

NDV SANITARY VALVES



NIPPON DAIYA VALVE CO., LTD.

SANITARY VALVES

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Bio-Clean Diaphragm Valves

Manually Operated Valves



Stainless Steel Handle
B400N
DN8-100



Aluminum Handle
BC400
DN15-50



Quick Open/Close Handle
BQL400N
DN8-80

Pneumatically Operated ON-OFF Valves



BPO (PC, PN) 1400NB
DN15-50



Opening Limit Device with Special Limit Switch Box



BPO (PC, PN) 1400N
DN65-100

Pneumatically Operated ON-OFF Valves (Stainless Steel Actuator)



BPO (PC, PN) 1400N
DN8-10



BPO (PC, PN) 1400N
DN15-50

Product List

○: Standard ☆: Option —: Not Applied

Bio-Clean Diaphragm Valve Series

Simplified Code		Main Body Material																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Connection Standard	ISSC	Ferrule (Clamp Joint)	○	○	—	○	○	—	○	○	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

* Please contact us for a possibility of producing a product other than the standard. ** With a manufacturing record of special clamp type. Please contact us for details. *** Other than this, specific orders for special valves and related products are welcome.

Please contact our sales dept. or local representative for materials and nominal sizes other than those listed in this table.

Bio-Clean Diaphragm Valves

1-1. Features of Bio-Clean Diaphragm Valves

1-2. Standard Specifications

- ① Valve Main Body Specifications
- ② Diaphragm Specifications
- ③ Working Temperature Range and Max. Working Pressure

1-3. Manually Operated Valves

- ① Handle Specifications: B400N, BC400 (B400NB), BQL400N
- ② Major Dimensions

1-4. Pneumatically Operated ON-OFF Valves (Standard): BPO1400NB(N)

- ① Features of Actuator
- ② Actuator Selection Table
- ③ Major Dimensions

1-5. Pneumatically Operated ON-OFF Valves (Stainless Steel Actuator): BPO1400N

- ① Features of Actuator
- ② Actuator Selection Table
- ③ Major Dimensions

1-1. Features of Bio-Clean Diaphragm Valves

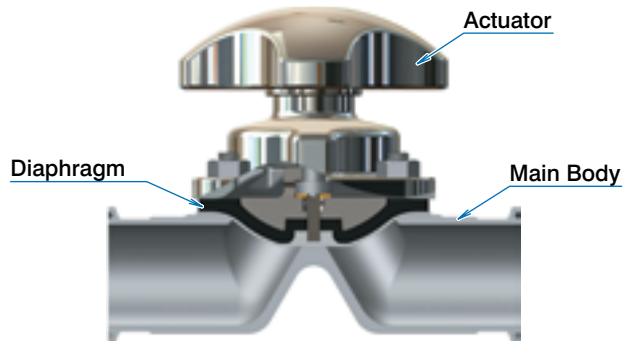
Optimum valves for manufacturing equipment for medicine, bioprocesses, cosmetics, foods and semiconductors

① Excellent Air-tightness

- A highly airtight structure perfectly separating the fluid and actuator by a diaphragm. The structure (Packless) that does not require a gland packing with high possibility of leakage as a general valve, is excellent for maintaining air tightness and prevention of contamination by various bacteria.

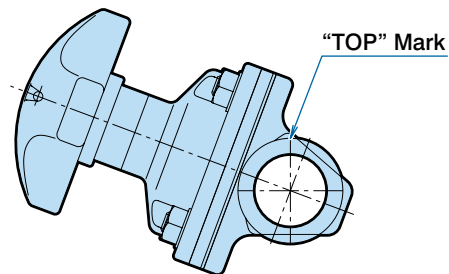
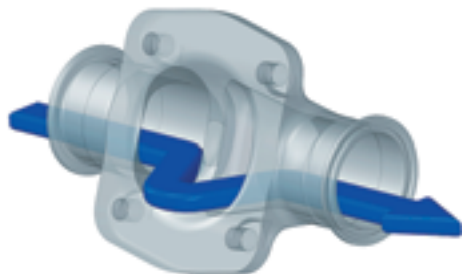
② A Structure not Contaminating the Fluid

- The flow path consists only of main body and diaphragm and is an optimum structure preventing the contaminant materials or lubricants from contacting the fluid.
- The valve seat sealing method to press the diaphragm to the weir of main body does not require the rotational parts or sliding parts required for ball valves and butterfly valves, accordingly almost no abrasion particle is expected.



