AUTOMATIC FILTER

RELENTLESSLY EFFICIENT

Automatic and process filters that deliver precision in continuous operation

Filtration Group®
Safer | Healthier | More Productive

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

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.

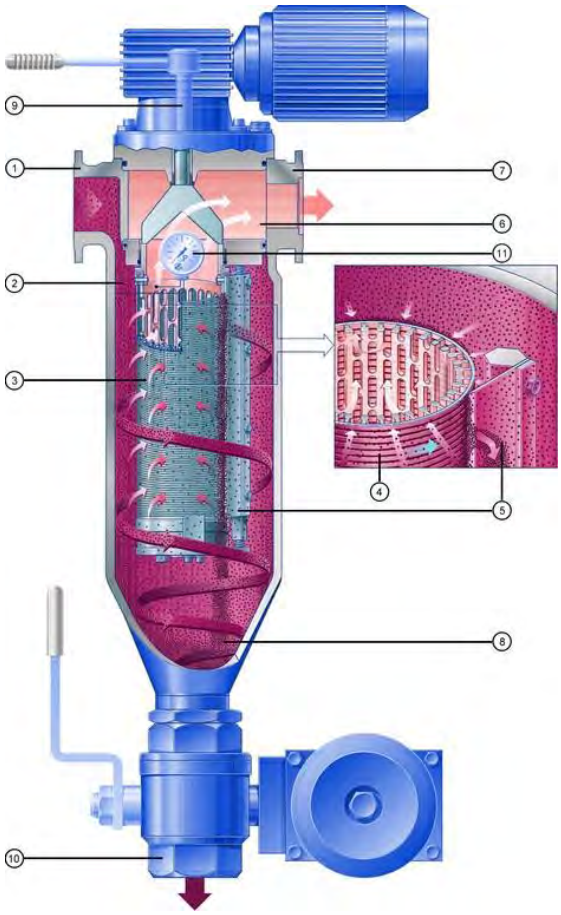
These compact inline filter systems can be designed for semi or fully automatic cleaning. The system is cleaned by rotating the filter cartridge against a spring actuated scraper.

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 funtion 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.



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

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

Filtration Group coiled cartridge (standard):

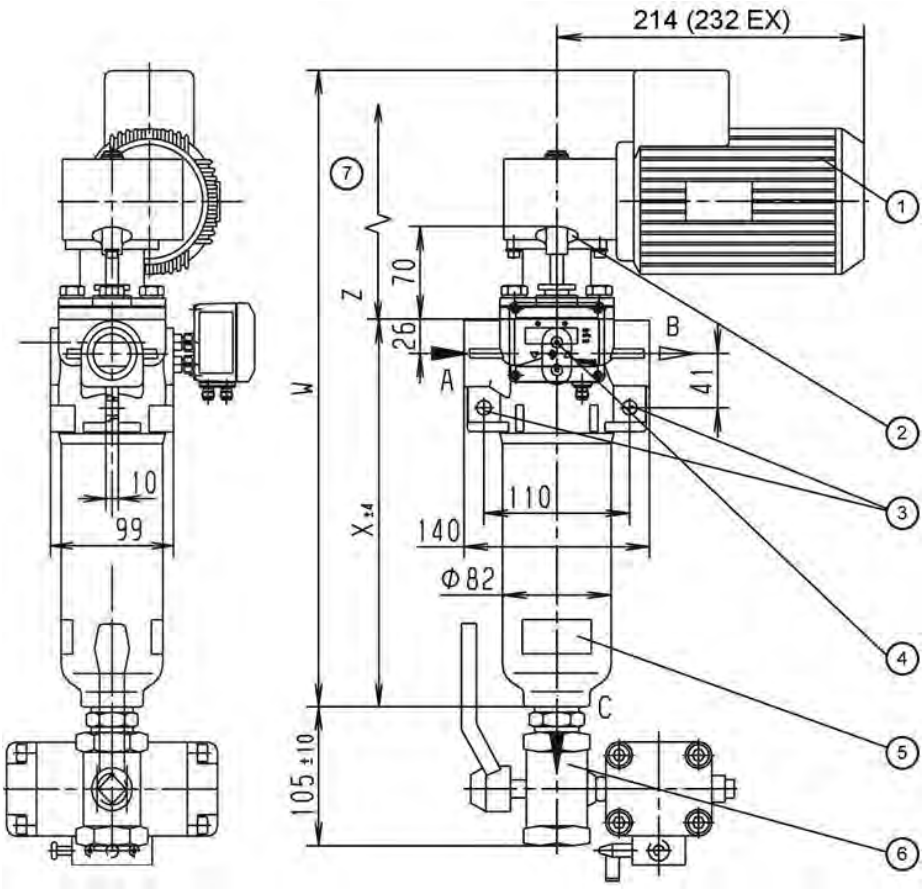
- Optimum cleaning by means of sharp-edged triangular wire
- Large effective filter surface
- Small, precise gap widths
- High differential pressure stability and torsional strength
- Several material combinations possible

Filtration Group welded cartridge:

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

1 Inlet connection
2 Inlet plenum
3 Filtration Group filter 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 star handle
10 Drain valve (automatic or manual)
11 Differential pressure indicator/switch

3. Technical data



1 Cleaning drive for size AF 713, gear motor can be mounted at each 90° position
2 Cleaning drive for size AF711/AF713, star handle
3 Mounting holes Ø11
4 Optional differential pressure indicator/switch
5 Type plate
6 Optional drain valve, manual or automatic mode
7 Z = Clearance required

The pneumatical rotary drive is not shown in this drawing!

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

Other types available on request!
Technical data is subject to change without notice!

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
Δ 230 ± 10%	50	0.060	18	0.60
⅄ 400 ± 10%	50	0.060	18	0.35
Δ 266 ± 10%	60	0.072	21	0.60
⅄ 460 ± 10%	60	0.072	21	0.35

Protection class: IP55, insulation class F; output torque: 14 Nm

Type	W [mm]	X [mm]	Z [mm]	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

* with star handle

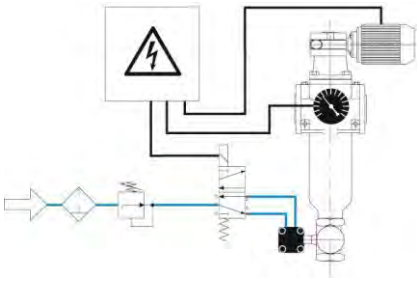
Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical design in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Pneumatical rotary drive

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width in µm/ effective filter surface in cm²													
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000
AF 7011	71	5	6	8	9	12	14	17	20	24	28	35	42	56		
AF 7031	71	5	6	8		12				24		35				
AF 7071	71									14	17		28	42		65
AF 7081	71				6	8	10		15							
AF 7013	230	14	18	22	26	33	40	50	59	69	81	102	121	162		194
AF 7033	230	14	18	22	26	33	40		59						182	194
AF 7073	230						22			40	49	64	81	121	146	162
AF 7083	230				18	23	29	36	43							

Recommended design

Cleaning and emptying



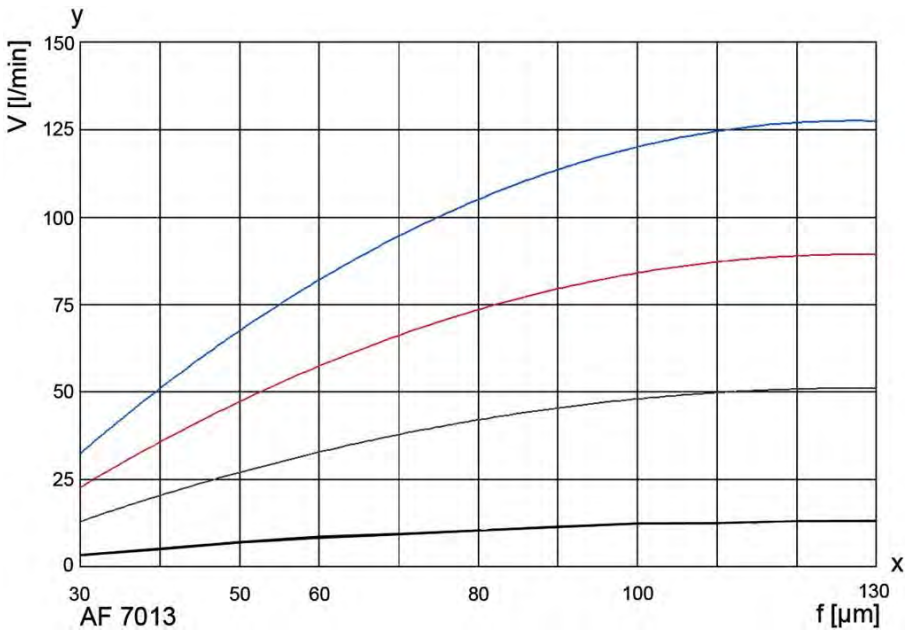
Fully automatic operation:

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

- 1 mm²/s
- 33 mm²/s
- 100 mm²/s
- 500 mm²/s

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

Size

- **AF 711** 1x 42x68 — No. of steps x diameter x length [mm]
- **AF 713** 1x 42x190 — No. of steps x diameter x length [mm]

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** Pneumatical rotary drive

Inlet and outlet connections

- **12** G1
- **2** G1½

Permissible operating pressure in bar (housing/cover)

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

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 Δp gauge with control function in combination with pneumatical rotary drive
- **4** PiS 3170, digital Δp 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-Δp gauge with Ex-pressure transmitter

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
- **1** Bypass valve 20 bar

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

*end number completion:

G1 cast iron, Version 1

GX1 cast iron with 1½ " inlet and outlet connection, Version 1

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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 70

Series

AF 70 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
	3	1.4581	1.4571	-	0.5
	Welded cartridge				
	7	-	1.4571	1.4571	1
	8	-	1.4571	1.4571	0.75

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	**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 70	**1**	**3**	**-005**

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		76148654
2	Seal kit (complete, standard square ring seal)	76148647	76198352
3	Scraper AF 711/AF 713		71371269/71371285
4	Filter cartridge	See name-plate	
5	Flat spring	79745365	

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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
04/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic metal-edge filter
AF 71 H

with radial scraper cleaning
High-pressure design up to 400 bar

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 are designed for automatic cleaning. The system is cleaned by rotating the filter element 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 element 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
- Optimal filter selection
- Material variants open up a wide range of applications
- Easy maintenance
- Worldwide distribution

2. Operating principle

The Filtration Group AF 71 H is a special type of metal-edge filter. The Filtration Group metal-edge filter system with an operating pressure up to 400 bar is used to filter and homogenise a wide range of liquids and pastes.

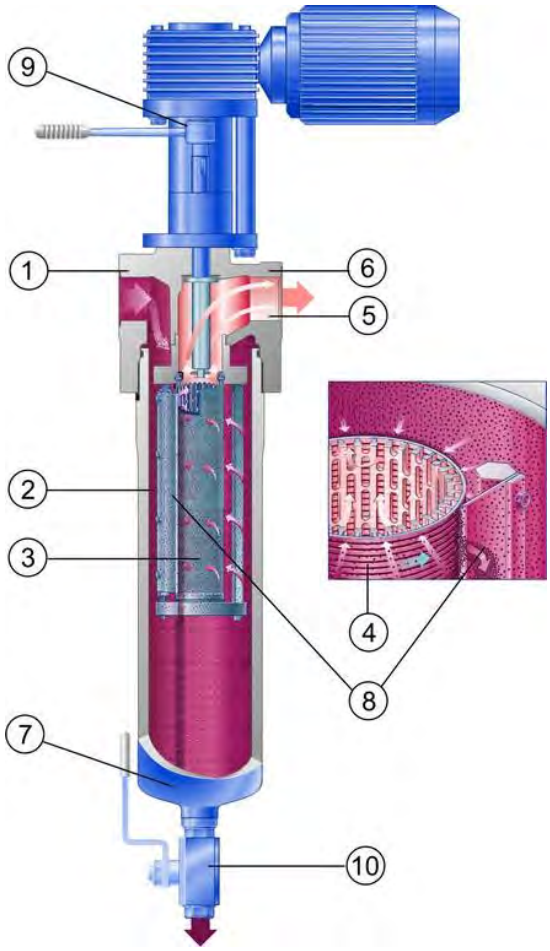
This compact, inline filter system consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned automatically, semi-automatically or manually without interrupting operation. The concentrated solids are drained off simply by opening the system for a short 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 element. The solids are separated on the surface of the triangular filter element 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 element is rotated against a spring actuated scraper for this purpose. The special gap geometry of the filter element guarantees efficient cleaning.

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

The residue that has settled in the collection plenum can be emptied via the drain valve either when the machine is at a standstill or during filtration if there are moderate pessure conditions.



Used Filtration Group filter elements in the AF 71 H metal-edge filter:

Filtration Group coiled element (standard):

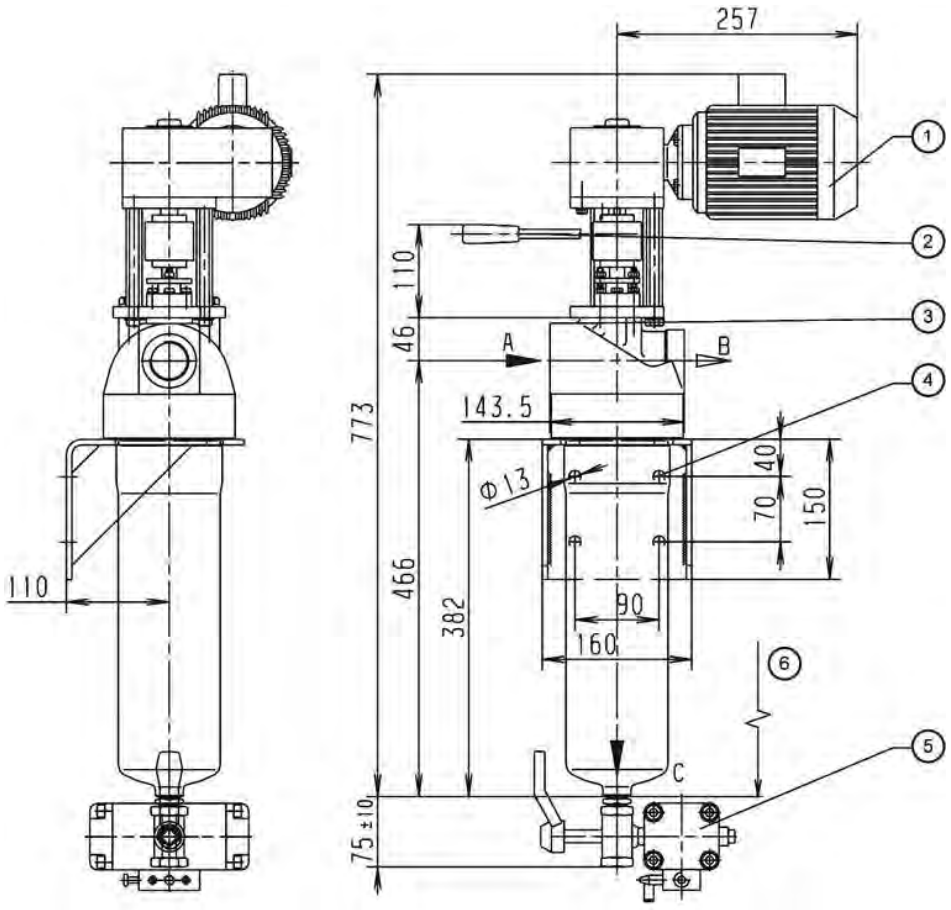
- Optimum cleaning by means of sharp-edged triangular wire
- Large effective filter surface
- Small, precise gap widths
- High differential pressure stability and torsional strength
- Several material combinations possible

Filtration Group welded element:

- 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 Filtration Group filter element
4 Triangular wire winding
5 Plenum for filtered fluid
6 Outlet connection
7 Particle collection plenum
8 Scraper
9 Cleaning drive with gear motor or hand ratchet
10 Drain valve manual

3. Technical data



1 Cleaning drive, worm gear motor can be mounted at each 90° position
2 Ratchet optional
3 Name-plate
4 Mounting holes Ø13
5 Drain valve manual, automatic mode optional
6 Clearance required = 260 mm

Optional: differential pressure switch

Filter data

Max. operating pressure:		400 bar
Max. operating temperature:		100 °C
Materials:	-	Filter head: Nodular cast iron 40
	-	Filter bowl: Ck 15
	-	Internals: St. 1.4301, nodular cast iron
	-	Bearing bushes: PTFE based
	-	Seals: FPM (Viton)
	-	Coiled element: 1.4571 or 1.4571/Al (Δp max. 40 bar)
	-	Welded element: 1.4571 (Δp max. 10 bar)
Connections and nominal diameters:	-	A-inlet, B-outlet: G1¼
	-	C-drain: G½
	-	All threaded holes acc. to DIN 3852 form X
Drive shaft seal:		Cup seal packing and O-ring
Outside coating:		Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	17	1.2
⅄ 400 ± 10%	50	0.18	17	0.7
△ 266 ± 10%	60	0.22	21	1.2
⅄ 460 ± 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: 10 kg (with ratchet) or 14 kg (with motor)
Volume: 2.5 l

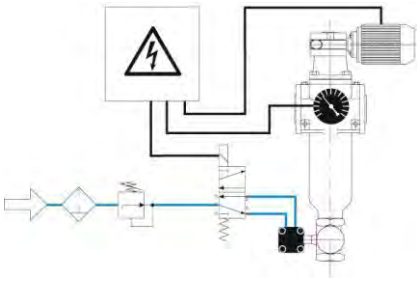
Other types available on request!
Technical data is subject to change without notice!

4. Design and application

Element type (see section 6)	Total surface in cm²	Gap width in µm/ effective filter surface in cm²													
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000
AF 7013	230	14	18	22	26	33	40	50	59	69	81	102	121	162		194
AF 7033	230	14	18	22	26	33	40	50	59						182	194
AF 7073	230						22	28	33	40	49	64	81	121	146	162
AF 7083	230				18	23	29	36	43							

Recommended design

Cleaning and emptying



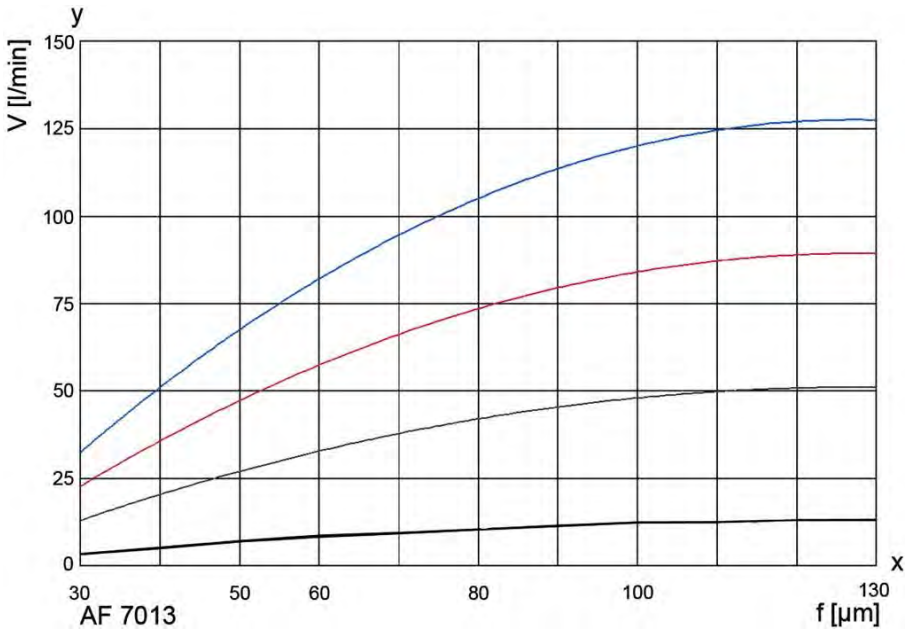
Operation mode:

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 element). 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 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 element) 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

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

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 7132-1691-60101/H2										
Size										
AF 713	1 x 42x190									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								
		16	G1¼							
			Permissible operating pressure in bar (housing/cover)							
			9	PN 400						
				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					
					Differential pressure indicator					
					6	PiS 3192, switching level at 2.2 bar, static 450 bar				
					7	PiS 3192, switching level at 5 bar, static 450 bar				
						Valves and control throttles for AF 11, 13, 15, 17				
						0	Without/special version			
							Drain valve			
							1	Ball valve, manual		
							2	Ball valve, electropneumatic 24 V DC		
							3	Ball valve, electropneumatic 230 V AC		
							4	Ball valve, electric 24 V DC		
							5	Ball valve, electric 230 V AC		
								Cleaning valve		
								0	Without/special version	
									Optional features	
									0	Without/special version
									1	Bypass valve 20 bar
AF 713	**2**	**- 16**	**9**	**1**	**-6**	**0**	**1**	**0**	**1**	**-XXXX (end number for special version)/H2***

*end number completion:

H1 High-pressure design, version 1

H2 High-pressure design, version 2

End number	Special version
3700	PTFE seals
Other numbers	On request

Type number key with selection example for coiled or welded elements for AF 70										
Series										
AF 70	Coiled or welded element with triangular wire winding									
	Material		**Core element**		**Filter medium**		**Clamp rings**		**Wire width in mm**	
	Coiled element									
	1		Al		1.4571		1.4571		0.5	
	3		1.4581		1.4571		-		0.5	
	Welded element									
	7		-		1.4571		1.4571		1	
	8		-		1.4571		1.4571		0.75	
		Overall length Diameter x length in mm								
		3	42x190							
			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 70	**1**	**3**	**-010**							

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		79797184
2	Seal kit (complete)	79797176	
3	Scraper		78389447
4	Filter element	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

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
76122550.05/2019

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.

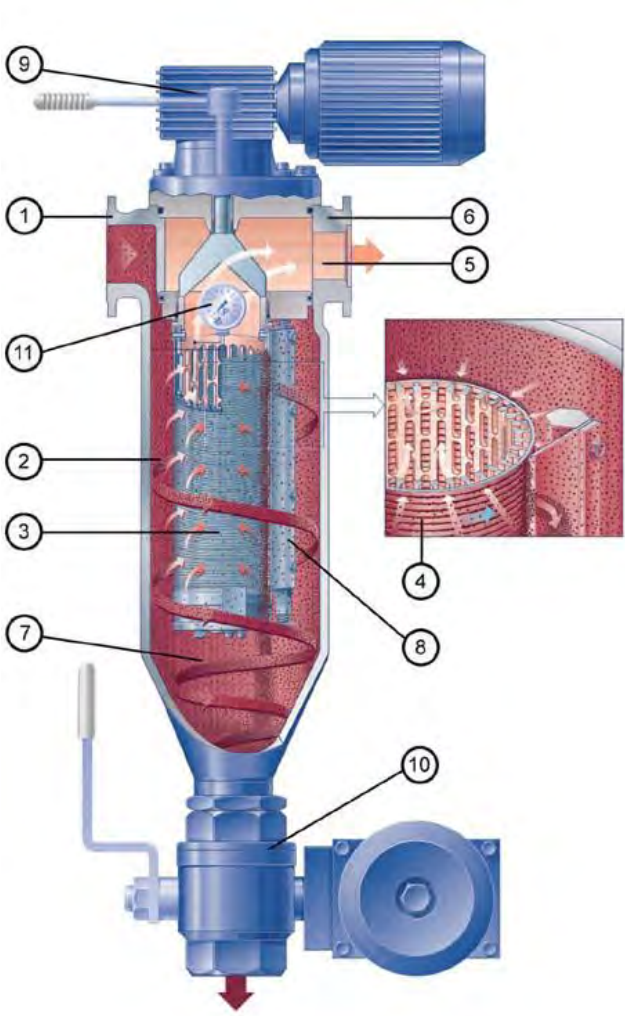
This compact, inline filter system consumes no filter material, which means there is also no need for subsequent disposal. The filter can be cleaned either automatically or semi-automatically without interrupting operation. The concentrated solids are drained off simply by opening the system for a short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

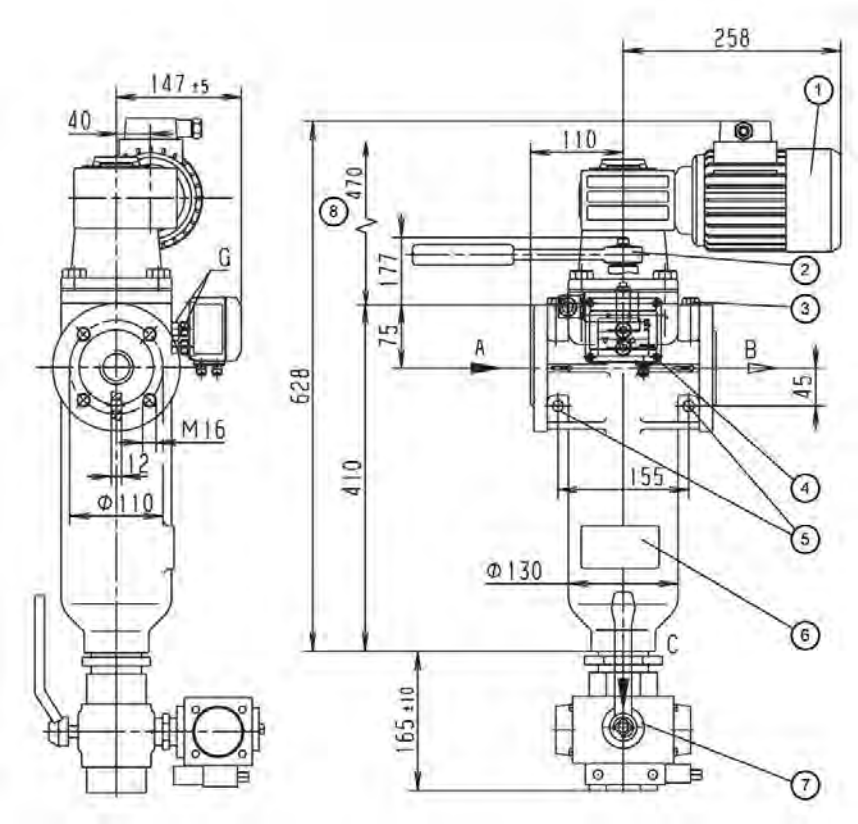
- Optimum cleaning by means of sharp-edged triangular wire
- High free surface portion
- Small, precise gap widths
- High differential pressure stability and torsional strength
- Several material combinations possible

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 G¼
4 Optional differential pressure indicator/switch
5 Mounting holes Ø13
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 (Δp max. 40 bar) - welded cartridge: 1.4571 (Δp 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 All threaded holes acc. to DIN 3852 Form X; flanges acc. to EN 1092-1/11B1/PN 40
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
Δ 230 □□10%	50	0.18	17	1.2
⅄ 400 ± 10%	50	0.18	17	0.7
Δ 266 ± 10%	60	0.22	21	1.2
⅄ 460 ± 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

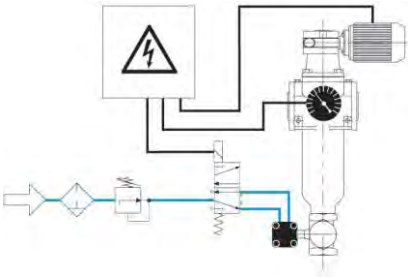
Other types available on request!
Technical data is subject to change without notice!

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width in µm/ effective gap surface in cm²														
		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



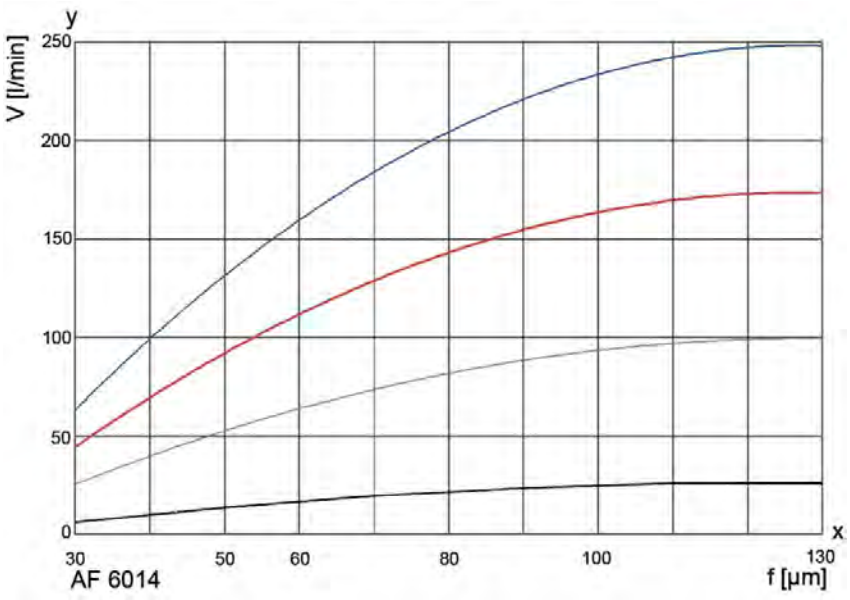
Fully automatic operation:

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 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]

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 $^{1}/_{2}$							
			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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
79753906.04/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

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 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
- 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):

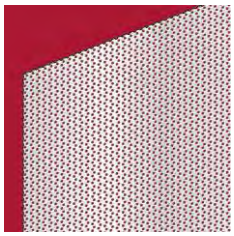
- Optimum cleaning by means of sharp-edged triangular wire
- Large effective filter surface
- Small, precise gap widths
- High differential pressure stability and torsional strength
- Several material combinations possible

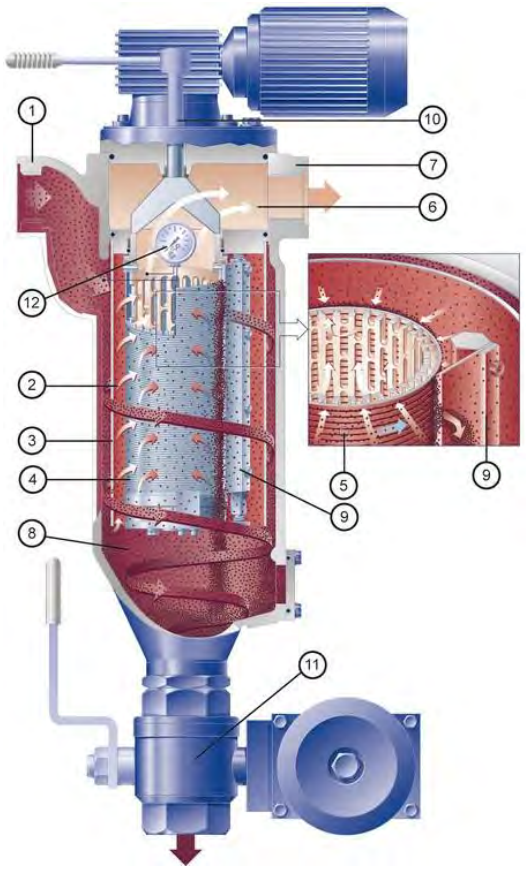
Filtration Group welded cartridge:

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

Filtration Group perforated foil:

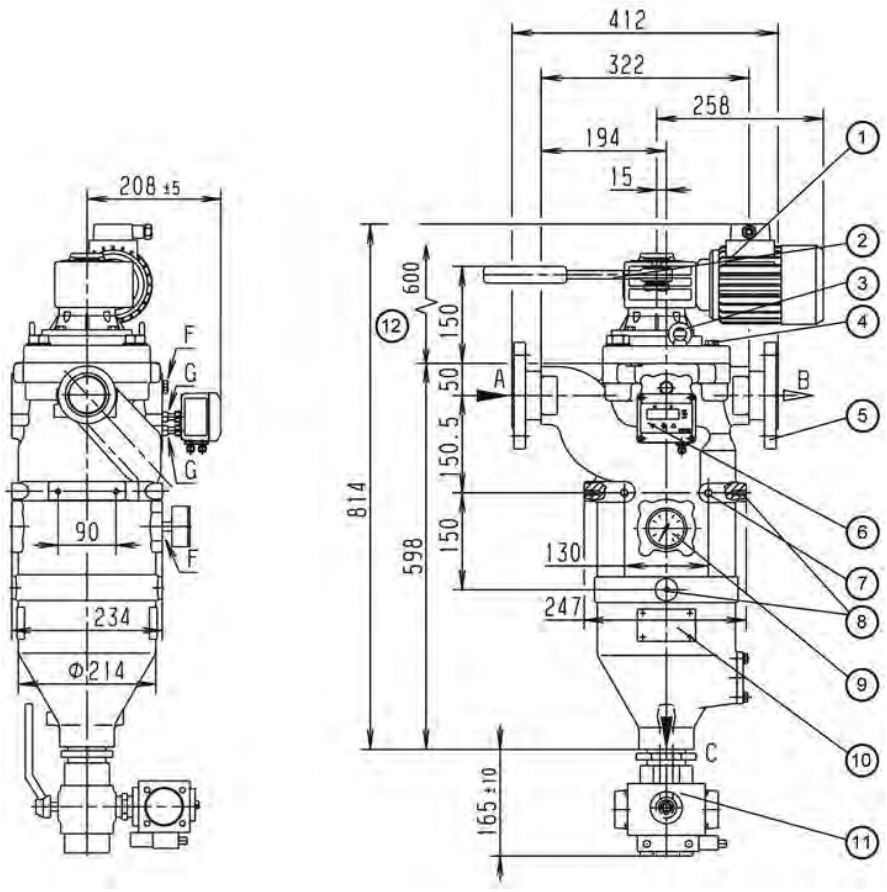
- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Suitable for filtering fibrous waste material
- Manufactured in stainless steel or nickel





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 G¼
5 Optional screw-in flanges DN 50 or DN 65 (the motor is mounted turned 90°)
6 Optional differential pressure indicator/switch
7 Mounting holes M12
8 Mounting holes M8
9 Optional P1 gauge
10 Name-plate
11 Optional drain valve, manual or automatic mode
12 Clearance required = 600 mm

Filter data

Max. operating pressure: 16 bar; optional 25 bar, 40 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 (Δp max. 30 bar)
- Welded cartridge: 1.4571 (Δp max. 10 bar)
- Perforated foil element: 1.4571 or Al, 1.4571 or Al, Ni (Δp max. 10 bar)

Cover fastening: 4 x M20 hexagon screws

Connections and nominal diameters:
- A-inlet, B-outlet, C-drain: G2
- F-gauge: G¼
- G-indicator: G1/8
- All threaded holes acc. to DIN 3852 X
- Optional A/B/C screw-in flanges DN 50, A/B DN 65 acc. to EN 1092-1/05A

Drive shaft seal: Lip seal with O-ring

Outside coating: Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	17	1.2
⅄ 400 ± 10%	50	0.18	17	0.7
△ 266 ± 10%	60	0.22	21	1.1
⅄ 460 ± 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

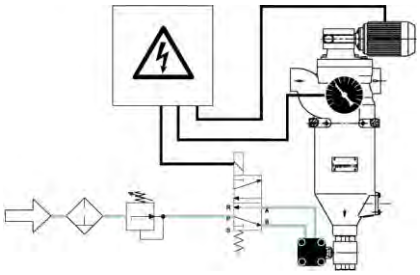
Other types available on request!
Technical data is subject to change without notice!

