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

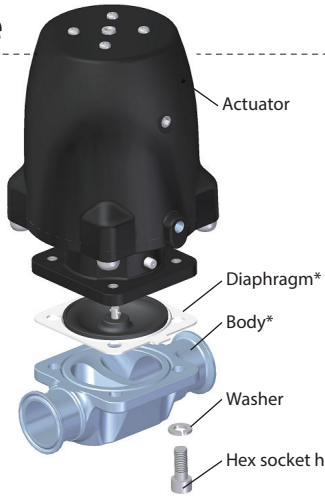
Basic structure of BNW series diaphragm valves

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

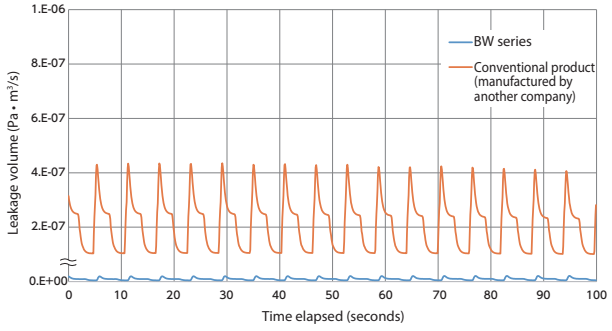
1. Proprietary seal structure increases reliability against external leakage by comparison with conventional diaphragm valves. Stable performance is maintained even after steam sterilization. External seal performance is confirmed through helium leak inspection designed to sense minute leaks. Guides 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 remains stable even under frequent opening/closing and steam sterilization.
4. The assembly process is designed to ensure that wetted parts are free of any oil or moisture.
5. The diaphragm complies with FDA and USP standards. (FDA CFR 177.1550, CFR 177.2600, USP class VI)

Structure



*: Wetted parts

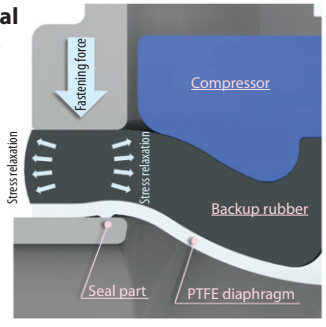
Leakage measurement results with helium leak tester



A helium leak detector is used to measure the helium leakage rate and confirm that the change in external seal leakage due to valve operation is effectively controlled.

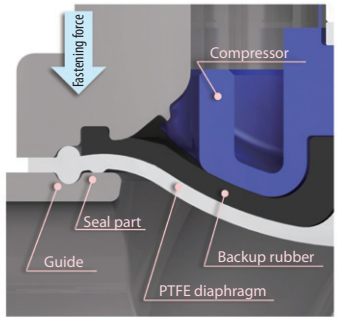
BNW series weir diaphragm valve seal structure

Conventional BW series



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

BNW series



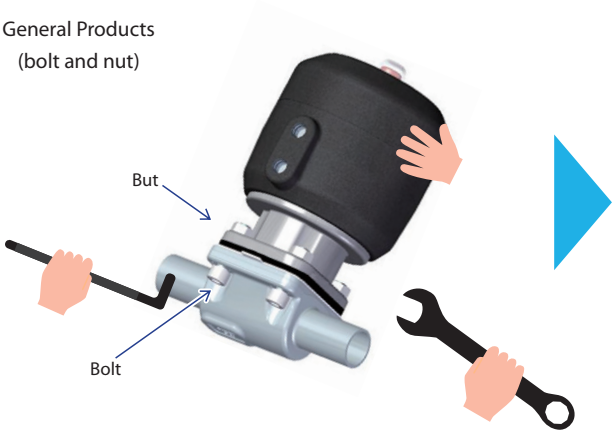
Thin backup rubber and dual protruding parts (guide and seal parts) have increased airtightness and durability. Successfully passed 100,000 open-close cycle tests under 150°C steam conditions.

Ease of diaphragm replacement

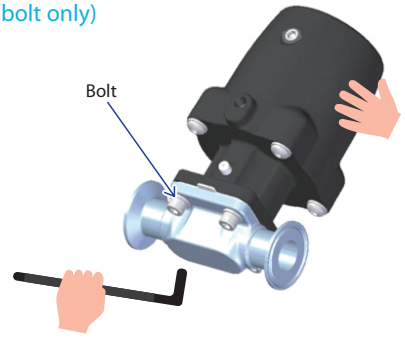
Can be fastened using a single tool (hex wrench).

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. (Some models require a spanner.)

General Products
(bolt and nut)



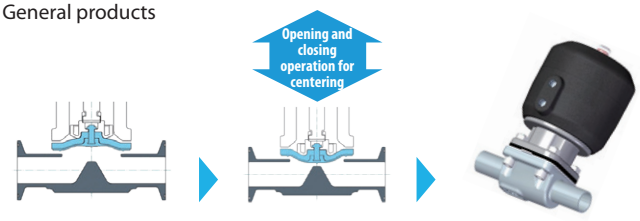
BNW series
(bolt only)



"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.

General products



Temporary fastening of bolt | Centering | Main fastening of bolt

BNW series

"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.

General products

Initial steam sterilization | Refastening | Stable performance

BNW series

Reference

Video of diaphragm replacement procedure

Please refer to these videos when replacing the diaphragm.

Automatic valve diaphragm replacement video

Manual valve diaphragm replacement video

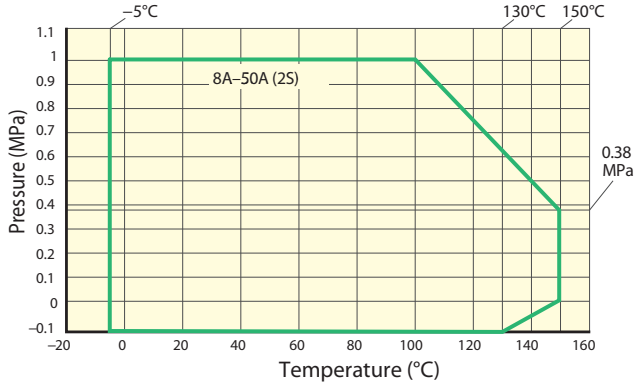
Product standard specifications

		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 ⊿P = 0% (0.35 for 100A), 1.0 when ⊿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								
	Feed port size	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								
Connection method		Clamp type, butt weld type, flange type, threaded type, union 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
Clamp-type product weight (automatic valve) (kg)		0.74	0.73	1.5	2.7	6.3	11.6	24	42	57
Clamp-type product weight (manual valve) (kg)		0.34	0.33	0.63	1.2	2.7	4.6	9.1	12.2	27.6

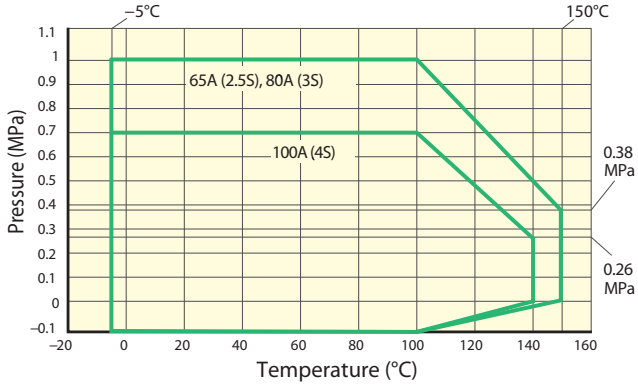
*1: Operating pressure range differs depending on actuator size.
*2: Piping installation angle is listed for ferrule type and butt weld type connections. Angle differs for flange type.

Temperature and pressure charts

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

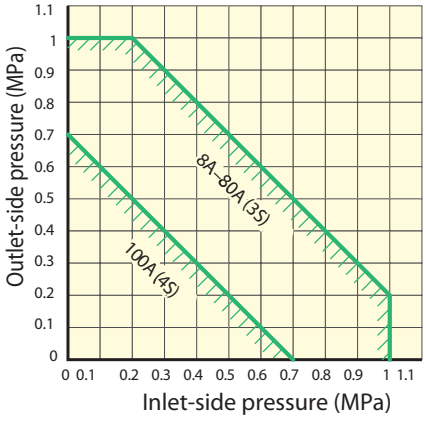


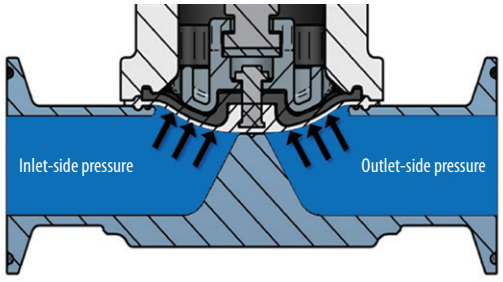
Temperature and pressure chart (65A (2.5S)–100A (4S))



*: Temperature-pressure diagram shown is for PTFE/EPDM diaphragms.
*: 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 withh 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)

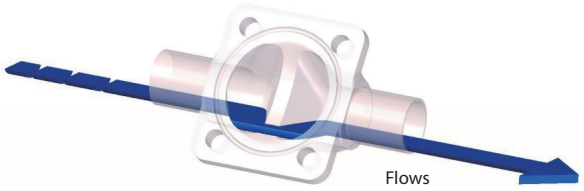


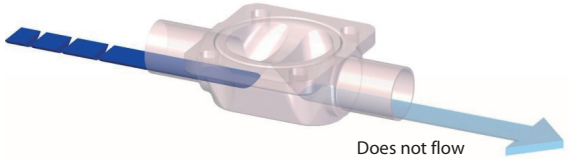


*: If valves are used at low temperatures 0°C or below,
valve shutoff performance may decrease,
so please consult with Fujikin.

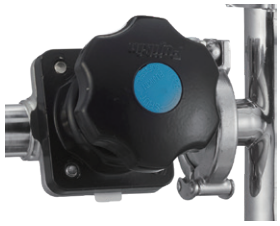
Self-draining piping angle

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.



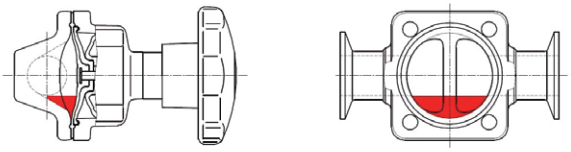


Figure 1. When actuator is oriented horizontally

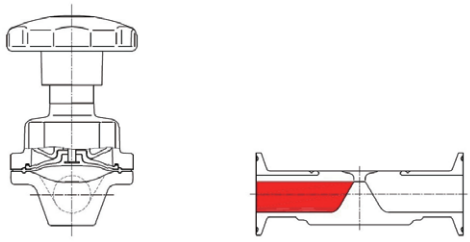


Figure 2. When actuator is oriented vertically

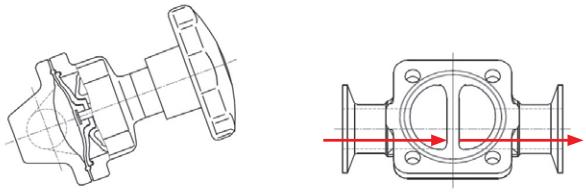
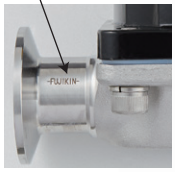
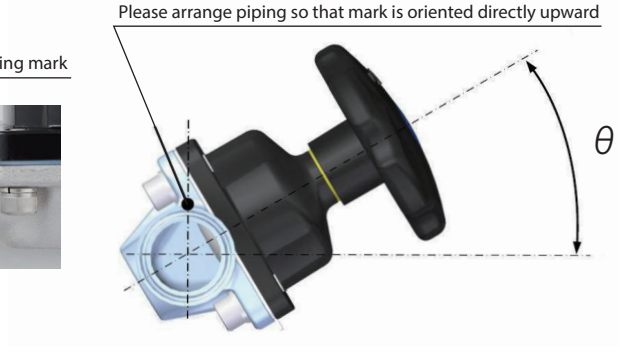


Figure 3. Self-draining piping

Clamp 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-drain mark ("-FUJIKIN-" or "–") is positioned vertically upward.

■ Self-draining piping installation angle, by size

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

Nominal diameter (DN)	Self-draining piping attachment angle (θ°)
1/4"	42
3/8"	32
1/2"	30
3/4"	26
1"	30
1.5"	25
2"	20
2.5"	15
3"	15
4"	15

Part number format

BNW C -25 P E- 7F -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 type

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	Clamp type	
9	Union type	

⑩ Connection	Connection piping size			
	Clamp type/ butt weld type	ASME standard Clamp 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

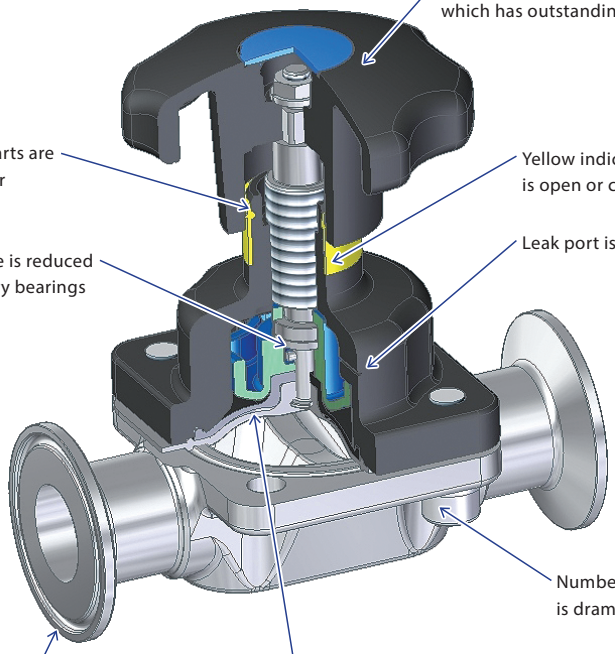
⑫	Options
None	No options
H	With open-side opening adjustment
HC	With closed-side closing adjustment
LC	With closed-side limit switch
LO	With open-side limit switch
LD	With open/closed dual limit switches
KNC	With closed-side proximity switch
KNO	With open-side proximity switch
KND	With open/closed dual 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

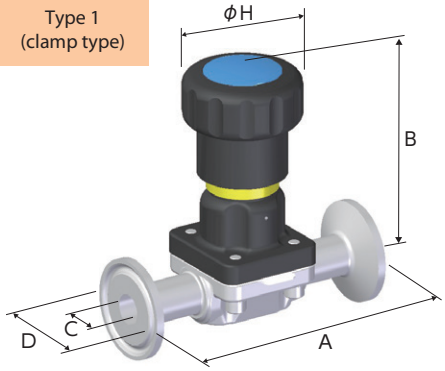


*: Refer to p. 18, self-draining piping installation angle.

Primary product dimensions

Small-aperture manual valves: Clamp type and butt weld type (nominal diameter: 8A–10A, 1/4"–1/2")

Type 1 (clamp type)



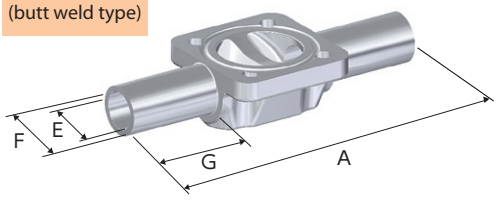
Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (clamp 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 (clamp 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

Type 2 (butt weld type)



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

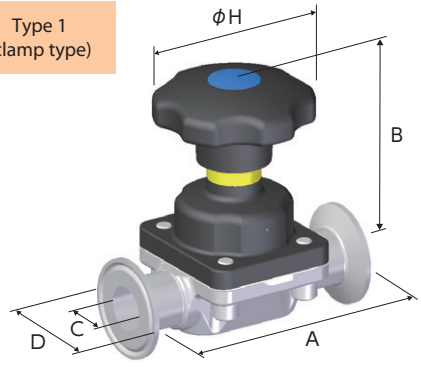
Units (mm)

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: Clamp type and butt weld type (nominal diameter: 15A–50A (2S), 3/4"–2")

Type 1
(clamp type)



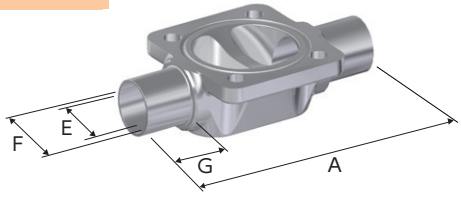
Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (clamp 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 (clamp 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

Type 2
(butt weld type)



Units (mm)

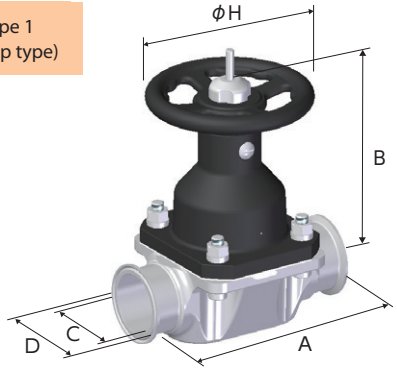
type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	15A	108	95	17.5	21.7	28	65	BNWM-15PE-5D
	25A (1S)	127	110	23	25.4	28	80	BNWM-25PE-5F
	40A (1.5S)	159	145	35.7	38.1	30	110	BNWM-40PE-5H
	50A (2S)	190	174	47.8	50.8	35	110	BNWM-50PE-5I

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

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

Type 1
(clamp type)



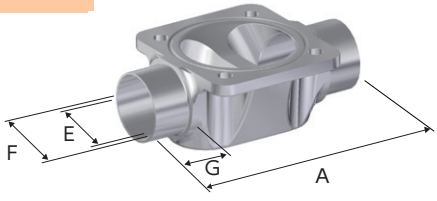
Units (mm)

type	Nominal diameter	A	B	C	D	H	Part No.
1 (clamp 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 (clamp 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

Type 2
(butt weld type)



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)

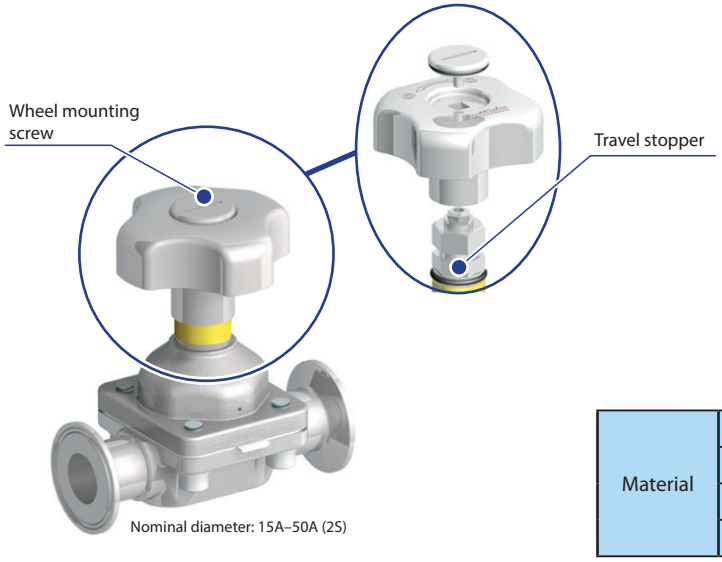
type	Nominal diameter	A	B	E	F	G	H	Part No.
2 (butt weld type)	2.5"	216	230	60.2	63.5	41	200	BNWM2-65PE-5JA
	3"	254	281	72.9	76.2	47	250	BNWM2-80PE-5KA
	4"	305	335	97.38	101.6	35	250	BNWM-100PE-5MA

