

KAF Bernoulli



SELF-CLEANING AUTOMATIC FILTER
NON-CONTACT CLEANING
DN 40 – DN 1000 | PN 2,5 – PN 25
EN / ANSI / JIS / GOST

Applications

The self-cleaning automatic KAF Bernoulli filter is a versatile self-cleaning, virtually maintenance-free filter for removal of particulate contaminants from highly polluted waters as well as process fluids e.g. from natural water sources (sea water, river water) and heating or cooling circuits and processes. It operates at a working pressure as low as 0.3 bar and is characterized by extremely low pressure loss of 0.09, for example, at a high flow rate, simple, robust design, with high performance, low weight, and space saving.

- from a working pressure of 0.3 bar
- the filter can be integrated in the pipe system in any installation position
- filtration stage × 160 microns (100 μ possible) - 10 mm

Brief description of operation

A specially shaped flushing disk gives rise to an increase in speed between the disk and strainer in the flushing process. The resulting local pressure drop causes internal evacuation of the contaminant particles from the strainer insert. Solid components are flushed out via the simultaneously opened flush valve. The filter is equipped with a differential pressure monitoring system that automatically triggers the flushing process before any blockages in the filter strainer cause significant flow reductions. The flushing process can also take place after a predetermined time.

- Filtrate flow is not interrupted in this process; the flushing volumes are low.
- The pressure drop in the system is minimal.

Installation

Operating instructions: The comprehensive instructions accompanying the filter must be followed!

The filter is installed in pipes using flanges. Ensure that the standard version of the filter is installed vertically or horizontally in a mechanically stress-free manner without additional loads. The medium must flow in the direction specified on the housing. Incorrect installation can cause filter malfunctions. If the contaminant drain pipe is laid with an ascending gradient ensure that the inlet pressure of the filter is at least a 0.3 bar higher than the counter pressure in the contaminant drain

KRONE FILTER SOLUTIONS GMBH
Industriestr. 19
28876 Oyten / Germany
Tel: +49 (0)4207 98 769-0
Fax: +49 (0)4207 98 769-27

Krone Filter
SOLUTIONS IN FILTRATION

filter@krone-filter.com
www.krone-filter.com



Electronic standard multifunctional unit of the KAF filter. Alternatively Siemens or Allen Bradley/Rockwell for controlling up to 10 filters.

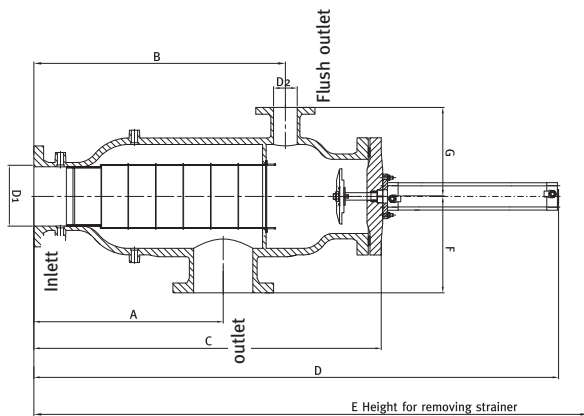
Functional description of the cleaning process

The contaminated medium flows into the filter through the flange marked inlet. The contaminated medium flows through the filter insert from the inside to the outside and exits out of the flange marked outlet as cleaned medium. The flushing phase of the filter is either activated when the set differential pressure is attained, or the flushing phase is activated after a set time interval. The flushing valve opens and larger contaminant particles are flushed out with the continuously flowing medium stream due to a pressure gradient. Subsequently the piston usually performs two strokes in the filter strainers, thereby increasing the speed between the piston and strainer wall. The contaminants are sucked off due to the resultant local pressure drop. The flushing time can be set by the controller according to the operating conditions, and flushing frequency depends on the level of contamination in the medium.

