

Automatic metal-edge filter AF 73 G/AF 93 G

with radial scraper cleaning

Connection size G2, screw-in flange DN 50 and DN 65

1. Features

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 filter cartridge against a spring actuated scraper. The AF 93 G version also has integrated pre-separation.

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 filter 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
- Modular Filtration Group Vario system for optimum filter selection
- Material variants open up a wide range of applications
- Gas-tight shaft seals available optional
- Application in Ex zone 1 and 2 optional
- Easy maintenance
- Worldwide distribution



2. Operating principle

The Filtration Group AF 73 G and AF 93 G metal-edge filters belong 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. 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.

In the AF 93 G version, the tangential flow around the tube of the integrated preseparator relieves the load on the filter cartridge from coarse and heavy particles.

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.

Filtration Group filter cartridges used in the AF 73 G and AF 93 G metal-edge filters:

Filtration Group coiled cartridge (standard):

- Optimum cleaning by means of sharp-edged triangular wire
- High throughput thanks to large open filter area
- 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



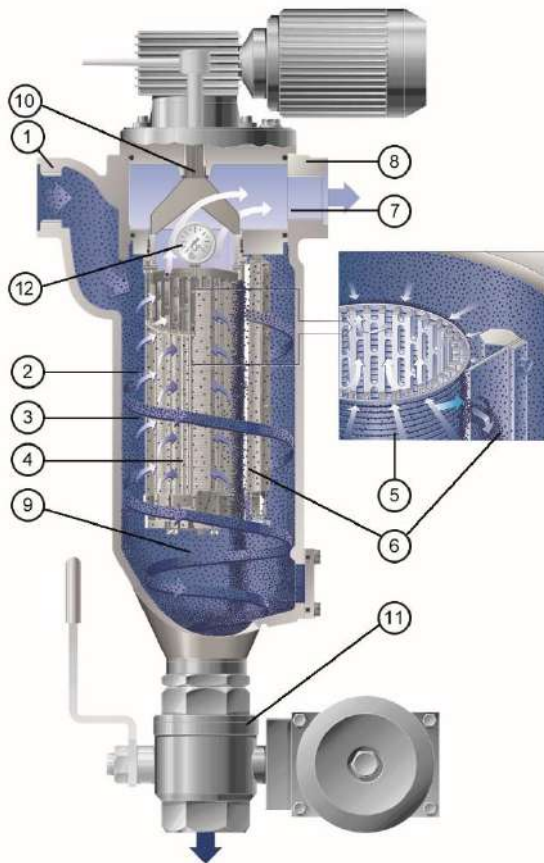
Filtration Group perforated foil:

- Precise hole diameter
- Sharp-edged, conical filter openings - no jamming of particles
- Suitable for fibres
- Manufactured in stainless steel



Filtration Group perforated sheet:

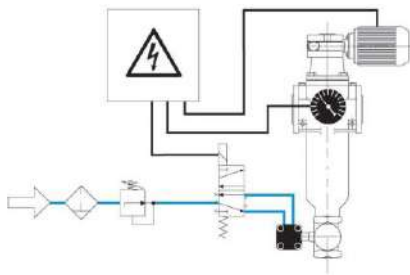
- Precise hole diameter
- Manufactured in stainless steel



- 1 Inlet connection
- 2 Inlet plenum
- 3 Preseparator tube for AF 93 G (not shown)
- 4 Filtration Group cartridge
- 5 Triangular wire winding
- 6 Scraper
- 7 Plenum for filtered fluid
- 8 Outlet connection
- 9 Particle collection cone
- 10 Cleaning drive with gear motor or hand ratchet
- 11 Drain valve, automatic or manual
- 12 Differential pressure indicator/switch

3. Design and application

Cleaning and emptying



Fully automatic operation:

