

## Automatic metal-edge filter AF 71 G

with radial scraper cleaning  
Connection size G1, G1 ½

### 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 homogenized.

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.

#### 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
- Application in Ex zone 1 and 2 optional
- Easy maintenance
- Worldwide distribution



## 2. Operating principle

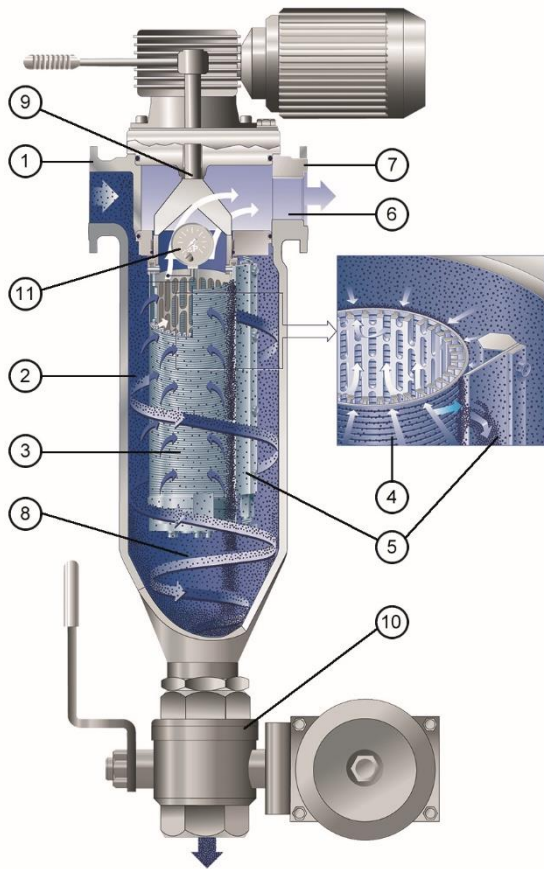
The Filtration Group AF 71 G metal-edge filter belongs to the small Vario series. The Filtration Group metal-edge filter system is used to filter and homogenise a wide range of liquids and pastes. This compact, inline filter system consumes no filter material, which means there is also no need for subsequent 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 function 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.

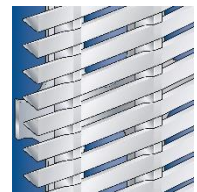


- 1 Inlet connection
- 2 Inlet plenum
- 3 Filtration Group cartridge
- 4 Triangular wire winding
- 5 Scraper
- 6 Plenum for filtered fluid
- 7 Outlet connection
- 8 Particle collection cone
- 9 Cleaning drive with gear motor or hand ratchet
- 10 Drain valve, automatic or manual
- 11 Differential pressure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

### FGC filter cartridges used in the AF 71 G metal-edge filter:

#### FGC 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



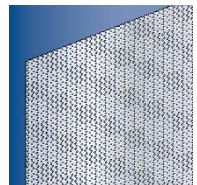
#### FGC Welded cartridge:

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



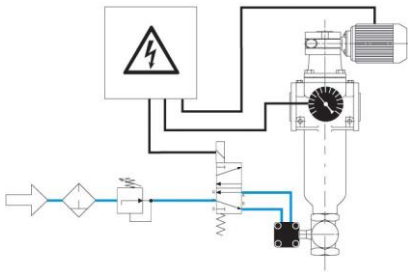
#### FGC Edge perforation foil:

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



### 3. Design and application

#### Cleaning and emptying



#### Fully automatic operation:

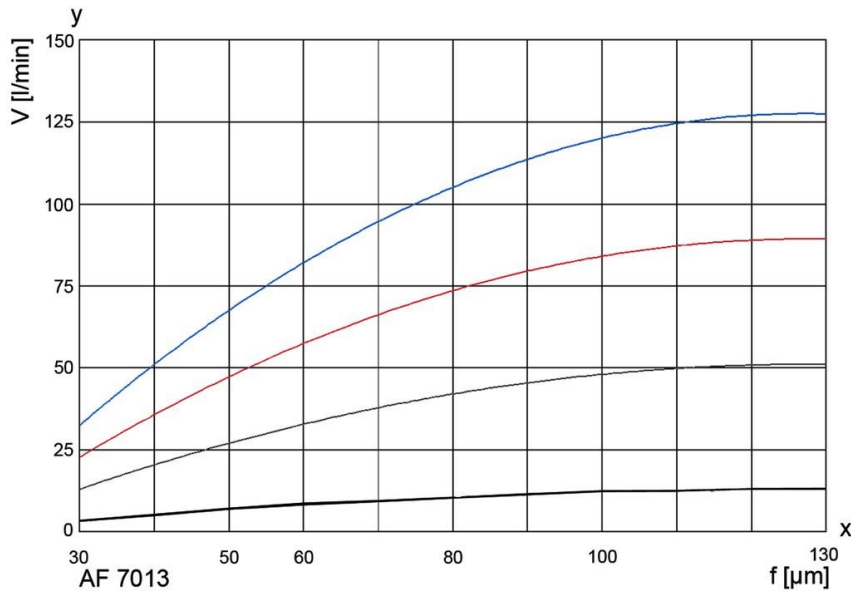
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at approximately 4 times the initial differential pressure. The cleaning motor is operated for around 10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



