Filtration Group®
Filtering The World

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Automatic metal-edge filters
AF 72 G

with radial scraper cleaning
Connection size G1 1/2, flange DN 40

1. Short description

Filtration Group automatic metal-edge filters are suitable for all applications where low or high-viscosity liquids or pastes have to be filtered and homogenised.

These compact inline filter systems can be designed for semi or fully automatic cleaning. The system is cleaned by rotating the cartridge against a spring actuated scraper.

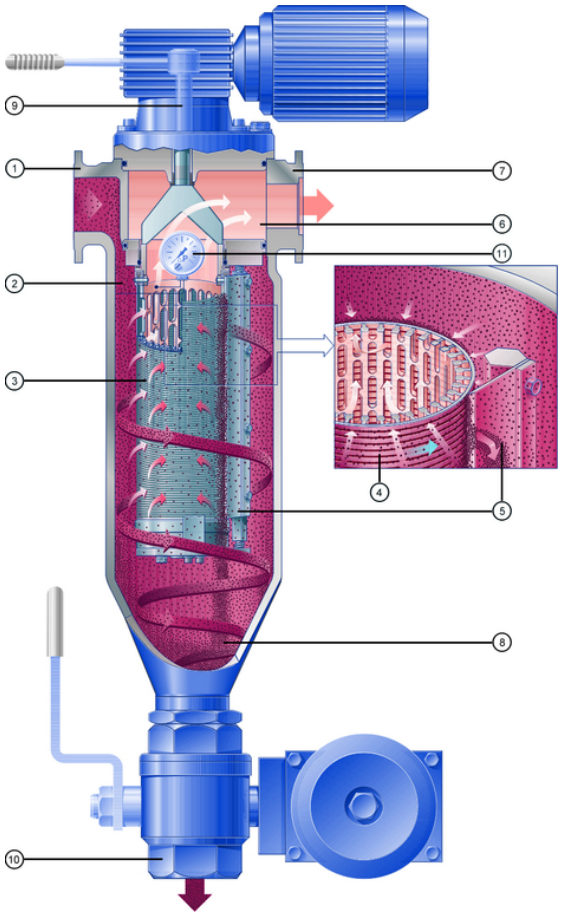
Advantages:

- Extended filter service life due to the use of a cleanable element
- Cleaning is possible without interrupting filtration
- Precise separation quality in accordance with the metal-edge principle
- Sturdy cartridge made of triangular stainless steel wire on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Filtration Group modular Vario system for optimum filter selection
- Material variants open up a wide range of applications
- Gastight shaft seals available optional
- Application in Ex zone 1 and 2 optional
- Easy maintenance
- Worldwide sales



2. Operating principles

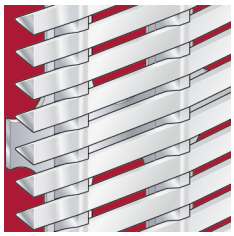
The Filtration Group AF 71 G metal-edge filter belongs to the small Vario series. The Filtration Group metal-edge filter system is used to filter and homogenise a wide range of liquids and pastes.
This compact, inline filter system consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned either automatically or semi-automatically without interrupting operation. Optional a pneumatical rotary drive is also available. Its advance is given by use with the differential pressure measure and display unit with integrated control funtion PiC 3170 MFC. Autarcic automatic filters can be combined without need of a power station for a 3-phase motor. 24 V DC field voltage and compressed air as auxilliary energy are sufficient.
The concentrated solids are drained off simply by opening the system for a short time.
The medium to be cleaned is guided into the filter housing under pressure or in suction mode. It flows inward through the Filtration Group filter cartridge. The solids are separated on the surface of the triangular filter cartridge wires. The filtered fluid exits the filter housing at the top opposite the inlet connection.
The filter is cleaned either when a preset differential pressure limit is reached or after a specified cycle time elapses. The Filtration Group filter cartridge is rotated against a spring actuated scraper for this purpose. The special gap geometry of the filter cartridge guarantees efficient cleaning.
The particles or agglomerates are skimmed from the surface and settle in the collection cone. The patented filter cartridge bearing (AKF system) prevents high axial forces and facilitates the cleaning process.
The residue that has settled in the collection cone can be emptied via the drain valve either when the machine is at a standstill or during filtration.



