

Mechanically Cleaned Filters and Strainers

DCF, MCF, MCS

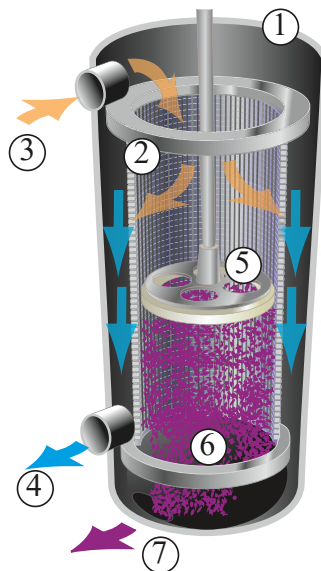
Unbeatable reliability
with measurable ROI

PERMANENT MEDIA WITH DISC CLEANING TECHNOLOGY

- Elimination or reduction in disposable filter bags or cartridges for reduced operator handling inventory costs and landfill waste
- Reduction in product loss, more thorough contaminant purge
- Reduction or elimination of operator intervention for safer operation
- Virtually maintenance free, near 100% uptime
- Compact design, lower capital cost to fit most installations
- Choice of pneumatic, motor drive or magnetic actuation
- Stainless steel screens from 15 micron slots to 1/4" perforations to handle a wide range of filtration needs
- Short payback period and increased ROI



Eaton's unique spring loaded cleaning disc (shown here in an MCS-500) ensures intimate contact with the filtration screen to thoroughly and uniformly clean the media.



TYPICAL APPLICATIONS

- paper coatings • pcc/gcc slurries • phenolic resins • detergents
- petroleum based greases • ethanol processing • hot fry oils
- cip fluids (sodium hydroxide) • starch • lime slurries • adhesives
- curtain coaters • nutraceuticals • machining coolants • paint
- ink • chocolate • edible oils • tallow

Collect, concentrate, expel

Eaton's mechanically cleaned filters are based on a simple concept: A cylindrical stainless steel housing (1) contains a filter screen (2); unfiltered liquids enter the inlet (3); solids are deposited on the interior surface of the filtration screen; and filtered fluid exits at the outlet (4).

When the media requires cleaning (based on time, differential pressure, or manual selection), a spring loaded cleaning disc travels down and up, wiping the media clean of concentrated solids in both strokes. Once the debris is removed from the slotted screen, the cleaning disc directs the contaminant to the bottom of the housing (6) and out of the flow path (7). This cleaning process happens while the filter remains in service, thereby maintaining process efficiency and dramatically reducing loss of valuable product.

Choice of actuation method

Pneumatic

The cleaning disc can be actuated by air pressure alone (60 to 80 psi @ 5 cfm). DCF-800 and DCF-1600 models feature single or twin air cylinders. The smaller DCF-400 is equipped with a single cylinder. The DCF-3000 model is only available in twin actuator design.

Pneumatic with magnetic coupling

MCS- and MCF-Series utilize rare earth magnets to eliminate the need for lid thru-holes and their associated seals. This cost-effective method reduces maintenance and lengthens operating life.

Motorized

The DCF-2000 Series uses a motor to drive the cleaning disc through higher viscosity fluids and other challenging conditions.



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DCF-Series

When processing water and water-like liquids where a low initial investment is demanded, this series delivers tremendous benefits.



DCF-1600



DCF-800



DCF-1600 with twin actuation



DCF-2000

DCF-2000-Series

Designed specifically for the needs of the pulp and paper industry, the DCF-2000 features a rugged motorized cleaning action, which can handle the continuous processing requirements of protecting critical wet-end coating operations.

High Flow MCS Strainer

Engineered to conserve valuable process water while protecting costly equipment from debris, the MCS features fast-cleaning magnetically coupled actuation. This high flow strainer uses a magnetically coupled cleaning disc, which eliminates the need for cover thru-holes and their associated seals.



MCS-500

MCF-824



MCF 824-Series

The MCF features a magnetically coupled cleaning disc, which eliminates the need for lid thru-holes and their associated seals. The MCF was designed specifically for the most challenging process liquids and conditions, and features the fastest cleaning action of the mechanically cleaned family.

	DCF-400	DCF-800	DCF-1600	DCF-3000	DCF-2000	MCF-824	MCS-500	MCS-1500
		pneumatically driven			motor driven	pneumatically driven with magnetic coupling		
Total Volume - gal (l)	0.944 (3.5)	3.9 (14.8)	11 (41.6)	49.2 (186.2)	11 (41.6)	11 (41.6)	18.7 (70.8)	49.2 (186.2)
Flow Rate Range at 100 µm - gpm (m³/h)	2-15 (0.45-3.5)	15-60 (3.5-13.5)	60-180 (13.5-40)	max. 1100 (max. 250)	30-200 (6.8-45.4)	30-180 (6.8-40)	30-180 (6.8-40)	max. 1100 (max. 250)