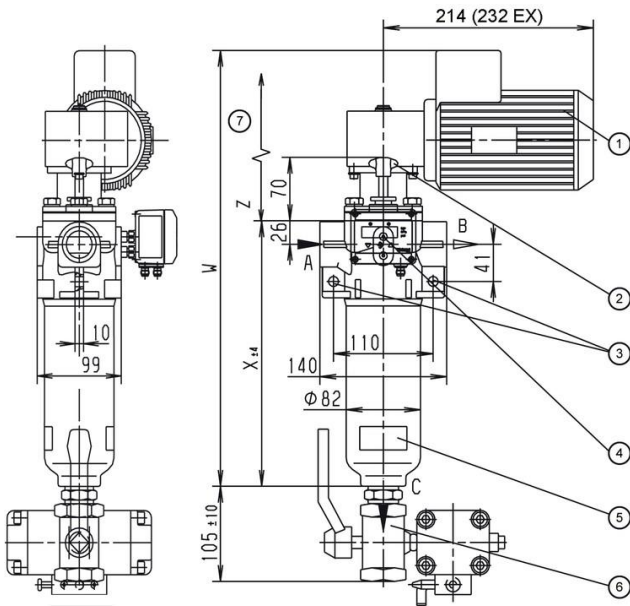
The curves indicate the volume flow through the complete filter system (filter housing including cartridge) and are referred to a differential pressure of 0.3 bar. Specific process information is essential to guarantee reliable operation of an automatic filter.

Viscosity in mm<sup>2</sup>/s (cst)

- 1 mm<sup>2</sup>/s
- 33 mm<sup>2</sup>/s
- 100 mm<sup>2</sup>/s
- 500 mm<sup>2</sup>/s

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

## 5. Technical data



- 1 Cleaning drive gear motor can be mounted at each 90° position
- 2 Cleaning drive star handle
- 3 Mounting holes Ø11
- 4 Differential pressure indicator/switch optional
- 5 Name-plate
- 6 Drain valve, manual or automatic mode optional
- 7 Clearance required Z

The pneumatic part-turn actuator is not shown in this drawing!

All Dimensions in mm.

| Type        | W    | X   | Z   | Volume [l] | Weight [kg] |
|-------------|------|-----|-----|------------|-------------|
| AF 711x*    | 240  | 170 | 130 | 0.6        | 4.2         |
| AF 713x     | 363* | 293 | 250 | 1.0        | 5.5         |
|             | 481  |     |     |            | 10.0        |
| AF 7133-2xx | 490  | 302 | 280 | 1.0        | 11.0        |
| AF 7137     | 470  | 302 | 260 | 1.0        | 9.5         |

\* Cleaning drive star handle

### Filter data

- Max. operating pressure: - 40 bar, 63 bar
- Max. operating temperature: - up to 63 bar max. 200 °C
- Materials:
- Housing and cover: Nodular cast iron
  - Internals: nodular cast iron, steel, optional stainless
  - Bearing bushes: PTFE-based
  - Seals: FPM (Viton)
  - Coiled cartridge: Al, 1.4571
  - Welded cartridge: 1.4571
  - Edge perforation foil: 1.4571
- Cover lock:
- 4x M10 hexagon screws
- Connect./nominal diam.:
- A-inlet, B-outlet: G1, G1½
  - C- drain: G1
  - G-Δp- connection: G<sup>1</sup>/<sub>8</sub> threaded holes DIN 3852 Form X
  - A-inlet, B-outlet: G1, G1½
- Drive shaft seal:
- Square seal ring

### Motor data

Worm gear motor  
Multi-range winding

| V            | Hz | KW    | U/min | A    |
|--------------|----|-------|-------|------|
| Δ 230 ± 10 % | 50 | 0.06  | 18    | 0.6  |
| ▲ 400 ± 10 % | 50 | 0.06  | 18    | 0.35 |
| Δ 266 ± 10 % | 60 | 0.072 | 21    | 0.6  |
| ▲ 460 ± 10 % | 60 | 0.072 | 21    | 0.35 |

Protection class: IP55; insulation class F; output torque: 14 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
- Pneumatic part-turn actuator

