BERNOULLI

MULTI-BASKET SELF-CLEANING FILTERS

Bernoulli offers you

- End-to-end solutions
- Continual innovation
- Genuine partnership
- Product customisation
- After-sales service

Made in Sweden
Original Quality

Unwavering commitment to *your* filter solutions

Since 1986, Bernoulli has proven time and again that our customers come first, and that we can be counted on to solve industrial filter challenges in a wide variety of industries and applications. We partner you to provide the right filter solutions, quickly and efficiently.

Our way of working

First, we keep our organisation flat and flexible, with short decision pathways. This ensures that customer needs are rapidly detected and understood by the experts who can make a difference.

Second, our product design and management is built around customisation, and the tailoring of solutions to unique customer requirements.

Third, we maintain a global network of sales representatives and service technicians, to assist customers with technical filter solutions and routine maintenance as well as emergencies.

We also use ISO certified management systems to make sure our performance keeps on improving.

Satisfied customers, worldwide

Over the years, the Bernoulli way of working has proven to be successful and highly appreciated by our customers. Today, thousands of corporations in over 80 countries enjoy the benefits of our filter technology, in everything from industrial cooling water systems to water treatment systems.

Partner with Bernoulli and feel secure in the knowledge that you have the highest quality, best service, and most dedicated partner in industrial filters.

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THE GAME-CHANGING WATER FILTER

More than twenty years ago, Bernoulli System patented its first automatic filter, the Bernoulli Filter. The filter was designed to ensure high operational reliability and very simple maintenance. The simplicity of the Bernoulli Filter has been retained over the years, and recently a multi-basket product family was added to the product portfolio. This range offers all of the advantages of a single-basket Bernoulli Filter, such as low flushing pressure and constant pressure drop, but it utilizes multiple filter baskets instead of a single filter basket. Put simply, it's the traditional Bernoulli Filter, multiplied!

Why is it called Bernoulli?

Bernoulli System pioneered the application of the Bernoulli Principle, named after the Swiss scientist Daniel Bernoulli, to water filtration. The distinguishing feature of a Bernoulli Filter, whether single or multi, is a disc mounted on a pneumatic cylinder, which enables contactless cleaning of the filter. The cleaning sequence itself is automatic and continuous, requiring no manual intervention. The combination of a low flushing pressure of 0.3 bar with very few moving parts makes our filters truly unique on the market.

Typical applications

Since the fundamental purpose of a Bernoulli Filter is to reduce the content of suspended solids in water from natural sources, the scope of applications ranges from pre-filtration in water treatment to the protection of plate heat exchangers and sensitive process equipment such as spray nozzles. It is used in a variety of industries ranging from power generation, petrochemicals, and HVAC to steelmaking, aquaculture, pharmaceuticals, pulp & paper, and foods & beverages.

About Bernoulli Filters

Multi-basket Bernoulli Filters are pneumatically operated, making the automatic cleaning process simple and reliable, with very little mechanical wear. The filter is supported by a control panel with a programmable logic controller (PLC), a flushing valve including an actuator and differential pressure sensor. Thanks to the flexible nozzle orientation, Bernoulli Filters can be installed in almost any position, either horizontally or vertically. Since the Bernoulli Filter operates as a pressure filter, it is always installed downstream of the feed pump.

BMG product line

The BMG product line is the first member of the multi-basket product family. It consists of four models, DN400 (16") to DN800 (32"), covering a capacity range of up to 8400 m^3/h. Thanks to the use of multiple filter baskets in one filter body, fine filtration down to 100 microns is achievable, even at high flow rates. This means that one single multi-basket unit is capable of doing the work of multiple smaller single basket units. The result is a space efficient installation that requires less piping.

Like the single-basket BSG product line, the BMG product line benefits from the use of GRP (Glass fibre Reinforced Polyester) as filter body material, which is the superior material of choice for seawater applications. Since customisation is vital to our business, multi-basket Bernoulli Filters can be manufactured in several steel materials to comply with your specific requirements and needs.

Control panel

The multi-basket product family is equipped with a sophisticated control system, powered by a PLC and equipped with an HMI colour touch screen. The touch screen makes it easy and intuitive to monitor the status of the filter and to change settings. A complete log system is included in the HMI, making it possible to track the behaviour of the filter historically, which is important during trouble-shooting. The control system is modular, enabling one control panel with a larger HMI to control several filters. Further customisation is possible, such as extra inputs and outputs, or communication via GSM. Furthermore, the HMI is equipped with a webserver, making it possible to control and obtain a visual representation of your filter's status from a standard PC.

BUILT TO LAST

Choose a Bernoulli Filter from Bernoulli System, and you get a reliable filter with an ingeniously simple design that ensures continuous, safe operation year after year. Quite simply, our filters are effective and they last!