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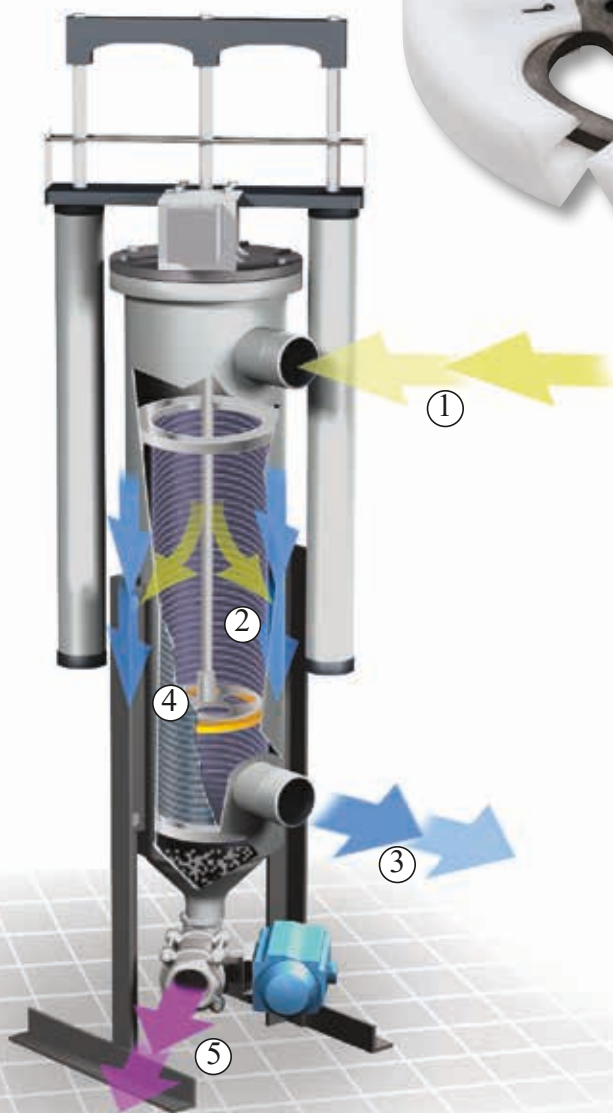
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Disc Power



Our unique circular cleaning disc design (MCF 824-Series design shown) ensures intimate contact with the screen to thoroughly and uniformly clean the media.



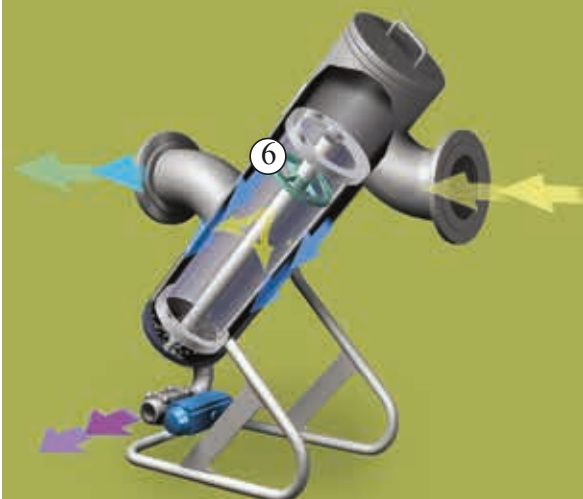
In Eaton's DCF mechanically cleaned filter unit, incoming fluids (1) are channeled from the interior cylinder through a wire screen (2) to the outer cylinder and out the discharge port (3). A cleaning disc (4) travels down and up inside the cylinder to periodically clear the filter screen. Particles are collected at the bottom of the housing where they can be discharged (5).



How it works

Eaton's mechanically cleaned filters are based on a simple concept: A cylindrical stainless steel housing contains a filter screen; unfiltered liquids enter the inlet; solids are deposited on the interior surface of the filtration screen; and filtered fluid exits at the outlet.

When the media requires cleaning (based on time, differential pressure, or manual selection), a spring loaded cleaning disc travels down and up, wiping the media clean of concentrated solids in both strokes. Once the debris is removed from the slotted screen, the cleaning disc directs the contaminant to the bottom of the housing and out of the flow path. This cleaning process happens while the filter remains in service, thereby maintaining process efficiency and dramatically reducing loss of valuable product.



Eaton MCF and MCS operate in much the same manner as DCF units, but add the advantage of a magnetically coupled disc mechanism (6). This unique design eliminates the need for internal seals and reduces maintenance costs.

