

BNW Series Weir Diaphragm Valves

Sterile, Aseptic and Sanitary Valves for Critical Process Systems



- High Durability and Life Cycle (SIP500)
- High Reliability and Sealing Performance
- Reduced Total Cost of Ownership in Critical Process System
- Reduced Maintenance and Service
- Compact and Light Weight Top Works
- Compliant to European, US and Global Industry Standards

For Biotechnological, Pharmaceutical, Food and Beverage Process Systems

Carten-Fujikin (FCG) are global leaders in the design, manufacture and development of High Performance Valves and Flow Solutions to high technology and demanding process sectors including Semiconductor, Photovoltaic, LED, Biotech, Pharmaceutical, Food & Beverage, PCI, Energy and Laboratory industries delivering products with safety, reliability, efficiency and performance to critical process systems and modules.

Fujikin have been supplying valves, fittings and piping products to industry since its inception in 1930. Understanding customer processes and requirements has driven FCG to innovate and develop leading edge performance valves, mass flow controllers, seal fittings and flow systems which deliver best-in-class performance, reliability and efficiency for its customers.

Carten-Fujikin's BNW series soft-seal weir diaphragm valve provides the most efficient and best-in-class total cost of ownership (TCO) for mission critical sterile processes. Key product features include:

- ASME BPE Compliant Design and Dimensions
- SIP500 Rated Life Durability (ASME BPE rating)
- No Re-torquing Required
- Compact and Light Weight Deep Drawn Stainless Steel Top Works
- Wide Range of Operating Conditions
- Reduced Polymer Cold Flow Sealing Design
- Reduced Total Cost of Ownership for Process Systems
- Electropolished Internal Surfaces
- Primary PTFE Diaphragm with EPDM Back Up
- One Piece EPDM Diaphragm Option
- Excellent Drainability
- 316L Stainless Steel Forged Valve Body
- Resin Manual Handle Option
- Range of Instrumentation Available
- Conventional 2-Way Hygienic Clamp or Butt Weld End
- 3-Way Zero Dead T (ZDT) leg configurations
- Rated to 150°C (302°F)
- SIP & CIP Capability
- High Pressure option



For Quality and Compliance see page 4.

Why chose the Carten-Fujikin BNW Weir Diaphragm Valves Series

Carten-Fujikin has developed an optimal valve and sealing design to increase performance, durability and efficiency for demanding Biotech, Pharmaceutical, Food & Beverage process systems where purity, hygienic and sterile conditions are essential for product yield. The BNW series weir soft-seal diaphragm valve are available in 2-Way, 3-Way and Multi-Port configurations with tube stub and clamp end connections. The BNW series is available with both primary PTFE diaphragm and one piece EPDM diaphragm options. The innovative deep drawn actuator top works for manual and pneumatic versions facilitates a light weight and ergonomic valve product suitable for bioreactors, fermenters, buffer vessels, process distribution, chromatography skids and centrifuge skids. Carten-Fujikin's BNW series diaphragm valves provide the lowest total cost of ownership (TCO) for end-users, equipment makers and system owners through reduced retorquing and minimal diaphragm replacement.

Typical Applications

- Bioreactors Skids
- Fermentors Skids
- Buffer Vessels
- Centrifuge Skids

Key Features:

- ASME BPE Compliant
- Stainless Steel Bonnet
- Reduced Cold Flow Sealing Design
- Compact Design
- 316L Stainless Steel Valve Body
- PTFE/EPDM or EPDM Diaphragm
- Pneumatic (High Pressure and Low Pressure)
- Manual (Stainless Steel or Resin Topworks)

ASME BPE Quality and Compliance

The ASME BPE standard drives the requirements applicable to the design of equipment used in the biotech, pharmaceutical and healthcare industries, as well as other applications with high levels of hygienic and sterile requirements. Carten-Fujikin's BNW weir soft-seal diaphragm valve complies with the design and performance standards demanded for high process performance systems facilitating high yield, high productivity process environments with reduced down time for maintenance, reduced diaphragm replacement, standard ASME dimensions and high quality surface finish in product contact systems and equipment. Carten-Fujikin's production system delivers consistent and repeatable valve performance with the Quality Management System and product control and traceability through the manufacturing process.

Competitive Price and Performance

Carten-Fujikin provides the lowest total cost of ownership for its BNW weir soft-seal diaphragm valve product range. The BNW valve series provides a competitively priced product with the high performance capability demanded by the Biotech, Pharmaceutical, Food and Beverage industries. Carten-Fujikin's quality and technical support ensures all customers receives efficient value and reliability in mission critical process systems.

Test Centre

Carten-Fujikin Europe has constructed a state-of the-art test facility that allows the repetition of industrial installation condition, to ensure every valve is fit for purpose. In-house capabilities include Steam-In-Place thermal cycling capability to match ASME BPE and industry standards, replication of Clean-In-Place (CIP) flow, verification of valve drainability, and fluid control and leak integrity at $\Delta P=0\%$ and $\Delta P=100\%$ condition.

Our in-house capability allows the reproduction of exact customer specification – tailored pressure profiles, installed slope, sterilisation temperature and duration, cooldown process parameters and more can be replicated to match installed condition to ensure confidence in all product.

Global Support

The FCG distribution network supports global supply of product through its distribution partners and direct global network. This enables fast time to market and responsiveness for customer product demands and delivery and post purchasing needs and customer support.

