amiad® WATER SYSTEMS | FILTOMAT

MCFM Filters

Automatic continuous self-cleaning filter for high flow rates and high dirt loads

flow rate per unit	filtration degrees	reject water volume	minimum operating pressure
up to 500 m^3/h (2200 US gpm)	3000–15 micron	8-20 m^3/h (35-88 US gallon)	0.4 bar (5.8 psi)

features:

- Designed for heavy dirt-load applications
- Very affective in filtering out fibrous and sticky particles
- Outstanding results even in low pressure lines
- Electronically controlled self-cleaning algorithm responding to dirt-load variations in real time
- Cost effective solution for wide range of high dirt-load applications
- Compact design supporting high flow rates
- Easy to install, operate and maintain

* For filtration degree of 30 micron and finer, minimum working pressure is 21 psi (1.5 bar)

How the FILTOMAT MCFM Filters Work

General

Amiad's FILTOMAT MCFM filters are automatic filters with an optional continuous self-cleaning mechanism designed for high flow rates and heavy dirt loads of fibrous and sticky particles.
The "MCFM" models support flow rates of up to 750 m^3/h (3300 gpm), in filtration degrees of 3000 down to 15 micron and inlet/outlet diameters of 4"-12".
The filtration process begins when raw water flows into the Filter Inlet (1) and through the coarse screen (2). Here, the water is pre-filtered in order to protect the cleaning mechanism from large debris. The water then passes on the inner surface of the fine screen; dirt particles are trapped and accumulate inside the filter while clean water flows out of the filter outlet (7).

The Self-Cleaning Process

The self-cleaning process of the "MCFM" filters is operated by a programmable logic controller (PLC). The PLC algorithm shifts the cleaning process, back and forth, between the following modes according to the actual real-time dirt-load on the filter:

1. Pressure Differential and/or Time Interval – This mode is active in inconsistent, moderate dirt-load conditions. The cleaning process is activated according to the reading of the pressure differential across the filter's screen or by a pre-set time interval.

2. Continuous Flushing – This mode is active in persistent high dirt loads conditions. The cleaning process is constantly active and the filter's PLC controls its intensity.

3. Super Flush – This mode is active when the Continuous Flushing mode is not sufficient to maintain a proper low pressure differential across the screen. A secondary Super Flush Valve (13) is activated to increase the suction force across the screen during flushing.

4. Reduced Flow – This mode is active (mostly momentary) when the Super Flush mode is not sufficient to maintain a proper low pressure differential across the screen. The flow of water through the filter's outlet is reduced and therefore the pressure in the filter is increased, this enables the cleaning mechanism to cope with the exceptional momentary heavy dirt-load.

The self-cleaning process continuously releases a small quantity of water to the atmosphere through the Flush Valve (9), creating a steady back-flush stream through the Fine Screen (6) the Nozzles (5), the Collector Pipe (4), the Drain Chamber (8) and out of the filter through the flush valve. The back-flush stream creates a reverse flow at the nozzles, generating a spot cleaning of the fine screen inner surface.

The Electric Motor (3) rotates the Collector Pipe and the nozzles, while the Piston (12) moves the collector pipe back and forth. This spiral movement of the collector pipe ensures that the suction nozzles sweep the entire inner surface of the fine screen.

