MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.FiltrationGroup.com

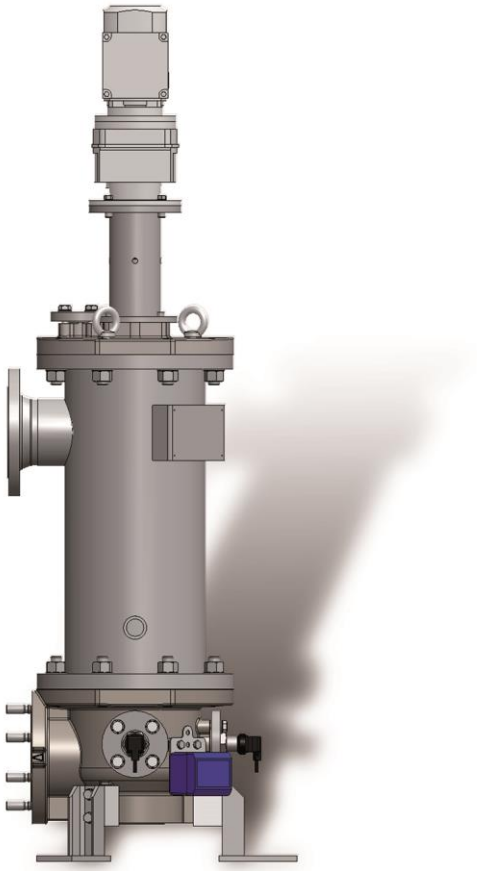
Filter module
AF 43

Nominal pressure 16 bar, nominal temperature 180 °C; nominal width DN 80 to DN 100/ANSI 2" to 4"

1. Features

Special demands are made on filter technology in process technology. With the modular metal-edge filter series AF 43 Filtration Group is setting new benchmarks in filter technology. The innovative filter concept provides an enhanced filter performance with optimised flow conduction and increased dirt pick-up capacity. At the same time, the new Filtration Group metal-edge filter series AF 43 combines different mechanical cleaning concepts, thus securing maximum cleaning performance and the chance to choose the optimum filter medium for your process from three different media.

Applications for the pioneering concept can be found in the petrochemical industry as well as in the production and processing of highly viscous pastes. Positive feedback has already been received from the field of paints, varnishes and pastes, and for the filtration of dispersions.



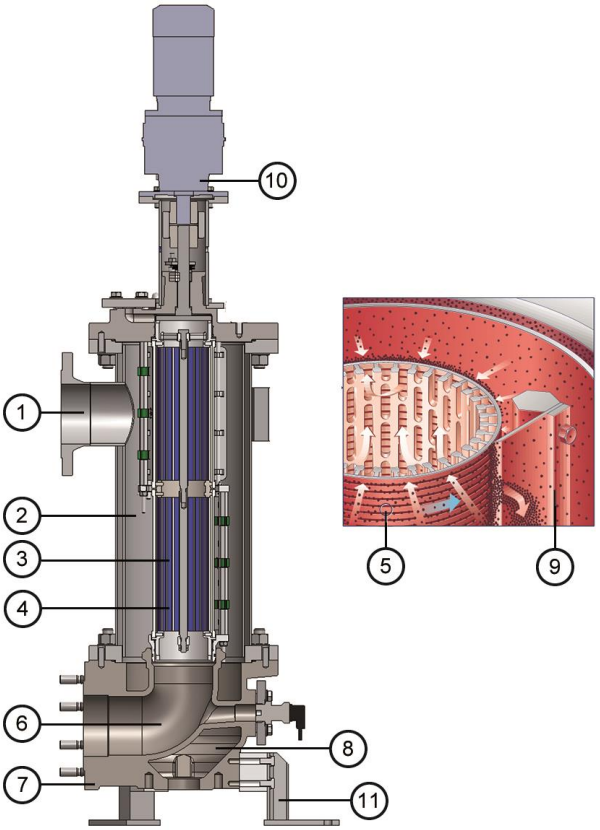
Advantages:

- Optimised flow conduction
- Three different series of filter elements
- Acceptance of the pressure tank according to the pressure equipment directive or ASME
- Series available in C-steel and stainless steel
- Volume flows up to 100 m³/h
- Filter fineness from 30 µm to 5000 µm
- Operating pressures up to 16 bar, optionally 25 bar
- Operating temperatures up to 180°C, optionally 250°C
- Shaft seal in compliance with Germany's "TA Luft" air quality regulations
- Low amount of waste related to batch change
- Heating jacket (optional)

2. Operating principle

With the filter module AF 43, Filtration Group is establishing a complete filter series for process technology in order to guarantee your production and ensure your product quality.
The development of the filter module AF 43 combines the tried-and-trusted Filtration Group metal edge filter principle with new technologies. There are three complete series of filter elements available for different areas of application in process technology. The mechanically cleanable Filtration Group metal edge filter elements can be selected specifically to match your process and applications. Combined with the different cleaning mechanisms, they thus achieve optimum filtration results, reduce soiling through solids and secure product quality over a long period.

