



K-FLOW Engineering

Filtration & Separation

ABW

Automatic
Backwash
Filter



Ser.:ABW

Continuous filtration without interruption Filtration & separation specialist

ABW

Multi Cartridge Self-Cleaning Filter

No Interruption No maintenance No consumption

ABW SERIES MULTI-CARTRIDGE SELF-CLEANING FILTER



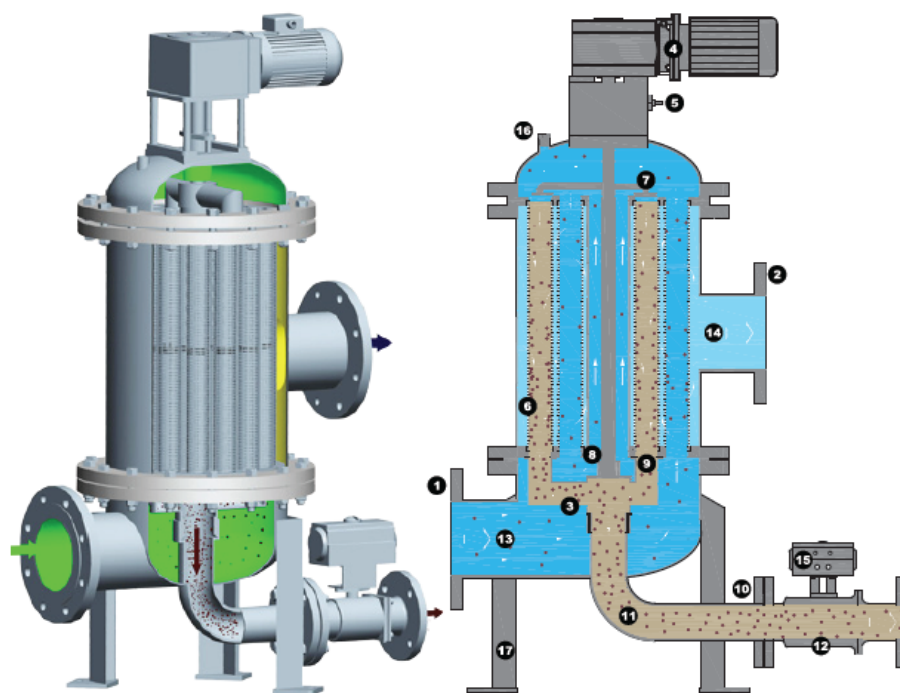
ABW Series Multi-cartridge Self-cleaning Filter (ABW Filter for short), a new generation self-cleaning filtration system independently designed by K-FLOW, is integrated with a number of slotted filter elements. When the filter elements are clogged, a specially designed back-flushing arm will clean the elements one by one. As the high-end self-cleaning filter, it is especially designed for customers who take good quality and high reliability into consideration firstly. The ABW filter consists of world-class top quality crucial parts, such as filter element, gear motor, control system, etc..

Compared with ordinary mesh type self-cleaning filter, ABW Filter has unparalleled advantages. It has rigid and durable V-SLOT filter element, highly uniform slot width, large filter area in single filter, super high flowrate up to 3000m³/h in single filter, fine filtration at low surface flow velocity, high reliability. It applies to the filtration of dirty water containing oil sludge type impurities, soft and viscous impurities, high content impurities, small amount of hairs and fibers.

ABW Filter's filtration rating ranges from 50-2000 micron and its line size is available from 2" to 24". ABW Filter has 3 sub-series: S series, as the large filter area filter, applies to high flowrate filtration or high precision filtration; M series, as the small filter area filter, applies to low flowrate filtration or rough grade filtration; T series are specially designed for super high flowrate at rough ratings. See the figure on page 3 to select the right series.

ABW Filter can remove the solid particles from various water resource and low viscosity liquid (e.g. machining coolant). It makes the fluid meet cleanliness requirement and protects downstream key equipments from clogging, abasing and fouling. It increases the key equipment running efficiency and service life. ABW Filter automatically works continuously on-line and reduces the downtime cost, maintenance cost and labor cost. ABW Filter is the advanced solution for the self-cleaning filtration of water and low viscous liquids.

