

КАF-G

Технические характеристики

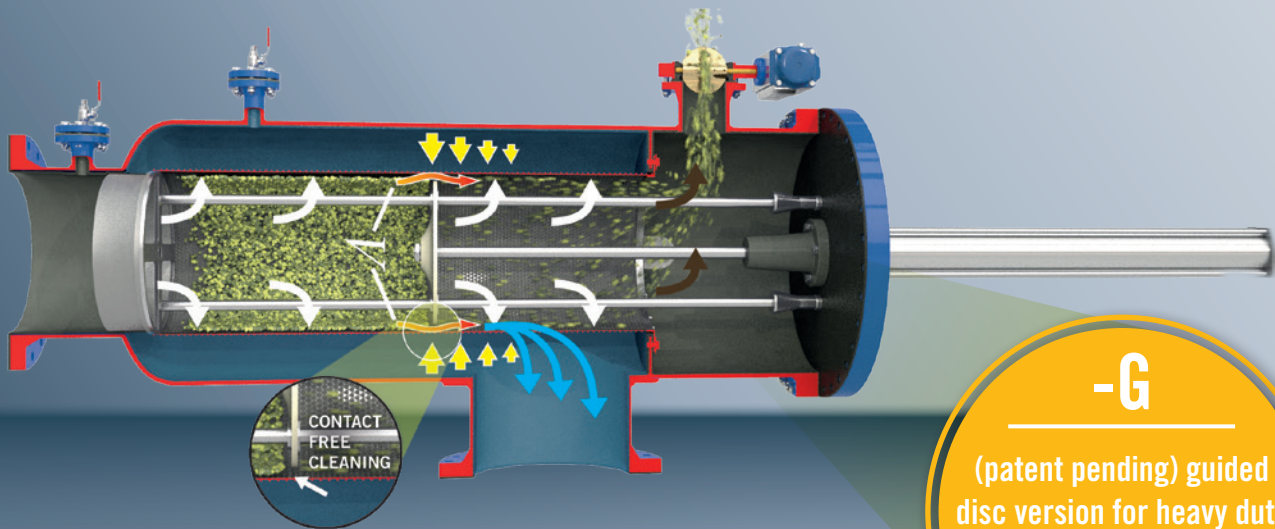
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KAF®-G Bernoulli®

heavy duty filter system

Self-Cleaning Automatic Filter

PN 2,5–25
DN 300–1000
EN/ANSI/JIS/GOST

- No contact cleaning
- No process interruption

Applications

The self-cleaning automatic KAF®-G Bernoulli® filter is a versatile self-cleaning, nearly 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, simple, space saving, robust design with high performance and low weight. The special guided disc systems makes the system even more robust for sudden extreme dirt loads, vacuum conditions or other heavy duty service conditions.

Characteristics

- Unique self cleaning function works from 0.1–25 bar
- Minimum working pressure 0.1 bar, better filter work under vacuum conditions at outlet
- The filter can be integrated in the pipe system in any installation position
- Filtration rate $\geq 100 \mu/\text{micron} - 10 \text{ mm}$
- Very low maintenance
- Low energy consumption
- Only few spare parts needed. Deliverable in SET's for easy and regular preventive maintenance.

Brief description

The KAF®-G Bernoulli® is a fully automatic self-cleaning filter and can be mounted vertically as well as horizontally. During operation the medium flows through the strainer insert from inside to outside and the dirt remains inside the strainer. 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. Due to the a specially shaped flushing disk the speed between the disk and strainer in the flushing process rises. The resulting local pressure drop causes an internal suction effect and the contaminant particles are removed from the strainer insert. Solid components are flushed out via the opened flush valve.

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

Notice:

The compatibility between medium and vessel or sealing material is the responsibility of the operator.

The design of the pressure vessel is based on a quasi-static operation (load cycle number ≤ 1000 according to AD 2000 Merkblatt S1, section 1.4). Max. Differential pressure inlet - outlet 1 bar.