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width in µm/ effective filter surface in cm²														
		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

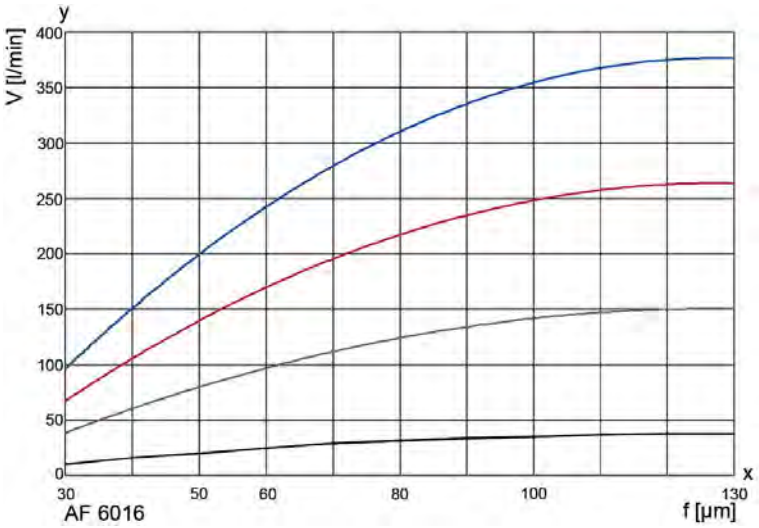
Cleaning and emptying



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 mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

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 7363-1321-40200/G3										
Size										
AF 736	1 x 110x265									No. of steps x diameter x length [mm]
AF 936	1 x 110x265									No. of steps 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								
		13								G2
		14								Screw-in flange DN 50 for cast design
		15								Screw-in flange DN 65 for cast design
		18								G2½
			Permissible operating pressure in bar (housing/cover)							
			1							PN 10
			2							PN 16
			3							PN 25
			4							PN 40
				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
					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***

*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
Perforated plate				
0	-	1.4301	-	-
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
Perforated foil				
11	Al	Ni	1.4571	-
12	Al	1.4571	1.4571	-
13	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)

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

Hole diameter at perforated foil in µm

010	100 µm	**020**	200 µm	**050**	500 µm

Other filter ratings on request

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

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70308169
2	Seal kit (complete)*	70315877	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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
04/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

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 selas 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):

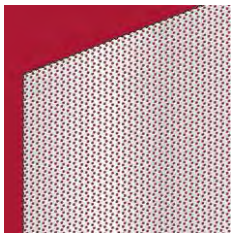
- Optimum cleaning by means of sharp-edged triangular wire
- Large effective filter surface
- Small, precise gap widths
- High differential pressure stability and torsional strength
- Several material combinations possible

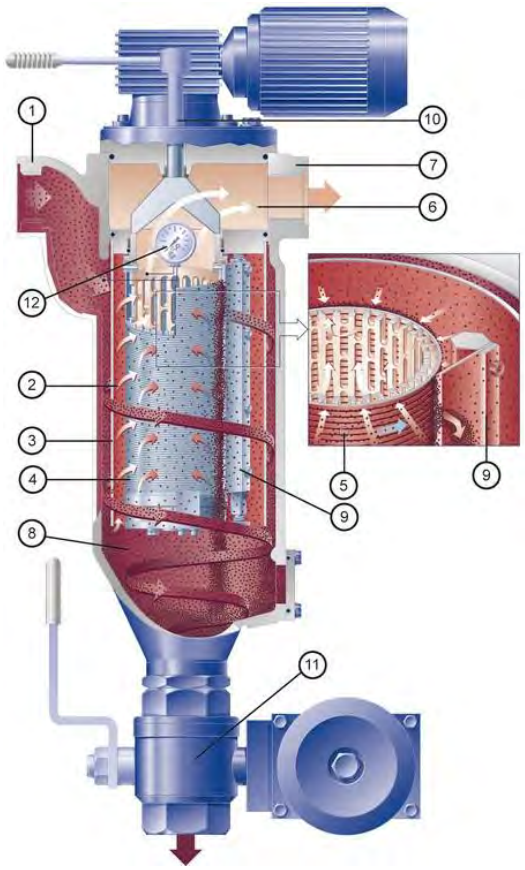
Filtration Group welded cartridge:

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

Filtration Group perforated foil:

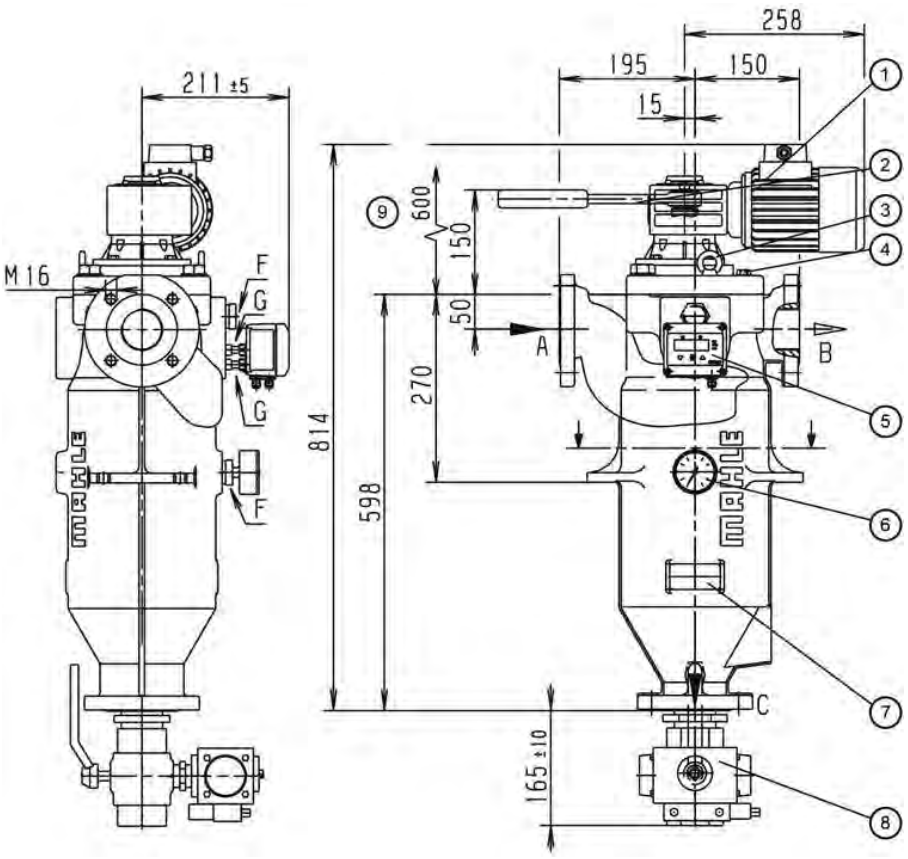
- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Suitable for filtering fibrous waste material
- Manufactured in stainless steel





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 G¼
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:	- Housing and cover: Stainless steel 1.4581 - Optional certificate acc. to EN 10204-3.1 - Internals: stainless steel 1.4581/1.4571 - Bearing bushes: PTFE based - Seals: FPM (Viton) - Coiled cartridge: 1.4571 or 1.4571/Al (Δp max. 30 bar) - Welded cartridge: 1.4571 (Δp max. 10 bar) - Perforated foil element: 1.4571 or Al, 1.4571 or Al, Ni (Δp max. 10 bar)
Cover fastening:	4 x M20 hexagon screws
Connections and nominal diameters:	- A-inlet, B-outlet, C-drain: DN 50 + internal thread G2 - F-gauge: G1 - G-indicator: G1/8 - threaded holes acc. to DIN 3852 Z
Drive shaft seal:	Lip seal with O-ring

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	17	1.2
⅄ 400 ± 10%	50	0.18	17	0.7
△ 266 ± 10%	60	0.22	21	1.1
⅄ 460 ± 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

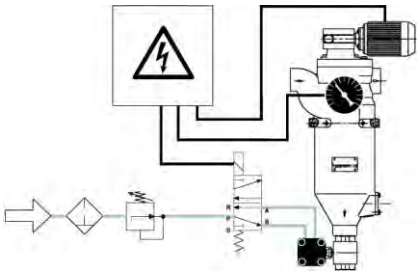
Other types available on request!
Technical data is subject to change without notice!

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width in µm/ effective filter surface in cm²														
		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

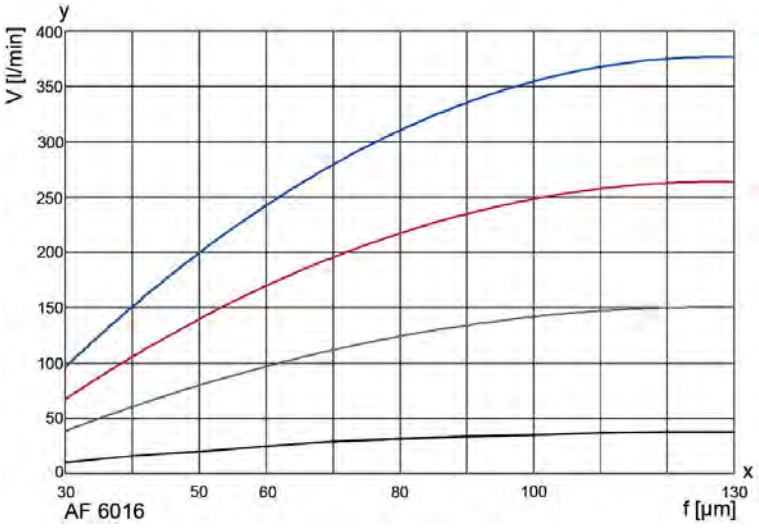
Cleaning and emptying



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 mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

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 7363-1322-40200/G3										
Size										
AF 736	1 x 110x265									step x diameter x length [mm]
AF 936	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 Δp gauge, 2 switching levels settable from 0 to 16 bar static				
					5	PiS 3175, digital Δp gauge, 2 pressure transmitters settable from 0 to 16 bar static				
					8	PíS 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
Perforated plate				
0	-	1.4301	-	-
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
Perforated foil				
11	Al	Ni	1.4571	-
12	Al	1.4571	1.4571	-
13	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)

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

Hole diameter at perforated foil in µm

010	100 µm	**020**	200 µm	**050**	500 µm

Other filter ratings on request

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

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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
04/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

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

with radial scraper cleaning
housing in welded design, optionally with cyclone effect
Connection size DN 50, DN 65, DN 80, DN 100, others upon request

1. Features

For the filtration and homogenization of low and high-viscosity fluids and pastes, Filtration Group automatic metal-edge filters offer anextensive range of applications.

The compact inline filter systems can be equipped with automatic cleaning. The system is cleaned by rotating the cartridge against a spring actuated scraper. The AF93 S version is with integrated preseparator.

Advantages:

- Low life cycle costs because of no filter material consumption
- Cleaning can be performed without an interruption in filtration
- Precision separation using the surface filter principle
- Sturdy filter cartridge made of triangular stainless steel wire on a robust inner core
- Efficient filter cleaning for process stability
- Solid construction and high-quality materials for a long service life
- Modular FGC Vario system for optimal filter selection
- Material variants for a wide range of possible applications
- Service-friendly
- Worldwide distribution

Optional:

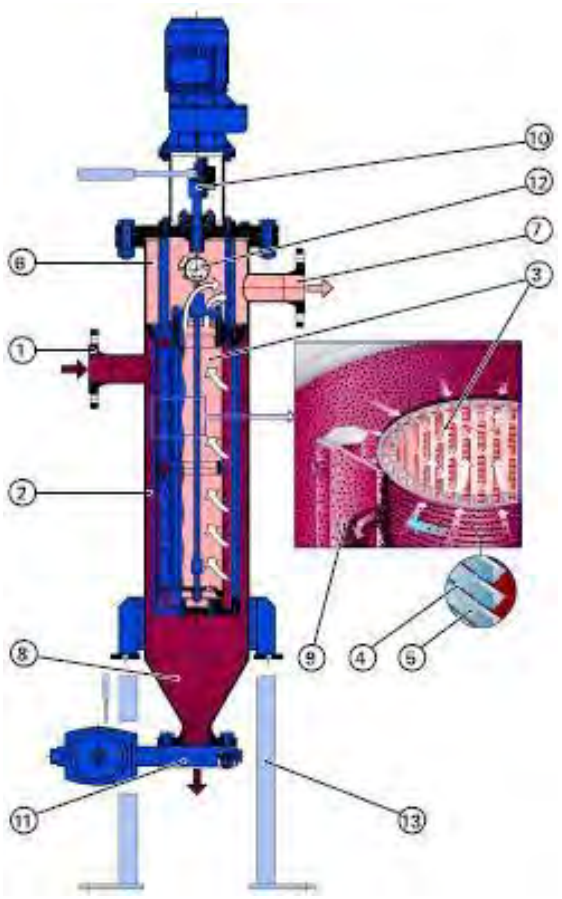
- Design acc. PED 2014 / 68 EU AD 2000; ASME VIII div. U-Stamp; EN 13445; GOST
- Designed on customers demand e.g. heating jacket; special materials; housing adaption.

2. Functional principle

The FGC metal-edge filter system is used for filtering and homogenizing an extensive range of liquids and pastes. The compact, inline filter system does not consume any filter material and therefore no disposal is required afterwards.
With the modular FGC Vario system on the FGC metal-edge filters it is possible to configure up to three filter cartridges above one another when high throughput rates are needed.

The filter can be cleaned either automatically or semi-automatically without interrupting operation. The concentrated solids are easily drained by opening the system for a short time.

The medium being cleaned is guided into the filter housing under pressure or in suction mode. It flows inward through the FGC filter cartridges. The solids are separated on the surface of the triangular wires of the filter cartridge.



The filtered fluid exits the filter housing at the top opposite the inlet connection. In the AF 93 S version, the integrated preseparator relieves the filter cartridge of coarse and heavy particles by means of a tangential flow around the tube.
Cleaning of the filter is performed either when a preset differential pressure limit is reached or after a specified cycle time elapses. Here the FGC filter cartridges are rotated against spring actuated scrapers. The special gap geometry of the filter cartridge ensures efficient cleaning.

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

The residue that settles in the collection cone can be emptied through the drain valve either when the machine is stopped or during filtration

On the FGC metal-edge filter AF 73 S, coiled cartridges, welded cartridges, and perforated foils can be used.

FGC coiled cartridge (standard):

- Optimal cleaning with sharp-edged triangular wire
- Large effective filter surface
- Precise, small gap widths
- High differential pressure stability and torsional strength
- Different material combinations possible

FGC welded cartridge:

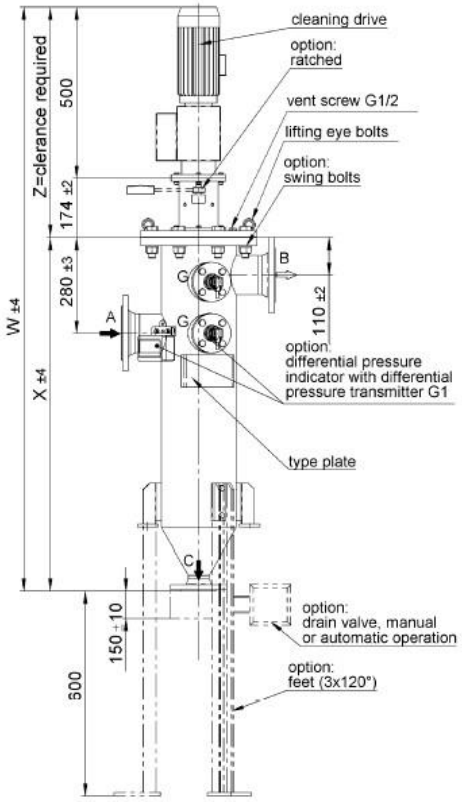
- High wear resistance to abrasive media
- Sturdy trapezoidal profile for high-viscosity media
- Continuous welded design
- Stainless steel construction

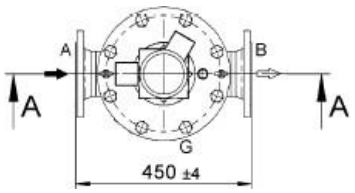
FGC perforated foil:

- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Continuous welded design
- Manufactured in stainless steel or nickel
- Suitable for filtering fibrous waste material

1 Inlet connection
2 Inlet plenum
3 FGC filter cartridge
4 Triangular wire winding
5 Triangular wire
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
13 Feet optional

3. Technical data





type	W (mm)	X (mm)	Z (mm)	volume (l)	weight (kg)	cleaning drive
AF7382-...-	1460	1300	1090	41	95	ratched
AF738.-...-	1974	1300	1090	41	110	gear motor
AF7372-...-	1190	1030	820	32	85	ratched
AF737.-...-	1704	1030	820	32	100	gear motor
AF7362-...-	920	760	550	22	75	ratched
AF736.-...-	1434	760	550	22	90	gear motor

Filter data

Max. operating pressure: - 16 bar, optional 25 bar / 40 bar

Max. operating temperature: - 100 °C, optional 200 °C

Design according: PED 2014 / 68 / EU

Materials:
- Housing and cover: Cast-Steel, 1.4571
- Internals: Cast steel and stainless steel, Al
- Bearing bushes: PTFE based
- Seals: FKM (Viton)
- Coiled cartridge: 1.4571 or Al, 1.4571 (Δp max. 30 bar)
- Welded cartridge: 1.4571 (Δp max. 10 bar)
- Element perforated foil: 1.4571 or Al, 1.4571 or Al, Ni (Δp max: 10 bar)

Connections and nominal diameters:
- A-inlet DN50, DN65,DN80,DN100
- B-outlet: DN50,DN65;DN80;DN100
- C-drain: DN50
- G-indicator: DN25

All threaded holes acc. to DIN 3852 form X
flanges acc. to EN 1092-1/11B1/PN 16 (Standard, depending on operating pressure and temp.)

Drive shaft seal: Gland packing rings made of PTFE fibre with disc spring pretension

External finish: Synthetic resin primer, blue (RAL 5007)

Motor data

Spur gear motor
Multirange winding

V	Hz	KW	rpm	A
Δ 230 ± 10%	50	0.18	17	1.11
⅄ 400 ± 10%	50	0.18	17	0.65
Δ 266 ± 10%	60	0.22	21	1.11
⅄ 460 ± 10%	60	0.22	21	0.65

Protection class: IP55, ISO-class F; output torque 95 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

Optional:
- heating jacket
- ASME
- EN 13445

Other types available on request.

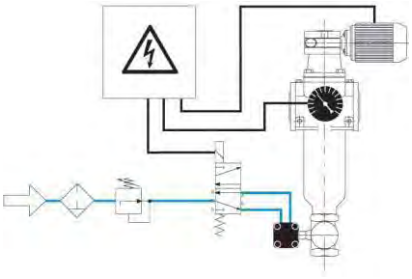
Note: Technical data is subject to change without notice.

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width/hole width in µm/ effective gap surface in cm²															
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	4000
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	634
AF 6076	836						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	337

recommended design

Cleaning and emptying



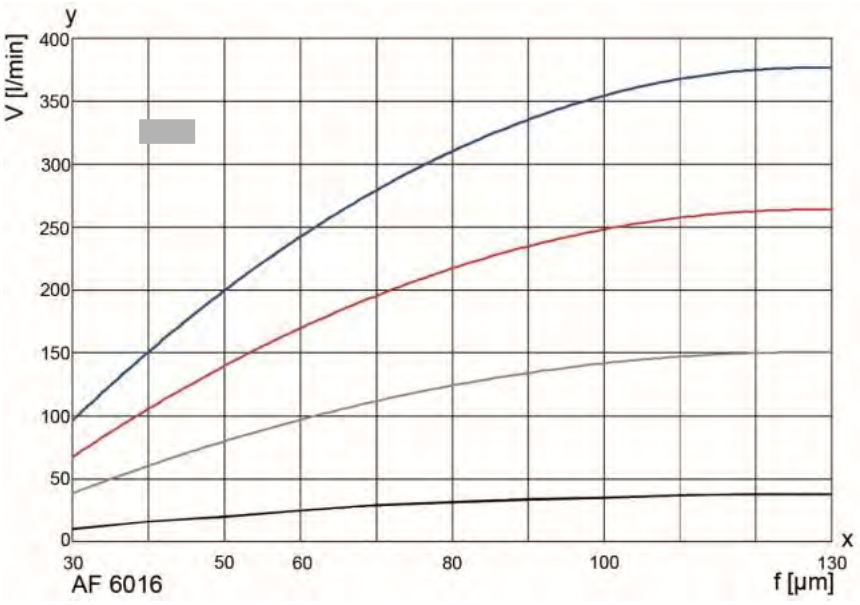
Fully automatic operation:

Filtration usually occurs 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 runs for about 10 seconds (about three turns of the filter cartridge). This is sufficient for a thorough cleaning. In certain rare cases it may be necessary to run the motor continuously. The drive shaft is always turned clockwise. The filter is emptied by opening the drain valve. This can either take place synchronously with cleaning or be time or cycle controlled, depending on the residue concentration. 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.

See the Instruction Manual for further information.

5. Performance curves



The curves represent the volumetric flow through the entire filter system (filter housing including for example one cartridge) and refer to a differential pressure of 0.3 bar. Specific information about process data is essential for reliable operation of an automatic filter.

Important note on performance curve!
It's an example of element AF 6016.
The number of dements per filter results from type number key in point 6.

Viscosity in mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

y = volumetric flow V [l/min]
x = gap width f [µm]

6. Type number key

Type number key with selection example for AF 7373-521-50200 S1											
Size / number of filter cartridge columns / function											
AF 73	1 filter cartridge column Ø 110 mm / metal-edge filter with radial cleaning										
AF 93	1 filter cartridge column Ø 110 mm / metal-edge filter with radial cleaning and preseparator through the cyclone effect										
	Number of filter cartridges										
	6	1 filter cartridge per column									
	7	2 filter cartridges per column									
	8	3 filter cartridges per column									
		Cleaning drive									
		3	Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz								
		4	Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz Ex II 2G T3								
			Inlet and outlet connections								
			3	DN 50 EN 1092-1 / 11 B1 / PN 16	**5**	DN 80 EN 1092-1 / 11 B1 / PN 16					
			4	DN 65 EN 1092-1 / 11 B1 / PN 16	**6**	DN 100 EN 1092-1 / 11 B1 / PN 16					
				Permissible operating pressure in bar (housing/cover)							
				1	PN10						
				2	PN 16						
				3	PN 25						
				4	PN 40						
					Material Seal FKM, bearing PTFE						
					1	Standard: Housing in carbon steel, internals in carbon steel, EN-GJS-400-15, aluminium					
					2	Standard: Housing in stainless steel 1.4571, internals in stainless steel					
					3	Standard: Housing in carbon steel, internals in stainless steel					
						Differential pressure indicator and gauge					
						5	PiS 3175 digital Δp gauge, 2 setting points 0 – 16 bar adjustable and analogous 4 – 20 mA/0 – 10 V				
						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, 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	
										Optional features	
										0	Without / other version
AF 73	**7**	**3**	**-5**	**2**	**1**	**-5**	**0**	**2**	**0**	**0**	**- XXXX(end no. for special)/S1***

*end number completion:
S1 welded, Version 1

End number	Special version
3001	Standard filter insert (complete), without housing and without drive
3002	Standard filter insert (complete), without housing, with drive
3400	With double jacket for heating / cooling PN 10 bar
3700	PTFE seals
4166	3 scrapers per filter cartridge
Others	Upon request

Type number key with selection example for coiled and welded cartridges for AF 60 and perforated foil AF 50

Series

AF 60	Coiled cartridge or welded cartridge with triangular wire winding
AF 50	Perforated foil

	Material	Inner core	Filter medium	Clamp rings	Wire width in mm
	Perforated plate				
	0	-	1.4301	-	-
	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
	Perforated foil				
	11	Al	Ni	1.4571	-
	12	Al	1.4571	1.4571	-
	13	1.4571	1.4571	1.4571	-

		Length	Diameter x length in mm
		6	110x265

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

003	30 µm	**010**	100 µm	**036**	360 µm	**400**	4000 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		

Hole size/grade in µm (see 4. Design and application)

010	100 µm
020	200 µm
050	500 µm
	Other grades upon request

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

7. Spare Parts

Metal-edge or coiled cartridge

Item	Designation	Order number	
		FKM/C-Steel	PTFE/Stainless steel
1	Bush kit		78358947
2	Seal kit (complete)	77982143	77982150
3	Scraper		71116805
4	Spring set		70350654
5	Filter cartridge	See name-plate	

Perforated foil cartridge

Item	Designation	Order number
6	Scraper PU (complete)	70531132
7	Scraper PTFE (complete)	70379502
8	Scraper PU (wear part)	70378953
9	Scraper PTFE (wear part)	70370568

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 cartridges and accessories can be provided. For information on installation and operation, please see the Instruction Manual.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic metal-edge filter
AF 74 S/AF 94 S

with radial scraper cleaning
housing in welded design, optionally with cyclone effect
Connection size DN 80, DN 100, DN 125, DN 150 others upon request

1. Features

For the filtration and homogenization of low and high-viscosity fluids and pastes, Filtration Group automatic metal-edge filters offer an extensive range of applications.

The compact inline filter systems can be equipped with automatic cleaning. The system is cleaned by rotating the cartridge against a spring actuated scraper. The AF 94 S version is with integrated preseparator.

Advantages:

- Low life cycle costs because of no filter material consumtion
- Cleaning can be performed without an interruption in filtration
- Precision separation using the surface filter principle
- Sturdy filter cartridge made of triangular stainless steel wire on a robust inner core
- Efficient filter cleaning for process stability
- Solid construction and high-quality materials for a long service life
- Modular Filtration Group Vario system for optimal filter selection
- Material variants for a wide range of possible applications
- Service-friendly
- Worldwide distribution

Optional:

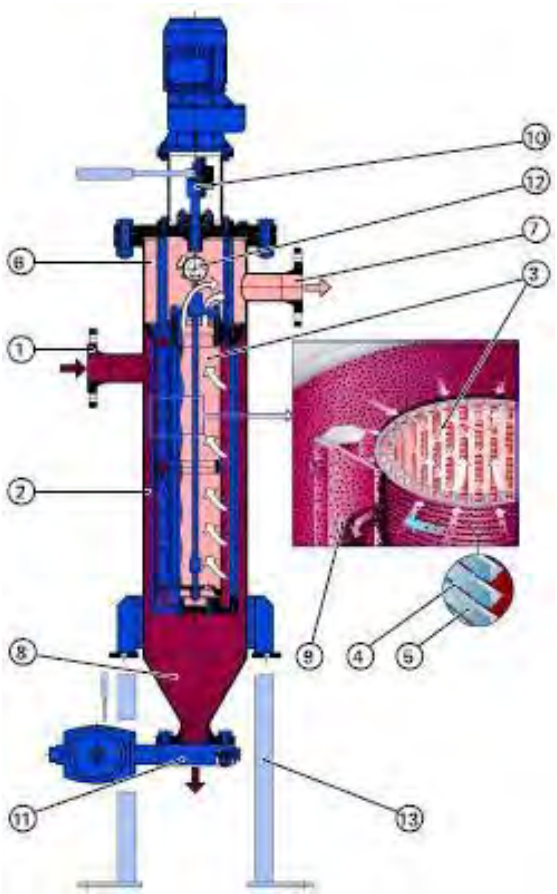
- Design acc. PED 2014 / 68 EU AD 2000; ASME VIII div. U-Stamp; EN 13445; GOST
- Designed on customers demand e.g. heating jacket; special materials; housing adaption.

2. Functional principle

The Filtration Group metal-edge filter system is used for filtering and homogenizing an extensive range of liquids and pastes. The compact, inline filter system does not consume any filter material and therefore no disposal is required afterwards.
With the modular Filtration Group Vario system on the Filtration Group metal-edge filters it is possible to configure up to three filter cartridges above one another when high throughput rates are needed.

The filter can be cleaned either automatically or semi-automatically without interrupting operation. The concentrated solids are easily drained by opening the system for a short time.

The medium being cleaned is guided into the filter housing under pressure or in suction mode. It flows inward through the Filtration Group filter cartridges. The solids are separated on the surface of the triangular wires of the filter cartridge.



The filtered fluid exits the filter housing at the top opposite the inlet connection. In the AF 94 S version, the integrated preseparator relieves the filter cartridge of coarse and heavy particles by means of a tangential flow around the tube.
Cleaning of the filter is performed either when a preset differential pressure limit is reached or after a specified cycle time elapses. Here the Filtration Group filter cartridges are rotated against spring actuated scrapers.
The special gap geometry of the filter cartridge ensures efficient cleaning.

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

The residue that settles in the collection cone can be emptied through the drain valve either when the machine is stopped or during filtration

On the Filtration Group metal-edge filter AF 74 S, coiled cartridges, welded cartridges, and perforated foils can be used.

Filtration Group coiled cartridge (standard):

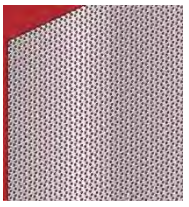
- Optimal cleaning with sharp-edged triangular wire
- Large effective filter surface
- Precise, small gap widths
- High differential pressure stability and torsional strength
- Different material combinations possible

Filtration Group welded cartridge:

- High wear resistance to abrasive media
- Sturdy trapezoidal profile for high-viscosity media
- Continuous welded design
- Stainless steel construction

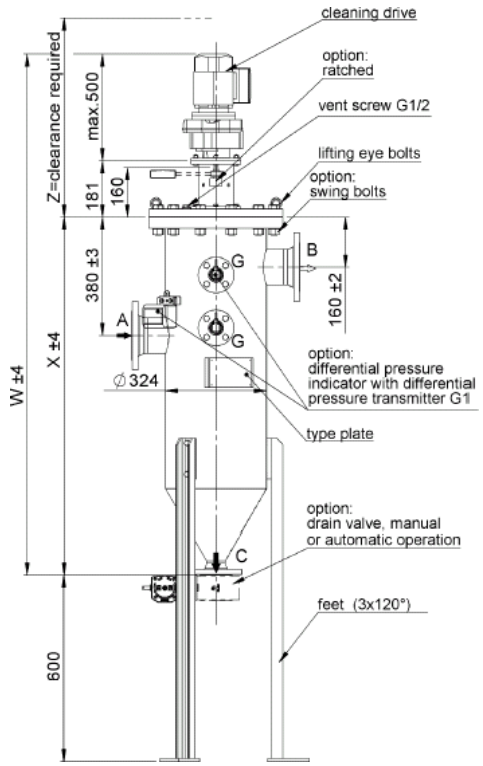
Filtration Group perforated foil:

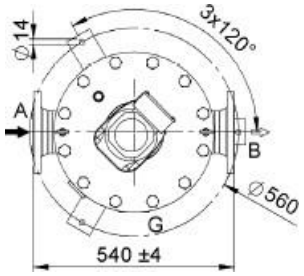
- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Continuous welded design
- Manufactured in stainless steel or nickel
- Suitable for filtering fibrous waste material



1 Inlet connection
2 Inlet plenum
3 Filtration Group filter cartridge
4 Triangular wire winding
5 Triangular wire
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 / manometer
Differential pressure gange with transmitter
13 Feet

3. Technical data





type	W (mm)	X (mm)	Z (mm)	volume (l)	weight (kg)	cleaning drive
AF7492-.2.-	1845	1685	1430	116	245	ratchet
AF749.-.2.-	2366	1685	1430	116	260	gear motor
AF7482-.2.-	1575	1415	1160	96	220	ratchet
AF748.-.2.-	2096	1415	1160	96	235	gear motor
AF7472-.2.-	1305	1145	890	75	195	ratchet
AF747.-.2.-	1786	1145	890	75	210	gear motor
AF7462-.2.-	1035	875	620	54	170	ratchet
AF746.-.2.-	1556	875	620	54	185	gear motor

Filter data

Max. operating pressure: - 16 bar, optional 25 bar / 40 bar

Max. operating temperature: - 100 °C, optional 200 °C

Design according: PED 2014 / 68 / EU

Materials:
- Housing and cover: Cast steel, 1.4571
- Internals: Cast steel, stainless steel, AL
- Bearing bushes: PTFE based
- Seals: FKM (Viton), PTFE
- Coiled cartridge: 1.4581; 1.4571 (Δp max. 30 bar) or Al, 1.4571 (Δp max. 10 bar)
- Welded cartridge: 1.4571 (Δp max. 10 bar)
- Element perforated foil: 1.4571 or Al, 1.4571 or Al, Ni (Δp max: 10 bar)

Cover fastening: - 8 x M20 hexagon screws

Connections and nominal diameters:
- A-inlet DN 80, DN 100,DN 125, DN 150
- B-outlet: DN 80, DN 100, DN 125, DN 150
- C-drain: DN 50
- G-indicator: DN 25

All threaded holes acc. to DIN 3852 form X
flanges acc. to EN 1092-1/11B1/PN 16 (Standard, depending on operating pressure and temp.)

Drive shaft seal: Gland packing rings made of PTFE fibre with disc spring pretension

External finish: Synthetic resin primer, blue (RAL 5007)

Motor data

Spur gear motor
Multirange winding

V	Hz	KW	rpm	A
Δ 230 ± 10%	50	0,25	19,5	1,4
⅄ 400 ± 10%	50	0,25	19,5	0,8
Δ 266 ± 10%	60	0,3	18,4	1,4
⅄ 460 ± 10%	60	0,3	18,4	0,78

Protection class: IP55, ISO-class F; output torque 115 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

Optional:
- heating jacket
- ASME
- EN 13445

Other types available on request.