FILTER STRUCTURE AND MAIN PARTS



MAIN PARTS

1	Inlet
2	Outlet
3	Cleaning Arm
4	Gear Motor
5	positioner
6	Filter Element
7	Cover Plate
8	Distribution Pipe
9	Cleaning Nozzle
10	Discharging Nozzle
11	Discharging Pipe
12	Cleaning Valve
13	Unfiltered Liquid
14	Filtrate
15	Actuator
16	Vent
17	Support Leg



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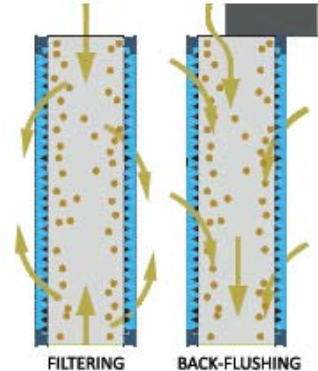
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WORKING PRINCIPLE

[Filtering] Liquid flows into the filter via the inlet, part of liquid flows directly through filter elements from the lower ends; another part of liquid flows through the distribution pipe and into the upper part of the filter and then flows into the filter elements from the upper and lower ends at the same time, and then flows through the internal surface of filter element and goes out from the outlet. Impurities are intercepted by the elements and the filter cake slowly accumulates, which leads to gradually pressure drop increasing between the inlet and outlet. It indicates that the filter cake reaches certain thickness, and the flux of filter element becomes lower.

[Back-flushing] When the preset pressure drop or time exceeds, the self-cleaning program is triggered. The gear motor drives the cleaning arm to aim at one element to partly cap the upper end of the element and connect its lower end to the cleaning nozzle. And then the cleaning valve opens and connect the element and discharging pipe. the differential pressure between the element's outside and discharging nozzle will make the filtrate back-flush the filter element, filter cake dislodged and be purged downward into the sewage pipe. After one element cleaned, the cleaning valve closes and the cleaning arm aims at the next one. When all filter elements cleaned, the entire back-flushing sequences are completed.

[Positioning] Positioning disc and cleaning arm are installed on the shaft driven by the gear motor. Each positioning hole on the disc matches each element and cleaning arm are corresponding to one hole. When one hole reaches the channel of positioning sensor, the sensor output the signal to stop the gear motor. The cleaning arm has aimed at one element at the same time. The cleaning valve opens for several seconds till the element is cleaned. Then the gear motor continues rotating. When the next hole on disc reaches the sensor channel, the gear motor will stop and the next element is cleaned.



TECHNICAL FEATURES AND ADVANTAGES

- Continuous automatic online filtration, no flow interruption when back-flushing, reducing downtime and maintenance cost
- Large filter area, low surface flow velocity, low pressure drop, accuracy fine filtration, less back-flushing frequency
- V-SLOT high performance filter element, accurate and uniform slot, efficient back-flushing, high strength structure, long service life over 10 years
- Impulse back-flushing one by one, high back-flushing intensity, less time consuming, less back-flushing water consumption
- Water flows in the filter element from both ends, which increases the flux, allows the water flow freely to reduce the clogging and avoids clogging at one dead end of the element
- Compact design, super high flowrate in single filter, saving installation space and construction costs prominently
- High integration without many valves, fittings and seals, high reliability and low running cost
- High reliability in automatic control system , friendly Interface, easy to adjust the running mode to fit the service condition

TYPICAL APPLICATIONS

- Applicable Fields: raw water treatment, water treatment systems, circulating cooling systems, steel, pulp and paper, mining, petrochemical, metal working, municipal facilities and etc..
- Applicable Liquid: groundwater, seawater, lake water, reservoir water, pond water, cooling water, chilled water, high and low pressure spray water, injection water, heat exchanging water, seal water, bearing cooling water, well water, circulating process water , machining coolant, cleaning agent, cleaning water.