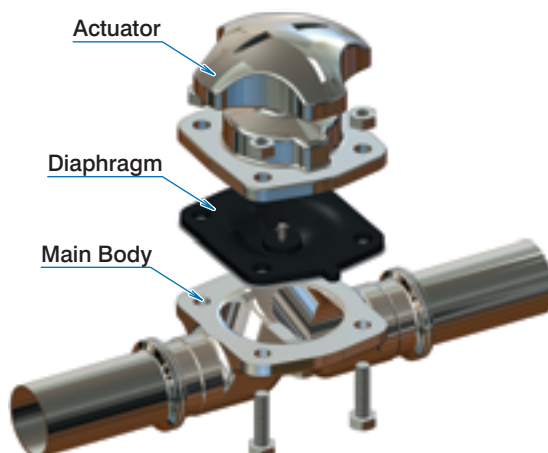
③ Excellent Washability

- The streamlined flow path eliminating the dead space (pockets or fluid accumulation) is excellent in washability and is a superior structure for CIP (cleaning in place) or SIP (sterilization in place) for its effectiveness and washing time.
- When attaching a valve on a horizontal pipework, installation with "TOP" mark in upper side will prevent the fluid, rinse solution, etc., from remaining inside.



④ Excellent Maintainability

- A simple structure of diaphragm valve consisting of only three units "Actuator", "Diaphragm" and "Main Body"
- Disassembling is just to remove the bolts and nuts fastening the "Actuator", "Diaphragm" and "Main Body" and that provides the excellent maintainability. In addition, the top-entry structure allows the maintenance work without removing the valve body from piping.
- As one of the features of diaphragm valves, the original performance will be restored by replacing the diaphragm by new parts.
- The standard exchangeability of various units will provide the ease of changing actuators.

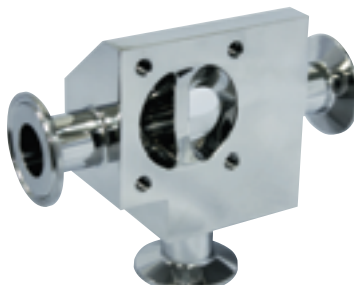


5 Manufacturing of Valve Main Unit Tailored to Applications and Specifications

- The streamlined flow path for main body made of stainless steel is buff finished (#400) and that allows further electropolishing facilitating the prevention of fluid accumulation, prevention of adhesion of substances in the fluid, and the improved washability. The outside surface of main body and actuator are ground as designated.
- A pocket free compact special shape for sampling valves, 3-way valves, and tank bottom valves are available while preserving the features of bio-clean diaphragm valves as they are.
- The tailored manufacturing for fitting various joints such as ferrule joint (clamp joint) or welded types used in the fields of medical drugs, bio processes, semiconductors, etc., are available.



Sampling Valve: Type-P



3-Way Valve: Type-K



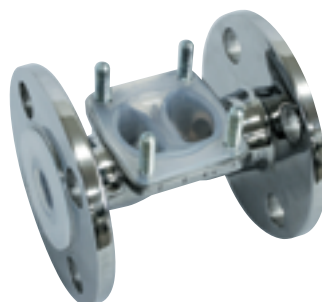
Tank Bottom Valve: Type-T

6 Products Excellent for Corrosion-Proof and Chemical Resistance

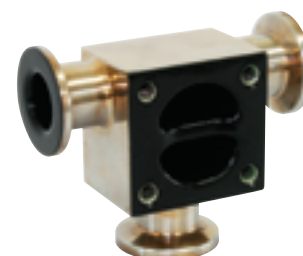
- The valve main bodies with optimum lining for countermeasures for corrosive fluids, crevice corrosion, and metal ion elution for sanitary pipework are available.
- The "New PFA" applied for PFA lined main body conforms to the FDA of the USA and Food Sanitation Act of Japan.
(Ref. ⑧ Various Certificates in 5. Technical Materials)



SUS316L + ETFE Lined Main Body
(Clamp Connection)



SCS13 + PFA Lined Main Body
(Flange Connection)



SUS316L + PFA Coated Main Body
Sampling Valve: Type-P
(Special Clamp Connection)

7 Sanitary Specification Diaphragms

- High-quality and safe sanitary specification diaphragms developed based on our knowledge cultivated through the years of manufacturing of diaphragms.
- Our New PTFE diaphragm is approved by the FDA in the USA* as safe for contacting use for food processing, cooking, etc.
- Conforming to USP (US Pharmacopeia) Class VI**
- Conforming to the standards and criteria of Food Sanitation Act of Japan.