**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 [cm <sup>2</sup> ]                    | Materials/ dimensions   | 30                             | 40 | 50   | 60   | 80   | 100  | 130  | 160  | 200 | 250 | 360 | 500 | 1000 | 1500 | 2000 | 3000 | 4000 | 5000 |
| AF 7011-XXX<br>f. AF 711...<br>71 cm <sup>2</sup>  | Core element Al,<br>wire stainless 1.4571/<br>ø42x74 mm,<br>wire width 0.5 mm         | -003                           | -  | -005 | -006 | -008 | -010 | -013 | -016 | -   | -   | -   | -   | -    | -    | -    | -    | -    | -    |
| AF 7031-XXX<br>f. AF 711...<br>71 cm <sup>2</sup>  | Core element stainless,<br>wire stainless 1.4571/<br>ø42x74 mm,<br>wire width 0.5 mm  | -003                           | -  | -005 | -    | -008 | -    | -    | -    | -   | -   | -   | -   | -    | -    | -    | -    | -    | -    |
| AF 7013-XXX<br>f. AF 713...<br>230 cm <sup>2</sup> | Core element Al,<br>wire stainless 1.4571/<br>ø42x194 mm,<br>wire width 0.5 mm        | -003                           | -  | -005 | -006 | -008 | -010 | -013 | -016 | -   | -   | -   | -   | -    | -    | -    | -    | -    | -    |
| AF 7033-XXX<br>f. AF 713...<br>230 cm <sup>2</sup> | Core element stainless,<br>wire stainless 1.4571/<br>ø42x194 mm,<br>wire width 0.5 mm | -003                           | -  | -005 | -006 | -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 [cm <sup>2</sup> ]                    | Materials/ dimensions  | 30                             | 40 | 50 | 60   | 80   | 100  | 130  | 160  | 200  | 250  | 360  | 500  | 1000 | 1500 | 2000 | 3000 | 4000 | 5000 |
| AF 7071-XXX<br>f. AF 711...<br>71 cm <sup>2</sup>  | Core element stainless,<br>wire stainless 1.4571/<br>ø42x74 mm,<br>wire width 1.0 mm   | -                              | -  | -  | -    | -    | -    | -    | -    | -020 | -025 | -036 | -050 | -100 | -    | -    | -    | -    | -    |
| AF 7081-XXX<br>f. AF 711...<br>71 cm <sup>2</sup>  | Core element stainless,<br>wire stainless 1.4571/<br>ø42x74 mm,<br>wire width 0.75 mm  | -                              | -  | -  | -006 | -008 | -010 | -013 | -016 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| AF 7073-XXX<br>f. AF 713...<br>230 cm <sup>2</sup> | Core element stainless,<br>wire stainless 1.4571/<br>ø42x194 mm,<br>wire width 1.0 mm  | -                              | -  | -  | -    | -    | -    | -    | -    | -020 | -025 | -036 | -050 | -100 | -150 | -200 | -    | -    | -    |
| AF 7083-XXX<br>f. AF 713...<br>230 cm <sup>2</sup> | Core element stainless,<br>wire stainless 1.4571/<br>ø42x194 mm,<br>wire width 0.75 mm | -                              | -  | -  | -006 | -008 | -010 | -013 | -016 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |




**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

**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 [cm <sup>2</sup> ]                        | Materials/ dimensions   | 30                             | 40 | 50 | 60 | 80 | 100  | 130 | 160 | 200  | 250 | 360 | 500  | 1000 | 1500 | 2000 | 3000 | 4000 | 5000 |
| AF 50133-XXX/E1<br>f. AF 713...<br>230 cm <sup>2</sup> | Core element stainless,<br>foil stainless 1.4571/<br>ø42x194 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 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

## 7. Type number key

### Type number key with selection example for AF AF 7133-1241-10200/G1

#### Size

AF 711 1x 42x68 No. of steps x diameter x length [mm]

AF 713 1x 42x190

#### Cleaning drive

- 1 Star handle
- 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 Pneumatic part-turn actuator

#### Inlet and outlet connections

- 2 G1<sup>1/2</sup> (only for AF 713)
- 12 G1

#### Permissible operating pressure in bar (housing/cover)

- 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  $\Delta p$  gauge with control function in combination with pneumatic part-turn actuator
- 4 PiS 3170, digital  $\Delta p$  gauge, 2 switching levels settable from 0 to 16 bar
- 8 PiS 3076, switching level at 2.2 bar, static 63 bar, aluminium/FPM
- 9 PiS 3180, Ex- $\Delta p$  gauge with Ex-pressure transmitter

#### 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

#### Cleaning valve

- 0 Without/special version

#### Cleaning valve

- 0 Without/special version
- 1 Bypass valve 20 bar

AF 713 3 -12 4 1 -1 0 2 0 0 -XXXX (end number for special version)\*

\* Supplement end number:

G1 Cast design, Version 1

GX1 Cast design with 1<sup>1/2</sup> " in- and outlet, Version 1

| 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   |

## 8. Spare parts

| No. | Designation  | Order number   |                   |
|-----|--|----------------|-------------------|
|     |  | FPM/C-Stahl    | PTFE/VA           |
| 1   | Bush kit   |                | 76148654          |
| 2   | Set of seals (complete, standard square ring seal) | 76148647       | 76198352          |
| 3   | Scraper AF 711/AF 713                              |                | 71371269/71371285 |
| 4   | Cartridge  | See name-plate |                   |
| 5   | Flat spring  | 79745365       |                   |

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76122527.05/2021