

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

with radial scraper cleaning

Connection size G2, flange DN 50, cast stainless steel

### 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 preseparation.

#### 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 system for optimum filter selection (small Vario series)
- 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
- Certification for Pressure Equipment Directive (PED) according to category III PED EN 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.

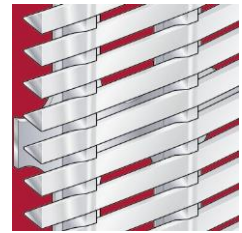
The particles or agglomerates are skimmed from the surface and settle in the collection cone. The patented filter cartridge bearing (AKF system) prevents high axial forces and facilitates the cleaning process.

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.

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

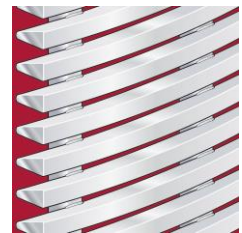
#### Filtration Group coiled cartridge (standard):

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



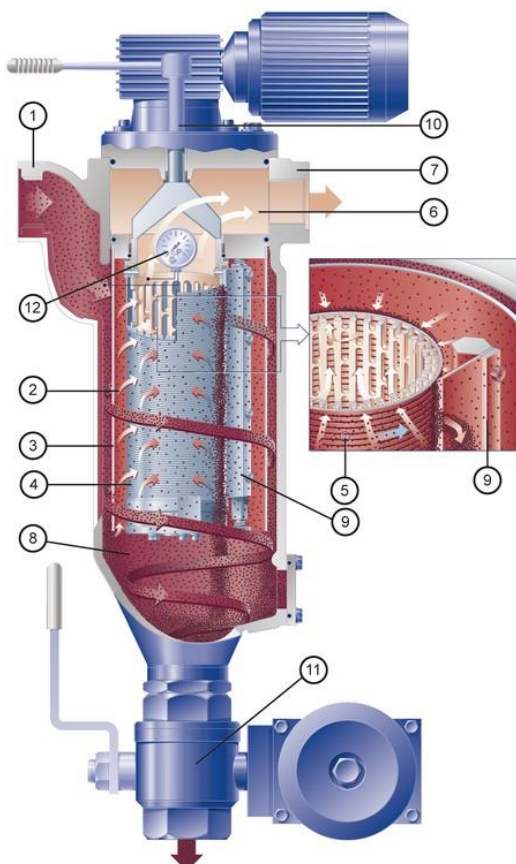
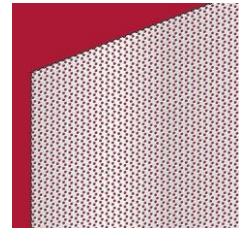
#### Filtration Group welded cartridge:

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



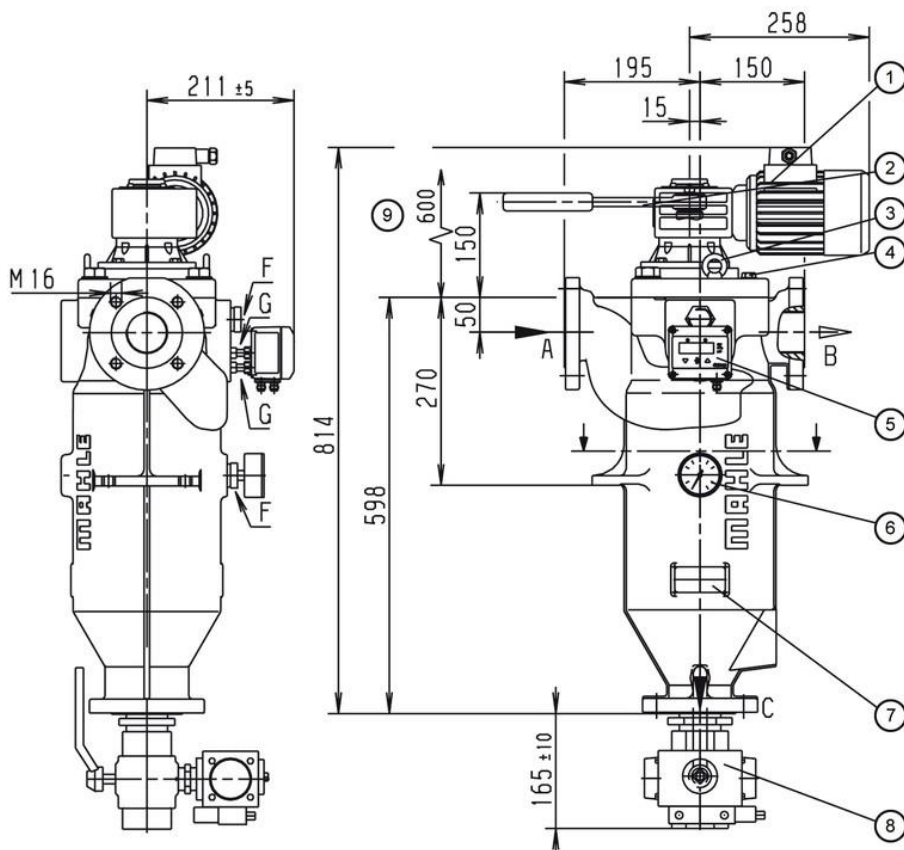
#### Filtration Group perforated foil:

- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Suitable for filtering fibrous waste material
- Manufactured in stainless steel



- 1 Tangential inlet connection
- 2 Inlet plenum
- 3 Preseparator tube for AF 93 G
- 4 Filtration Group filter cartridge
- 5 Triangular wire winding
- 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

### 3. Technical data



- 1 Cleaning drive, worm gear motor can be mounted at each 90° position
- 2 Optional ratchet
- 3 Lifting eyebolts
- 4 Vent screw G $\frac{1}{4}$
- 5 Optional differential pressure indicator/switch
- 6 Optional P1 gauge
- 7 Name-plate
- 8 Optional drain valve, manual or automatic mode
- 9 Clearance required = 600 mm

#### Filter data

|                                    |  |
|------------------------------------|--|
| Max. operating pressure:           | 16 bar   |
| Max. operating temperature:        | 100 °C   |
| Materials:                         | <ul style="list-style-type: none"> <li>- Housing and cover: Stainless steel 1.4581</li> <li>- Optional certificate acc. to EN 10204-3.1</li> <li>- Internals: stainless steel 1.4581/1.4571</li> <li>- Bearing bushes: PTFE based</li> <li>- Seals: FPM (Viton)</li> <li>- Coiled cartridge: 1.4571 or 1.4571/Al (<math>\Delta p</math> max. 30 bar)</li> <li>- Welded cartridge: 1.4571 (<math>\Delta p</math> max. 10 bar)</li> <li>- Perforated foil element: 1.4571 or Al, 1.4571 or Al, Ni (<math>\Delta p</math> max. 10 bar)</li> </ul> |
| Cover fastening:                   | 4 x M20 hexagon screws   |
| Connections and nominal diameters: | <ul style="list-style-type: none"> <li>- A-inlet, B-outlet, C-drain: DN 50 + internal thread G2</li> <li>- F-gauge: G1</li> <li>- G-indicator: G1/8</li> <li>- threaded holes acc. to DIN 3852 Z</li> </ul>  |
| Drive shaft seal:                  | Lip seal with O-ring   |

#### Motor data

Worm gear motor  
Multi-range winding

| V                       | Hz | kW   | rpm | A   |
|-------------------------|----|------|-----|-----|
| $\Delta$ 230 $\pm$ 10%  | 50 | 0.18 | 17  | 1.2 |
| $\lambda$ 400 $\pm$ 10% | 50 | 0.18 | 17  | 0.7 |
| $\Delta$ 266 $\pm$ 10%  | 60 | 0.22 | 21  | 1.1 |
| $\lambda$ 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!**

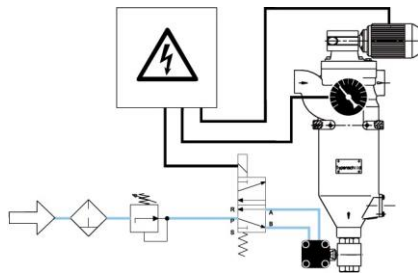
**Technical data is subject to change without notice!**

## 4. Design and application

| Cartridge type<br>(see section 6) | Total surface<br>in cm <sup>2</sup> | Gap width in µm/<br>effective filter surface in cm <sup>2</sup> |    |    |    |     |     |     |     |     |     |     |     |      |      |      |
|-----------------------------------|-------------------------------------|---|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|                                   |                                     | 30  | 40 | 50 | 60 | 80  | 100 | 130 | 160 | 200 | 250 | 360 | 500 | 1000 | 1500 | 2000 |
| 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  |
| AF 6076                           | 836                                 |   |    |    |    | 63  | 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  |