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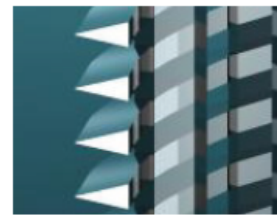
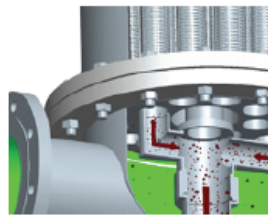
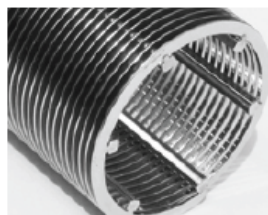
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V-SLOT HIGH PERFORMANCE PRECISION FILTER ELEMENT

ABW filter adopts V-SLOT precision filter element of the world-class top quality with following advantages:

- Filtration rating ranges from 50 to 2000 microns, highly uniform filtration slots with deviation less than 5 micron
- High opening rate, higher flow rate in same filter area, higher dirt holding capacity, more compact structure
- 316L material, excellent corrosion resistance. SuperDuplex and Ti2 are available, especially suitable for sea water
- Smooth inner surface, V-shaped slot, less clogging chance, excellent back-flushing performance, steady flowrate.
- Suitable for filtration of inferior liquids containing knotty impurities such as oli sludge, gel and microfiber.
- Strengthened structure, no deformation when pressure drop increasing, stable particle bridging, higher removing efficiency
- High resistance against the forward and reverse pressure, extremely long service life more than 10 years

Rating	mesh	300	200	150	120	100	75	60	50	40	30	25	20	15	10	7
Conversion	μm	50	75	100	125	150	200	250	300	375	500	600	750	1000	1500	2000



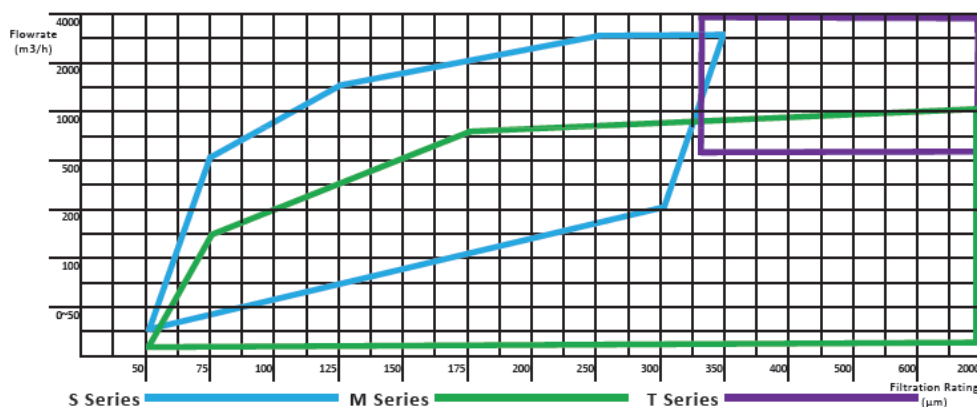
ACS™ AUTOMATIC SELF-CLEANING CONTROL SYSTEM

ABW Filter's ACS™ self-cleaning control system integrates the parallel control with both pressure drop and time-set cleaning. Customers can control the filter to run efficiently according to the service condition. DCS remote control access is available if custom-made design required. Pressure drop cleaning mode applies to most conditions and it is the most efficient cleaning triggering mode, because the pressure drop reflects the filter cake accumulation or the clogging of filter elements. When the pressure drop reaches the set value, the self-cleaning action begins. Generally we suggest 0.5 bar as the cleaning pressure drop value. And it can be adjusted between 0.1 and 1 bar according to the specific condition. The time-set cleaning mode can be adjusted from 0 to 24 hours. If the pressure drop cleaning mode malfunctions, the time-set mode still works, which acts as the final safety protection. The cleaning cycle should be set close to the average period as under the pressure drop cleaning mode.