Engineering Support and Design

Carten-Fujikin supports its BNW soft-seal diaphragm valves through engineering services including modular design, flow analysis and calculations based on customer requests.

Technological Advantage

The BNW seal design developed by Carten-Fujikin removes the EPDM back up diaphragm from the sealing surface. This reduces 'cold flow' as EPDM deforms to a far greater degree than PTFE under significant and constant load – as a diaphragm seal is when torqued, therefore eliminating the different expansion & contraction rates of two different polymers during the thermal cycling process.

Valve Modulus/Constructability

Carten-Fujikin has designed numerous Multiport and block valve designs and modular systems for customers. The collaboration and expertise of Japanese and European valve design, robust and rigorous testing in severe environments ensures Carten-Fujikin's products are constructed to meet global standards and regulatory demands.

Improved Servicability

The BNW series meets the requirements for ASME BPE SIP500 thermal cycling. As retorquing is reduced the necessity for serviceability is reduced also extending the

durability and lifecycle of the valve, reducing on-site maintenance, reducing diaphragm replacement cycles, reducing downtime thus ensuring maximum productivity in critical process systems. The BNW Series reliability ensures reduced TCO for customers and system owners.

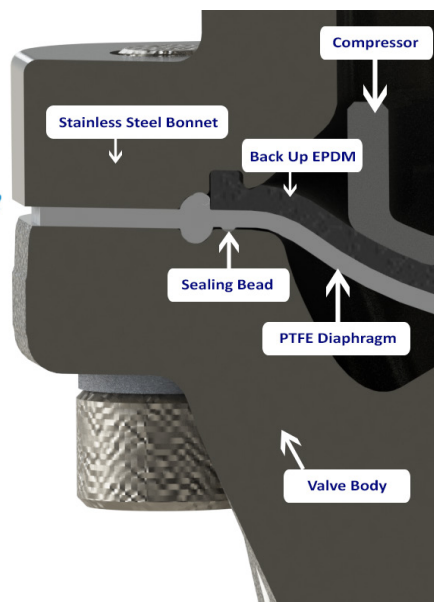
Traceability

Carten-Fujikin Europe ensure each and every diaphragm is traceable back to the material compound, material supplier, batch of production, and polymer cure date. As the line size, manufacturer identification, and product part code are also permanently marked onto the moulded diaphragm – compliance with both ASME BPE and MSS-SP-88 is assured. Each valve is individually serialised. The 316L/1.4435 stainless steel forgings can similarly be traced back to the type of steel heat used, material supplier, batch of production, and product contact surface roughness. As the pressure-temperature rating, manufacturer, valve series, and line size are also permanently marked – compliance to ASME BPE and MSS-SP-88, and certification to the Pressure Equipment Directive Module D1 (Category 2) is realised.

Diaphragms

Carten-Fujikin Europe perform a verification FTIR analysis for all diaphragm compounds to ensure exact conformance to known material spectra fingerprints. All diaphragms meets the minimum requirements of FDA CFR Title 21 177.2600 (elastomers) and 177.1550 (perfluorocarbons), and USP <87> <88> Class VI. A modified In Vivo analysis also includes analysis as per ISO10993, which is superseding the USP analysis.

CARTEN-Fujikin
SEALING SYSTEM
FOR HIGH DURABILITY



Key Product Specifications

Nominal Size	DN8	DN15	DN20	DN25	DN40	DN50
End Connections	Buttweld or Triclamp					
Body Material	SUSF316L (S31603)					
Bonnet Material	CF3M (S31603).					
Diaphragm Material	Modified PTFE/EPDM (Back up Rubber) or EPDM					
Pressure Rating	10 Bar CWP150 (150psi)					
Operating Temperature Range	-5 to 150°C (23 to 302°F)					
Surface Finish	SF0-SF6					
Operating Modes	High Pressure and Low Pressure (NC) Pneumatic and Manual					

Port Connection		Kv-Value Water [m3/h]		Cv-Value		Max. Operating Pressure			
						ΔP= 100%		ΔP= 0%	
[mm]	[inch]	PTFE	EPDM	PTFE	EPDM	High Pressure Manual	Low Pressure	High Pressure Manual	Low Pressure
8	1/2"	2.4	1.8	2.8	2.1	10 Bar	6 Bar	6 Bar	3 Bar
20	3/4"	5.4	3.4	6.2	4.0	10 Bar	6 Bar	6 Bar	3 Bar
25	1"	11.2	9.4	13.1	11.0	10 Bar	6 Bar	6 Bar	3 Bar
40	1 1/2"	23.3	18.3	27.1	21.3	10 Bar	6 Bar	6 Bar	3 Bar
50	2"	43.2	40.6	50.2	47.2	10 Bar	6 Bar	6 Bar	3 Bar

Quality and Compliance

- FDA extraction per 21CFR177.2600 (Elastomers)
- FDA extraction per 21CFR177.1550 (PTFE)
- Latest Edition of the US Pharmacopeia USP In Vitro Class VI <87>
- A modified Class VI protocol for In Vivo Biological Reactivity Testing that meets ISO and USP Class VI with histopathology - USP <88>/ISO 10993-6, -10 and -11.
- Certified as per the Pressure Equipment Directive 97/23/EC
- EN 10204 3.1 Certified Materials



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