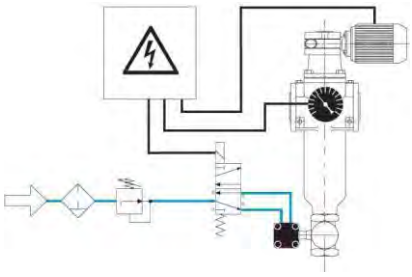
Note: Technical data is subject to change without notice.

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width/hole width in µm/ effective gap surface in cm²															
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	4000
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	634
AF 6076	836						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	337

recommended design

Cleaning and emptying



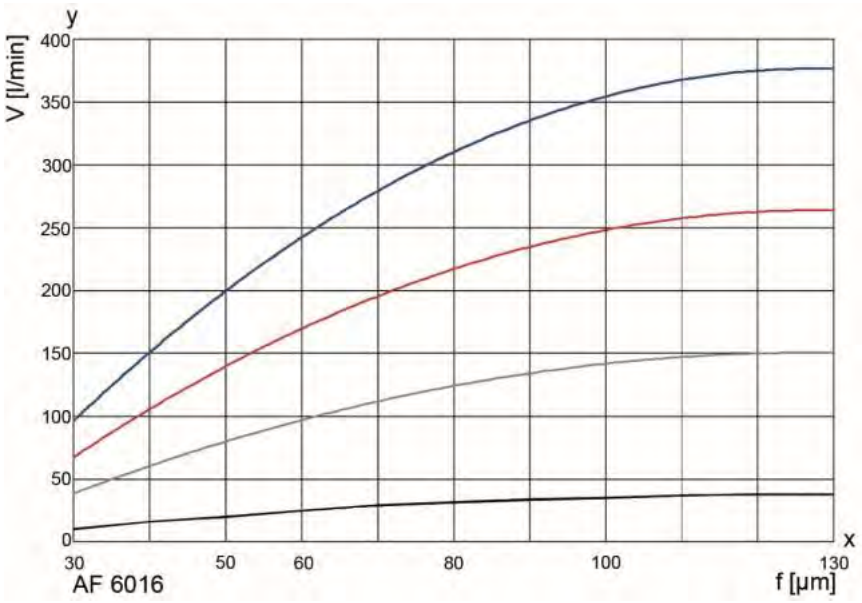
Fully automatic operation:

Filtration usually occurs 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 runs for about 10 seconds (about three turns of the filter cartridge). This is sufficient for a thorough cleaning. In certain rare cases it may be necessary to run the motor continuously. The drive shaft is always turned clockwise. The filter is emptied by opening the drain valve. This can either take place synchronously with cleaning or be time or cycle controlled, depending on the residue concentration. 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.

See the Instruction Manual for further information.

5. Performance curves



The curves represent the volumetric flow through the entire filter system (filter housing including for example one cartridge) and refer to a differential pressure of 0.3 bar. Specific information about process data is essential for reliable operation of an automatic filter.

Important note on performance curve!
It's an example of element AF 6016.
The number of dements per filter results from type number key in point 6.

Viscosity in mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

y = volumetric flow V [l/min]
x = gap width f [µm]

6. Type number key

Type number key with selection example for AF 7473-821-50200 S1											
Size / number of filter cartridge columns / function											
AF 74	3 filter cartridge columns Ø 110 mm / metal-edge filter with radial cleaning										
AF 94	3 filter cartridge columns Ø 110 mm / metal-edge filter with radial cleaning and preseparator through the cyclone effect										
	Number of filter cartridges										
	6	1 filter cartridge per column									
	7	2 filter cartridges per column									
	8	3 filter cartridges per column									
	9	4 filter cartridges per column									
		Cleaning drive									
		3	Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz								
		4	Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz Ex II 2G T3								
			Inlet and outlet connections								
			5	DN 80 EN 1092-1 / 11 B1 / PN 16	**7**	DN 125 EN 1092-1 / 11 B1 / PN 16					
			6	DN 100 EN 1092-1 / 11 B1 / PN 16	**8**	DN 150 EN 1092-1 / 11 B1 / PN 16					
				Permissible operating pressure in bar (housing/cover)							
				1	PN10						
				2	PN 16						
				3	PN 25						
				4	PN 40						
					Material Seal FKM, bearing PTFE						
					1	Standard: Housing in carbon steel, internals in carbon steel, EN-GJS-400-15, aluminium					
					2	Standard: Housing in stainless steel 1.4571, internals in stainless steel					
					3	Standard: Housing in carbon steel, internals in stainless steel					
						Differential pressure indicator and gauge					
						5	PiS 3175 digital Δp gauge, 2 setting points 0 – 16 bar adjustable and analogous 4 – 20 mA/0 – 10 V				
						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		
								6	Drain valve, electropneumatic 24 V, 10 bar		
								7	Drain valve, electropneumatic 230 V, 10 bar		
								8	Drain valve, electric 24 V, 10 bar		
								9	Drain valve, electric 230 V, 10 bar		
									Cleaning valve		
									0	Without	
										Optional features	
										0	Without / other version
AF 74	**7**	**3**	**-5**	**2**	**1**	**-5**	**0**	**2**	**0**	**0**	**- XXXX(end no. for special)S1***

*end number completion:
S1 welded, Version 1

End number	Special version
3001	Standard filter insert (complete), without housing and without drive
3002	Standard filter insert (complete), without housing, with drive
3400	With double jacket for heating / cooling PN 10 bar
3700	PTFE seals
Others	Upon request

Type number key with selection example for coiled and welded cartridges for AF 60 and perforated foil AF 50

Series

AF 60	Coiled cartridge or welded cartridge with triangular wire winding
AF 50	Perforated foil

	Material	Inner core	Filter medium	Clamp rings	Wire width in mm
	Perforated plate				
	0	-	1.4301	-	-
	Welded 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
	Coiled cartridge				
	6	-	1.4571	1.4571	1.8
	7	-	1.4571	1.4571	1
	8	-	1.4571	1.4571	0,75
	Perforated foil				
	11	Al	Ni	1.4571	-
	12	Al	1.4571	1.4571	-
	13	1.4571	1.4571	1.4571	-

		Length	Diameter x length in mm
		6	110x265

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

003	30 µm	**010**	100 µm	**036**	360 µm	**400**	4000 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		

Hole size/grade in µm (see 4. Design and application)

010	100 µm
020	200 µm
050	500 µm
	Other grades upon request

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

7. Spare Parts

Metal-edge or coiled cartridge

Item	Designation	Order number	
		FKM/C-Steel	PTFE/Stainless steel
1	Bush kit		70307545
2	Seal kit (complete)	78319600	76191738
3	Scraper		71116805
4	Spring set		70350654
5	Filter cartridge	See name-plate	

Perforated foil cartridge

Item	Designation	Order number
6	Scraper PU (complete)	70531132
7	Scraper PTFE (complete)	70379502
8	Scraper PU (wear part)	70378953
9	Scraper PTFE (wear part)	70370568

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 cartridges and accessories can be provided. For information on installation and operation, please see the Instruction Manual.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic metal-edge filter
AF 75 S/AF 95 S

with radial scraper cleaning
housing in welded design, optionally with cyclone effect
Connection size DN 150, DN 200, DN 250 others upon request

1. Features

For the filtration and homogenization of low and high-viscosity fluids and pastes, Filtration Group automatic metal-edge filters offer an
extensive range of applications.

The compact inline filter systems can be equipped with automatic cleaning. The system is cleaned by rotating the cartridge against a spring actuated scraper. The AF95 S version is with integrated preseparator.

Advantages:

- Low life cycle costs because of no filter material consumtion
- Cleaning can be performed without an interruption in filtration
- Precision separation using the surface filter principle
- Sturdy filter cartridge made of triangular stainless steel wire on a robust inner core
- Efficient filter cleaning for process stability
- Solid construction and high-quality materials for a long service life
- Modular Filtration Group Vario system for optimal filter selection
- Material variants for a wide range of possible applications
- Service-friendly
- Worldwide distribution

Optional:

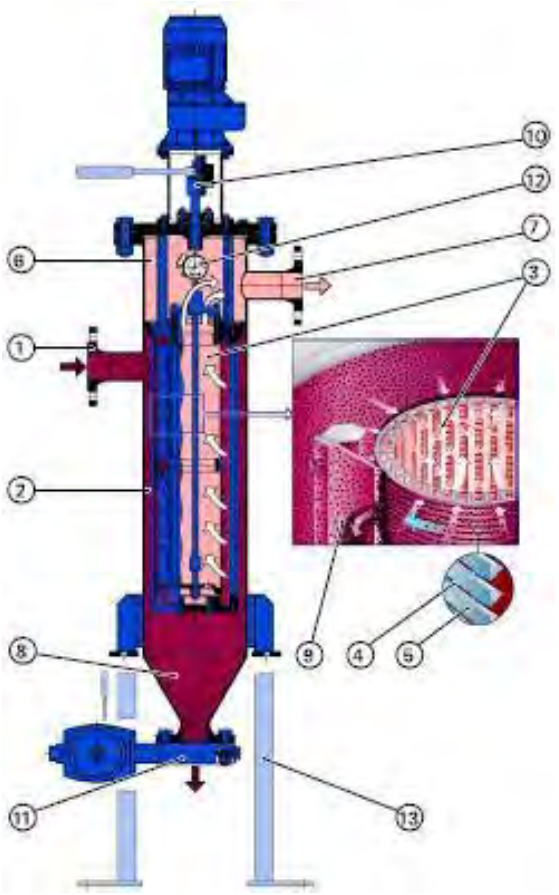
- Design acc. PED 2014 / 68 / EU AD 2000; ASME VIII div. U-Stamp; EN 13445; GOST
- Designed on customers demand e.g. heating jacket; special materials; housing adaption.

2. Functional principle

The Filtration Group metal-edge filter system is used for filtering and homogenizing an extensive range of liquids and pastes. The compact, inline filter system does not consume any filter material and therefore no disposal is required afterwards.
With the modular Filtration Group Vario system on the Filtration Group metal-edge filters it is possible to configure up to three filter cartridges above one another when high throughput rates are needed.

The filter can be cleaned either automatically or semi-automatically without interrupting operation. The concentrated solids are easily drained by opening the system for a short time.

The medium being cleaned is guided into the filter housing under pressure or in suction mode. It flows inward through the Filtration Group filter cartridges. The solids are separated on the surface of the triangular wires of the filter cartridge.



The filtered fluid exits the filter housing at the top opposite the inlet connection. In the AF 95 S version, the integrated preseparator relieves the filter cartridge of coarse and heavy particles by means of a tangential flow around the tube.
Cleaning of the filter is performed either when a preset differential pressure limit is reached or after a specified cycle time elapses. Here the Filtration Group filter cartridges are rotated against spring actuated scrapers.

The special gap geometry of the filter cartridge ensures efficient cleaning.

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

The residue that settles in the collection cone can be emptied through the drain valve either when the machine is stopped or during filtration.

On the Filtration Group metal-edge filter AF 75 S, coiled cartridges, welded cartridges, and perforated foils can be used.

Filtration Group coiled cartridge (standard):

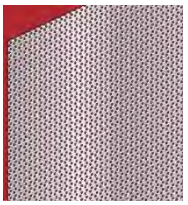
- Optimal cleaning with sharp-edged triangular wire
- Large effective filter surface
- Precise, small gap widths
- High differential pressure stability and torsional strength
- Different material combinations possible

Filtration Group welded cartridge:

- High wear resistance to abrasive media
- Sturdy trapezoidal profile for high-viscosity media
- Continuous welded design
- Stainless steel construction

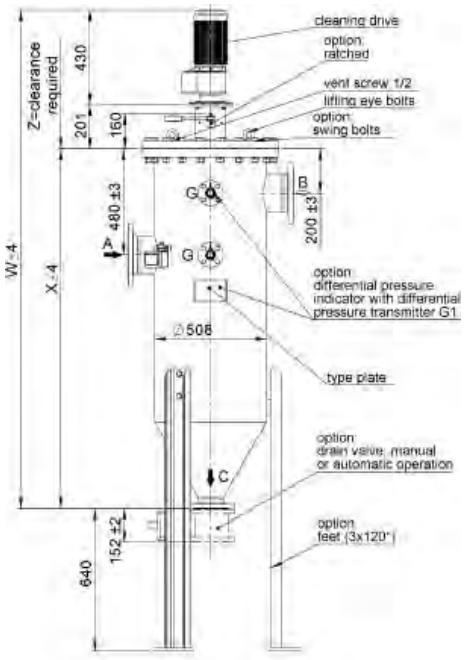
Filtration Group perforated foil:

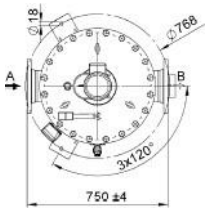
- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Continuous welded design
- Manufactured in stainless steel or nickel
- Suitable for filtering fibrous waste material



1 Inlet connection
2 Inlet plenum
3 Filtration Group filter cartridge
4 Triangular wire winding
5 Triangular wire
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 / manometer
Differential pressure gange with transmitter
13 Feet

3. Technical data





type	W (mm)	X (mm)	Z (mm)	volume (l)	weight (kg)	cleaning drive
AF7592-...-	2083	1900	1490	319	440	ratchet
AF759.-...-	2526	1900	1490	319	460	gear motor
AF7582-...-	1813	1630	1220	267	410	ratchet
AF758.-...-	2256	1630	1220	267	430	gear motor
AF7572-...-	1543	1360	950	215	380	ratchet
AF757.-...-	1986	1360	950	215	400	gear motor

Filter data

Max. operating pressure: - 10 bar, optional 16 bar

Max. operating temperature: - 100 °C, optional 200 °C

Design according: PED 2014 / 68 / EU

Materials:
- Housing and cover: Cast steel, 1.4571
- Internals: Cast steel, stainless steel, AL
- Bearing bushes: PTFE based
- Seals: FKM (Viton), PTFE
- Coiled cartridge: 1.4581; 1.4571 (Δp max. 30 bar) or Al, 1.4571 (Δp max. 10 bar)
- Welded cartridge: 1.4571 (Δp max. 10 bar)
- Element perforated foil: 1.4571 or Al, 1.4571 or Al, Ni (Δp max: 10 bar)

Cover fastening: - 8 x M20 hexagon screws

Connections and nominal diameters:
- A-inlet DN 150, DN 200,DN 250
- B-outlet: DN 150, DN 200,DN 250
- C-drain: DN 100
- G-indicator: DN 25

All threaded holes acc. to DIN 3852 form X
flanges acc. to EN 1092-1/11B1/PN 16 (Standard, depending on operating pressure and temp.)

Drive shaft seal: Gland packing rings made of PTFE fibre with disc spring pretension

External finish: Synthetic resin primer, blue (RAL 5007)

Motor data

Spur gear motor
Multirange winding

V	Hz	KW	rpm	A
Δ 230 ± 10%	50	0.25	11.80	1.4
⅄ 400 ± 10%	50	0.25	11.80	0.8
Δ 266 ± 10%	60	0.3	12.6	1.5
⅄ 460 ± 10%	60	0.3	12.6	0.75

Protection class: IP55, ISO-class F; output torque 190 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

Optional:
- heating jacket
- ASME
- EN 13445

Other types available on request.

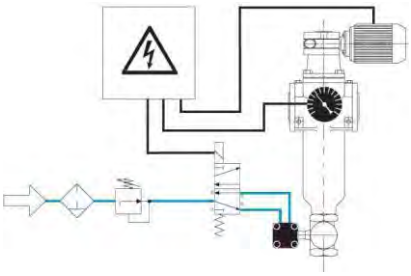
Note: Technical data is subject to change without notice.

4. Design and application

Cartridge type (s. sec. 6)	Total surface in cm²	Gap width/hole width in µm/ effective gap surface in cm²																
		30	40	50	60	80	100	130	160	200	250	300	360	500	1000	1500	2000	4000
AF 6016	862	48	63	77	91	117	142	176	206									
AF 6026	862			50	59	77	95	119	142	170	203	231	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	231	263	326	471	553	206	
AF 6066	836													184	302	385	446	634
AF 6076	836					63	77	97	117	141	169	195	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	337

recommended design

Cleaning and emptying



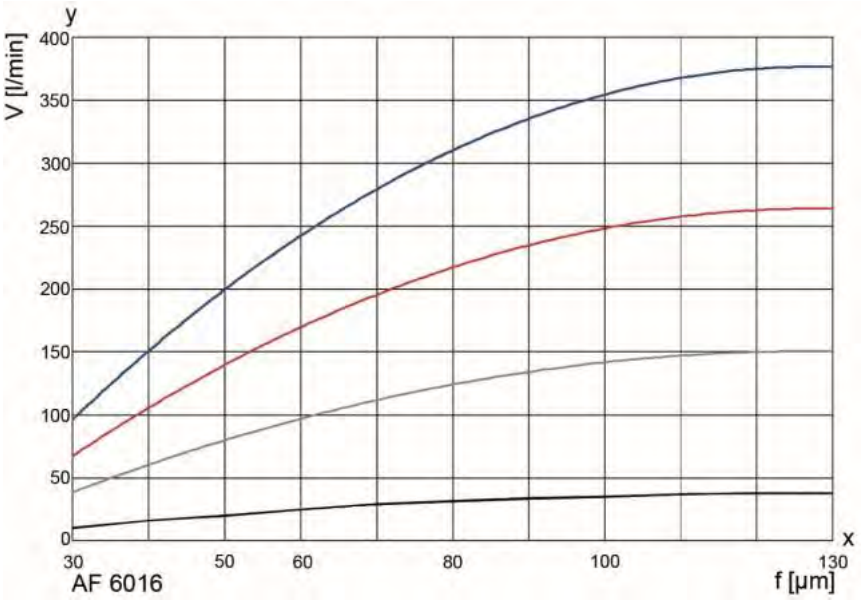
Fully automatic operation:

Filtration usually occurs 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 runs for about 10 seconds (about three turns of the filter cartridge). This is sufficient for a thorough cleaning. In certain rare cases it may be necessary to run the motor continuously. The drive shaft is always turned clockwise. The filter is emptied by opening the drain valve. This can either take place synchronously with cleaning or be time or cycle controlled, depending on the residue concentration. 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.

See the Instruction Manual for further information.

5. Performance curves



The curves represent the volumetric flow through the entire filter system (filter housing including for example one cartridge) and refer to a differential pressure of 0.3 bar. Specific information about process data is essential for reliable operation of an automatic filter.

Important note on performance curve! It's an example of element AF 6016. The number of dements per filter results from type number key in point 6.

Viscosity in mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

y = volumetric flow V [l/min]
x = gap width f [µm]

6. Type number key

Type number key with selection example for AF 7573-811-50200 S1											
Size / number of filter cartridge columns / function											
AF 75	6 filter cartridge column Ø 110 mm / metal-edge filter with radial cleaning										
AF 95	6 filter cartridge column Ø 110 mm / metal-edge filter with radial cleaning and preseparator through the cyclone effect										
	Number of filter cartridges										
	6	1 filter cartridge per column									
	7	2 filter cartridges per column									
	8	3 filter cartridges per column									
	9	4 filter cartridges per column									
		Cleaning drive									
		3	Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz								
		4	Gear motor 230/400 V, 50 Hz or 266/460 V, 60 Hz Ex II 2G T3								
			Inlet and outlet connections								
			8	DN 150 EN 1092-1 / 11 B1 / PN 16							
			9	DN 200 EN 1092-1 / 11 B1 / PN 16							
			10	DN 250 EN 1092-1 / 11 B1 / PN 16							
				Permissible operating pressure in bar (housing/cover)							
				1	PN10						
				2	PN 16						
				3	PN 25						
				4	PN 40						
					Material Seal FKM, bearing PTFE						
					1	Standard: Housing in carbon steel, internals in carbon steel, EN-GJS-400-15, aluminium					
					2	Standard: Housing in stainless steel 1.4571, internals in stainless steel					
					3	Standard: Housing in carbon steel, internals in stainless steel					
						Differential pressure indicator and gauge					
						5	PiS 3175 digital Δp gauge, 2 setting points 0 – 16 bar adjustable and analogous 4 – 20 mA/0 – 10 V				
						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		
								6	Drain valve, electropneumatic 24 V, 10 bar		
								7	Drain valve, electropneumatic 230 V, 10 bar		
								8	Drain valve, electric 24 V, 10 bar		
								9	Drain valve, electric 230 V, 10 bar		
									Cleaning valve		
									0	Without	
										Optional features	
										0	Without / other version
AF 75	**7**	**3**	**-8**	**1**	**1**	**-5**	**0**	**2**	**0**	**0**	**- XXXX(end no. for special)/S1***

*end number completion:
S1 welded, Version 1

End number	Special version
3001	Standard filter insert (complete), without housing and without drive
3002	Standard filter insert (complete), without housing, with drive
3400	With double jacket for heating / cooling PN 10 bar
3700	PTFE seals
Others	Upon request

Type number key with selection example for coiled and welded cartridges for AF 60 and perforated foil AF 50

Series

AF 60	Coiled cartridge or welded cartridge with triangular wire winding
AF 50	Perforated foil

	Material	Inner core	Filter medium	Clamp rings	Wire width in mm
	Perforated plate				
	0	-	1.4301	-	-
	Welded 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
	Coiled cartridge				
	6	-	1.4571	1.4571	1.8
	7	-	1.4571	1.4571	1
	8	-	1.4571	1.4571	0.75
	Perforated foil				
	11	Al	Ni	1.4571	-
	12	Al	1.4571	1.4571	-
	13	1.4571	1.4571	1.4571	-

		Length	Diameter x length in mm
		6	110x265

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

003	30 µm	**010**	100 µm	**036**	360 µm	**400**	4000 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		

Hole size/grade in µm (see 4. Design and application)

010	100 µm
020	200 µm
050	500 µm
	Other grades upon request

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

7. Spare Parts

Metal-edge or coiled cartridge

Item	Designation	Order number	
		FKM/C-Steel	PTFE/Stainless steel
1	Bush kit		78318354
2	Seal kit (complete)	79783499	79718206
3	Scraper		71116805
4	Spring set		70350654
5	Filter cartridge	See name-plate	

Perforated foil cartridge

Item	Designation	Order number
6	Scraper PU (complete)	70531132
7	Scraper PTFE (complete)	70379502
8	Scraper PU (wear part)	70378953
9	Scraper PTFE (wear part)	70370568

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 cartridges and accessories can be provided. For information on installation and operation, please see the Instruction Manual.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 112 G

Cast design with internal pressure cleaning and integrated cyclone effect
Connection size: flange DN 40 or G1 1/2

1. Short description

Filtration Group automatic backflush filters are suitable for all applications where low-viscosity liquids have to be filtered.

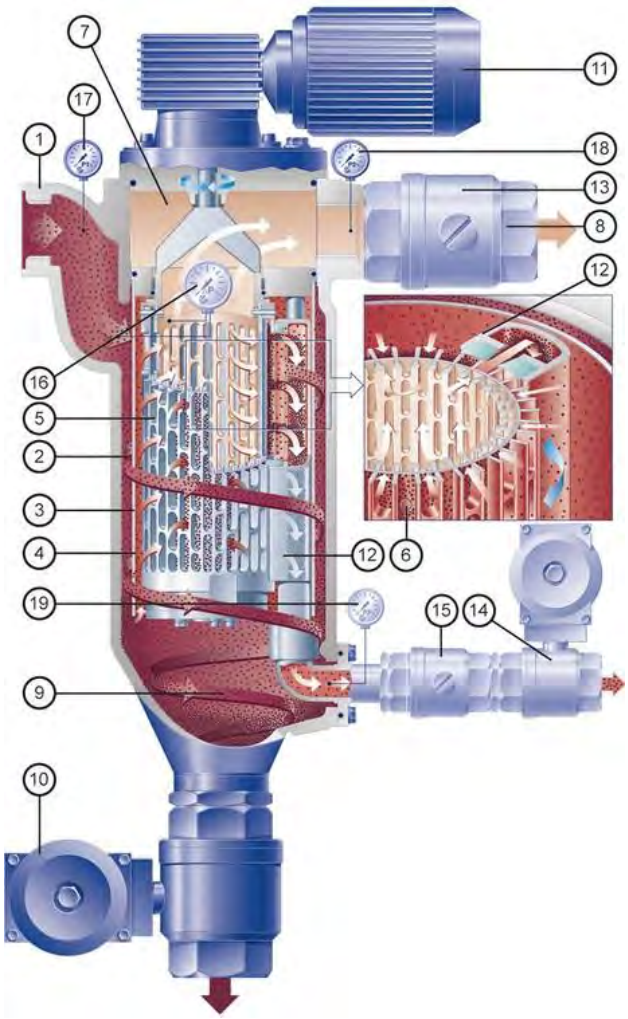
These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter element and backflushing with internal pressure media.

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 surface filtering principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Continous cleaning without valves
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Filtration Group modular Vario system for optimum filter selection
- Application in Ex zone 1 and 2 optional
- Easy maintenance
- Worldwide sales

2. Operating principle

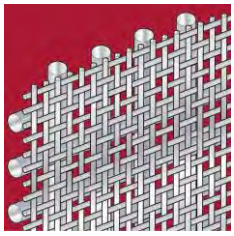
The Filtration Group AF 112 G backflush filter belongs to the small Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.
This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time. 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 funtion 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 and flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.
The integrated preseparator relieves the load on the segmented element, articularly from coarse and heavy particles. This is achieved by a tangential flow around the preseparator tube and the deflection edges.
The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached. The segmented element is turned as the cleaning pressure valve is opened. The segments are then guided one at a time past the flushing channel on the outer circumference, causing them to open and close alternately. The internal pressure is built up at a throttling point downstream of the filter, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the flushing channel and discharged with a small amount of internal medium. One turn is sufficient to clean all segments. 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. All filters of the Filtration Group Vario series are protected by various patents.



Used Filtration Group filter elements in the AF 112 G backflush filter:

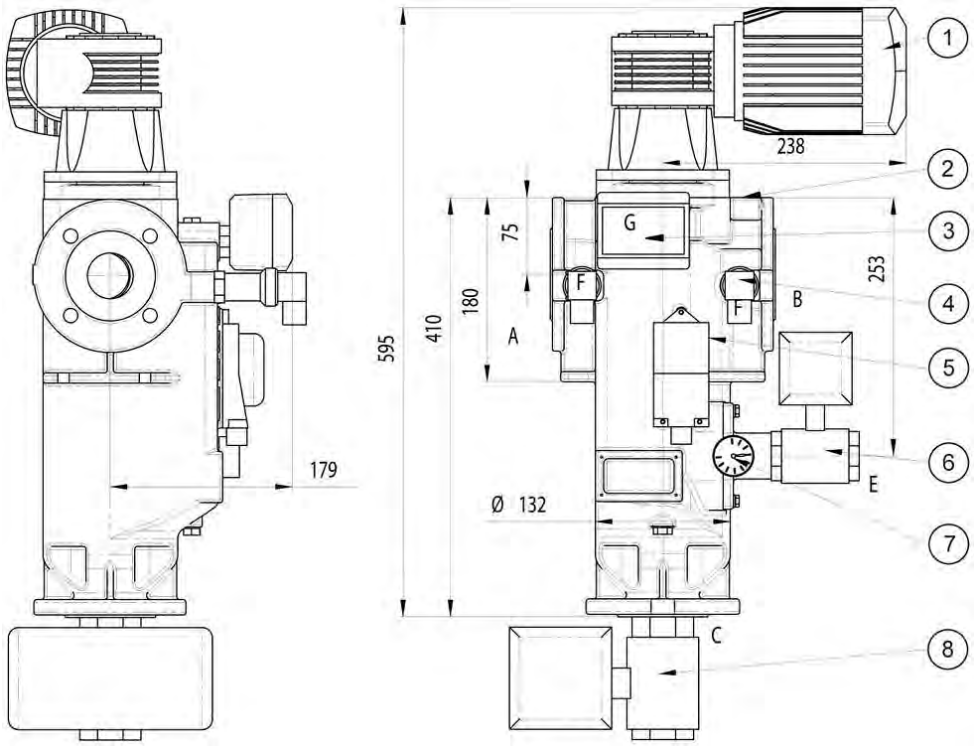
Filtration Group Topmesh:

- Good cleanability due to asymmetric design
- High free surface portion
- Defined particle retention
- Several material combinations possible



1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segment element
6 Filtration Group filter materials
7 Plenum for filtered fluid
8 Drain connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 Flushing channel
13 P2-control throttle
14 Cleaning valve
15 P3-control throttle (not always required)
16 Differential pressure contact gauge
17 P1-gauge
18 P2-gauge
19 P3-gauge (not always required)

3. Technical data



1 Cleaning drive: Worm gear motor can be mounted at each 90° position
2 Vent screw G¼
3 Optional: Differential pressure indicator/switch
4 Optional: Pressure sensor
5 Optional: Sensor actor box
6 Optional: Automatic backflush valve
7 Optional: P3 control throttle with P3 gauge
8 Optional: Cleaning valve Clearance required = 400 mm

The pneumatical rotary drive is not shown in this drawing!

Filter data

Max. operating pressure:		16 bar
Max. operating temperature:		100 °C
Materials:	-	Housing and cover: cast steel
	-	Internals: C-steel, PPS GF40, Al
	-	Bearing bushes: PTFE based
	-	Seals: FPM (Viton)
	-	Segmented element: 1.4571/Al or 1.4571/Alhc (Δp max. 10 bar)
Cover lock:		4x M16 hexagon screws
Connections and nominal diameters:	-	A-inlet, B-outlet, C-drain: G1½ threaded holes DIN 3852 form Z in flange DN 40
	-	E-backflush: G1 DIN 3852 form Z
	-	F-gauge: G½ DIN 3852 form Z
	-	G-indicator: G1/8 DIN 3852 form X
Drive shaft seal:		Lip seal with O-ring
External finish:		Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
△ 230 ± 10%	50	0.18	17	1.2
⅄ 400 ± 10%	50	0.18	17	0.7
△ 266 ± 10%	60	0.22	17	1.1
⅄ 460 ± 10%	60	0.22	17	0.7

Protection class: IP55; insulation class F; output torque: 97 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
- Pneumatical rotary drive

Weight: 36 kg (with motor) or 32 kg (with pneumatical rotary drive)
Volume: 8 l

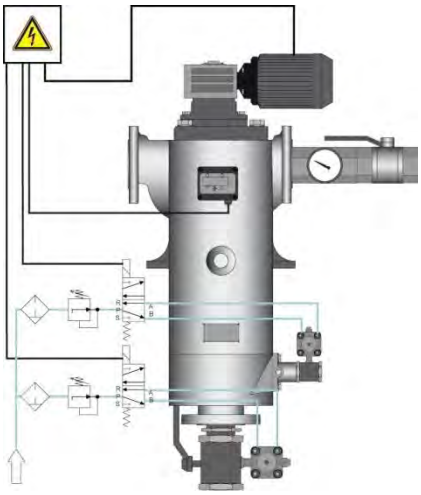
Other versions available on request!
Technical data is subject to change without notice.

4. Design and application

Element type (see section 6)	Total surface in cm²	Filter rating in µm/ effective filter surface in cm²								
			10	20	30	40	60	80	100	
AF 100XX4	437		310	310	310	310	310	310	310	

Recommended design

Cleaning and discharge modes

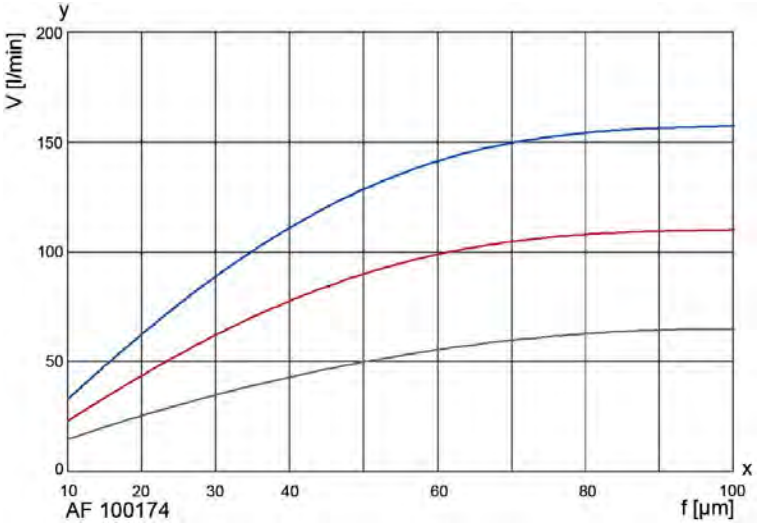


Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 - 0.7 bar. The cleaning motor is operated for around 3 seconds (about one turn of the element). The cleaning valve remains open for this period. An internal pressure of 2 - 3 bar is adequate to clean the filter efficiently.
The drain valve is opened in order to discharge the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 - 3 seconds.

Refer to the Instruction Manual for further information.

Filtration Group´s team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

5. Performance curves



The curves indicate the volume flow through the complete filter system (filter housing including element) 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

1 mm²/s
33 mm²/s
100 mm²/s

y = Volume flow V [l/min]
x = Filter rating f [µm]

6. Type number key

Type number key with selection example for AF 11243-221-41220/G2										
Size										
AF 1124 1 x 65x230										No. of steps x diameter x length [mm]
	Cleaning drive									
	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									Pneumatical rotary drive
		Inlet and outlet connections								
		2								G1½ in flange DN 40 PN 16
			Permissible operating pressure in bar (housing/cover)							
			2							PN 16
				Material Seal FPM, PU, bearing PTFE						
				1						Cover and housing nodular cast iron, internals steel, aluminium
				3						Cover and housing nodular cast iron, internals stainless steel 1.4301/1.4571
					Differential pressure indicator and gauge					
					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 #p gauge with control function in combination with pneumatical rotary drive
					4					PiS 3170, digital Δp gauge, 2 switching levels settable from 0 to 16 bar
						Valves and control throttles				
						1				P2 control throttle with P2 gauge
						6				Like 1 but with P3 control throttle and P3 gauge
							Drain valve			
							2			Ball valve, electropneumatic 24 V DC
							3			Ball valve, electropneumatic 230 V AC
							4			Ball valve, electric 24 V DC
							5			Ball valve, electric 230 V AC
								Abreinigungsventil		
								2		Ball valve, electropneumatic 24 V DC
								3		Ball valve, electropneumatic 230 V AC
								4		Ball valve, electric 24 V DC
								5		Ball valve, electric 230 V AC
									Optional features	
									0	Without/special version
AF 1124	**3**	**- 2**	**2**	**1**	**-4**	**1**	**2**	**2**	**0**	**-XXXX (end number for special version)/G2***

*end number completion:

G2 cast iron, Version 2

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 element for AF 100										
Series										
AF 100 Segmented cartridge with topmesh (10 µm to 100 µm)										
	Material Segmented element		**Core element**		**Filter medium**		**Clamp rings**		**Wire width in mm**	
	17		Al		1.4571		St		-	
	20		Al/hc		1.4571		1.4571		-	
		Overall length Diameter x length in mm								
		4	65x230							
			Gap width/rating in µm (see 4. Desgin and application)							
			001	10 µm	**004**	40 µm			**010**	100 µm
			002	20 µm	**006**	60 µm				
			003	30 µm	**008**	80 µm				
				Other filter ratings on request						
AF 100	**17**	**4**	**- 006**							

For the correct choice of the filter fineness please consult the table on page 4.

