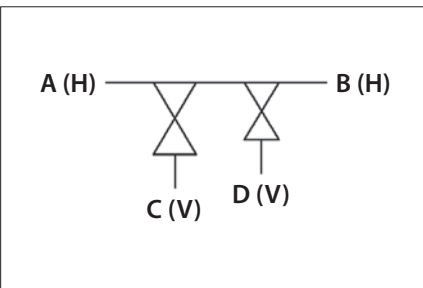
V: Vertical H: Horizontal



4 ports 2 valves

type **MS42AR**

V: Vertical H: Horizontal



BNW series Weir diaphragm valves

BSW series Weirless diaphragm valves

LPS series Weirless diaphragm valves

BY series Angle seat valves

CARTEN

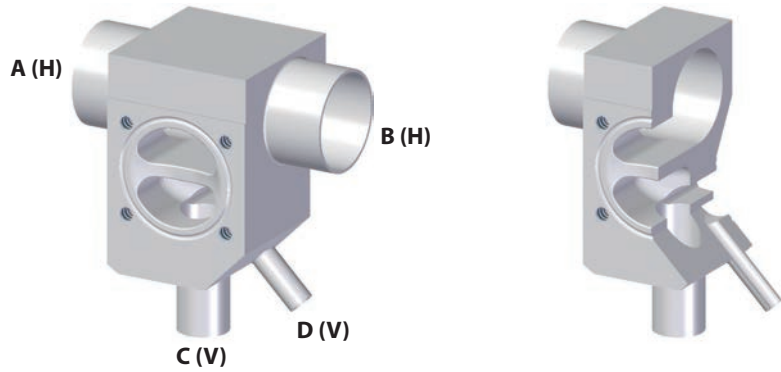
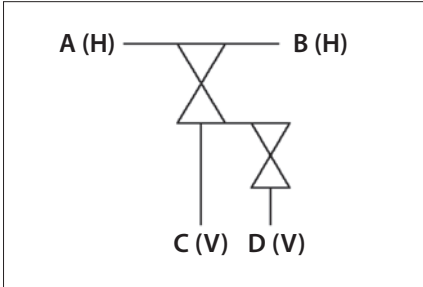
CARTEN BPV series Single-use punch valves

Pipilim & CARTEN Products related to liquid processes

4 ports 2 valves

type **MS42BR**

V: Vertical H: Horizontal

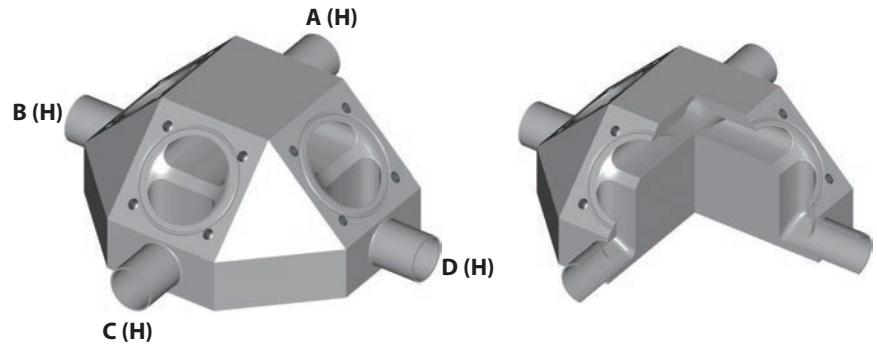
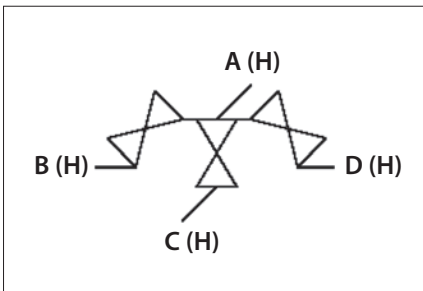


*: Blocks with leftward ports (type B42BL) can also be produced

4 ports 3 valves

type **MB43A**

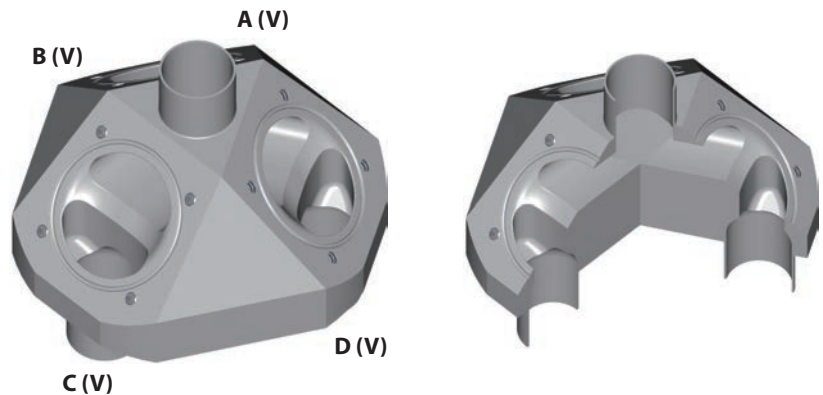
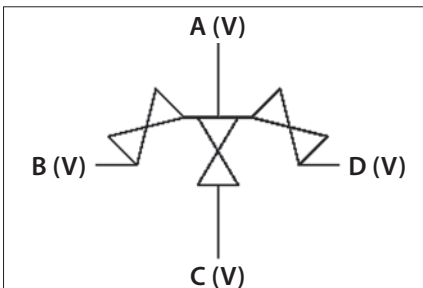
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43B**

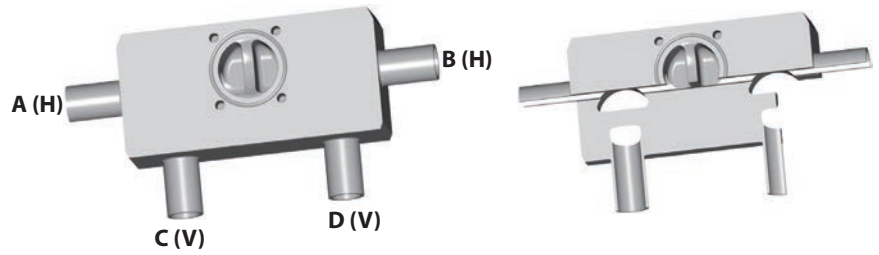
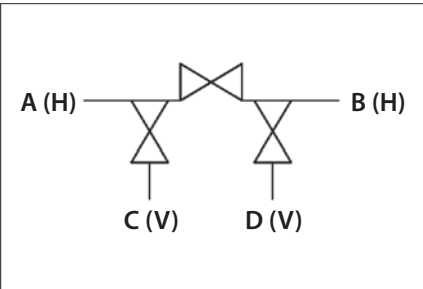
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43C**

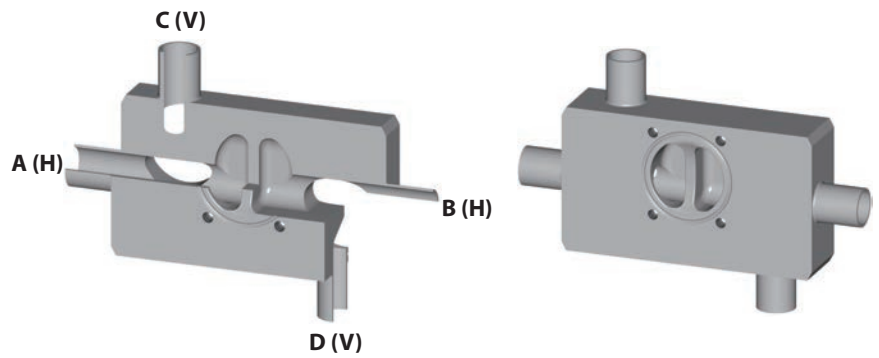
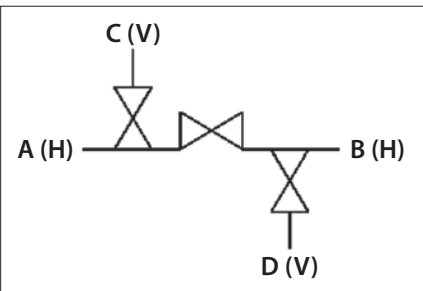
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43D**

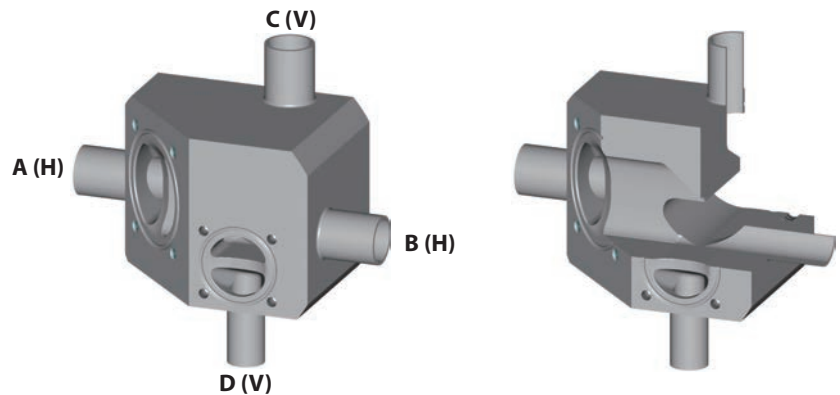
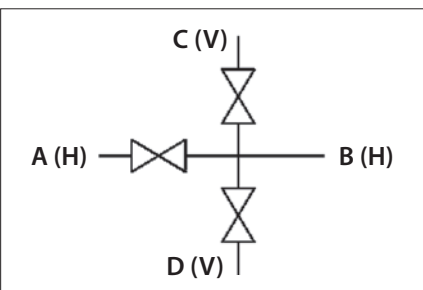
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43E**

V: Vertical H: Horizontal



BNW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN[®]

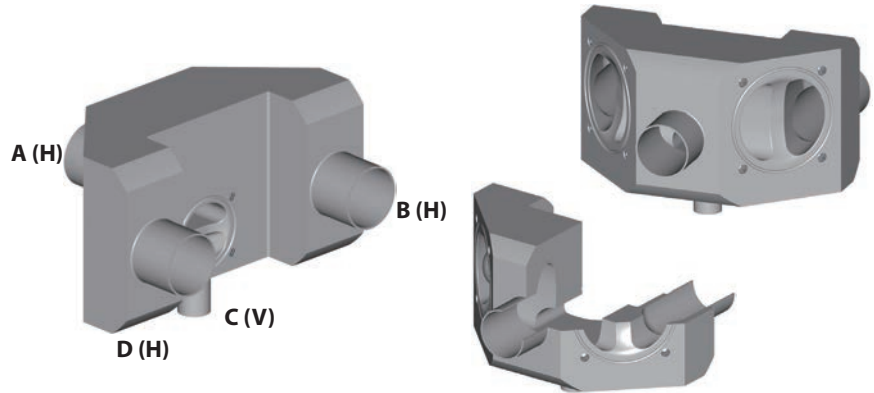
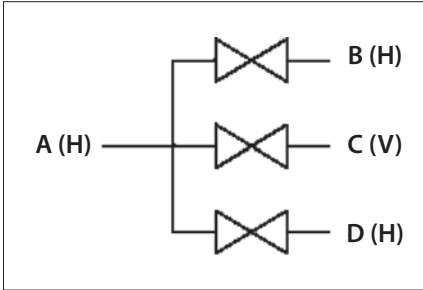
CARTEN[®]
BPV series
Single-use punch valves

Pullman & CARTEN[®]
Products related to liquid processes

4 ports 3 valves

type **MB43F**

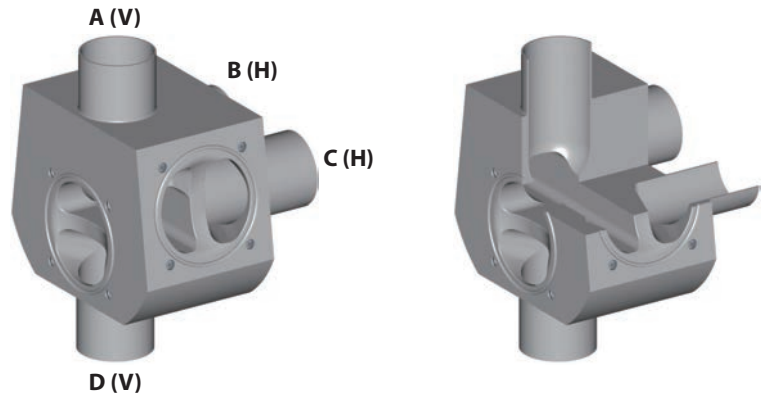
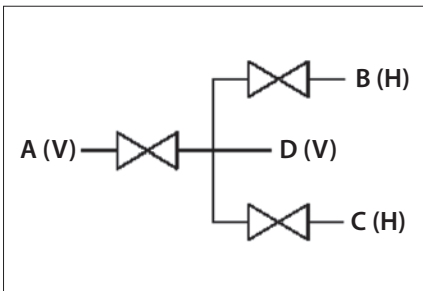
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43G**

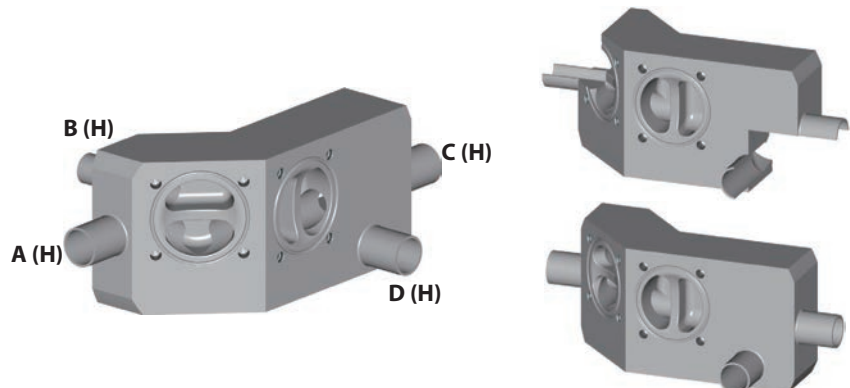
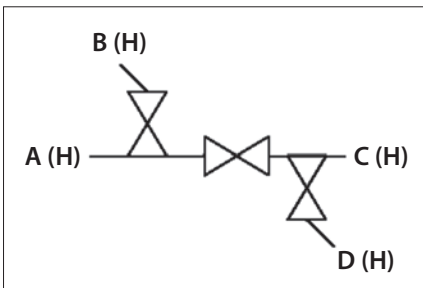
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43H**

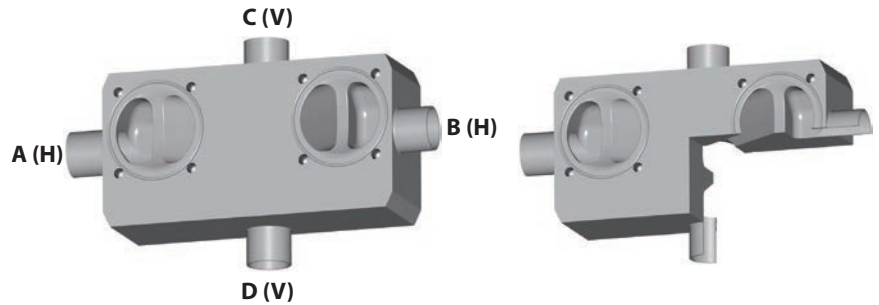
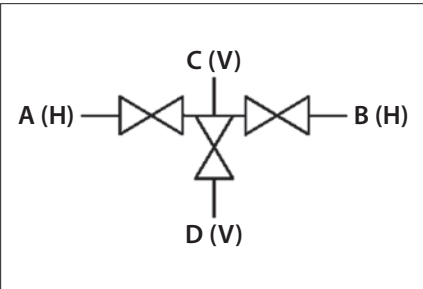
V: Vertical H: Horizontal