Functional description of the cleaning process

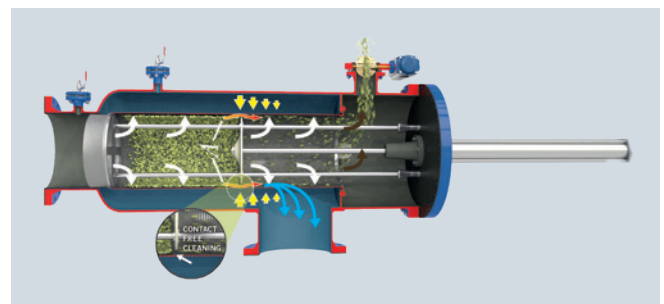
The contaminated medium flows into the filter through the flange marked "inlet". The contaminated medium flows through the filter insert from the inside to the outside and exits out of the flange marked "outlet" as cleaned medium. The flushing phase of the filter is either activated when the set differential pressure is attained, or the flushing phase is activated after a set time interval or by pressing the button. 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, thereby increasing the speed between the flushing disc 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.

Operating instructions

The comprehensive instructions accompanying the filter must be followed!

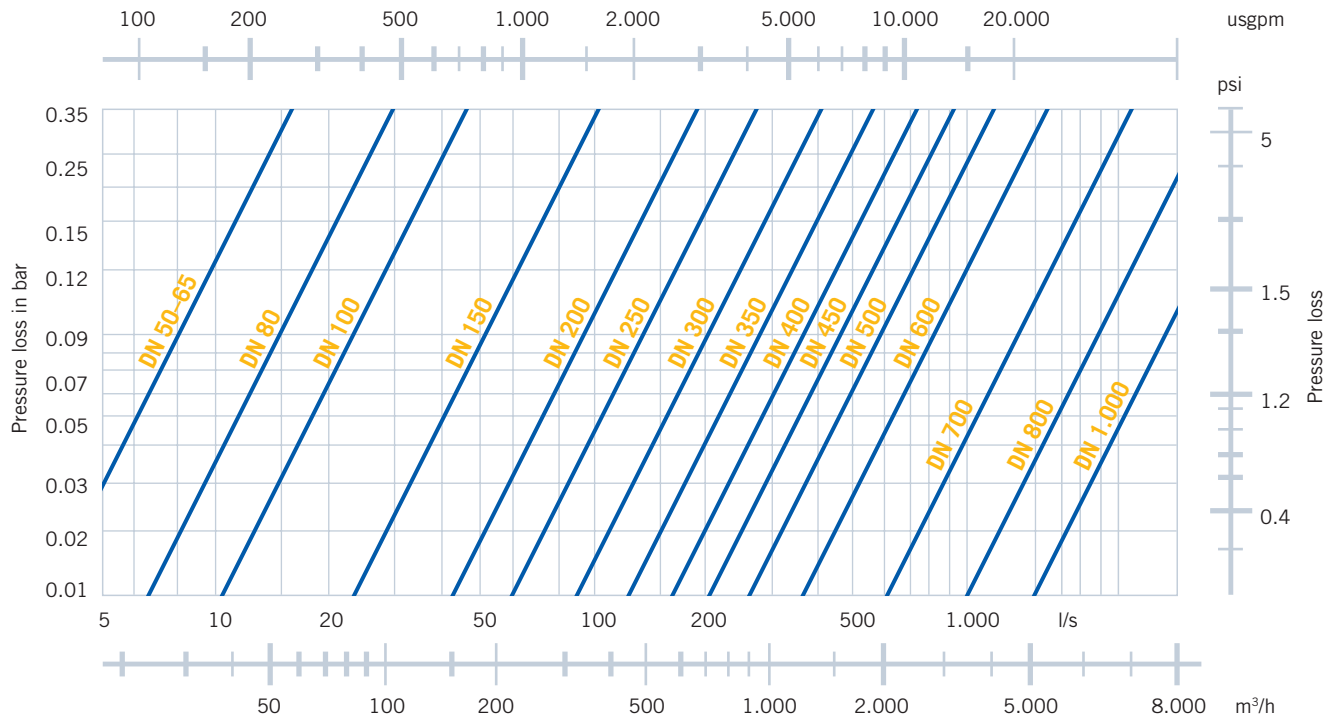
The filter is installed in piping via flanges. Ensure that the standard version of the filter is installed vertically or horizontally in a mechanically stress-free manner without additional loads. The medium must flow in the direction specified on the housing. Incorrect installation can cause filter malfunctions. If the flush outlet pipe is installed with a gradient ensure that the inlet pressure of the filter is at least 0.3 bar higher than the counter pressure in the flush outlet pipe (pay attention to the loss through friction in pipes). Before using with another medium or other operation conditions than specified in the design, the resistance of the materials of the pressure-bearing parts and seals touched by 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 2014/68/EU (if there is a CE-marking requirement).