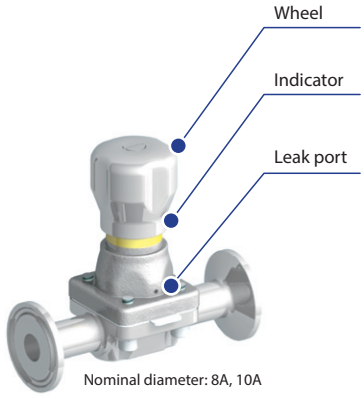
Stainless steel actuators: Manual valve

Stainless steel actuator features

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

Structure



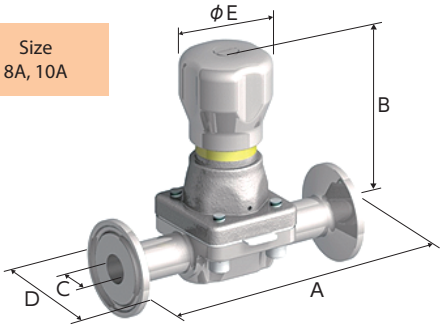


Material	Bonnet	ASTM A351 CF8
	Diaphragm restraint	SUS304
	Wheel	SUS304
	Indicator	EPDM

Primary product dimensions

Stainless steel upper section: Clamp type (nominal diameter: 8A–50A (2S), 1/4"–2")

Size 8A, 10A



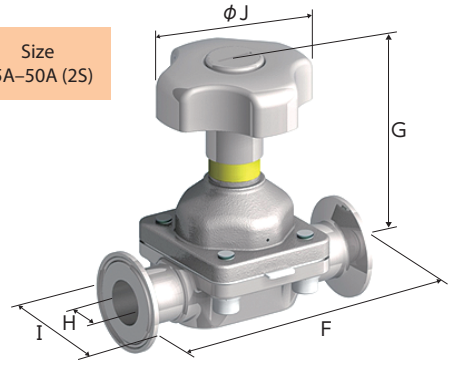
Units (mm)

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

Size 15A–50A (2S)



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)

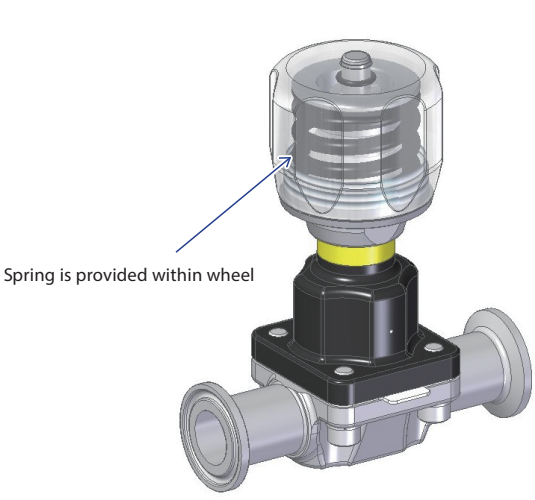
Nominal diameter	F	G	H	I	J	Part No.
3/4"	101.6	97	15.75	25	60	BNWUM-15PE-7EA
1"	114.3	115	22.1	50.4	80	BNWUM-25PE-7FA
1.5"	139.7	147	34.8	50.4	110	BNWUM-40PE-7HA
2"	158.8	173	47.5	63.9	110	BNWUM-50PE-7IA

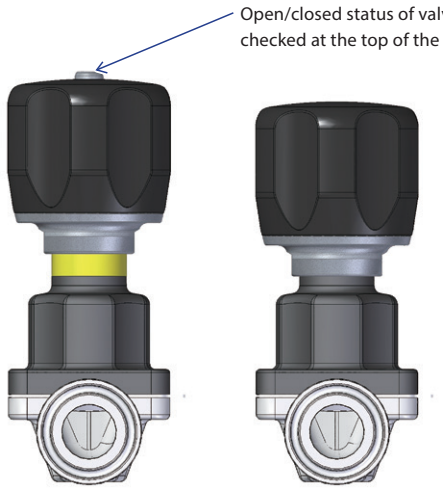
Excessive shutoff prevention: Manual valves

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



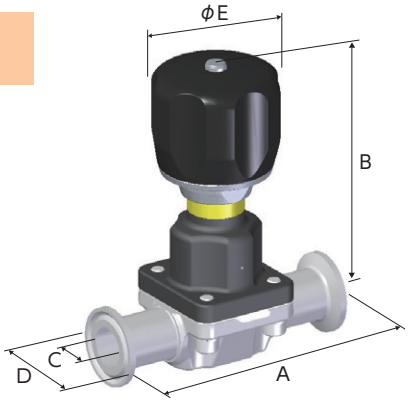


Open/closed status

Primary product dimensions

Excessive shutoff prevention upper section: Manual valves: Clamp type (nominal diameter: 8A–15A, 1/4"–3/4")

Size
8A–15A



Units (mm)

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

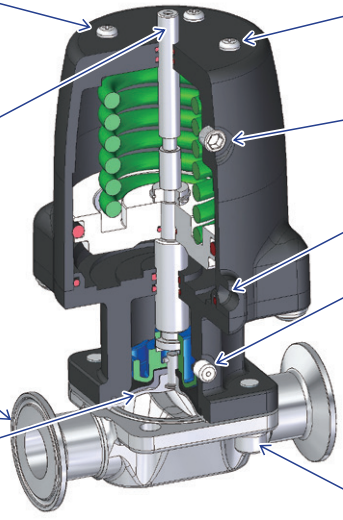
The actuator cap and actuator body are treated with a nylon coating that has outstanding corrosion resistance.

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.

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



A threaded hole is provided for accessory installation

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

Feed port

Install a leak port/intake port on the bonnet.

Number of bolt refastenings to fasten diaphragm is dramatically reduced

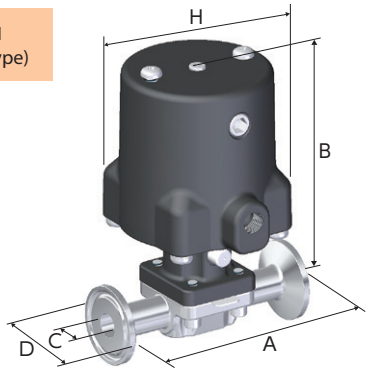
1. There are three actuator operation types: the spring-back types (normal close type, normal open type) and the double action type.
2. Actuator feed port connection sizes are Rc 1/8 for 8A–50A (2S) and Rc 1/4 for 65A (2.5S)–100A (4S). For low-pressure type aluminum automatic actuators, size is Rc 1/8 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))

Clamp type and butt weld type (nominal diameter: 8A–10A, 1/4"–1/2")

Type 1 (clamp type)



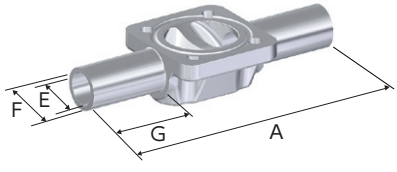
Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (clamp 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 (clamp type)	1/4"	63.5	113	4.57	25	80	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	80	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	80	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

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	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

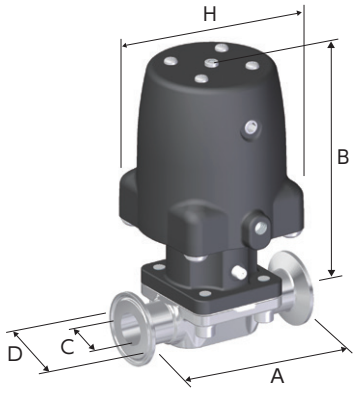
Units (mm)

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	80	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	80	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	80	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))
Clamp type and butt weld type (nominal diameter: 15A–50A (2S), 3/4″–2″)

Type 1
(clamp type)



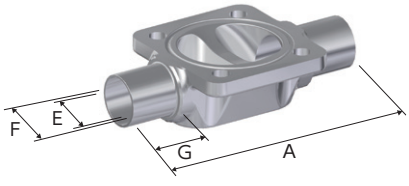
Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (clamp 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 (clamp type)	3/4″	101.6	138	15.75	25	101	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	123	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	163	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	203	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

Type 2
(butt weld type)



Units (mm)

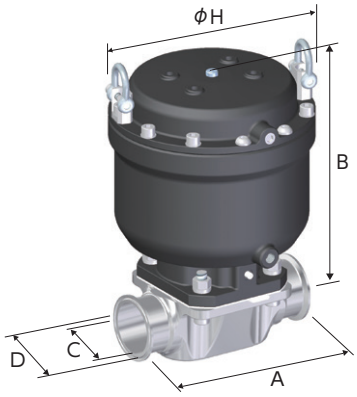
type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	15A	108	135	17.5	21.7	28	101	N.C.	0.4–0.7	BNWC-15PE-5D
								N.O.	0.4–0.44	BNWO-15PE-5D
								D.A.	0.18–0.2	BNWD-15PE-5D
	25A (1S)	127	188	23	25.4	28	123	N.C.	0.4–0.7	BNWC-25PE-5F
								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	101	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	123	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	163	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	203	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))
Clamp type and butt weld type (nominal diameter: 65A (2.5S)–100A (4S), 2.5″–4″)

Type 1
(clamp type)



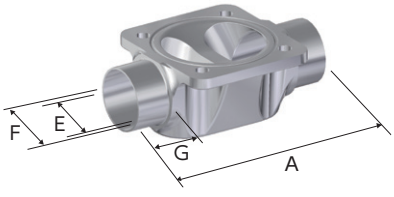
Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (clamp 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 (clamp 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)

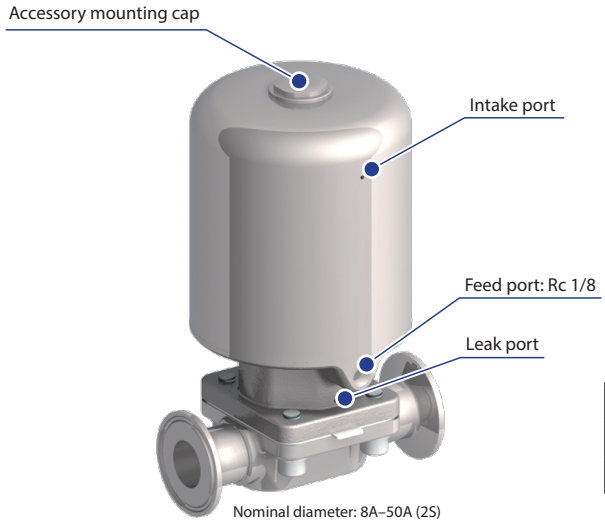
type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	2.5″	216	320	60.2	63.5	41	234	N.C.	0.4–0.7	BNWC-65PE-5JA
								N.O.	0.4–0.44	BNWO-65PE-5JA
								D.A.	0.23–0.25	BNWD-65PE-5JA
	3″	254	381	72.9	76.2	47	290	N.C.	0.4–0.7	BNWC-80PE-5KA
			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



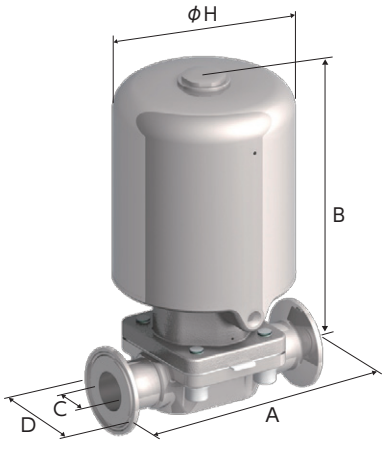
Material	Bonnet	ASTM A351 CF8
	Diaphragm restraint	SUS304
	Cylinder exterior	SUS304

Primary product dimensions

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

Clamp type (nominal diameter: 15A–50A (2S), 3/4"–2")

Size
15A–50A (2S)



Units (mm)

Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
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.
3/4"	101.6	101	15.75	25	83	N.C.	0.4–0.7	BNWUC-15PE-7EA
1"	114.3	148	22.1	50.4	103	N.C.	0.4–0.7	BNWUC-25PE-7FA
1 1/2"	139.7	194	34.8	50.4	128	N.C.	0.4–0.7	BNWUC-40PE-7HA
2"	158.8	247	47.5	63.9	164	N.C.	0.4–0.7	BNWUC-50PE-7IA

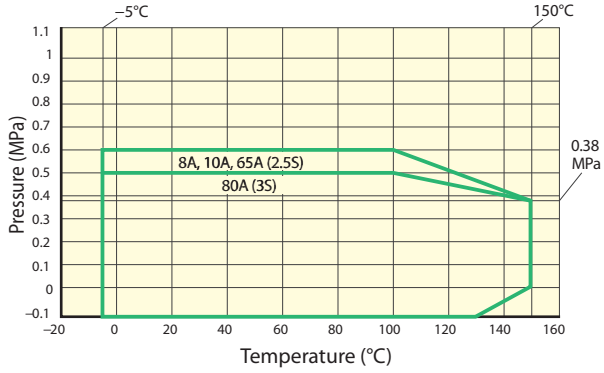
Low-pressure type automatic valves

Low-pressure type automatic valve product specifications

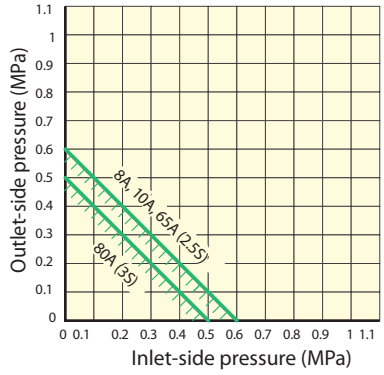
		Product specifications			
Maximum working pressure		100% ⊿P 0.6 MPa, 80A (3S): 100% ⊿P 0.5 MPa			
Working fluid temperature range		−5°C to +150°C			
Actuator	type	Spring-back (normal close type) (N.C.)			
	Feed port size	Rc 1/8			
	Operating pressure	N.C. type: 0.5–0.8 MPa			
Nominal diameter (DN)		8A	10A	65A	80A
Clamp type product weight (automatic valve) (kg)		0.4	0.39	14.3	24.6

Temperature and pressure charts

Temperature and pressure chart (low-pressure type)



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



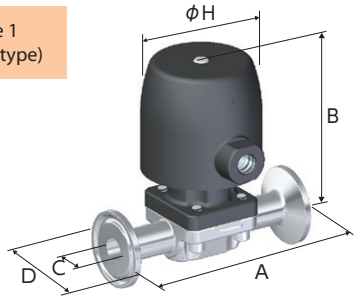
*: Temperature-pressure diagram shown is for PTFE/EPDM diaphragms.
*: Please feel free to inquire with Fujikin about usage conditions outside of the temperature and pressure charts.
*: Durability can vary depending on usage conditions, so please consult with Fujikin.
*: Temperature and pressure charts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

*: 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.))
Clamp type and butt weld type (nominal diameter: 8A–10A, 1/4"–1/2")

Type 1 (clamp type)



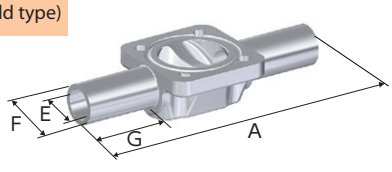
Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (clamp 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 (clamp 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)

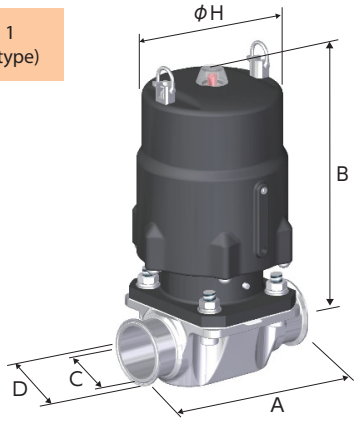
type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	1/4"	90	84	4.57	6.35	27	52	N.C.	0.4–0.7	BNWC2-8PE-5BA
	3/8"	90	84	7.75	9.52	27	52	N.C.	0.4–0.7	BNWC2-8PE-5CA
	1/2"	90	84	9.4	12.7	27	52	N.C.	0.4–0.7	BNWC2-8PE-5DA

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.))