4 ports 3 valves

type **MB43 I**

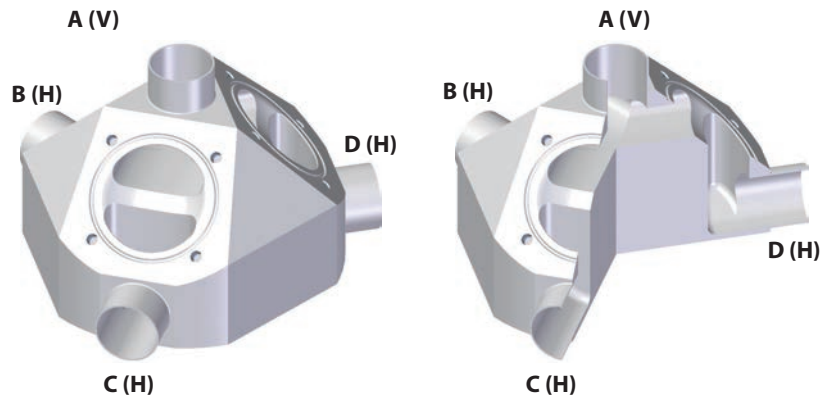
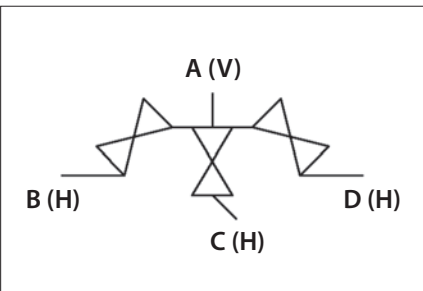
V: Vertical H: Horizontal



4 ports 3 valves

type **M43A**

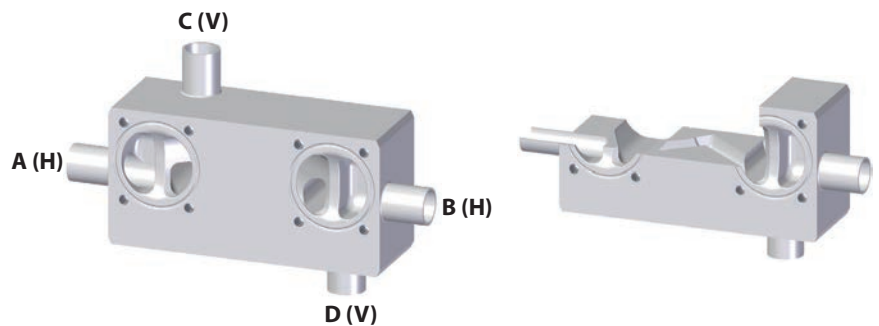
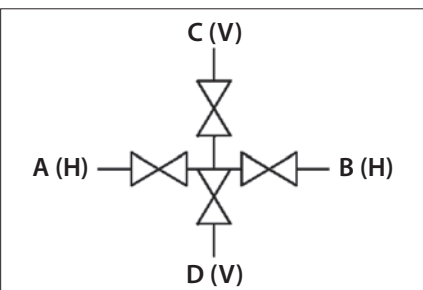
V: Vertical H: Horizontal



4 ports 4 valves

type **MB44A**

V: Vertical H: Horizontal



BNW series Weir diaphragm valves

BNW series Weirless diaphragm valves

LPS series Weirless diaphragm valves

BY series Angle seat valves

CARTEN

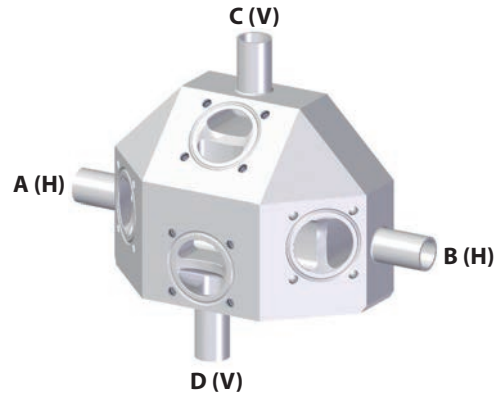
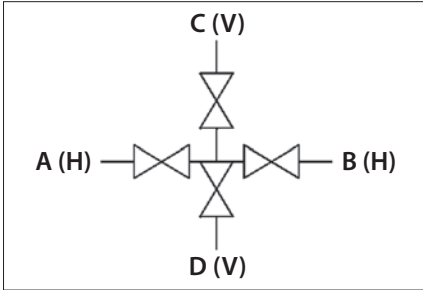
CARTEN BPV series Single-use punch valves

Pujolín & CARTEN Products related to liquid processes

4 ports 4 valves

type **MB44B**

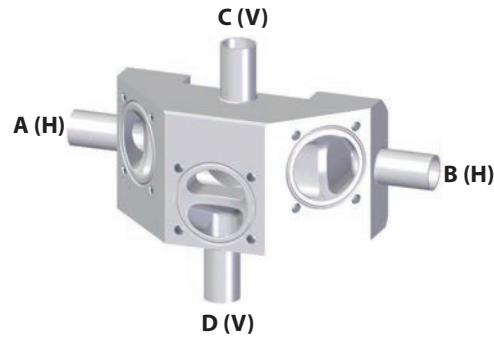
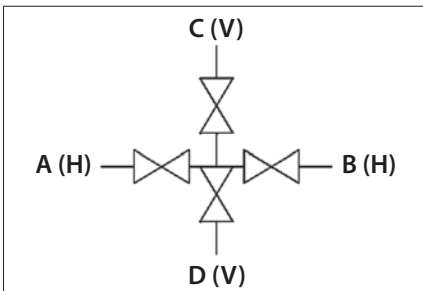
V: Vertical H: Horizontal



4 ports 4 valves

type **MB44C**

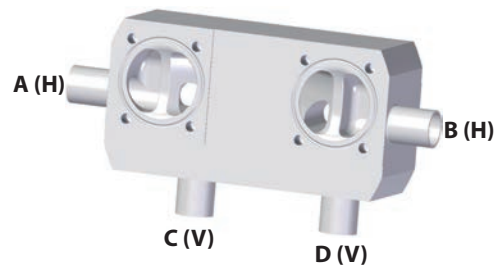
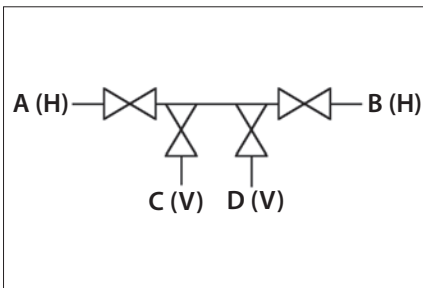
V: Vertical H: Horizontal



4 ports 4 valves

type **MB44D**

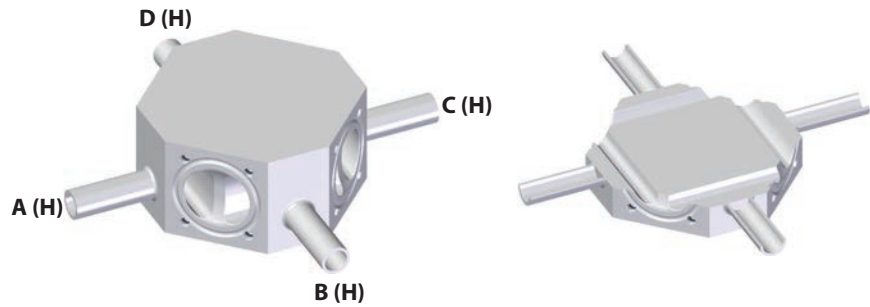
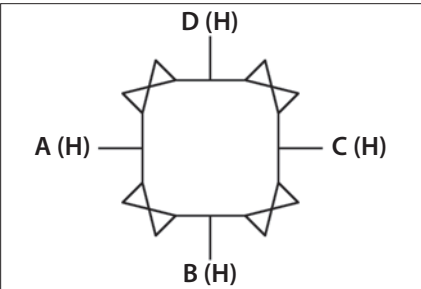
V: Vertical H: Horizontal



4 ports 4 valves

type **MB44E**

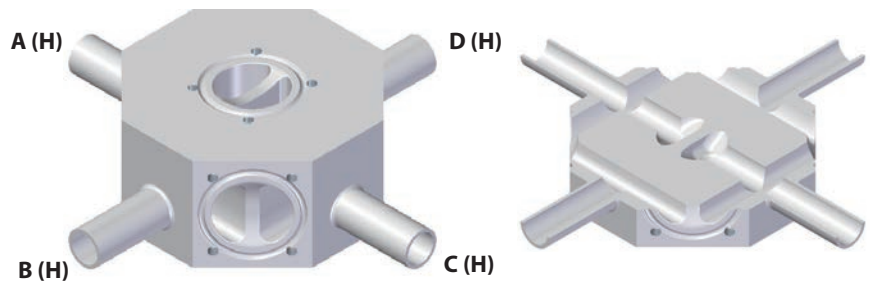
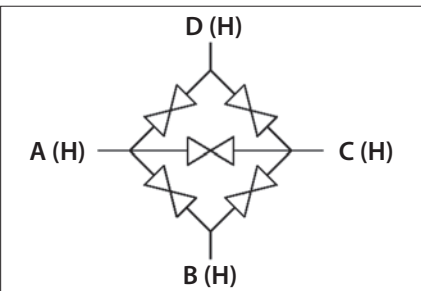
V: Vertical H: Horizontal



4 ports 5 valves

type **MB45A**

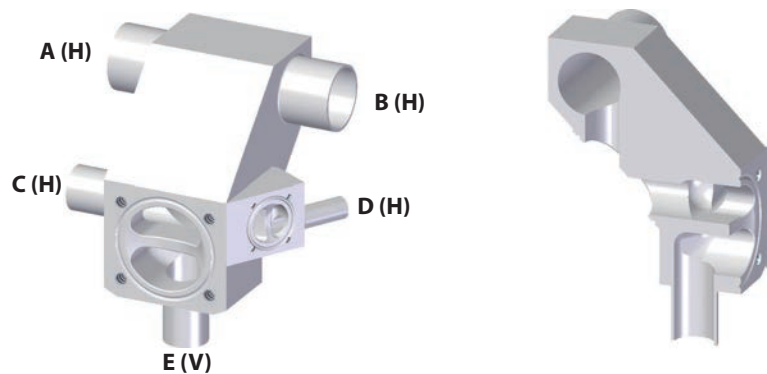
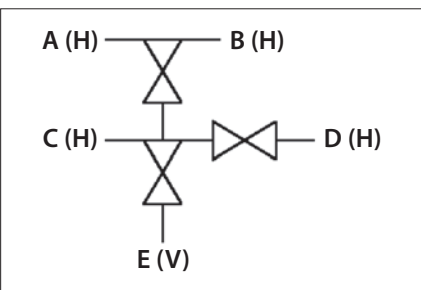
V: Vertical H: Horizontal



5 ports 3 valves

type **MB53A**

V: Vertical H: Horizontal



BNW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN

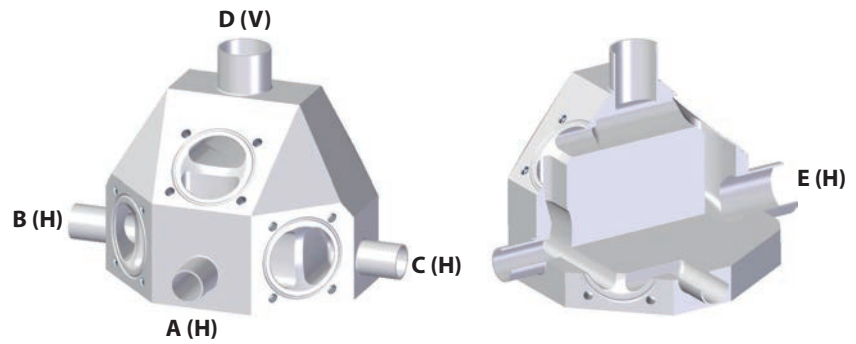
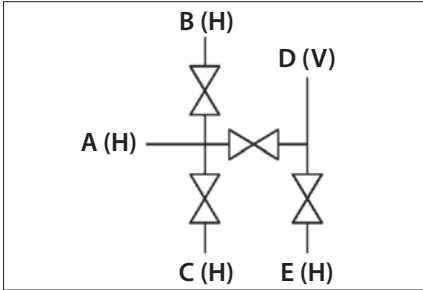
CARTEN
BPV series
Single-use punch valves

Pipilin & CARTEN
Products related to liquid processes

5 ports 4 valves

type **MB54A**

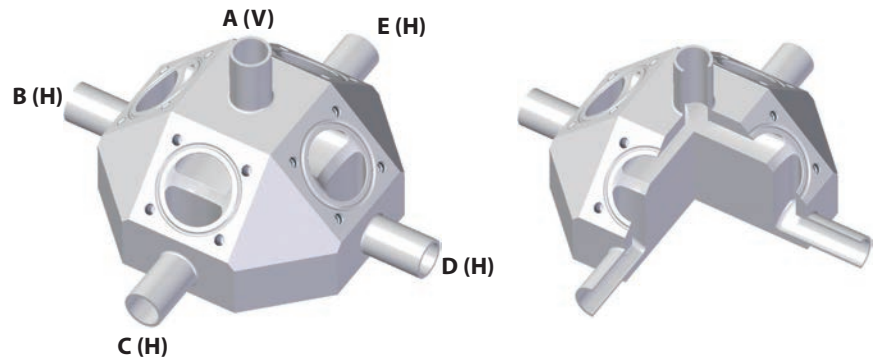
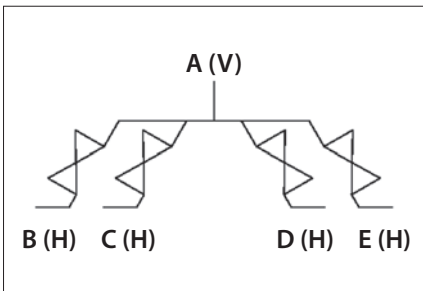
V: Vertical H: Horizontal