BERNOULLI'S CLEANING TECHNOLOGY

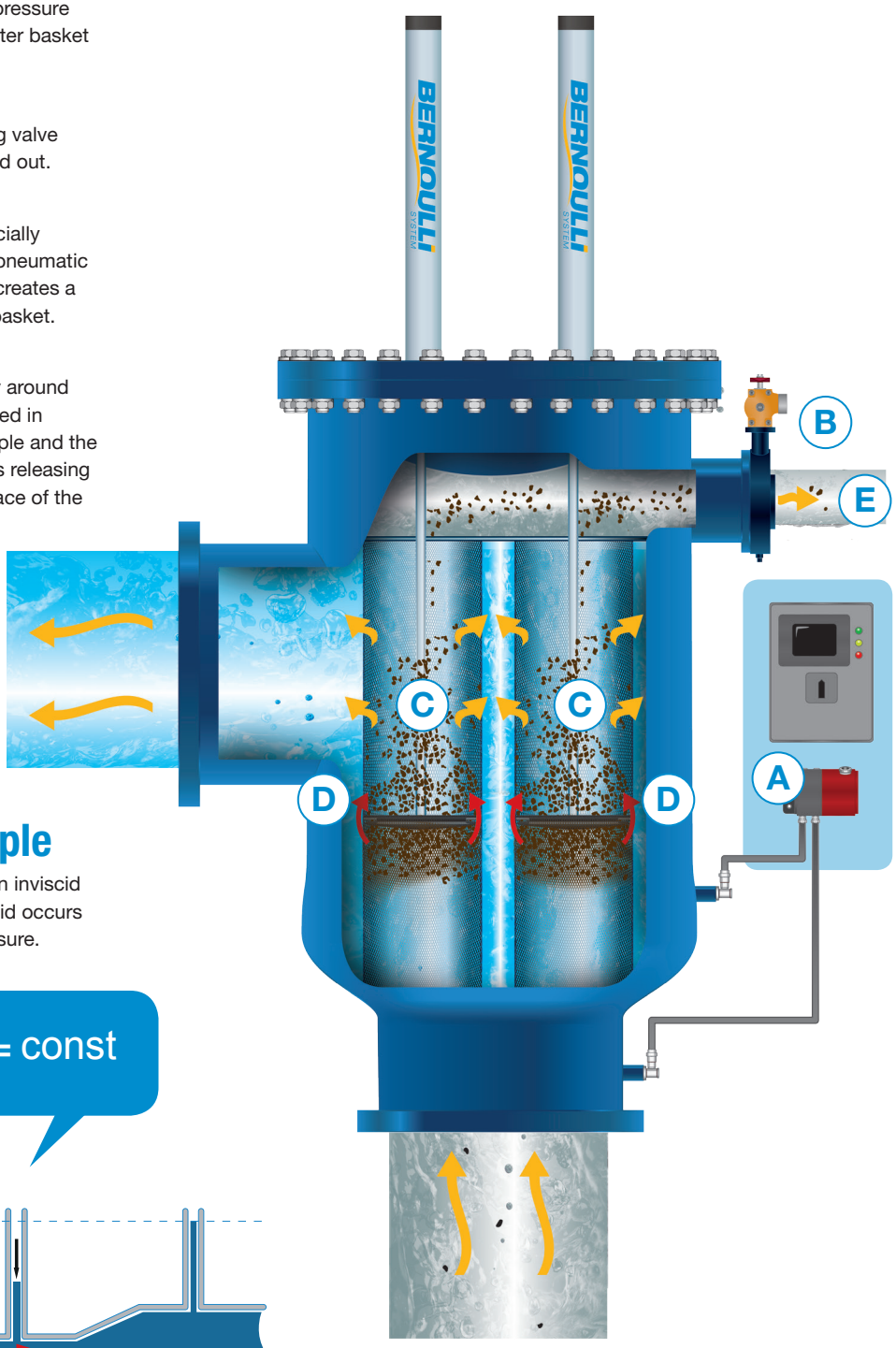
A The flushing sequence is initiated by a timer setting or triggered by a differential pressure sensor before any blockage of the filter basket causes flow reduction.

B In the pre-flushing stage, the flushing valve opens and larger particles are flushed out.

C During the flushing sequence, a specially shaped flushing disc mounted on a pneumatic cylinder enters the filter basket and creates a gap between the disc and the filter basket.

D As the flow velocity increases locally around the disc, the static pressure is reduced in accordance with the Bernoulli Principle and the direction of the flow is reversed, thus releasing particles which are stuck to the surface of the filter basket.

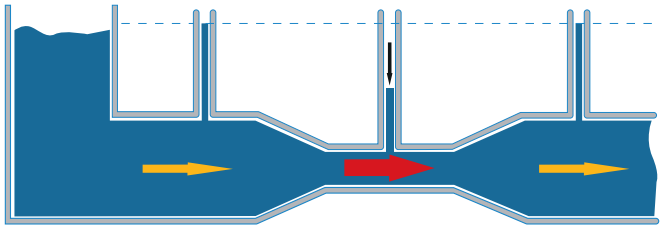
E The released particles are led out from the filter through the flushing outlet.