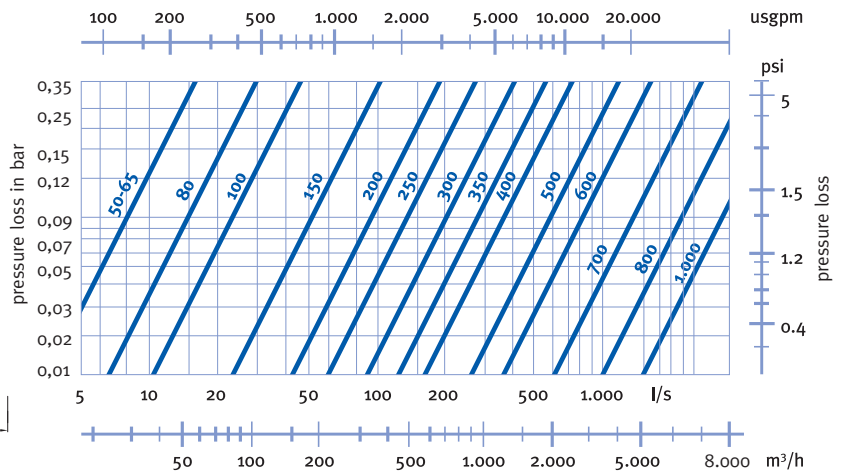
pipe (pay attention to the loss through friction in pipes). Before using with a medium other than the medium specified in the design, or for different operating data, the resistance of the materials of the parts and seals touched by the pressure-bearing membrane to the medium to be filtered must be checked by the customer; it may be necessary to consult with the manufacturer and to execute a conformity evaluation in accordance with PED EN 97 / 23 EC (if there is a CE-mark requirement).

Technical data

	Standard	Special versions
Filter insert/filtration degree	100/160 µm (0.2 mm) – 10 mm	additional on request e.g. 0.1 mm
Filter cover	Cover with hex bolts + nuts	-
Venting device	-	On request
Drain unit	-	On request
Connections	EN 1092-1 PN 10/16	As specified by the customer (e.g. ANSI, JIS)
Materials:		
Housing: Plastic	GRP / FRP (polyester-based fiber-reinforced plastic)	Cast Iron (rubberlined)
Stainless steel	1.4571, steel	Steel (rubberlined), special alloy steels
Cast Iron	GGG50 / EN-GJS-500-7 / ASTM-80-55-06	
Seals	NBR	On request
Perforated plate/slotted hole strainer	1.4571/1.4401	Titan, Hastelloy, Monel, Super Duplex, Uranus
Flushing disk	POM / GRP	-
Piston rod	1.4404	Super Duplex 1.4410 / 1.4501
Differential pressure switch	Ms chem. nickel-plated (Membrane)	Hastelloy, Monell (Membrane)
Version:		
Differential pressure switch	Electrical with 1st contact for start of cleaning, protective class IP65	Protection rating in Ex-conformant version (ATEX), Transmitter 4-20 mA, HART protocol
Control	Multi-function unit mounted (Crouzet Millenium III) / delivered separately	Allen Bradley/Rockwell, Siemens, Eexd, Explosion-protected (ATEX),
	230 V / 50 Hz	On request
	Protective class IP64	Protection class in Ex version
Cylinder	Pneumatically activated	Electrical (depending on nominal diameter) (ATEX)
Required compressed air	6 bar	3.5 bar (Maximator), slanted seat, ball valve
Contaminant outlet valve fitting	Butterfly valve	
Surface treatment, internal:		
Steel housing / Cast Iron	Corrosion protection oil / Chemonit 33 (rubberlined)	Chemonit 31 (rubberlined) Corrocoat, Polyglass
Stainless steel housing	Glass bead blasting or blasted	Pickled and passivated
GRP / FRP housing	Chemical-resistant vinylester liner	Corrocoat, Polyglass
Surface treatment, external:		
Steel housing / Cast Iron	Epoxy in RAL 5010 blue	Customer specification
Stainless steel housing	Glass bead blasting or blasted	-
Housing GRP / FRP	GRP outer color or through-colored in RAL 5015 blue	Customer specification Polyurethane paint
Range of application of the materials according to temperature:		
Steel / stainless steel housing / Cast Iron	Temperature limits: In accordance with PED or AD2000 legislation -29°C to 95°C	Special version: +120°C
GRP housing	Temperature limits: -70°C to +60°C	Special version: +120°C
Design/Certification	Declaration of Conformity, 3.1 Material Certificates – Lloyds Register certified foundry acc. to DGRL 97/23/EC for cast iron (GGG50/EN-GJS-500-7/ASTM 80-55-06)	ASME-Code, ATEX, PED, NORSOK, DOSH, MOM, GOST, RTN



Filter dimensioning chart



Flanges in accordance with EN 1092-1 PN10-16 or ANSI 16.5 150 lbs

Dimensioning example (0.22 mm filtration degree) / selection chart at 500 m³/h, the use of a DN 200 or DN 250 is recommended at 200 µm.