5 ports 4 valves

type **MB54B**

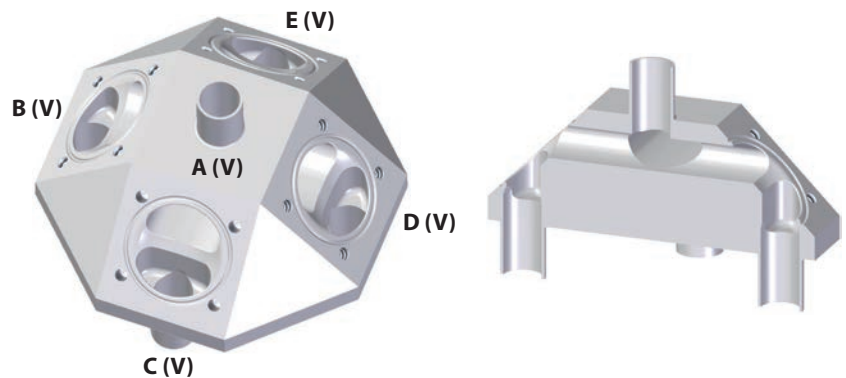
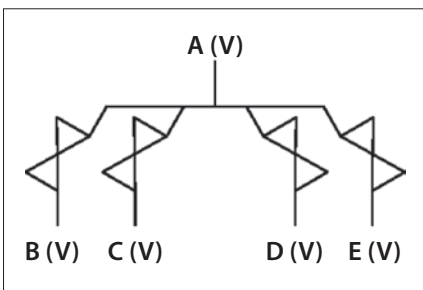
V: Vertical H: Horizontal



5 ports 4 valves

type **MB54C**

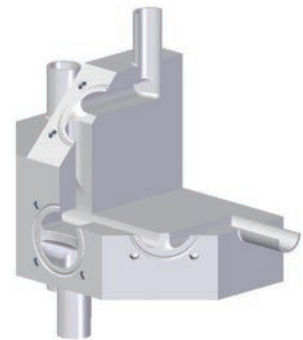
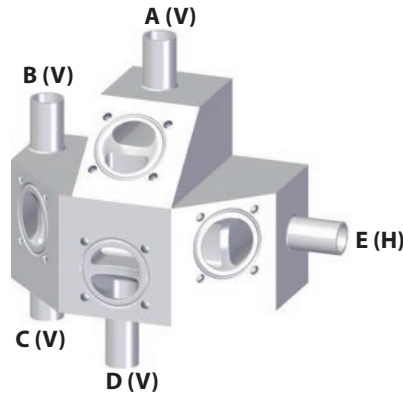
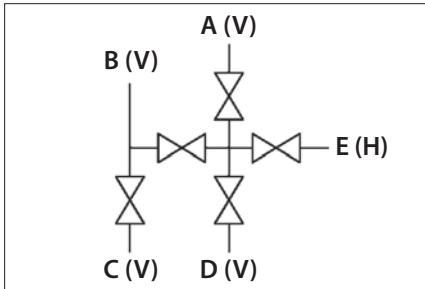
V: Vertical H: Horizontal



5 ports 5 valves

type **MB55A**

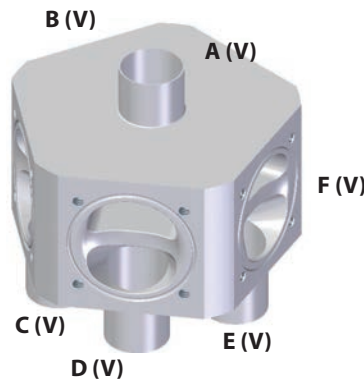
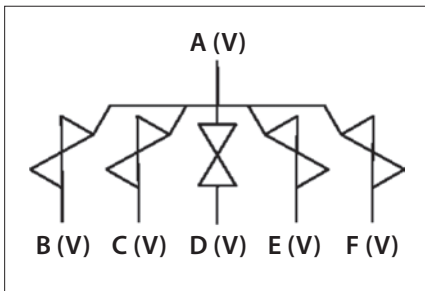
V: Vertical H: Horizontal



6 ports 5 valves

type **MB65A**

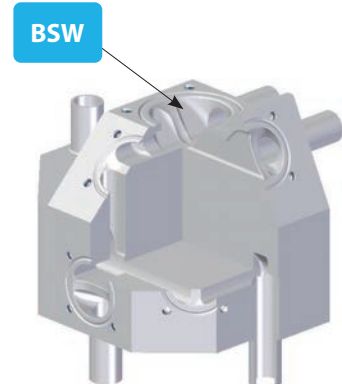
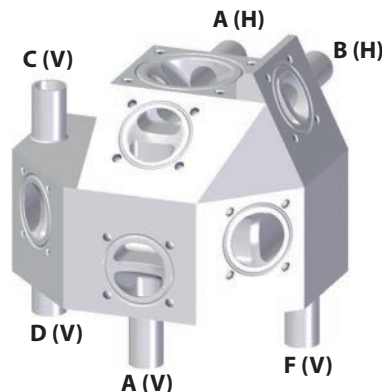
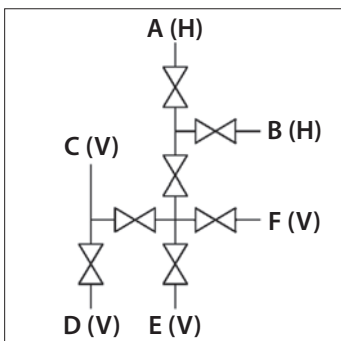
V: Vertical H: Horizontal



6 ports 7 valves

type **MB67A**

V: Vertical H: Horizontal



BNW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN[®]

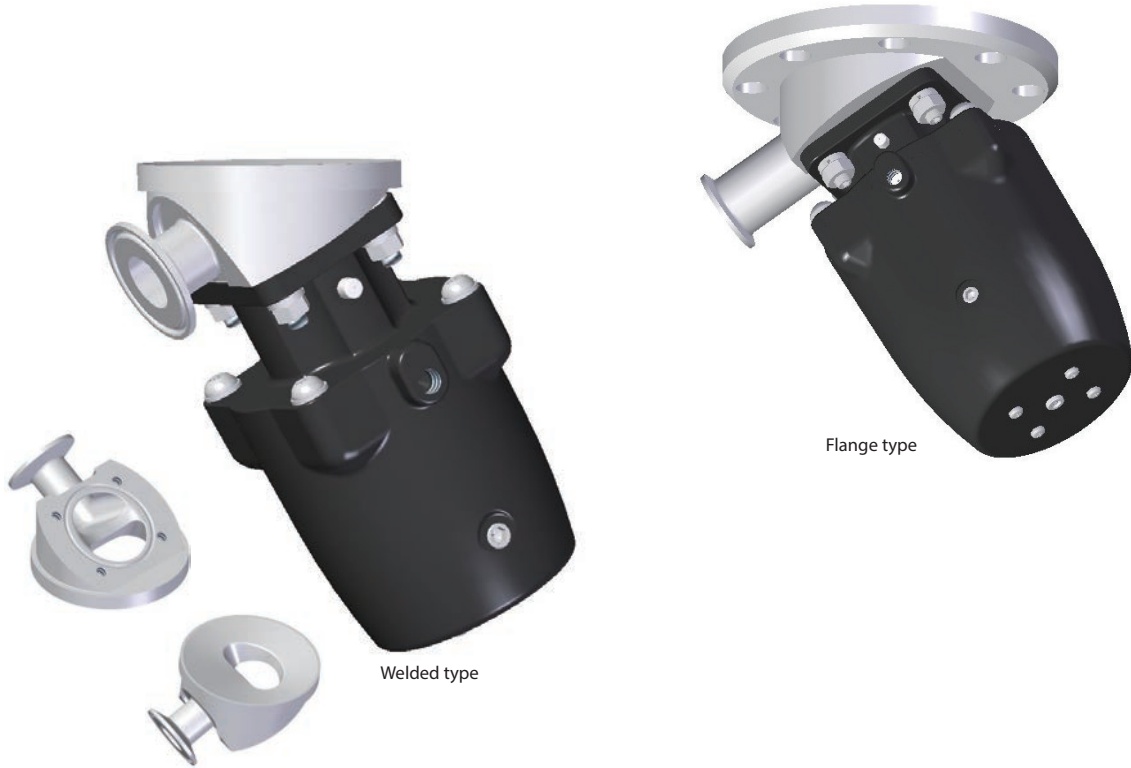
CARTEN[®]
BPV series
Single-use punch valves

Pullin & CARTEN[®]
Products related to liquid processes

Tank bottom diaphragm valves

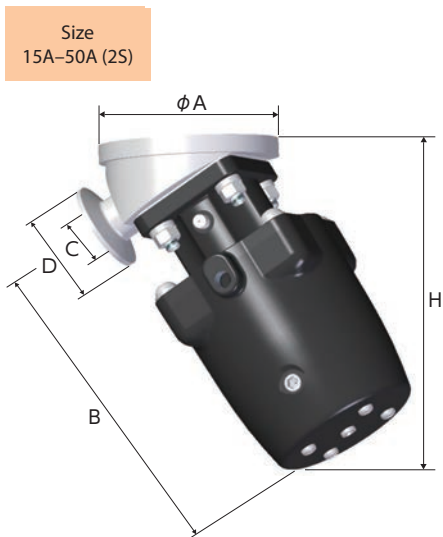
Tank bottom diaphragm valve features

- Inclined structure of main unit flow path results in lowest possible liquid retention
- Valve does not protrude into interior of tank, so stirrer installation is unrestricted



Primary product dimensions

Automatic valves: Welded type: Tank bottom valves (nominal diameter: 15A–50A (2S))



Units (mm)

Nominal diameter	A	B	C	D	H	Actuator Operation type	Part No.
15A	85	138	17.5	34	145	N.C.	BNWCTK-15PE-7D-30
25A (1S)	100	188	23	50.5	187	N.C.	BNWCTK-25PE-7F-30
40A (1.5S)	140	242	35.7	50.5	244	N.C.	BNWCTK-40PE-7H-30
50A (2S)	160	281	47.8	64	281	N.C.	BNWCTK-50PE-7I-30

Units (mm)

Nominal diameter	A	B	C	D	H	Actuator Operation type	Part No.
3/4"	85	141	15.75	25	145	N.C.	BNWCTK-15PE-7EA-30
1"	100	188	22.1	50.5	187	N.C.	BNWCTK-25PE-7FA-30
1.5"	140	242	34.8	50.5	244	N.C.	BNWCTK-40PE-7HA-30
2"	160	281	47.5	63.9	281	N.C.	BNWCTK-50PE-7IA-30

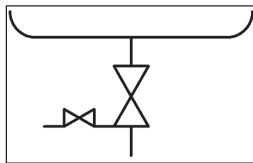
Tank bottom valves with CIP/SIP valve attached

With CIP/SIP valve attached

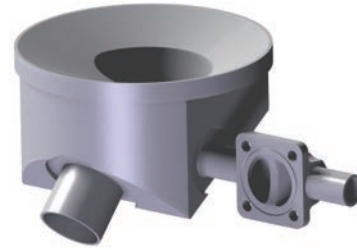
Type: UN32L1



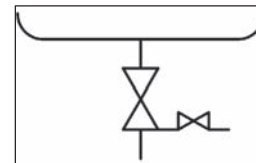
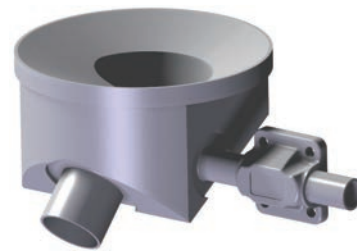
Type: UN32L2



Type: UN32R1

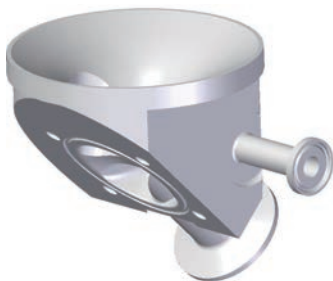


Type: UN32R2

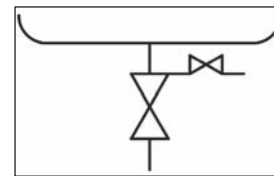


Tank bottom valves with sampling valve attached

Integrated sampling valve



Type: UN32A

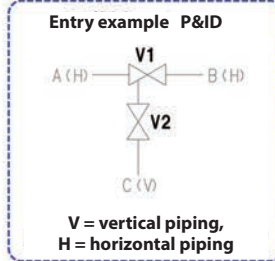


Block valve selection specifications

Type:

Please sketch the associated drawing or record the P&ID.

P&ID (piping and instrumentation diagram) section



Piping ports: A, B, C, ...

Piping orientation: V = vertical piping, H = horizontal piping

Flow direction:

Valve symbol

Working pressure: _____ MPa

Working temperature: _____ °C

Body material: _____

Diaphragm wetted surface material:

- PTFE
- EPDM

Piping standards:

- ISO/IDF
- ASME BPE
- OTHER

Actuator description codes

Actuation type:

- Manual: M
- Automatic (normal close): N.C.
- Automatic (normal open): N.O.
- Automatic (double action): D.A.

Actuator types:

- Standard type, aluminum material: A
- Standard type, stainless steel material: U
- Low-pressure type, aluminum material: LA
- Low-pressure type, stainless steel material: LU

Port No.	Connection			Actuator		Other	
	Piping orientation (V, H)	Piping size	Connection type	Valve No.	Actuation type	Actuator type	Accessories
A				V1			
B				V2			
C				V3			
D				V4			
E				V5			
F				V6			
G				V7			
H				V8			
I				V9			
J				V10			

Options (accessories)

Automatic valves: Limit switch assembly

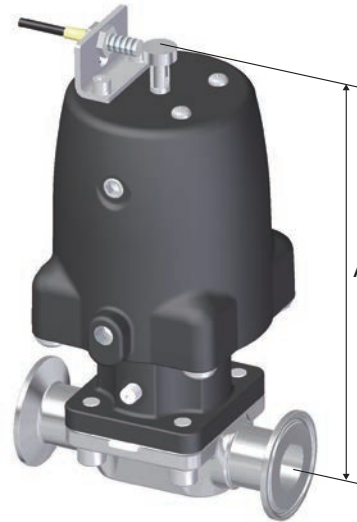


Units (mm)

Nominal diameter	A
15A	159
25A (1S)	210
40A (1.5S)	264
50A (2S)	303
65A (2.5S)	341
80A (3S)	402

*: We are available for consultation regarding switch specifications.

Automatic valves: Proximity switch assembly



Units (mm)

Nominal diameter	A
8A	134
10A	135
15A	156
25A (1S)	207
40A (1.5S)	261
50A (2S)	314
65A (2.5S)	338
80A (3S)	399

*: We are available for consultation regarding switch specifications.

Automatic valves: Open/closed dual-side detection: Valve sensor assembly



Units (mm)

Nominal diameter	A
8A	235
10A	236
15A	256
25A (1S)	303
40A (1.5S)	354
50A (2S)	385

Valve sensor specifications	
Model No.	IX5006 (manufactured by ifm electronic gmbh)
Power source	DC PNP 18-36 V
Ambient temperature	-25°C to +85°C
Protective structure	IP65



With the "Pos" button, start and end setting mode.



Store the "closed" position with the "Teach" button.



Store the "open" position with the "Teach" button.

*: The open position and the closed position are output electronically as voltage changes, can be fed back to a control device, and can also be confirmed visually by lighting of LEDs on the main unit.