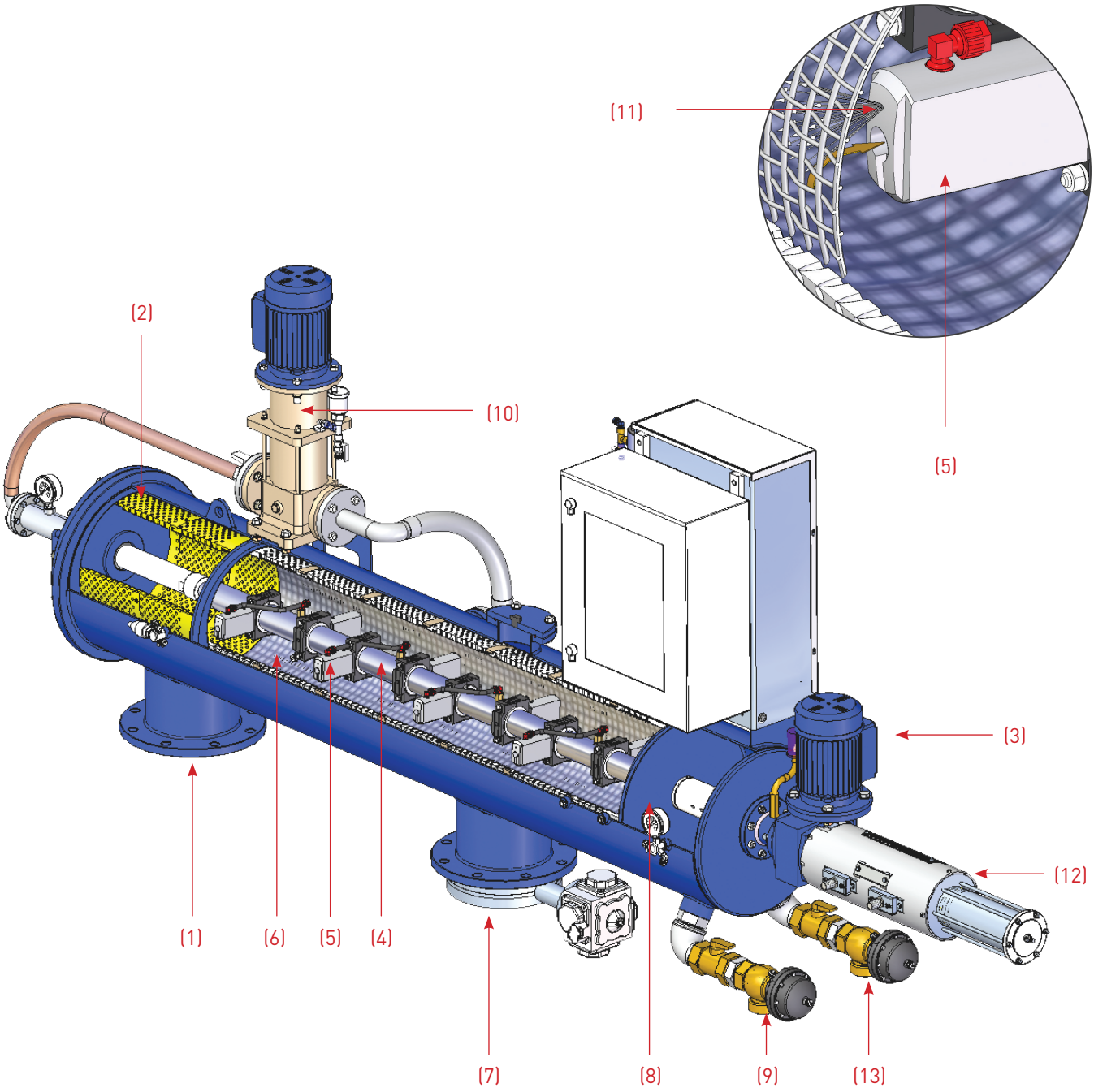
Since the MCFM is designed for handling heavy dirt loads of fibers and sticky particles, a high pressure jet stream Injection Nozzle (11) is incorporated with the cleaning mechanism adjacent to each suction nozzle. The Booster Pump (10) injects a high pressure jet stream of filtered water through these nozzles during the self-cleaning process, onto the fine screen, enabling the removal of sticky materials from the screen.