Clamp type and butt weld type (nominal diameter: 65A (2.5S)–80A (3S), 2.5″–3″)

Type 1
(clamp type)



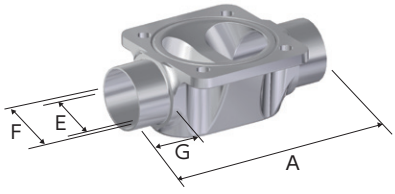
Units (mm)

type	Nominal diameter	A	B	C	D	H	Actuator Operation type	Operating pressure (MPa)	Part No.
1 (clamp 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 (clamp 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)

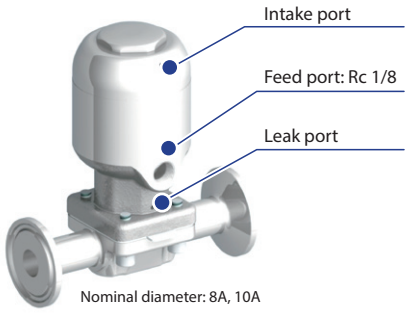
type	Nominal diameter	A	B	E	F	G	H	Actuator Operation type	Operating pressure (MPa)	Part No.
2 (butt weld type)	65A (2.5S)	216	306	59.5	63.5	35	176	N.C.	0.5–0.8	BNWC2-65PE-5J
								N.O.	0.5–0.55	BNWO2-65PE-5J
	80A (3S)	370	85.5	72.3	76.3	35	200	N.C.	0.5–0.8	BNWC2-80PE-5K
								N.O.	0.5–0.55	BNWO2-80PE-5K

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)

Nominal diameter: 15A–50A (2S)



Nominal diameter: 8A, 10A

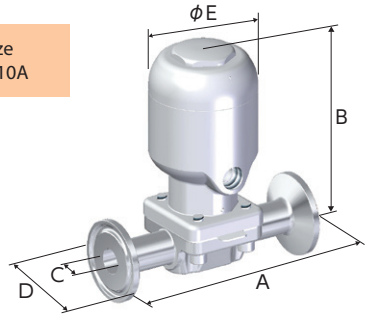
Material	Bonnet	ASTM A351 CF8
	Diaphragm restraint	SUS304
	Cylinder exterior	SUS304

Primary product dimensions

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

Clamp type (nominal diameter: 8A–50A (2S), 1/4″–2″)

Size
8A, 10A



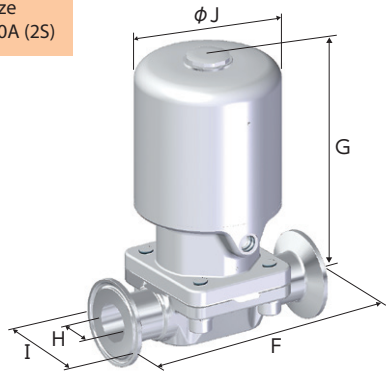
Units (mm)

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)



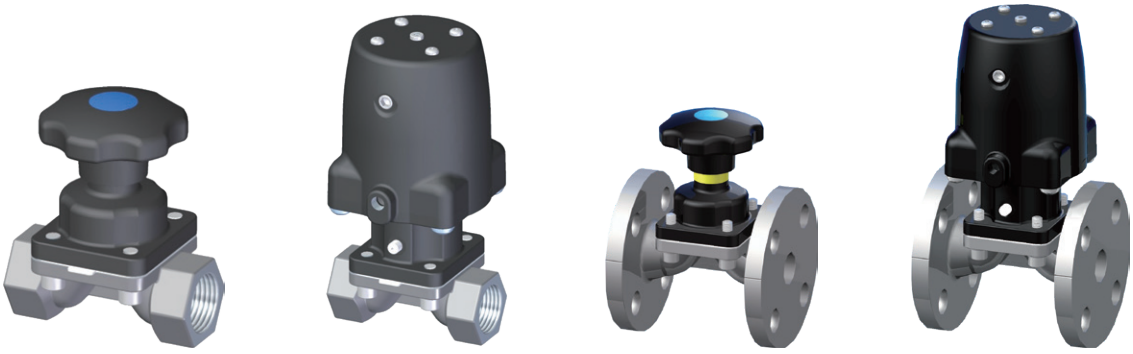
Units (mm)

Nominal diameter	F	G	H	I	J	Actuator Operation type	Operating pressure (MPa)	Part No.
15A	108	104	17.5	34	68	N.C.	0.4–0.7	BNWUC2-15PE-7D
25A (1S)	127	148	23	50.5	83	N.C.	0.4–0.7	BNWUC2-25PE-7F
40A (1.5S)	159	194	35.7	50.5	103	N.C.	0.4–0.7	BNWUC2-40PE-7H
50A (2S)	190	247	47.8	64	128	N.C.	0.4–0.7	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.	0.4–0.7	BNWUC2-15PE-7EA
1″	114.3	148	22.1	50.4	83	N.C.	0.4–0.7	BNWUC2-25PE-7FA
1.5″	139.7	194	34.8	50.4	103	N.C.	0.4–0.7	BNWUC2-40PE-7HA
2″	158.8	247	47.5	63.9	128	N.C.	0.4–0.7	BNWUC2-50PE-7IA

Economy series: Threaded type, flange type



Economy series product specification

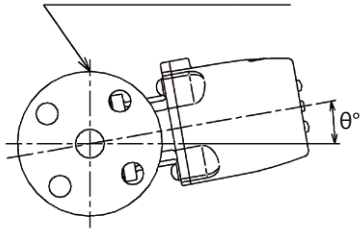
		Product specifications								
Connection		Threaded type, flange type								
Material	Body	SCS14A								
Maximum working pressure		1 MPa (0.6 MPa for 8A, 0.7 MPa for 100A)								
Working fluid temperature range		−5°C to +150°C								
Actuator	Type	• Spring-back type (normally closed type) [N.C.] • Spring-back type (normally open type) [N.O.] • Double-action type [D.A.] • Manual type								
	Feed port size	Rc 1/8 (65A to 100A: Rc 1/4)								
	Operating pressure	• N.C. type: 0.4 to 0.7 MPa • N.O. type: 0.4 to 0.44 MPa • D.A. type: 0.17 to 0.3 MPa								
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

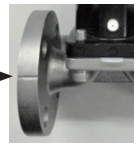
Self-draining piping installation angle

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.

Self-draining mark

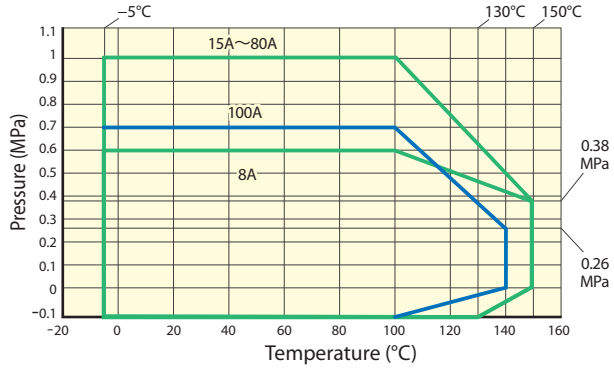


Valve size (DN)	Self-draining Piping angle (θ°)
15A	11
20A	13
25A	10
40A	8
50A	7
65A	6
80A	6
100A	10

Table. Flange connection types Self-draining piping installation angle

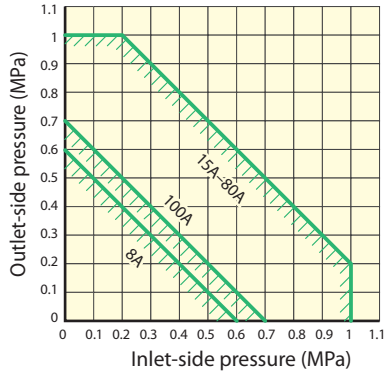
Temperature and pressure charts

Temperature and pressure charts



*: Temperature-pressure diagram shown is for PTFE/EPDM diaphragms.
*: 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

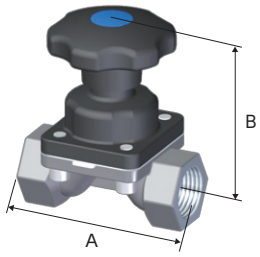


*: If valves are used at low temperatures 0°C or below, valve shutoff performance may decrease, so please consult with Fujikin.

Primary product dimensions

Manual valves

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

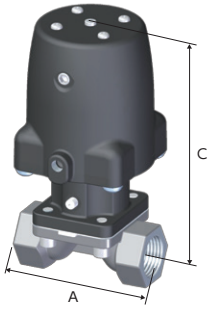


Units (mm)

	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)

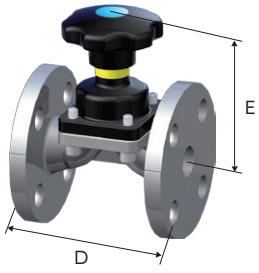


Units (mm)

	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)

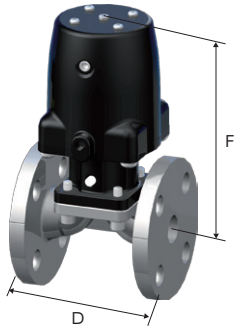


Units (mm)

	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

BNW - 25 P E -

① ② ③ ④ ⑤

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.

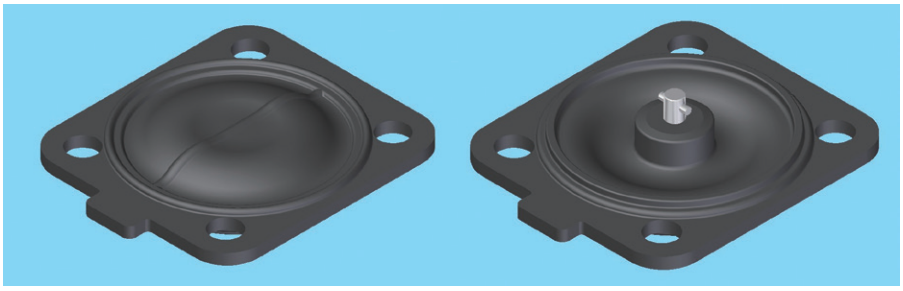
⑤	Other
	Abbreviations are inserted for special products.

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

BNW M T - 15 - SL - B

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

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 type

④	Pressure type
None	Standard type
2	Low-pressure type

*: 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

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

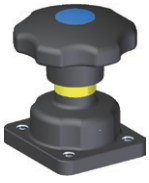
⑥	Diaphragm size
8	8A
15	15A
25	25A (1S)
40	40A (1.5S)
50	50A (2S)
65	65A (2.5S)
80	80A (3S)
100	100A (4S)

⑦	Manual type options
SL	Over-tightening prevention
GMN	Opening indicator

⑧	Includes
B	Tightening bolt

⑨	Other
	Abbreviations are inserted for special products.

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)

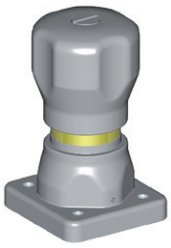
■ Upper section for two-way valves

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

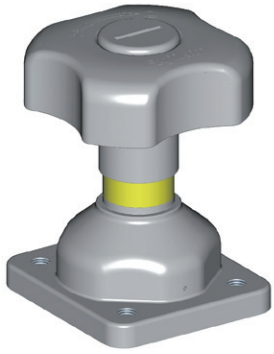
■ Upper section for T valves and block valves

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.
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.
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:
8A–10A

■ 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.))

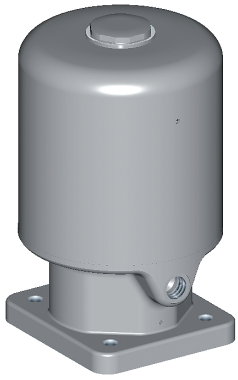
Nominal diameter:
65A (2.5S)

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–10A



Nominal diameter:
15A–50A (2S)

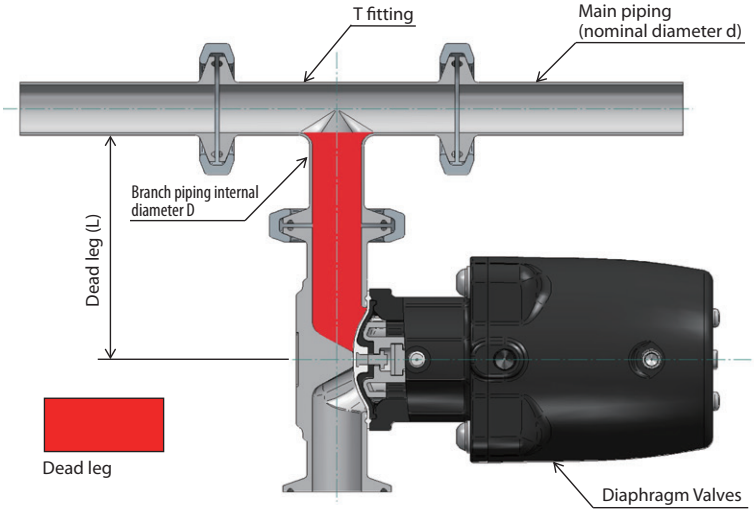
■ Upper section for two-way valves

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

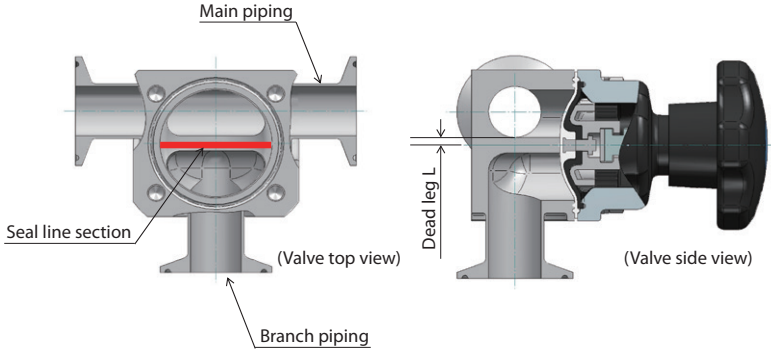
Piping dead leg (L/D)



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.

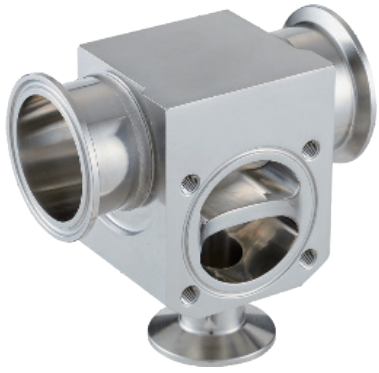
In ASME BPE, the dead leg L is considered to be the distance from the inner wall of the main piping to the central part of the internal seal of the diaphragm valve.



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.

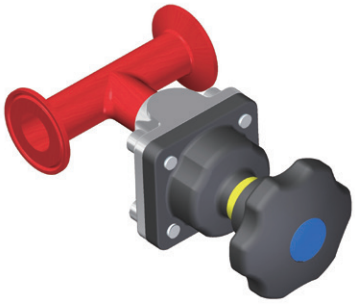


T-shaped sampling valves

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

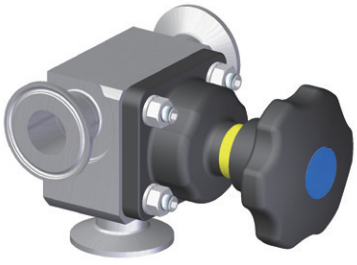
Sampling piping using fitting

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.



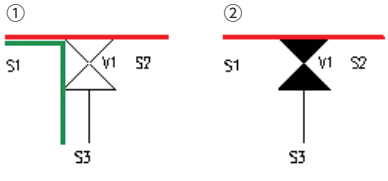
Sampling piping formed into a block

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.

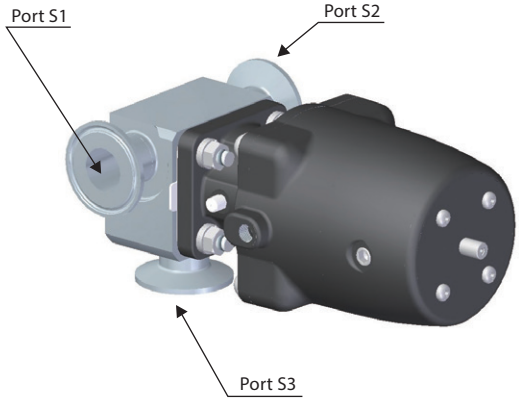
Operation pattern table

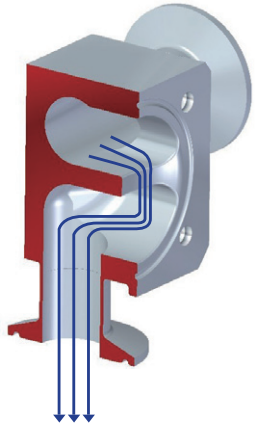
Pattern No.	Valve operation
	V1
①	O
②	C

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



V: Vertical H: Horizontal





Part number format

T-type sampling valve part number format

Branch pipe　Main pipe

BNW　C　S - 25 P E - 7 F　7 H

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

Drive unit　Diaphragm　Body

①	Valve series name
BNW	BNW series weir diaphragm valve

②	Actuator material
None	Aluminum
U	Stainless steel

③	Actuator operation type
C	Spring-back type (normally closed type) [N.C.]
O	Spring-back type (normally open type) [N.O.]
D	Double-action type [D.A.]
M	Manual type

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

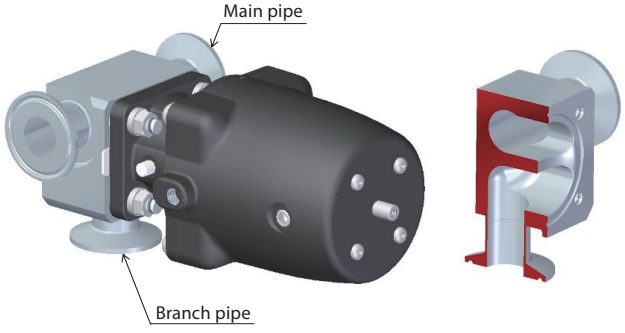
⑤	Valve type
S	T-type sampling valve

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	Wetted part diaphragm material
P	PTFE
E	EPDM

⑧	Backup rubber material
None	Rubber diaphragm
E	EPDM

*1: The aluminum automatic upper section low-pressure type is only available in 8A, 10A, 65A, and 80A.
The aluminum manual upper section 65A and 80A models are standard type.
*2: Flange connection: JIS 10KFF flange



⑨	Branch pipe connection	
1	Threaded type	
2	Flange type	*2
5	Butt weld type (BW)	
7	Clamp type	
9	Union type	

⑩	Branch pipe connection size			
Connection	Clamp type and butt weld type	ASME clamp type and 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	

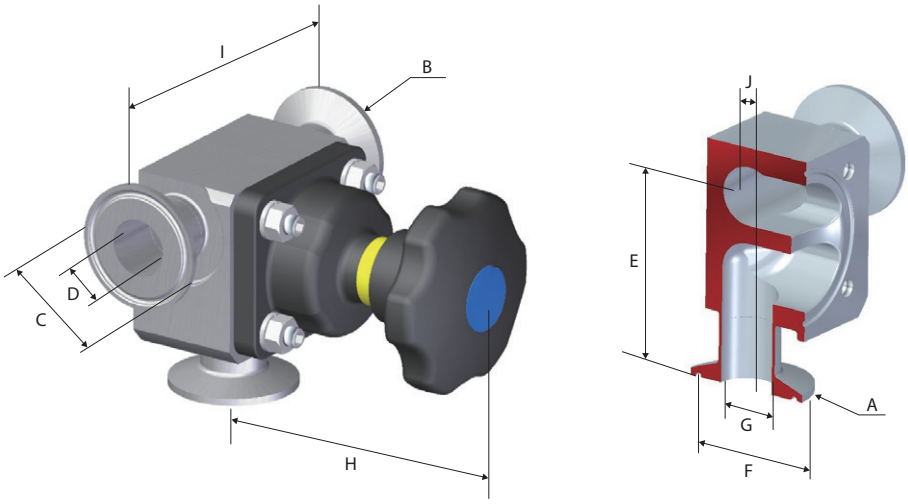
⑪	Pipe specifications
None	ISO/IDF
A	ASME

⑫	Main pipe connection	
1	Threaded type	
2	Flange type	*2
5	Butt weld type (BW)	
7	Clamp type	
9	Union type	

⑬	Main pipe connection size			
Connection	Clamp type and butt weld type	ASME Clamp type and 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	

⑭	Pipe specifications
None	ISO/IDF
A	ASME

Primary product dimensions



Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
8A	8A	34	10.5	51.5	34	10.5	81	90	0	BNWMS-8PE-7B
8A	10A	34	14	53	34	10.5	81	90	2	BNWMS-8PE-7B7C
8A	15A	34	17.5	55	34	10.5	81	90	4.5	BNWMS-8PE-7B7D
8A	25A (1S)	50.5	23	57.5	34	10.5	81	90	7	BNWMS-8PE-7B7F
8A	40A (1.5S)	50.5	35.7	64	34	10.5	81	90	12	BNWMS-8PE-7B7H
8A	50A (2S)	64	47.8	70	34	10.5	81	90	16.7	BNWMS-8PE-7B7I
8A	65A (2.5S)	77.5	59.5	75.8	34	10.5	81	95	23	BNWMS-8PE-7B7J
8A	80A (3S)	91	72.3	82.2	34	10.5	81	95	31	BNWMS-8PE-7B7K