The filter needs regularly maintenance (every 1–2 years). Please consider instructions delivered with the filter.



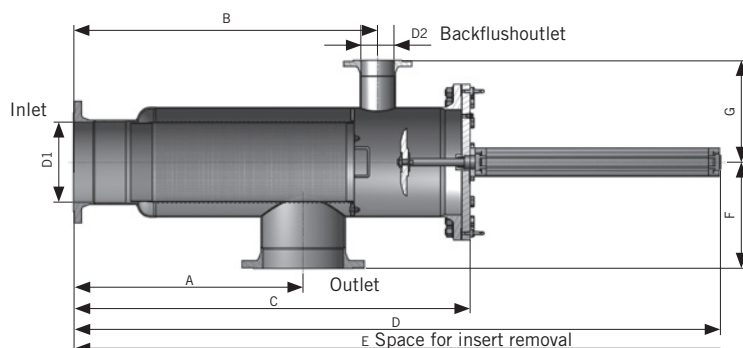
Filter dimensioning chart/Pressure loss diagram

At 200 µm filter fineness



Dimensioning example (0.2 mm filtration degree)/selection chart at 500 m³/h, the use of a DN 250 or DN 300 is recommended at 200 µm.

Technical data and dimensions



Flanges in accordance with EN 1092-1 PN 10–16
or ANSI 16.5 150 lbs

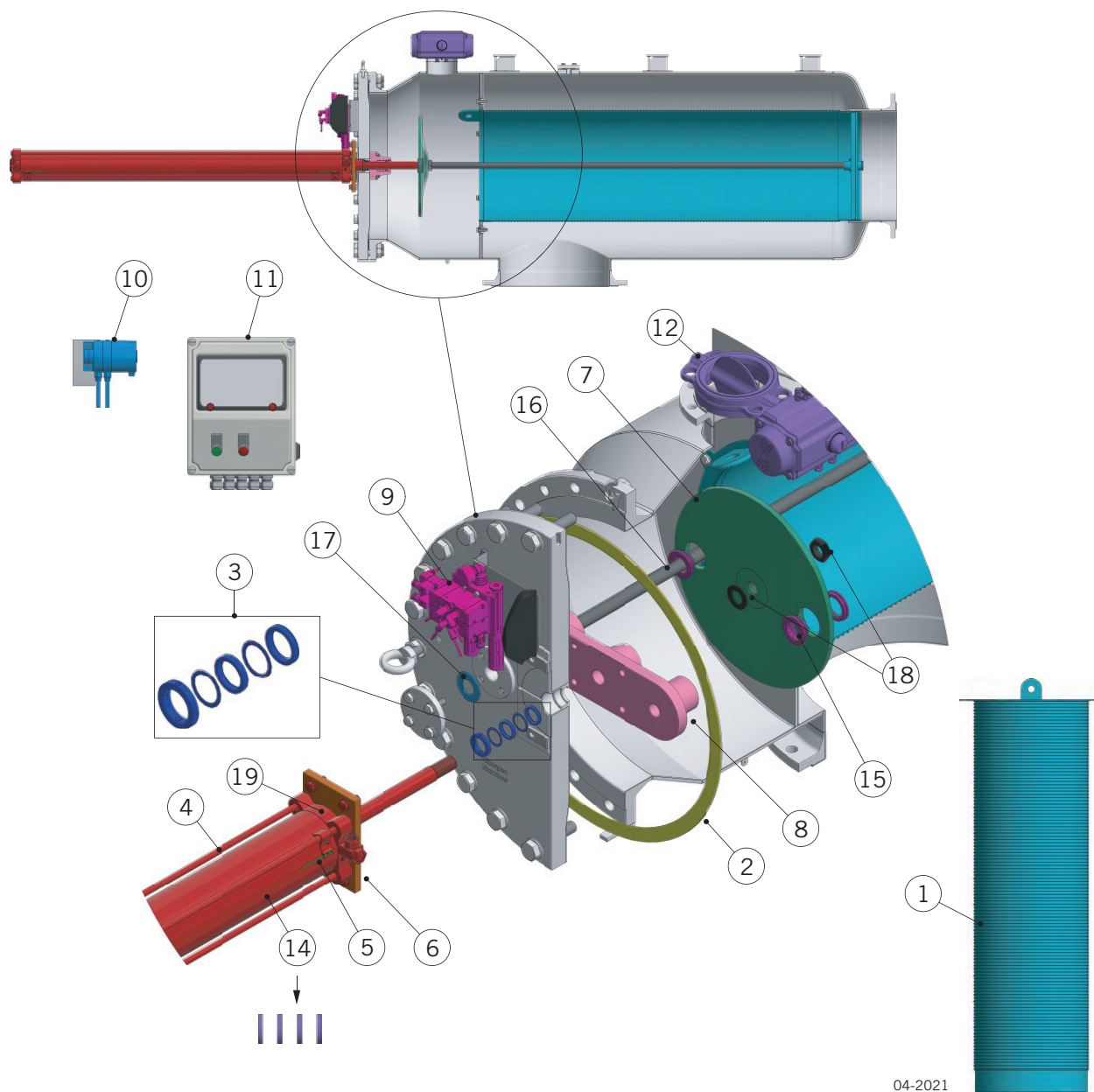
Material	D1	D2	A	B	C	D	E	F	G	Weight *	Flowrate ***	Example flushing volume/backflush (adjustable)	Flushing volume ****
	DN	DN	mm	mm	mm	mm	mm	mm	mm	approx. kg	m³/h	m³	m³
SS316Ti/SS316L/ steel **	300	100	890	1.155	1.440	2.510	2.610	375	385	200	200–1.100	1.50	0.94
	350	100	950	1.260	1.481	2.467	2.500	410	410	300	300–1.500	2.80	1.71
	400	100	1.010	1.325	1.535	3.010	3.100	485	465	450	400–2.000	3.70	2.20
	450	100	1.010	1.325	1.535	3.010	3.100	485	465	450	400–2.000	3.70	2.20
	500	150	1.590	2.205	2.350	3.800	3.900	695	555	1.600	800–3.000	6.50	3.87
	550	150	1.590	2.205	2.350	3.800	3.900	695	555	1.600	800–3.000	6.50	3.87
	600	200	1.540	3.055	3.490	4.650	4.750	780	805	2.300	1.200–4.000	8.10	4.83
