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 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.

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 auxiliary 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.

The schematic drawing deviates slightly from the actual technical lay-out.

Used Filtration Group filter cartridges in the AF 71 G metal-edge filter:

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
3. Technical data

Filter data
- Max. operating pressure: 40 bar, 63 bar
- Max. operating temperature: up to 63 bar max. 200 °C
- Materials: Housing and cover: GGG 40, Internals: nodular cast iron, steel, optional stainless steel, Bearing bushes: PTFE based, Seals: FPM (Viton), Coiled cartridge: 1.4571 or 1.4571/Al (Δp max. 40 bar), Welded cartridge: 1.4571 (Δp max. 10 bar)
- Cover fastening: 4x M10 hexagon screws
- Connections and nominal diameters: A-inlet, B-outlet: G1, G1½, C-drain: G1, G-indicator: G1/8, All threaded holes acc. to DIN 3852 form X
- Drive shaft seal: Square seal ring
- Outside coating: Synthetic resin primer blue acc. to RAL 5007

Motor data
- Worm gear motor
- Multi-range winding

<table>
<thead>
<tr>
<th>Type</th>
<th>W [mm]</th>
<th>X [mm]</th>
<th>Z [mm]</th>
<th>Volume [l]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF 711x*</td>
<td>240</td>
<td>170</td>
<td>130</td>
<td>0.6</td>
<td>4.2</td>
</tr>
<tr>
<td>AF 713x</td>
<td>363*</td>
<td>293</td>
<td>250</td>
<td>1.0</td>
<td>5.5*</td>
</tr>
<tr>
<td></td>
<td>481</td>
<td></td>
<td></td>
<td></td>
<td>10.0</td>
</tr>
<tr>
<td>AF 7133-2xx</td>
<td>490</td>
<td>302</td>
<td>280</td>
<td>1.0</td>
<td>11.0</td>
</tr>
<tr>
<td>AF 7137</td>
<td>470</td>
<td>302</td>
<td>260</td>
<td>1.0</td>
<td>9.5</td>
</tr>
</tbody>
</table>

* with star handle

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

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- 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

Technical data is subject to change without notice!
4. Design and application

<table>
<thead>
<tr>
<th>Cartridge type (see section 6)</th>
<th>Total surface in cm²</th>
<th>Gap width in µm/ effective filter surface in cm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF 7011</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7031</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7071</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7081</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7013</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7033</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7073</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AF 7083</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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 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 s. 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 mm²/s

<table>
<thead>
<tr>
<th>Viscosity in mm²/s</th>
<th>1 mm²/s</th>
<th>33 mm²/s</th>
<th>100 mm²/s</th>
<th>500 mm²/s</th>
</tr>
</thead>
</table>

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 7133-1241-10200/G1**

<table>
<thead>
<tr>
<th>Size</th>
<th>1x 42x68</th>
<th>No. of steps x diameter x length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF 711</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF 713</td>
<td>1x 42x190</td>
<td></td>
</tr>
</tbody>
</table>

**Cleaning drive**

1. Star handle
2. Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz
3. Gear motor 230/400 V, 50 Hz Ex II G T3
4. Pneumatical rotary drive

**Inlet and outlet connections**

<table>
<thead>
<tr>
<th>No.</th>
<th>G1</th>
<th>G1½</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>G1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>G1½</td>
<td></td>
</tr>
</tbody>
</table>

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

- 4 PN 40
- 5 PN 63 (only for AF 713)

**Material**

- Seal FPM, bearing PTFE
- Housing and cover nodular cast iron, steel
- Housing and cover steel, grey cast iron or nodular cast iron, internals stainless steel 1.4301/1.4571
- Housing and cover steel, grey cast iron or nodular cast iron, aluminium-free
- Housing and cover nodular cast iron with delta seal coating, internals stainless steel 1.4301

**Differential pressure indicator and switch**

1. PI S 3076, switching level at 1.2 bar, static 63 bar, aluminium/FPM
2. PI S 3076, switching level at 0.7 bar, static 63 bar, aluminium/FPM
3. PI S 3170 MFC, digital Δp gauge with control function in combination with pneumatical rotary drive
4. PI S 3170, digital Δp gauge, 2 switching levels settable from 0 to 16 bar
5. PI S 3076, switching level at 2.2 bar, static 63 bar, aluminium/FPM
6. PI S 3180, Ex-Δp gauge with Ex-pressure transmitter
7. PI S 3170, digital Δp gauge with control function in combination with pneumatical rotary drive
8. PI S 3170, digital Δp gauge, 2 switching levels settable from 0 to 16 bar
9. PI S 3180, Ex-Δp gauge with Ex-pressure transmitter

**Valves and control throttles**

<table>
<thead>
<tr>
<th>No.</th>
<th>Without/special version</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ball valve, manual</td>
</tr>
<tr>
<td>1</td>
<td>Ball valve, electric 24 V</td>
</tr>
<tr>
<td>2</td>
<td>Ball valve, electric 230 V</td>
</tr>
</tbody>
</table>

**Optional features**

<table>
<thead>
<tr>
<th>No.</th>
<th>Without/special version</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Bypass valve 20 bar</td>
</tr>
</tbody>
</table>

**End number**

- 3001 Standard complete inner assembly, without housing or drive
- 3002 Standard complete inner assembly, without housing, with drive
- 3700 PTFE seals

**Other numbers**

- On request

*end number completion:
- G1 cast iron, Version 1
- GX1 cast iron with 1½ " inlet and outlet connection, Version 1
## Type number key with selection example for coiled or welded cartridges for AF 70

<table>
<thead>
<tr>
<th>Material</th>
<th>Core element</th>
<th>Filter medium</th>
<th>Clamp rings</th>
<th>Wire width in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coiled cartridge</td>
<td>1</td>
<td>Al</td>
<td>1.4571</td>
<td>1.4571</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1.4581</td>
<td>1.4571</td>
<td>-</td>
</tr>
<tr>
<td>Welded cartridge</td>
<td>7</td>
<td>-</td>
<td>1.4571</td>
<td>1.4571</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>-</td>
<td>1.4571</td>
<td>1.4571</td>
</tr>
</tbody>
</table>

### Overall length Diameter x length in mm
- 1: 42 x 70
- 3: 42 x 190

### Gap width/rating in µm (see 4. Design and application)
- 003: 30 µm
- 004: 40 µm
- 005: 50 µm
- 006: 60 µm
- 008: 80 µm
- 010: 100 µm
- 013: 130 µm
- 016: 160 µm
- 020: 200 µm
- 025: 250 µm
- 036: 360 µm
- 050: 500 µm
- 100: 1000 µm
- 150: 1500 µm
- 200: 2000 µm
- Other filter ratings on request

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## 7. Spare parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Designation</th>
<th>Material no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bush kit</td>
<td>76148654</td>
</tr>
<tr>
<td>2</td>
<td>Seal kit (complete, standard square ring seal)</td>
<td>76148647, 76198352</td>
</tr>
<tr>
<td>3</td>
<td>Scraper AF 711/AF 713</td>
<td>71371269/71371285</td>
</tr>
<tr>
<td>4</td>
<td>Filter cartridge</td>
<td>See name-plate</td>
</tr>
<tr>
<td>5</td>
<td>Flat spring</td>
<td>79745365</td>
</tr>
</tbody>
</table>

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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