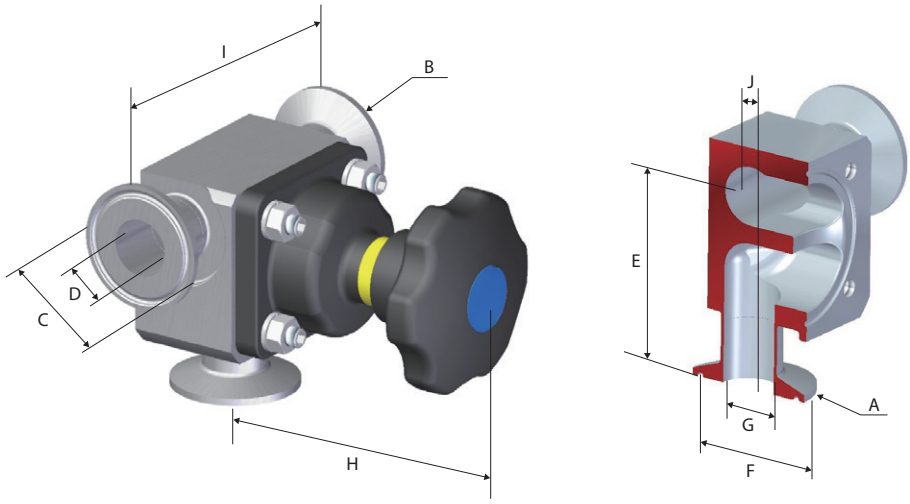
Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
10A	10A	34	14	53	34	14	85	90	0	BNWMS-8PE-7C
10A	15A	34	17.5	55	34	14	85	90	2	BNWMS-8PE-7C7D
10A	25A (1S)	50.5	23	57.5	34	14	85	90	4.5	BNWMS-8PE-7C7F
10A	40A (1.5S)	50.5	35.7	64	34	14	85	90	9	BNWMS-8PE-7C7H
10A	50A (2S)	64	47.8	70	34	14	85	90	13	BNWMS-8PE-7C7I
10A	65A (2.5S)	77.5	59.5	75.8	34	14	85	95	19	BNWMS-8PE-7C7J
10A	80A (3S)	91	72.3	82.2	34	14	85	95	27	BNWMS-8PE-7C7K

Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
15A	15A	34	17.5	63.5	34	17.5	104	108	0	BNWMS-15PE-7D
15A	25A (1S)	50.5	23	66	34	17.5	104	108	2.8	BNWMS-15PE-7D7F
15A	40A (1.5S)	50.5	35.7	72.5	34	17.5	104	108	9.2	BNWMS-15PE-7D7H
15A	50A (2S)	64	47.8	78.5	34	17.5	104	108	15.2	BNWMS-15PE-7D7I
15A	65A (2.5S)	77.5	59.5	84.5	34	17.5	104	113	22.3	BNWMS-15PE-7D7J
15A	80A (3S)	91	72.3	90.9	34	17.5	104	113	28.3	BNWMS-15PE-7D7K
15A	100A (4S)	119	97.6	103.6	34	17.5	104	121	35.3	BNWMS-15PE-7D7M

Primary product dimensions



Units (mm)

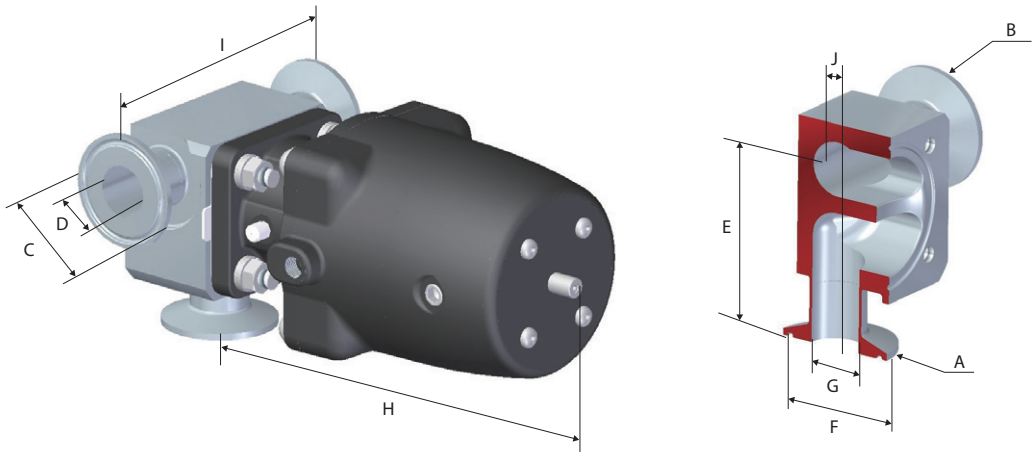
Size A	Size B	C	D	E	F	G	H	I	J	Part No.
25A (1S)	25A (1S)	50.5	23	75	50.5	23	122	127	0	BNWMS-25PE-7F
25A (1S)	40A (1.5S)	50.5	35.7	81.5	50.5	23	122	127	6.4	BNWMS-25PE-7F7H
25A (1S)	50A (2S)	64	47.8	87.5	50.5	23	122	127	13.7	BNWMS-25PE-7F7I
25A (1S)	65A (2.5S)	77.5	59.5	93	50.5	23	122	127	18.3	BNWMS-25PE-7F7J
25A (1S)	80A (3S)	91	72.3	99.5	50.5	23	122	127	24	BNWMS-25PE-7F7K
25A (1S)	100A (4S)	119	97.6	112.3	50.5	23	122	134	37	BNWMS-25PE-7F7M

Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
40A (1.5S)	40A (1.5S)	50.5	35.7	102.5	50.5	35.7	159	159	0	BNWMS-40PE-7H
40A (1.5S)	50A (2S)	64	47.8	108.5	50.5	35.7	159	159	6	BNWMS-40PE-7H7I
40A (1.5S)	65A (2.5S)	77.5	59.5	114.5	50.5	35.7	159	159	12	BNWMS-40PE-7H7J
40A (1.5S)	80A (3S)	91	72.3	121	50.5	35.7	159	159	18	BNWMS-40PE-7H7K
40A (1.5S)	100A (4S)	119	97.6	133.5	50.5	35.7	159	159	31	BNWMS-40PE-7H7M

Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
50A (2S)	50A (2S)	64	47.8	126	64	47.8	192	190	0	BNWMS-50PE-7I
50A (2S)	65A (2.5S)	77.5	59.5	131.8	64	47.8	192	190	6	BNWMS-50PE-7I7J
50A (2S)	80A (3S)	91	72.3	138	64	47.8	192	190	12.5	BNWMS-50PE-7I7K
50A (2S)	100A (4S)	119	97.6	151	64	47.8	192	190	24	BNWMS-50PE-7I7M



Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
8A	8A	34	10.5	51.5	34	10.5	118	90	0	BNWCS-8PE-7B
8A	10A	34	14	53	34	10.5	118	90	2	BNWCS-8PE-7B7C
8A	15A	34	17.5	55	34	10.5	118	90	4.5	BNWCS-8PE-7B7D
8A	25A (1S)	50.5	23	57.5	34	10.5	118	90	7	BNWCS-8PE-7B7F
8A	40A (1.5S)	50.5	35.7	64	34	10.5	118	90	12	BNWCS-8PE-7B7H
8A	50A (2S)	64	47.8	70	34	10.5	118	90	16.7	BNWCS-8PE-7B7I
8A	65A (2.5S)	77.5	59.5	75.8	34	10.5	118	95	23	BNWCS-8PE-7B7J
8A	80A (3S)	91	72.3	82.2	34	10.5	118	95	31	BNWCS-8PE-7B7K

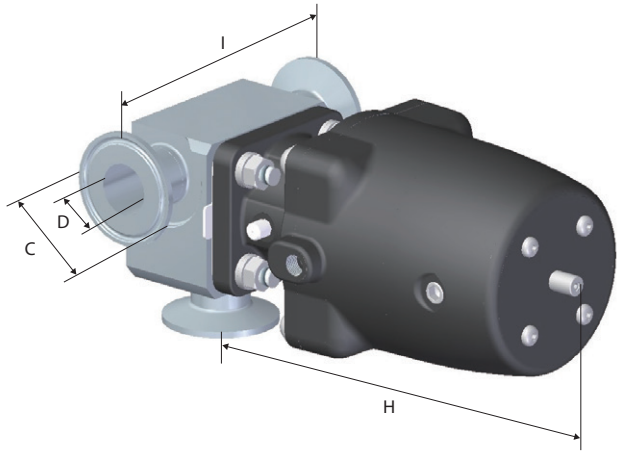
Units (mm)

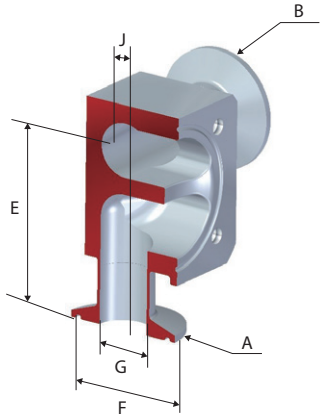
Size A	Size B	C	D	E	F	G	H	I	J	Part No.
10A	10A	34	14	53	34	14	122	90	0	BNWCS-8PE-7C
10A	15A	34	17.5	55	34	14	122	90	2	BNWCS-8PE-7C7D
10A	25A (1S)	50.5	23	57.5	34	14	122	90	4.5	BNWCS-8PE-7C7F
10A	40A (1.5S)	50.5	35.7	64	34	14	122	90	9	BNWCS-8PE-7C7H
10A	50A (2S)	64	47.8	70	34	14	122	90	13	BNWCS-8PE-7C7I
10A	65A (2.5S)	77.5	59.5	75.8	34	14	122	95	19	BNWCS-8PE-7C7J
10A	80A (3S)	91	72.3	82.2	34	14	122	95	27	BNWCS-8PE-7C7K

Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
15A	15A	34	17.5	63.5	34	17.5	146	108	0	BNWCS-15PE-7D
15A	25A (1S)	50.5	23	66	34	17.5	146	108	2.8	BNWCS-15PE-7D7F
15A	40A (1.5S)	50.5	35.7	72.5	34	17.5	146	108	9.2	BNWCS-15PE-7D7H
15A	50A (2S)	64	47.8	78.5	34	17.5	146	108	15.2	BNWCS-15PE-7D7I
15A	65A (2.5S)	77.5	59.5	84.5	34	17.5	146	113	22.3	BNWCS-15PE-7D7J
15A	80A (3S)	91	72.3	90.9	34	17.5	146	113	28.3	BNWCS-15PE-7D7K
15A	100A (4S)	119	97.6	103.6	34	17.5	146	121	35.3	BNWCS-15PE-7D7M

Primary product dimensions





Units (mm))

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
25A (1S)	25A (1S)	50.5	23	75	50.5	23	200	127	0	BNWCS-25PE-7F
25A (1S)	40A (1.5S)	50.5	35.7	81.5	50.5	23	200	127	6.4	BNWCS-25PE-7F7H
25A (1S)	50A (2S)	64	47.8	87.5	50.5	23	200	127	13.7	BNWCS-25PE-7F7I
25A (1S)	65A (2.5S)	77.5	59.5	93	50.5	23	200	127	18.3	BNWCS-25PE-7F7J
25A (1S)	80A (3S)	91	72.3	99.5	50.5	23	200	127	24	BNWCS-25PE-7F7K
25A (1S)	100A (4S)	119	97.6	112.3	50.5	23	200	134	37	BNWCS-25PE-7F7M

Units (mm)

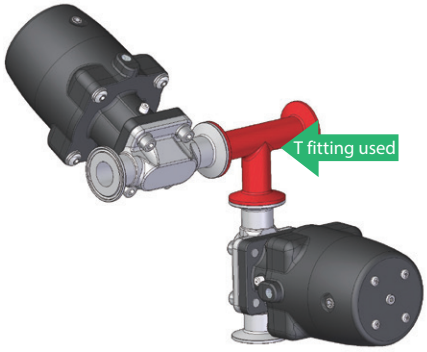
Size A	Size B	C	D	E	F	G	H	I	J	Part No.
40A (1.5S)	40A (1.5S)	50.5	35.7	102.5	50.5	35.7	257	159	0	BNWCS-40PE-7H
40A (1.5S)	50A (2S)	64	47.8	108.5	50.5	35.7	257	159	6	BNWCS-40PE-7H7I
40A (1.5S)	65A (2.5S)	77.5	59.5	114.5	50.5	35.7	257	159	12	BNWCS-40PE-7H7J
40A (1.5S)	80A (3S)	91	72.3	121	50.5	35.7	257	159	18	BNWCS-40PE-7H7K
40A (1.5S)	100A (4S)	119	97.6	133.5	50.5	35.7	257	159	31	BNWCS-40PE-7H7M

Units (mm)

Size A	Size B	C	D	E	F	G	H	I	J	Part No.
50A (2S)	50A (2S)	64	47.8	126	64	47.8	299	190	0	BNWCS-50PE-7I
50A (2S)	65A (2.5S)	77.5	59.5	131.8	64	47.8	299	190	6	BNWCS-50PE-7I7J
50A (2S)	80A (3S)	91	72.3	138	64	47.8	299	190	12.5	BNWCS-50PE-7I7K
50A (2S)	100A (4S)	119	97.6	151	64	47.8	299	190	24	BNWCS-50PE-7I7M

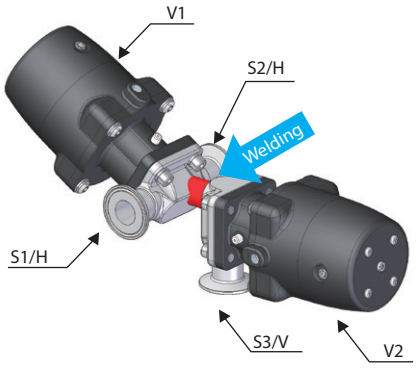
Three-way branch valves

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

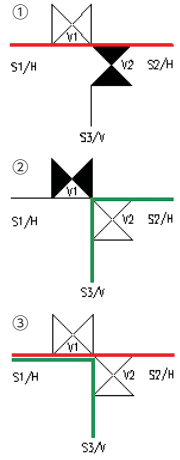


In order to reduce the size of this dead leg, the T fitting is removed, another valve is welded directly to the valve body, and the dead leg is reduced in size.

Operation pattern table

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

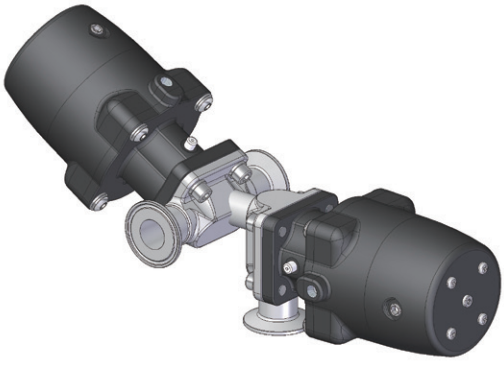
O: Open, valve open
C: Close, valve closed



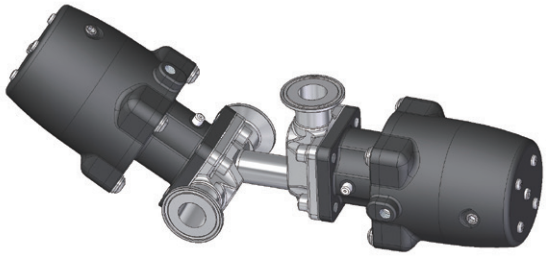
V: Vertical H: Horizontal

Representative piping examples

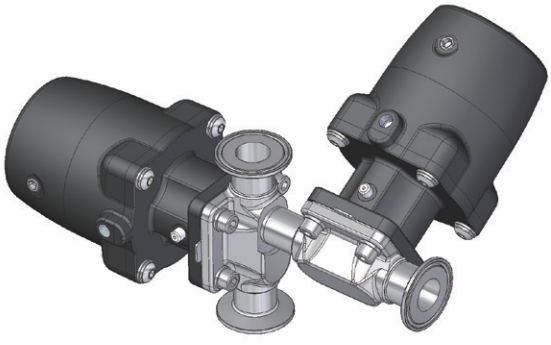
Horizontal–vertical (direct downward outlet) piping
TV type



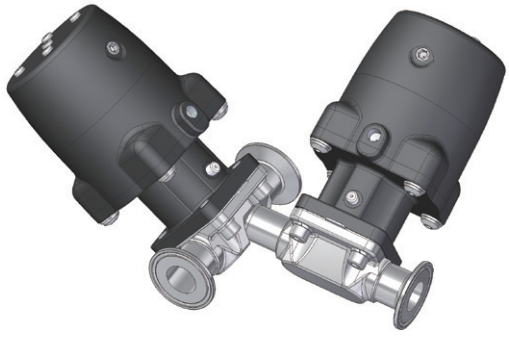
Horizontal–vertical (direct upward outlet) piping
TVU type



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	
type	H0

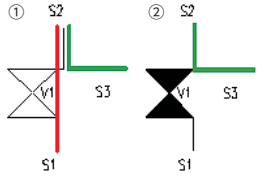
⑤ List of horizontal–vertical branch piping orientation patterns

 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.

Part number format

Three-way branch valve part number format

Pipe on parent valve side

Pipe on child valve side

BNW	C	-	25	P	E	-	7	F	-	T	C	HH1	-	25	P	E	-	7	H
	①	②	③	④		⑤	⑥	⑦		⑧	⑨	⑩		⑪	⑫	⑬		⑭	⑮	⑯		⑰	⑱	⑲
	Drive unit					Diaphragm				Body								Diaphragm				Body		

①	Valve series name
BNW	BNW series weir diaphragm valve

②	Actuator material
None	Aluminum
U	Stainless steel

③	Actuator operation type
C	Spring-back type (normally closed type) [N.C.]
O	Spring-back type (normally open type) [N.O.]
D	Double-action type [D.A.]
M	Manual type

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

⑤	Parent valve 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	Parent valve wetted part diaphragm material
P	PTFE
E	EPDM

⑦	Parent valve backup rubber material
None	Rubber diaphragm
E	EPDM

⑧	Parent valve pipe connection	
1	Threaded type	
2	Flange type	*2
5	Butt weld type (BW)	
7	Clamp type	
9	Union type	

⑨	Parent valve pipe connection size			
Connection	Clamp type and butt weld type	ASME Clamp type and 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	

*1: The aluminum automatic upper section low-pressure type is only available in 8A, 10A, 65A, and 80A.
Aluminum manual upper section 65A and 80A models are standard type.
*2: Flange connection: JIS 10KFF flange

⑩	Parent valve pipe specifications
None	ISO/IDF
A	ASME

⑪	Valve type
T	Three-way branch valve

⑫	Actuator operation type
C	Spring-back type (normally closed type) [N.C.]
O	Spring-back type (normally open type) [N.O.]
D	Double-action type [D.A.]
M	Manual type

⑬	Valve pipe orientation pattern
*3: See list of patterns on p.45.	