	700	200	2.650	3.255	3.750	5.650	5.750	800	900	2.800	1.500–5.000	12.60	7.39
	800	200	2.550	3.300	4.195	6.660	7.000	1.060	940	3.200	2.500–8.000	15.00	8.75
	1.000	250	3.100	3.990	5.100	7.000	7.700	1.360	1.140	1.800	5.000–9.000	20.00	12.13
GRP	300	100	900	1.280	1.600	2.800	2.900	430	390	140	300–1.000	1.50	0.94
	350	100	1.000	1.430	1.810	3.058	3.170	500	450	205	300–1.500	2.80	1.71
	400	100	1.220	1.670	2.100	3.600	3.700	550	500	220	500–1.800	3.70	2.20
	450	100	1.220	1.670	2.100	3.600	3.700	550	500	220	500–1.800	3.70	2.20
	500	150	1.680	2.220	2.700	4.300	4.400	650	580	550	8.00–2.500	6.50	3.87
	600	200	1.950	2.570	3.120	4.500	4.600	780	700	750	1.200–4.000	8.10	4.83
	700	200	2.300	2.990	3.650	4.750	4.850	920	820	1.000	1.500–5.000	12.60	7.39
	800	200	2.550	3.300	4.100	6.660	7.000	1.060	940	1.400	2.500–6.500	15.00	8.75
	1.000	250	3.100	3.990	5.100	7.000	7.700	1.360	1.140	1.800	5.000–9.000	20.00	12.13
Cast Iron ** (EN-GJS-500-7/ GGG-50/ ASTM 80-55-06)	300	100	890	1.250	1.460	2.420	2.540	380	450	520	200–1.100	1.50	0.94
	350	100	1.010	1.325	1.670	2.730	900	485	465	650	300–1.500	2.80	1.71
	400	100	1.010	1.325	1.670	2.730	2.900	485	465	650	400–2.000	3.70	2.20

