Filtration Group®
Filtering The World

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Automatic metal-edge filter
AF 74/AF 94 S

with radial scraper cleaning
housing in welded design, optionally with cyclone effect
Connection size DN 80, DN 100, DN 125, DN 150 others upon request

1. Features

For the filtration and homogenization of low and high-viscosity fluids and pastes, Filtration Group automatic metal-edge filters offer an extensive range of applications.

The compact inline filter systems can be equipped with automatic cleaning. The system is cleaned by rotating the cartridge against a spring actuated scraper. The AF 94 S version is with integrated preseparator.



Advantages:

- Low life cycle costs because of no filter material consumtion
- Cleaning can be performed without an interruption in filtration
- Precision separation using the surface filter principle
- Sturdy filter cartridge made of triangular stainless steel wire on a robust inner core
- Efficient filter cleaning for process stability
- Solid construction and high-quality materials for a long service life
- Modular Filtration Group Vario system for optimal filter selection
- Material variants for a wide range of possible applications
- Service-friendly
- Worldwide distribution

Optional:

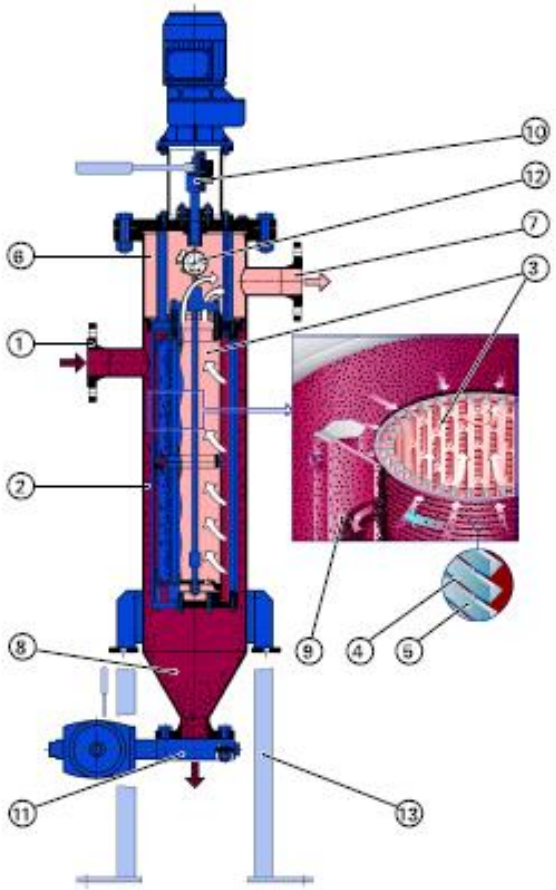
- Design acc. PED 2014 / 68 EU AD 2000; ASME VIII div. U-Stamp; EN 13445; GOST
- Designed on customers demand e.g. heating jacket; special materials; housing adaption.

2. Functional principle

The Filtration Group metal-edge filter system is used for filtering and homogenizing an extensive range of liquids and pastes. The compact, inline filter system does not consume any filter material and therefore no disposal is required afterwards.
With the modular Filtration Group Vario system on the Filtration Group metal-edge filters it is possible to configure up to three filter cartridges above one another when high throughput rates are needed.

The filter can be cleaned either automatically or semi-automatically without interrupting operation. The concentrated solids are easily drained by opening the system for a short time.

The medium being cleaned is guided into the filter housing under pressure or in suction mode. It flows inward through the Filtration Group filter cartridges. The solids are separated on the surface of the triangular wires of the filter cartridge.



The filtered fluid exits the filter housing at the top opposite the inlet connection. In the AF 94 S version, the integrated preseparator relieves the filter cartridge of coarse and heavy particles by means of a tangential flow around the tube.
Cleaning of the filter is performed either when a preset differential pressure limit is reached or after a specified cycle time elapses. Here the Filtration Group filter cartridges are rotated against spring actuated scrapers.
The special gap geometry of the filter cartridge ensures efficient cleaning.