Material	D1	D2	A	B	C	D	E	F	G	Weight *	Flow rate ***	Example flushing volume/backflush (adjustable)
	DN	DN	mm	mm	mm	mm	mm	mm	mm	ca. kg	m ³ /h	m ³
VA/steel **	50	25	310	385	520	1020	1100	200	135	25	8-45	0,04
	65	25	310	385	520	1020	1100	200	135	30	8-45	0,04
	80	40	405	510	620	1100	1200	235	190	35	15-80	0,06
	100	40	430	480	680	1305	1400	240	240	40	40-120	0,09
	150	40	490	680	810	1450	1550	260	255	80	50-300	0,2
	200	80	590	790	1010	1950	2050	290	280	110	100-500	0,54
	250	100	740	980	1250	2180	2280	345	330	165	160-800	1,2
	300	100	890	1155	1440	2510	2610	375	385	200	200-1100	2,2
	350	100	950	1260	1481	2467	2500	410	410	300	300-1500	2,6
	400	100	1010	1325	1535	3010	3100	485	465	450	400-2000	4,5
	500	150	1590	2205	2350	3800	3900	695	555	1600	800-3000	9,5
	600	200	1540	3055	3490	4650	4750	900	805	2300	1200-4000	13,5
700	200	2650	3255	3750	5650	5750	1200	1100	2800	1500-5000	17,0	
800	200	2550	3300	4195	6660	7000	1060	940	3200	2500-8000	24,0	
1000	on request								4100	on request		

GFK	40/50	25	400	540	650	1200	1300	160	160	15	8-45	0,04
	65	25	400	540	650	1200	1300	160	160	17	8-45	0,04
	80	40	440	600	720	1300	1400	190	175	20	20-90	0,06
	100	40	460	640	800	1370	1450	220	200	25	40-120	0,09
	150	50	500	720	890	1680	1750	250	240	30	70-300	0,2
	200	80	600	870	1130	2000	2100	325	300	60	150-500	0,54
	250	100	660	1000	1290	2300	2400	370	330	90	200-700	1,2
	300	100	900	1280	1600	2800	2900	430	390	140	300-1000	2,2
	350	100	1000	1430	1810	3058	3000	500	450	205	300-1500	2,6
	400	100	1220	1670	2100	3600	3700	550	500	220	500-1800	4,5
	500	150	1680	2220	2700	4300	4400	650	580	550	800-2500	9,5
	600	200	1950	2570	3120	4500	4600	780	700	750	1200-4000	13,5
	700	200	2300	2990	3650	4750	4850	920	820	1000	1500-5000	17,0
	800	200	2550	3300	4100	6660	7000	1060	940	1400	2500-6500	24,0
	1000	250	3100	3990	5100	on request		1360	1140	1800	5000-9000	38,0

*Dependent on pressure phase, **Rubberlined on request, ***Dependent on filtration degree

Material	D1	D2	A	B	C	D	E	F	G	Weight *	Flow rate ***	Example flushing volume/backflush (adjustable)
	DN	DN	mm	mm	mm	mm	mm	mm	mm	ca. kg	m ³ /h	m ³
Cast Iron (EN-GJS-500-7 / GGG-50 / ASTM 80-55-06)	80	40	30	580	730	1210	1300	240	240	60	15-80	0,09
	100	40	430	580	730	1210	1300	240	240	60	40-120	0,09
	150	40	490	690	850	1440	1600	260	240	00	50-300	0,3
	200	80	620	810	1000	1670	1780	300	280	270	100-500	0,54
	250	100	890	1250	1460	2420	2540	380	450	520	160-800	2,2
	300	100	890	1250	1460	2420	2540	380	450	520	200-1100	2,2
	350	100	1010	1325	1670	2730	900	485	465	650	300-1500	4,5
400	100	1010	1325	1670	2730	2900	485	465	650	400-2000	4,5	

*Dependent on pressure phase, ***Dependent on filtration degree



24" / DN 600 KAF Filter
Bioethanol plant



24" / DN 600 KAF Filter
seawater cooling



3 x 16" / DN 400 KAF Filter
desalination



14" / DN 350 Filter seawater cooling for
use in Ex Zone 1



200 JIS / DN 200 ship seawater cooling
for use in Ex Zone 1



300 JIS / DN 300 ship seawater cooling
for use in Ex Zone 1