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Automatic disc filters

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WATER FILTRATION FROM MECHANICAL IMPURITIES. WHAT IS IT AND WHY IS IT NEEDED?

Water filtration from mechanical impurities is the process of removing particles and contaminants of various sizes that may be in water. These impurities can include sand, dirt, rust, metal particles, and other materials commonly found in water from various sources such as rivers, lakes, wells, or the municipal water supply.

Filtration of water from mechanical impurities is crucial because these particles can be harmful to human health or the equipment used for water treatment. They can cause clogging or damage to filters, pumps, and other devices, as well as serve as a source of water contamination, which can reduce its quality for drinking or various processes.

Therefore, filtering water from mechanical impurities is the first step in water treatment, preceding other purification methods such as filtration, disinfection, or reverse osmosis, ensuring a more effective and safe purified water.

The most commonly used types of water filtration filters for mechanical impurities in households and industries are:

- Mesh Filters: These filters allow water to pass through a mesh or screen with fine openings, trapping mechanical particles. They can be easily cleaned or flushed to remove accumulated deposits.
- Cartridge Filters: These filters utilize cartridges containing materials that trap water particles of specific sizes. Cartridges can be replaced or flushed to maintain filter efficiency.
- Bag Filters: Bag filters work by passing water through a bag with a fine porous structure, which traps mechanical particles and contaminants. Bags are typically made from various materials like nylon, polyester, or synthetic fabrics and offer different filtration levels depending on pore size and material density.

Choosing a specific type of filtration system depends on water purification needs, the volume of impurities, and other parameters that need consideration when selecting a water filtration system for mechanical impurities.

Filters for removing mechanical impurities are used in various industrial sectors, including food, pharmaceuticals, oil, and even in the aerospace industry to ensure clean water for manufacturing or life support.

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Automatic disc filters are designed to purify water from mechanical solid contaminants, algae, various particles such as sand, scale, rust, algae, etc. The filters are excellent for filtering groundwater, water from open sources, as well as for sea water filtration (special version).
The filter element is polypropylene disks tightly compressed together, each of which has special conical grooves of a set width and depth (depending on the required filtration rating). The filters are washed automatically with clean water backwards.

Main advantages:

- high efficiency;
- low water consumption for own needs;
- simple internal structure and reliability;
- low maintenance;
- wide range of productivity with compact dimensions (one module from 6 to 300 m^3/h);
- Chemical-resistant materials;
- full automation of the filtration and washing process;
- low cost.

The operation of the installation is controlled by a programmable controller.
Options for initiating flushing: by pressure difference, time, or whichever comes first, starting flushing from a remote signal.

Operating principle:

Disc water filters are equipped with a special disc filtering element. It consists of a set of relief polymer disc rings that, when compressed, form a volumetric mesh-like 3D structure that retains undissolved particles in the water.
At the same time, the working surface area of the block (cartridge) corresponds to the total area of all disc rings in the package. This makes the cleansing device more compact while increasing the cleaning efficiency.

Filtration area	
block2″	1600 sm^2
block 3″	1600 sm^2
block 4″	3200 sm^2

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During the filtration mode (Service), water passes through tightly compressed discs (from outside to inside), while undissolved particles remain in the inter-disc space.

Filter’s cleaning

The filter's cleaning (Backwash) is automatically performed by changing the water flow direction to reverse (Back Wash). Filter cleaning occurs using clean water from the clean water collector, allowing the delivery of clean water to consumers to continue uninterrupted.

The reverse flow is pressurized from the inside out, causing the compression spring to compress, expanding the disks and increasing the gap in the inter-disc space. This results in flushing and discharging all previously trapped particles into the sewer.

Typically, the cleaning of each filter block takes about 10 seconds. On average, the water consumption for self-use per block amounts to 0.2% of its capacity.

