

## Automatic metal-edge filters AF 72 G

with radial scraper cleaning

Connection size G1 1/2, flange DN 40

### 1. Short description

FGC 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
- FGC 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
- Certification for Pressure Equipment Directive (PED) according to category III PED EN for stainless steel design optional
- Easy maintenance
- Worldwide sales



## 2. Operating principles

The FGC AF 72 G metal-edge filter belongs to the small Vario series. The FGC metal-edge filter system is used to filter and homogenise a wide range of liquids and pastes.

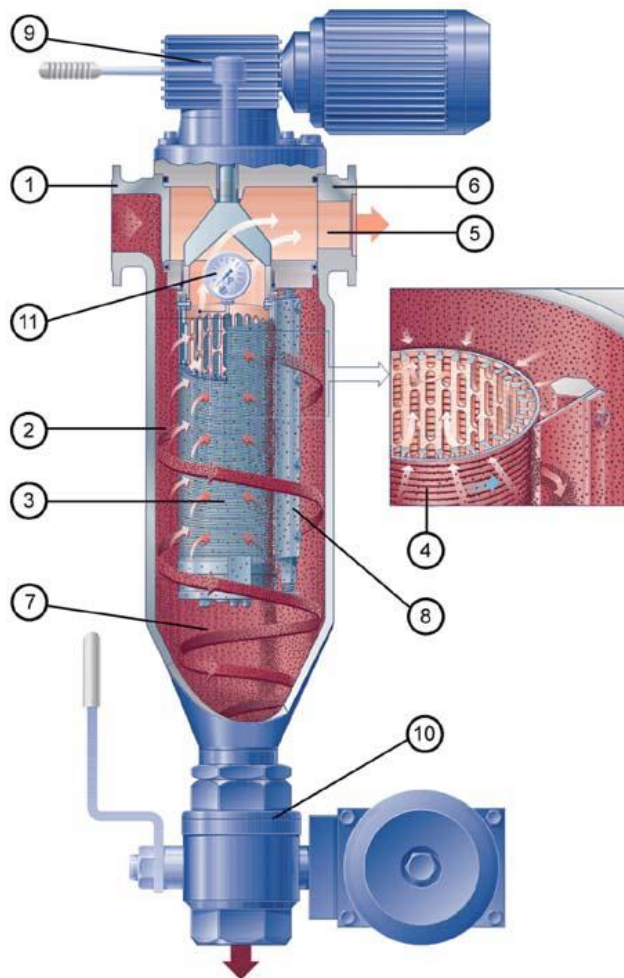
This compact, inline filter system consumes no filter material, which means there is also no need for subsequent disposal. The filter can be cleaned either automatically or semi-automatically without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time.

The medium to be cleaned is guided into the filter housing under pressure or in suction mode. It flows inward through the FGC cartridge. The solids are separated on the surface of the triangular 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 FGC cartridge is rotated against a spring actuated scraper for this purpose. The special cartridge gap geometry guarantees efficient cleaning.

The particles or agglomerates are skimmed from the surface and settle in the collection cone. The patented cartridge bearing (AKF system) prevents high axial forces and facilitates the cleaning process.

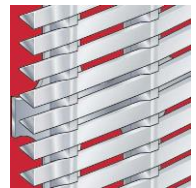
The residue that has settled in the collection cone can be emptied via the drain valve either when the machine is at a standstill or during filtration.



