CECO Peerless

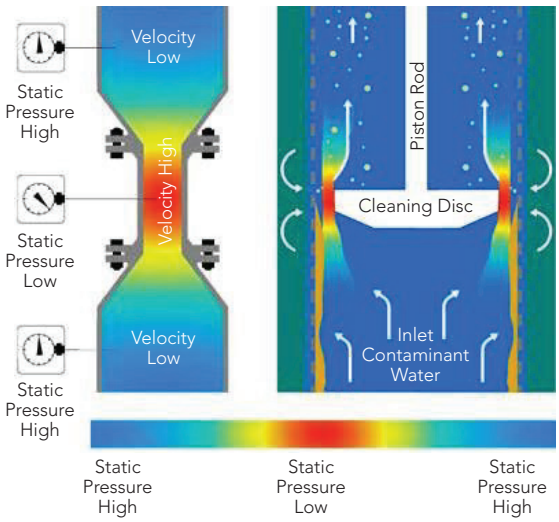
SELF-CLEANING FILTER SERIES

CECO ENVIRONMENTAL

BF Series Bernoulli Self-Cleaning Filter

The BF Series Bernoulli Self-cleaning Filter is designed for automatic continuous filtration of raw water, cooling water, and processing water in the pressurized systems. The BF Series Bernoulli Filter removes suspended debris and particles from natural water sources such as seawater, river water, and lake water. It is the ideal solution for coarse water filtration ranging from 150μm to 2000μm. BF Series Bernoulli Filter works in the Bernoulli Effect Principle, and it cleans the filter screen with high velocity surface cross flow and the back-flushing flow. It has very low inlet pressure requirements down to 30kPa and features higher particle removal efficiency and reliable and straighforward operation.

BF Series Bernoulli Self-Cleaning Filter



The filter screen of the BF Bernoulli Filter is back-flushed by the cleaning disc inside. In a pneumatic Bernoulli filter, the cleaning disc is mounted on the piston rod and is driven by the pneumatic cylinder, while in a motor-driven Bernoulli filter, the cleaning disc with a nut is mounted on two guiding rods and is driven by a bidirectional rotating thread shaft. When the cleaning action is triggered, the disc moves into the filter screen and water passes through the gap between the disc and the inner surface of the filter screen. Flow velocity increases as water passses the gap, while the static pressure around the gap is reduced because of the Bernoulli Effect Principle. Around the disc edge, the vacuum effect of lower static pressure back-flushes the filter screen's inside surface with the filtered

Pnuematic Bernoulli Filter
More competitive construction price,
simple structure,
very easy for maintenance.

Motor Driven Bernoulli Filter
Ideal for very limited filter
installation space or jobsite
without compressed air supply.

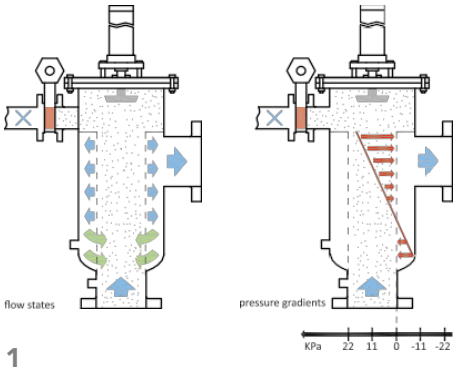
Performance Test
200μm Filter Screen

Before the self-cleaning begins

After the self-cleaning ends

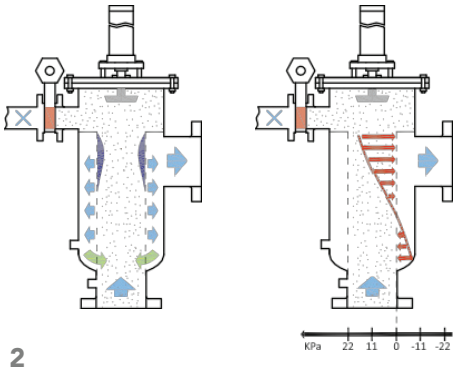
BERNOULLI / SELF-CLEANING FILTER

CECO Peerless



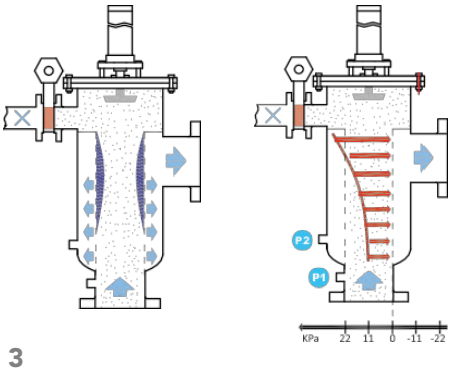
1

Filtration in the upper 2/3 screen.
In the lower 1/3 reverse flows takes place because of high flow velocity in the filter screen entrance. This causes no impurity deposit.