⑭	Child valve 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)

⑮	Child valve wetted part diaphragm material
P	PTFE
E	EPDM

⑯	Child valve backup rubber material
None	Rubber diaphragm
E	EPDM

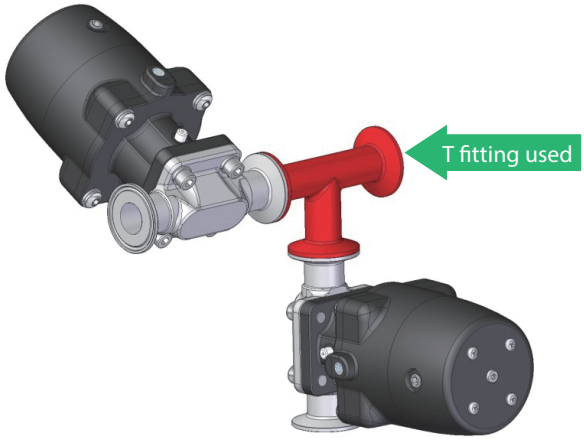
⑰	Child valve main pipe connection	
1	Threaded type	
2	Flange type	*2
5	Butt weld type (BW)	
7	Clamp type	
9	Union type	

⑱	Child valve main pipe connection size			
Connection	Clamp type and butt weld type	ASME Clamp type and 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	

⑲	Child valve pipe specifications
None	ISO/IDF
A	ASME

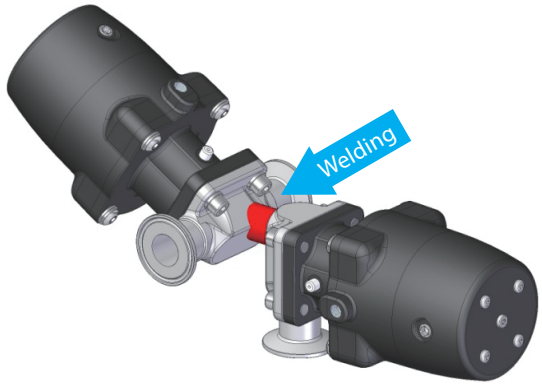
Block valves

Branched piping using fitting



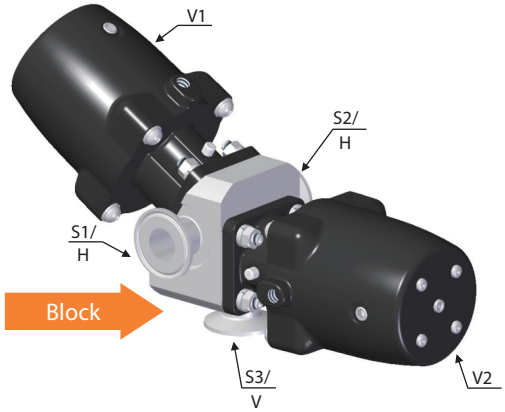
For branched piping on which a horizontal valve and a vertical valve are arranged, a T fitting like that shown in the drawing is used.
However, this results in a large dead leg.

Branched piping directly welded to valve body

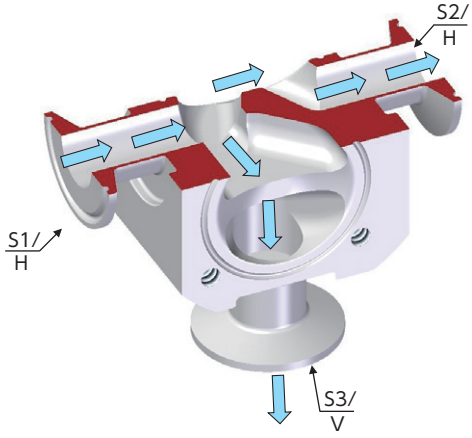


In order to reduce the size of this dead leg, the T fitting is eliminated,
another valve is welded directly to the valve body, and the dead leg is made smaller.

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.

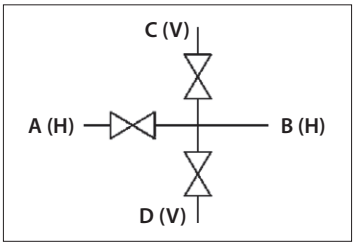
Number of ports and number of valves

Type name

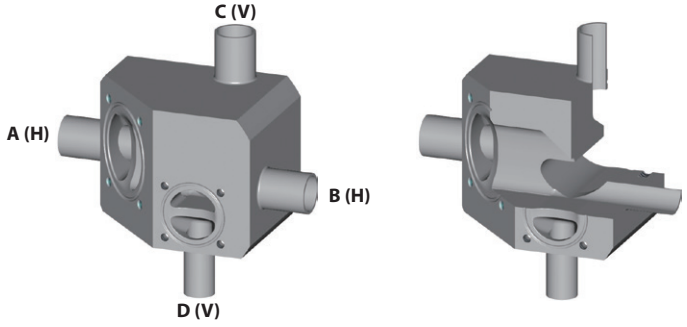
4 ports 3 valves

type MB43E

V: Vertical H: Horizontal



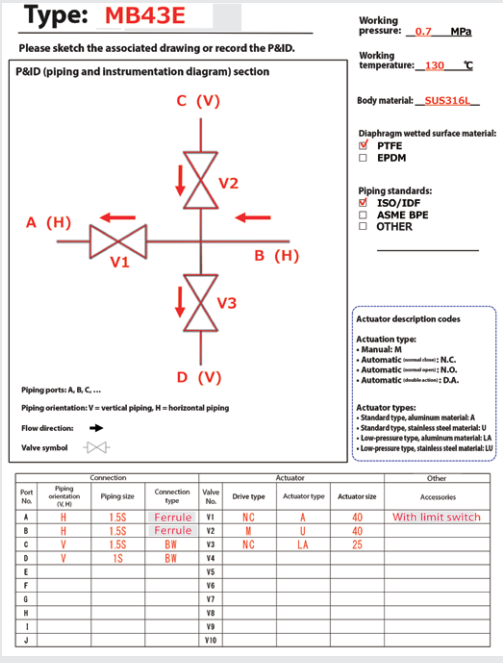
P&ID



Block valve illustration diagram

Block valve selection specifications Entry example

Refer to p. 65



Type: MB43E

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

P&ID (piping and instrumentation diagram) section

C (V), V2, A (H), V1, B (H), V3, D (V)

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 ℃

Body material: SUS316L

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.

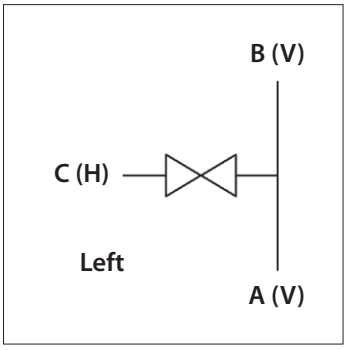
Actuator types:
• Standard type, aluminum material: A
• Standard type, stainless steel material: U
• Low-pressure type, aluminum material: LA
• Low-pressure type, stainless steel material: LU

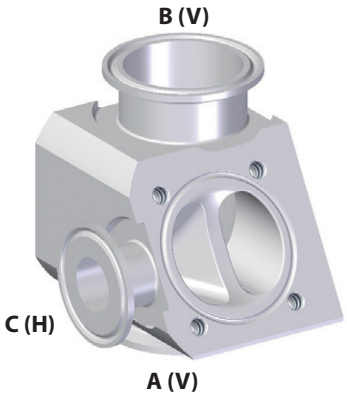
Connection				Actuator				Other
Port No.	Piping orientation (V, H)	Piping size	Connection type	Valve No.	Drive type	Actuator type	Actuator size	Accessories
A	H	1.5S	Ferrule	V1	NC	A	40	With limit switch
B	H	1.5S	Ferrule	V2	M	U	40	
C	V	1.5S	BW	V3	NC	LA	25	
D	V	1S	BW	V4				
E				V5				
F				V6				
G			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

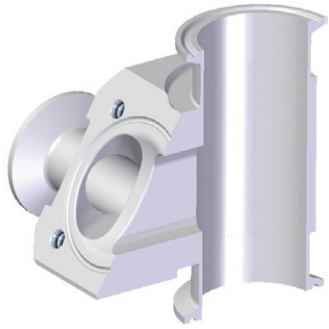
3 ports 1 valve

type S31AL

V: Vertical H: Horizontal



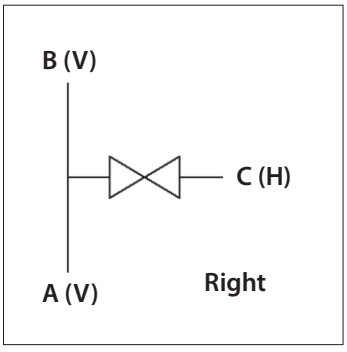


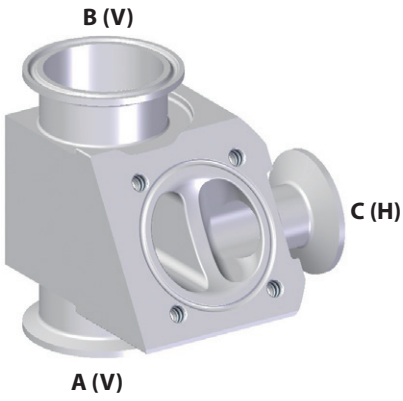


3 ports 1 valve

type S31AR

V: Vertical H: Horizontal

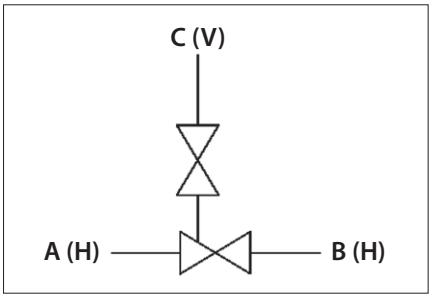


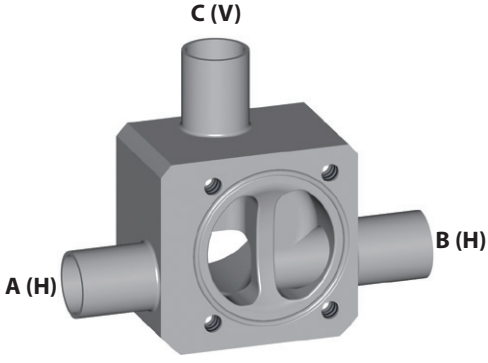


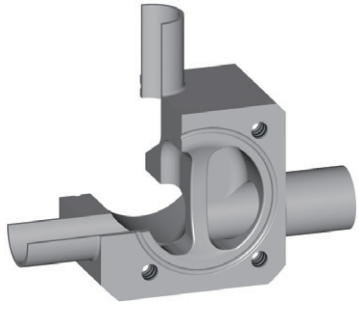
3 ports 2 valves

type B32AL

V: Vertical H: Horizontal



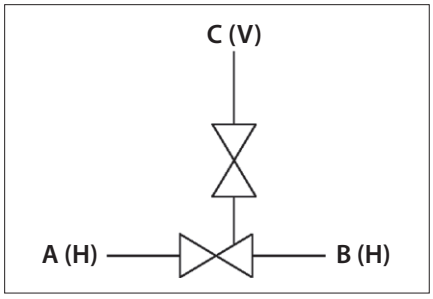


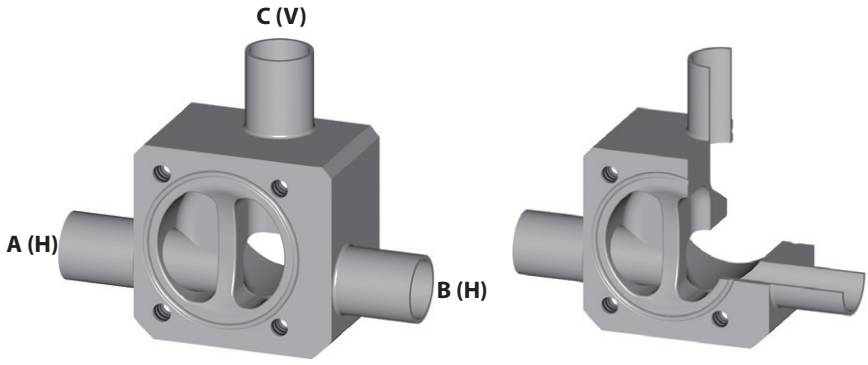


3 ports 2 valves

type B32AR

V: Vertical H: Horizontal

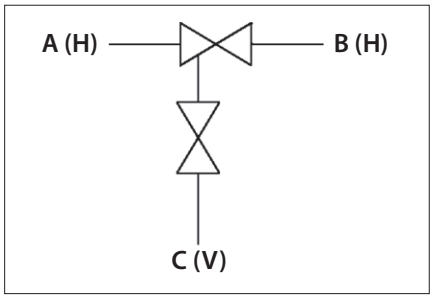


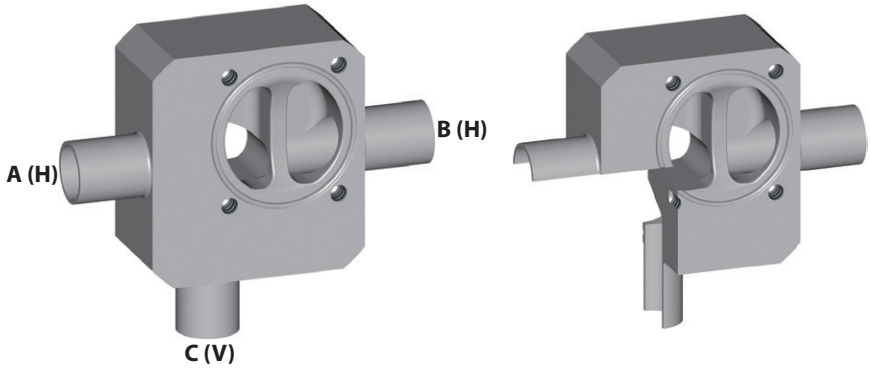


3 ports 2 valves

type B32BL

V: Vertical H: Horizontal

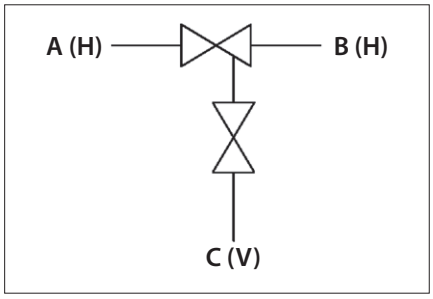


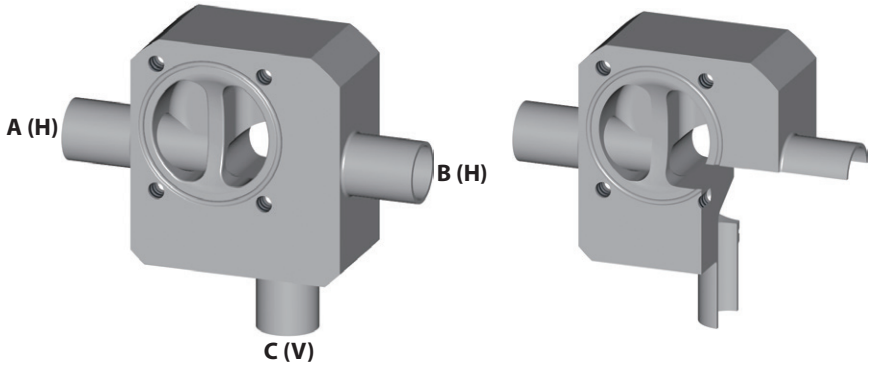


3 ports 2 valves

type B32BR

V: Vertical H: Horizontal

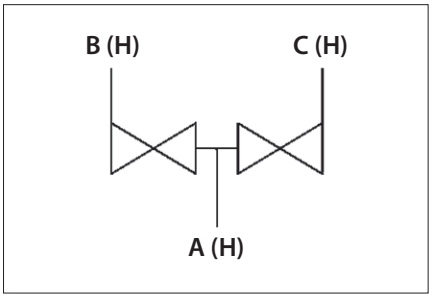


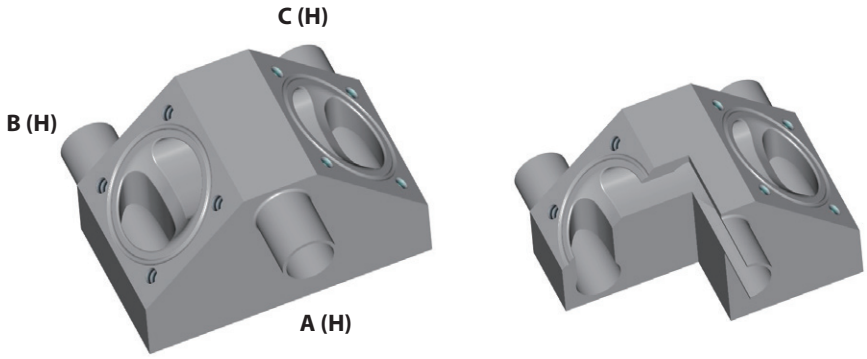


3 ports 2 valves

type B32C

V: Vertical H: Horizontal

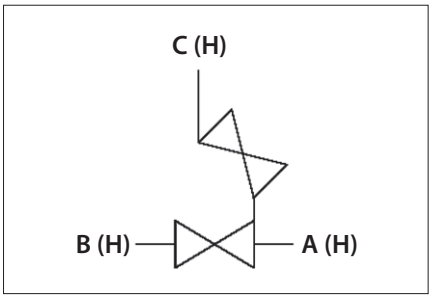


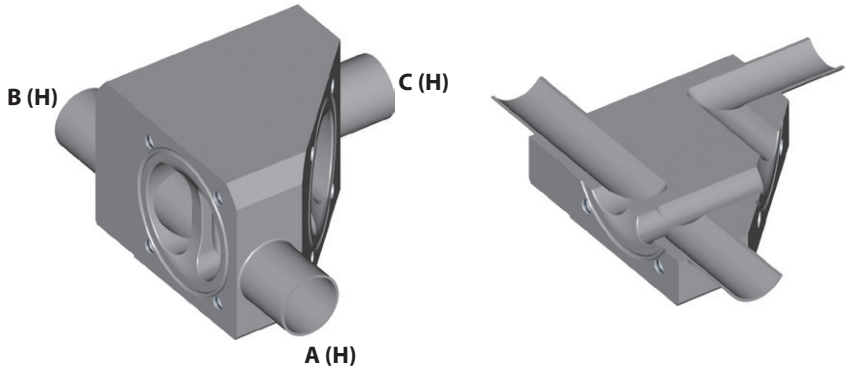


3 ports 2 valves

type B32DR

V: Vertical H: Horizontal

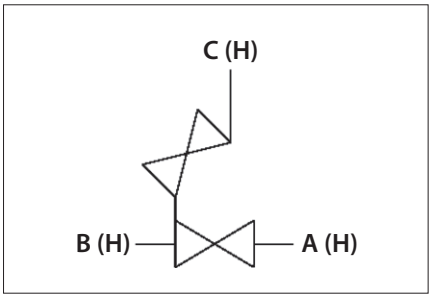


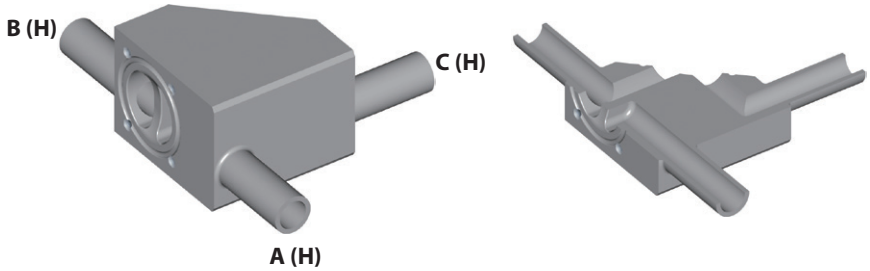


3 ports 2 valves

type B32DL

V: Vertical H: Horizontal

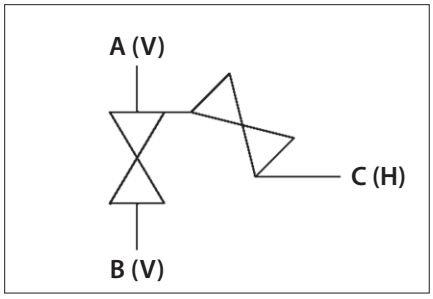


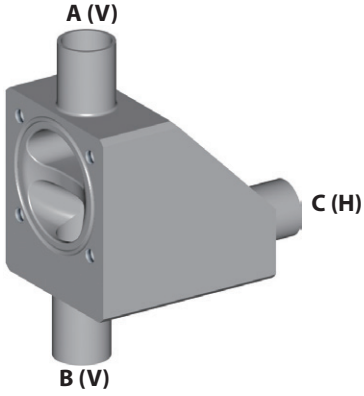


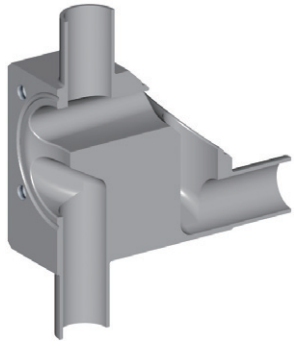
3 ports 2 valves

type B32ET

V: Vertical H: Horizontal





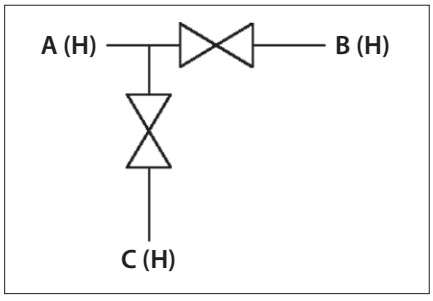


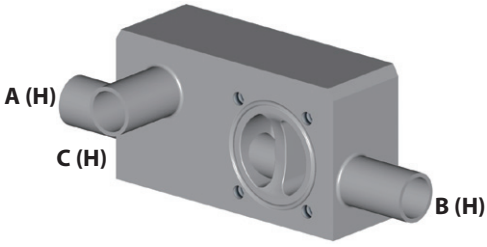
*: Blocks with downward ports (type B32EB) can also be produced