Automatic valves: Opening restriction mechanism (for adjusting full-open position)



Units (mm)

Nominal diameter	A
8A	150
10A	151
15A	199
25A (1S)	250
40A (1.5S)	304
50A (2S)	343
65A (2.5S)	420
80A (3S)	481

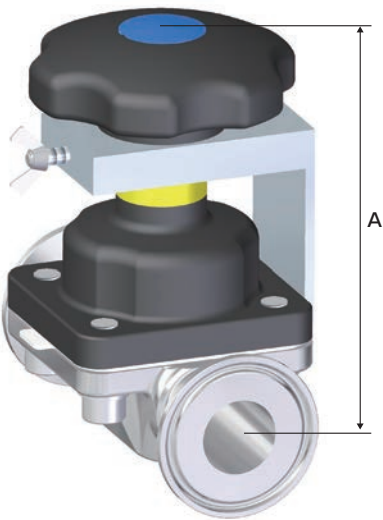
Automatic valves: Closing restriction mechanism (for adjusting full-closed position)



Units (mm)

Nominal diameter	A
8A	134
10A	135
15A	170
25A (1S)	220
40A (1.5S)	274
50A (2S)	323

Manual valves: Wheel lock mechanism



Units (mm)

Nominal diameter	A
15A	95
25A (1S)	110
40A (1.5S)	145
50A (2S)	174

Stainless steel actuators: The manual type is provided with a travel stopper mechanism for fixing the position of the wheel as a standard mechanism, so please consider using it.

Two-stage switching diaphragm valve



- Can switch between high flow rate and an arbitrarily set low flow rate
- Can shorten design, assembly, and installation time
- Can save space around the equipment

Automatic valves: Smart positioner assembly (control valve)

Positioner specifications

		Positioner specifications
Model No.		3725 (manufactured by Samson)
Input signal (WA)		DC 4–20 mA (split range can be set)
Ambient temperature (positioner main unit)		–25°C to +80°C
Electrical wiring connection (°C)		Cable ground M20 × 1.5
Feed connection port		Rc 1/4
Protective structure		IP66
Accommodation of explosion-proof standards L1 *1		II2G Ex ia IIC T4 acc. ATEX (optional)
Material	Main unit	Polyphthalamide
	Cover	Polycarbonate (transparent)

*1: Please inform Fujikin, if accommodation of explosion-proof standards is desired.



Smart function operation

With conventional types, it was necessary to make adjustments by hand by rotating the zero point and span knob while measuring valve lift.

With smart functions, now anyone can easily perform initial setting.



(Operation 1) Input 4 mA signal and introduce feed voltage

(Operation 2) Release lock on LCD panel

Press Δ to top right of LCD screen, select P19 on LCD screen, and then press $* \rightarrow \Delta \rightarrow *$ to release the lock.

(Operation 3) Set parameters

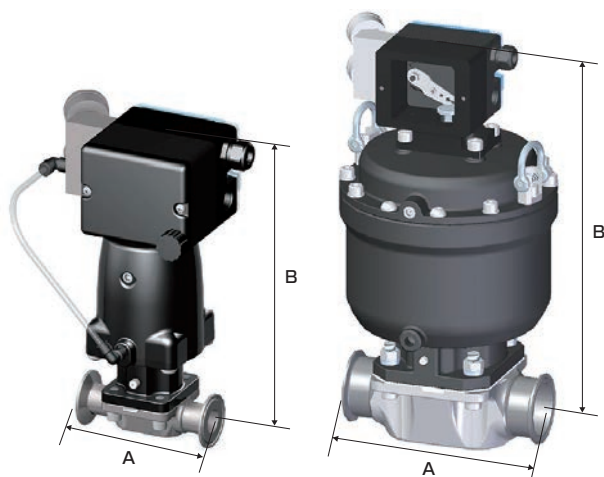
Parameters from time of shipment are stored, so this is normally not necessary.

(Operation 4) Start auto-tuning

Press Δ to top right of LCD screen, select P15 on LCD screen, and hold $*$ for six seconds to start auto-tuning.

This operation will end in a few minutes, and you can use the valve once it is complete.

Primary product dimensions



Nominal diameter: 8A–50A (2S)

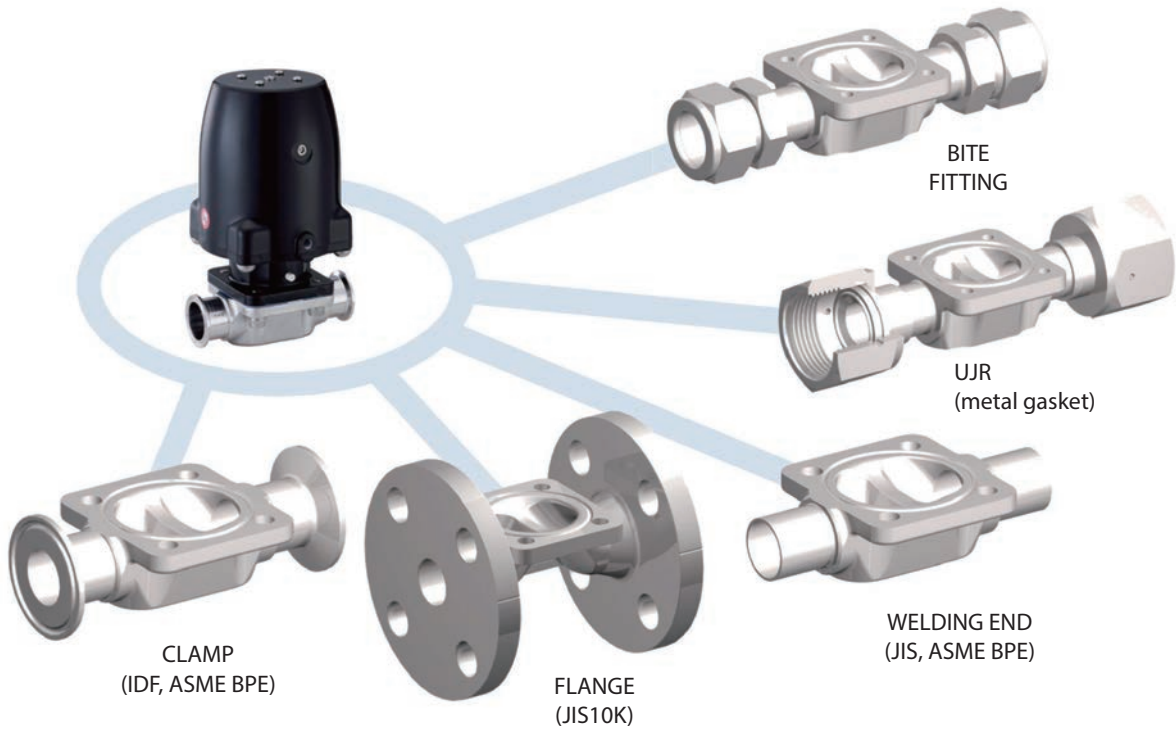
Nominal diameter: 65A (2.5S)–80A (3S)

Units (mm)

Nominal diameter	Primary dimensions		Operating pressure (MPa)	Valve stroke	Cv value
	A	B			
8A	90	198	0.45–0.7	5	2.8
10A	90	199		5	2.9
15A	108	220		7	6.2
25A (1S)	127	268		10	13
40A (1.5S)	159	318		14	27
50A (2S)	190	350		20	50
65A (2.5S)	216	400		28	80
80A (3S)	254	457		34	130

*: Please request individual Cv value characteristics charts individually for each size.

Fujikin connection variations



Inspection and maintenance

Testing

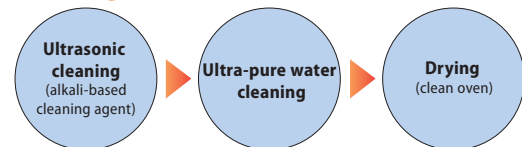
- Products are subjected to the following tests at the raw material stage, the component stage, and the fully assembled product stage.
 1. Materials test: The quality of the materials is confirmed on the basis of manufacturer certificates. Materials (unprocessed raw materials) are confirmed to have no surface defects.
 2. Dimension test: The materials are mechanically processed and ground, and all dimensions are confirmed to be within tolerances.
 3. Outer surface and inner surface test: There are confirmed to be no harmful scratches or contamination of surfaces, and it is confirmed that the required surface roughness has been achieved.
 4. Pressure test: A three-part pressure inspection is performed, including valve seat leakage, airtightness leakage, and pressure resistance.
 5. Operation test: It is confirmed that manual and automatic actuators and accessories (limit switches, opening adjustment, etc.) are operating correctly.

Cleaning points

The valve body surface passes through the steps **casting** → **cutting** → **polishing**, so it may be contaminated with cutting oil, buffing powder, electropolishing solution, or the like. At Fujikin, we also apply the cleaning technology for valves and fittings for semiconductor manufacturing devices that we have cultivated for many years to cleaning for sanitary finishing, so cutting oil, buffing powder, electropolishing solution, and the like are removed.

*: Cleaning points differ for valves that are not cast, so please confirm separately.

Cleaning flow



Danger



Precautions for storage and handling

1. Actuators incorporate powerful springs, so please do not dismantle them. Power in the spring may cause injury if an actuator is dismantled.
2. Connecting ends of valves are sealed with caps to ensure that scraps and other foreign matter do not enter the valve interior, so please remove caps immediately before use.
3. Please use actuators within the specified range for operating air pressure. Applying operating air pressure above the specified values can result in breakdown, so please do not apply pressure above the specified values. If operating air pressure is below the specified values, the valve will not operate.
4. Please be careful not to get the actuator wet. If the valve is opened or closed with the actuator wet, water will enter the interior of the actuator through the actuator air vent and will cause malfunction.



Warning



Maintenance inspection

- Please carry out maintenance and inspection during regular operation and in the following cases to ensure that the valve continues to function correctly.
 1. Daily inspection: Please check for leakage and abnormalities in valve operation.
 2. Open inspection: This may differ depending on usage conditions, but we recommend that open inspections be carried out and diaphragms be replaced on a regular basis.
 3. Type of fluid and temperature can have significant effects on the life of the valve, so please perform open inspections as early as possible. When an open inspection is performed, the diaphragm can be reused as long as it has no abnormalities, but please do not change the combination of diaphragm and body. Please be careful, as changing the combination can cause leakage.
 4. Actuator maintenance cycle

In cases where fluid temperature and environmental temperature are normal (room temperature), maintenance of the actuator is recommended after one million open/close cycles. Maintenance is recommended for actuators that have been in use for over ten years even if they have not reached one million open/close cycles. When used under high-temperature conditions such as steam lines or other special conditions, the cycle on which maintenance is required may be shorter, so please confirm this separately. Please consult with us separately if products will be used with high open/close frequency, such as filling valves.
 5. If EPDM rubber single membranes are used, specifications will differ from those for PTFE/EPDM, and maintenance and inspections cycles will also differ, so please inquire with us separately.



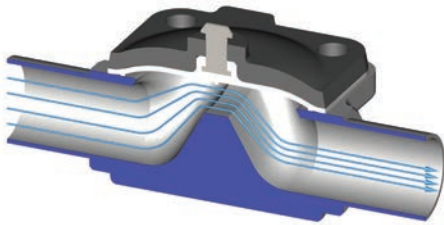
Truly drain-free valves

BSW SERIES

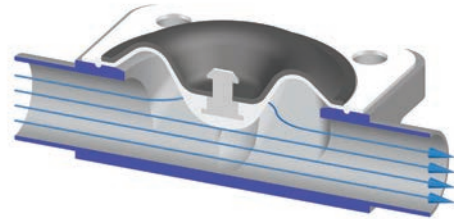
WEIRLESS DIAPHRAGM VALVES

Features

Flow path shapes



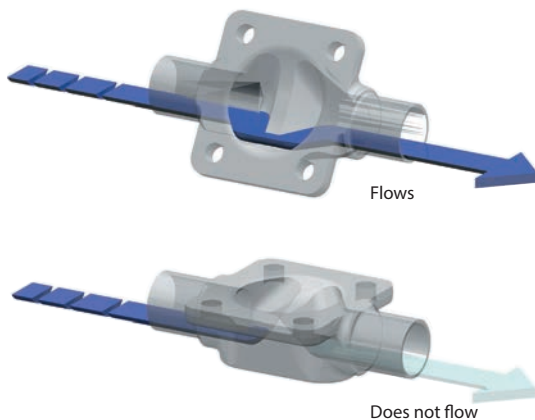
- Flow path narrows in the weir section.
- Flow rate is around 50% of the Cv value of the piping.



- Flow path is straight.
- Flow rate is at least 80% of the Cv value of the piping.

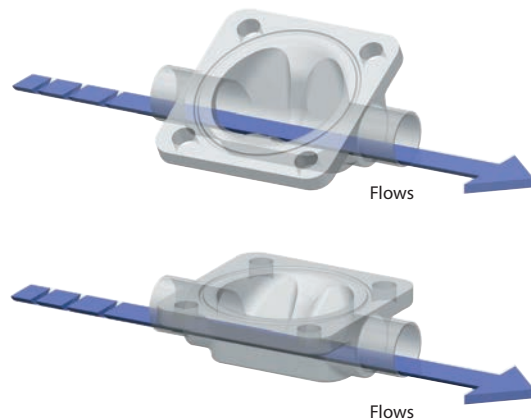
Free piping orientation

$\pm 0^\circ$



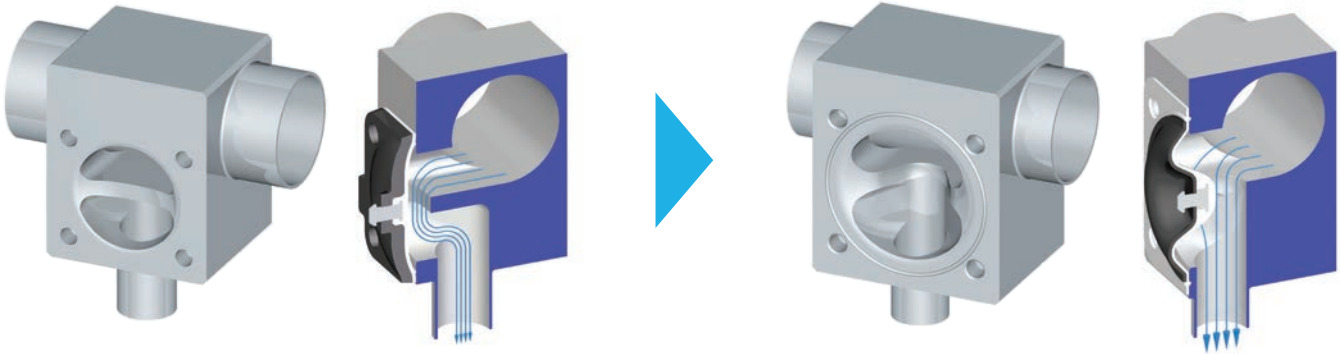
- If piping is arranged at the specified angle, liquid retention within piping can be minimized.
- Piping angle must be kept precise, so piping installation is more difficult than with straight valves.

$\pm 50^\circ$



- Liquid retention within piping can be minimized with horizontal and vertical piping.
- Angling of valve is unnecessary, so piping design and installation is simple.