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Model Characteristics

Part No.	Model No.	Collector Size	Filtration grade(μm)	Flow (m3/hour)	Dimensions (mm)			Weight (kg)
					Length	Width	Height	
1431201	HF-A2-1	3"	20	6～8	150	80	46	50
1431202			50	8～15				
1431203			100	15～18				
1431204			130	18～22				
1431205			200	20～25				
1431301	HF-A2-2	3"	20	12～16	80	88	130	102
1431302			50	16～30				
1431303			100	30～36				
1431304			130	36～45				
1431305			200	40～55				
1431401	HF-A2-3	3	20	18～24	108	97	130	115
1431402			50	24～45				
1431403			100	45～55				
1431404			130	55～68				
1431405			200	60～75				
1421401	HF-A2-4	4"	20	24～32	130	97	130	120
1421402			50	32～60				
1421403			100	60～72				
1421404			130	72～90				
1421405			200	80～100				
1431501	HF-A2-5	4"	20	30～40	160	97	130	150
1431502			50	50～75				
1431503			100	75～90				
1431504			130	80～110				
1431505			200	100～125				
1431601	HF-A3-1	3"	20	8～10	160	90	46	60
1431602			50	10～18				
1431603			100	15～25				
1431604			130	18～28				
1431605			200	20～35				
1431701	HF-A3-2	3"	20	16～20	80	90	130	98
1431702			50	20～36				
1431703			100	30～50				
1431704			130	36～56				
1431705			200	40～70				

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Part No.	Model No.	Collector Size	Filtration grade(µm)	Flow (m3/hour)	Dimensions (mm)			Weight (kg)
					Length	Width	Height	
1431801	HF-A3-3	4"	20	24～30	110	97	140	130
1431802			50	30～54				
1431803			100	45～75				
1431804			130	54～84				
1431805			200	60～105				
1431901	HF-A3-4	4"	20	32～40	140	97	140	160
1431902			50	40～72				
1431903			100	60～100				
1431904			130	72～112				
1431905			200	80～140				
1432001		4"/6"	20	40～50	170	97	140	190

* It's possible to manufacture any manifold, either from plastic or metal, according to the specifications provided

Possible filtration ratings:

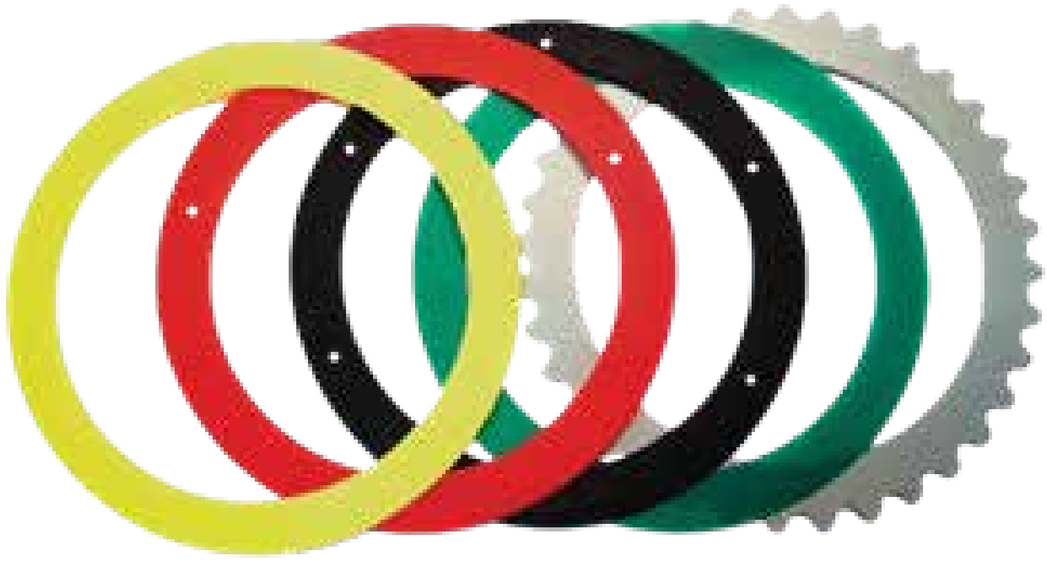
200µm (75 mesh)

130µm (120 mesh)

100µm (150 mesh)

100µm (300 mesh)

20µm (625 mesh)



Backwash Flow Intensity		Water consumption for backwashing within 10 seconds	
Inch	l/s/m²	Inch	l/s/m²
2	2.18	2	24.88
3	3.18	3	34.88