Used Filtration Group filter cartridges in the AF 72 G metal-edge filter:

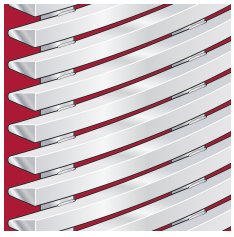
Filtration Group coiled cartridge (standard):

- Optimum cleaning by means of sharp-edged triangular wire
- High free surface portion
- Small, precise gap widths
- High differential pressure stability and torsional strength
- Several material combinations possible



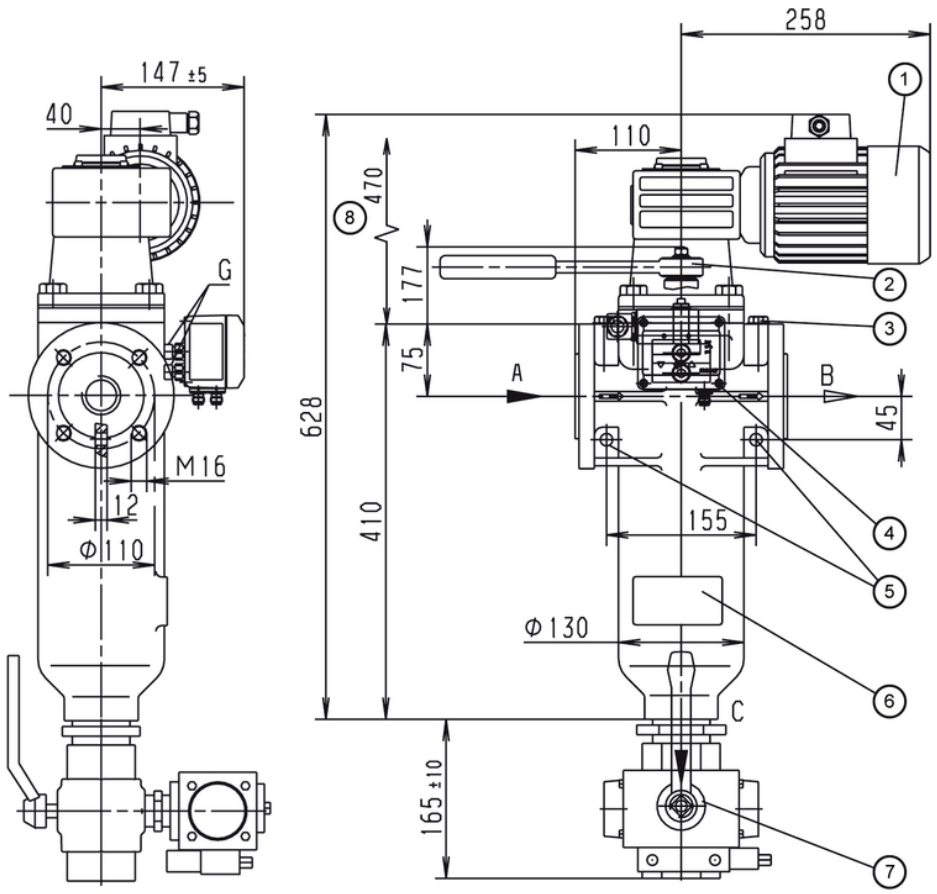
Filtration Group welded cartridge:

- High wear resistance to abrasive media
- Sturdy trapezoidal wire for high-viscosity media
- Welded design
- Manufactured in stainless steel



1 Inlet connection
2 Inlet plenum
3 Filtration Group cartridge
4 Triangular wire winding
5 Scraper
6 Plenum for filtered fluid
7 Outlet connection
8 Particle collection cone
9 Cleaning drive with gear motor or hand ratchet
10 Drain valve (automatic or manual)
11 Differential pressure indicator/switch

3. Technical data



1 Cleaning drive, worm gear motor can be mounted at each 90° position
2 Optional ratchet
3 Vent screw G1/4
4 Optional differential pressure indicator/switch
5 Mounting holes Ø13
6 Name-plate
7 Optional drain valve, manual or automatic mode
8 Clearance required = 470 mm

The pneumatical rotary drive is not shown in this drawing!