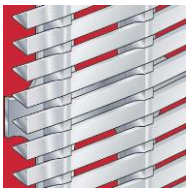
As the filter medium flows in from the side, the solids and impurities contained in the medium are retained on the surface and scraped off into the cone for discharge.
The filtrate leaves the housing via the outlet flange at the bottom of the tank.
When the pre-set time or differential pressure for triggering the mechanical cleaning has been reached on the filter control, the mechanical cleaning process is automatically started.



Filtration Group filter elements used in the metal edge filter AF 43

Filtration Group coiled cartridge (standard):

- Optimal cleaning with sharp-edged triangular wire
- Large effective filter surface
- Precise, small gap widths
- High differential pressure stability and torsional strength
- Different material combinations possible



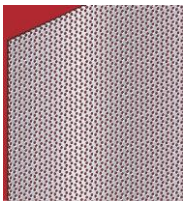
Filtration Group welded cartridge:

- High wear resistance to abrasive media
- Sturdy trapezoidal profile for high-viscosity media
- Continuous welded design
- Stainless steel version



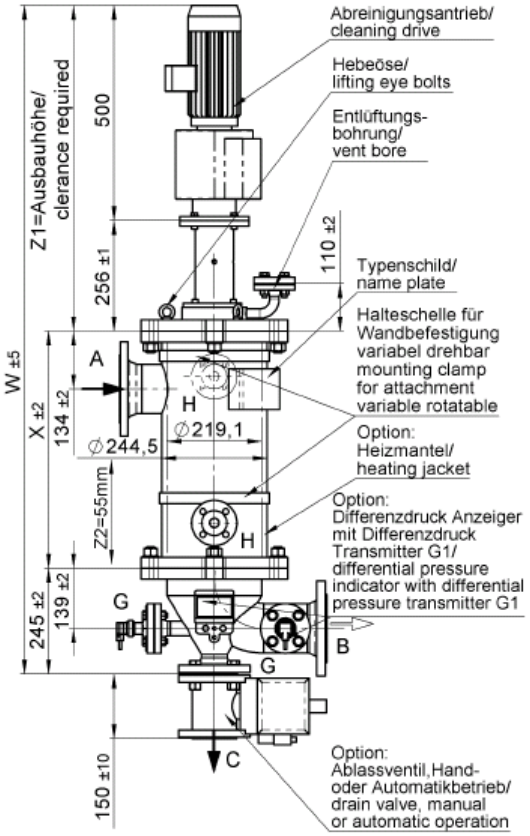
Filtration Group perforated foil:

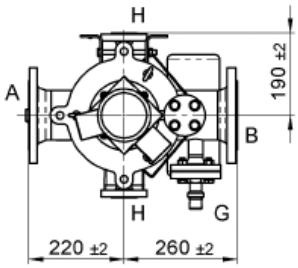
- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Suitable for fibres
- Manufactured in stainless steel or nickel



1 Inlet connection
2 Inlet plenum
3 Filtration Group filter element
4 Triangular profile winding
5 Triangular wire
6 Plenum for filtered fluid
7 Outlet connection
8 Particle collection cone
9 Scraper
10 Cleaning drive with gear motor or hand ratchet
11 Feet, optional

3. Technical data





Type	W	X	Z	Weight (kg)
AF 436.-...	1284	283	590	125
AF 437.-...	1552	551	860	140
AF 438.-...	1820	819	1130	155
AF439.-...	2088	1087	1400	170

Filter data

Max. operating pressure: - 16 bar, optional 25 bar (higher pressure ratings on request)

Max. operating temperature: - 100°C, 180°C, optional 250°C (higher temperature ratings on request)

Trace heating with steam: 10bar / 200 °C

Cleaning pressure Δp: 0.3 bar – 2.2 bar

Materials:
- Housing and cover: Nodular cast iron, steel or 1.4404, 1.4571
- Internals: Nodular cast iron, steel or 1.4404 1.4571
- Bearing bushes: PTFE basis
- Seals: FPM (Viton)
- Metal-edge coiled cartridge**: 1.4571 or 1.4571/Al
- Welded cartridge*: 1.4571 Perforated foil*: 1.4571, 1.4571/Al or Al/Ni

Cover fastening: - 4 x M20 hexagon screws

Connections and nominal diameters:
- A-inlet, B-outlet: DN100- Adapter DN 50/65/80 or ANSI 4" – Adapter 2"/3"
- C-drain: DN50 or ANSI 2"
- D-aerating: DN 5 or ANSI 3/4"
- G-Δp indicator: DN25 or ANSI 1"
- H-heating jacket (optional): DN20
- All threaded holes acc. to DIN 3852 form X; flanges acc. to EN 1092-1/11B1/PN 16