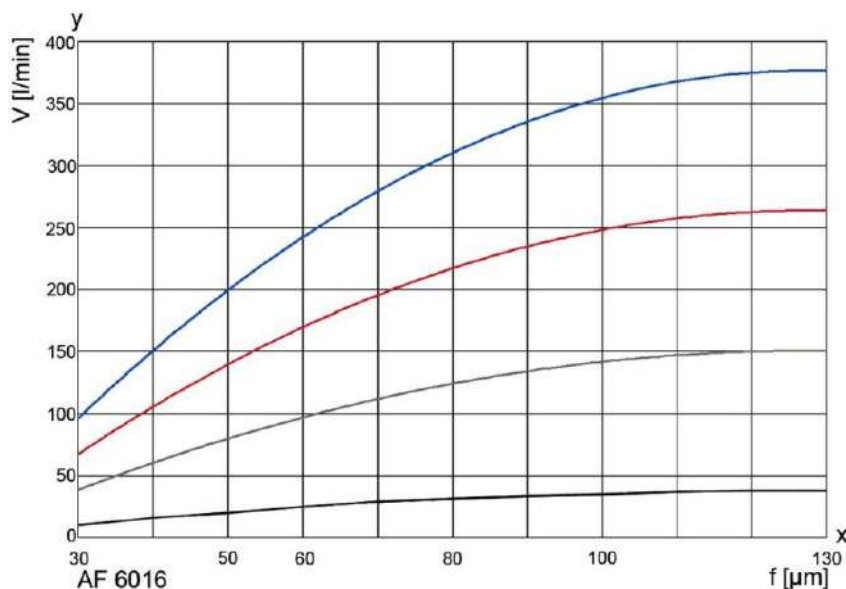
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at approximately 4 times the initial differential pressure. The cleaning motor is operated for around 10 seconds (about three turns of the filter 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 (x) 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 is also possible.

Refer to the Instruction Manual for further information.

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.

4. Efficiency curves



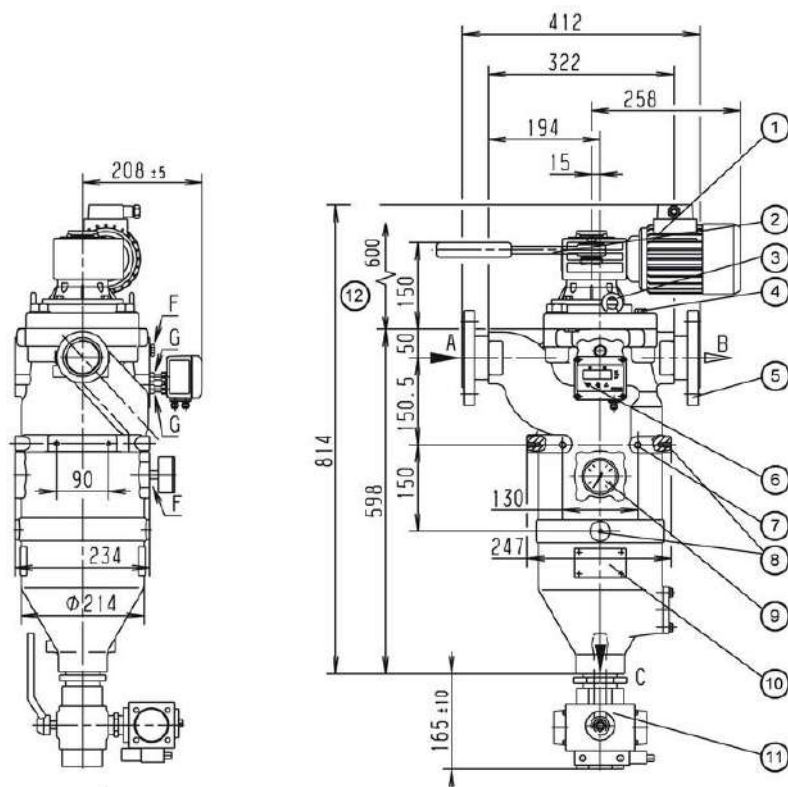
The curves indicate the volume flow through the complete filter system (filter housing including cartridge) and are referred to a differential pressure of 0.3 bar. Specific process information is essential to guarantee reliable operation of an automatic filter.