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TECHNICAL INFORMATION

Mechanically Cleaned Filters & Strainers



	DCF-400	DCF-800	DCF-1600	DCF-3000	DCF-2000	MCF-824	MCS-500	MCS-1500
	pneumatically driven				motor driven	pneumatically driven with magnetic coupling		
Approx Weight - lbs (kg)	35 (16)	75 (34)	215 (97.5)	639 (290)	564 (256)	200 (91)	350 (159)	775 (352)
Service Height - in (mm)	62 (1575)	69 (1753)	102 (2591)	136 (3454)	80 (2032)	64 (1626)	66 (1676)	102 (2591)
Total Volume - gal (l)	0.94 (3.5)	3.9 (14.8)	11 (41.6)	49.2 (186.2)	11 (41.6)	11 (41.6)	18.7 (70.8)	49.2 (186.2)
Purge Chamber Capacity - gal (l)	0.0313 (0.119)	0.2 (0.74)	1.5 (6)	1.1 (4.1)	1.5 (6)	1.3 (5)	0.56 (2.1)	1.1 (4.1)
Filtration Surface Area - in ² (cm ²)	112 (722)	264 (1704)	610 (3995)	1508 (9729)	610 (3995)	610 (3995)	610 (3995)	1508 (9729)
Flow Rate Range at 100 µm - gpm (m ³ /h)	2–15 (0.45–3.5)	15–60 (3.5–13.5)	60–180 (13.5–40)	to 1100 (to 250)	30–200 (6.8–45.4)	30–180 (6.8–40)	30–180 (6.8–40)	to 1100 (to 250)
Temperature max. - °F (°C)	350 (177)	350 (177)	350 (177)	350 (177)	350 (177)	180 (82)	180 (82)	180 (82)
Pressure max. - psi (bar)	300 (21)	150 (10.5)	150 (10.5)	150 (10.5)	150 (10.5)	150 (10.5)	150 (10.5)	150 (10.5)

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Mechanically Cleaned Filters and Strainers

Cleanable Media and System Options

Selection of media retentions and degree of automation is easy with Eaton mechanically cleaned filtration systems. Choose from 15-micron filter elements to 1/4" strainers. Manual to semi-automatic to full microprocessor controlled systems can be configured to suit specific operations, and the range of internal and external components help make Eaton systems a logical choice for long-term efficiency and cost control.

A range of control systems can be employed to actuate and monitor mechanically cleaned systems. Microcomputer controls can also be integrated with system-wide operations.

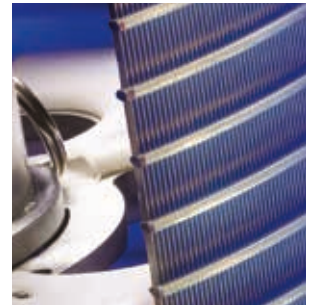


MEDIA ELEMENTS



Slotted Wedge Wire

DCF/MCF/MCS filter screens feature special wedge wire that is honed perfectly circular to guarantee contact with the cleaning disc so the slot openings are smallest at the screen's surface. This design helps prevent particle plugging of the slot openings while assuring total rated solids removal.



Perforated

Perforated screens feature precise and uniform perforation patterns for complete removal of larger solids. These elements are ideal for straining large volumes of viscous fluids. 1/16", 1/8", and 1/4" perforations are available.



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Mechanically Cleaned Filter Media and Options

MEDIA RETENTIONS

Slotted Wedge Wire

Inch	Micron	Mesh	% Open Area
.0006	15	—	2
.001	25	—	3
.0015	38	400	5
.002	50	325	6
.003	75	200	9
.004	100	150	12
.006	150	100	17
.007	180	80	19
.008	200	70	21
.009	230	60	23
.015	380	40	33
.024	610	30	44
.030	750	20	50
.045	1140	15	60

Perforated

Inch	Micron	Mesh	% Open Area
1/16	1575	12	40
1/8	3175	6	40
1/4	6350	3	57

Additional retentions available. Consult Eaton.

CONTROL SYSTEM CHOICES

The control options for mechanically cleaned filters are as broad as the applications they serve. Available controllers include:



PLC controls deliver programmable stand-alone performance. A panel mounted HMI allows for easy parameter changes and system monitoring. Power isolation design reduces electrical shock hazard. PLC controls can also integrate into existing control networks. Eaton, Allen Bradley and Siemens are standard options. Hardware is mounted in a NEMA4 enclosure (stainless steel optional).

Continuous Cleaning Valve (CCV) is the standard configuration where the cleaning disc continuously cycles, driven by shop airflow. Purge is controlled by a manual valve or push-button.

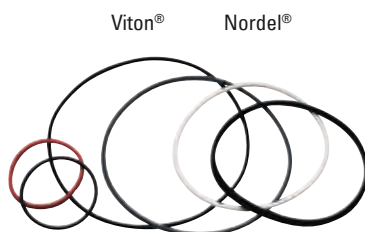


The low cost smart relay option allows for timed clean or timed clean and purge. Parameter changes are made via an integrated display. Hardware is mounted in a NEMA4 enclosure (stainless steel optional). Dual pneumatic timers are also available. As standard, hardware in mounted in a NEMA4 enclosure (stainless steel optional).

DISC AND SEAL CHOICES

To meet the widest range of operating conditions and process liquid characteristics, Eaton mechanically cleaned systems are available with a number of lid and element seal elastomers and cleaning discs.

Lid and element seals



Cleaning discs



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