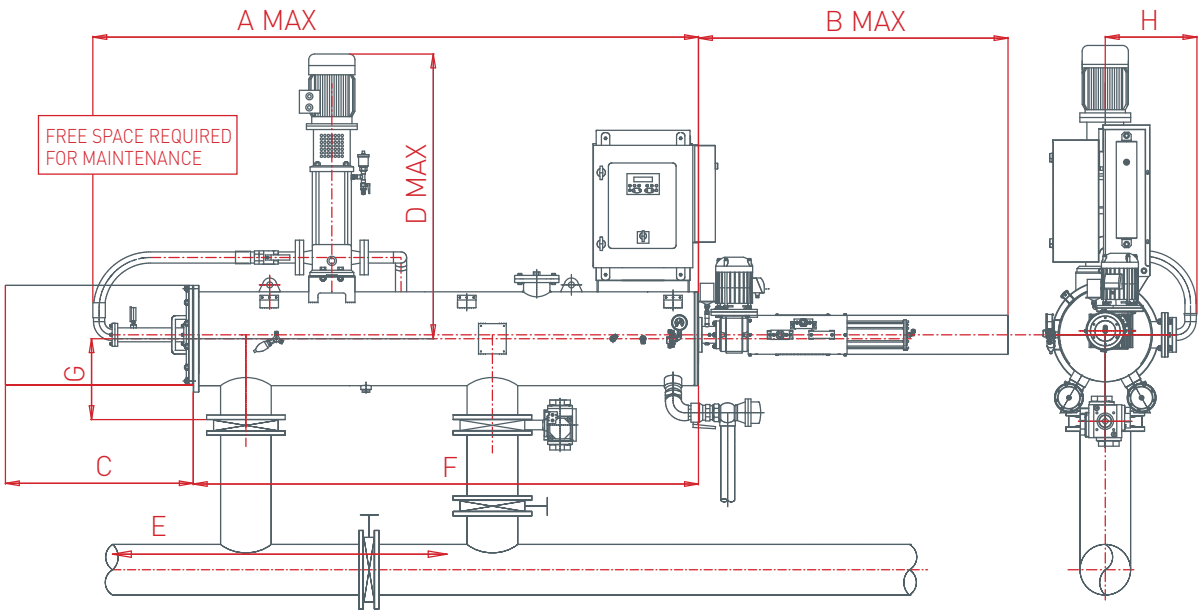
“MCFM SERIES” Models

Amiad’s “FILTOMAT MCFM SERIES” consists of the following models:

MCFM-8000 supporting flow-rates of 375 m³/h (1650 US gpm)

MCFM-12000 supporting flow-rates of 500 m³/h (2200 US gpm)





Dimensional Drawing

This is a conceptual installation drawing. Note that piping is not included.

FILTER TYPE	A		B		C		D		E		F		G		H	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
MCFM-8000	2195	86.4	1340	53	1100	44	910	36	1067	42	1760	70	350	14	400	16
MCFM-12000	2620	103	1340	53	1600	63	1250	49	1067	42	2187	86	350	14	400	16

Inlet/Outlet diameter:
MCFM-8000: 4", 6", 8",
MCFM-12000: 6", 8", 10"

Technical Specifications

	MCFM 8000			MCFM 12000		
Filter Type	**4" MCFM-8000**	**6" MCFM-8000**	**8" MCFM-8000**	**6" MCFM-12000**	**8" MCFM-12000**	**10"MCFM-12000**
General Data						
Maximum flow rate*	120 m^3/h (528 US gpm)	250 m^3/h (1100 US gpm)	375 m^3/h (1650 US gpm)	250 m^3/h (1100 US gpm)	375 m^3/h (1650 US gpm)	500 m^3/h (2200 US gpm)
Inlet/Outlet diameter	4" (100 mm)	6" (150 mm)	8" (200 mm)	6" (150 mm)	8" (200 mm)	10" (250 mm)
Filtration degrees	3000, 1500, 800, 400, 200, 150, 120, 100, 80, 50, 40, 30, 25, 15 micron					
Min. working pressure	0.4 bar (5.8 psi) 1.5 bar (21 psi) for filtration degree of 30, 25, 15 micron					
Max. working pressure	10 bar (150 psi)					
Max. working temperature	65°C (149°F)					
weight [empty]**	410 kg (904 lb)	415 kg (915 lb)	420 kg (926 lb)	465 kg (1025 lb)	470 kg (1039 lb)	480 kg (1058 lb)

* Consult Amiad for optimum flow depending on filtration degree & water quality.
** Due to the wide range of elements, the weight stated is approximate only.

Flushing Data		
Minimum flow for flushing (at 2 bar-30 psi)	8-20 m^3/h (35-88 US gpm)	8-20 m^3/h (35-88 US gpm)
Flush valve	2 X 50 mm (2 x 2")	2 X 50 mm (2 x 2")
Flushing modes	DP/Time interval, continuous, super-flush, reduced flow	DP/Time interval, continuous, super-flush, reduced flow

* Consult Amiad for lower or higher flow-rates

Engineering Data

Screen Data		
Filter area	Flat screen = 4,785 cm^2 (742 in^2) 4-layer screen = 8,192 cm^2 (1,270 in^2)	Flat screen = 6,954 cm^2 (1078 in^2) 4-layer screen = 12,126 cm^2 (1880 in^2)
Screen types	Flat, 4-layer	Flat, 4-layer

***Construction Materials**	
Filter housing	Epoxy-coated carbon steel 37-2. (Stainless steel 316 on request)
Filter lid	Epoxy-coated carbon steel 37-2. (Stainless steel 316 on request)
Cleaning mechanism	Plastic and stainless steel 316l
Flush valve	Brass, stainless steel 316, BUNA-N
Seals	BUNA-N

* Amiad offers a variety of construction materials. Consult Amiad for specifications.


Municipal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