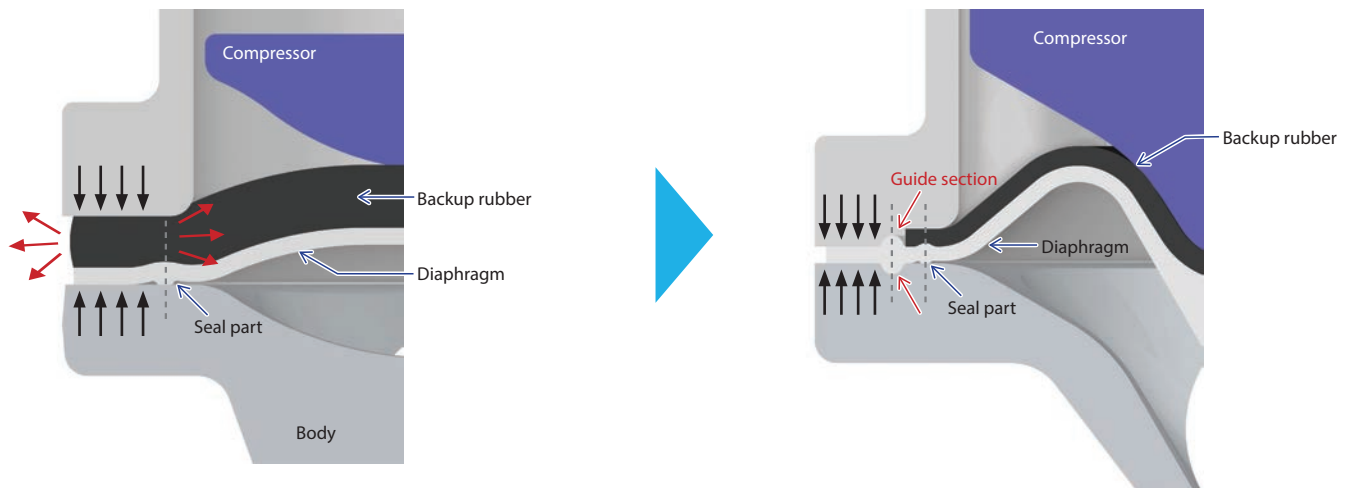
T-shaped branching valve structure



- Flow patch narrows in the weir section.
- Pressure loss in the branching section is increased.

- Flow path is straight.
- Pressure loss in the branching section is decreased.

Seal structure



- Precise torque control to avoid deformation and loosening is required to fasten thick backup rubber.
- Thick backup rubber is effective in absorbing slight body variations, but using thick rubber has disadvantages that include poor high temperature resistance and proneness to loosening.

- Thin fluorine-based rubber is used for the backup rubber, so high temperature resistance is good and loosening is not prone to occur.
- Diaphragm is provided with a two-layer touch line (protruding section). The outer line serves as a guide for the body and the actuator, while the inner line serves to stop the fluid. This structure maintains outstanding airtightness and durability.

Part number format

BSWCN - A 1 C - 7 F ST -

①

②

③

④

⑤

⑥

⑦

⑧

	①	②	③	④	⑤	⑥	⑦	⑧	Details		
type	BSW								Manual		
	BSWCN								Automatic (normal close) (N.C.)		
	BSWON								Automatic (normal open) (N.O.)		
	BSWDN								Automatic (double action) (D.A.)		
Actuator material		A							Aluminum		
Diaphragm material*1			1						PTFE/FKM		
Body material				No					SUS316L		
				C					SCS16		
Connection type					1				Threaded		
					2				Flange*2		
					5				BW (butt weld)		
					7				Ferrule		
					9				Union		
Connection size									Ferrule/BW	Flange	Threaded
						B			8A	-	1/4B
						D			15A	15A	1/2B
						F			25A (1S)	25A	1B
Piping standards							No		ISO/IDF		
							ST		ASME ferrule		
							US		ASME BW (butt weld)		
Other								Abbreviations are inserted for special products.			

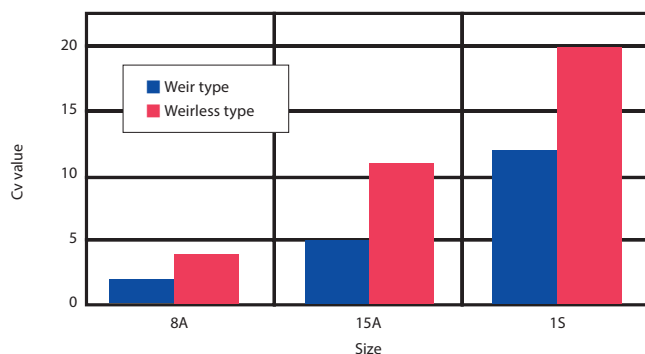
*1: Standard diaphragm material is PTFE/FKM (fluorine-based rubber) *2: JIS10K flange connection

Specifications

Nominal diameter	Maximum working pressure	Working fluid temperature range	MAX Cv value	Pneumatic actuator		
				Operating pressure	Connection port	Operation type
8A	0.6 MPa	0-150°C	4	0.4-0.7 MPa	Rc 1/8	N.C.
15A			11			
25A (1S)			20			

Material

Component name	Material
Body	SUS316L (#400 buffing + electropolishing)
Diaphragm	PTFE/FKM (fluorine-based rubber)
Actuator	ADC12 (PTFE coating)



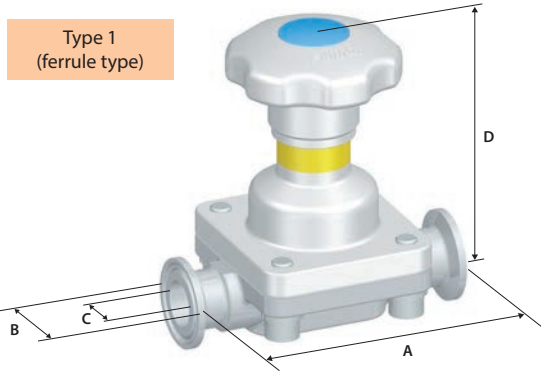
Size	BNW series (weir type)	BSW series (weirless type)
6.35 mm		0.6
8A	2.8	4
10A	2.9	
15A	6.2	11
25A (1S)	13	20

Primary product dimensions

Manual valves

Ferrule type and butt weld type (nominal diameter: 8A–25A (1S))

Units (mm)



Type 1
(ferrule type)

type	Size	A	B	C	D	Part No.
1 (ferrule type)	8A	90	34	10.5	86	BSW-A1-7B
	15A	108	34	17.5	102	BSW-A1-7D
	1S	127	50.5	23	121	BSW-A1-7F

Units (mm)

type	Size	A	B	C	D	Part No.
1 (ferrule type)	1/4"	89	25	4.6	89	BSW-A1-7BST
	3/8"	89	25	7.7	87	BSW-A1-7CST
	1/2"	89	25	9.4	86	BSW-A1-7DST
	3/4"	102	25	15.8	103	BSW-A1-7EST
	1"	114	50.5	22.1	121	BSW-A1-7FST

Units (mm)

Type 2
(butt weld type)



type	Size	A	D	E	F	Part No.
2 (butt weld type)	8A	75	86	10.5	13.8	BSW-A1-5B
	15A	108	102	17.5	21.7	BSW-A1-5D
	20A	127	121	23	27.2	BSW-A1-5E
	1S	127	121	23	25.4	BSW-A1-5F

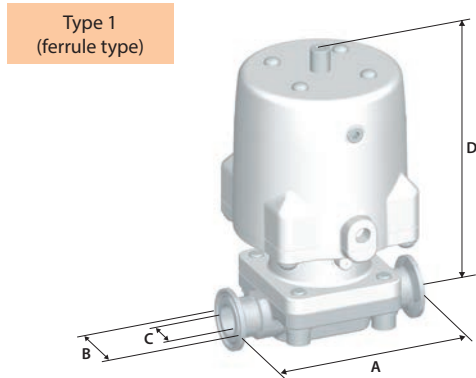
Units (mm)

type	Size	A	D	E	F	Part No.
2 (butt weld type)	1/4"	89	89	4.57	6.35	BSW-A1-5BUS
	3/8"	89	87	7.75	9.52	BSW-A1-5CUS
	1/2"	89	87	9.4	12.7	BSW-A1-5DUS
	3/4"	102	102	15.75	19.05	BSW-A1-5EUS
	1"	114	121	22.1	25.4	BSW-A1-5FUS

Automatic valve (spring-back normal close type (N.C.))

Ferrule type and butt weld type (nominal diameter: 8A–25A (1S))

Units (mm)



Type 1
(ferrule type)

type	Size	A	B	C	D	Part No.
1 (ferrule type)	8A	90	34	10.5	115	BSWCN-A1-7B
	15A	108	34	17.5	150	BSWCN-A1-7D
	1S	127	50.5	23	201	BSWCN-A1-7F

Units (mm)

type	Size	A	B	C	D	Part No.
1 (ferrule type)	1/4"	89	25	4.6	120	BSWCN-A1-7BST
	3/8"	89	25	7.7	118	BSWCN-A1-7CST
	1/2"	89	25	9.4	118	BSWCN-A1-7DST
	3/4"	102	25	15.8	150	BSWCN-A1-7EST
	1"	114	50.5	22.1	201	BSWCN-A1-7FST

Units (mm)

Type 2
(butt weld type)



type	Size	A	D	E	F	Part No.
2 (butt weld type)	8A	75	115	10.5	13.8	BSWCN-A1-5B
	15A	108	150	17.5	21.7	BSWCN-A1-5D
	20A	127	201	23	27.2	BSWCN-A1-5E
	1S	127	201	23	25.4	BSWCN-A1-5F

Units (mm)

type	Size	A	D	E	F	Part No.
2 (butt weld type)	1/4"	89	120	4.57	6.35	BSWCN-A1-5BUS
	3/8"	89	118	7.75	9.52	BSWCN-A1-5CUS
	1/2"	89	118	9.4	12.7	BSWCN-A1-5DUS
	3/4"	102	150	15.75	19.05	BSWCN-A1-5EUS
	1"	114	201	22.1	25.4	BSWCN-A1-5FUS

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN

CARTEN
BPV series
Single-throw valves

Faifan & CARTEN
Products related to liquid processes

Components (diaphragms and actuators)

Diaphragm



Size	Part No.
8A	BSW1-8DF
15A	BSW1-15DF
25A	BSW1-25DF

Manual type



■ Upper section for two-way valves

Size	Part No.
8A	BSW-A1-8AC-B
15A	BSW-A1-15AC-B
25A	BSW-A1-25AC-B

■ Upper section for T valves and block valves

Size	Part No.
8A	BSWT-A1-8AC-B
15A	BSWT-A1-15AC-B
25A	BSWT-A1-25AC-B

Automatic type

(Spring-back normal close type (N.C.), normal open type (N.O.), double action (D.A))



■ Upper section for two-way valves

Size	Actuator Operation type	Part No.
8A	N.C.	BSWCN-A1-8AC-B
	N.O.	BSWON-A1-8AC-B
	D.A.	BSWDN-A1-8AC-B
15A	N.C.	BSWCN-A1-15AC-B
	N.O.	BSWON-A1-15AC-B
	D.A.	BSWDN-A1-15AC-B
25A	N.C.	BSWCN-A1-25AC-B
	N.O.	BSWON-A1-25AC-B
	D.A.	BSWDN-A1-25AC-B

■ Upper section for T valves and block valves

Size	Actuator Operation type	Part No.
8A	N.C.	BSWCTN-A1-8AC-B
	N.O.	BSWOTN-A1-8AC-B
	D.A.	BSWDTN-A1-8AC-B
15A	N.C.	BSWCTN-A1-15AC-B
	N.O.	BSWOTN-A1-15AC-B
	D.A.	BSWDTN-A1-15AC-B
25A	N.C.	BSWCTN-A1-25AC-B
	N.O.	BSWOTN-A1-25AC-B
	D.A.	BSWDTN-A1-25AC-B

Weirless small-diameter diaphragm valves

Compact weirless diaphragm valves

Wheel with torque limiter mechanism

The wheel has a built-in torque limiter mechanism, and the wheel turns freely when the specified torque has been reached if the valve is fully closed, so excessive force is not exerted on the diaphragm. Thus, durability is improved because excessive application of force to the diaphragm is reduced.



Manual valves



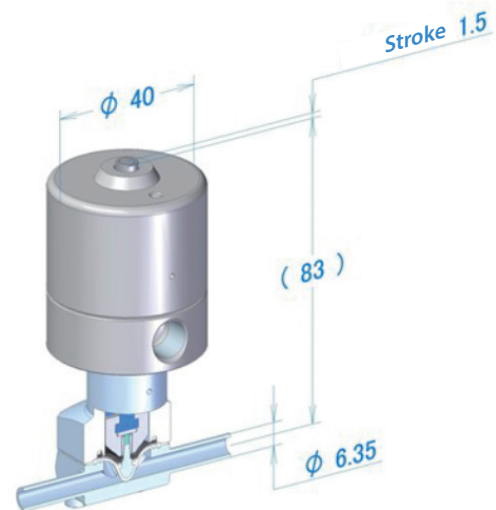
Automatic valves



Automatic valves

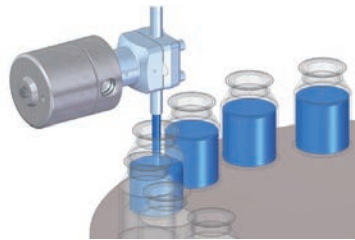
Product specifications (two-way valve type)

Material	Body	SUS316L / SUS316
	Bonnet	SUS303
	Diaphragm	PTFE (USP Class VI, FDA 177.1550) / EPDM (USP Class VI, FDA 177.2600)
	Automatic actuator	A5056B / SUS304
Maximum working pressure		0.6 MPa when $\Delta P = 0\%$, 1 MPa when $\Delta P = 100\%$
Working fluid temperature range		0°C to +80°C
Body surface roughness		Seal surface: #400 buffing + electropolishing (Ra Max. 0.38 μm ASME-BPE SF4)
Actuator	type	Spring-back type (normal close type) (N.C.)
	Operating pressure feed port Rc screw size	Rc 1/8
	Operating pressure	0.4–0.7 MPa
Body connection		ASME ferrule type, butt weld type
Stroke (mm)		1.5
Product mass (automatic valve) (kg)		~0.28



Usage examples

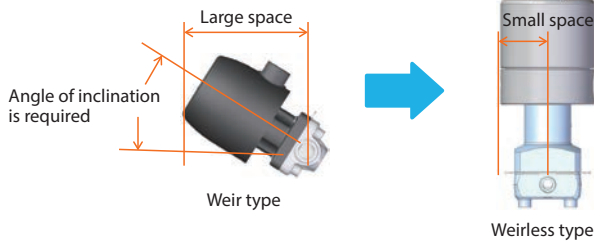
Usage as a filling valve



Combination of two-way valves



Switching from weir type to weirless type

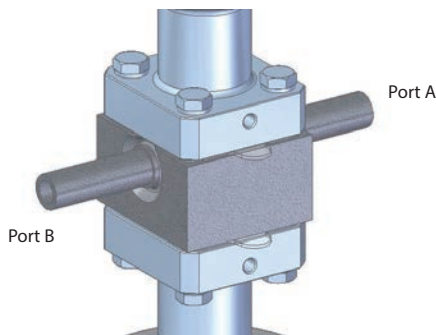


From combination of two-way valves to three-way valve



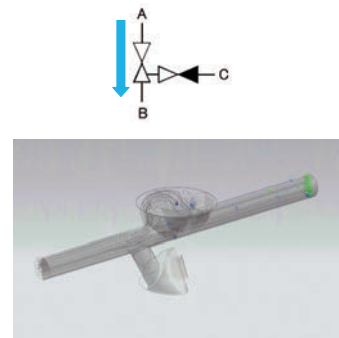
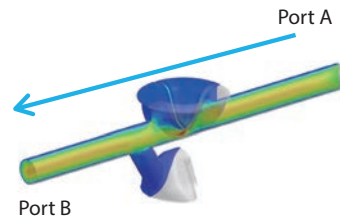
Flow of three-way valve with AC double installation

Flow path of body interior of three-way valve



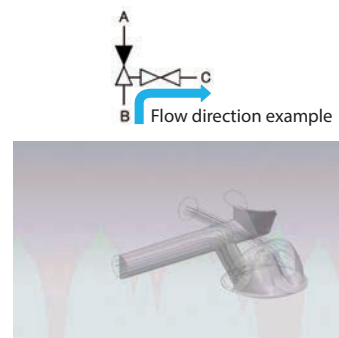
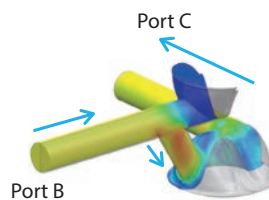
Example 1

A—B port: OPEN
C—B port: CLOSE



Example 2

A—B port: CLOSE
C—B port: OPEN



BSW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

CARTEN®
BPV series
Single-use punch valves

Pfafflin & CARTEN
Products related to liquid processes



Easy-maintenance valves with straight flow paths

LPS SERIES

LPS[®] VALVES

Features

● Straight flow path

Flow path resistance is low, and structure is not prone to retention of process fluids or cleaning solutions.