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]

5. Technical data



- 1 Cleaning drive, worm gear motor can be mounted at each 90° position
- 2 Ratchet optional
- 3 Lifting eyebolts
- 4 Vent screw G $\frac{1}{4}$
- 5 Screw-in flanges DN 50 or DN 65 (the motor is mounted turned 90°) optional
- 6 Differential pressure indicator/switch optional
- 7 Mounting holes M12
- 8 Mounting holes M8
- 9 P1-gauge optional
- 10 Name-plate
- 11 Drain valve, manual or automatic mode optional
- 12 Clearance required = 600 mm

Filter data

Max. operating pressure: - 16, 40, 63 bar
(higher pressure ratings on request)

Max. operating temperature: - 100 °C (higher temperature ratings on request)

Materials:

- Housing and cover: Nodular cast iron
- Internals: Nodular cast iron, steel
- Bearing bushes: PTFE based
- Seals: FPM (Viton)
- Coiled cartridge: 1.4571 or 1.4571/Al
- Welded cartridge: 1.4571
- Perforated foil element: 1.4571 or 1.4571/Al
- Perforated sheet 1.4301
- 4x M20 hexagon screws

Cover fastening:

Connections and nominal diameters:

- A-inlet, B-outlet, C-drain: G2
- F-gauge: G $\frac{1}{4}$
- G- Δ p-connections: G $\frac{1}{8}$
- All threaded holes acc. to DIN 3852 Form X
- A/B/C screw-in flanges DN 50 optional
- A/B DN 65 acc. to EN 1092-1/05A
- Lip seal with O-Ring

Drive shaft seal:

Motor data

Worm gear motor
Multi-range winding

V	Hz	KW	U/min	A
Δ 230 \pm 10 %	50	0.18	17	1.2
Δ 400 \pm 10 %	50	0.18	17	0.7
Δ 266 \pm 10 %	60	0.22	21	1.2
Δ 460 \pm 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

Weight: 73 kg (with ratchet) or 82 kg (with motor)


Volume: 12 l

Other types available on request!

Technical data is subject to change without notice!

6. Cartridges

FG Coiled cartridge		Gap width [µm]/Type end number																	
Type/surface [cm²]	Materials/ dimensions	30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	3000	4000	5000
AF 6016-XXX 862 cm²	Core element Al, wire stainless 1.4571/ ø110x265 mm, wire width 0.5 mm	-003	-004	-005	-006	-008	-010	-013	-016	-	-	-	-	-	-	-	-	-	-
AF 6036-XXX 862 cm²	Core element stainless, wire stainless 1.4571/ ø110x265 mm, wire width 0.5 mm	-003	-004	-005	-	-008	-010	-013	-016	-	-	-	-	-	-	-	-	-	-




Technique

- Sharp-edged rolled stainless steel triangular wire wound in thread on base body
- Precise gap width due to precise thread
- Wire cross section equilateral triangle results in large opening angle of 60°
- Large open filter area
- Core element made of aluminium or stainless steel
- Differential pressure stable up to 25 bar (Al) or 40 bar (stainless steel)

Application

- Very low to high viscosity liquids
- e.g. emulsions, dispersions, lubricating oils and lubricants
- For high solids loads
- Recommended for filtration from 30 to 160 µm

FG Welded cartridge		Gap width [µm]/Type end number																	
Type/surface [cm²]	Materials/ dimensions	30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	3000	4000	5000
AF 6066-XXX 836 cm²	Core element stainless, wire stainless 1.4571/ ø110x265 mm, wire width 1.8 mm	-	-	-	-	-	-	-	-	-	-	-	-050	-100	-150	-200	-	-	-
AF 6076-XXX 836 cm²	Core element stainless, wire stainless 1.4571/ ø110x265 mm, wire width 1.0 mm	-	-	-	-	-	-	-013	-016	-020	-025	-036	-	-	-	-	-	-	-
AF 6086-XXX 836 cm²	Core element stainless, wire stainless 1.4571/ ø110x265 mm, wire width 0.75 mm	-	-	-	-006	-008	-010	-	-	-	-	-	-	-	-	-	-	-	-