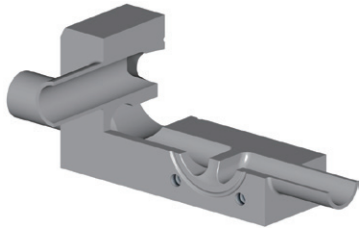
3 ports 2 valves

type B32FT

V: Vertical H: Horizontal



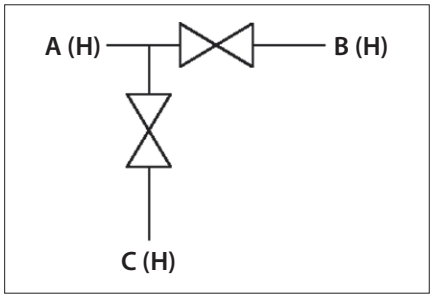


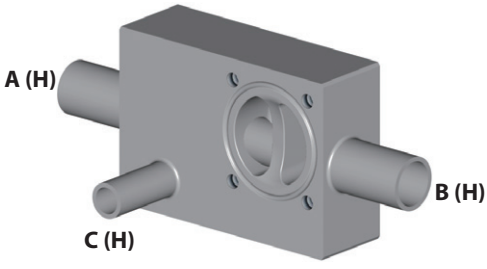


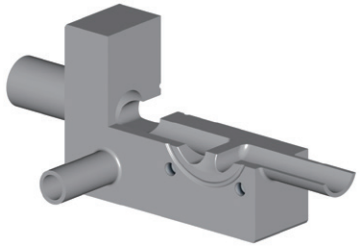
3 ports 2 valves

type B32FB

V: Vertical H: Horizontal



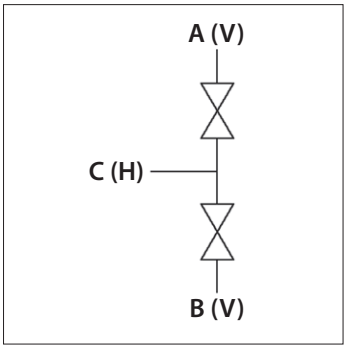


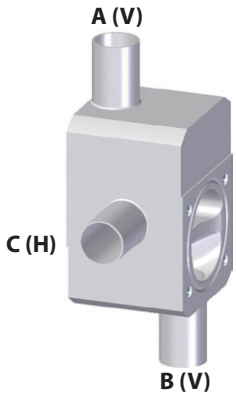


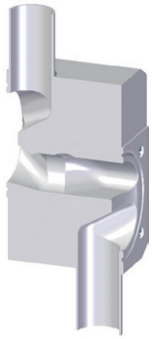
3 ports 2 valves

type B32G

V: Vertical H: Horizontal



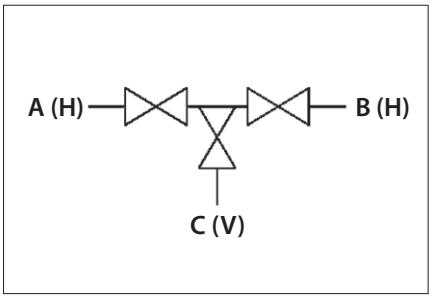


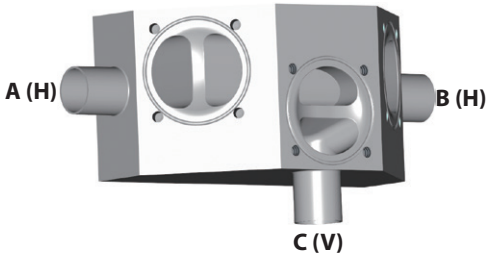


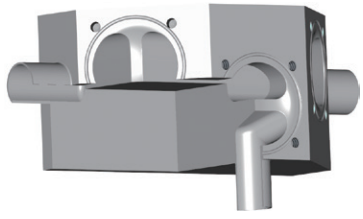
3 ports 3 valves

type MB33A

V: Vertical H: Horizontal



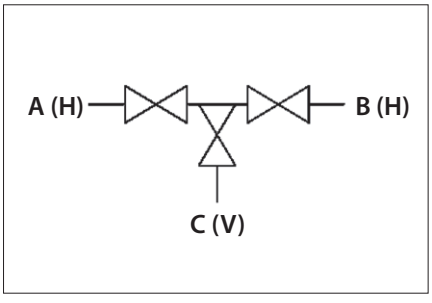


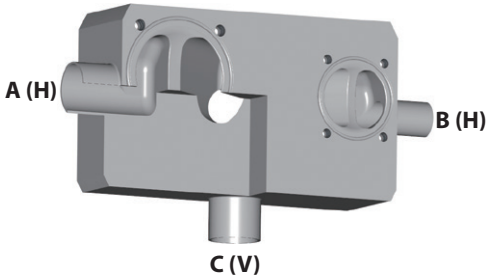


3 ports 3 valves

type MB33B

V: Vertical H: Horizontal

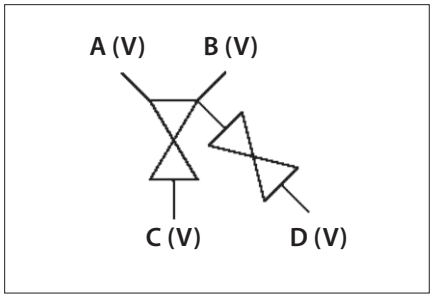


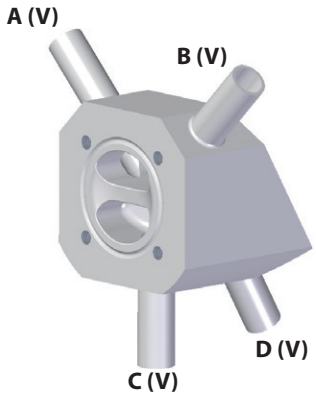


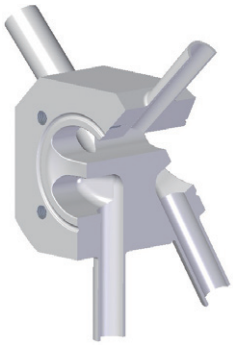
4 ports 2 valves

type MY42AT

V: Vertical H: Horizontal





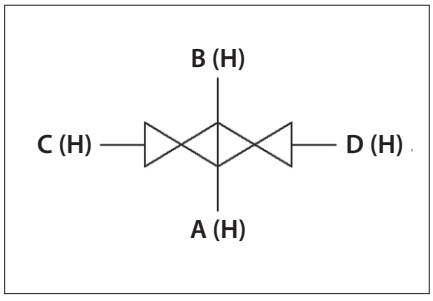


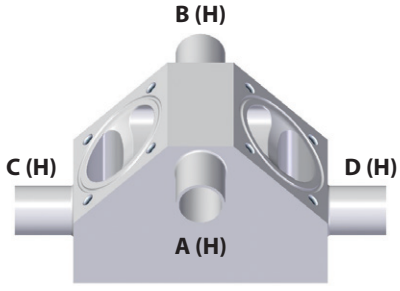
*: Blocks with downward ports (type B42AB) can also be produced

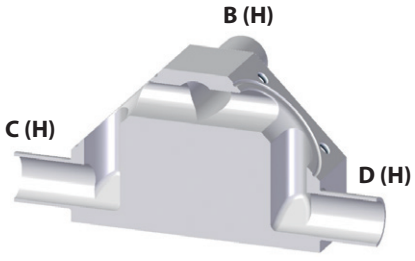
4 ports 2 valves

type MB42A

V: Vertical H: Horizontal



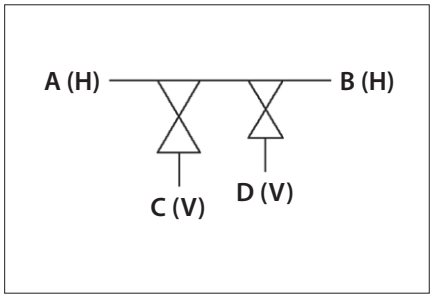


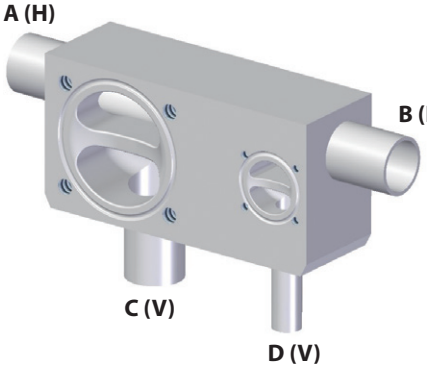


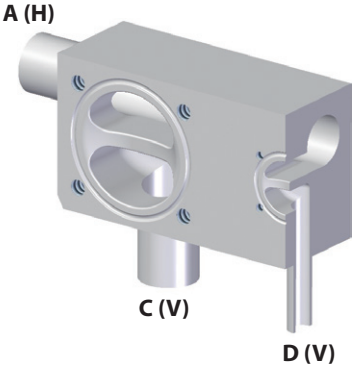
4 ports 2 valves

type MS42AR

V: Vertical H: Horizontal



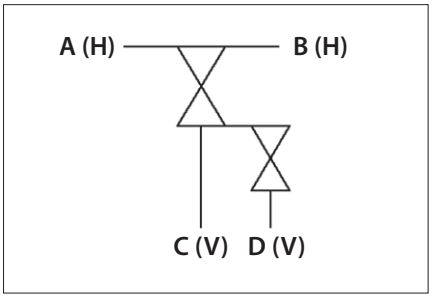


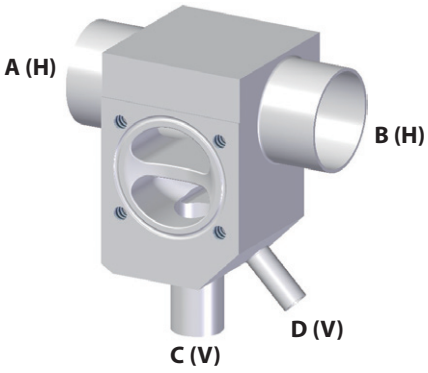


4 ports 2 valves

type MS42BR

V: Vertical H: Horizontal



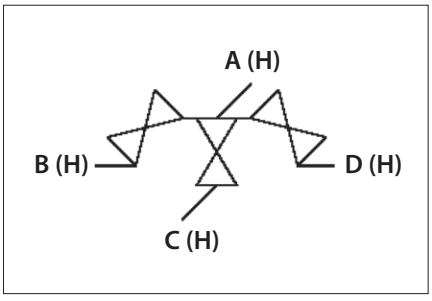


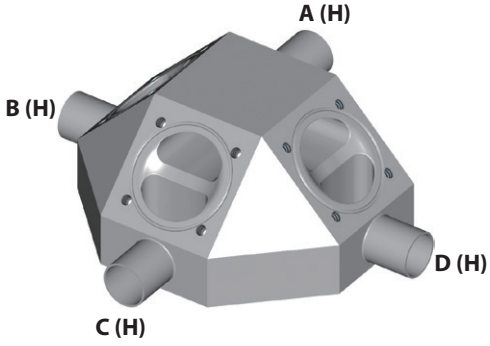
*: Blocks with leftward ports (type B42BL) can also be produced