* Food and Drug Administration, HHS 21 CFR Ch.1 (4-1-94 Edition) §177, 1550
(HHS: Department of Health and Human Services)
(CFR: Code of Federal Regulations)

** The conformance is recommended in ASME BPE (Bio Processing Equipment), "POLYMER" construction materials used for contacting surfaces with product material (contacting surface with product and fluid).

(Ref. ⑧ Various Certificates in 5. Technical Materials)



8 Environment Friendly

- Environment friendly paints are used for coating of actuator for bio-clean diaphragm valves.
- Diaphragm valves have less number of parts compared to other valve types owing to a simple unit structure; accordingly, there is no waste of wearing parts.

9 Integrated Manufacturing System in Clean Room

Bio-Clean Diaphragm Valves are manufactured in the clean room with processes "1. Cleaning of fluid contacting parts", "2. Assembly", "3. Inspection" and "4. Packing" and finished to a clean product and delivered to the customers.

1-2. Standard Specifications

1 Valve Main Body Specifications

Stainless Steel Body

Manufactured Main Bodies

Name	Main Material	Material Code	Connection Standard and Manufacturing Range			
			Ferrule	Astro (TIG) Welding*	Union Screw*	Flange*
			Nominal Size (DN)	Nominal Size (DN)	Nominal Size (DN)	Nominal Size (DN)
Stainless Steel Forged	SUS316L	14	8–100	8–100	25–100	8–100
Stainless Steel Cast	SCS16	13	8–50	8–50	—	15–100

* Option

Main Body Surface Finish Classification

Please designate from table below:

Classification Code	Process
B1	#400 Buffing: Inner/Outer Surfaces
B2	#400 Buffing: Inner Surface*
B3	#400 Buffing: Outer Surface*
E1	Inner Surface Electropolishing after #400 Buffing on Inner/Outer Surfaces*
E2	Inner Surface Electropolishing after #400 Buffing on Inner Surface*

* For main bodies of forged stainless steel only



Standard Main Body (Ferrule)

Lined Main Bodies

Manufactured Main Bodies

Name	Base Material	Material Code	Connection Standard and Manufacturing Range	
			Ferrule	Flange
			Nominal Size (DN)	Nominal Size (DN)
PFA Lining ★	SCS13	59 (2S)/59 (S)	—	15–80
	FCD-S	59 (M)*	—	15–100
ETFE Lining ★	SUS316L	60 (S)	25–65	—

* Standard external painting (white)

• PFA Lining: The lining material "New PFA" conforms to FDA of the USA and Food Sanitation Act of Japan.
(Ref. ⑧ Various Certificates in 5. Technical Materials)

★: In case of export, export license stipulated in the Foreign Exchange and Foreign Trade Control Law of Japan and/or if necessary, export-related laws and regulations of the United States of America and other countries is required.



PFA Lining (Flange)

Main Body Surface Finish Classification (Option)

Please designate from table below:

Classification Code	Process
B3	#400 Buffing: Outer Surface (Burnt Color)
B4	#400 Buffing: Outer Surface (No Burnt Color)

(For base material FCS-S: White painting for standard external painting, no grinding)

Detailed Dimensions of Main Body

In accordance with P. 42 "Valve Main Body Dimension List"

Others

PFA Lining: Please contact us for special clamp connection types.

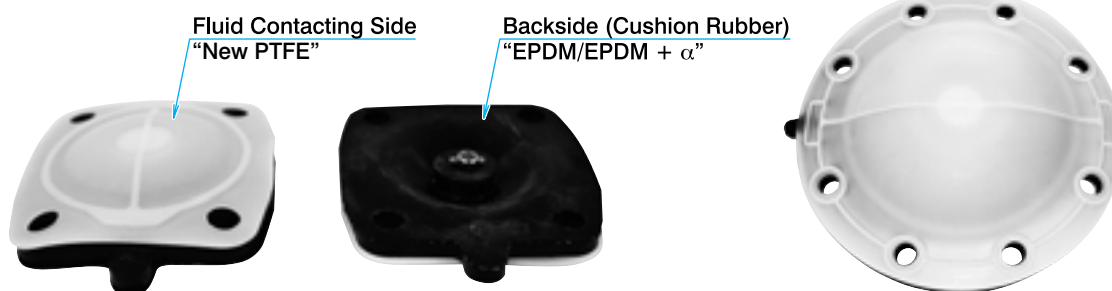
P.28



ETFE Lining (Ferrule)

2 Diaphragm Specifications

The “New PTFE” diaphragm is adopted for fluid contacting side, and the cushion rubber (EPDM or EPDM + α) is applied for the backside for improved sealing performance of valve.