● No shaft seal gland packing

More reliable against leakage than ball valves, butterfly valves, and other valves with gland packing.

● Can be dismantled and assembled with internal piping intact

● No buffing is used to finish internal surfaces

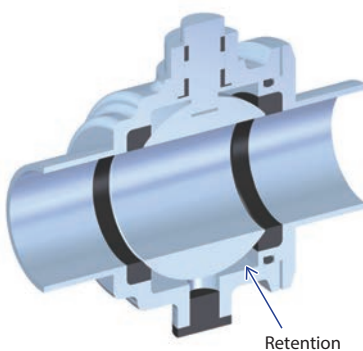
(electropolishing only)

● Lighter in weight because of special stainless steel machining

Mass is equivalent to that of Fujikin aluminum actuator diaphragm valves.

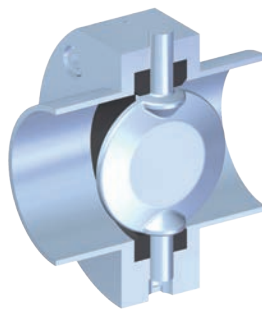
■ No shaft seal gland

Ball valve



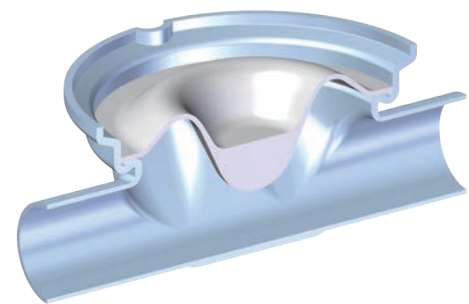
- Shaft seal
- Has retention section
- Poor dismantling performance

Butterfly valve



- Shaft seal
- No retention section
- Poor dismantling performance

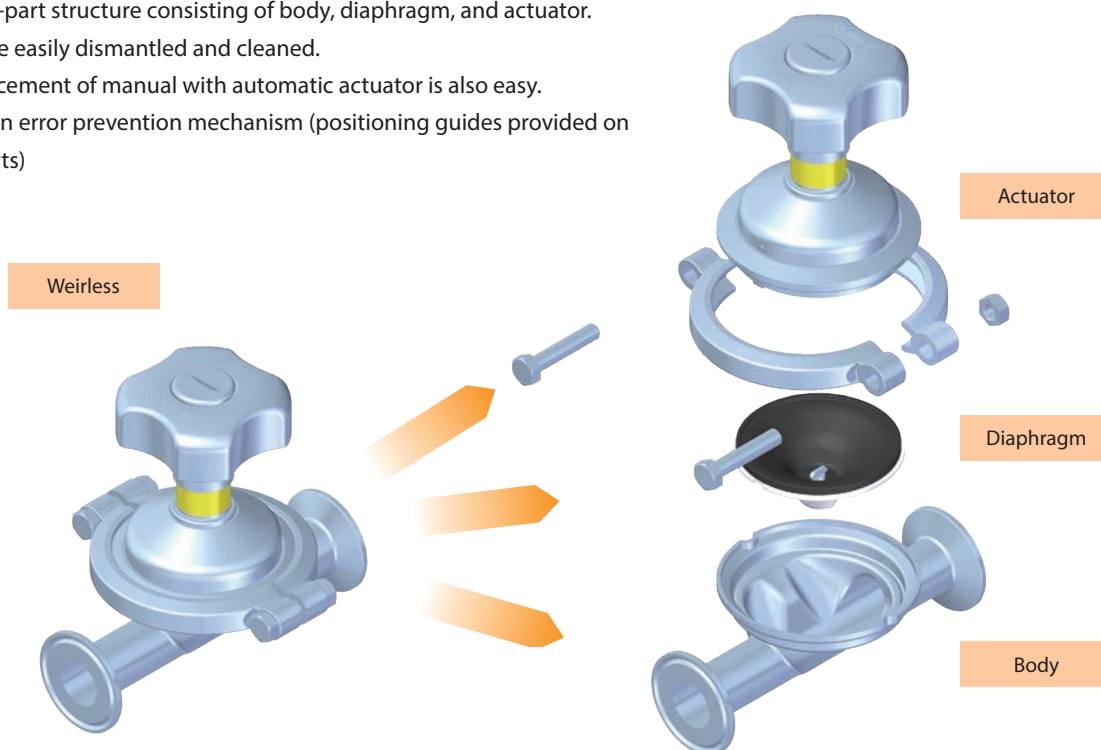
LPS_® valve



- Diaphragm seal
- No retention section
- Good dismantling performance

Can be dismantled and assembled with piping intact

- Three-part structure consisting of body, diaphragm, and actuator.
- Can be easily dismantled and cleaned.
- Replacement of manual with automatic actuator is also easy.
- Human error prevention mechanism (positioning guides provided on all parts)



Product specifications

Material	Body	Stainless steel (SUS316L)				
	Diaphragm	PTFE/EPDM (backup rubber)				
	Manual actuator	Stainless steel, etc. (bonnet section SUS316)				
	Automatic actuator	Stainless steel, etc. (bonnet section SUS316)				
Working pressure range		0–0.8 MPa				
Working temperature range		Fluid temperature: 0°C–140°C Working environment temperature (actuator working temperature): Constant 60°C Compatible with autoclaves				
Body surface roughness		Internal surfaces: Ra 1 μm or less (other than welded sections) + electropolishing External surfaces: Electropolishing				
Working fluid		Water, fluids such as water vapor that do not corrode wet members of valve, and inert gases such as air or nitrogen				
Actuator type		Manual M. (manual) Manual L. (level) Automatic N.C. (normal close) Automatic N.O. (normal open) Automatic D.A. (double action)				
Body connection		Clamp type				
Size		0.5 (8A)	0.75 (15A)	1.0 (1S)	1.5 (1.5S)	2.0 (2S)
Cv value		4	11	20	48	78
Dimensions	Face-to-face dimension (mm)	108	140	159	190	203
	Internal diameter (mm)	10.5	17.5	23	35.7	47.8
	Lift (mm)	6.5	10.5	14	21.5	25

Part number format

LPS C - 1 - 7 - P E - HP - 2K - PSC - * * *

①

②

③

④

⑤

⑥

⑦

⑧

⑨

⑩

①	Valve series name
LPS	Diaphragm size: 15A, 1S
LPSN	Diaphragm size: 8A, 1.5S, 2S

②	Actuator operation type
C	Spring-back (normal close type) (N.C.)
O	Spring-back (normal open type) (N.O.)
D	Double action type (D.A.)
M	Round wheel type
L	Lever type

③	Diaphragm size
0.5	8A
0.75	15A
1	1S
1.5	1.5S
2	2S

④	Connection
5	Butt weld type (BW)
7	Ferrule type

⑤	Diaphragm wetted surface material
P	PTFE

⑥	Backup rubber material
E	EPDM

⑦	Actuator working pressure
HP	Standard type (0.5 MPa)

⑧	Bonnet section clamp
None	Bolt and nut type
2K	Butterfly screw type

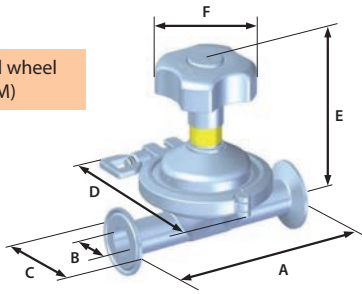
⑨	Options
None	No options
LC	With closed-side limit switch
LO	With open-side limit switch
LD	With open/closed dual limit switches
PSC	With closed-side proximity sensor
PSO	With open-side proximity sensor
PSD	With open/closed two-point proximity sensor
EP1	With electropneumatic positioner

⑩	Other
	Separate specifications (three-digit abbreviation)



Manual valve primary specifications

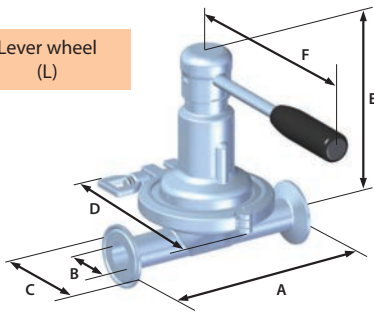
Round wheel (M)



Units (mm)

type	Size	A	φB	φC	D	E	φF	Mass (kg)	Part No.
Manual M	0.5 (8A)	108	10.5	34	92	81	40	0.59	LPSNM-0.5-7-PE-2K
	0.75 (15A)	140	17.5	34	119	109	60	1.1	LPSM-0.75-7-PE-2K
	1.0 (15)	159	23	50.5	134	127	80	1.4	LPSM-1-7-PE-2K
	1.5 (1.5S)	190	35.7	50.5	163	163	110	2.6	LPSNM-1.5-7-PE-2K
	2.0 (2S)	203	47.8	64	185	185	160	3.3	LPSNM-2-7-PE-2K

Lever wheel (L)

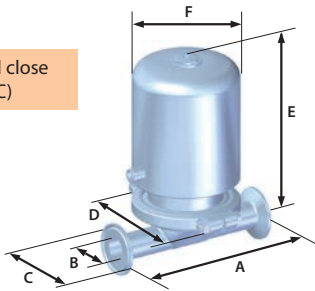


Units (mm)

type	Size	A	φB	φC	D	E	F	Mass (kg)	Part No.
Manual L	0.5 (8A)	108	10.5	34	92	104	99	0.74	LPSNL-0.5-7-PE-2K
	0.75 (15A)	140	17.5	34	119	154	140	1.7	LPSL-0.75-7-PE-2K
	1.0 (15)	159	23	50.5	134	161	180	2.1	LPSL-1-7-PE-2K
	1.5 (1.5S)	190	35.7	50.5	163	201	221	3.9	LPSNL-1.5-7-PE-2K
	2.0 (2S)	203	47.8	64	185	219	261	4.9	LPSNL-2-7-PE-2K

Automatic valve primary specifications

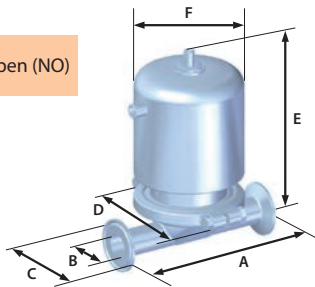
Normal close (NC)



Units (mm)

type	Size	A	φB	φC	D	E	φF	Mass (kg)	Part No.
Automatic NC	0.5 (8A)	108	10.5	34	86	111	52	0.88	LPSNC-0.5-7-PE-HP
	0.75 (15A)	140	17.5	34	115	149	82	2.0	LPSC-0.75-7-PE-HP
	1.0 (15)	159	23	50.5	130	193	103	3.2	LPSO-1-7-PE-HP
	1.5 (1.5S)	190	35.7	50.5	158	247	128	7.1	LPSNC-1.5-7-PE-HP
	2.0 (2S)	203	47.8	64	170	283	164	10.3	LPSNC-2-7-PE-HP

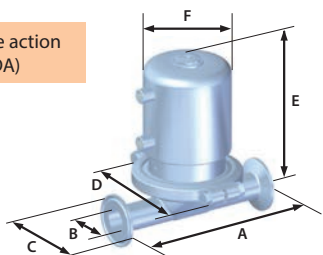
Normal open (NO)



Units (mm)

type	Size	A	φB	φC	D	E	φF	Mass (kg)	Part No.
Automatic NO	0.5 (8A)	108	10.5	34	86	111	52	0.86	LPSNO-0.5-7-PE-HP
	0.75 (15A)	140	17.5	34	115	149	82	1.8	LPSO-0.75-7-PE-HP
	1.0 (15)	159	23	50.5	130	178	103	2.6	LPSO-1-7-PE-HP
	1.5 (1.5S)	190	35.7	50.5	158	231	128	5.5	LPSNO-1.5-7-PE-HP
	2.0 (2S)	203	47.8	64	170	263	164	7.9	LPSNO-2-7-PE-HP

Double action (DA)



Units (mm)

type	Size	A	φB	φC	D	E	φF	Mass (kg)	Part No.
Automatic DA	0.5 (8A)	108	10.5	34	86	106	42	0.74	LPSND-0.5-7-PE-HP
	0.75 (15A)	140	17.5	34	115	137	65	1.4	LPSD-0.75-7-PE-HP
	1.0 (15)	159	23	50.5	130	160	82	2.0	LPSD-1-7-PE-HP
	1.5 (1.5S)	190	35.7	50.5	158	202	103	3.8	LPSND-1.5-7-PE-HP
	2.0 (2S)	203	47.8	64	170	221	128	5.1	LPSND-2-7-PE-HP

Components (diaphragms and actuators)

Diaphragm



Size	Part No.
0.5	LPSNP-0.5-PE
0.75	LPSNP-0.75-PE
1	LPSNP-1-PE
1.5	LPSNP-1.5-PE
2	LPSNP-2-PE

Actuator

Manual round wheel actuator



Size	Part No.
0.5	LPSNM-0.5
0.75	LPSM-0.75
1	LPSM-1
1.5	LPSNM-1.5
2	LPSNM-2

Manual lever actuator



Size	Part No.
0.5	LPSNL-0.5
0.75	LPSL-0.75
1	LPSL-1
1.5	LPSNL-1.5
2	LPSNL-2



Automatic N.C.

Automatic N.O.

Automatic D.A.