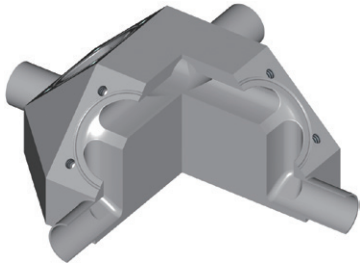
4 ports 3 valves

type MB43A

V: Vertical H: Horizontal



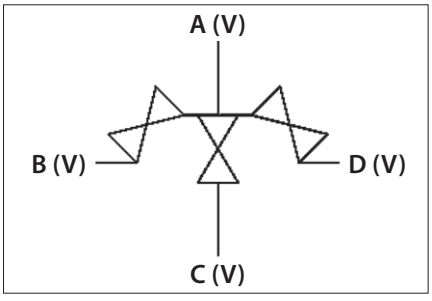


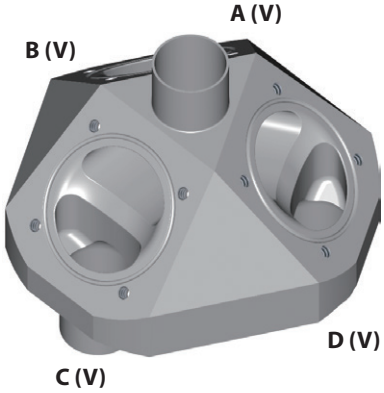


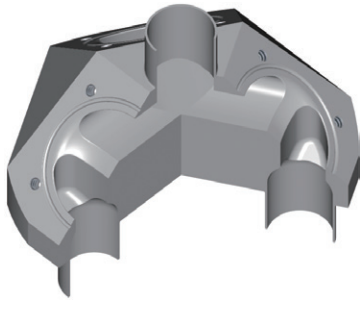
4 ports 3 valves

type MB43B

V: Vertical H: Horizontal



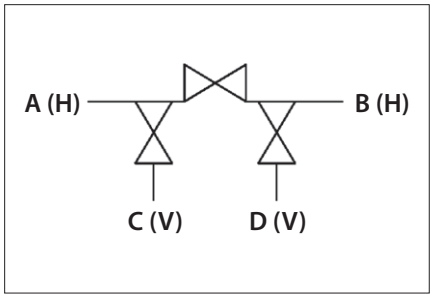


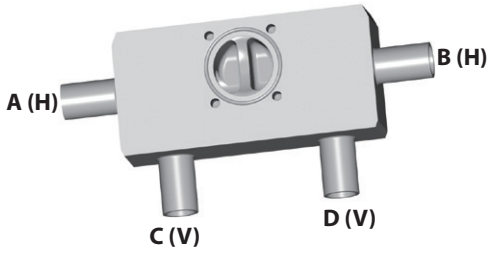


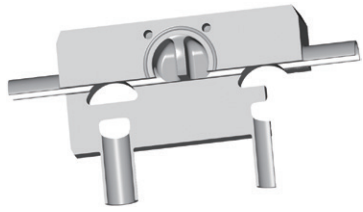
4 ports 3 valves

type MB43C

V: Vertical H: Horizontal



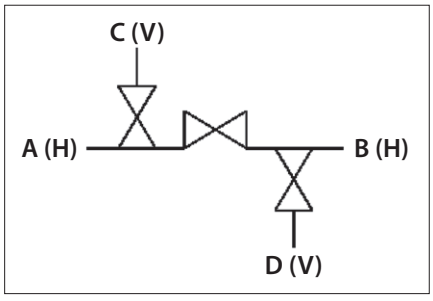


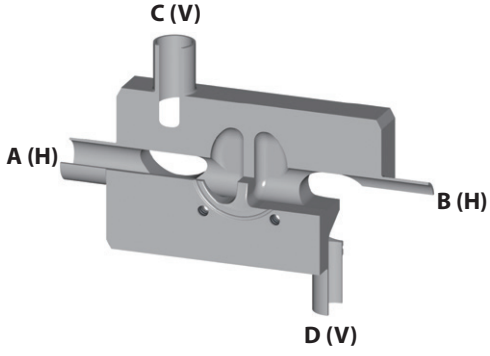


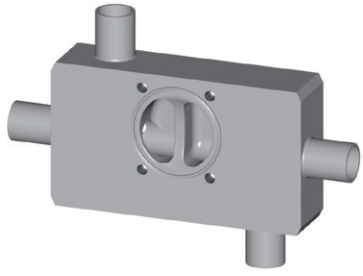
4 ports 3 valves

type MB43D

V: Vertical H: Horizontal



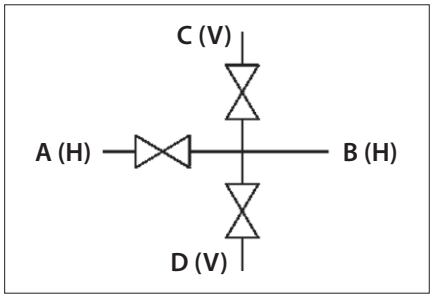


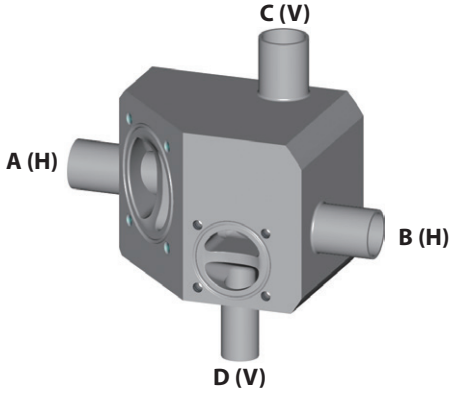


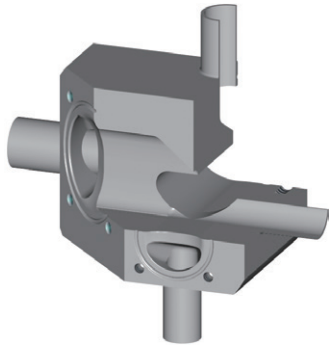
4 ports 3 valves

type MB43E

V: Vertical H: Horizontal



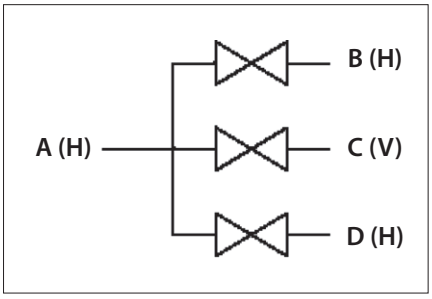


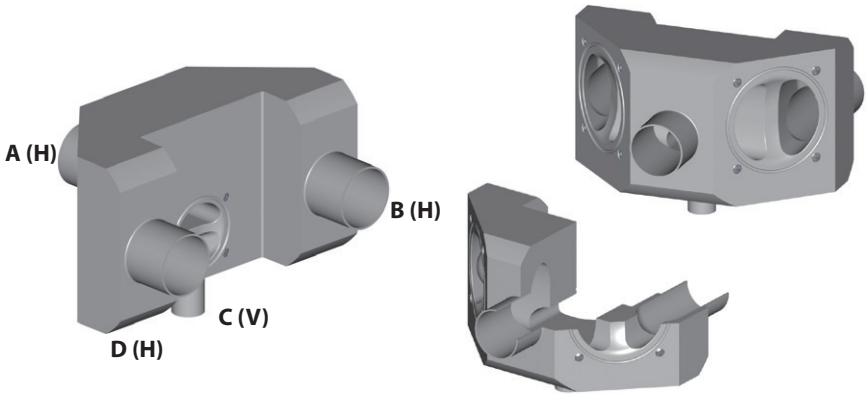


4 ports 3 valves

type MB43F

V: Vertical H: Horizontal

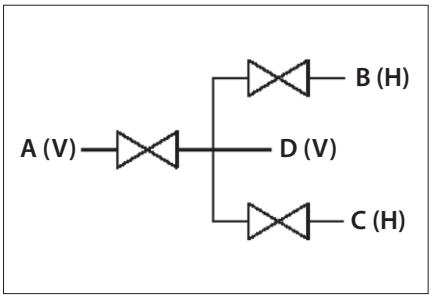


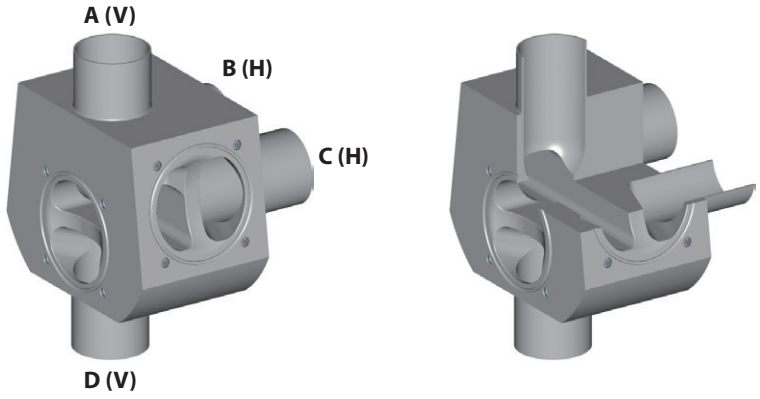


4 ports 3 valves

type MB43G

V: Vertical H: Horizontal

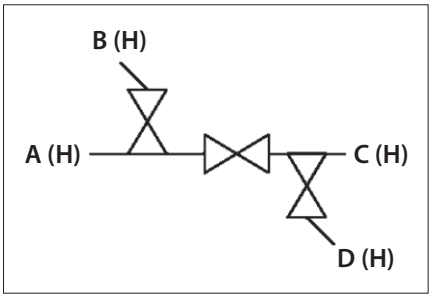


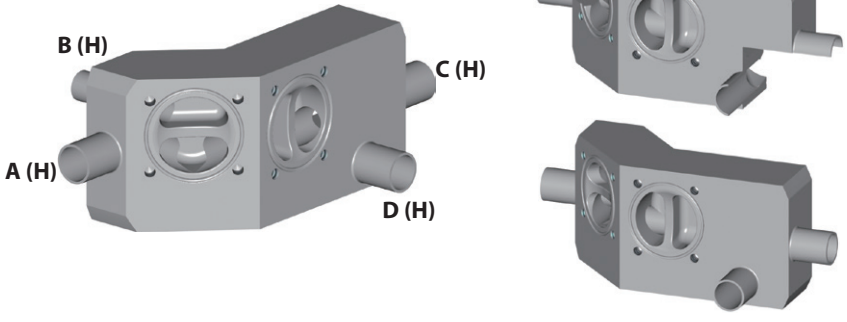


4 ports 3 valves

type MB43H

V: Vertical H: Horizontal

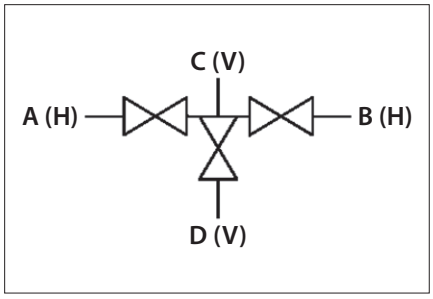


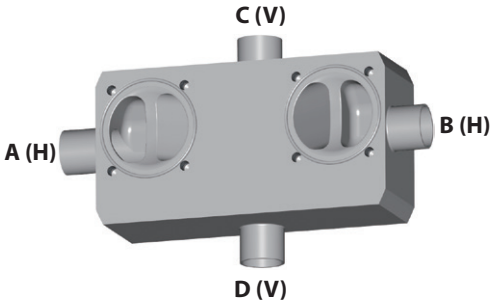


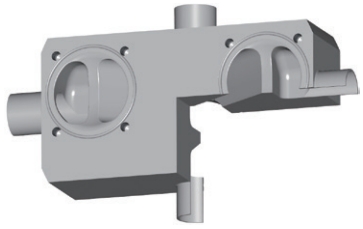
4 ports 3 valves

type MB43I

V: Vertical H: Horizontal



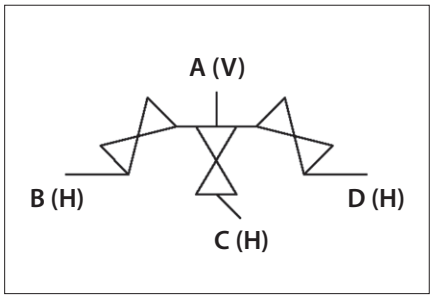


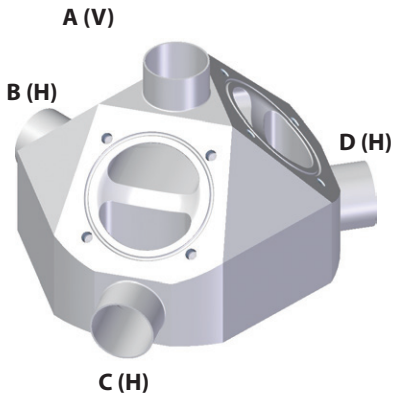


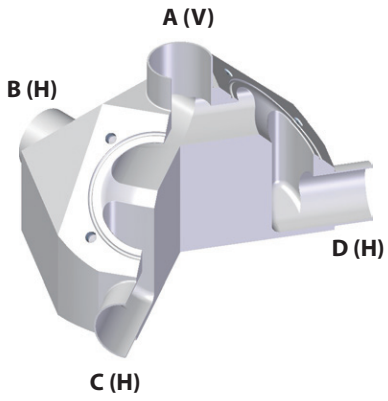
4 ports 3 valves

type M43A

V: Vertical H: Horizontal



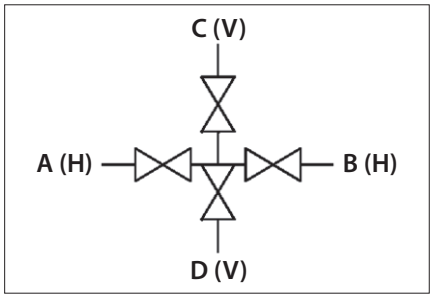


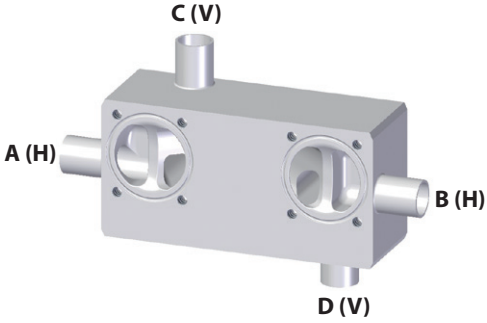


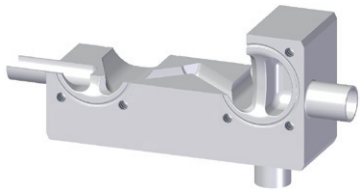
4 ports 4 valves

type MB44A

V: Vertical H: Horizontal



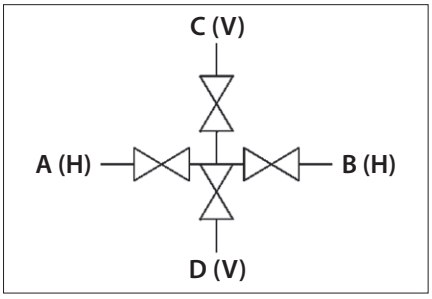


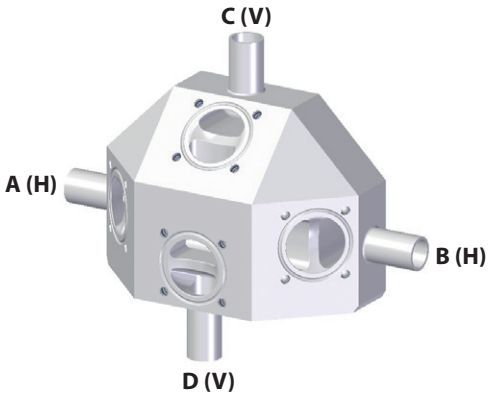


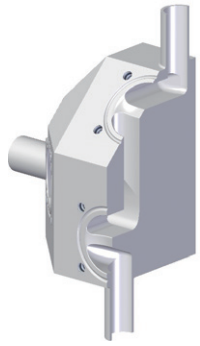
4 ports 4 valves

type MB44B

V: Vertical H: Horizontal



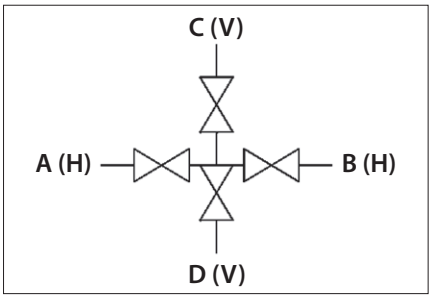


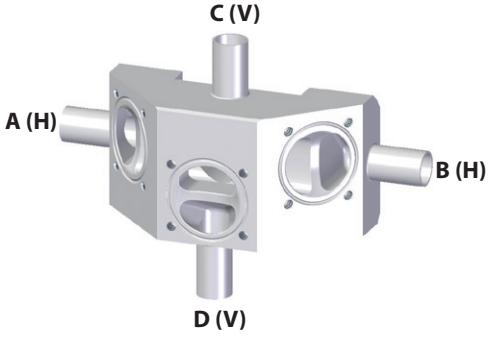


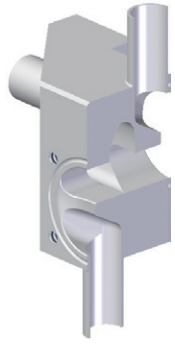
4 ports 4 valves

type MB44C

V: Vertical H: Horizontal



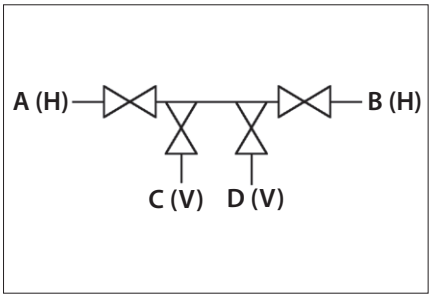


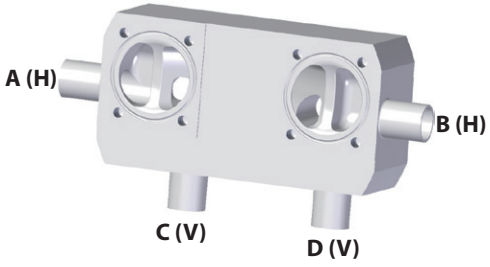


4 ports 4 valves

type MB44D

V: Vertical H: Horizontal

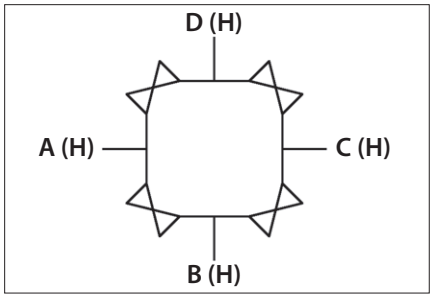


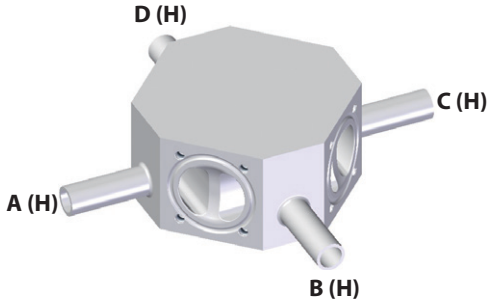


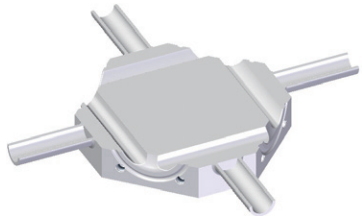
4 ports 4 valves

type MB44E

V: Vertical H: Horizontal



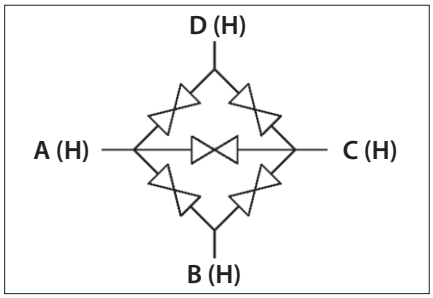


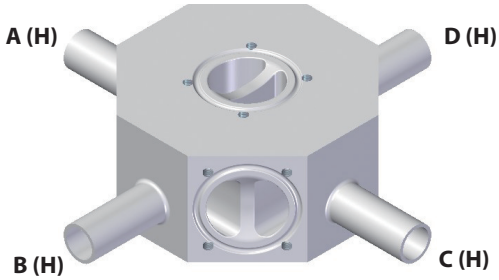


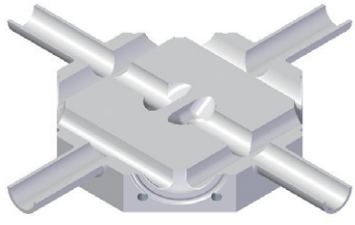
4 ports 5 valves

type MB45A

V: Vertical H: Horizontal



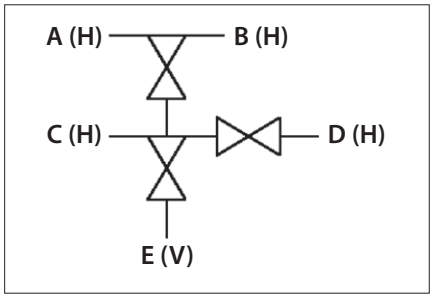


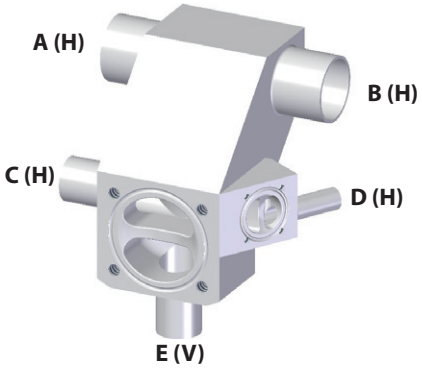


5 ports 3 valves

type MB53A

V: Vertical H: Horizontal

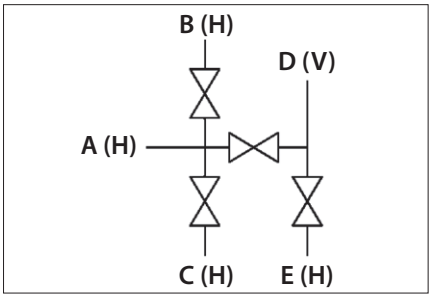


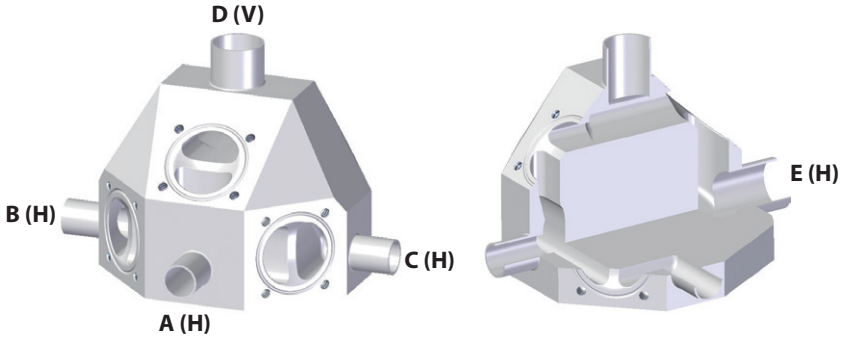


5 ports 4 valves

type MB54A

V: Vertical H: Horizontal

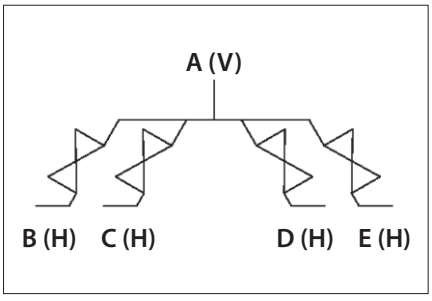


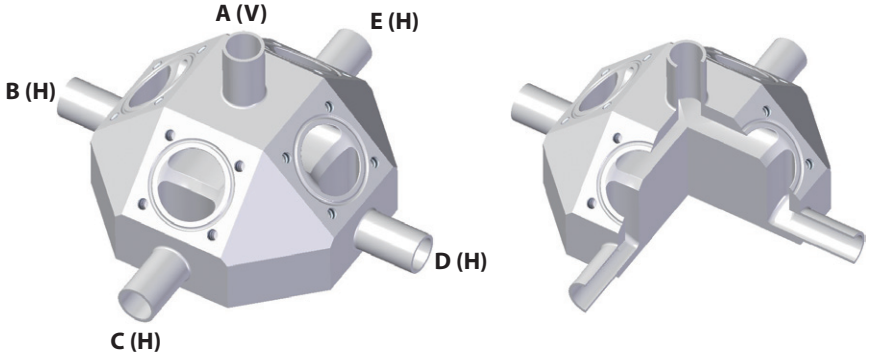


5 ports 4 valves

type MB54B

V: Vertical H: Horizontal

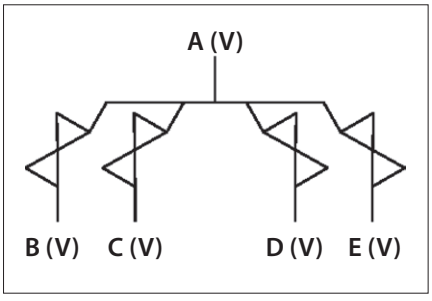


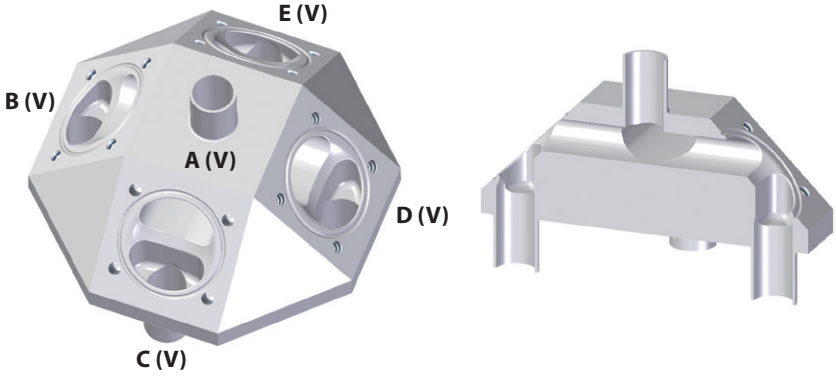


5 ports 4 valves

type MB54C

V: Vertical H: Horizontal

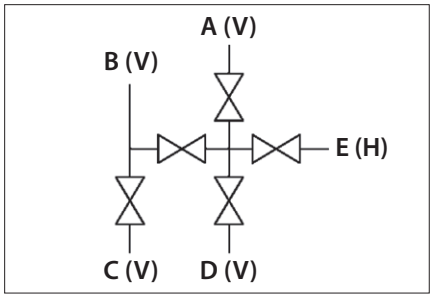


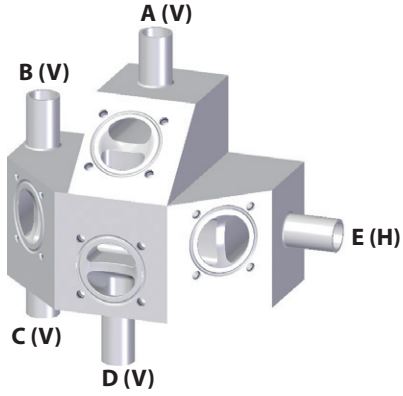


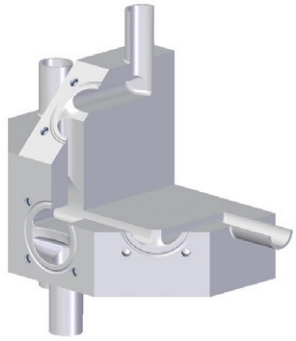
5 ports 5 valves

type MB55A

V: Vertical H: Horizontal



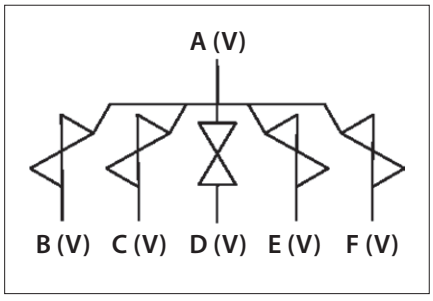


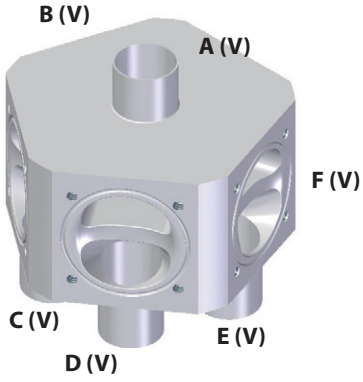