ACS™ has two types pressure drop instrument. Pressure drop transmitter can output the real-time pressure drop, has high sensitivity and reliability and is good for DCS remote monitoring; The pressure drop switch specially designed by K-FLOW, has high sensitivity and long-term reliability. It has two pressure drop set-points. The setting precision is ± 5 Kpa. One setting point is for cleaning pressure drop value setting (ex. 0.5 bar) and the other one is for the alarm when pressure drop higher than normal, which can be connected with DCS control system.



S SERIES, M SERIES, T SERIES RATING AND FLOWRATE RANGE



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MAIN SPECIFICATION

Sub-series	S Series, M Series, T Series
Applicable Liquid	Water and liquid of low viscosity(<40cps), contaminant <300ppm
Lowest Working DP	Differential pressure between the outlet and discharging outlet >1.5bar
Filtration Rating	50-2000 micron
Design Pressure Class	6bar / 10bar / 16bar / 20 bar
Design Temperature	0-95 °C
Flowrate Range	17-3000 m³/h
Filter Area	4970 cm² - 89530 cm²
Self-cleaning DP	0.5 bar – 0.7 bar
Control System	Parallel control of differential pressure and time
DP Instrument	Differential pressure transmitter, differential pressure switch
Gear Motor	120W, three phase, 380V, protection class IP55, CCWU
Inlet and outlet size	2"-24"
Connection Standard	Flange (ANSI B16.5)
Filter Element	V-SLOT series slotted screen, material 316L / SuperDuplex / Ti2
Wet Part Material	304 / 316L / CS, special material available (such as 904L, duplex S.S.)
Inner Lining	Epoxy, PA11 for CS Housing or special anti-corrosion requirement
Housing Sealing Material	NBR (Standard / VITON (FKM)
Discharging Valve	Pneumatic stainless steel valve or butterfly valve, protection class IP65
Facility Supply	Compressed air: clean and dry, 4-6 bar, 380V AC, 24V DC

FLOWRATE SELECTION CHART

Model	50µm	75µm	100µm	125µm	150µm	175µm	200µm	250µm	300µm	350µm	400µm	500µm	600µm
M300	17	33	52	70	93	121	136	173	219	248	271	280	280
M400	21	42	65	88	117	151	170	216	274	310	339	380	380
M501	34	67	103	140	187	242	271	345	438	495	543	560	560
M502	49	96	149	202	269	348	390	496	630	700	700	700	700
M600	61	121	188	255	339	438	492	626	794	898	984	1090	1090
M700	78	154	239	325	432	559	628	799	1013	1145	1255	1465	1492
S300	34	66	103	140	187	242	271	280	280	280	280	280	280
S400	42	83	129	175	233	302	339	380	380	380	380	380	380
S501	68	133	207	281	374	483	490	490	490	490	490	490	490
S502	97	191	297	403	537	695	700	700	700	700	700	700	700
S600	122	241	375	509	677	876	983	1090	1090	1090	1090	1090	1090
S700	156	307	478	649	864	1118	1254	1492	1492	1492	1492	1492	1492
S801	194	382	595	807	1074	1389	1559	1762	1762	1762	1762	1762	1762
S802	236	465	724	982	1307	1691	1898	2062	2062	2062	2062	2062	2062
S1001	270	532	827	1123	1494	1933	2169	2500	2500	2500	2500	2500	2500
S1002	304	598	931	1263	1681	2175	2441	3100	3100	3100	3100	3100	3100

Note: Unit m3/h, applicable for common water, initial pressure <0.02MPa, add safe margin for dirty water