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70308169
2	Set of seals (complete)	70368610	70316071
3	Backflush channel moulding	79744004	70312375
4	Backflush channel	70345207	
5	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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70365279.05/2019

Automatic filter
AF 113 G

Cast design with internal pressure cleaning and integrated cyclone effect
Connection sizes: G2, screw in flange DN 50 and DN 65

1. Short description

Filtration Group automatic backflush filters are suitable for all applications where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the element and backflushing with internal pressure media.

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 surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Filtration Group modular Vario system for optimum filter selection
- Gas-tight shaft seals available optional
- Application in Ex zone 1 and 2 optional
- Easy maintenance
- Worldwide distribution

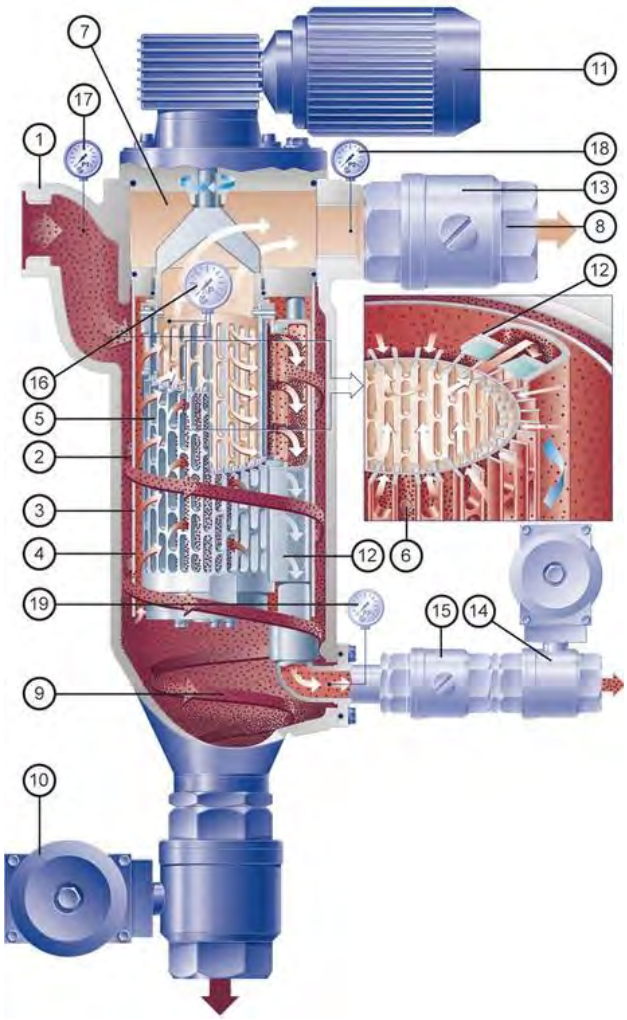
2. Operating principle

The Filtration Group AF 113 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned 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 and flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseparator relieves the load on the segmented element, particularly from coarse and heavy particles. This is achieved by a tangential flow around the preseparator tube and the deflection edges.

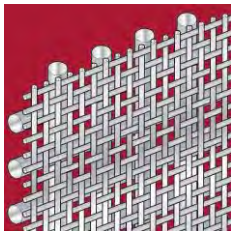


The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached. The segmented element is turned as the cleaning valve is opened. The segments are then guided one at a time past the flushing channel on the outer circumference, causing them to open and close alternately. The internal pressure is built up at a throttling point downstream of the filter, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the flushing channel and discharged with a small amount of internal medium. One turn is sufficient to clean all segments. 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.

All filters of the Filtration Group Vario series are protected by various patents.

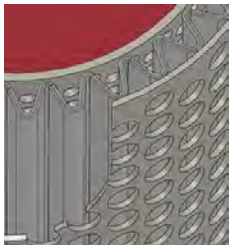
Used Filtration Group filter elements in the AF 113 G backflush filter:

Filtration Group Topmesh element (standard):



- Good cleanability due to asymmetric design
- High effective filter surface
- Defined particle retention
- Several material combinations possible

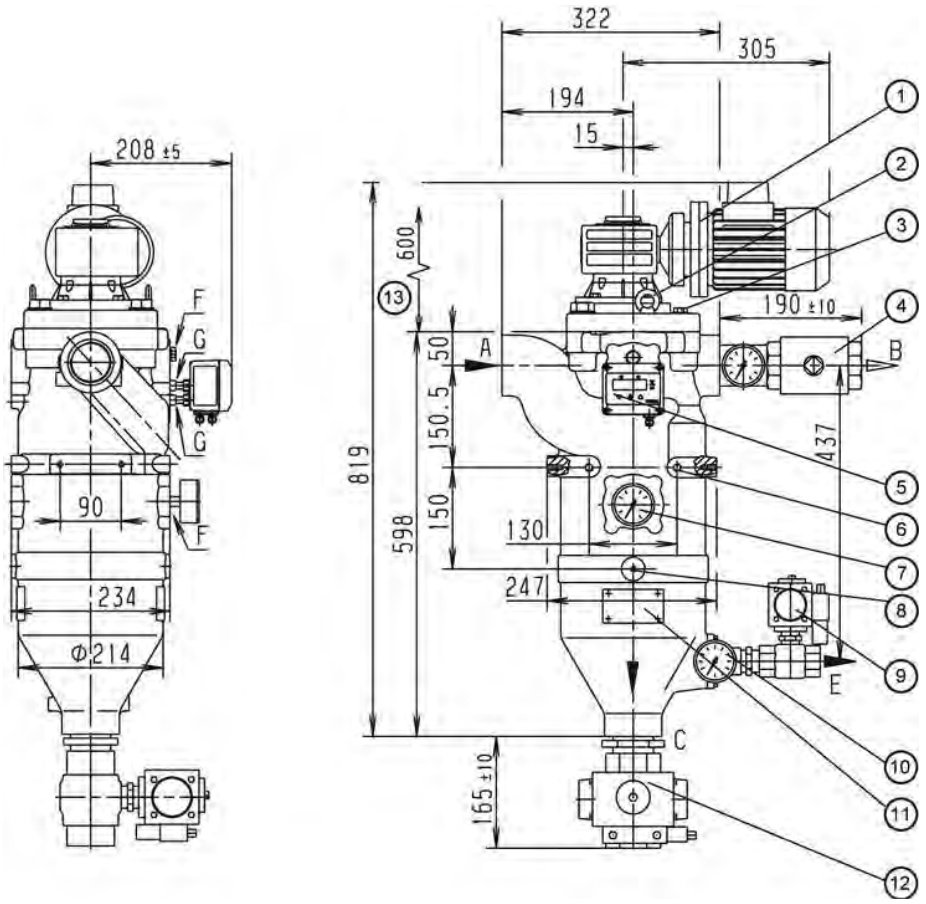
Filtration Group Wave element:



- Higher contamination levels because of pleated filter area
- Complete stainless steel
- Higher flow rate compared to standard elements
- Specially for filter fineness < 60 µm
- Filter media (wire mesh) made of 1.4401

1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segment element
6 Filtration Group filter materials
7 Plenum for filtered fluid
8 Drain connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 Flushing channel
13 P2-control throttle
14 Cleaning valve
15 P3-control throttle (not always required)
16 Differential pressure contact gauge
17 P1-gauge
18 P2-gauge
19 P3-gauge (not always required)

3. Technical data



1 Cleaning drive: Worm gear motor can be mounted at each 90° position
2 Lifting eyebolts
3 Vent screw G¼
4 P2 control throttle with P2 gauge
5 Optional: Differential pressure indicator/switch
6 Mounting holes M12
7 P1 gauge
8 Mounting holes M8
9 Optional: Automatic backflush valve
10 Option: P3-Regeldrossel mit P3-Manometer
11 Name-plate
12 Optional: Automatic drain valve
13 Clearance required = 600 mm

Filter data

Max. operating pressure:	16 bar
Max. operating temperature:	100 °C
Materials:	- Housing and cover: Nodular cast iron - Internals: Nodular cast iron, steel - Bearing bushes: PTFE based - Seals: FPM (Viton) - Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar) - Wave element: 1.4401
Cover lock:	4 x M20 hexagon screws
Connections and nominal Diameters:	- A-inlet, B-outlet, C-drain: G2 threaded holes DIN 3852 form X - E-backflush: G1 threaded holes DIN 3852 form Z - F-gauge: G¼ - G-indicator: G1/8 - Optional: A/B/C screw-in flanges DN 50 or DN 65 acc. to EN 1092-1/05A
Drive shaft seal:	Lip seal with O-ring
External finish:	Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
△ 230 ± 10%	50	0.18	9.3	1.2
人 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
人 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex
- Ex II 2G T3, output torque 97 Nm

Weight: 85 kg
Volume: 12 l

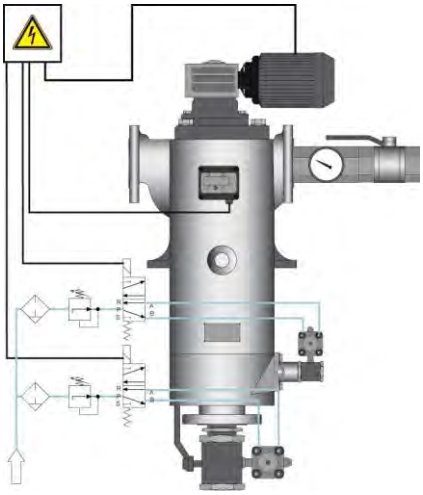
Other versions available on request!
Technical data is subject to change without notice!

4. Design and application

Element type (see section 6)	Total surface in cm²	Filter rating in µm/ effective filter surface in cm²								
			10	20	30	40	60	80	100	200
AF 100XX6	763		637	637	637	637	637	637	637	637
AF 1052166	1750		1620	1620	1620	1620	1620	1620	1620	

Recommended design

Cleaning and discharge modes

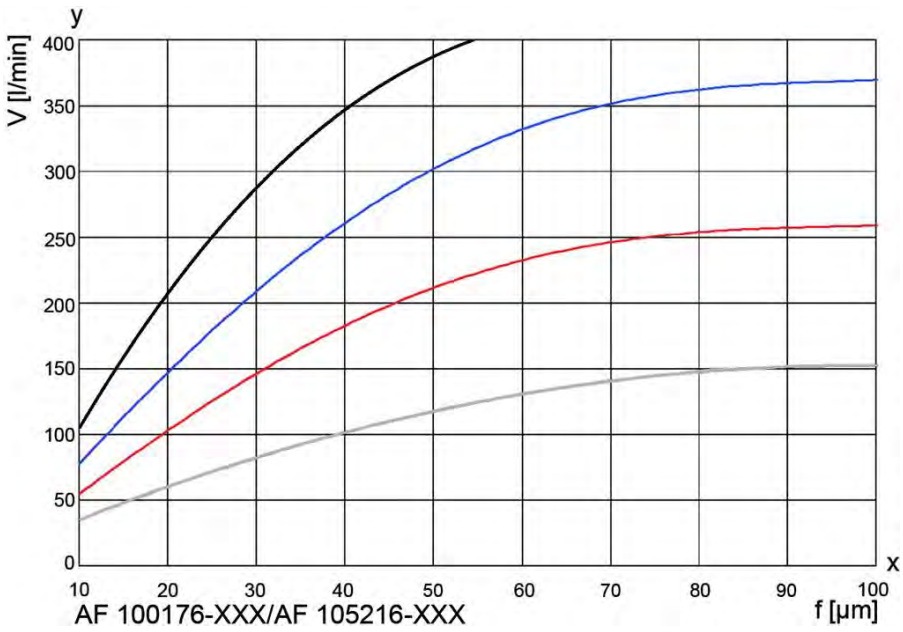


Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 - 0.7 bar. The cleaning motor is operated for around 7 seconds (about one turn of the element). The cleaning valve remains open for this period. An internal pressure of 2 - 3 bar is adequate to clean the filter efficiently.
The drain valve is opened in order to discharge the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 - 3 seconds.

Refer to the Instruction Manual for further information.

Filtration Group´s team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

5. Performance curves



The curves indicate the volume flow through the complete filter system (filter housing including element) 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

1 mm²/s AF105 DN65/G2 ½
1 mm²/s AF100 DN50/G2
33 mm²/s "
100 mm²/s "

y = Volume flow V [l/min]
x = Filter rating f [µm]
mm²/s = cst

6. Type number key

Type number key with selection example for AF 11363-1321-41220/G3

Size

AF 1136 1 x 110x265 — No. of steps x diameter x length [mm]

Cleaning drive

- **3** Gear motor 230/400 V, 50 Hz oder 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** G2½

Permissible operating pressure in bar (housing/cover)

- **2** PN 16

Material Seal FPM, PU, bearing PTFE

- **1** Cover and housing nodular cast iron, internals steel, aluminium
- **3** Cover and housing nodular cast iron, internals stainless steel 1.4301/1.4571

Differential pressure indicator and gauge

- **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

Valves and control throttles

- **1** P2 control throttle with P2 gauge
- **6** Like 1 but with P3 control throttle and P3 gauge

Drain valve

- **2** Ball valve, electropneumatic 24 V DC
- **3** Ball valve, electropneumatic 230 V AC
- **4** Ball valve, electric 24 V DC
- **5** Ball valve, electric 230 V AC

Cleaning valve

- **2** Ball valve, electropneumatic 24 V DC
- **3** Ball valve, electropneumatic 230 V AC
- **4** Ball valve, electric 24 V DC
- **5** Ball valve, electric 230 V AC

Optional features

- **0** Without/special version

AF 1136	**3**	**- 13**	**2**	**1**	**-4**	**1**	**2**	**2**	**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 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 elements for AF 100

Series

AF 100 Segmented element with topmesh

AF 105 Wave element AF 105216

	Material Segmented element	Core element	Filter medium	Clamp rings
	17	Al	1.4571	St
	20	Al/hc	1.4571	1.4571
	21	1.4571	1.4571 (1.4401)*	1.4571

Overall length Diameter x length in mm

6 110x265

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

001	10 µm	**004**	40 µm	**010**	100 µm
002	20 µm	**006**	60 µm	**013**	130 µm
003	30 µm	**008**	80 µm	**020**	200 µm

Other filter ratings on request

AF 100	**17**	**6**	**- 006**

For the correct choice of the filter fineness please consult the table on page 4.

*AF 105 Filter medium 1.4401

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70308169
2	Set of seals (complete)	70316068	70316071
3	Backflush channel moulding	79744004	70312375
4	Backflush channel moulding for wave element*		70597327
5	Cartridge	see name-plate	

*When replacing standard filter element by wave element request wave element kit.

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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
79799073.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 113 G

with internal pressure cleaning and integrated cyclone effect
Connection size: DN 50/G2, cast stainless steel

1. Short description

Filtration Group automatic backflush filters are suitable for applications
where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the element and backflushing with internal pressure media.

Advantages:

- Extended filter service life due to the use of a cleanable element
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation tanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- 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

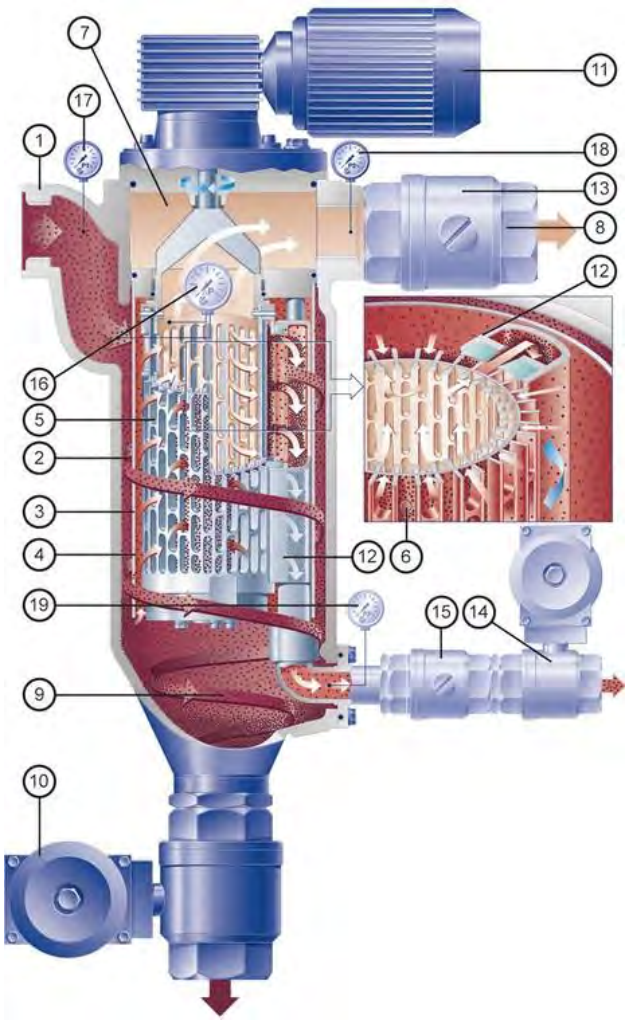
2. Operating principle

The Filtration Group AF 113 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned 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 and flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseparator relieves the load on the segmented element, particularly from coarse and heavy particles. This is achieved by a tangential flow around the preseparator tube and the deflection edges.

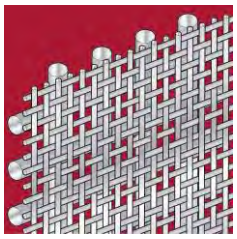


The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached. The segmented element is turned as the cleaning valve is opened. The segments are then guided one at a time past the flushing channel on the outer circumference, causing them to open and close alternately. The internal pressure is built up at a throttling point downstream of the filter, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the flushing channel and discharged with a small amount of internal medium. One turn is sufficient to clean all segments. 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.

All filters of the Filtration Group Vario series are protected by various patents.

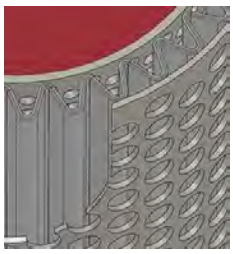
Used Filtration Group filter elements in the AF 113 G backflush filter:

Filtration Group topmesh elements (standard):



- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations possible

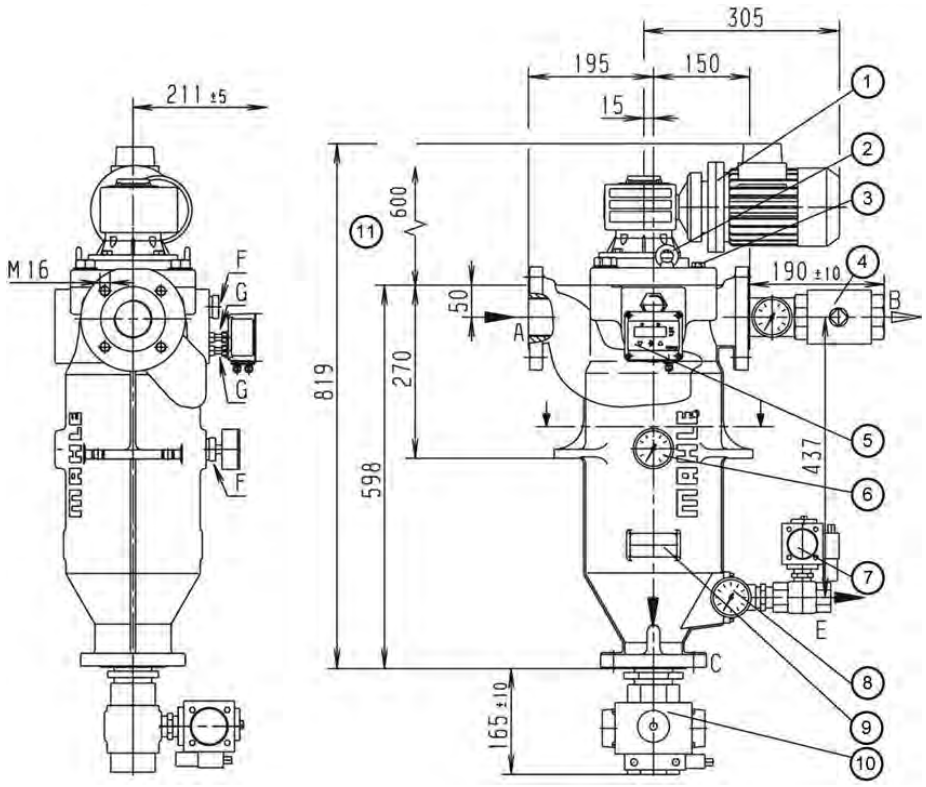
Filtration Group Wave element:



- Higher contamination levels because of pleated filter area
- Complete stainless steel
- Higher flow rate compared to standard elements
- Specially for filter fineness < 60 µm
- Filter media (wire mesh) made of 1.4401

1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segmented element
6 Filtration Group filter materials
7 Plenum for filtered fluid
8 Drain connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 Flushing channel
13 P2 control throttle
14 Cleaning valve
15 P3 control throttle (not always required)
16 Differential pressure contact gauge
17 P1 gauge
18 P2 gauge
19 P3 gauge (not always required)

3. Technical data



1 Cleaning drive: Worm gear motor can be mounted of each 90° position
2 Lifting eyebolts
3 Vent screw G¼
4 P2 control throttle with P2 gauge
5 Optional: Differential pressure indicator/switch
6 P1 gauge
7 Optional: Automatic back-flush valve
8 Optional: P3 control throttle with P3 gauge
9 Name-plate
10 Optional: Automatic drain valve
11 Clearance required = 600 mm

Filter data

Max. operating pressure: 16 bar
Max. operating temperature: 100 °C
Materials: - Housing and cover: Cast steel 1.4581
- Optional: Certificate acc. to EN 10204-3.1
- Internals: Cast steel 1.4581, stainless steel 1.4571
- Bearing bushes: PTFE based
- Seals: FPM (Viton)
- Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar)
- Wave element: 1.4401

Cover lock: 4 x M20 hexagon screws
Connections and nominal diameters: A-inlet, B-outlet, C-drain: threaded hole G2 in flange DN 50
E-backflush: G1
F-gauge: G1
G-indicator: G1/8
All threaded holes acc. to DIN 3852 form Z
Drive shaft seal: Lip seal with O-ring

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	9.3	1.2
⅄ 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
⅄ 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP 55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex
- Ex II 2G T3, output torque 97 Nm

Weight: 85 kg
Volume: 12 l

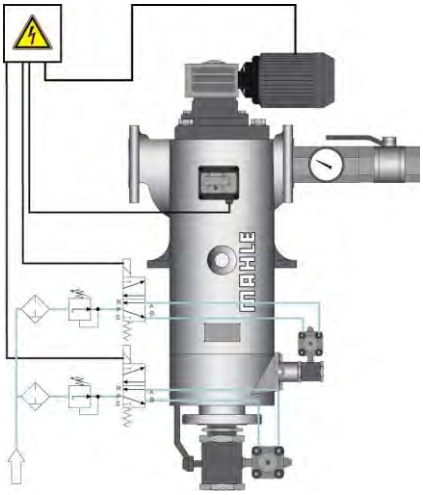
Other versions available on request!
Technical data is subject to change without notice!

4. Design and application

Element type (see section 6)	Total surface in cm²	Filter rating in µm/ effective filter surface in cm²								
			10	20	30	40	60	80	100	200
AF 100XX6	763		637	637	637	637	637	637	637	637
AF 105216	1750		1620	1620	1620	1620	1620	1620	1620	

recommended design

Possible cleaning and discharge modes

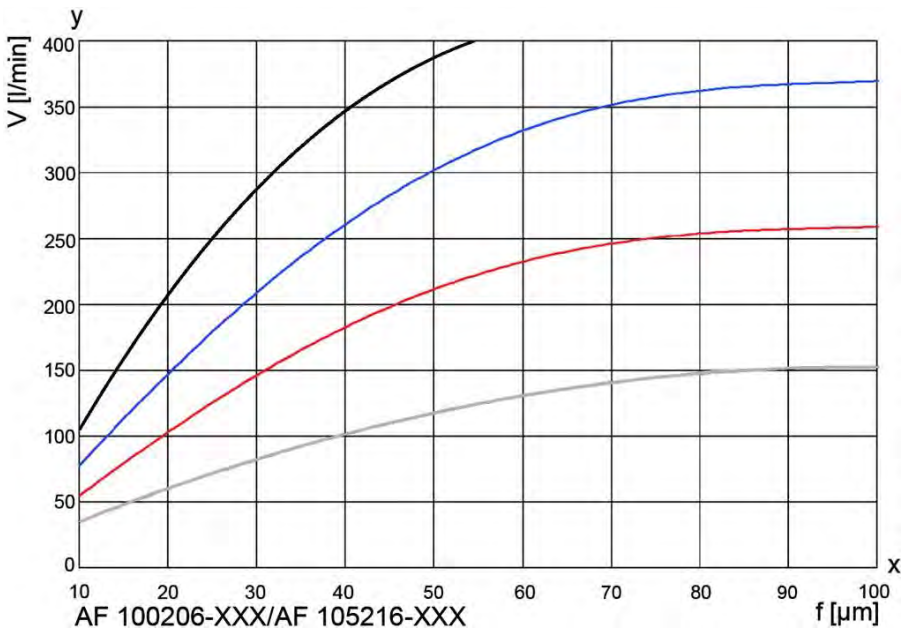


Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approx. 0.5 - 0.7 bar. The cleaning motor is operated for around 7 seconds (about one turn of the element). The cleaning valve remains open for this period. An internal pressure of 2-3 bar is adequate to clean the filter efficiently.
The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2-3 seconds.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

5. Performance curves



The curves indicate the vclume flow through the complete filter system (filter housing including element) 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

- 1 mm²/s AF105 DN65/G2 ½
- 1 mm²/s AF100 DN50/G2
- 33 mm²/s "
- 100 mm²/s "

y = Volume flow V [l/min]
x = Filter rating f [µm]
mm²/s = cst

6. Type number key

Type number key with selection example for AF 11363-1322-41220/G3										
Size										
AF 1136 1 x 110x265										No. of steps x diameter x length [mm]
	Cleaning drive									
	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	threaded hole G2 in flange DN 50, mountings flange connection							
		13	threaded hole G2 in flange DN 50, mountings thread connection							
			Permissible operating pressure in bar (housing/cover)							
			2	PN 16						
				Material Seal FPM bearing PTFE						
				2	Stainless steel 1.4581/1.4571					
					Differential pressure indicator and gauge					
					1	PiS 3076, switching level at 1.2 bar static 63 bar				
					2	PiS 3076, switching level at 0.7 bar static 63 bar				
					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				
						Valves and control throttles				
						1	P2 control throttle with P2 gauge			
						6	Like 1 but with P3 control throttle and P3 gauge			
							Drain valve			
							2	Ball valve, electropneumatic 24 V DC		
							3	Ball valve, electropneumatic 230 V AC		
							4	Ball valve, electric 24 V DC		
							5	Ball valve, electric 230 V AC		
								Cleaning valve		
								2	Ball valve, electropneumatic 24 V DC	
								3	Ball valve, electropneumatic 230 V AC	
								4	Ball valve, electric 24 V DC	
								5	Ball valve, electric 230 V AC	
									Optional features	
									0	Without/special version
AF 1136	**3**	**- 13**	**2**	**2**	**-4**	**1**	**2**	**2**	**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 filter insert (comlpete), without housing or drive
3002	Standard filter insert (comlpete), without housing, with drive
3700	PTFE seals
Other numbers	On request

Type number key with selection example for AF 100									
Series									
AF 100 Segmented element with topmesh									
AF 105 Wave element AF 105216									
	Material		**Core element**		**Filter medium**		**Clamp rings**		
	Segmented element								
	20		Al/hc		1.4571		1.4571		
	21		1.4571		1.4571 (1.4401)*		1.4571		
		Overall length diameter x length in mm							
		6	110x265						
			Gap width/rating in µm (see 4. Design and application)						
			001	10 µm	**004**	40 µm	**010**	100 µm	
			002	20 µm	**006**	60 µm	**013**	130 µm	
			003	30 µm	**008**	80 µm	**020**	200 µm	
				Other filter ratings on request					
AF 100	**20**	**6**	**- 006**						

For the correct choice of the filter fineness please consult the table on page 4.
*AF 105 Filter medium 1.4401

7. Spare parts

No.	Designation	Material no.	
		FPM/	PTFE/VA
1	Bush kit		70308169
2	Set of seals (complete)	70316068	70316071
3	Backflush channel moulding	79744004	70312375
4	Backflush channel moulding for wave element*		70597327
5	Element	See name-plate	

*When replacing standard filter element by wave element request wave element kit.

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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70360052.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 119 S

with internal pressure cleaning and integrated cyclone effect
Nominal diameter: DN 100, 125, 150, 200

1. Features

Filtration Group automatic backflush filters are suitable for all applications where low or medium-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge and backflushing with cleaned internal pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a robust inner core
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material options open up a wide range of applications(also for high abrasive media)
- Modular Filtration Group Vario system for optimum filter selection
- Optional: Gas-tight shaft seals available
- Optional: Appliction in Ex zone 1 and 2
- Optional Certification for Pressure Equipment Directive (PED)
- Optional: Acceptence for AMSE U-Stamp
- Easy maintenance
- Worldwide distribution

2. Operating principle

The Filtration Group AF 119 S backflush filter belongs to the large Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time.

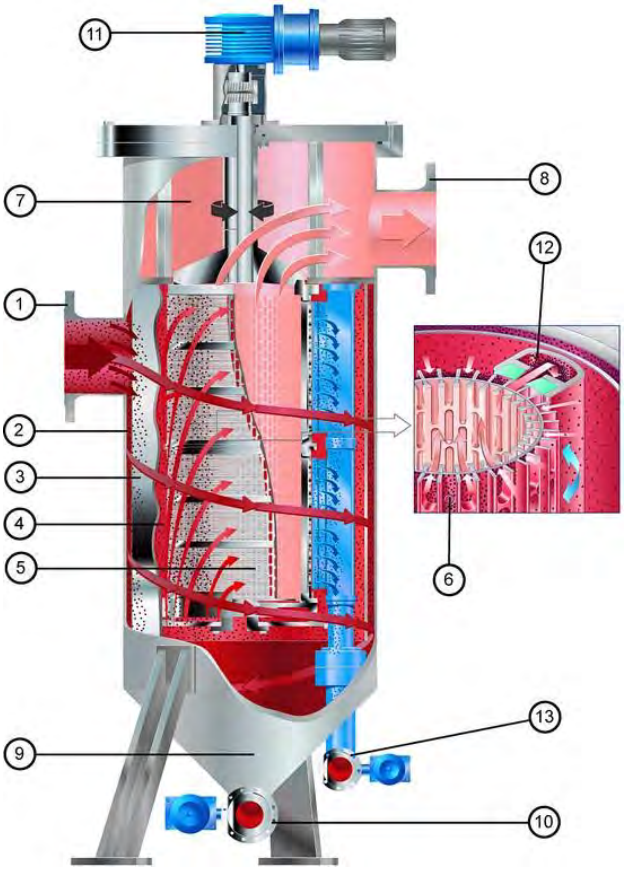
The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseparator relieves the load on the segmented element, particularly from coarse and heavy particles. This permits a tangential flow around the preseparator tube and the deflection edges.

The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned as the cleaning and external pressure valves are opened. The segments are then guided one at a time past the outside backflush channel. This causes them to open and close alternately. The internal pressure is built up at a throttle point downstream of the filter, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the backflush channel and discharged with a small amount of internal medium. One turn suffices to clean all segments.
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.

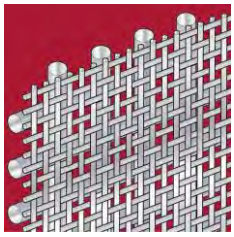
All filters in the Filtration Group Vario series are protected by various patents.