### Used FGC filter cartridges in the AF 72 G metal-edge filter

#### FGC 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



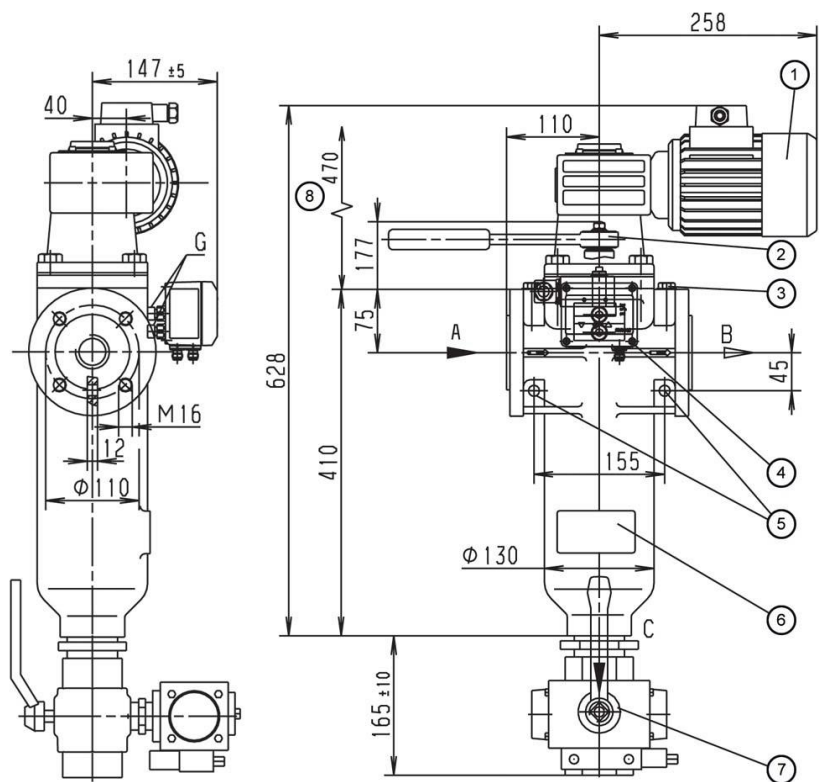
#### FGC welded cartridge:

- 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 FGC cartridge
- 4 Triangular wire winding
- 5 Plenum for filtered fluid
- 6 Outlet connection
- 7 Particle collection cone
- 8 Scraper
- 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 G $\frac{1}{4}$
- 4 Optional differential pressure indicator/switch
- 5 Mounting holes  $\varnothing 13$
- 6 Name-plate
- 7 Optional drain valve, manual or automatic mode
- 8 Clearance required = 470 mm

Filter data

- Max. operating pressure:
- 16, 40, 63 bar
  - 100 bar nur bei statischer Belastung zulässig
- Max. operating temperature:
- 200 °C up to 63 bar
  - 100 °C up to 100 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 ( $\Delta p$  max. 40 bar)
  - welded cartridge: 1.4571 ( $\Delta p$  max. 10 bar)
- Cover lock:
- 4 x M16 hexagon screws
- Connect./nominal diam.:
- A-inlet, B-outlet: G1½, flange DN 40
  - C-drain: G2
  - G-Dp-connection: G1/8
- 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   | U/min | A   |
|-----------------------|----|------|-------|-----|
| $\Delta 230 \pm 10\%$ | 50 | 0.18 | 17    | 1.2 |
| $\Delta 400 \pm 10\%$ | 50 | 0.18 | 17    | 0.7 |
| $\Delta 266 \pm 10\%$ | 60 | 0.22 | 21    | 1.2 |
| $\Delta 460 \pm 10\%$ | 60 | 0.22 | 21    | 0.7 |

Protection class: IP55; insulation class F; output torque: 52 Nm

Optional: Ex protection acc. to ATEX 94/9/EC

- Electrical. design in Ex II 2G T3
- Mechanical design in Ex II 2G c T3

Weight: 42 kg (with ratchet) or 52 kg (with motor)

Volume: 4 l

Other types available on request!

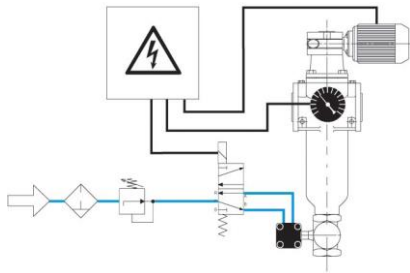
Technical data is subject to change without notice!