 Recommended design

### Cleaning and emptying



#### Fully automatic operation:

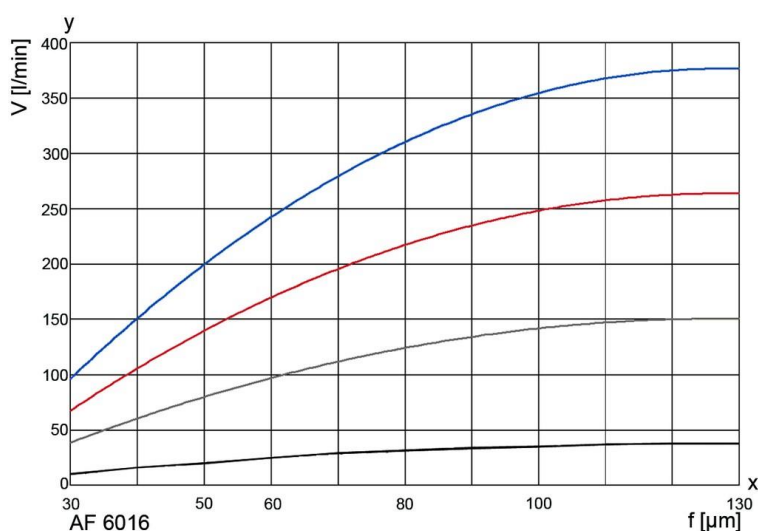
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at approximately 4 times the initial differential pressure. The cleaning motor is operated for around 10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

Refer to the Instruction Manual for further information.

## 5. 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 mm<sup>2</sup>/s

-  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]

mm<sup>2</sup>/s = cst

## 6. Type number key

### Type number key with selection example for AF 7363-1322-40200/G3

#### Size

|               |             |   |
|---------------|-------------|---|
| <b>AF 736</b> | 1 x 110x265 | step x diameter x length [mm]                                 |
| <b>AF 936</b> | 1 x 110x265 | step x diameter x length [mm], with integrated pre-separation |

#### 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

- 3** DN 50 for cast design
- 13** G2

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

- 2** PN 16

#### Material Seal FPM, bearing PTFE

- 2** Housing and cover 1.4581, internals 1.4571

#### 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  $\Delta p$  gauge, 2 switching levels settable from 0 to 16 bar static
- 5** PiS 3175, digital  $\Delta p$  gauge, 2 pressure transmitters settable from 0 to 16 bar static
- 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    2    -4    0    2    0    0    -XXXX (end number for special version)/G3\***

\*end number completion:

**G1** cast iron, Version 1

**G3** cast iron, 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 scraper assembled at outline (120°)                         |
| 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 or perforated plate

**AF 50** Perforated foil

| Material                | Core element | Filter medium | Clamp rings | Wire width in mm |
|-------------------------|--------------|---------------|-------------|------------------|
| <b>Perforated plate</b> |              |               |             |                  |
| <b>0</b>                | -            | 1.4301        | -           | -                |
| <b>Coiled cartridge</b> |              |               |             |                  |
| <b>1</b>                | Al           | 1.4571        | 1.4571      | 0.5              |
| <b>2</b>                | Al           | 1.4571        | 1.4571      | 0.8              |
| <b>3</b>                | 1.4581       | 1.4571        | -           | 0.5              |
| <b>4</b>                | 1.4581       | 1.4571        | -           | 0.8              |
| <b>Welded cartridge</b> |              |               |             |                  |
| <b>6</b>                | -            | 1.4571        | 1.4571      | 1.8              |
| <b>7</b>                | -            | 1.4571        | 1.4571      | 1                |
| <b>8</b>                | -            | 1.4571        | 1.4571      | 0.75             |
| <b>Perforated foil</b>  |              |               |             |                  |
| <b>11</b>               | Al           | Ni            | 1.4571      | -                |
| <b>12</b>               | Al           | 1.4571        | 1.4571      | -                |
| <b>13</b>               | 1.4571       | 1.4571        | 1.4571      | -                |

**Overall length** Diameter x length in mm

**6** 110x265

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

|            |       |            |        |            |         |
|------------|-------|------------|--------|------------|---------|
| <b>003</b> | 30 µm | <b>010</b> | 100 µm | <b>036</b> | 360 µm  |
| <b>004</b> | 40 µm | <b>013</b> | 130 µm | <b>050</b> | 500 µm  |
| <b>005</b> | 50 µm | <b>016</b> | 160 µm | <b>100</b> | 1000 µm |
| <b>006</b> | 60 µm | <b>020</b> | 200 µm | <b>150</b> | 1500 µm |
| <b>008</b> | 80 µm | <b>025</b> | 250 µm | <b>200</b> | 2000 µm |

**Hole diameter at perforated foil in µm**

|            |        |            |        |            |        |
|------------|--------|------------|--------|------------|--------|
| <b>010</b> | 100 µm | <b>020</b> | 200 µm | <b>050</b> | 500 µm |
|------------|--------|------------|--------|------------|--------|

Other filter ratings on request

**AF 60** **1** **6** **- 010**

xxx

## 7. Spare parts

| No. | Designation          | Material no.   |          |
|-----|----------------------|----------------|----------|
|     |                      | FPM/C steel    | PTFE/VA  |
| 1   | Bush kit             |                | 70308169 |
| 2   | Seal kit (complete)* |                | 70315880 |
| 3   | Scraper              |                | 71116805 |
| 4   | Spring kit           |                | 79753492 |
| 5   | Filter cartridge     | See name-plate |          |

\*Standard lip seal G3 Version

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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