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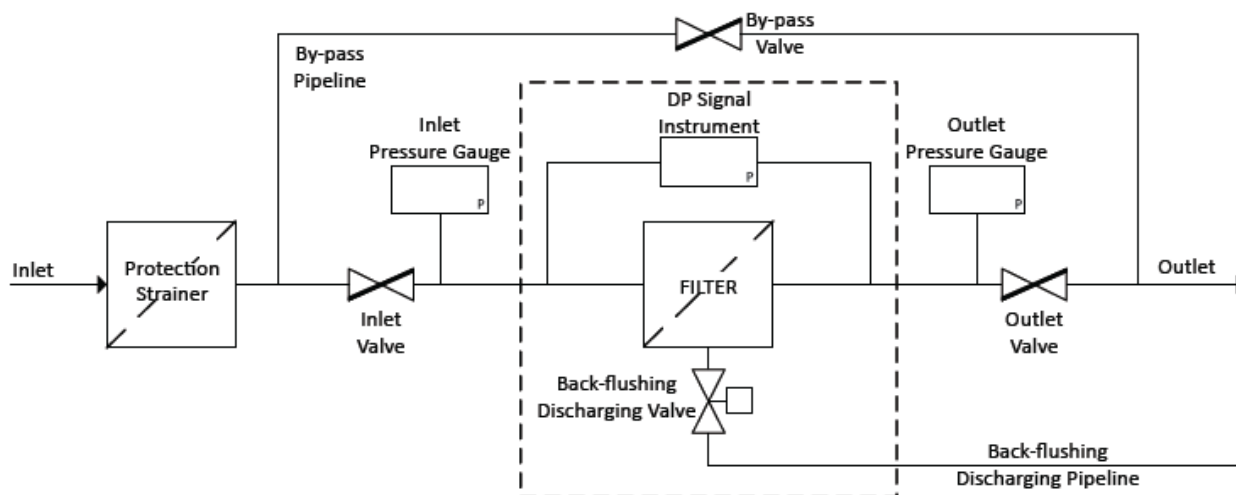
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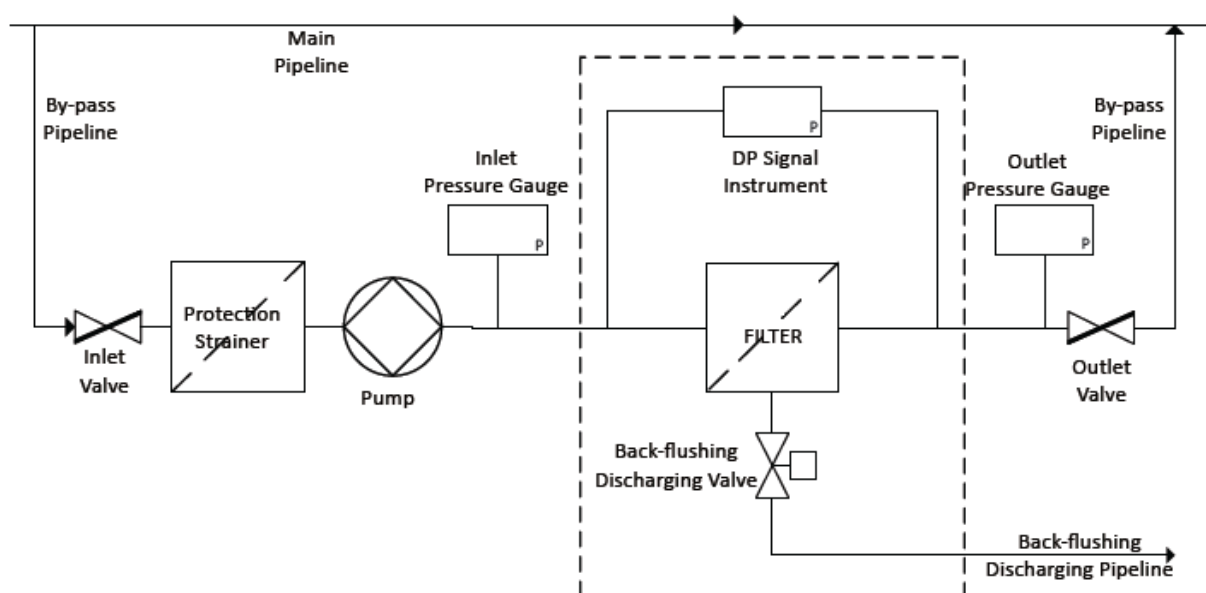
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TYPICAL MAIN PIPELINE INSTALLATION DIAGRAM



TYPICAL BY-PASS PIPELINE INSTALLATION DIAGRAM



PROTECTION STRAINER

It is necessary to install the protection strainer before the pump or ABW filter to remove the large particles or impurities like rope and yarn, which may block the filter's moving parts. Usually, ABW filter with ratings 50~600 μ m should be protected by a 3mm strainer, while ABW filter with ratings 600~2000 should be protected by a 8mm strainer. K-FLOW SF series strainers with line size from 1" to 48", large filter area and easy operation are the ideal protection strainer for the ABW filter.