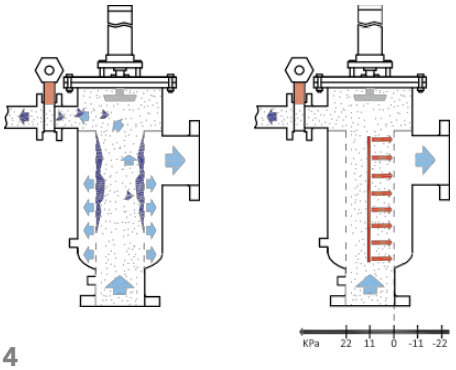
2

Filtration in progress.
the screen gradually gets clogged from top to down. filtration also begins in the 1/3 screen.
reverse flow in the screen entrance area still takes place.



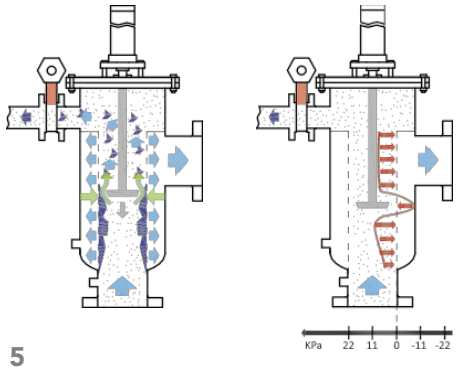
3

Filtration and self-cleaning action triggered.
2/3 upper screen gets almost clogged filtration starts on the whole screen surface the differential pressure triggers the self-cleaning action.



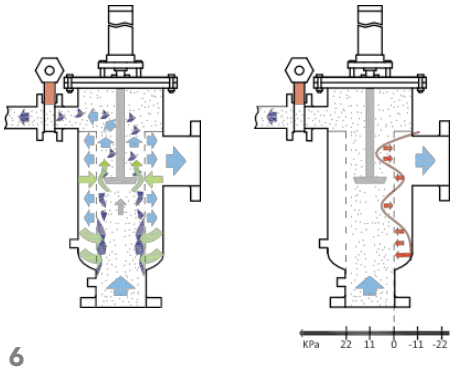
4

Cleaning and filtration.
the flushing valve is opened.
the clean disc keeps still in the initial position.
the coarse particles are easily flushed out.
the lower 1/3 screen also takes part in the filtration.



5

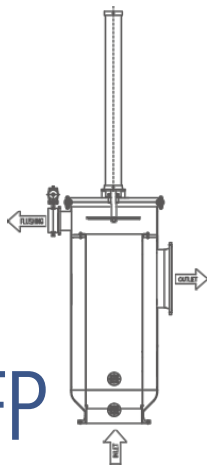
cleaning and continuous filtration.
the disc moves down into the screen (down to 2/3) cleaning takes place on the screen surface around the disc because of the Bernoulli effect principle



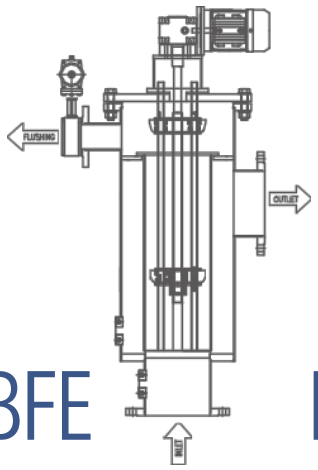
6

the disc moves up and down and cleans the upper 2/3 screen.
reverse flow takes place and cleans the lower 1/3 screen.
particles are flushed out. the whole screen is cleaned.