Used Filtration Group filter cartridges in the AF 119 S backflush filter:

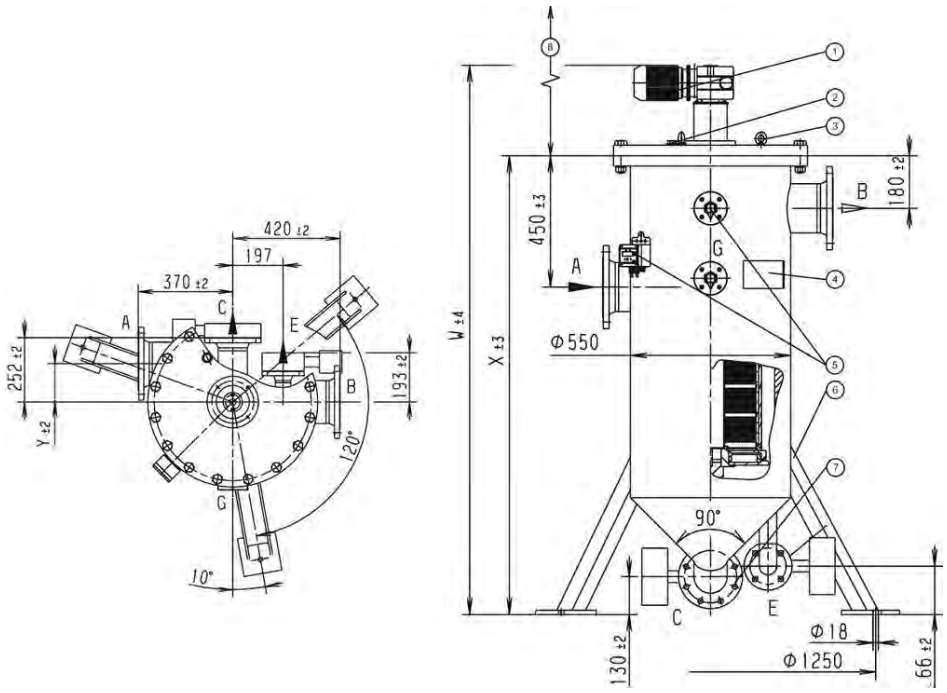
Filtration Group topmesh cartridges (standard)

- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations possible



1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segmented element
6 Filtration Group filter materials
7 Plenum for filtered fluid
8 Drain connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 Flushing channel
13 Cleaning valve

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 Vent screw G1/4
3 Lifting eyebolts
4 Name-plate
5 Optional: Differential pressure indicator/switch
6 Feet (3 x 120°)
7 Optional: Drain valve, manual or automatic mode
8 Optional: Automatic backflush valve
9 Clearance required = 600 mm

Filter data

Max. operating pressure:	10 bar
Max. operating temperature:	100 °C
Materials:	- Housing and cover: St. 1.4571 - Internals: St. 1.4571 - Bearing bushes: PTFE based - Seals: FPM (Viton) - Segmented element: 1.4571/Al (Δp max. 6 bar)
Cover fastening:	- 16x M24 hexagon screws - 16x M24 hexagon nuts
Connections and nominal diameters:	- A-inlet, B-outlet: DN 100, DN 125, DN 150, DN 200 - C-drain: DN 50 - D-gauge DN 25 - E-cleaning: DN 50 - All threaded holes acc. to DIN 3852 X - flanges acc. to EN 1092-1/11B1/PN 40
Drive shaft seal:	Lip seal with O-ring
Outside coating:	Synthetic resin primer, blue acc. to RAL 5007

Other types available on request!

Technical data is subject to change without notice

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	4.09	1.3
⅄ 400 ± 10%	50	0.18	4.09	1.3
△ 255 ± 10%	60	0.21	4.09	1.3
⅄ 440 ± 10%	60	0.21	4.09	1.3

Protection class: IP55; insulation class F; output torque: 252 Nm

Typ	W [mm]	X [mm]	Z [mm]	Volume [l]	Weight [kg]
AF 119123-.1.	1543	1232	860	239	460
AF 119133-.1.	1883	1572	1200	319	500
AF 119153-.1.	2223	1912	1540	399	540
AF 119163-.1.	2563	2252	1880	479	580

Nominal diameter	Dimension Y [mm]
DN 200	165
DN 150	190
DN 125	205
DN 100	215

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3

Differential pressure stability:
Segmented elements (aluminium and stainless steel versions): 6 bar

4. Design and application

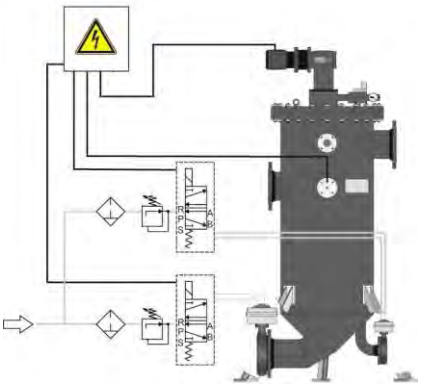
Cartridge type (see section 6)	Total surface in cm²	Gap width in µm / effective filter surface in cm²								
			10	20	30	40	60	80	100	
AF 1002013	2615		2129	2129	2129	2129	2129	2129	2129	
AF 1002113										

Recommended design

The table shows the filter surfaces for one filter cartridge.

For AF 11913.. Filter surface x 2
AF 11915.. Filter surface x 3
AF 11916.. Filter surface x 4

Cleaning and emptying

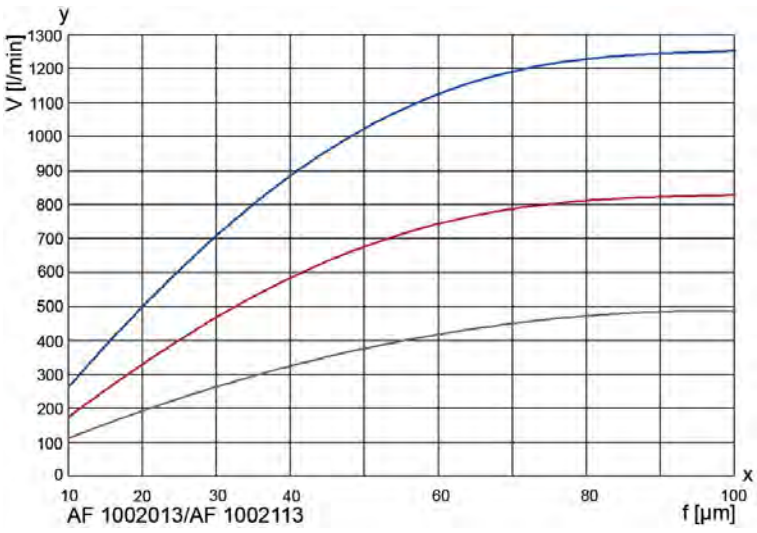


Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 14 s (about one turn of the filter cartridge). The cleaning valve remains open for this period. An internal pressure of 2 to 3 bar suffices to clean the filter thoroughly. The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 to 3 s.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

1 mm²/s
33 mm²/s
100 mm²/s

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

6. Type number key

Type number key with selection example for AF 119143-711-53660/S4										
Size										
AF 11912 1 x 300x350										
AF 11913 2 x 300x350										
AF 11915 3 x 300x350										
AF 11916 4 x 300x350										
	Cleaning drive									
	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								
		6 DN 100								
		7 DN 125								
		8 DN 150								
		9 DN 200								
			Permissible operating pressure in bar (housing/cover)							
			1 PN 10							
				Material Seal FPM, bearing PTFE						
				1 Standard; aluminium, nodular cast iron; steel						
				2 Stainless steel 1.4571/1.4581						
				3 Standard; steel, internals stainless steel 1.4301/1.4571						
					Differential pressure indicator and gauge					
					5 PiS 3175, digital Δp gauge, 2 pressure transmitters settable from 0 to 16 bar					
						Valves and control throttles				
						1 P2 control throttle with P2 gauge				
						6 Like 1 but with P3 control throttle and P3 gauge				
							Drain valve			
							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		
								2 Ball valve, electropneumatic 24 V		
								3 Ball valve, electropneumatic 230 V		
								4 Ball valve, electric 24 V		
								5 Ball valve, electric 230 V		
									Optional features	
									0 Without / special version	
AF 11913	**3**	**- 7**	**1**	**1**	**-5**	**1**	**2**	**2**	**0**	**-XXXX (end number for special version)/S4**

*end number completion:

S4 welded, Version 4

End number	Special version
3001	Standard filter insert (complete), without housing or drive
3002	Standard complete inner assembly, without housing, with drive
3700	PTFE seals
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 1002013-006

Series

AF 100 Segmented element with topmesh

	Material		Core element		Filter medium		Clamp rings			
	Segmented element									
	20		Al/hc		1.4571		1.4571			
	21		1.4571		1.4571		1.4571			
		Overall length Diameter x length in mm								
		13 300 x 350								
			Gap width/rating in µm (see 4. Design and application)							
			001	10 µm	**004**	40 µm			**010**	100 µm
			002	20 µm	**006**	60 µm				
			003	30 µm	**008**	80 µm				
				Other filter ratings on request						
AF 100	**20**	**13**	**-006**							

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70310285
2	Seal kit (complete)	70310287	
3	Backflush channel moulding AF 119		70310292
4	Filter 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

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70358902.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Fuel Filter
COM plus

Nominal pressure 16 bar (232 psi); nominal size DN 25 up to DN 100

1. Features

Automatic filter for heavy fuel (HFO)

For the conditioning of heavy fuels, there is a special demand of purity, particularly for the usage in large engines. The Filtration Group COM plus filter series combines highest retention rates with a innovative self cleaning filter technique. Through back flushing with pressure preloaded, tempered and purified heavy fuel the self cleaning process takes place without interference with the filters capacity.

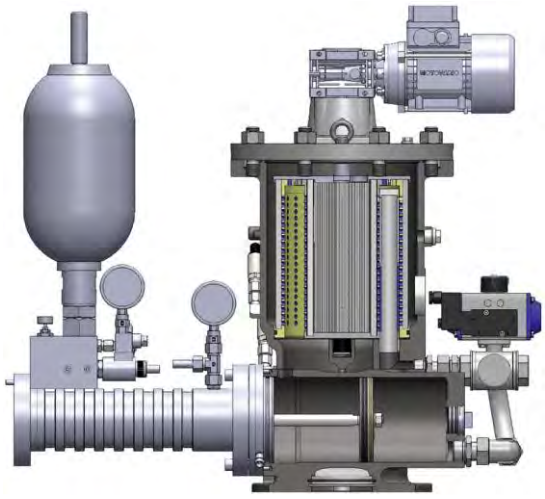
- Degree of filtration down to 10 µm absolute
- Defined and minimized back flush flow rate
- Compact design
- No pressure drop all through cleaning cycle
- Back flushing with tempered and purified heavy fuel
- Powerful cleaning by reliable back flush nozzles
- Back flushing neither effect the filtration process nor the system pressure
- Adjustable cleaning intensity
- Integrated trace heating
- Quality filters, easy to service
- Worldwide distribution and service

2. Mode of operation

The Filtration Group COM plus is a special designed filter for heavy fuel and large engine applications. It is part of the Filtration Group large engine filter product line.
The COM plus combines the reliable and proven cleaning system with back flush nozzles and the new opportunity of a process capable of cleaning without a pressure drop. The cleaning process and the discharge of the dirt have no influence to the filter process itself.
At operating temperature the heavy fuel is pumped into the filter. The filter is fluidically optimized and trace heated as standard. The Filter insert itself is designed either as single or duplex filter insert.
The duplex filter insert consists of two concentric stainless steel wire mesh cylinders, which come in the required filter fineness.
Utilizing lateral flow the dirt load is evenly spread over and retained at the surface of the wire mesh cylinder.
The filtered heavy fuel is discharged through the outlet flange.
The cleaning cycles are controlled through a preset time or a differential pressure threshold. A control box automatically triggers the cleaning cycle, if either time or the differential pressure threshold is reached. For monitoring the filter from a distant control room, the filter control is able to give an analog data signal and to two relay thresholds. For the back flushing a defined amount of clean heavy fuel is stored inside the filter. With use of external pressure it is used to clean the filter. Simultaneously the exact same amount of sludge is sucked up from the dirt side of the filter. The refilling of the back flush storage tank, with filtered and tempered heavy fuel, proceeds simultaneously with the drainage of the dirt to the dirt tank. This refilling does not affect the filtration process. All filters of the Filtration Group large engine product line are patented.

3. Technical Specification

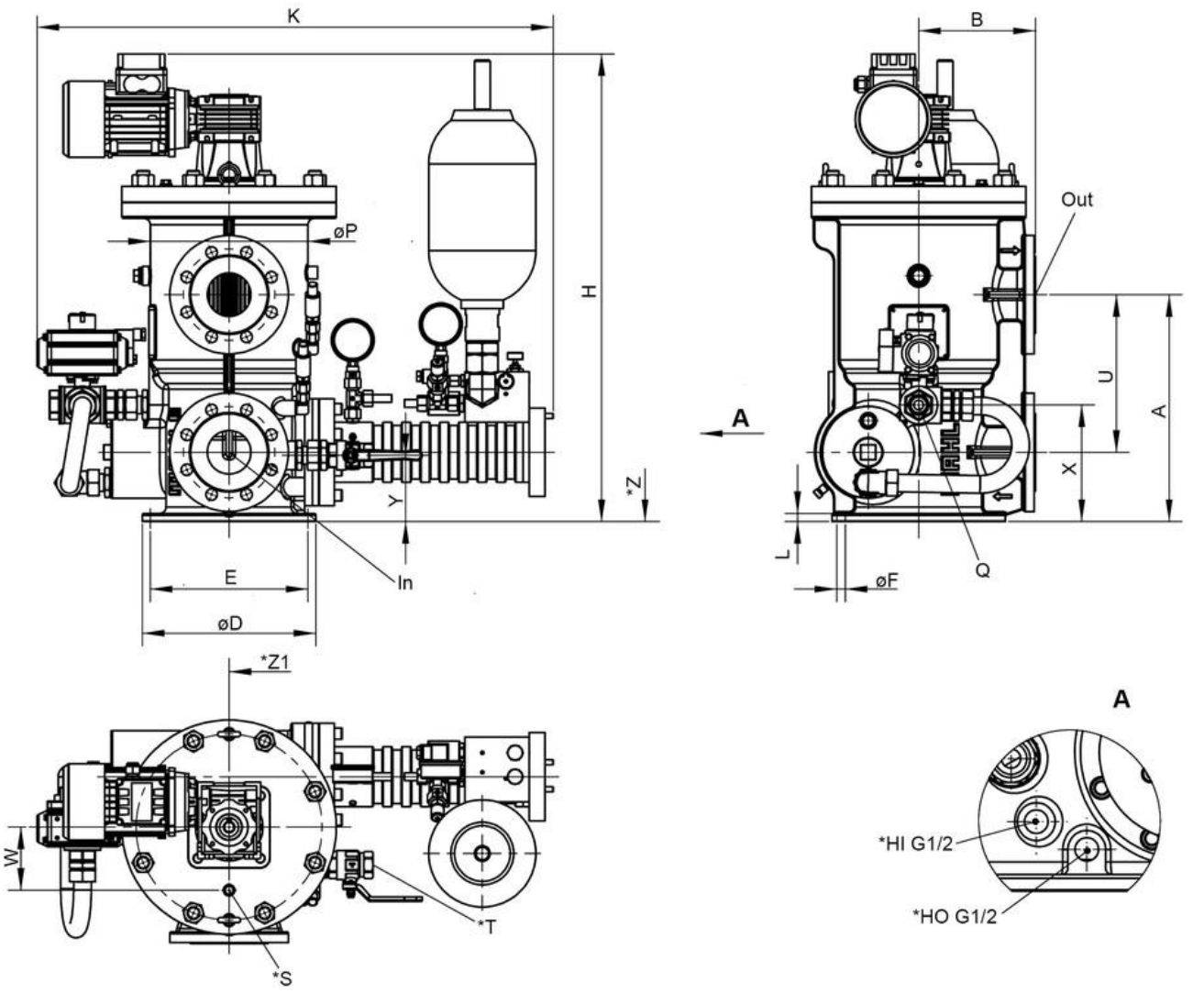
Design:	Pressure vessel
Nominal pressure:	16 bar (232 psi)
Test pressure:	24 bar (348 psi)
Operating temperature:	max. 160 °C
	(Higher temperatures on request)
Trace steam heating:	10 bar (141 psi)/200 °C
Cleaning pressure Δ p:	0.5 bar
Differential pressure stability:	min. 3 bar
Materials	
Filter cover:	1.0038
Filter housing:	0.7040
Seals:	FPM
Filter mesh:	1.4401



Special filter wire mesh available in 48, 34, 25 and 10 µm.
Active filter area up to 16,000 cm² possible.
A hydraulic prop is used for cleaning cycle drive.

Subject to technical alteration without prior notice.

4. Dimensions



In	Inlet
Out	Outlet
*HI	Heating connection inlet
*HO	Heating connection outlet
Q	Back wash line
*S	Venting
*T	Drain
*Z	Minimum clearance for insert removal
*Z1	Minimum clearance for disc piston with hydr. drive removal

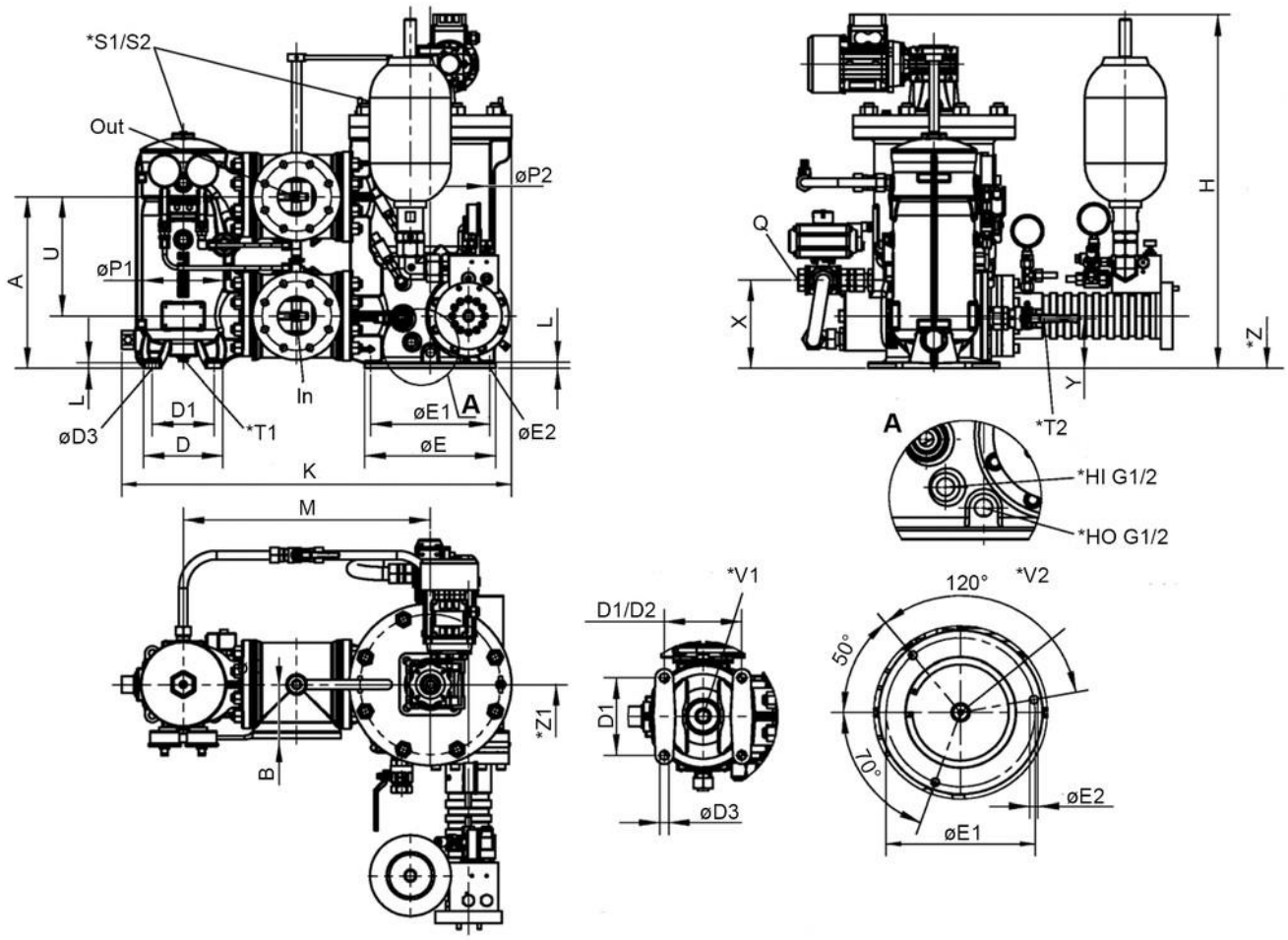
All dimensions except "Q", "S" and "T" in mm.

Type	Connection*	A	B	øD	E	øF	H
RP063110F590020	DN 40	300	150	225	200	3x 13.5	725
RP083110F600020	DN 65	360	185	275	250	3x 13.5	735
RP103110F630020	DN 100	580	225	275	250	3x 13.5	955

* EN 1092-1 PN 16

Type	K	L	øP	Q	S	T	U
RP063110F590020	720	13	190	G1	G¼	G1	200
RP083110F600020	820	13	250	G1	G¼	G1	250
RP103110F630020	1020	13	340	G1	G¼	G1	450

Type	W	X	Y	Z	Z1	Weight in kg	
RP063110F590020	80	150	105	730	540	60	
RP083110F600020	100	185	105	970	700	130	
RP103110F630020	100	205	105	1420	920	170	



In	Inlet
Out	Outlet
*HI	Heating connection inlet
*HO	Heating connection outlet
Q	Back wash line
*S1/S2	Venting
*T1/T2	Drain
*V1	Bottom view filter
*V2	Bottom view COMplus
*Z	Minimum clearance for insert removal
*Z1	Minimum clearance for disc piston with hydr. drive removal

All dimensions except "Q", "S1", "S2", "T1" and "T2" in mm.

Type	Connec-tion*	A	B	D	D1	D2	øD3	øE	øE1
KP063110F590020	DN 40	300	105	100	100	90	11.5	225	200
KP083110F600020	DN 65	360	113	170	130	-	15.0	275	250
KP103110F630020	DN 100	580	180	245	130	-	13.5	275	250

* EN 1092-1 PN 16

Type	øE2	H	K	L	M	øP1	øP2	Q	S1
KP063110F590020	3x 13.5	725	600	13	340	115	190	G1	G1/4
KP083110F600020	3x 13.5	735	875	13	511	171	250	G1	G1/4
KP103110F630020	3x 13.5	955	1111	13	655	247	340	G1	G3/8

Type	S2	T1	T2	U	X	Y	Z	Z1	Weight in kg
KP063110F590020	G¼	G3/8	G1	200	150	105	370	540	90
KP083110F600020	G¼	G3/8	G1	250	185	105	970	700	180
KP103110F630020	G¼	G3/8	G1	450	205	105	1420	920	350

Filtration Group GmbH, Schleifbachweg 45, D-74613 Öhringen, Phone +49 7941 6466-0, Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com, www.fluid.filtrationgroup.com
70576625.06/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 132 G

with external pressure cleaning
Connection size DN 40, G1 1/2, cast design

1. Features

Filtration Group automatic backflush filters are suitable for all applications
where low or medium-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge and backflushing with external or internal pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Precise separation quality in accordance with the surface filter principle
- Asymmetrical filter medium of the highest quality made of multiple sintered stainless steel wire mesh on a robust supporting body
- Process reliability through efficient filter cleaning
- Long service life due to solid construction and high-quality materials
- Low loss of liquid during the cleaning process
- Segmental filter cleaning with high backflush pulse
- Indication of actual filter fineness and nominal separation
- Material variants for a wide range of applications
- Modular system Filtration Group Vario for optimum filter selection
- Optional: Use in Ex-zones 1 and 2
- Easy maintenance
- Worldwide distribution

2. Operating principle

The Filtration Group Rückspülfilter AF 132 G backflush filter belongs to the small Vario series. The compact MAHLE automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

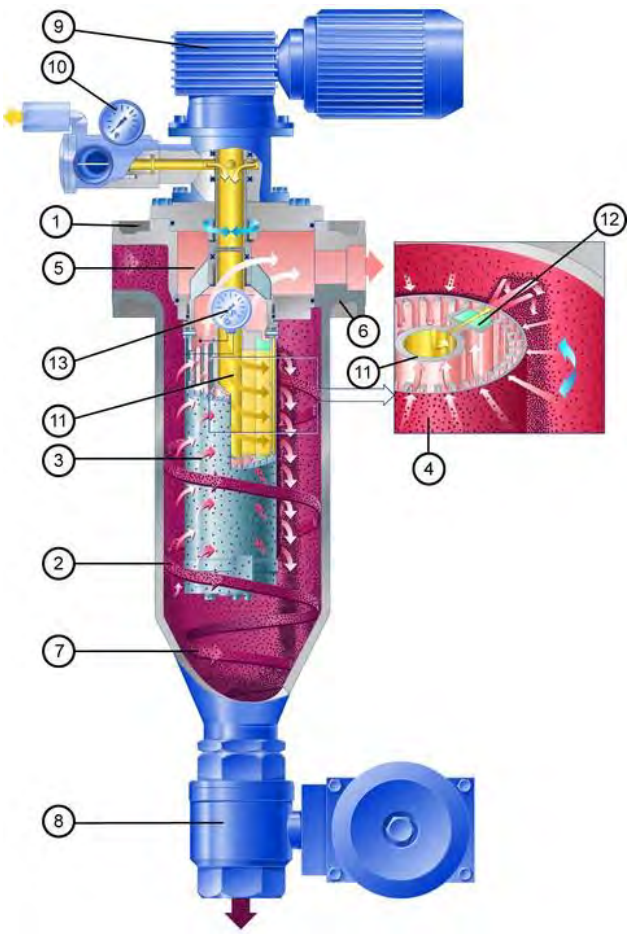
This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time.

The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned as the drain and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside. This causes them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. The particles are catapulted out as a result of this pulse cleaning principle and discharged via the drain valve. One turn suffices to clean all segments.

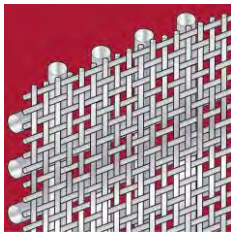
All filters in the Filtration Group Vario series are protected by various patents.



Filtration Group filter elements used in AF 132 G backwash filter:

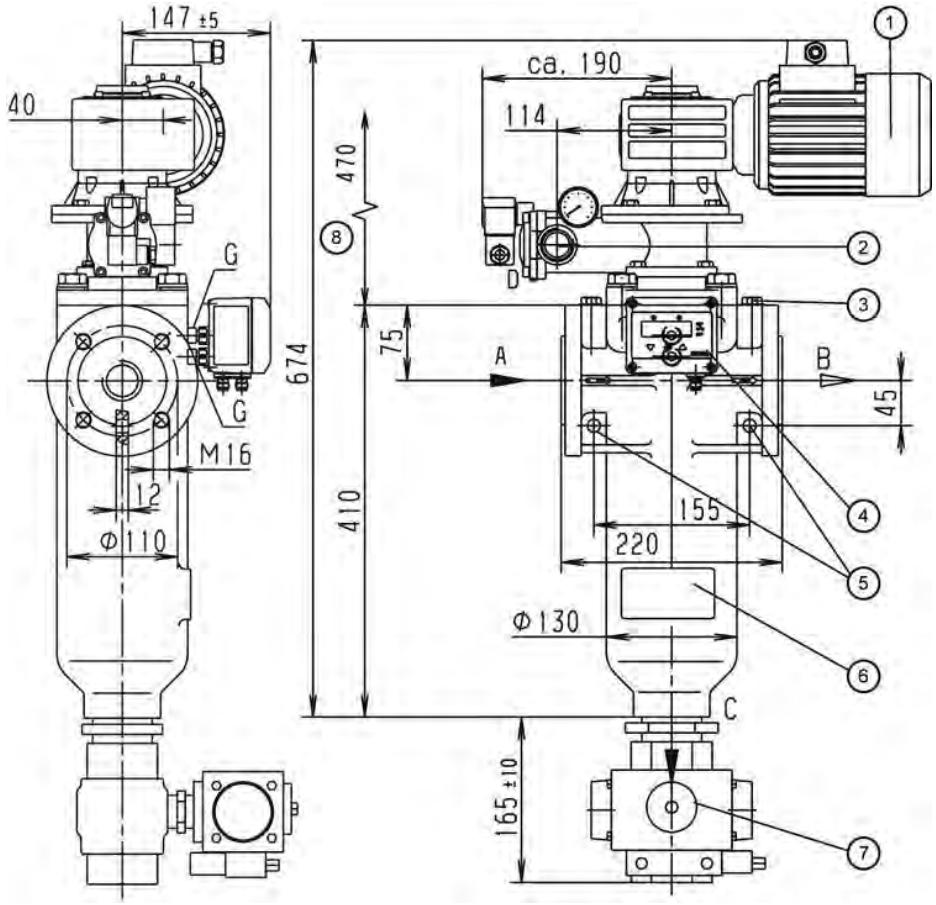
Filtration Group Topmesh (standard):

- Good cleaning due to asymmetric structure
- High proportion of open space
- Defined particle retention
- Various material combinations possible



1 Inlet connection
2 Inlet chamber
3 Filtration Group segment element
4 Filtration Group filter material
5 Filtrate chamber
6 Filtrate drain connection
7 Particle collection cone
8 Drain valve
9 Drive motor
10 External pressure connection, external pressure and non-return valve as well as pressure gauge P_f
11 External pressure reservoir
12 External pressure nozzle
13 Differential pressure contact gauge

3. Technical Data



1 Cleaning drive:
The motor can be mounted at each 90°position
2 External pressure valve
3 Vent screw G1/4
4 Optional: Differential pressure indicator/switch
5 Mounting holes Ø13
6 Type plate
7 Optional: Automatic drain valve
8 Clearance required = 470 mm

Filter data

Max. operating pressure:		16 bar
Max. operating temperature:		100 °C
Materials:	-	Housing and cover: Nodular cast iron
	-	Internals: Nodular cast iron, St. 1.4301
	-	Bearing bushes: PTFE based
	-	Seals: FPM
	-	Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar)
	-	Pressure channel housing: PPS-GF40
Cover fastening:		4x hexagon screws M16
Connections and nominal diameters:	-	A- inlet, B- outlet: G1 1/2, flange DN40/PN25
	-	C-drain: G2
	-	D- external pressure: G1 (air: must be reduced to G1/2 by the customer
	-	G- indicator: G1/8
	-	All threaded holes acc. to DIN 3852 form Z
	-	Flanges acc. to EN 1092-1
Drive shaft seal:		Lip seal with O-ring
Outside coating:		Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
△ 230 ± 10%	50	0.18	17	1.2
人 400 ± 10%	50	0.18	17	0.7
△ 266 ± 10%	60	0.22	21	1.2
人 460 ± 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 components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex, output torque: 52 Nm

Weight 52 kg
Volume: 4 l

Differential pressure stability
Segmented element with topmesh: 10 bar

Other types available on request!

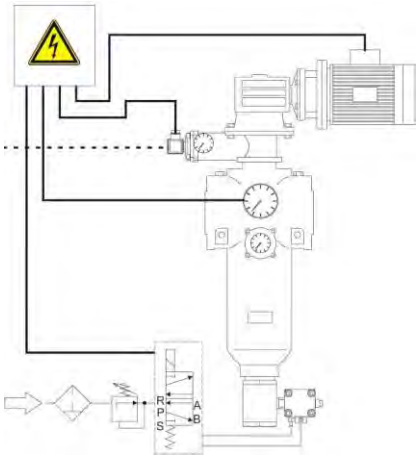
Technical data is subject to change without notice!

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Gap width in µm / effective filter surface in cm²							
			10	20	30	40	60	80	100
AF 170XX4	437		310	310	310	310	310	310	310

Recommended design

Cleaning and emptying



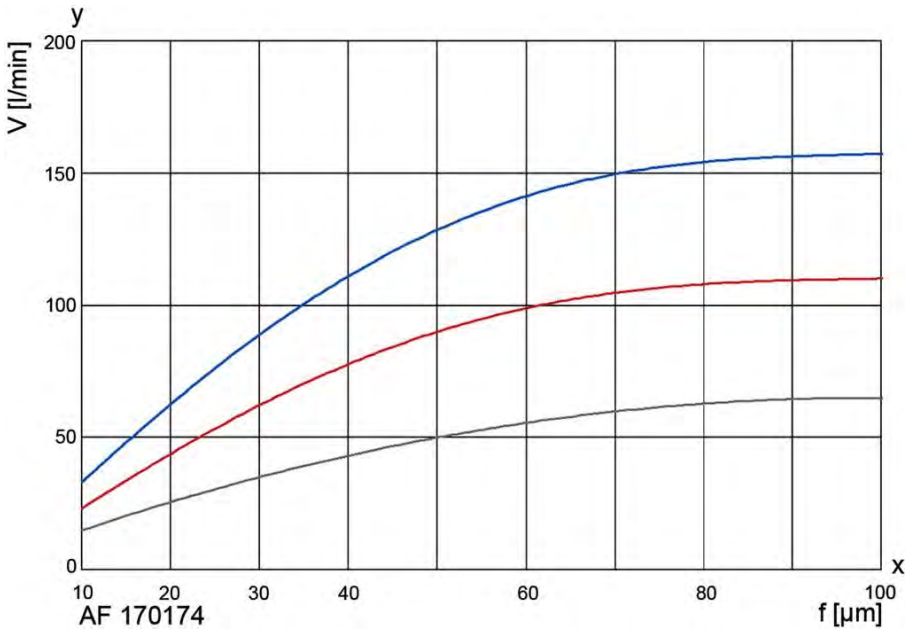
Fully automatic operation:

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 a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 4 s (about one turn of the filter cartridge). The external pressure and drain valves remain open for this period. This suffices to clean the filter thoroughly.

Refer to the Instruction manual for further information.

The Filtration Group team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

1 mm²/s
33 mm²/s
100 mm²/s

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

6. Type number key

Type number key with selection example for AF 13243-221-43200 /G2										
Size										
AF 1324 1 x 65x230										No. of steps x diameter x length [mm]
	Cleaning drive									
	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 1/2
			Permissible operating pressure in bar (housing/cover)							
			2							PN 16
				Material Seal FPM, bearing PTFE						
				1						Cover and housing nodular cast iron, internals steel, aluminium
				3						Cover and housing nodular cast iron, internals stainless steel 1.4301/1.4571
				6						Cover and housing nodular cast iron with delta seal coating, internals stainless steel 1.4301
					Differential pressure indicator and gauge					
					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 0-16 bar
						Valves and control throttles				
						3				External pressure valve G1 for liquid, 24 V
						4				External pressure valve G1 for liquid, 230 V
							Drain valve			
							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 1324	**3**	**- 2**	**2**	**1**	**-4**	**3**	**2**	**0**	**0**	**-XXXX (end number for special version)/G2***

*end number completion:

G2 cast iron, Version 2

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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 170

Series
AF 170 Segmented element with topmesh (10 µm to 100 µm)

	Material Segmented element	**Inner core**	**Filter medium**	**Clamp rings**
	17	Al	1.4571	St
	20	Al/hc.	1.4571	1.4571

Overall length Diameter x length in mm

4	65 x 230

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

001	10 µm	**004**	40 µm	**010**	100 µm
002	20 µm	**006**	60 µm		
003	30 µm	**008**	80 µm		

Other filter ratings on request

AF 170	**17**	**4**	**-006**

7. Spare parts

Position	Designation	Material number	
		FPM/C steel	PTFE/VA
1	Bush kit		76351514
2	Seal kit (complete)	70320685	
3	Pressure channel mould		76351209
4	Filter element	see type-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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70360038.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 133 G

with external pressure cleaning
Connection sizes: G2, screw-in flange DN 50 and DN 65, cast design

1. Features

Filtration Group automatic backflush filters are suitable for all applications where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge and backflushing with external or internal pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a robust inner core
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow
- Material options open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Optional: Gas-tight shaft seals available
- Optional: Application in Ex zone 1 and 2
- Easy maintenance
- Worldwide distribution

2. Operating principle

The Filtration Group AF 133 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine filtration of a variety of lowviscosity liquids.