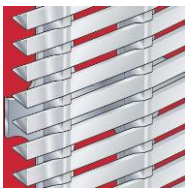
The particles or agglomerates are skimmed from the surface and settle in the collection cone. The patented bearing in the filter cartridges (AKF system) prevents high axial forces and simplifies the cleaning procedure.

The residue that settles in the collection cone can be emptied through the drain valve either when the machine is stopped or during filtration

On the Filtration Group metal-edge filter AF 74 S, coiled cartridges, welded cartridges, and perforated foils can be used.

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



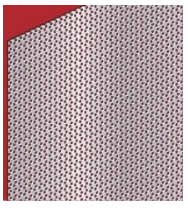
Filtration Group welded cartridge:

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



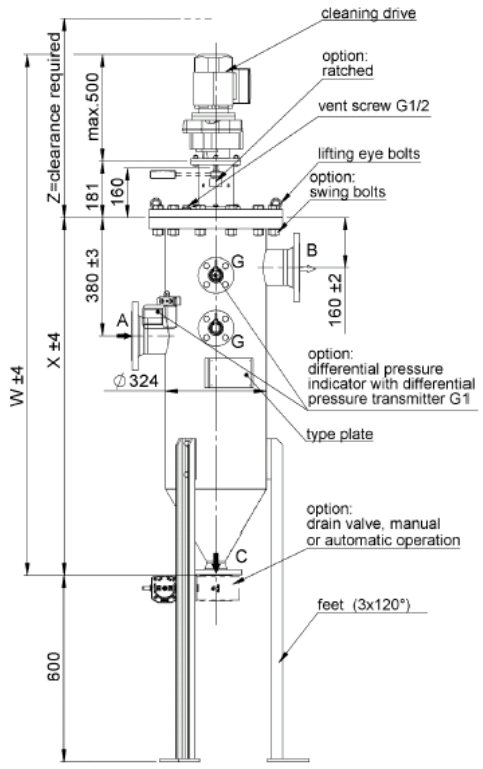
Filtration Group perforated foil:

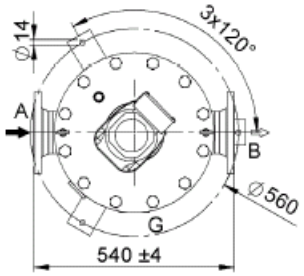
- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Continuous welded design
- Manufactured in stainless steel or nickel
- Suitable for filtering fibrous waste material



1 Inlet connection
2 Inlet plenum
3 Filtration Group filter cartridge
4 Triangular wire 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 Drain valve (automatic or manual)
12 Differential pressure indicator/switch / manometer
Differential pressure gange with transmitter
13 Feet

3. Technical data





type	W (mm)	X (mm)	Z (mm)	volume (l)	weight (kg)	cleaning drive
AF7492-.2.-	1845	1685	1430	116	245	ratchet
AF749.-.2.-	2366	1685	1430	116	260	gear motor
AF7482-.2.-	1575	1415	1160	96	220	ratchet
AF748.-.2.-	2096	1415	1160	96	235	gear motor
AF7472-.2.-	1305	1145	890	75	195	ratchet
AF747.-.2.-	1786	1145	890	75	210	gear motor
AF7462-.2.-	1035	875	620	54	170	ratchet
AF746.-.2.-	1556	875	620	54	185	gear motor

Filter data

Max. operating pressure: - 16 bar, optional 25 bar / 40 bar

Max. operating temperature: - 100 °C, optional 200 °C

Design according: PED 2014 / 68 / EU

Materials:
- Housing and cover: Cast steel, 1.4571
- Internals: Cast steel, stainless steel, AL
- Bearing bushes: PTFE based
- Seals: FKM (Viton), PTFE
- Coiled cartridge: 1.4581; 1.4571 (Δp max. 30 bar) or Al, 1.4571 (Δp max. 10 bar)
- Welded cartridge: 1.4571 (Δp max. 10 bar)
- Element perforated foil: 1.4571 or Al, 1.4571 or Al, Ni (Δp max: 10 bar)

Cover fastening: - 8 x M20 hexagon screws

Connections and nominal diameters:
- A-inlet DN 80, DN 100,DN 125, DN 150
- B-outlet: DN 80, DN 100, DN 125, DN 150
- C-drain: DN 50
- G-indicator: DN 25

All threaded holes acc. to DIN 3852 form X
flanges acc. to EN 1092-1/11B1/PN 16 (Standard, depending on operating pressure and temp.)