## 4. Design and application

| Cartridge type<br>(see<br>section 6) | Total<br>surface<br>in cm <sup>2</sup> | Gap width in µm/<br>effective gap surface in cm <sup>2</sup> |    |    |    |    |     |     |     |     |     |     |     |      |      |      |
|--------------------------------------|--|--|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|                                      |  | 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  | 343  | 366  |
| AF 6024                              | 437                                    |  |    | 27 | 32 | 42 | 51  | 64  | 76  | 91  | 109 | 142 | 176 | 254  | 298  | 327  |
| AF 6034                              | 419                                    | 25   | 33 | 40 | 47 | 61 | 73  | 91  | 106 |     |     |     |     |      |      |      |
| AF 6044                              | 419                                    |  |    | 26 | 31 | 40 | 49  | 61  | v   | 88  | 105 | 136 | 169 | 244  | 286  | 314  |
| AF 6064                              | 415                                    |  |    |    |    |    |     |     |     | 44  | 53  | 73  | 95  | 156  | 198  | 229  |
| AF 6074                              | 415                                    |  |    | 21 | 25 | 32 | 40  | 50  | 60  | 73  | 87  | 115 | 145 |      |      |      |
| 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.

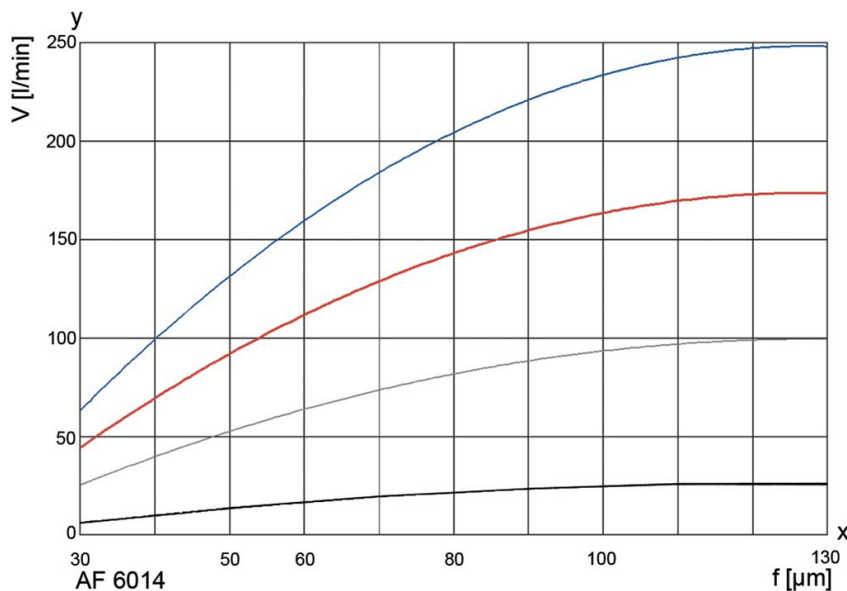
The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place synchronously with cleaning or be time or cycle controlled.

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 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]

## 6. Type number key

### Type number key with selection example for AF 7243-221-30200/G4

#### Size

AF 724 1 x 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

#### Inlet and outlet connections

- 2 DN 40 with G1<sup>1</sup>/<sub>2</sub>

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

- 2 PN 16
- 4 PN 40
- 5 PN 63
- 6 PN 100

#### Material

- Seal FPM, bearing PTFE
- 1 Housing and cover nodular cast iron, steel, aluminium
- 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
- 4 PiS 3170, digital Dp 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 3076, switching level at 5 bar, static 63 bar, aluminium/FPM

#### 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

#### Optional features

- 1 Bypass valve 20 bar
- 2 Bypass valve 40 bar

AF 724 3 - 2 2 1 -3 0 2 0 0 -XXXX (end number for special version)/G4

| 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  |                         |               |             |                  |         | /E1 |
|---|-------------------------|---------------|-------------|------------------|---------|-----|
| 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       |                  | /E1     |     |

## 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.