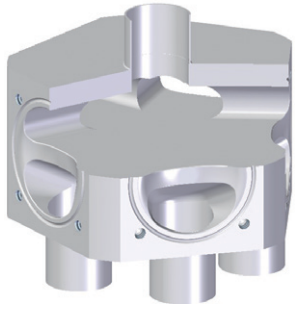
6 ports 5 valves

type MB65A

V: Vertical H: Horizontal



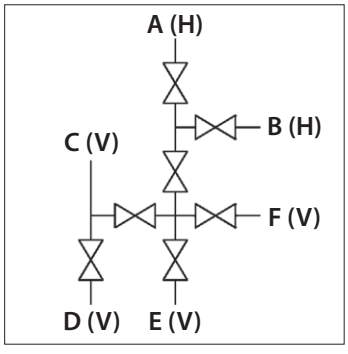


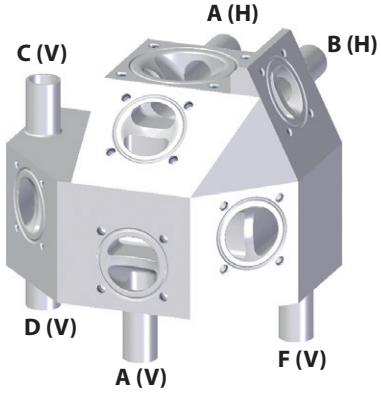


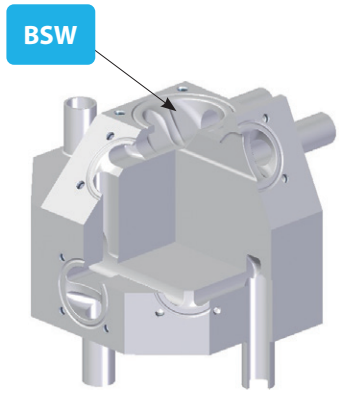
6 ports 7 valves

type MB67A

V: Vertical H: Horizontal





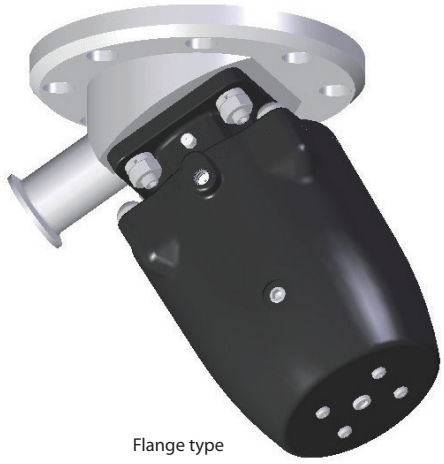


Tank bottom diaphragm valves

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

Welded type

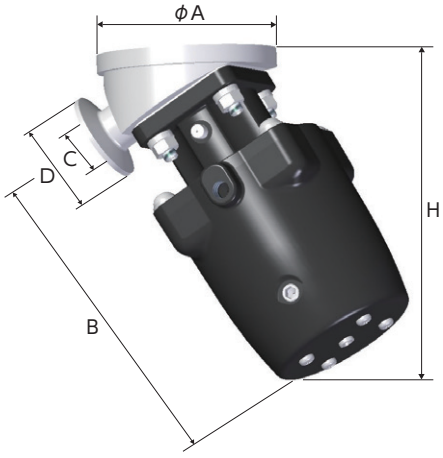


Flange type

Primary product dimensions

Automatic valves: Welded type: Tank bottom valves (nominal diameter: 15A–50A (2S), 3/4″–2″)

Size
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

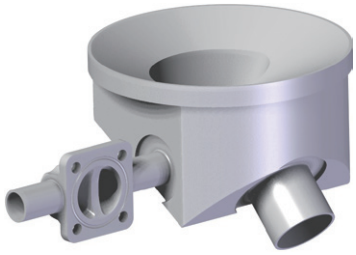
Units (mm)

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

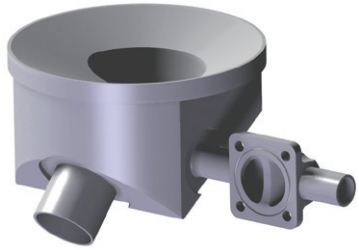
Tank bottom valves with CIP/SIP valve attached

With CIP/SIP valve attached

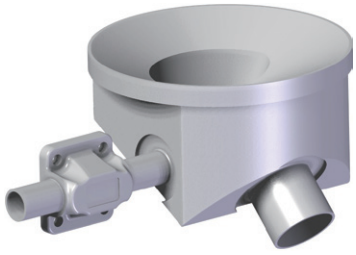
Type: UN32L1

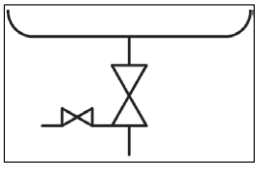


Type: UN32R1

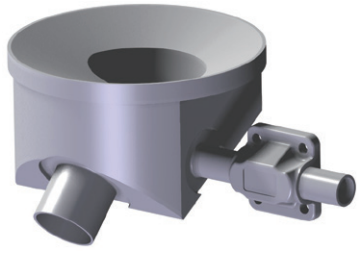


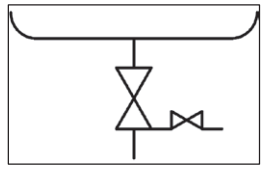
Type: UN32L2





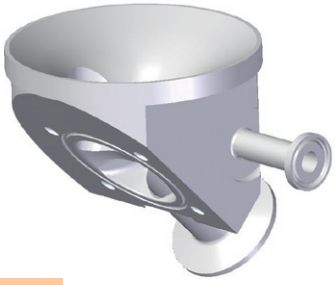
Type: UN32R2

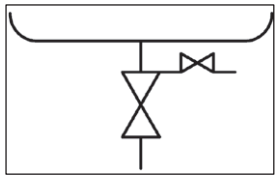




Tank bottom valves with sampling valve attached

Integrated sampling valve





Type: UN32A

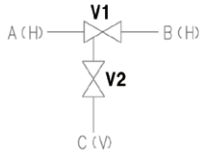
Block valve selection specifications

Type:

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

P&ID (piping and instrumentation diagram) section

Entry example P&ID



**V = vertical piping,
H = horizontal piping**

Piping ports: A, B, C, …

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

Flow direction: ➡

Valve symbol

Working pressure: _____ **MPa**

Working temperature: _____ **℃**

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.**

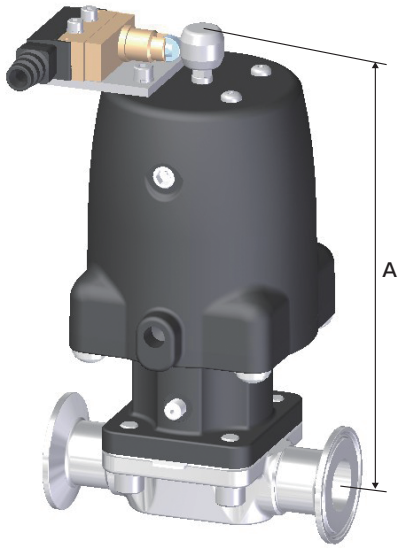
Actuator types:

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

Connection				Actuator			Other
Port No.	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

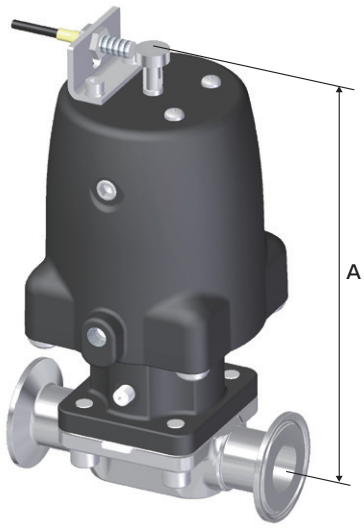


Units (mm)

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

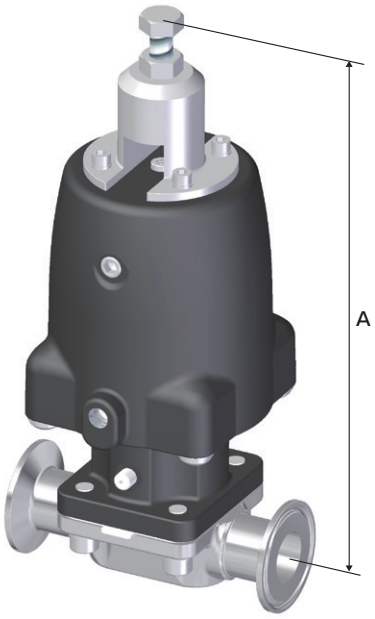
With the "Pos" button, start and end setting mode.

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.

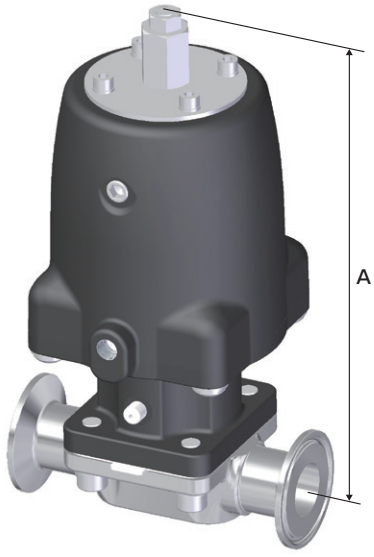
Automatic valves: Opening restriction mechanism (for adjusting full-open position)



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

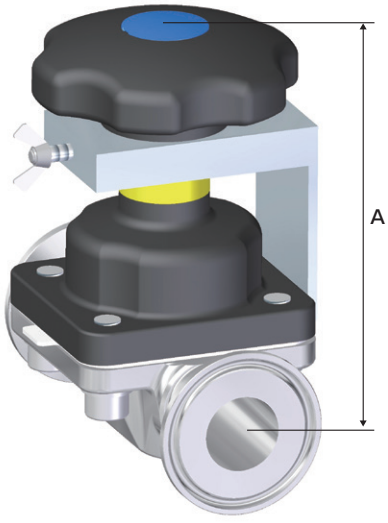
Automatic valves: Closing restriction mechanism (for adjusting full-closed position)



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 △ to top right of LCD screen, select P19 on LCD screen, and then press *→△→* to release the lock.

(Operation 3) Set parameters

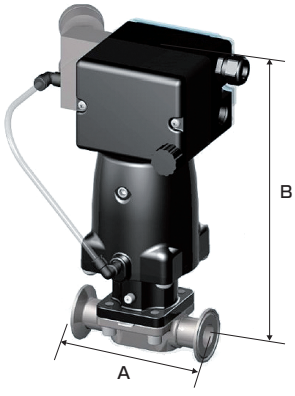
Parameters from time of shipment are stored, so this is normally not necessary.

(Operation 4) Start auto-tuning

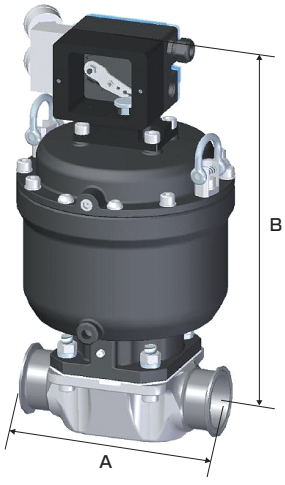
Press △ to top right of LCD screen, select P15 on LCD screen, and hold * for six seconds to start auto-tuning.

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)



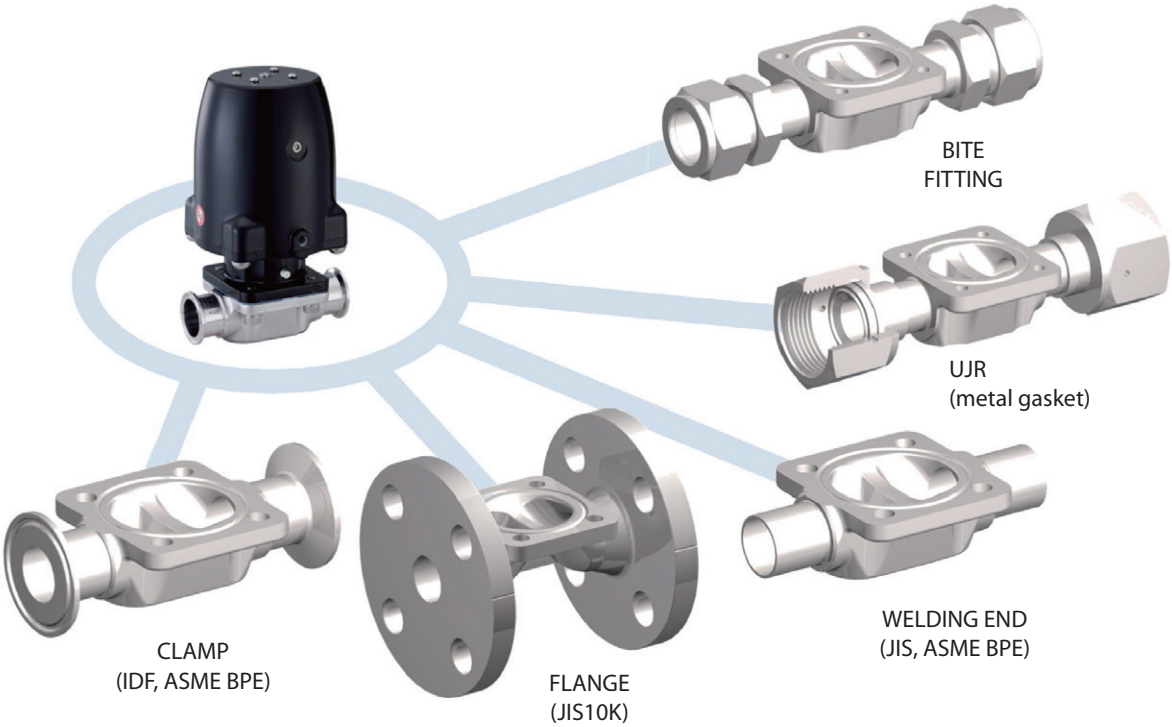
Nominal diameter: 65A (2.5S)–80A (3S)

Units (mm)

Nominal diameter	Primary dimensions A	Primary dimensions B	Operating pressure (MPa)	Valve stroke	Cv value
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



UJR fitting

Fitting with dual compression rings

ASME BPE BW fitting

ASME BPE clamp fitting

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.