Drive shaft seal: Gland packing rings made of PTFE fibre with disc spring pretension

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

Motor data

Spur gear motor
Multirange winding

V	Hz	KW	rpm	A
Δ 230 ± 10%	50	0,25	19,5	1,4
⅄ 400 ± 10%	50	0,25	19,5	0,8
Δ 266 ± 10%	60	0,3	18,4	1,4
⅄ 460 ± 10%	60	0,3	18,4	0,78

Protection class: IP55, ISO-class F; output torque 115 Nm

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

Optional:
- heating jacket
- ASME
- EN 13445

Other types available on request.

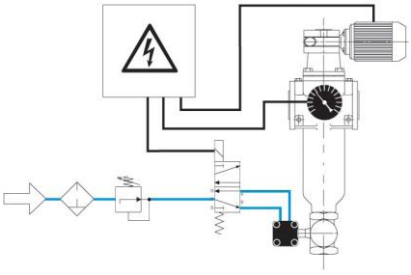
Note: Technical data is subject to change without notice.

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width/hole width in µm/ effective gap surface in cm²															
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	4000
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	634
AF 6076	836						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	337

recommended design

Cleaning and emptying



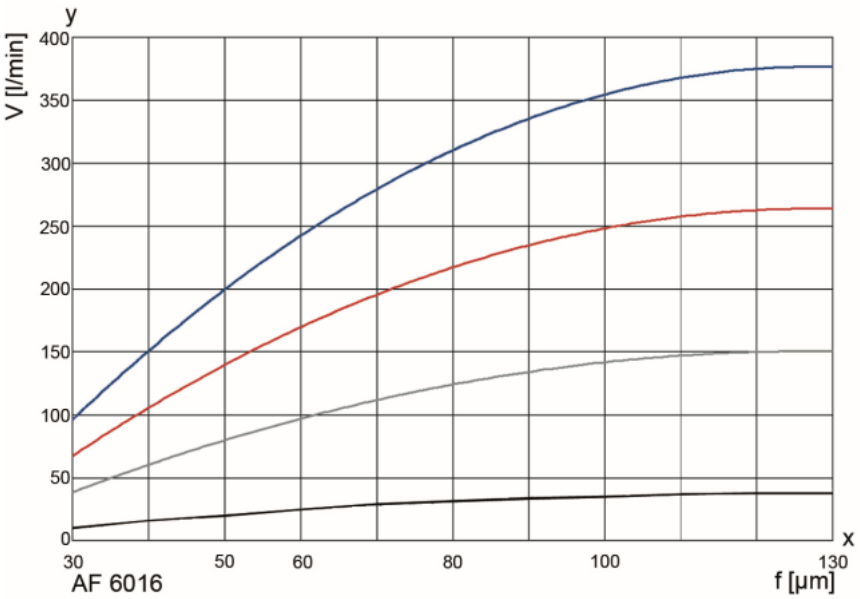
Fully automatic operation:

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 cartridge). 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 for example one cartridge) and refer to a differential pressure of 0.3 bar. Specific information about process data is essential for reliable operation of an automatic filter.