Technique

- Welded, solid trapezoidal profile
- Mechanically stable welded construction
- Opening angle of 30°
- Completely made of stainless steel 1.4571
- Differential pressure stable up to 10 bar
- Optional reinforcing spiral for high torsion stability

Application

- Very low to high viscosity liquids
- e.g. pastes, sealants and resins
- High temperatures even above 180 °C
- Recommended for filtration from 60 to 2000 µm

FG Edge perforation foil		Gap width [µm]/Type end number																	
Type/surface [cm²]	Materials/ dimensions	30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	3000	4000	5000
AF 50126-XXX/E1 836 cm²	Core element Al, foil stainless 1.4571/ ø110x265 mm	-	-	-	-	-	-010	-	-	-020	-	-	-050	-	-	-	-	-	-
AF 50136-XXX/E1 836 cm²	Core element stainless, foil stainless 1.4571/ ø110x265 mm	-	-	-	-	-	-010	-	-	-020	-	-	-050	-	-	-	-	-	-




Technique

- Particularly stable edge perforation foil made of stainless steel 1.4571 welded to core element with end rings
- Electron beam drilled conical filter openings
- Opening angle of 45°
- Core element made of aluminium or stainless steel
- Differential pressure stable up to 10 bar

Application

- Very low to high viscosity liquids
- e.g. adhesives and greases
- For gel-like or fibrous impurities
- Recommended for filtration from 100, 200 and 500 µm

FG Perforated sheet		Gap width [µm]/Type end number																	
Type/surface [cm²]	Materials/ dimensions	30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	3000	4000	5000
AF 6006-XXX 836 cm²	Stainless steel 1.4301, ø110x265 mm	-	-	-	-	-	-	-	-	-	-	-	-	-100	-	-200	-	-400	-



Technique

- Robust perforated plate cylinder made of stainless steel 1.4301 with welded reinforcement rings
- Differential pressure stable up to 10 bar

Application

- Very low to high viscosity liquids
e.g. service water and process liquids
- For coarse impurities
- High temperatures even above 180 °C
- Recommended for filtration from 1000 to 4000 µm
- Only available for Vario-3 and higher

7. Type number key

Type number key with selection example for AF 7363-1321-40200/G3

Size

AF 736 1x 110x265 No. of steps x diameter x length [mm]

AF 936 1x 110x265

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

Inlet and outlet connections

- 13 G2
- 14 Screw-in flange DN 50 for cast design
- 15 Screw-in flange DN 65 for cast design
- 18 G2¹/₂

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

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
- 4 PiS 3170, digital Δp gauge, 2 switching levels settable from 0 to 16 bar
- 5 PiS 3175, digital Δp gauge, 2 pressure transmitters settable from 0 to 16 bar
- 8 PiS 3076, switching level at 2.2 bar, static 63 bar, aluminium/FPM
- 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

Cleaning valve

- 0 Without/special version

Optional features

- 0 Without/special version

AF 736 3 - 13 2 1 -4 0 2 0 0 -XXXX (end number for special version)/G3*

* Supplement end number:

G1 Cast design, Version 1

G3 Cast design, Version 3

End number	Special version
3001	Standard complete inner assembly, without housing or drive
3002	Standard complete inner assembly, without housing, with drive
3700	PTFE seals
4166	3 scrapers assembled at outline (120°)
Other numbers	On request

8. Spare parts

No.	Designation	FPM/C steel	Order number	PTFE/VA
1	Bush kit			70308169
2	Seal kit (complete)*	70315877		70315880
3	Scraper			79718503
4	Spring kit			79753492
	Filter cartridge		See name-plate	

*Standard lip seal G3 Version