Drive shaft seal: Packaging gland

External finish: Synthetic resin primer, blue (RAL 5007)

∗ Δp max. 10 bar ∗∗ Δp max. 30 bar

Motor data

Spur gear motor
Multirange winding

V	Hz	KW	rpm	A
Δ 230 ± 10%	50	0.18	17	1.11
⅄ 400 ± 10%	50	0.18	17	0.65
Δ 266 ± 10%	60	0.22	21	1.11
⅄ 460 ± 10%	60	0.22	21	0.65

Protection class: IP55 ISO-Class F; output torque: 84 Nm

Optional:
- Ex protection acc. to Atex 2014/34/EU
- Electrical design Ex II 2G T3
- Mechanical design Ex II 2G c T3

Special filter media with 30 µm to 5000 µm are available for your use
Filter cleaning can be operated manually or through rotary current motors.

Other types available on request.

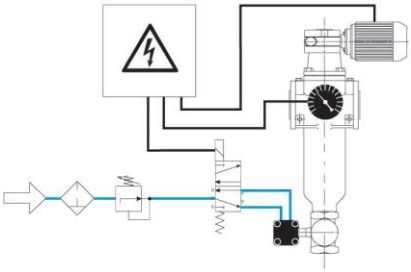
Technical data is subject to change without notice.

4. Design and application

Element type (see section 6)	Total surface in cm²	Gap width in µm/ effective gap surface in cm²														
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000
AF 6016	862	48	63	77	91	117	142	176	206							
AF 6026	862			50	59	77	95	119	142	170	203	264	328	473	555	608
AF 6036	862	48	63	77		117	141	175	206							
AF 6046	862			50	59	77	94	119	141	170	202	263	326	471	553	606
AF 6066	836												184	302	385	446
AF 6076	836					63	77	97	117	141	169	224	282			
AF 6086	836			56	67	89	112									
AF 50116	836						188			155			188			
AF 50126	836						82			147			228			
AF 50136	836						82			147			228			
AF 6006	836													190	278	190

recommended design

Cleaning and emptying



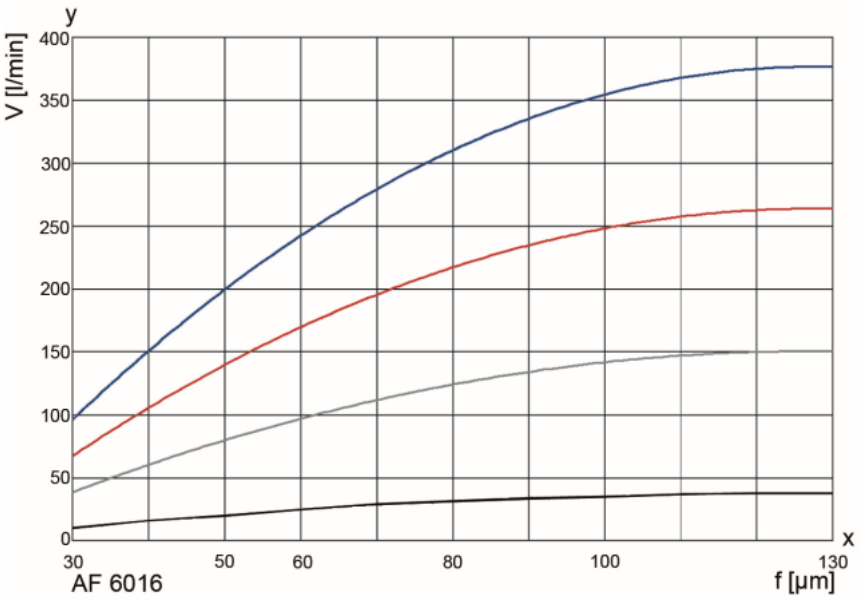
Fully automatic operation:

Filtration usually occurs under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at approximately 4 times the initial differential pressure. The cleaning motor runs for about 10 seconds (about three turns of the filter element). This is sufficient for a thorough cleaning. In certain rare cases it may be necessary to run the motor continuously. The drive shaft is always turned clockwise. The filter is emptied by opening the drain valve. This can either take place synchronously with cleaning or be time or cycle controlled, depending on the residue concentration. The opening time of the drain valve can be set between 2 and 6 seconds. The filter can be emptied in suction mode using a buffer or by interrupting the filtration process.

Semi-automatic and manual operation are also possible.

See the Instruction Manual for further information.

5. Performance curves



The curves represent the volumetric flow through the entire filter system (filter housing including one filter element as an example) and refer to a differential pressure of 0.3 bar. Specific information about process data is essential for reliable operation of automatic filters.