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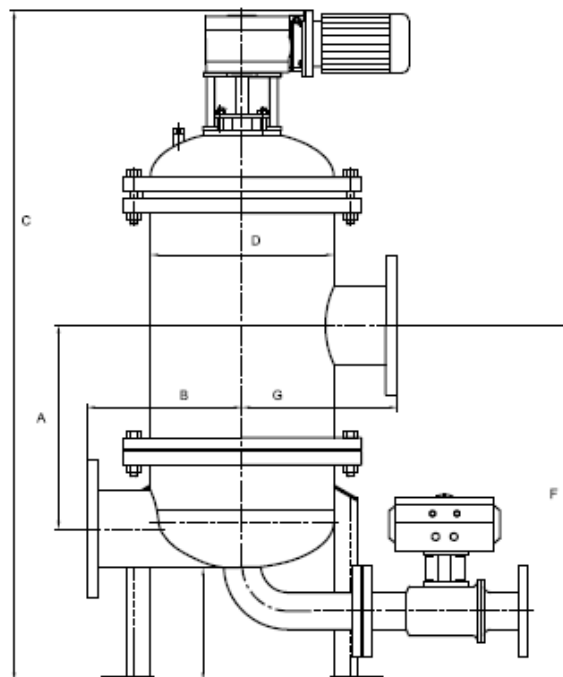
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DIMENSION CHART

MODEL	Inlet/Outlet	A	B/G	C	D	F
M300	DN80-DN200	360	312	1480	325	650
M400	DN80-DN250	435	350	1520	400	665
M501	DN100-DN300	465	400	1580	500	675
M502	DN100-DN300	465	400	1580	500	675
M600	DN125-DN350	700	450	1630	600	825
M700	DN125-DN400	635	500	1690	700	1150
S300	DN50-DN200	535	312	1830	325	825
S400	DN80-DN250	560	350	1870	400	850
S501	DN100-DN300	585	400	1930	500	875
S502	DN100-DN300	585	400	1930	500	875
S600	DN125-DN350	610	450	1980	600	890
S700	DN125-DN400	635	500	1980	700	1150
S801	DN125-DN500	660	550	2130	800	1175
S802	DN125-DN500	660	550	2130	800	1175
S1001	DN150-DN500	685	600	2150	900	1190
S1002	DN250-DN600	710	750	2250	1000	1210



ABW FILTER ORDER CODE GUIDANCE

ABW Ordering code example: ABWS-40F-150-CR-SD-N-500

1	2	3	4	5	6	7	8
ABW	S	40F	150	CR	SD	N	500

1	Filter Type	5	Material	8	Filtration Rating
ABW	ABW Series Multi-cartridge Self-cleaning Filter	C	Carbon steel	001	1 micron
		S	304 S.S.	010	10 micron
2	Sub-series	6	316 S.S.	100	100 micron
S	S Series	6L	316L S.S.		
M	M Series	CR	Carbon steel + RILSAN		
T	T Series				

3	Inlet and Outlet Size	6	Element Material
2F	2"	S	304 S.S.
2.5F	2.5"	6	316 S.S.
3F	3"	6L	316L S.S.
4F	4"	SD	Supper Duplex
~	~		
40F	40"		

4	Pressure Class	7	Cover Seal Material
150	ANSI 150LB	N	NBR
300	ANSI 300LB	B	Buna-N
		E	EPDM
		V	Viton
		G	Spiral Wound gasket with 304SS + Graphite
		F	Spiral Wound gasket with 304SS + Teflon
		NA	NON-ASBESTOS



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