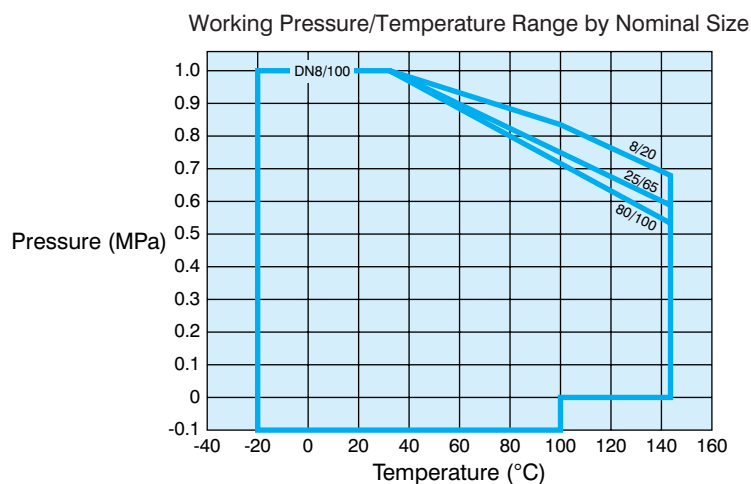
Diaphragm/Cushion Rubber Material	Material Code	Nominal Size (DN)	Working Temperature Range	Max Working Pressure
New PTFE/EPDM	TX/CE	8–100	-20–143°C	1.0MPa
New PTFE/EPDM + α	TX/CX	8–100	-20–151°C	1.0MPa

- EPDM + α is developed by our company for enhanced thermal durability of EPDM.
- Our “New PTFE” diaphragm conforms to FDA of the USA, USP class VI and Food Sanitation Act of Japan. (Ref. ⑧ Various Certificates in 5. *Technical Materials*)
- Option: Fluorine Cushion Rubber, Hastelloy Diaphragm Fixing Bayonet Pin

3 Working Temperature Range and Max. Working Pressure

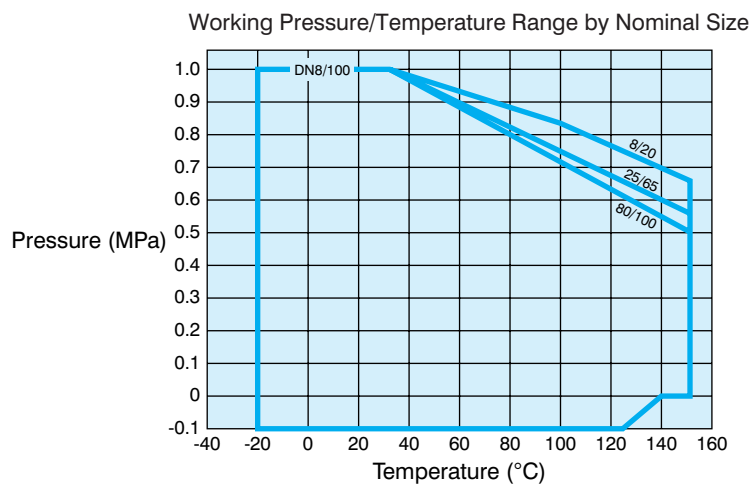
New PTFE/EPDM (TX/CE), Stainless Steel · PFA Lined Main Body*

Working Temperature Range: -20–143°C



New PTFE/EPDM + α (TX/CX), Stainless Steel · PFA Lined Main Body*

Working Temperature Range: -20–151°C (max. working temperature for continuous use)



* Lower limit temperature for PFA lined main body made of base material FCD-S is -10°C

1-3. Manually Operated Valves

1 Handle Specifications: B400N, BC400 (B400NB), BQL400N

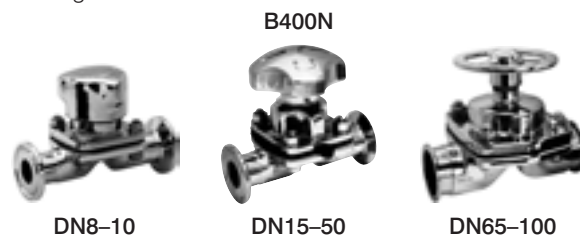
Stainless Steel Handle Type: B400N

- Manual valves with highly durable stainless steel handle and ease of cleaning.