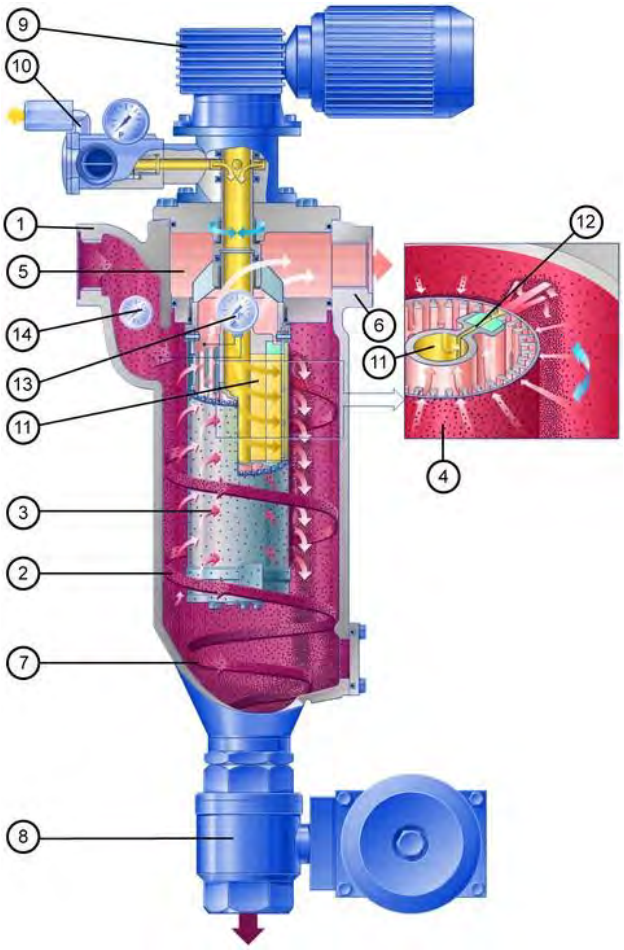
This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter can only be cleaned after switching off the system.

The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. Due to the unique design also coarse particles can be backflushed. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned as the drain and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside. This causes them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. The particles are catapulted out as a result of this pulse cleaning principle and discharged via the drain valve. One turn suffices to clean all segments.

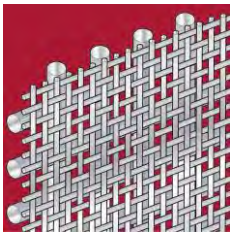
All filters in the Filtration Group Vario series are protected by various patents.



Used Filtration Group filter cartridges in the AF 133 G backflush filter:

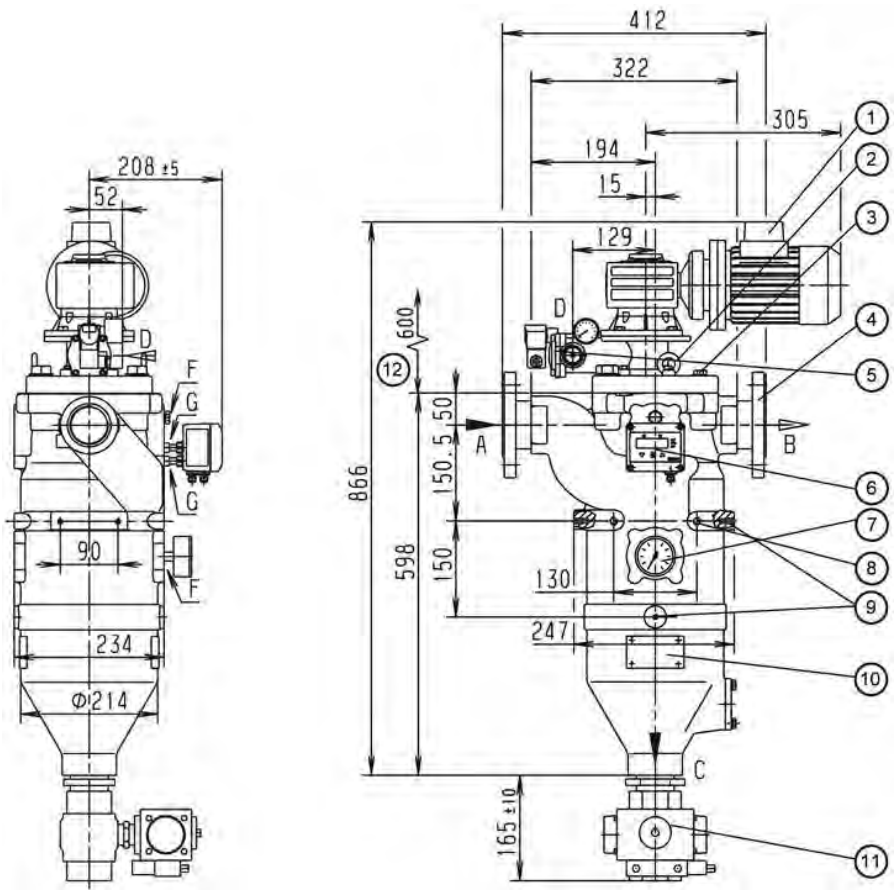
Filtration Group Topmesh (Standard):

- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations possible



1 Tangential inlet connection
2 Inlet plenum
3 Filtration Group segmented element
4 Filtration Group filter material
5 Plenum for filtered fluid
6 Outlet connection for filtered fluid
7 Residue collection cone
8 Drain valve
9 Drive motor
10 External pressure connection, external pressure and check valves and gauge P_f
11 External pressure accumulator
12 External pressure nozzle
13 Differential pressure contact gauge
14 P1 gauge

3. Technische Daten



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 Lifting eyebolts
3 Vent screw G1/4
4 If DN 65 screw-in flanges are used, the motor is mounted turned 90°
5 External pressure valve
6 Optional: Differential pressure indicator/switch
7 Optional: P1 gauge
8 Mounting holes M12
9 Mounting holes M8
10 Name-plate
11 Optional: Automatic drain valve
12 Clearance required = 600 mm

Filter data

Max. operating pressure:		16 bar
Max. operating temperature:		100 °C
Materials:	-	Housing and cover: Nodular cast iron
	-	Internals: Nodular cast iron, steel
	-	Bearing bushes: PTFE based
	-	Seals: FPM (Viton)
	-	Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar)
Cover fastening:		4 x M20 hexagon screws
Connections and	-	A-inlet, B-outlet, C-drain: G2 threaded holes DIN 3852 form X
nominal diameters:	-	D-external pressure: G1 threaded holes DIN 3852 form Z (air: must be reduced to G1/2 by the customer)
	-	F-gauge: G1/4
	-	G-indicator: G1/8
	-	Optional: A/B/C screw-in flanges DN 50 or DN 65 acc. to EN 1092-1/05A
Drive shaft seal:		Lip seal with O-ring
Outside coating:		Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	9.3	1.2
人 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
人 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP55; insulation class F; output torque: 97Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex; output torque: 97 Nm

Weight: 92 kg
Volume: 12 l

Differential pressure stability
Segmented elements with topmesh: 10 bar

Other types available on request!

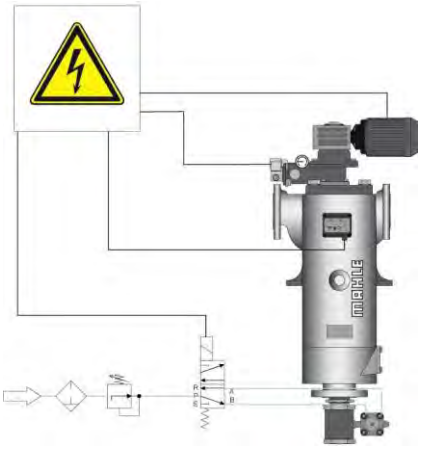
Technical data is subject to change without notice

4. Design and application

Cartridge type (see section 6)	Total surface in in cm²	Filter rating in µm / effective filter surface in cm²								
				20	30	40	60	80	100	200
AF 170XX6	763			637	637	637	637	637	637	637

Recommended design

Possible cleaning and emptying modes

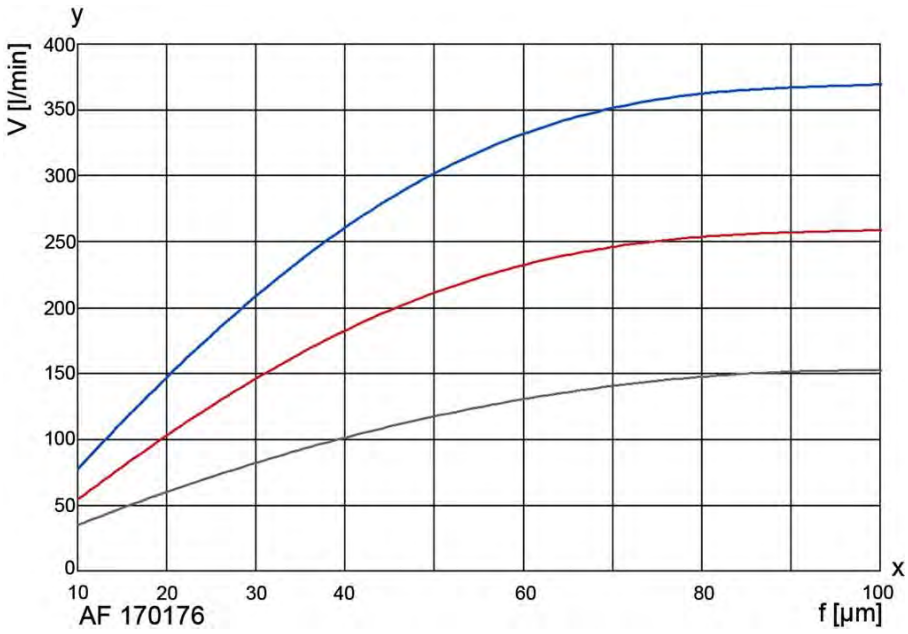


Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 7 s (about one turn of the filter cartridge). The external pressure and cleaning valves remain open for this period. This suffices to clean the filter thoroughly.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

1 mm²/s
33 mm²/s
100 mm²/s

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

6. Type number key

Type number key with selection example for AF 13363-1321-43200/G3										
Size										
AF 1336 1 x 110x265										No. of steps x diameter x length [mm]
	Cleaning drive									
	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	G2 1/2							
			Permissible operating pressure in bar (housing/cover)							
			2	PN 16						
				Material Seal FPM, bearing PTFE						
				1	Housing and cover nodular cast iron, internals steel, aluminium					
				3	Housing and cover nodular cast iron, internals stainless steel 1.4301/1.4571					
					Differential pressure indicator and gauge					
					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				
						Valves and control throttles				
						3	External pressure valve G1 for liquid, 24 V			
						4	External pressure valve G1 for liquid, 230 V			
							Drain valve			
							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 1336	**3**	**- 13**	**2**	**1**	**-4**	**3**	**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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 170

Series

AF 170 Segmented element with topmesh

	Material		**Inner core**	**Filter medium**	**Clamp rings**		
	Segmented element						
	17		Al	1.4571	St		
	20		Al/hc	1.4571	1.4571		
	21		1.4571	1.4571	1.4571		
		Overall length Diameter x length in mm					
		6	110 x 265				
			Gap width/rating in µm (see 4. Design and application)				
			002 20 µm	**006** 60 µm		**020**	200 µm
			003 30 µm	**008** 80 µm			
			004 40 µm	**010** 100 µm			
			Other filter ratings on request				
AF 170	**17**	**6**	**-006**				

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	**PTFE/VA**
1	Bush kit		70311579
2	Seal kit (complete)	70316111	70316118
3	Distributor	70511099	
4	Filter 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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
76148159.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 133 G

with patented external pressure cleaning
Connection sizes: DN 50/G2, cast stainless steel

1. Features

Filtration Group automatic backflush filters are suitable for all applications where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge and backflushing with external or internal pressure media.

Advantages:

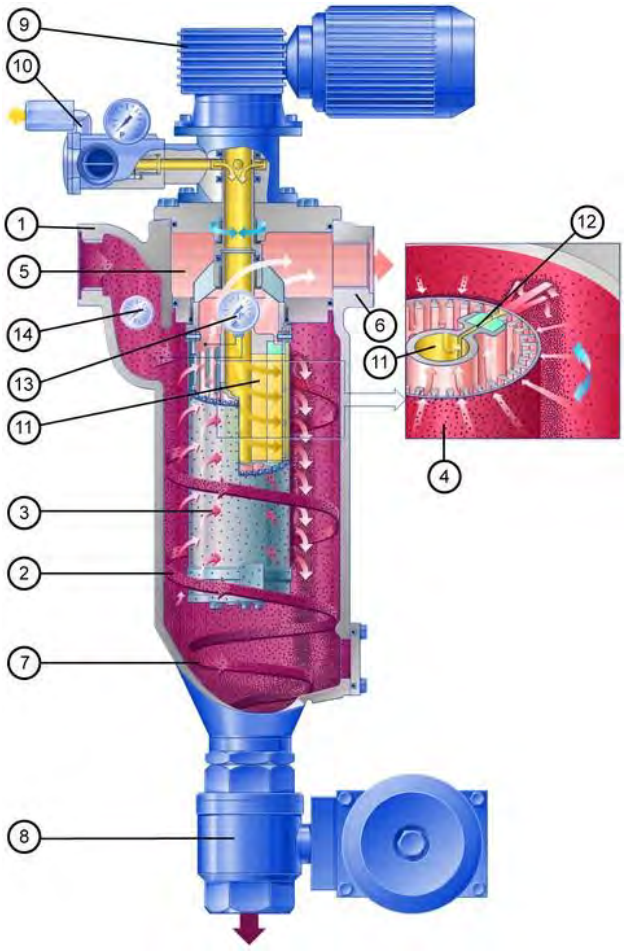
- Low lifecycle costs because no filter material is consumed
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a robust inner core
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow
- Material options open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Optional: 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
- Easy maintenance
- Worldwide distribution

2. Operating principle

The Filtration Group AF 133 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine filtration of a variety of lowviscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter can only be cleaned after switching off the system.

The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. Due to the unique design also coarse particles can be backflushed. The filtered fluid exits the filter housing at the top opposite the inlet connection.



The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

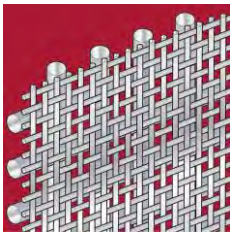
The segmented element is turned as the drain and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside. This causes them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. The particles are catapulted out as a result of this pulse cleaning principle and discharged via the drain valve. One turn suffices to clean all segments.

All filters in the Filtration Group Vario series are protected by various patents.

Used Filtration Group filter cartridges in the AF 133 G backflush filter:

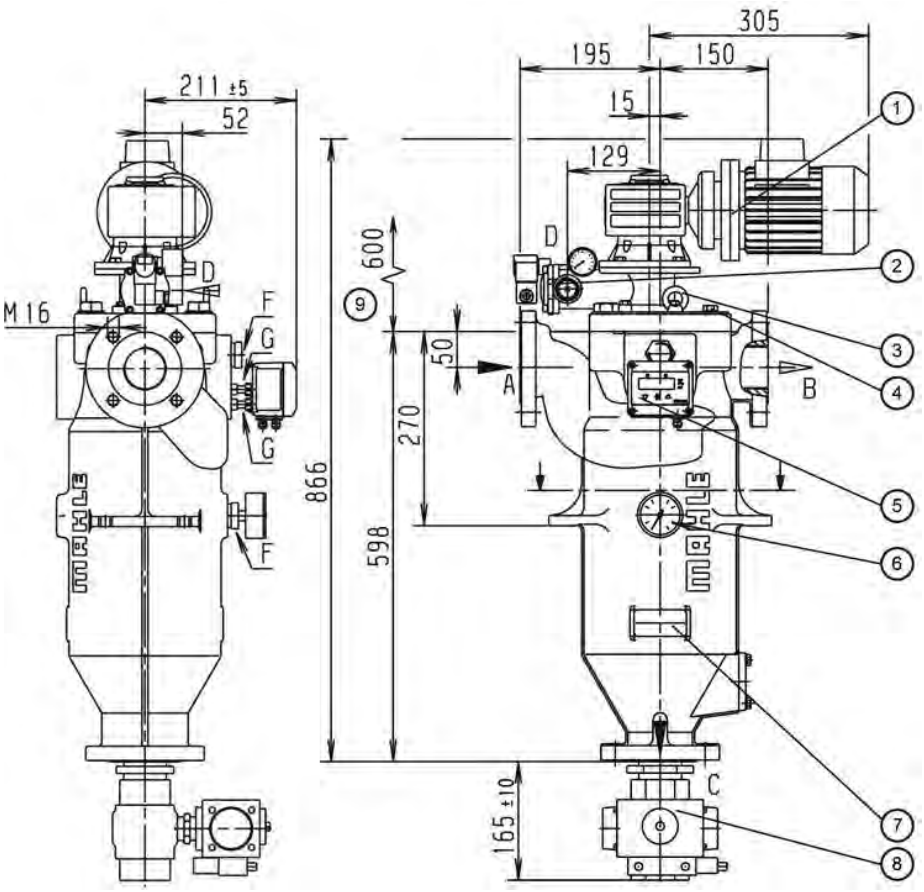
Filtration Group topmesh cartridges (standard):

- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations possible



1 Tangential inlet connection
2 Inlet plenum
3 Filtration Group segmented element
4 Filtration Group filter material
5 Plenum for filtered fluid
6 Outlet connection for filtered fluid
7 Residue collection cone
8 Drain valve
9 Drive motor
10 External pressure connection, external pressure and check valves and gauge
11 External pressure accumulator
12 External pressure nozzle
13 Differential pressure contact gauge
14 P1 gauge

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 External pressure valve
3 Lifting eyebolts
4 Vent screw G1/4
5 Optional: Differential pressure indicator/switch
6 Optional: P1 gauge
7 Name-plate
8 Optional: Automatic drain valve
9 Clearance required = 600 mm

Filter data

Max. operating pressure:	16 bar
Max. operating temperature:	100 °C
Materials:	- Housing and cover: Cast steel: 1.4581 - Optional: Certificate acc. to EN 10204-3.1 - Internals: Cast steel 1.4581, stainless steel 1.4571 - Bearing bushes: PTFE based - Seals: FPM (Viton) - Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar)
Cover fastening:	4 x M20 hexagon screws
Connections and nominal diameters:	- A-inlet, B-outlet, C-drain: Thread G2 in flange DN 50 - D-external pressure: G1 (air: must be reduced to G1/2 by the customer) - F-gauge: G1 - G-indicator: G1/8 - All threaded holes acc. to DIN 3852 form Z
Drive shaft seal:	Lip seal with O-ring

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	9.3	1.2
人 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
人 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex, output torque: 97 Nm

Weight: 92 kg
Volume: 12 l

Differential pressure stability
Segmented elements with topmesh: 10 bar
Other types available on request!

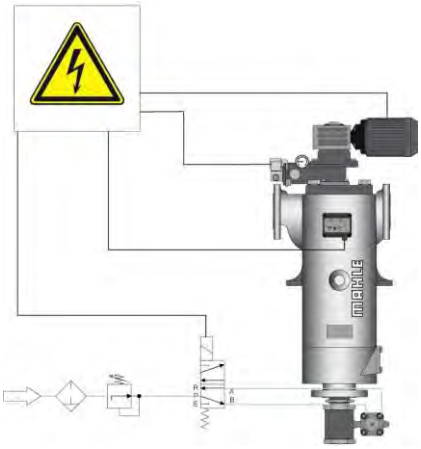
Technical data is subject to change without notice

4. Design and application

Cartridge type see section 6)	Total surface in cm²	Filter rating in µm / effective filter surface in cm²								
				20	30	40	60	80	100	200
AF 170XX6	763			637	637	637	637	637	637	637

Recommended design

Cleaning and emptying

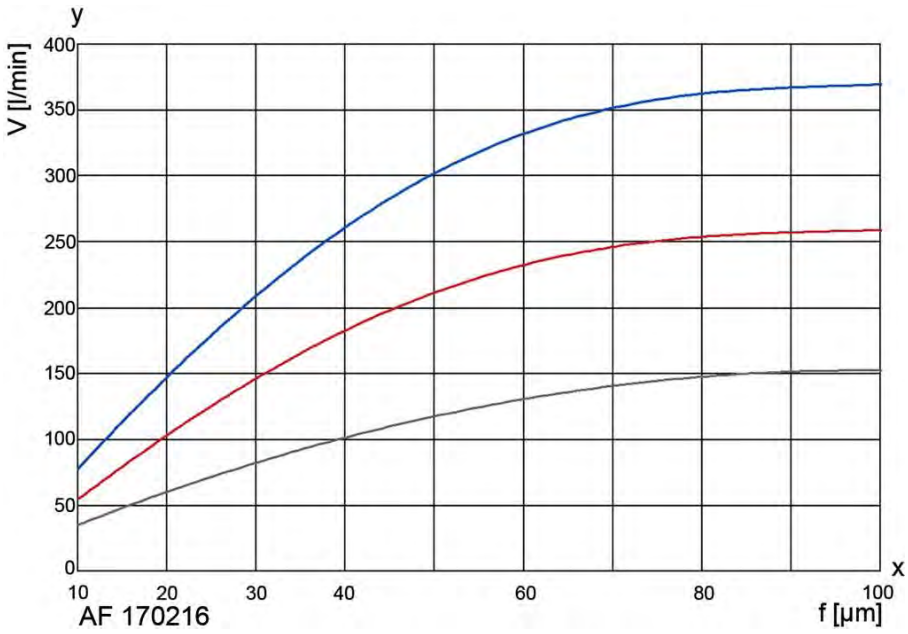


Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 7 s (about one turn of the filter cartridge). The external pressure and cleaning valves remain open for this period. This suffices to clean the filter thoroughly.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

1 mm²/s
33 mm²/s
100 mm²/s

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

6. Type number key

Type number key with selection example for AF 13363-1322-43200/G3										
Size										
AF 1336 1 x 110x265										No. of steps x diameter x length [mm]
	Cleaning drive									
	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 stainless steel							
		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 gauge					
					1	PiS 3076, switching level at 1.2 bar, static 63 bar				
					2	PiS 3076, switching level at 0.7 bar, static 63 bar				
					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				
						Valves and control throttles				
						3	External pressure valve G1 for liquid, 24 V			
						4	External pressure valve G1 for liquid, 230 V			
							Drain valve			
							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 1336	**3**	**- 13**	**2**	**2**	**-4**	**3**	**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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 170									
Series									
AF 170 Segmented element with topmesh									
	Material		**Core element**		**Filter medium**		**Clamp rings**		
	Segmented element								
	20		Al/hc		1.4571		1.4571		
	21		1.4571		1.4571		1.4571		
		Overall length Diameter x length in mm							
		6	110 x 265						
			Gap width/rating in µm (see 4. Design and application)						
			002	20 µm	**006**	60 µm		**020**	200 µm
			003	30 µm	**008**	80 µm			
			004	40 µm	**010**	100 µm			
				Other filter ratings on request					
AF 170	**21**	**6**	**-006**						

7. Spare parts for G3 version

No.	Designation	Material no.	
		FPM	PTFE/VA
1	Bush kit		70311579
2	Seal kit (complete)	70316111	70316118
3	Distributor	70511099	
4	Filter 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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70360055.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 153 G

with radial scraper and external pressure cleaning
Connection sizes: G2, screw-in flange DN 50 and DN 65, cast design

1. Features

Filtration Group automatic backflush filters are suitable for all applications where low or mediumviscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge against a spring actuated scraper and backflushing with external pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged inner core
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Optional: Gas-tight shaft seals available
- Optional: Application in Ex zone 1 and 2
- Easy maintenance
- Worldwide distribution

2. Operating principle

The combined Filtration Group AF 153 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for filtration of a variety of low or medium-viscosity liquids.

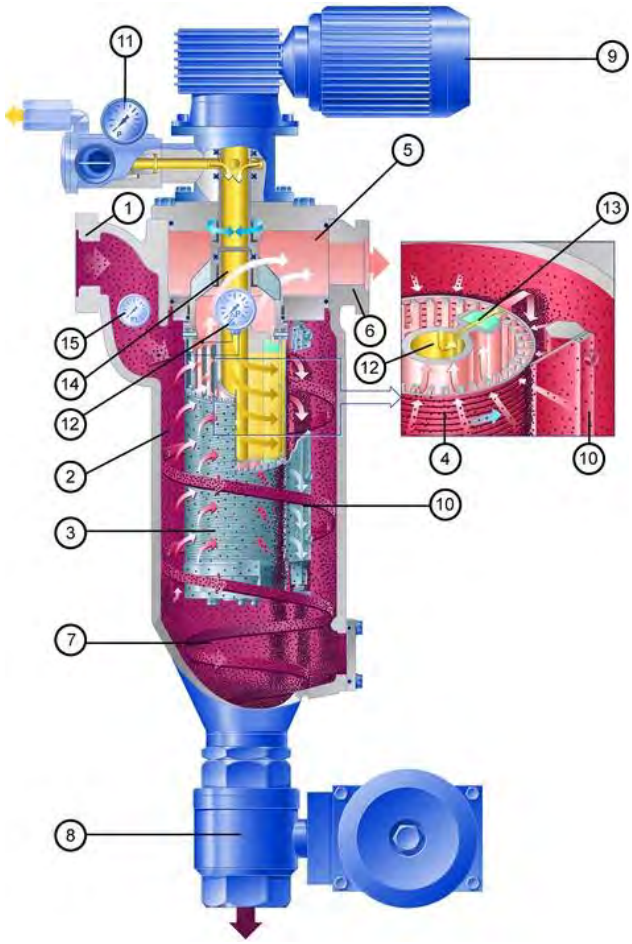
This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter can be cleaned after switching off the system or, if necessary, without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time.

The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned against a spring actuated scraper as the drain and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside and the scraper on the outside. This causes them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. The particles are catapulted out as a result of this pulse cleaning principle. One turn suffices to clean all segments.
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.

All filters in the Filtration Group Vario series are protected by patents.



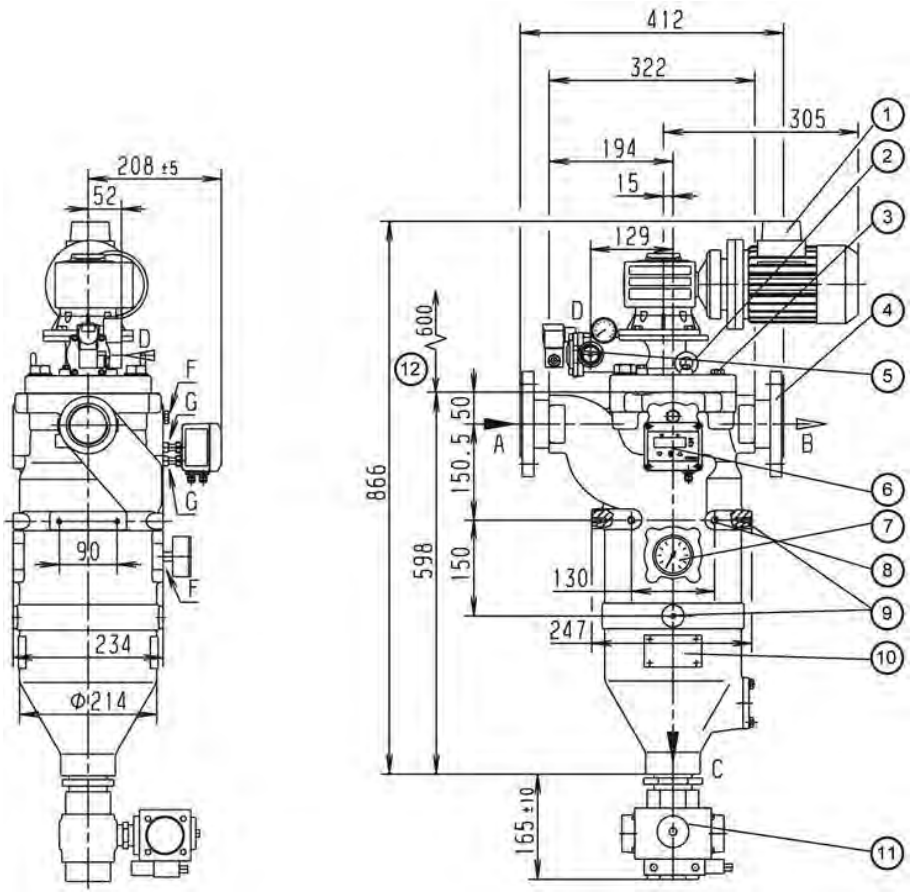
Used Filtration Group filter cartridges in the AF 153 G combined backflush filter:

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

1 Tangential inlet connection
2 Inlet plenum
3 Filtration Group coiled cartridge
4 Filtration Group triangular wire winding
5 Plenum for filtered fluid
6 Outlet connection for filtered fluid
7 Residue collection cone
8 Drain valve
9 Drive motor
10 Scraper
11 External pressure connection, external pressure and backflush valves and gauge P_f
12 Differential pressure contact gauge
13 External pressure nozzle
14 External pressure accumulator
15 P1 gauge

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 Lifting eyebolts
3 Vent screw G1/4
4 If DN 65 screw-in flanges are used, the motor is mounted turned 90°
5 External pressure valve
6 Optional: Differential pressure indicator/switch
7 Optional: P1 gauge
8 Mounting holes M12
9 Mounting holes M8
10 Name-plate
11 Optional: Automatic drain valve
12 Clearance required = 600 mm

Filterdaten

Max. operating pressure:	16 bar
Max. operating temperature:	100 °C
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 (Δp max. 30 bar)
Cover fastening:	4 x M20 hexagon screws
Connections and nominal diameters:	- A-inlet, B-outlet, C-drain: G2 threaded holes DIN 3852 form X - D-external pressure: G1 threaded holes DIN 3852 form Z (air: must be reduced to G1/2 by the customer) - F-gauge: G1/4 - G-indicator: G1/8 - Optional: A/B/C screw-in flanges DN 50 or DN 65 acc. to EN 1092-1/05A
Drive shaft seal:	Lip seal with O-ring
Outside coating:	Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	9.3	1.2
人 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
人 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex, output torque: 97 Nm

Weight: 92 kg
Volume: 12 l

Other types available on request!

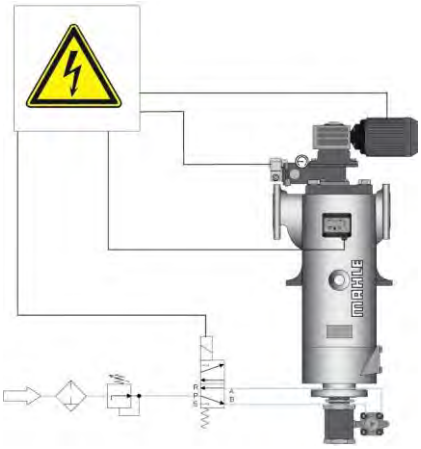
Technical data is subject to change without notice

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Filter rating in µm / effective filter surface in cm²											
			10	20	30	40		60	80	100	130	160	200
AF 130XX6	818				48	63		91	117	142	176	206	

Recommended design

Cleaning and emptying



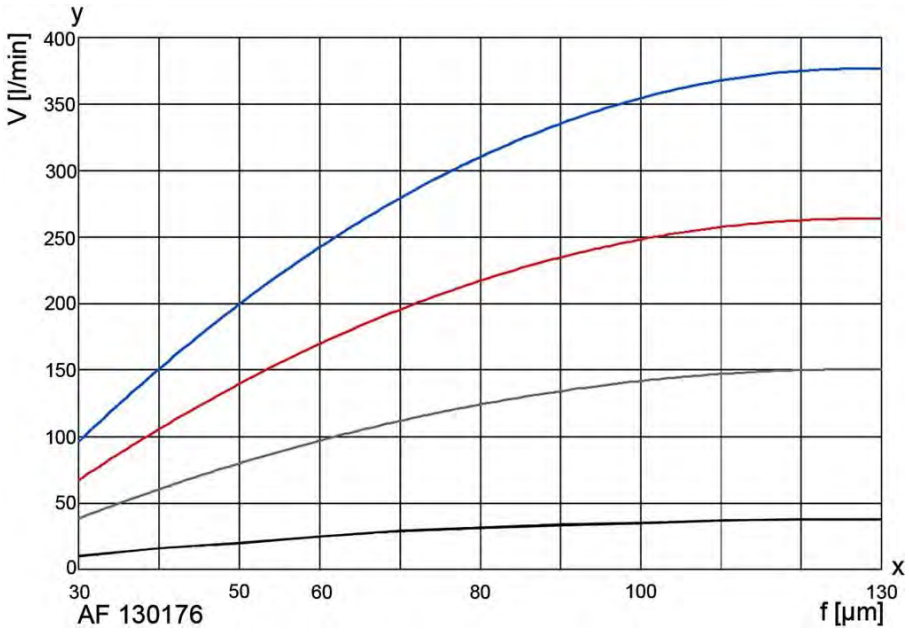
Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 7 s (about one turn of the filter cartridge). The external pressure and drain valves can be opened for this period. This suffices to clean the filter thoroughly.