Important note on performance curve!
It's an example of element AF 6016.
The number of dements per filter results from type number key in point 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 7473-821-50200 S1											
Size / number of filter cartridge columns / function											
AF 74 3 filter cartridge columns Ø 110 mm / metal-edge filter with radial cleaning											
AF 94 3 filter cartridge columns Ø 110 mm / metal-edge filter with radial cleaning and preseparator through the cyclone effect											
	Number of filter cartridges										
	6 1 filter cartridge per column										
	7 2 filter cartridges per column										
	8 3 filter cartridges per column										
	9 4 filter cartridges per column										
		Cleaning drive									
		3 Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz									
		4 Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz Ex II 2G T3									
			Inlet and outlet connections								
			5 DN 80 EN 1092-1 / 11 B1 / PN 16								
			6 DN 100 EN 1092-1 / 11 B1 / PN 16								
			7 DN 125 EN 1092-1 / 11 B1 / PN 16								
			8 DN 150 EN 1092-1 / 11 B1 / PN 16								
				Permissible operating pressure in bar (housing/cover)							
				1 PN10							
				2 PN 16							
				3 PN 25							
				4 PN 40							
					Material Seal FKM, bearing PTFE						
					1 Standard: Housing in carbon steel, internals in carbon steel, EN-GJS-400-15, aluminium						
					2 Standard: Housing in stainless steel 1.4571, internals in stainless steel						
					3 Standard: Housing in carbon steel, internals in stainless steel						
						Differential pressure indicator and gauge					
						5 PiS 3175 digital Δp gauge, 2 setting points 0 – 16 bar adjustable and analogous 4 – 20 mA/0 – 10 V					
						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, electropneumatic 24 V			
								3 Ball valve, electropneumatic 230 V			
								4 Ball valve, electric 24 V			
								5 Ball valve, electric 230 V			
								6 Drain valve, electropneumatic 24 V, 10 bar			
								7 Drain valve, electropneumatic 230 V, 10 bar			
								8 Drain valve, electric 24 V, 10 bar			
								9 Drain valve, electric 230 V, 10 bar			
									Cleaning valve		
									0 Without		
										Optional features	
										0 Without / other version	
AF 74	**7**	**3**	**-5**	**2**	**1**	**-5**	**0**	**2**	**0**	**0**	**- XXXX(end no. for special)S1***

*end number completion:
S1 welded, Version 1

End number	Special version
3001	Standard filter insert (complete), without housing and without drive
3002	Standard filter insert (complete), without housing, with drive
3400	With double jacket for heating / cooling PN 10 bar
3700	PTFE seals
Others	Upon request

Type number key with selection example for coiled and welded cartridges for AF 60 and perforated foil AF 50									
Series									
AF 60	Coiled cartridge or welded cartridge with triangular wire winding								
AF 50	Perforated foil								
	Material	**Inner core**	**Filter medium**	**Clamp rings**	**Wire width in mm**				
	Perforated plate								
	0	-	1.4301	-	-				
	Welded 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				
	Coiled cartridge								
	6	-	1.4571	1.4571	1.8				
	7	-	1.4571	1.4571	1				
	8	-	1.4571	1.4571	0,75				
	Perforated foil								
	11	Al	Ni	1.4571	-				
	12	Al	1.4571	1.4571	-				
	13	1.4571	1.4571	1.4571	-				
		Length	Diameter x length in mm						
		6	110x265						
			Gap width/rating in µm (see 4. Design and application)						
			003	30 µm	**010**	100 µm	**036**	360 µm	**400** 4000 µm
			004	40 µm	**013**	130 µm	**050**	500 µm	
			005	50 µm	**016**	160 µm	**100**	1000 µm	
			006	60 µm	**020**	200 µm	**150**	1500 µm	
			008	80 µm	**025**	250 µm	**200**	2000 µm	
			Hole size/grade in µm (see 4. Design and application)						
			010	100 µm					
			020	200 µm					
			050	500 µm					
				Other grades upon request					
AF 60	**1**	**6**	**- 010**						

7. Spare Parts

Metal-edge or coiled cartridge			
Item	**Designation**	**Order number**	
		FKM/C-Steel	**PTFE/Stainless steel**
1	Bush kit		70307545
2	Seal kit (complete)	78319600	76191738
3	Scraper		71116805
4	Spring set		70350654
5	Filter cartridge	See name-plate	

Perforated foil cartridge		
Item	**Designation**	**Order number**
6	Scraper PU (complete)	70531132
7	Scraper PTFE (complete)	70379502
8	Scraper PU (wear part)	70378953
9	Scraper PTFE (wear part)	70370568

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 cartridges and accessories can be provided. For information on installation and operation, please see the Instruction Manual.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
sales@filtrationgroup.com
www.filtrationgroup.com
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