The Bernoulli Principle

The Bernoulli Principle states that for an inviscid flow, an increase in the speed of the fluid occurs simultaneously with a decrease in pressure.

$$P_1 + \frac{u_1^2}{2}\rho + \rho g h_1 = \text{const}$$



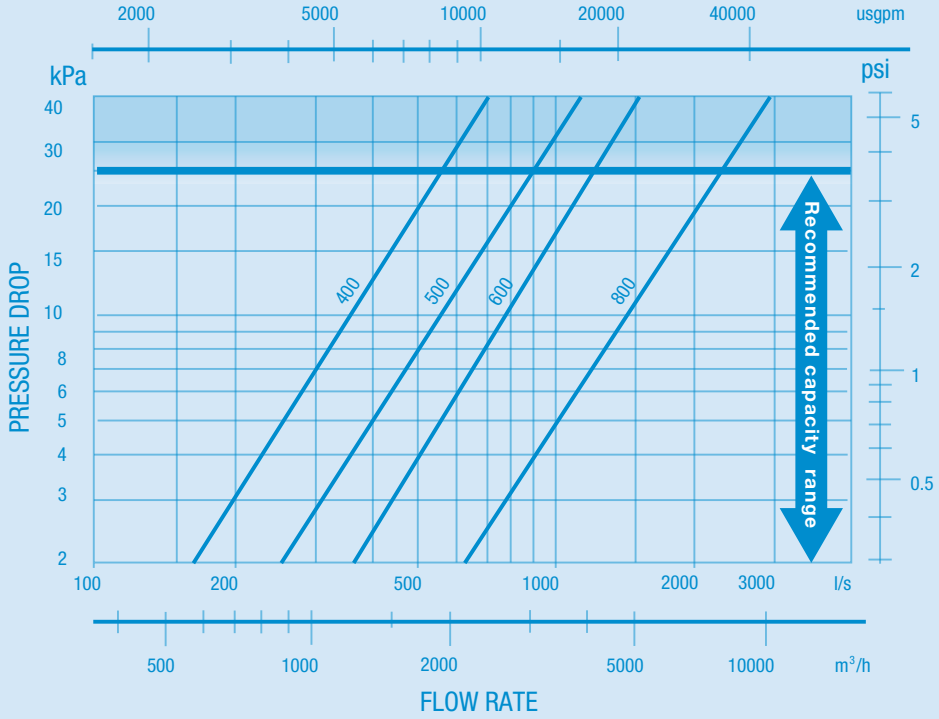
Velocity low
Static pressure high

Velocity high
Static pressure low

Velocity low
Static pressure high

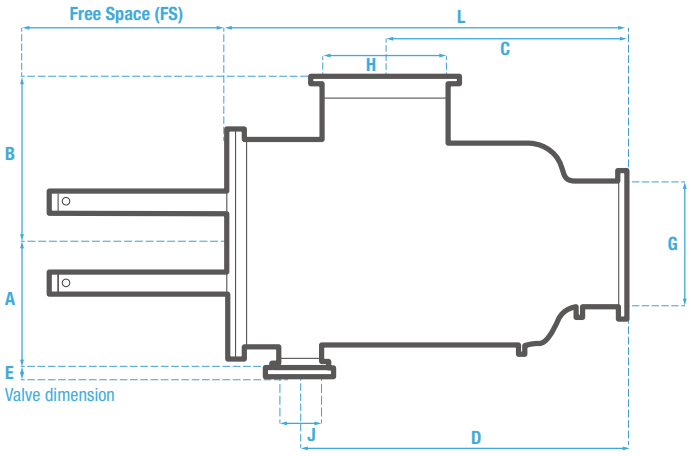
TECHNICAL DATA – MULTI-BASKET SELF-CLEANING FILTERS

SELECTION CHART



Example

Recommended filter size at a flow rate of 2000 m³/h – DN 500.



OPERATING SPECIFICATIONS

Min. operating pressure	≥ 0,3 bar [1]
Max. operating pressure	10 bar (g)
Max. operating temp.	60°C [2]
Power supply	100-240V AC or DC, 45-65 Hz (AC)
Instrument air pressure	min 6 bar (g)

[1] Minimum operating pressure during flushing, depends on filter size.

[2] Alternative maximum operating temperatures are available upon request.

DIMENSIONS

Filter type	Flow capacity		Dimensions (mm)									
	Max (l/s)	Flush (l/s)	A	B	C	D	E	L	FS	G/H	J	Weight (kg)
FILTER BODY IN GRP												
BMG 400	580	68	520	650	1000	1285	56	1550	1300	DN 400	DN 150	320
BMG 500	890	106	650	800	1200	1530	56	1875	1620	DN 500	DN 150	600
BMG 600	1300	151	800	950	1400	1825	60	2210	1980	DN 600	DN 200	850
BMG 800	2320	268	900	1150	1700	2265	68	2760	2180	DN 800	DN 250	1000

STANDARD DESIGN SPECIFICATIONS

Design code	EN 13121 / ASME VIII, Div 1 / ASME X
Flange standard	DIN 2632 PN10 / ANSI B 16.5 lbs 150
Filter body material	GRP
Filtration range	0.1-1.0 mm Wedge wire 1.0-2.0 0 mm Perforated
Filter basket material	Stainless steel (316, Duplex, Super-duplex) / Titanium
Control panel	PLC incl. HMI touch screen

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