Important information about the performance curve!
This is an example of a filter element of the type AF6016. The number of filter elements can be read from the type number key, see section 6.

Viscosity in mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

y = volumetric flow V [l/min]
x = gap width f [µm]

6. Type number key

Type number key with selection example for AF 4373-521-50200										
Size										
AF 436	1 x 1 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
AF 437	1 x 2 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
AF 438	1 x 3 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
AF 439	1 x 4 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
	Cleaning drive									
	2 Ratchet									
	3 Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz									
	4 Gear motor 230/400 V, 50 Hz Ex II 2G T3									
	5 Motor with standard connection is provided and completely delivered by the customer									
	6 Standard motor connection, delivered without motor									
		Inlet and outlet connections								
		5 DN 80								
		6 DN 100								
			Permissible operating pressure in bar (housing/cover)							
			2 PN 16							
			3 PN 25							
				Material Seal FKM and bearing PTFE						
				1 Standard; aluminium, nodular cast iron; steel						
				2 Stainless steel 1.4571, 1.4581						
				3 Standard steel, internals in stainless steel 1.4301/1.4571						
				4 Standard steel aluminium-free						
					Differential pressure indicator and gauge					
					1 PiS 3076, switching point at 1.2 bar, static 63 bar, aluminium/FKM					
					2 PiS 3076, switching point at 0.7 bar, static 63 bar, aluminium/FKM					
					5 PiS 3165, digital Dp manometer, 2 pressure transmitters 0-6 bar adjustable					
					8 PiS 3076, switching point at 2.2 bar, static 63 bar, aluminium/FKM					
					9 PiS 3180, Ex II 2G Exd IIC T5, 4…20 mA signal, static max. 40 bar, stainless steel					
						Valves and control throttles				
						0 Without/special version				
							Drain valve			
							1 Ball valve, manual			
							2 Ball valve, electro-pneumatic 24 V			
							3 Ball valve, electro-pneumatic 230 V			
							4 Ball valve, electric 24 V			
							5 Ball valve, electric 230 V			
							6 Flap, electro-pneumatic 24 V/10 bar			
							7 Flap, electro-pneumatic 230 V/10 bar			
							8 Flap, electric 24 V/10 bar			
							9 Flap, electric 230 V/10 bar			
								Cleaning valve		
								0 without/special version		
									Optional features	
									0 without/special version	
AF 437	**3**	**-5**	**2**	**1**	**-5**	**0**	**2**	**0**	**0**	**- XXXX(end no. for special version)***

*end number completion:
G2 housing version combination cast and welded parts, Version 2 (standard)
S1 welded version, Version 1

End number	Special version
3001	Standard filter insert (complete), without housing or drive
3002	Standard filter insert (complete), without housing, with drive
3400	Heating jacket, standard welded version
3700	PTFE seals
3701	Welded version in compliance with TÜV regulations
4166	3 x scraper
7000	Perforated version + plastic scraper
Others	Upon request

Type number key with selection example for coiled and welded cartridges for AF 60

Series

AF 60	Coiled or welded cartridge with triangular wire winding
AF 50	Perforated foil

Material	Inner core	Filter medium	Clamp rings	Wire width in mm
Perforated plate	**-**	**1.4301**	**-**	**-**
Coiled cartridge				
1	Al	1.4571	1.4571	0.5
2	Al	1.4571	1.4571	0.8
3	1.4581	1.4571	-	0.5
4	1.4581	1.4571	-	0.8
Welded cartridge				
6	-	1.4571	1.4571	1.8
7	-	1.4571	1.4571	1
Perforated foil				
11	Al	Ni	1.4571	-
12	Al	1.4571	1.4571	-
13	1.4571	1.4571	1.4571	-

Overall length	Diameter x length in mm	
6	110x26	
	5	
	Gap width/rating in µm (see 4. Design and application	
	003 30 µm	**010** 100 µm
	004 40 µm	**013** 130 µm
	005 50 µm	**016** 160 µm
	006 60 µm	**020** 200 µm
	008 80 µm	**025** 250 µm
	Hole diameter with metal edge perforated elements in µm	
	010 100 µm	**020** 200 µm
	Other grades upon request	

AF 60	**1**	**6**	**- 010**

7. Spare Parts

Metal-edge or coiled cartridge

Position	Designation	Material number	
		FKM/C-steel	PTFE/VA
1	Bush kit		78358947
2	Seal kit (complete)	77982143	77982150
3	Scraper		71116805
4	Leg spring set per scraper		79753492
5	Filter element	See name-plate	

Please contact us for detailed technical information, any open questions about options, accessories and for general expert advice.
Completion of the relevant questionnaire would facilitate in the coordination of all important parameters.
Comprehensive documentation on our filter range, filter elements and accessories can be provided. For information on installation and operation, please see the Instruction Manual.

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