The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 to 3 s.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

- 1 mm²/s
- 33 mm²/s
- 100 mm²/s
- 500 mm²/s

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

6. Type number key

Type number key with selection example for AF 15363-1321-43200/G3										
Size										
AF 1536 1 x 110x265										No. of steps x diameter x length [mm]
	Cleaning drive									
	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	G2½							
			Permissible operating pressure in bar (housing/cover)							
			2	PN 16						
				Material Seal FPM, bearing PTFE						
				1	Housing and cover nodular cast iron, internals steel, aluminium					
				3	Housing and cover nodular cast iron, internals stainless steel 1.4301/1.4571					
					Differential pressure indicator and gauge					
					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				
						Valves and control throttles				
						3	External pressure valve G1 for liquid, 24 V			
						4	External pressure valve G1 for liquid, 230 V			
							Drain valve			
							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 1536	**3**	**- 13**	**2**	**1**	**-4**	**3**	**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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 130

Series

AF 130 Coiled cartridge with triangular wire winding

	Materials		Inner core	Filter medium	Clamp rings	Wire width in mm
	Coiled cartridge					
	17		Al	1.4571	St	0.5
	20		Al/hc	1.4571	1.4571	0.5

		Overall length Diameter x length in mm
	6	110 x 265

		Gap width/rating in µm (see 4. Design and application)			
		003	30 µm	**010**	100 µm
		004	40 µm	**013**	130 µm
		006	60 µm	**016**	160 µm
		008	80 µm	**020**	200 µm
			Other filter ratings on request		

AF 130	**17**	**6**	**-010**

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70311579
2	Seal kit (complete)	70316111	70316118
3	Scraper	70310724	70310731
4	Distributor	70511099	
5	Filter 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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
79799107.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 153 G

with scraper and external pressure cleaning
Connection sizes: DN 50/G2, cast stainless steel

1. Features

Filtration Group automatic backflush filters are suitable for all applications where low or medium-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge against a spring actuated scraper and backflushing with external pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged inner core
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Optional: Gas-tight shaft seals available
- Optional: Application in Ex zone 1 and 2
- Optional: Certification fpr Pressure Equipment Directive (PED) according to category III PED EN
- Easy maintenance
- Worldwide distribution

2. Operating principle

The combined Filtration Group AF 153 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for filtration of a variety of low or medium-viscosity liquids.

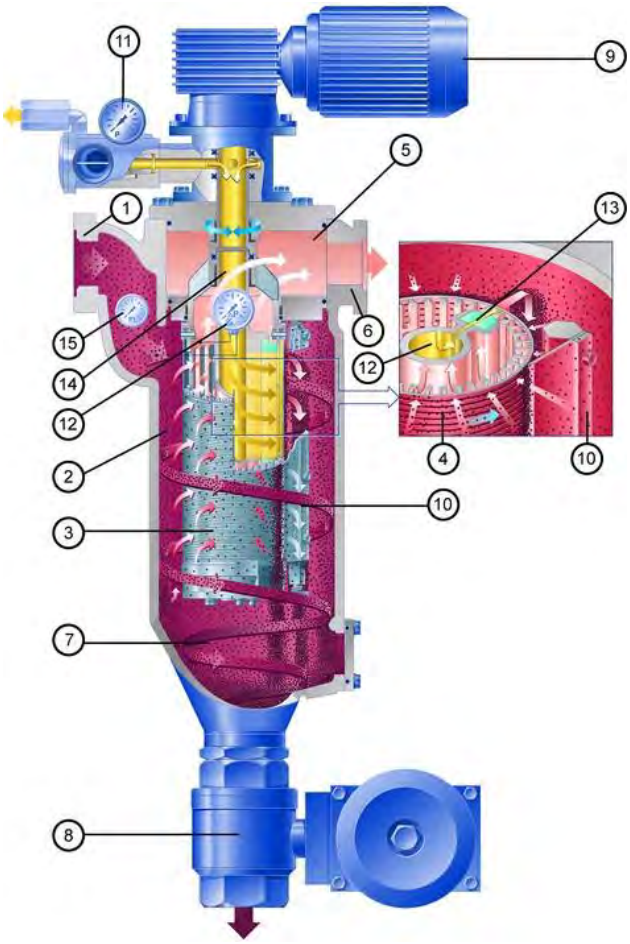
This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter can be cleaned after switching off the system or, if necessary, without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time.

The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned against a spring actuated scraper as the drain and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside and the scraper on the outside. This causes them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. The particles are catapulted out as a result of this pulse cleaning principle. One turn suffices to clean all segments.
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.

All filters in the Filtration Group Vario series are protected by patents.



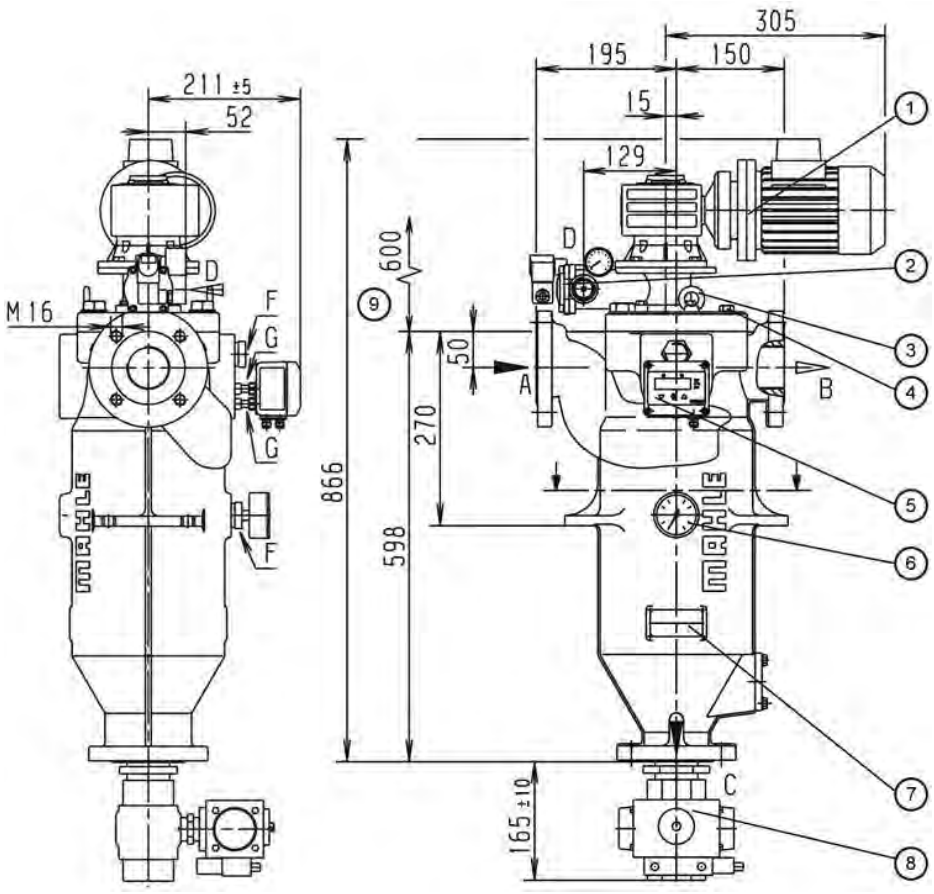
Used Filtration Group filter cartridges in the AF 153 G combined backflush filter:

Filtration Group coiled cartridge:

- 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

1 Tangential inlet connection
2 Inlet plenum
3 Filtration Group coiled cartridge
4 Filtration Group triangular wire winding
5 Plenum for filtered fluid
6 Outlet connection for filtered fluid
7 Residue collection cone
8 Drain valve
9 Drive motor
10 Scraper
11 External pressure connection, external pressure and backflush valves and gauge
12 Differential pressure contact gauge
13 External pressure nozzle
14 External pressure accumulator
15 P1 gauge

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 External pressure valve
3 Lifting eyebolts
4 Vent screw G1/4
5 Optional: Differential pressure indicator/switch/ gauge
6 Optional: P1 gauge
7 Name-plate
8 Optional: Automatic drain valve
9 Clearance required = 600 mm

Filter data

Max. operating pressure:	16 bar
Max. operating temperature:	100 °C
Materials:	- Housing and cover: Cast steel 1.4581, 1.4408 - Optional: Certificate acc. to EN 10204-3.1 - Internals: Cast steel 1.4581, stainless steel 1.4571 - Bearing bushes: PTFE based - Seals: FPM (Viton) - Coiled cartridge: 1.4571 or 1.4571/ Al/hc (Δp max. 30 bar)
Cover fastening:	4 x M20 hexagon screws
Connections and nominal diameters:	- A-inlet, B-outlet, C-drain: G2 threaded hole in flange DN 50 - D-external pressure: G1 (air: must be reduced to G1/2 by the customer) - F-gauge: G1 - G-indicator: G1/8 - All threaded holes acc. to DIN 3852 form Z
Drive shaft seal:	Lip seal with O-ring

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
△ 230 ± 10%	50	0.18	9.3	1.2
人 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
人 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex, output torque: 97 Nm

Weight: 92 kg
Volume: 12 l

Other types available on request!

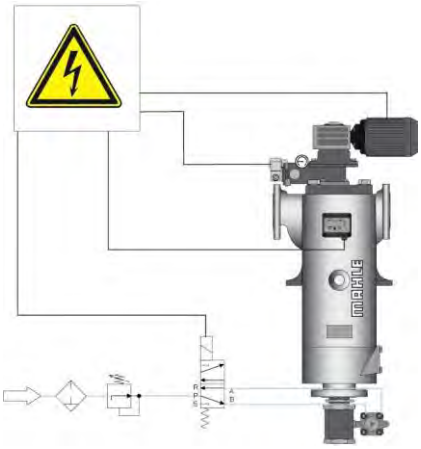
Technical data is subject to change without notice

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	Filter rating in µm / effective filter surface in cm²											
			10	20	30	40		60	80	100	130	160	200
AF 130XX6	818				48	63		91	117	142	176	206	

Recommended design

Cleaning and emptying



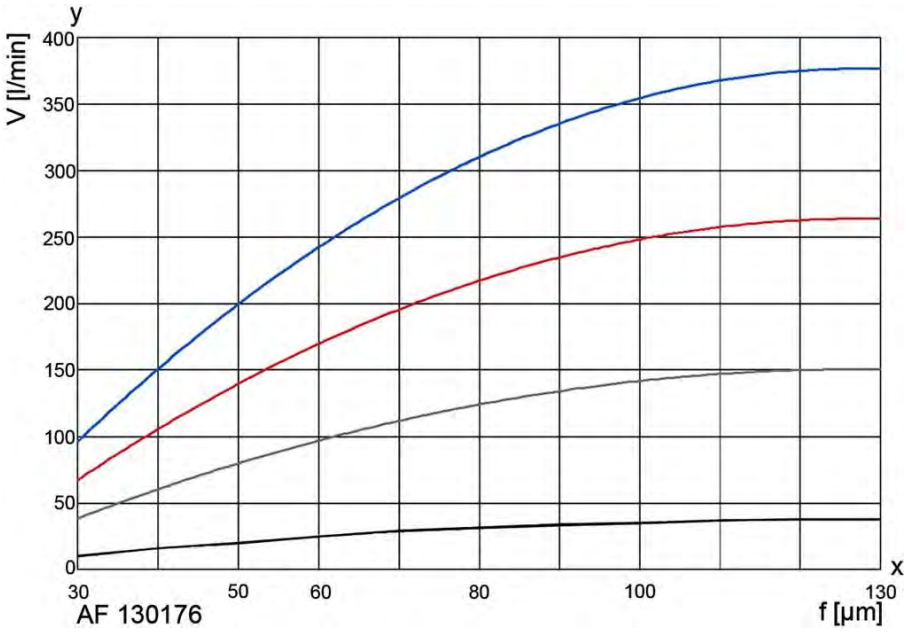
Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 7 s (about one turn of the filter cartridge). The external pressure and drain valves can be opened for this period. This suffices to clean the filter thoroughly.

The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 to 3 s.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

- 1 mm²/s
- 33 mm²/s
- 100 mm²/s
- 500 mm²/s

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

6. Type number key

Type number key with selection example for AF 15363-1322-43200/G3										
Size										
AF 1536 1 x 110x265										No. of steps x diameter x length [mm]
	Cleaning drive									
	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							
		13	G2							
			Permissible operating pressure in bar (housing/cover)							
			2	PN 16						
				Material Seal FPM, bearing PTFE						
				2	Housing and cover stainless steel 1.4581/1.4571					
					Differential pressure indicator and gauge					
					1	PiS 3076, switching level at 1.2 bar, static 63 bar				
					2	PiS 3076, switching level at 0.7 bar, static 63 bar				
					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				
						Valves and control throttles				
						3	External pressure valve G1 for liquid, 24 V			
						4	External pressure valve G1 for liquid, 230 V			
							Drain valve			
							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 1536	**3**	**- 13**	**2**	**2**	**-4**	**3**	**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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 130								
Series								
AF 130 Segmented element with triangular wire winding								
	Material		**Core element**		**Filter medium**		**Clamp rings**	**Wire width in mm**
	Coiled cartridge							
	20		Al/hc		1.4571		1.4571	0.5
		Overall length Diameter x length in mm						
		6	110 x 265					
			Gap width/rating in µm (see 4. Design and application)					
			003	30 µm	**010**	100 µm		
			004	40 µm	**013**	130 µm		
			006	60 µm	**016**	160 µm		
			008	80 µm	**020**	200 µm		
				Other filter ratings on request				
AF 130	**20**	**6**	**-010**					

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70311579
2	Seal kit (complete)	70316111	70316118
3	Scraper	70310724	70310731
4	Distributor	70511099	
5	Filter 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

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70360057.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

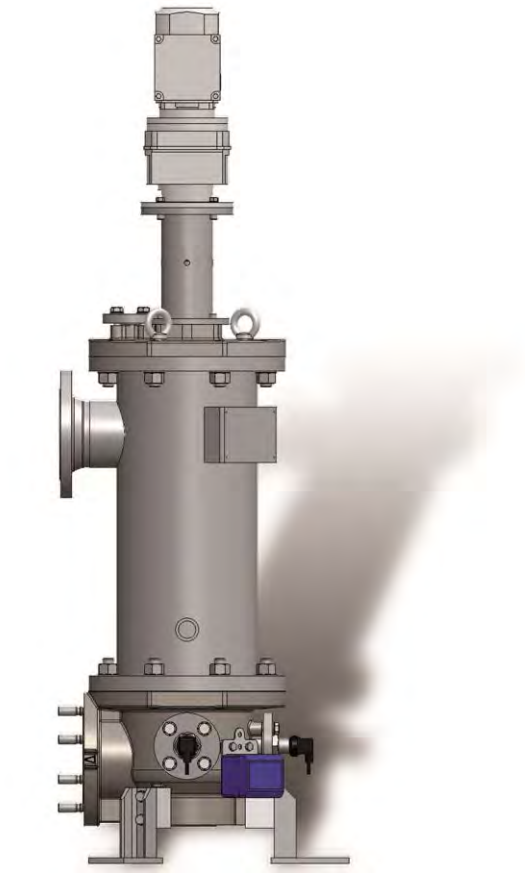
Filter module
AF 43

Nominal pressure 16 bar, nominal temperature 180 °C; nominal width DN 80 to DN 100/ANSI 2" to 4"

1. Features

Special demands are made on filter technology in process technology. With the modular metal-edge filter series AF 43 Filtration Group is setting new benchmarks in filter technology. The innovative filter concept provides an enhanced filter performance with optimised flow conduction and increased dirt pick-up capacity. At the same time, the new Filtration Group metal-edge filter series AF 43 combines different mechanical cleaning concepts, thus securing maximum cleaning performance and the chance to choose the optimum filter medium for your process from three different media.

Applications for the pioneering concept can be found in the petrochemical industry as well as in the production and processing of highly viscous pastes. Positive feedback has already been received from the field of paints, varnishes and pastes, and for the filtration of dispersions.



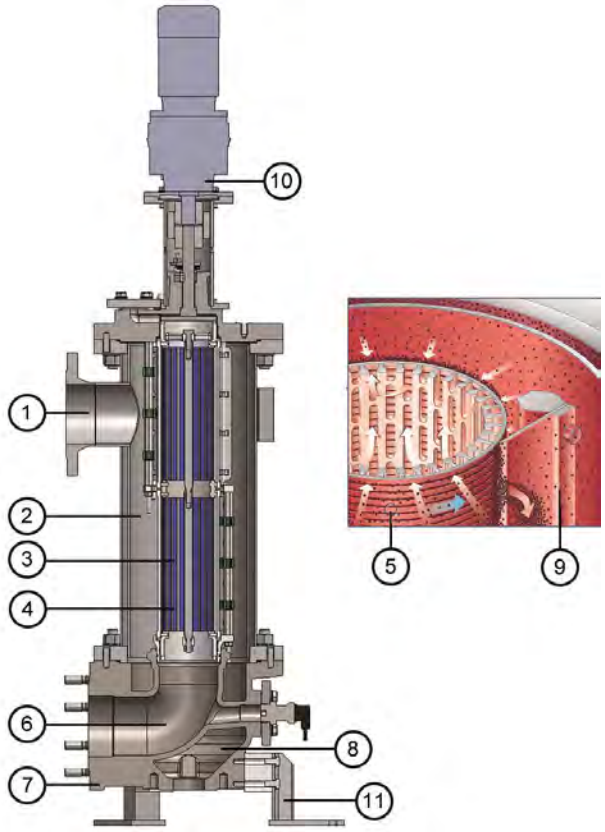
Advantages:

- Optimised flow conduction
- Three different series of filter elements
- Acceptance of the pressure tank according to the pressure equipment directive or ASME
- Series available in C-steel and stainless steel
- Volume flows up to 100 m³/h
- Filter fineness from 30 µm to 5000 µm
- Operating pressures up to 16 bar, optionally 25 bar
- Operating temperatures up to 180°C, optionally 250°C
- Shaft seal in compliance with Germany's "TA Luft" air quality regulations
- Low amount of waste related to batch change
- Heating jacket (optional)

2. Operating principle

With the filter module AF 43, Filtration Group is establishing a complete filter series for process technology in order to guarantee your production and ensure your product quality.
The development of the filter module AF 43 combines the tried-and-trusted Filtration Group metal edge filter principle with new technologies. There are three complete series of filter elements available for different areas of application in process technology. The mechanically cleanable Filtration Group metal edge filter elements can be selected specifically to match your process and applications. Combined with the different cleaning mechanisms, they thus achieve optimum filtration results, reduce soiling through solids and secure product quality over a long period.

As the filter medium flows in from the side, the solids and impurities contained in the medium are retained on the surface and scraped off into the cone for discharge.
The filtrate leaves the housing via the outlet flange at the bottom of the tank.
When the pre-set time or differential pressure for triggering the mechanical cleaning has been reached on the filter control, the mechanical cleaning process is automatically started.



Filtration Group filter elements used in the metal edge filter AF 43

Filtration Group coiled cartridge (standard):

- Optimal cleaning with sharp-edged triangular wire
- Large effective filter surface
- Precise, small gap widths
- High differential pressure stability and torsional strength
- Different material combinations possible

Filtration Group welded cartridge:

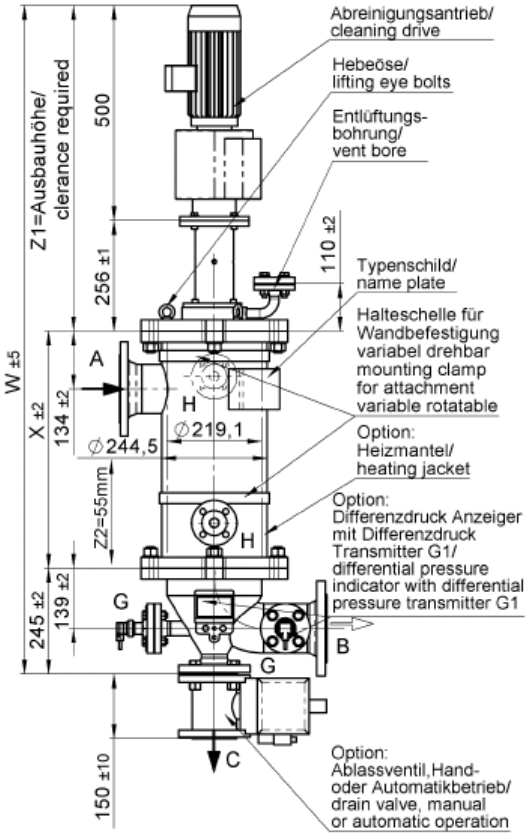
- High wear resistance to abrasive media
- Sturdy trapezoidal profile for high-viscosity media
- Continuous welded design
- Stainless steel version

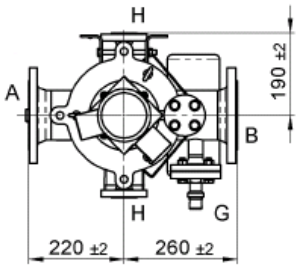
Filtration Group perforated foil:

- Specified sharp-edged hole diameter
- Asymmetric hole pattern
- Suitable for fibres
- Manufactured in stainless steel or nickel

1 Inlet connection
2 Inlet plenum
3 Filtration Group filter element
4 Triangular profile winding
5 Triangular wire
6 Plenum for filtered fluid
7 Outlet connection
8 Particle collection cone
9 Scraper
10 Cleaning drive with gear motor or hand ratchet
11 Feet, optional

3. Technical data





Type	W	X	Z	Weight (kg)
AF 436.-...	1284	283	590	125
AF 437.-...	1552	551	860	140
AF 438.-...	1820	819	1130	155
AF439.-...	2088	1087	1400	170

Filter data

Max. operating pressure: - 16 bar, optional 25 bar (higher pressure ratings on request)

Max. operating temperature: - 100°C, 180°C, optional 250°C (higher temperature ratings on request)

Trace heating with steam: 10bar / 200 °C

Cleaning pressure Δp: 0.3 bar – 2.2 bar

Materials:
- Housing and cover: Nodular cast iron, steel or 1.4404, 1.4571
- Internals: Nodular cast iron, steel or 1.4404 1.4571
- Bearing bushes: PTFE basis
- Seals: FPM (Viton)
- Metal-edge coiled cartridge**: 1.4571 or 1.4571/Al
- Welded cartridge*: 1.4571 Perforated foil*: 1.4571, 1.4571/Al or Al/Ni

Cover fastening: - 4 x M20 hexagon screws

Connections and nominal diameters:
- A-inlet, B-outlet: DN100- Adapter DN 50/65/80 or ANSI 4" – Adapter 2"/3"
- C-drain: DN50 or ANSI 2"
- D-aerating: DN 5 or ANSI 3/4"
- G-Δp indicator: DN25 or ANSI 1"
- H-heating jacket (optional): DN20
- All threaded holes acc. to DIN 3852 form X; flanges acc. to EN 1092-1/11B1/PN 16

Drive shaft seal: Packaging gland

External finish: Synthetic resin primer, blue (RAL 5007)

∗ Δp max. 10 bar ∗∗ Δp max. 30 bar

Motor data

Spur gear motor
Multirange winding

V	Hz	KW	rpm	A
Δ 230 ± 10%	50	0.18	17	1.11
⅄ 400 ± 10%	50	0.18	17	0.65
Δ 266 ± 10%	60	0.22	21	1.11
⅄ 460 ± 10%	60	0.22	21	0.65

Protection class: IP55 ISO-Class F; output torque: 84 Nm

Optional:
- Ex protection acc. to Atex 2014/34/EU
- Electrical design Ex II 2G T3
- Mechanical design Ex II 2G c T3

Special filter media with 30 µm to 5000 µm are available for your use
Filter cleaning can be operated manually or through

rotary current motors.

Other types available on request.

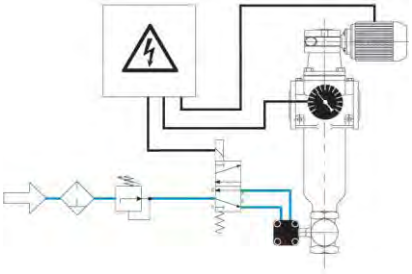
Technical data is subject to change without notice.

4. Design and application

Element type (see section 6)	Total surface in cm²	Gap width in µm/ effective gap surface in cm²														
		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



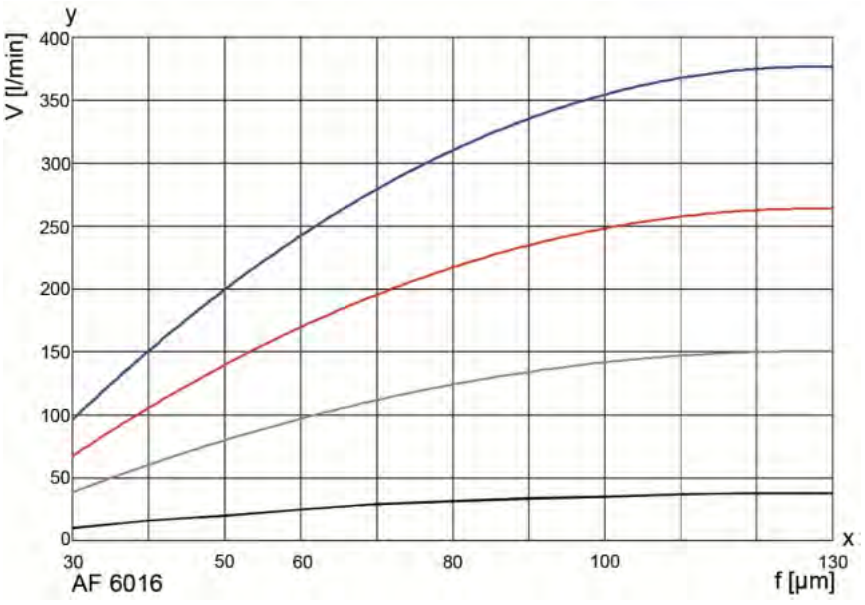
Fully automatic operation:

Filtration usually occurs 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 runs for about 10 seconds (about three turns of the filter element). This is sufficient for a thorough cleaning. In certain rare cases it may be necessary to run the motor continuously. The drive shaft is always turned clockwise. The filter is emptied by opening the drain valve. This can either take place synchronously with cleaning or be time or cycle controlled, depending on the residue concentration. 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.

See the Instruction Manual for further information.

5. Performance curves



The curves represent the volumetric flow through the entire filter system (filter housing including one filter element as an example) and refer to a differential pressure of 0.3 bar. Specific information about process data is essential for reliable operation of automatic filters.

Important information about the performance curve!
This is an example of a filter element of the type AF6016. The number of filter elements can be read from the type number key, see section 6.

Viscosity in mm²/s

1 mm²/s
33 mm²/s
100 mm²/s
500 mm²/s

y = volumetric flow V [l/min]
x = gap width f [µm]

6. Type number key

Type number key with selection example for AF 4373-521-50200										
Size										
AF 436	1 x 1 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
AF 437	1 x 2 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
AF 438	1 x 3 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
AF 439	1 x 4 x 110x265 number of steps x diameter x length [mm] with emptying via the clean side									
	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									
	5 Motor with standard connection is provided and completely delivered by the customer									
	6 Standard motor connection, delivered without motor									
		Inlet and outlet connections								
		5 DN 80								
		6 DN 100								
			Permissible operating pressure in bar (housing/cover)							
			2 PN 16							
			3 PN 25							
				Material Seal FKM and bearing PTFE						
				1 Standard; aluminium, nodular cast iron; steel						
				2 Stainless steel 1.4571, 1.4581						
				3 Standard steel, internals in stainless steel 1.4301/1.4571						
				4 Standard steel aluminium-free						
					Differential pressure indicator and gauge					
					1 PiS 3076, switching point at 1.2 bar, static 63 bar, aluminium/FKM					
					2 PiS 3076, switching point at 0.7 bar, static 63 bar, aluminium/FKM					
					5 PiS 3165, digital Dp manometer, 2 pressure transmitters 0-6 bar adjustable					
					8 PiS 3076, switching point at 2.2 bar, static 63 bar, aluminium/FKM					
					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, electro-pneumatic 24 V			
							3 Ball valve, electro-pneumatic 230 V			
							4 Ball valve, electric 24 V			
							5 Ball valve, electric 230 V			
							6 Flap, electro-pneumatic 24 V/10 bar			
							7 Flap, electro-pneumatic 230 V/10 bar			
							8 Flap, electric 24 V/10 bar			
							9 Flap, electric 230 V/10 bar			
								Cleaning valve		
								0 without/special version		
									Optional features	
									0 without/special version	
AF 437	**3**	**-5**	**2**	**1**	**-5**	**0**	**2**	**0**	**0**	**- XXXX(end no. for special version)***

*end number completion:
G2 housing version combination cast and welded parts, Version 2 (standard)
S1 welded version, Version 1

End number	Special version
3001	Standard filter insert (complete), without housing or drive
3002	Standard filter insert (complete), without housing, with drive
3400	Heating jacket, standard welded version
3700	PTFE seals
3701	Welded version in compliance with TÜV regulations
4166	3 x scraper
7000	Perforated version + plastic scraper
Others	Upon request

Type number key with selection example for coiled and welded cartridges for AF 60

Series

AF 60	Coiled or welded cartridge with triangular wire winding
AF 50	Perforated foil

	Material	Inner core	Filter medium	Clamp rings	Wire width in mm
	Perforated plate	**-**	**1.4301**	**-**	**-**
	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
	Perforated foil				
	11	Al	Ni	1.4571	-
	12	Al	1.4571	1.4571	-
	13	1.4571	1.4571	1.4571	-

		Overall length	Diameter x length in mm
		6	110x26 5

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

Hole diameter with metal edge perforated elements in µm

010	100 µm	**020**	200 µm	**050**	500 µm

Other grades upon request

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

7. Spare Parts

Metal-edge or coiled cartridge

Position	Designation	Material number	
		FKM/C-steel	PTFE/VA
1	Bush kit		78358947
2	Seal kit (complete)	77982143	77982150
3	Scraper		71116805
4	Leg spring set per scraper		79753492
5	Filter element	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. For information on installation and operation, please see the Instruction Manual.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 172 G

with external pressure cleaning and integrated cyclone effect
Connection sizes: DN 40/G1 1/2, cast design

1. Short description

Filtration Group automatic backflush filters are suitable for applications where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the element and backflushing with external or internal pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Application in Ex zone 1 and 2 optional
- Easy maintenance
- Worldwide distribution

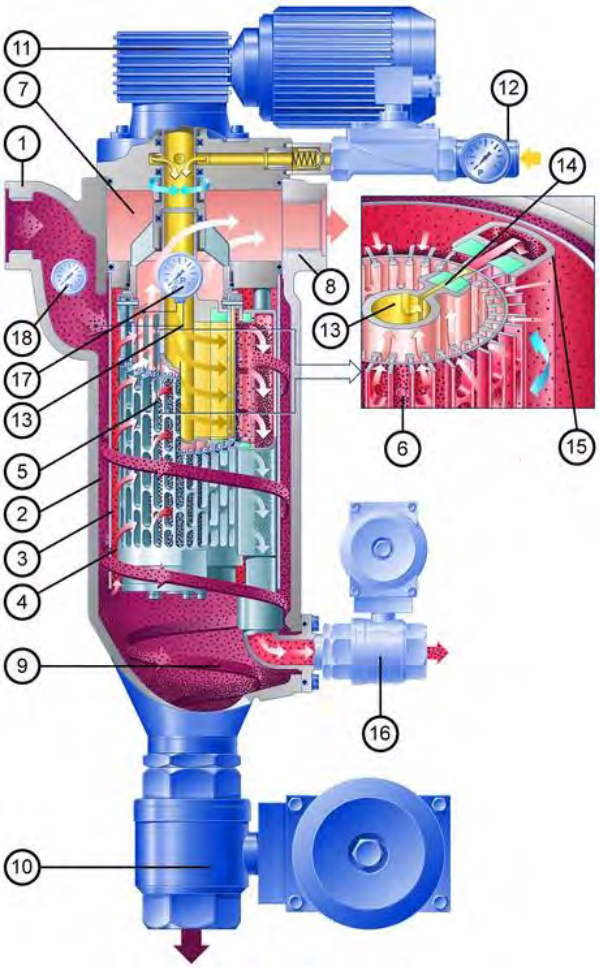
2. Operating principle

The Filtration Group AF 172 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned 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 and flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseperator relieves the load on the segmented element, particularly from coarse and heavy particles. This is achieved by a tangential flow around the preseparator tube and the deflection edges.



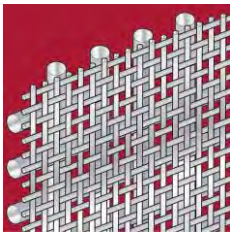
The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned as the cleaning and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside and the flushing channel on the outside, causing them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the flushing channel and discharged almost entirely with external medium. One turn suffices to clean all segments.
The residue that has settled in the collection cone can be emptied via the drain valve either when the machine is at a stillstand or during filtration.
All filters of the Filtration Group Vario series are protected by various patents.