Size	Type	Part No.
0.5	N.C.	LPSNC-0.5-HP
	N.O.	LPSNO-0.5-HP
	D.A.	LPSND-0.5-HP
0.75	N.C.	LPSC-0.75-HP
	N.O.	LPSO-0.75-HP
	D.A.	LPSD-0.75-HP
1	N.C.	LPSC-1-HP
	N.O.	LPSO-1-HP
	D.A.	LPSD-1-HP
1.5	N.C.	LPSNC-1.5-HP
	N.O.	LPSNO-1.5-HP
	D.A.	LPSND-1.5-HP
2	N.C.	LPSNC-2-HP
	N.O.	LPSNO-2-HP
	D.A.	LPSND-2-HP

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

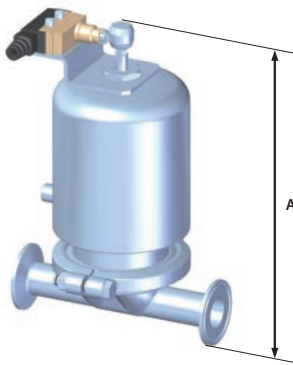
BY series
Angle seat valves

CARTEN®

CARTEN®
BPV series
Single-use punch valves

Pullin & CARTEN®
Products related to liquid processes

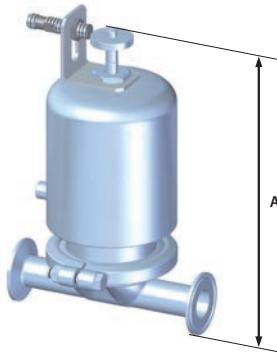
Automatic valve limit switch assembly (ex. N.C. type closed-side detection)



Units (mm)

Size	A
0.75	189
1	233
1.5	287
2	323

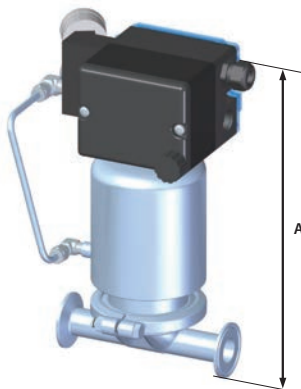
Automatic valve proximity sensor assembly (ex. N.C. type open-side detection)



Units (mm)

Size	A
0.75	189
1	229
1.5	287
2	319

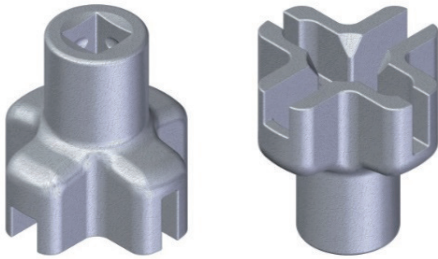
Automatic valve electropneumatic positioner assembly (ex. N.C. type)



Units (mm)

Size	A
0.75	223
1	263
1.5	310
2	342

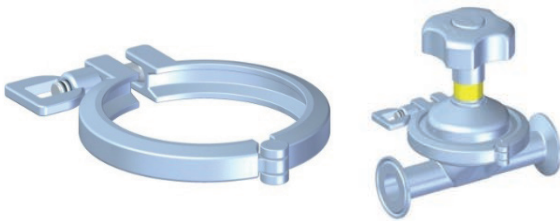
Joint for butterfly screw clamp fastening



Part No.
SCS13-CLAMPLOCK-FTG

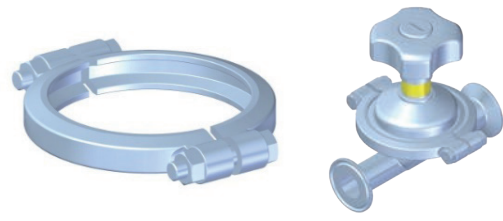
Bonnet section clamp

Butterfly screw type



Size	Part No.
0.5	LPSNA-0.5-CLA-2K
0.75	LPSA-0.75-CLA-2K
1	LPSA-1-CLA-2K
1.5	LPSNA-1.5-CLA-2K
2	LPSNA-2-CLA-2K

Bolt and nut type



Size	Part No.
0.5	LPSNA-0.5-CLA-2D
0.75	LPSA-0.75-CLA-2D
1	LPSA-1-CLA-2D
1.5	LPSNA-1.5-CLA-2D
2	LPSNA-2-CLA-2D

Automatic actuator diaphragm replacement plug



Size	Part No.
0.5	LPSA-0.5-HS-4AJ
0.75	LPSA-1-HS-4AJ
1	
1.5	LPSA-1.5-HS-4AJ
2	

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

CARTEN®
BPV series
Single-use punch valves

Pijlma & CARTEN®
Products related to liquid processes



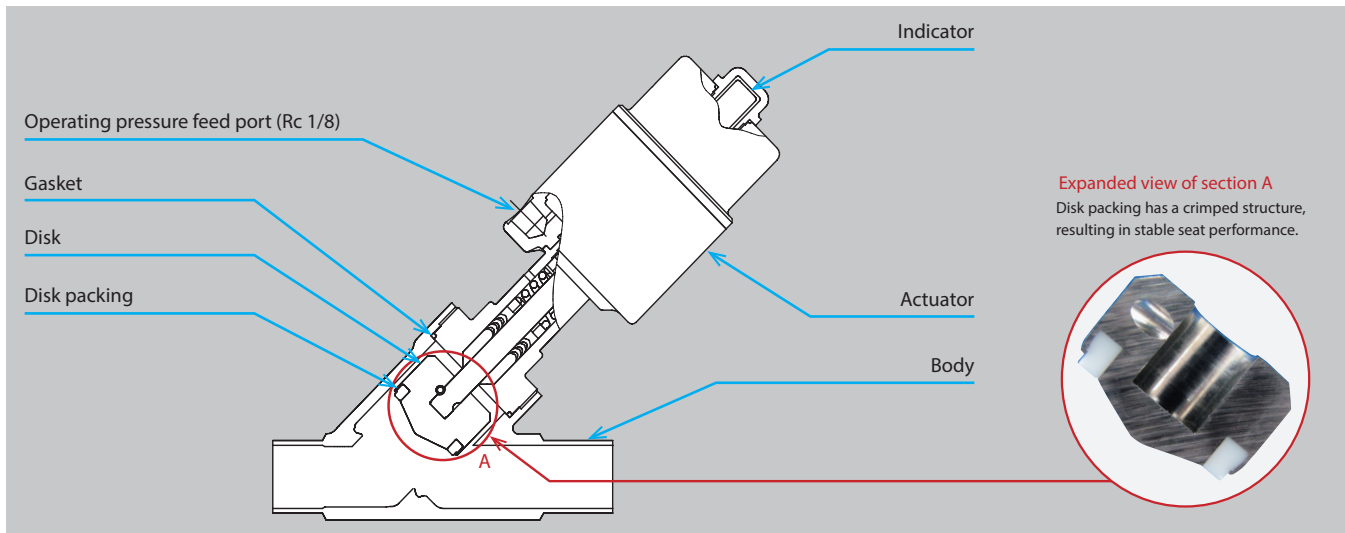
Achieving high durability, long life, and smooth fluid flow

BY SERIES

ANGLE SEAT VALVES

Features

Outline of basic structure



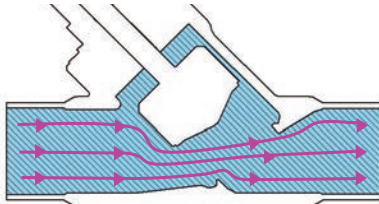
Actuator can turn 360°, allowing adjustment of orientation of operating pressure feed port.

No surface crack for attaching a spanner is provided (in order prevent scratching), so please hold the actuator in both hands to rotate it.

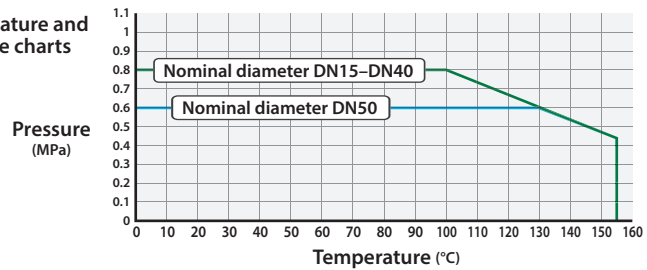
Selection of valve type

Type "FO"

For steam and gases only
(reverse flow direction)



Temperature and pressure charts

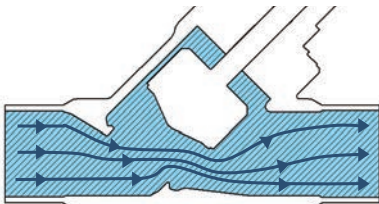


Select when the fluid is steam or gas. Actuator size is kept compact, allowing cost to be reduced.

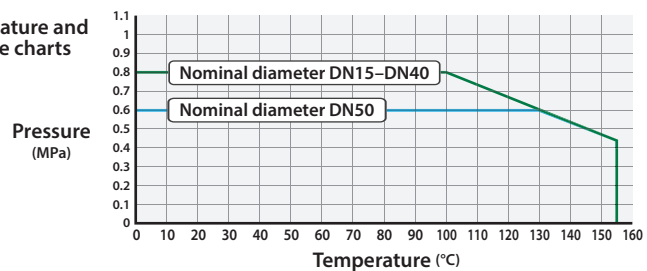
If the fluid is a liquid, water hammer may occur when the valve is closed, damaging surrounding devices, so please be cautious.

Type "FU"

For liquids, steam, and gases
(forward flow direction)



Temperature and pressure charts



Please select when the fluid is a liquid. Can also be used when the fluid is steam or a gas.

Part number format

BY C FO-25 P-C 7 F A-LC-HT-

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

①	Valve series name
BY	BY series angle seat valves

②	Actuator operation type
C	Spring-back (normal close type) (N.C.)
O	Spring-back (normal open type) (N.O.)

③	Flow rate adjustment
None	On/off valve
C	Control valve

④	Flow direction
FO	Reverse flow (flow over the seat)
FU	Forward flow (flow under the seat)
None	Control valve

⑤	Disk seat size
15	15A
20	20A
25	25A
40	40A
50	50A

⑥	Disk packing wetted surface material
P	PTFE

⑦	Body material
C	ASTM A351 CF8M

⑧	Connection
1	Threaded type
2	Flange type
5	Butt weld type (BW)
7	Ferrule type

⑨	Connection piping size			
	Ferrule type	butt weld type	Threaded type	Flange type
D	15A	1/2"	1/2B	15A
E		3/4"	3/4B	20A
F	25A (1S)	1"	1B	25A
H	40A (1.5S)	1-1/2"	1 1/2B	40A
I	50A (2S)	2"	2B	50A

⑩	Piping standards
None	ISO/IDF
A	ASME

⑪	Options
None	No options
H	With open-side opening adjustment
HC	With closed-side closing adjustment
LC	With closed-side limit switch
LO	With open-side limit switch
LD	With open/closed dual limit switches
KC	With closed-side proximity switch
KO	With open-side proximity switch
KD	With open/closed dual proximity switches
EP1	Electropneumatic positioner

⑫	Compatible with high-temperature environments
None	Standard type
HT	Type compatible with high-temperature environments

⑬	Other
	Abbreviations are inserted for special products.

*: Normal open (O) is only compatible with FU (forward flow)

*: Flange connection: JIS10KFF flange

*: Butt weld (BW) connection: ASME standard

Product specifications (standard)

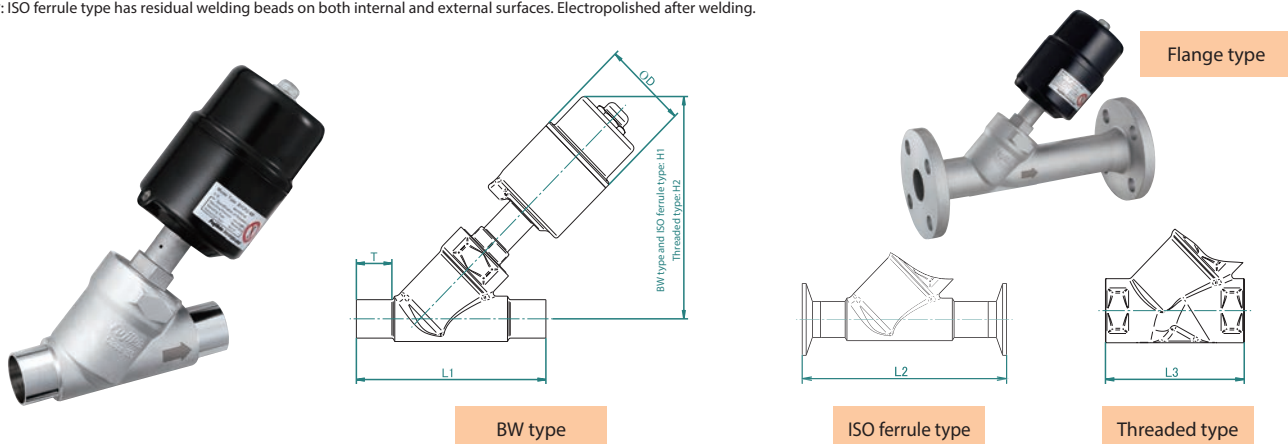
Nominal diameter (DN)		DN15	DN20	DN25	DN40	DN50
Material	Body	ASTM A351 CF8M (cast 316 stainless steel)				
	Bonnet	ASTM A351 CF8M (cast 316 stainless steel)				
	Disk packing	PTFE (Food Sanitation Act conformant material)				
	Gland packing	PTFE + graphite (Food Sanitation Act conformant material)				
	Actuator	ADC12 (aluminum + nylon coating)				
Maximum working pressure (MPa)		0.8			0.6	
Temperature range of working fluid (°C)		0–155 (low-temperature type can be produced for as low as –40)				
Body internal surface finishing		Casting surface*				
Working environment (°C)		Indoors, environment temperature 0–80				
Actuator	type	N.C., N.O.				
	Feed port size	Rc 1/8				
	Operating pressure (MPa)	0.5–0.8 (for N.C. type)				
Body connection		ISO ferrule type, butt weld type (ASME-BPE welding end), threaded type				
Stroke (mm)		9	12	18	26	30
Accessory mounting thread size		M16 × 1				
Oil free		Not oil free (H1 grease applied to wetted surfaces)				

*: ISO ferrule type has residual welding beads on both internal and external surfaces. Body is electropolished after welding.

Primary product dimensions

Nominal diameter				type	H	H1	H2	D	T	L			Part No.		
Orifice	BW type	ISO Ferrule type	Threaded type							L1	L2	L3	BW type	ISO ferrule type*	Threaded type
DN15	1/2"	-	Rc 1/2	FO	119	119	122	46	23	100	-	65	BYCFO-15P-C5DA	-	BYCFO-15P-C1D
				FU	119	119	122	46					BYCFU-15P-C5DA	-	BYCFU-15P-C1D
DN20	3/4"	15A	Rc 3/4	FO	124	124	127	46	25	115	130	75	BYCFO-20P-C5EA	BYCFO-20P-C7D	BYCFO-20P-C1E
				FU	133	133	136	58					BYCFU-20P-C5EA	BYCFU-20P-C7D	BYCFU-20P-C1E
DN25	1"	1S	Rc1	FO	146	146	149	58	25	130	150	90	BYCFO-25P-C5FA	BYCFO-25P-C7F	BYCFO-25P-C1F
				FU	158	158	161	74					BYCFU-25P-C5FA	BYCFU-25P-C7F	BYCFU-25P-C1F
DN40	1-1/2"	1.5S	Rc 1-1/2	FO	174	174	179	74	25	160	180	120	BYCFO-40P-C5HA	BYCFO-40P-C7H	BYCFO-40P-C1H
				FU	198	198	203	92					BYCFU-40P-C5HA	BYCFU-40P-C7H	BYCFU-40P-C1H
DN50	2"	2S	Rc2	FO	188	188	193	74	25	175	200	150	BYCFO-50P-C5IA	BYCFO-50P-C7I	BYCFO-50P-C1I
				FU	223	223	228	112					BYCFU-50P-C5IA	BYCFU-50P-C7I	BYCFU-50P-C1I

*: ISO ferrule type has residual welding beads on both internal and external surfaces. Electropolished after welding.