* Dependent on design pressure, ** Rubberlined on request, *** Dependent on filtration degree **** EcoSense® is a processor controlled flush water management system. For EcoSense® control and functions the Em4 processor LCP has to be used.

Technical data

Technical data		
	Standard	Special versions
Filter insert/filtration degree	Slot wedge wire 150–1.000 µm Basket with perforated plate 1–10 mm	Others on request e.g. 100 µm
Filter cover	Cover with hex bolts + nuts	Quick release bolts, davit
Venting device	–	On request
Drain device	–	On request
Connections	Flange in accordance with EN 1092-1 11B PN 10/16	As specified by the customer (e.g. ANSI, JIS)
Materials		
Housing		
Plastic	GRP/FRP (polyester-based fiber-reinforced plastic)	Special alloy steels (e.g. Duplex SS, Super Duplex SS)
Stainless steel/steel	SS304/SS316Ti, steel	
Cast Iron	GGG50/EN-GJS-500-7/ASTM-80-55-06	
Seals	NBR	On request
Perforated plate/ slotted hole strainer	SS316Ti/SS316	Titanium, Hastelloy, Monel, Super Duplex, Uranus
Flushing disk	POM/GRP	–
Piston rod	SS316L	Duplex, Super Duplex
Differential pressure switch	Ms chem. nickel-plated (Membrane)	Hastelloy, Monell (Membrane), Stainless steel
Version		
Differential pressure switch	Electrical with 1 contact for start of cleaning, protection class IP65	Protection class in Ex-compliant version (ATEX), Transmitter 4–20 mA, HART protocol, diaphragm seals
Control	Multi-function unit mounted (Crouzet Millenium III)/delivered separately	Crouzet Millenium en4/Allen Bradley/Rockwell/Siemens, Eexd, Explosion-protected (ATEX)
	230 V/50 Hz/1Ph	On request
	Protective class IP 64	Protection class in Ex version
Cylinder	Pneumatically actuated	Electrical (depending on nominal diameter), EX-compliant (ATEX)
Required compressed air	6 bar	3.5 bar (Maximator)
Contaminant outlet valve fitting	Butterfly valve	Angle seat valve, ball valve
Surface treatment, internal		
Steel housing	Chemonit 33 (rubberlining)	Corrosion protection oil, Corrocoat, Polyglass, Epoxy coating
Cast Iron	Chemonit 33 (rubberlining)	Chemonit 31 (rubberlining), KTW compliant rubberlining
Stainless steel housing	Pickled and passivated	Glass bead blasted
GRP/FRP housing	Chemical-resistant vinylester liner	Corrocoat, Polyglass
Surface treatment, external		
Steel housing	Epoxy in RAL 5010 blue	Customer specification
Cast Iron	Epoxy in RAL 5010 blue	Customer specification
Stainless steel housing	Pickled and passivated	Glass bead blasted
GRP/FRP housing	GRP outer color or through-colored in RAL 5015 blue	UV-resistant painting, customer specification
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 2014/68/EU for cast iron (GGG50/EN-GJS-500-7/ASTM 80-55-06)	ASME-Code, ATEX, PED, NORSOK, DOSH, MOM, GOST, RTN, EN 13445