Filter data

Max. operating pressure:	-	16, 40, 63 bar
Max. operating temperature:	-	100 °C up to 63 bar
Materials:	-	Housing and cover: Nodular cast iron 40
	-	Internals: Nodular cast iron, steel, optional stainless
	-	Optional interior coat
	-	Bearing bushes: PTFE based
	-	Seals: FPM (Viton)
	-	Coiled cartridge: Al, 1.4571 (Δp max. 40 bar)
	-	welded cartridge: 1.4571 (Δp max. 10 bar)
Cover lock:		4 x M16 hexagon screws
Connect./nominal diam.:	-	A-inlet, B-outlet: G1½ threaded holes DIN 3852 form Z flange DN 40
	-	C-drain: G2 DIN 3852 form Z
	-	G-Δp-Connection: G1/8 DIN 3852 form X
Drive shaft seal:		Gland packing rings made of PTFE fibre with disc spring pretension; optional lip seal with O-ring
External finish:		Synthetic resin primer, blue (RAL 5007)

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
Δ 230 ± 10%	50	0.18	17	1.2
⅄ 400 ± 10%	50	0.18	17	0.7
Δ 266 ± 10%	60	0.22	21	1.2
⅄ 460 ± 10%	60	0.22	21	0.7

Protection class: IP55, insulation class F; output torque: 52 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
- Pneumatical rotary drive

Weight: 27 kg (with ratchet), 36 kg (with motor) or 34 kg (with pneumatical rotary drive)
Volume: 4 l

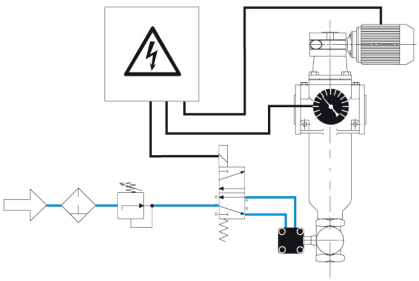
Other types available on request!
Technical data is subject to change without notice!

4. Design and application

Cartridge 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 6014	437	**26**	**34**	42	49	63	76	94	111	131	152	191	229	305		
AF 6024	437	17		27	32	42	51	64	76	91	109	142	176	254	298	**327**
AF 6034	419	**25**	**33**	40		61	73	91	106	135	157	197				
AF 6044	419			26		40	49	61	73	88	105	136	169	244		314
AF 6064	415												95	156	198	229
AF 6074	415									73	87	115				
AF 6084	415			27	32	42	51	64	77							