Standard Specifications

Nominal Size (DN)	8–100
Bonnet Material	SCS13A* Outside #400 Buffing
Handwheel Material	SCS13A* Outside #400 Buffing
Compressor Material	SCS13

* SCS13 for DN8–10



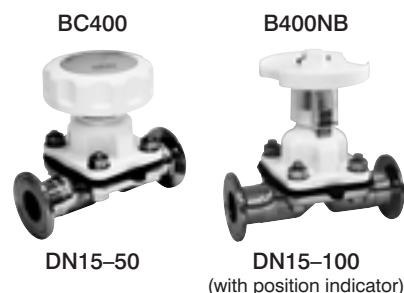
Aluminum Handle Type: BC400 (B400NB)

- Aluminum handle type lightweight and cost benefit conscious manual valves.

Standard Specifications

Nominal Size (DN)	15–50*
Bonnet Material	ADC12
Handwheel Material	ADC12
Compressor Material	ADC12
Standard Painting Color	White thermal curing acrylic resin paint (eco-friendly) baked finish

* Separately supplied general-purpose aluminum handle B400NB (white painting) are available.
Contact us for a detailed study.

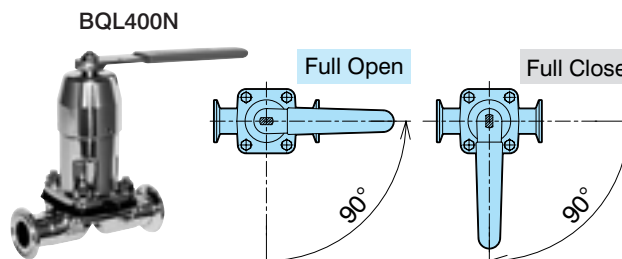


Quick Open/Close Handle: BQL400N (Option)

- Quarter turn (90°) actuator with lever handle. Stable closing performance with simple operation. (Max.Shutoff Differential Pressure 0.6MPa)
- The valve status can be recognized with the handle position from far place like ball valves.
- Too tight closing by open/close operation can be prevented and the long life is expected with no excessive loading on diaphragm.

Standard Specifications

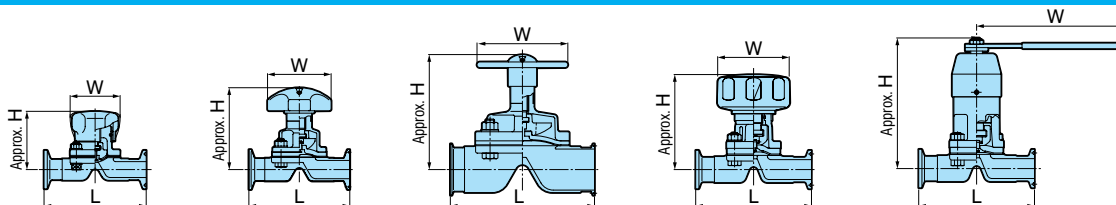
Nominal Size (DN)	8–80
Bonnet Material	SCS13 Outside #400 Buffing
Lever Handle Material	SUS304 (PVC coating)
Compressor Material	SCS13
Position Setting	Two positions: Full Close / Full Open
Option	Limit Switch



Other Options

- Valves with lock nut, position indicator, etc., are provided as requested. Please contact our sales dept. or local representative.

2 Main Dimensions



Unit: mm

		B400N-DN8, 10		B400N-DN15-50		B400N-DN65-100		BC400-DN15-50		BQL400N-DN8-80	
Nominal Size	DN	8	10	15	20	25	40	50	65	80	100
	S	—	—	—	—	1	1.5	2	2.5	3	4
L	Ferrule	90	90	102	118	127	159	191	216	254	305
	Astro (TIG) Welding	80	80								
	Flange	118	118								
	Union Screw	—	—	—	—	—	—	—	—	—	—
Approx. H	B400N	56	56	98	104	107	136	153	185	203	258
	BC400	—	—	89	98	112	141	169	—	—	—
	BQL400N	87	87	115	124	142	182	201	246	279	—
	BQL400N	—	—	—	—	—	—	—	—	—	—
W	B400N	44	44	63	63	80	100	125	125	160	224
	BC400	—	—								
	BQL400N	—	—								
	BQL400N	90	90	130	130	160	230	230	350	350	—
Mass (Approx. kg)	B400N	0.5	0.5	1.1	1.3	1.3	2.3	3.8	7.0	12.0	16.0
	BC400	—	—	0.8	1.1	1.3	2.3	3.9	—	—	—
	BQL400N	—	—	—	—	—	—	—	—	—	—
	BQL400N	0.88	0.85	1.1	1.5	1.9	3.8	5.2	9.4	15.0	—

* The above table is based on Ferrule main body made of SUS316L. Contact us for detailed dimensions for each valve.