KAF®-G spare part sets



04-2021

KAF®-G spare part sets

Set	Content
1	Insert, sealing (optional), set of bolts
2	Cover gasket
3	Piston rod to cover sealing/gasket
4	Pneumatic cylinder, restrictors, set of bolts**
5	Set limit switches
6	Flange for pneumatic cylinder
7	Flushing disc, fixing nut, special washer
8	Piston rod guide
9	Complete solenoid valve unit
10	Differential pressure switch

Set	Content
11	Control unit/LCP with CPU
12	Flushing valve
13	Tubes, adapter fittings
14	Wearing parts set pneumatic cylinder ("air" repair package)*
15	Bushings for flushing disc guide pipes
16	Guide rods for flushing disc incl. fixing
17	Flange seal for guide rods
18	Special washer & special fixing nut (for flushing disc)
19	Cylinder head & bearing unit pneumatic actuator*

* Repair; not recommended for ATEX certified components

** Recommended for ATEX component – complete with certificate

Recommended spare part sets KAF®-G

For commissioning / continuous operation & strategical spares

- Please note this is only a general recommendation, which may have project related changes.
- Please ask for your detailed spare part quotation for your self-cleaning filter.
- After your definitions of spare packages, Krone will check if technical developments apply and always quote newest technical development

- 2– 4 weeks
- 4– 8 weeks
- 10–16 weeks for special materials or versions

* Lead time depends on version, model and materials. Exact delivery time will be mentioned in quotation by Krone Filter Solutions.

** Dependent on filter operational stress/flush frequency depending on water quality.

*** If purchased together with 2–3 year operational spares the SET 2, 3 and 17 can be reduced to 1 pcs.

**** Recommended number of strategical spare packages 30% of filter's in operation/min. 1 package. If purchased with 4–7** years operational spares package can be reduced by those positions.

Commissioning spares		
SET	Recommended quantity per filter	Lead time rating*
2	1	●
3	1	●
17	1	●

2–3 years operation spares		
SET	Recommended quantity per filter	Lead time rating*
2	2	●
3	2	●
5	1	●
15	1	●
17	1	●

4–7** years operational spares		
SET	Recommended quantity per filter***	Lead time rating*
1	1	● ●
2	2	●
3	3	●
5	1	●
7	1	● ●
8	1	● ●
10	1	● ●
14 (or SET 4 optional)	1	●
4 (optional to SET 14)	1	● ●
15	1	●
17	2	●

Strategical spare package recommended purchase latest 1 year after START-UP****		
SET	Recommended quantity per filter	Lead time rating*
1	1	● ●
2	1	●
3	1	●
4	1	● ●
5	1	●
7	1	● ●
8	1	●
9	1	●
10	1	● ●
11	1	● ●
12	1	● ●
15	1	●
17	1	●



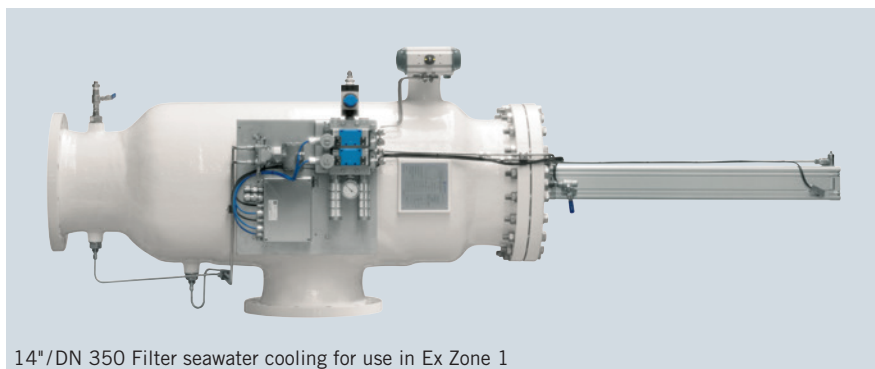
24"/DN 600 KAF® Filter – Bioethanol plant



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



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



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

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