recommended design

Cleaning and emptying

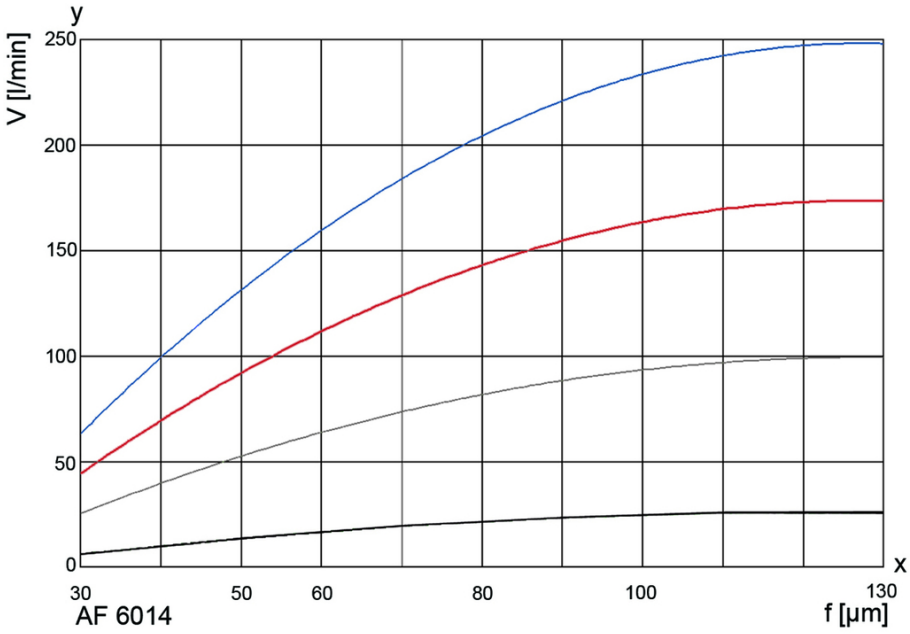


Fully automatic operation:

Filtration usually takes place 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 is operated for around 10 seconds (about three turns of the cartridge). This is sufficient to clean the filter thoroughly. The motor may need to run continuously in exceptional cases. The drive shaft is always turned clockwise.
The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place synchronously with cleaning or be time or cycle controlled.
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.

Refer to the Instruction Manual for further information.

5. Performance curves



The curves indicate the volume flow through the complete filter system (filter housing including cartridge) and are referred to a differential pressure of 0.3 bar. Specific process information is essential to guarantee reliable operation of an automatic filter.

Viscosity in mm²/s (cst)

- 1 mm²/s
- 33 mm²/s
- 100 mm²/s
- 500 mm²/s

y = Volume flow V [l/min]
x = Gap width f [µm]
mm²/s = cst

6. Type number key

Type number key with selection example for AF 7243-221-40200/G4										
Size										
AF 724	1x 65x230									No. of steps x diameter x length [mm]
	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								
	7	Pneumatical rotary drive								
		Inlet and outlet connections								
		2	DN 40 with G1½							
			Permissible operating pressure in bar (housing/cover)							
			2	PN 16						
			4	PN 40						
			5	PN 63						
				Material Seal FPM, bearing PTFE						
				1	Housing and cover nodular cast iron, steel					
				3	Housing and cover steel, grey cast iron or nodular cast iron, internals stainless steel 1.4301/1.4571					
				4	Housing and cover steel, grey cast iron or nodular cast iron, aluminium-free					
				6	Housing and cover nodular cast iron with delta seal coating, internals stainless steel 1.4301					
					Differential pressure indicator and switch					
					1	PiS 3076, switching level at 1.2 bar, static 63 bar, aluminium/FPM				
					2	PiS 3076, switching level at 0.7 bar, static 63 bar, aluminium/FPM				
					3	PiS 3170 MFC, digital #p gauge with control function in combination with pneumatical rotary drive				
					4	PiS 3170, digital Δp gauge, 2 switching levels settable from 0 to 16 bar				
					8	PiS 3076, switching level at 2.2 bar, static 63 bar, aluminium/FPM				
						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		
								Cleaning valve		
								0	Without/special version	
									Optional features	
									0	without/Special version
									1	Bypass valve 20 bar
									2	Bypass valve 40 bar
AF 724	**3**	**- 2**	**2**	**1**	**-4**	**0**	**2**	**0**	**0**	**-XXXX (end number for special version)/G4***

*end number completion:

G4 cast iron, Version 4

End number	Special version
3001	Standard filter insert (complete), without housing or drive
3002	Standard filter insert (complete), without housing, with drive
3700	PTFE seals
Other numbers	On request

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

Series

AF 60 Coiled or welded cartridge with triangular wire winding

	Material	Core element	Filter medium	Clamp rings	Wire width in mm
	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
	8	-	1.4571	1.4571	0.75

Overall length Diameter x length in mm

4	65x230

Gap width/rating in µm (see 4. Design and application)

003	30 µm	**010**	100 µm	**036**	360 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

Other filter ratings on request

AF 60	**1**	**4**	**- 010**

7. Spare parts

No.	Designation	Order number	
		FPM/C steel	PTFE/VA
1	Bush kit		79725557
2	Set of seals (complete)	79331786	79718511
3	Scraper		79718503
4	Cartridge	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. About installation and operation, please refer to the Instruction Manual.

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