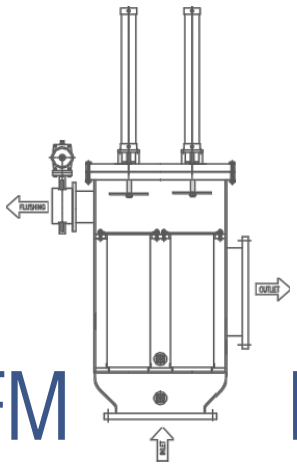
BF SERIES BERNOULLI FILTER TYPES



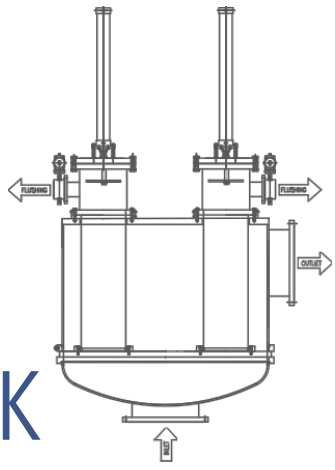
BFP



BFE



BFM



BFK

BF FILTER TYPES	BFP	BFE	BFM	BFK
Features	Single Basket, Simple Structure Price Competitive	Motor Driven, Single Basket Save Installation Space	Save Installation Space and Smaller Standard Multi-basket Design, Price Competitive	Better Back-flushing Performance Especially at 150~200 micron, Save Installation Space and Smaller Standard Multi-basket Design
Self-Cleaning Actuator	Pneumatic Cylinder	Gear Motor	Pneumatic Cylinder	Pneumatic Cylinder
Filter Screen	Single Basket	Single Basket	Multi-basket	Multi-basket
Filtration Degree (μm)	200~2000	200~2000	200~2000	150~2000
Filter Housing Material	304/316L/Duplex 2205/CS/GRP	304/316L/Duplex 2205/CS	304/316L/Duplex 2205/CS	304/316L/Duplex 2205/CS
Inlet and Outlet Size	DN65~DN800	DN65~DN800	DN200~DN800	DN200~DN800
Flushing Outlet	1 Flushing Outlet	1 Flushing Outlet	1 Flushing Outlet Header	Individual Flushing Outlet for Each Basket

Technical Features and Advantages

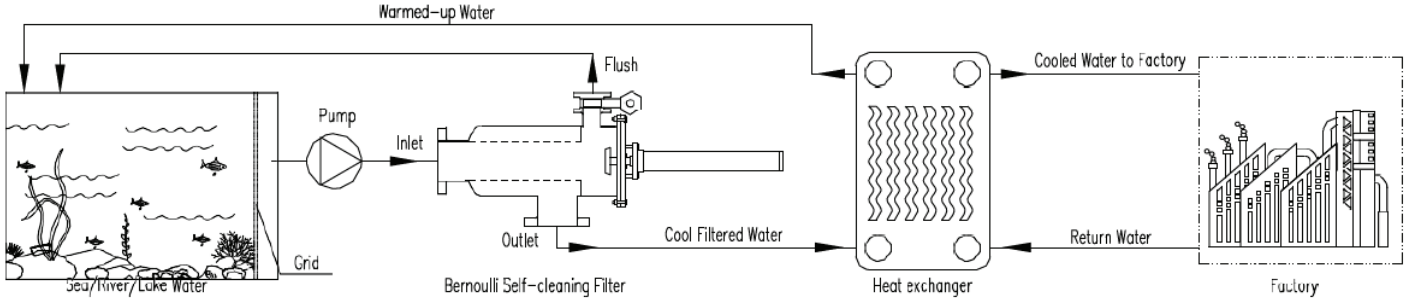
- Only two moving parts, the cleaning disc and the flushing valve
- Simple and reliable design structure, very easy to open for maintenance
- Non-contact back-flushing when cleaning, no wearing, no particles larger than the screen aperture extruded through the screen, high removal efficiency
- Consistent low pressure drop (<11kPa) when the filter screen is clean or dirty
- Low working pressure requirement down to 30kPa, less energy consumption
- Wide flow rate range from 30 to 6500 m3/h with one single filter
- No filtration or flow interruption when back-flushing
- Filtration degree ranges from 150μm to 2000μm
- Flexible installation in the horizontal or vertical position
- Configured with a smart D.P. transmitter, more reliable than a D.P. switch

Comparison to the Brush Filter

When a brush filter is brushing and cleaning, many particles larger than the screen aperture are extruded through the screen. And brushing results in wearing and shortens the filter screen service life. While the BF Bernoulli Filter cleans the screen by back-flushing and high velocity surface cross flow, with no contact between the cleaning disc and filter screen. The BF Series Bernoulli Filter removes particles much more efficiently than the conventional brush filter, which means better protection for the downstream equipment and lower running cost.

Bernoulli Filter Specifications

Bernoulli Filter Types	BFP/BFE/BFM/BFK
Control Panel	Based on Siemens Controller
Control Mode	D.P. and Time Mode
D.P. Instrument	Differential Pressure Transmitter
Filter Screen Material	304/316L/duplex 2205/Super
Housing Material	Duplex 2507
Flushing Valve	304/316L/duplex 2205/CS/GRP
Power Seal	Pneumatic / Electrical Butterfly
Largest Removable Particle	Valve
Housing Seal	110V/220V/380V/440V AC
	8MM
	NBR

Compressed Air Supply	0.6MPa, Clean & Dry
Working Pressure (Min.)	30kPa / 0.3Bar
Filtration Rating	150-2000μm
Design Pressure	0.6/1.0/1.6/2.5 MPa
Design Temperature	80°C
Flowrate Range	30-6500 m3/h
Cleaning Pressure Drop	11~164kPa
Inlet and Outlet Size	DN65-DN800
Piston Rod Material	316L
Piston Rod Seal	PU

Bernoulli Filter in a Direct Sea Water Cooling System