List of options

Options (accessories)



Smart positioner

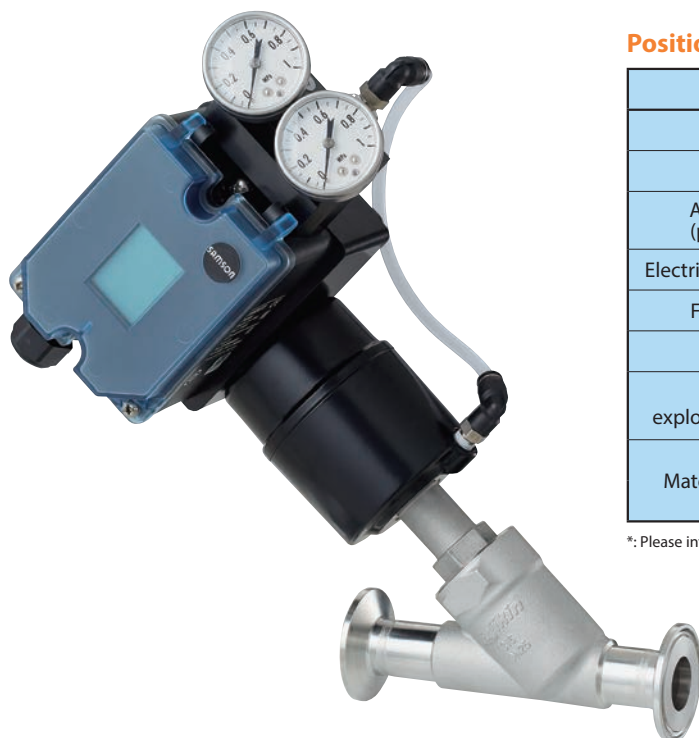


Opening limitation mechanism



Proximity sensor

Automatic valve smart positioner assembly



Positioner specifications

		Positioner specifications
Model No.		3725 (manufactured by Samson)
Input signal (WA)		DC 4–20 mA (split range can be set)
Ambient temperature (positioner main unit)		–25°C to +80°C
Electrical wiring connection (°C)		Cable ground M20 × 1.5
Feed connection port		Rc 1/4
Protective structure		IP66
Accommodation of explosion-proof standards L1*		II2G Ex ia IIC T4 acc. ATEX (optional)
Material	Main unit	Polyphthalamide
	Cover	Polycarbonate (transparent)

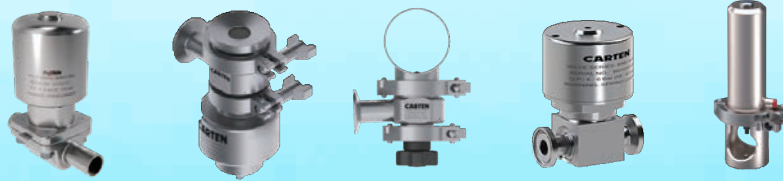
*: Please inform Fujikin if accommodation of explosion-proof standards is desired.

CARTEN®

Valves for the bioproduct and pharmaceutical fields

 **Fujikin** development and production center in Ireland

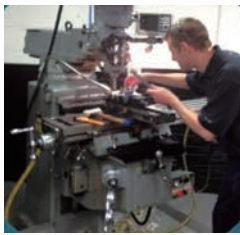
Presented by Carten's Life Science Division



- 8000 m² (86,000 Ft²) site in Waterford
- Fujikin Group (FCG) since 1991
- 35+ Years UHP manufacturing knowledge
- 30+ years in pharmaceutical manufacturing
- ISO 9001_2015 and PED 2014-68-EU: Certified (CE Marking) - Quality system, production system, and products, ISO 14001_2015
- Certified facility and technicians - ISO 14644-1, SNT-TC-1A, ASME BPVC Section IX, EN15614-1

Manufacturing processes and testing facilities

All processes are carried out within CARTEN® facilities.



Machine plant



Surface finishing



Welding

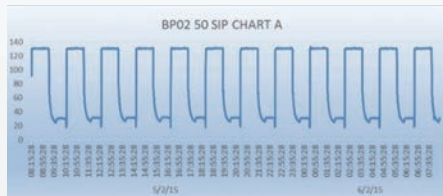


Electropolishing



ISO class 4, 5, and 6 clean rooms

Research and development center steam resistance tester



Flow characteristics measurement equipment and durability tester



Testing and certification

- Conformant with FDA 21CFR177.2600 (elastomers) and FDA 21CFR177.1550 (PTFE)
- Conformant with ISO and USP Class VI
- Certified facility and technicians – ISO14644-1, SNT-TC-1A, ASME BPVC Section IX, EN15614-1

 **Fujikin® and CARTEN® life science products**

- Development to respond to solve customer process problems
- Can accommodate cleanliness, liquid non-retention, and durability requirements for biopharmaceutical manufacture
- Development to conform with ASME BPE standards
- Development for cost reduction
- Flexible compatibility with product customization
- Increased speed of development and production



CARTEN®

SOLUTION PINCH VALVE SYSTEMS

(BPV SERIES)

Solution for Single-Use Systems



Single-use pinch valves compatible with numerous sizes

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

CARTEN®
BPV series
Single-use pinch valves

Falke & CARTEN®
Products related to liquid processes

Integrated valves: Products that can be incorporated into equipment

1. High-durability, reusable valves
2. Assembly structure that allows attachment to panels
3. Compatible with tubes having internal diameters from 1/8 inch to 1.5 inch
4. Protective guards for operation
5. Can be changed to accommodate all single-use tube sizes
6. Compatible with multiple tube manufacturers
7. Accommodates instrumentation (proximity sensors, etc.)
8. Real-time analysis of valves and tubes
9. Certification under actual usage conditions
10. Compatible with continuous production



General single-use applications

Filling systems | Single-pass and tangential flow filtration (TFF) |
Water for injection | Biopharmaceutical manufacture | Cell cultures | Chromatography | Sterile processes

Manual pinch valves

Advantages of **CARTEN**® manual pinch valves

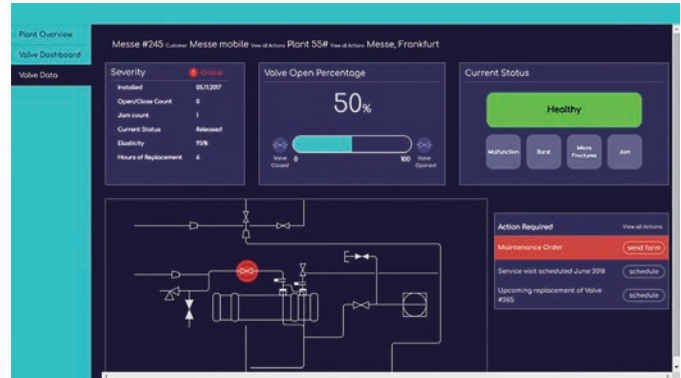
1. Hinge structure allows for easy attachment and detachment
2. Lightweight PPS wheel (40% glass)
3. Linear control versions for each tube size
4. Compatible with tubes having internal diameters from 1/8 inch to 1.5 inch
5. Compatible with platinum silicone and TPE
6. No lubricants used
7. Compact versions can be used (< 1/2")
8. Rapid switching of tube sizes
9. Real-time analysis of valves and tubes
10. Certification under actual usage conditions
11. Compatible with continuous production



Advanced **CARTEN**® technology for single-use valves

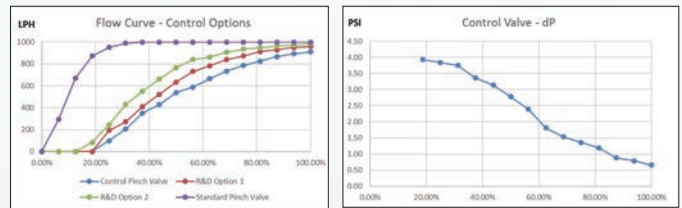
Real-time analysis of tubes

Tube abrasion, wear, etc. are analyzed in real time by a tube surface sensor. We are developing preventive maintenance based on remote monitoring.



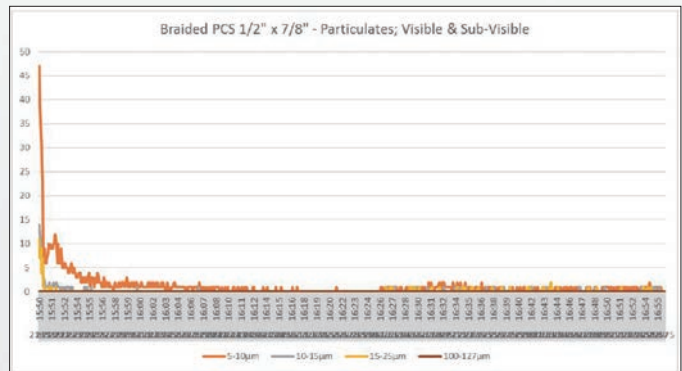
Flow rate control

Flow rate can be controlled to match specifications. Control performance is measured and output.



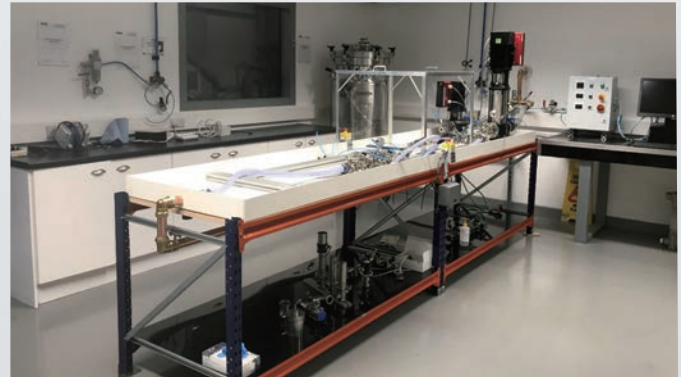
Particle measurement

Dust generation from tubes is evaluated using manufacturing technology and evaluation technology for semiconductor manufacturing process valves.



Tube evaluation

At our on-site research and development center, we evaluate tubes used in valves through simulated processes.



BPV series part numbers

BPV - ADV P 25 S - B 6 - I01

1 2 3 4 5 6 7 8

1	Valve series	Bio pinch valves	BPV					
2	Body type	Integrated (pneumatic)	ADV					
		Hinge type (manual)	HIN					
3	Operation	Manual	M					
		Pneumatic	P					
4	Tube holder Size	Small (internal diameter 1/2 inch or less)	25					
		Large (internal diameter 1 inch or less)	50					
		High-pressure/reinforced type	80					
5	Control type	On-off	S					
		Control	C					
6	Tube	Tube wall thickness		Size			Size	
				inches	mm		inches	mm
			A	1/32"	0.8	E	5/32"	4.0
			B	1/16"	1.6	F	3/16"	4.8
			C	3/32"	2.4	G	1/4"	6.4
D	1/8"	3.2						
7	Tube	Tube internal diameter		Size			Size	
				inches	mm		inches	mm
			1	1/50"	0.5	11	3/8"	9.6
			2	1/40"	0.635	12	7/16"	11.2
			3	1/32"	0.8	13	15/32"	12.0
			4	1/16"	1.6	14	1/2"	12.7
			5	3/32"	2.4	15	5/8"	15.9
			6	1/8"	3.2	16	0.63"	16.0
			7	5/32"	4.0	17	3/4"	19.05
			8	3/16"	4.8	18	7/8"	22.2
			9	1/4"	6.4	19	1"	25.4
10	5/16"	8.0	20	1 1/4"	31.75			
			21	1.5"	38.1			
8	Options	Proximity sensor	I01					
		E/P positioner	B01					
		Other	I04					

FUJIKIN **Fujikin** **CARTEN**® *products related to liquid processes*



Dome diaphragm valves (BND series)



Needle stop valves US-VALVES



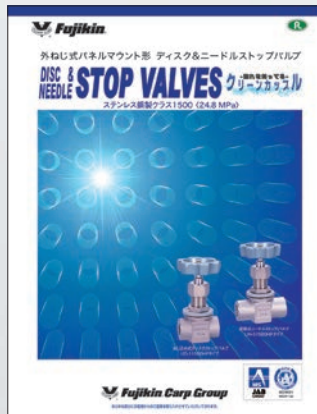
Minicontrol valves MINUCONR



Needle stop valves US-13P series



Automatic ball valves AFMO-40R



Externally threaded disk and needle stop valves



JIS10K ball valves

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN

CARTEN
BPV series
Single wafer type valves

Fujikin & CARTEN
Products related to liquid processes



Fine ceramic valves
COSMIX™



Direct diaphragm valves
NEW MEGAR



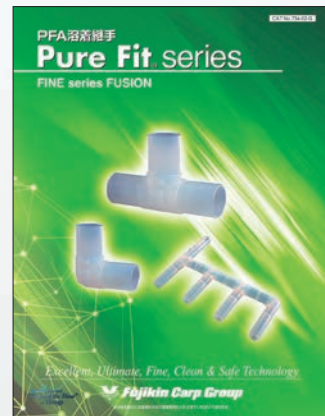
New VR LOK
(stainless steel)



HiLife fine ceramic
Ball valve



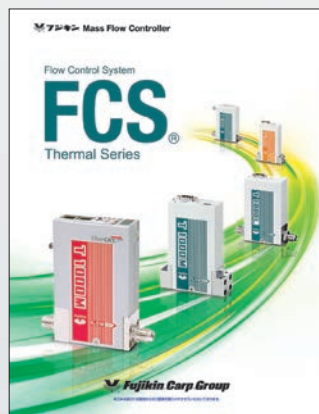
standard series



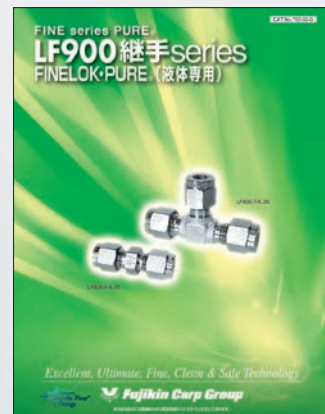
PFA weld fittings
Pure FitR



New Value Series
Ball valve



FCS Thermal Series
FCSR T1000



LF900 fittings (for liquids only)

BMW series
Weir diaphragm valves

BSW series
Weirless diaphragm valves

LPS series
Weirless diaphragm valves

BY series
Angle seat valves

CARTEN®

CARTEN®
Single seat punch valves

Fujikin & CARTEN®
Products related to liquid processes



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URL: <https://www.fujikin.co.jp/en/>



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Fujikin® shall bear no liability regarding product selection criteria or decisions, nor shall Fujikin® be liable (including direct, special or consequential damages including, but not limited to, lost profits or income) in regard to any product which has been damaged by misuse, improper handling or accident, or as a result of service or modification by anyone other than an authorized employee or agent of Fujikin®, or being subjected to use under conditions, or combinations of conditions, that are not compatible with that particular Fujikin® product.



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