Used Filtration Group filter elements in the AF 172 G backflush filter:

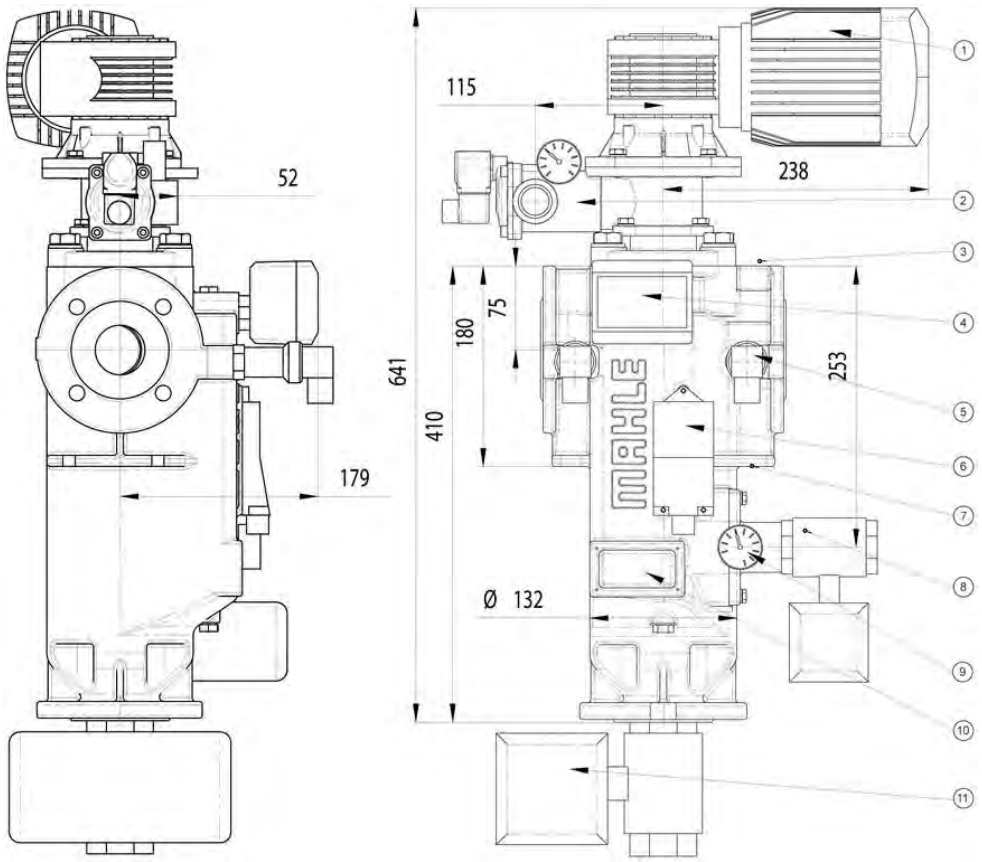
Filtration Group topmesh elements (standard):

- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations possible



1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segmented element
6 Filtration Group filter material
7 Plenum for filtered fluid
8 Outlet connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 External pressure connection, external pressure and backflush valves and gauge P_f
13 External pressure accumulator
14 External pressure nozzle
15 Flushing channel (outside)
16 Cleaning valve (P3 control throttle)
17 Differential pressure contact gauge
18 P1 gauge

3. Technical data



1 Cleaning drive: can be mounted turned 90°
2 External pressure valve
3 Vent screw G¼
4 Optional: Differential pressure indicator/switch
5 Optional: Pressure sensor
6 Optional: Sensor Actor Box
7 Mounting plate
8 Optional: Automatic backflush valve
9 Optional: P3 control throttle with P3 gauge
10 Name-plate
11 Optional: Automatic drain valve
Clearance = 400 mm

Filter data

Max. operat. pressure:		16 bar
Max. operat. temperature:		100 °C
Materials:	-	Housing and cover: cast iron
	-	Internals: C-steel, PPS GF40
	-	Bearing bushes: PTFE based
	-	Seals: FPM (Viton)
	-	Segmented element: 1.4571/Al (Δp max. 10 bar)
Cover lock:		4 x M16 hexagon screws
Connections and nominal diameters:	-	A-inlet, B-outlet, C-drain: G1½ threaded holes DIN 3852 form Z in flange DN 40
	-	D-external pressure: G1 (must be reduced to G½ by the costumer)
	-	E-backflush: G1 accord. DIN 3852 form Z
	-	F-gauge: G½ accord. DIN 3852 form Z
	-	G-indicator: G1/8 accord. DIN 3852 form X
Drive shaft seal:		Lip seal with O-Ring
External finish:		Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
△ 230 ± 10%	50	0,18	17	1,2
⅄ 400 ± 10%	50	0,18	17	0,7
△ 266 ± 10%	60	0,22	17	1,1
⅄ 460 ± 10%	60	0,22	17	0,7

Protection class: IP 55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex, output torque: 97 Nm

Weight: 40 kg
Volume: 8 l

Differential pressure resistance
Segmented elements with topmesh: 10 bar

Other versions available on request.

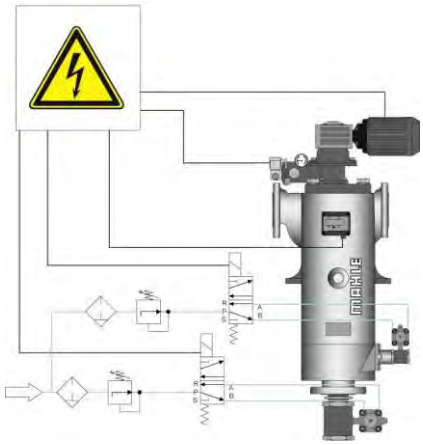
Technical data is subject to change without notice!

4. Design and application

Element type (see section 6)	Total surface in cm²	Filter rating in µm/ effective filter surface in cm²								
			10	20	30	40	60	80	100	200
AF 100XX4	437		310	310	310	310	310	310	310	310

recommended design

Possible cleaning and discharge modes



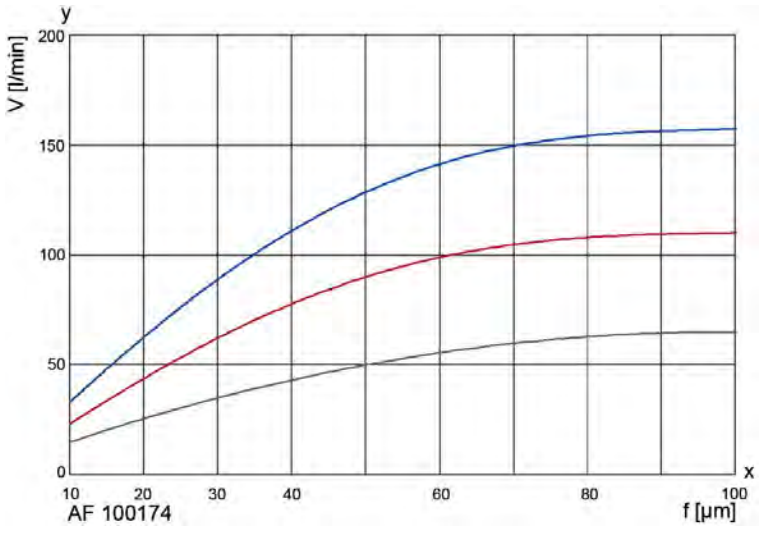
Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approx. 0.5 - 0.7 bar. The cleaning motor is operated for around 3 s (about one turn of the element). The external pressure and cleaning valves remain open for this period. This suffices to clean the filter thoroughly.

The drain valve is opened in order to discharge the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 bis 3 s.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

5. Performance curves



The curves indicate the volume flow through the complete filter system (filter housingh including element) 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

1 mm²/s
33 mm²/s
100 mm²/s

y = Volum flow V [l/min]
x = Filter rating f [µm]

6. Type number key

Type number key with selection example for AF 17243-221-43220/G2										
Size										
AF 1724 1 x 65x230										No. of steps x diameter x length [mm]
	Cleaning drive									
	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								G1 1/2 in flange DN 40 PN16
			Permissible operating pressure in bar (housing/cover)							
			2							PN 16
				Material Seal FPM, bearing PTFE						
				1						Housing and cover nodular cast iron, internals steel, aluminium
				3						Housing and cover nodular cast iron, internals stainless steel 1.4301/1.4571
					Differential pressure indicator and gauge					
					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 0-16 bar
						Valves and control throttles				
						3				External pressure valve G1 for liquid, 24 V DC
						4				External pressure valve G1 for liquid, 230 V AC
							Drain valve			
							2			Ball valve, electropneumatic 24 V DC
							3			Ball valve, electropneumatic 230 V AC
							4			Ball valve, electric 24 V DC
							5			Ball valve, electric 230 V AC
								Cleaning valve		
								2		Ball valve, electropneumatic 24 V DC
								3		Ball valve, electropneumatic 230 V AC
								4		Ball valve, electric 24 V DC
								5		Ball valve, electric 230 V AC
									Optional features	
									0	Without/special version
AF 1724	**3**	**-2**	**2**	**1**	**-4**	**3**	**2**	**2**	**0**	**-XXXX (end number for special version)/G2***

*end number completion:

G2 cast iron, Version 2

End number	Special version
3001	Standard filter insert (complete), without housing or drive
3002	Standard filter insert (complete), without housing, with drive
3700	Seals PTFE
Other numbers	On request

Type number key with selection example for AF 100 element									
Series									
AF 100	Segmented element with topmesh (20 µm to 100 µm)								
	Material Segmented element	**Core element**		**Filter medium**		**Clamp rings**			
	17		Al		1.4571		St		
		Overall length Diameter x lenght in mm							
		4	65 x 230						
			Gap width/rating in µm (see 4. Design and application)						
			002	20 µm	**004**	40 µm		**008**	80 µm
			003	30 µm	**006**	60 µm		**010**	100 µm
				Other filter ratings on request					
AF 100	**17**	**4**	**- 006**						

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit	70320691	
2	Set of seals (complete)	70376736	
3	Backflush channel moulding	70345207	
4	Backflush valve	70320084	
5	Filter element	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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70365279.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 173 G

with external pressure cleaning and integrated cyclone effect
Connection sizes: G2, screw-in flange DN 50 and DN6 5, cast design

1. Short description

Filtration Group automatic backflush filters are suitable for applications where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the cartridge and backflushing with external or internal pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation tanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Optional: Gas-tight shaft seals available
- Optional: Application in Ex zone 1 and 2
- Easy maintenance
- Worldwide distribution

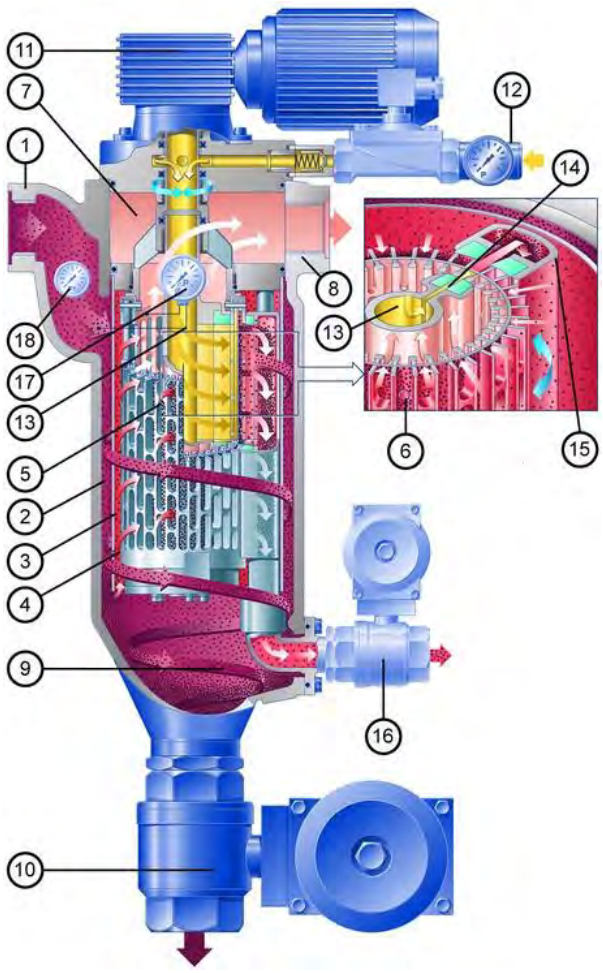
2. Operating principle

The Filtration Group AF 173 G backflush filter belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned 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 and flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseperator relieves the load on the segmented element, particularly from coarse and heavy particles. This is achieved by a tangential flow around the preseparator tube and the deflection edges.

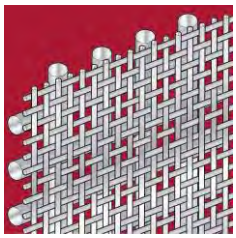


The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned as the cleaning and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside and the flushing channel on the outside, causing them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the flushing channel and discharged almost entirely with external medium. One turn suffices to clean all segments.
The residue that has settled in the collection cone can be emptied via the drain valve either when the machine is at a stillstand or during filtration.
All filters of the Filtration Group Vario series are protected by various patents.

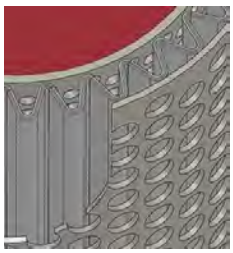
Used Filtration Group filter cartridges in the AF 173 G backflush filter:

Filtration Group Topmesh element (standard):



- Good cleanability due to asymmetric design
- High effective filter surface
- Defined particle retention
- Several material combinations possible

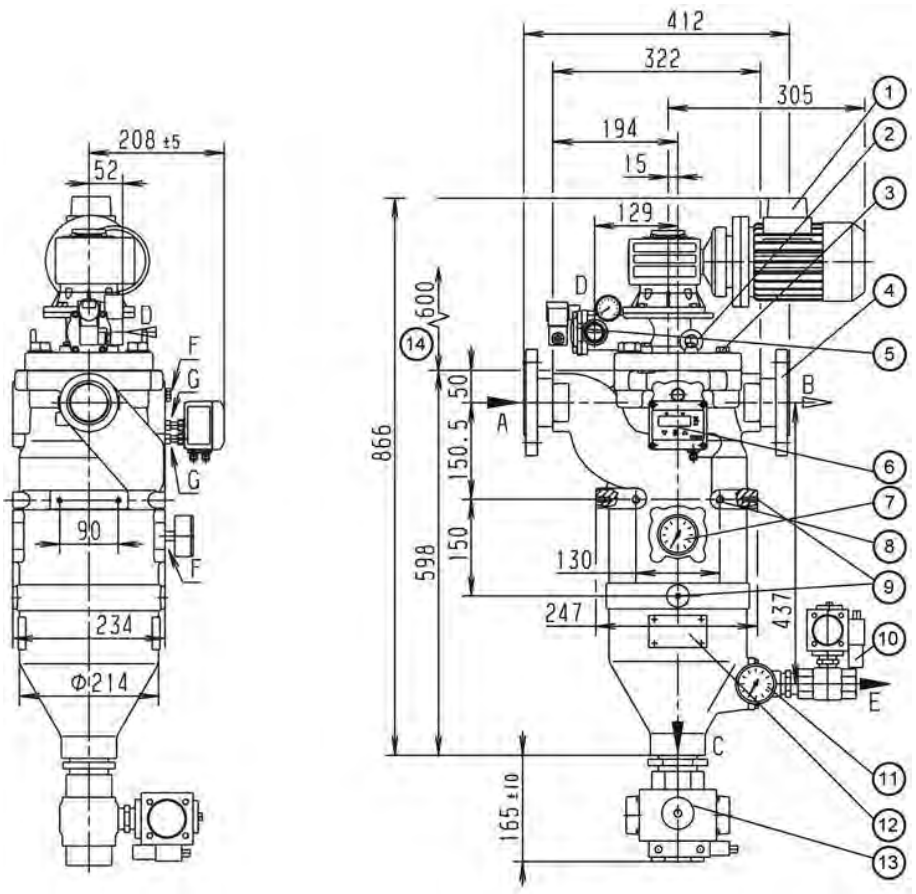
Filtration Group Wave element:



- Higher contamination levels because of pleated filter area
- Complete stainless steel
- Higher flow rate compared to standard elements
- Specially for filter fineness < 60 µm
- Filter media (wire mesh) made of 1.4401

1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segmented element
6 Filtration GroupE filter material
7 Plenum for filtered fluid
8 Outlet connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 External pressure connection, external pressure and backflush valves and gauge P_f
13 External pressure accumulator
14 External pressure nozzle
15 Flushing channel (outside)
16 Cleaning valve (P3 control throttle)
17 Differential pressure contact gauge
18 P1 gauge

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 Lifting eyebolts
3 Vent screw G1/4
4 If DN65 screw-in flanges are used, the motor is mounted turned 90°
5 External pressure valve
6 Optional: Differential pressure indicator/switch
7 Optional: P1 gauge
8 Mounting holes M12
9 Mounting holes M8
10 Optional: Automatic backflush valve
11 Optional: P3 control throttle with P3 gauge
12 Name-plate
13 Optional: Automatic drain valve
14 Clearance = 600 mm

Filter data

Max. operat. pressure:	16 bar
Max. operat. temperature:	100 °C
Materials:	Housing and cover: GGG Internals: GGG, St Bearing bushes: PTFE based Seals: FPM (Viton) Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar) Wave element: 1.4401
Cover lock:	4 x M20 hexagon screws
Connections and nominal diameters:	A-inlet, B-outlet, C-drain: G2 threaded holes DIN 3852 form X D-external pressure: G1 (air: must be reduced to G1/2 by the customer) E-backflush: G1 threaded holes DIN 3852 form Z F-gauge: G1/4 G-indicator: G1/8 Optional: A/B/C G2½ screw-in flanges DN50 or DN65 acc. to EN 1092-1/05A
Drive shaft seal:	Lip seal with O-ring
External finish:	Synthetic resin primer, blue acc. to RAL 5007

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	9.3	1.2
⅄ 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
⅄ 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP 55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex
- Ex II 2G T3, output torque: 97 Nm

Weight: 92 kg
Volume: 12 l

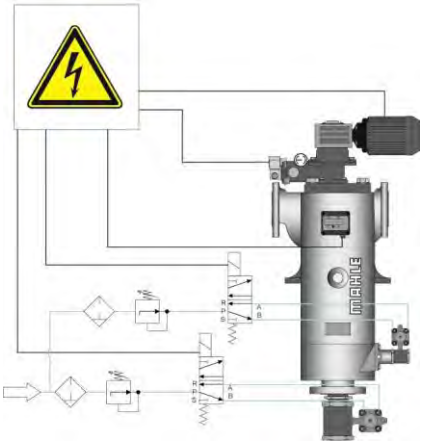
Other versions available on request.
Technical data is subject to change without notice.

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	filter rating in µm / effective filter surface in cm²							
		10	20	30	40	60	80	100	200
AF 100XX6	763	637	637	637	637	637	637	637	637
AF 105216	1750	1620	1620	1620	1620	1620	1620	1620	

recommended design

Possible cleaning and discharge modes



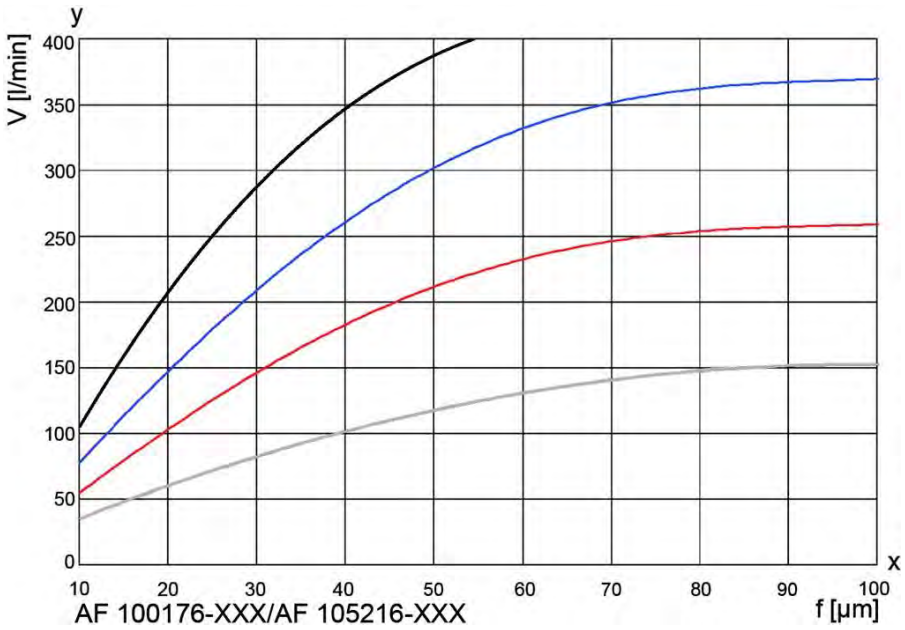
Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approx. 0.5 - 0.7 bar. The cleaning motor is operated for around 7 s (about one turn of the cartridge). The external pressure and cleaning valves remain open for this period. This suffices to clean the filter thoroughly.

The drain valves is opened in order to discharge the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2-3 s.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

5. Performance curves



The curves indicate the volume flow through the complete filter system (filter housingh 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

- 1 mm²/s AF105 DN65/G2 ½
- 1 mm²/s AF100 DN50/G2
- 33 mm²/s "
- 100 mm²/s "

y = Volum flow V [l/min]
x = Filter rating f [µm]

6. Type number key

Type number key with selection example for AF 17363-1321-43220/G3										
Size										
AF 1736 1 x 110x265										No. of steps x diameter x length [mm]
	Cleaning drive									
	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	G2 1/2							
			Permissible operating pressure in bar (housing/cover)							
			2	PN 16						
				Material Seal FPM, bearing PTFE						
				1	Housing and cover nodular cast iron, internals steel, aluminium					
				3	Housing and cover nodular cast iron, internals stainless steel 1.4301/1.4571					
					Differential pressure indicator and gauge					
					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				
						Valves and control throttles				
						3	External pressure valve G1 for liquid, 24 V			
						4	External pressure valve G1 for liquid, 230 V			
						8	Like 3, but with P3 control throttle and P3 gauge			
						9	Like 4 but with P3 control throttle and P3 gauge			
							Drain valve			
							2	Ball valve, electropneumatic 24 V DC		
							3	Ball valve, electropneumatic 230 V AC		
							4	Ball valve, electric 24 V DC		
							5	Ball valve, electric 230 V AC		
								Cleaning valve		
								2	Ball valve, electropneumatic 24 V DC	
								3	Ball valve, electropneumatic 230 V AC	
								4	Ball valve, electric 24 V DC	
								5	Ball valve, electric 230 VAC	
									Optional features	
									0	Without/special version
AF 1736	**3**	**- 13**	**2**	**1**	**-4**	**3**	**2**	**2**	**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 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 AF 100 cartridges

Series

AF 100 Segmented element with topmesh

AF 105 Wave element AF 105216

	Material	Core element	Filter medium	Clamp rings
	Segmented element			
	17	Al	1.4571	St
	20	AL/hc	1.4571	1.4571
	21	1.4571	1.4571 (1.4401)*	1.4571

Overall length Diameter x lenght in mm

6 110 x 265

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

001	10 µm	**004**	40 µm	**010**	100 µm
002	20 µm	**006**	60 µm	**013**	130 µm
003	30 µm	**008**	80 µm	**020**	200 µm

Other filter ratings on request

AF 100	**17**	**6**	**-006**

*AF 105 Filter medium 1.4401

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70311579
2	Set of seals (complete)	70316231	70316233
3	Backflush channel moulding	79744004	70312375
4	Backflush channel moulding for wave element*		70597327
5	Distributer	70511099	
6	Cartridge	See name-plate	

*When replacing standard filter element by wave element request wave element kit.

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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
Fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
79799131.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 173 G

with external pressure cleaning and integrated cyclone effect
Connection size DN 50/G2, cast stainless steel

1. Short description

Filtration Group automatic backflush filters are suitable for all applications where low-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the cartridge and backflushing with external or internal pressure media.

Advantages:

- Low lifecycle cost because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications
- Modular Filtration Group Vario system for optimum filter selection
- Optional: 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
- Easy maintenance
- Worldwide distribution

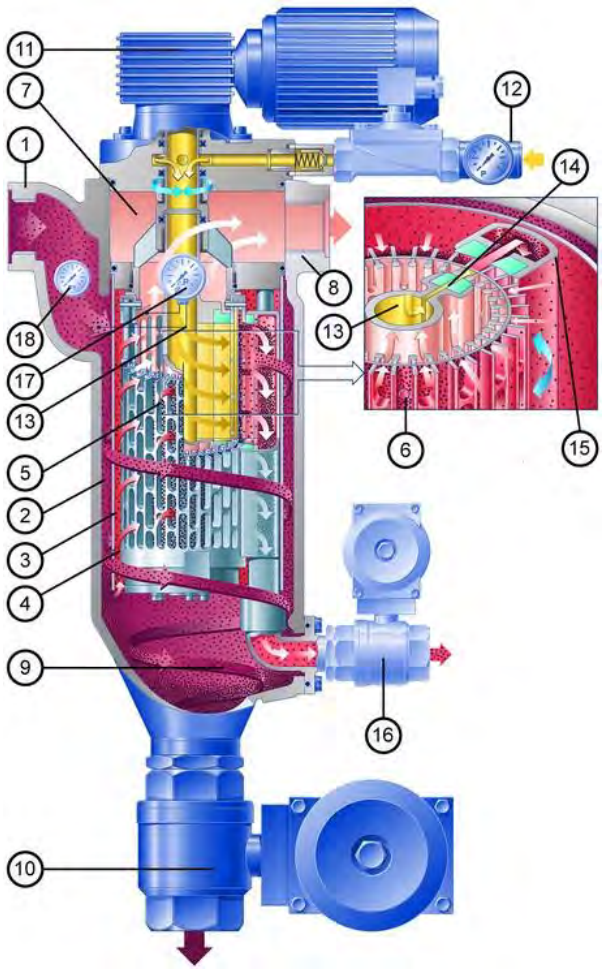
2. Operating principle

The Filtration Group AF 173 G belongs to the Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned 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 and flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseparator relieves the load on the segmented element, particularly from coarse and heavy particles. This is achieved by a tangential flow around the preseparator tube and the deflection edges.

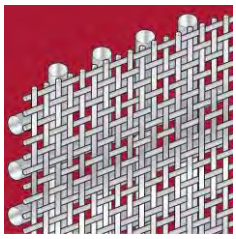


The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.
The segmented element is turned as the cleaning and external pressure valves are opened. The segments are then guided one at a time past the pressure channel on the outside, causing them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the flushing channel and discharged almost entirely with external medium. One turn suffices to clean all segments. 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.

All filters of the Filtration Group Vario series are protected by various patents.

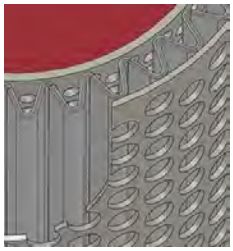
Used Filtration Group filter cartridges in the AF 173 G backflush filter:

Filtration Group topmesh cartridges (standard):



- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations

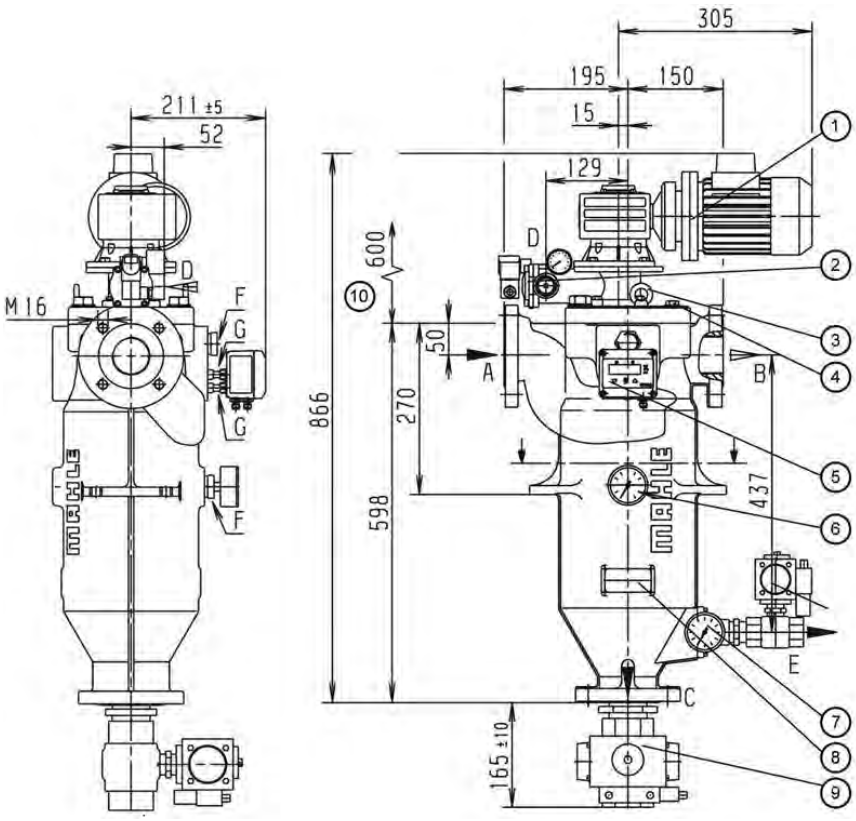
Filtration Group Wave element:



- Higher contamination levels because of pleated filter area
- Complete stainless steel
- Higher flow rate compared to standard elements
- Specially for filter fineness < 60 µm
- Filter media (wire mesh) made of 1.4401

1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segmented elements
6 Filtration Group filter material
7 Plenum for filtered fluid
8 Outlet connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 External pressure connection, external pressure and backflush valves and gauge P_f
13 External pressure accumulator
14 External pressure nozzle
15 Flushing channel
16 Cleaning valve (P3 control throttle)
17 Differential pressure contact gauge
18 P1 gauge

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270 °
2 External pressure valve
3 Lifting eyebolts
4 Vent screw G1/4
5 Optional: Differential pressure indicator/switch
6 Optional: P1 gauge
7 Optional: Automatic backflush valve
8 Optional: P3 control throttle with P3 gauge
9 Name-plate
10 Optional: Automatic drain valve
11 Clearance required = 600 mm

Filter data

Max. operat. pressure:	16 bar
Max. operat. temperature:	100 °C
Materials:	Housing and cover: Cast steel 1.4581 - Optional: Certificate acc. to EN 10204-3.1 - Internals: Cast steel 1.4581, stainless steel 1.4571 - Bearing bushes: PTFE based - Seals: FPM (Viton) - Segmented element: 1.4571 or 1.4571/Al (Δp max. 10 bar) - Wave element: 1.4401
Cover lock:	4 x M20 hexagon screws
Connections and nominal diameters:	- A-inlet, B-outlet, C-drain: threaded hole G2 in flange DN 50 - D-external pressure: G1 (air: must be reduced to G1/2 by the customer) - E-backflush, F-gauge: G1 G-indicator: G1/8 - All threaded holes acc. DIN 3852 Form Z
Drive shaft seal:	Lip seal with O-Ring

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	rpm	A
△ 230 ± 10%	50	0.18	9.3	1.2
⅄ 400 ± 10%	50	0.18	9.3	0.7
△ 266 ± 10%	60	0.22	11.2	1.1
⅄ 460 ± 10%	60	0.22	11.2	0.7

Protection class: IP 55; insulation class F; output torque: 97 Nm

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3
- Worm gear motor Ex
- Ex II 2G T3, output torque: 97 Nm

Weight: 92 kg
Volume: 12 l

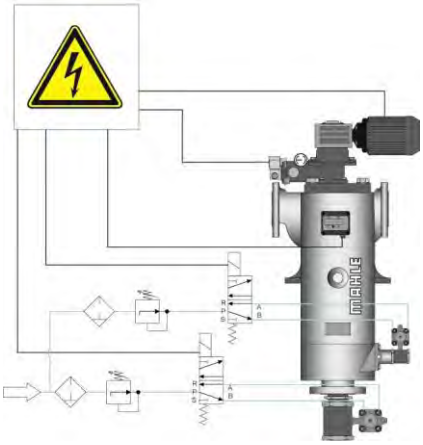
Other versions available on request.
Technical data is subject to change without notice.

4. Design and application

Cartridge type (see section 6)	Total surface in cm²	filter rating in µm / effective filter surface in cm²							
		10	20	30	40	60	80	100	200
AF 100XX6	763	637	637	637	637	637	637	637	637
AF 105216	1750	1620	1620	1620	1620	1620	1620	1620	

recommended design

Possible cleaning and discharge modes



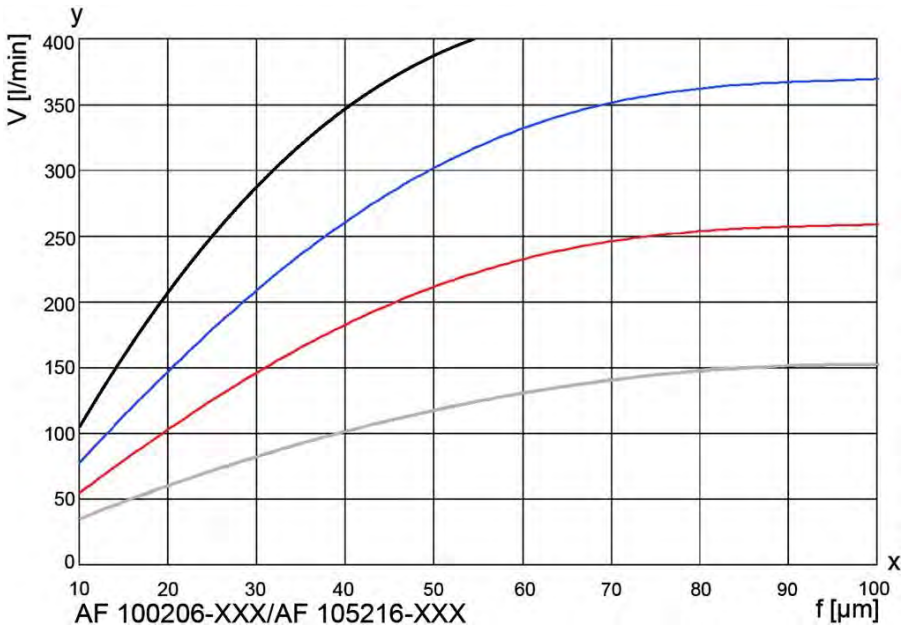
Fully automatic operation:
Filtration usually takes place under pressure. The filter is cleaned after a programmed time or a preset number of cycles or according to the differential pressure. We recommend cleaning the system at a differential pressure of approximately 0.5 - 0.7 bar. The cleaning motor is operated for around 7 s (about one turn of the cartridge). The external pressure and cleaning valves remain open for this period. This suffices to clean the filter thoroughly.

The drain valve is opened in order to discharge the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2-3 s.

Refer to the Instruction Manual for further information.

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

- 1 mm²/s AF105 DN65/G2 ½
- 1 mm²/s AF100 DN50/G2
- 33 mm²/s "
- 100 mm²/s "

y = Volume flow V [l/min]
x = Filter rating f [µm]

6. Type number key

Type number key with selection example for AF 17363-1322-43220/G3

Size

AF 1736 1 x 110x265 — No. of steps x diameter x length [mm]

Cleaning drive

- **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** threaded hole G2 in flange DN 50, mountings flange connection
- **13** threaded hole G2 in flange DN 50, mountings thread connection

Permissible operating pressure in bar (housing/cover)

- **2** PN 16

Material Seal FPM, bearing PTFE

- **2** Housing and cover 1.4581/1.4571

Differential pressure indicator gauge

- **1** PiS 3076, switching level at 1.2 bar, static 63 bar
- **2** PiS 3076, switching level at 0.7 bar, static 63 bar
- **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

Valves and control throttles

- **3** External pressure valve G1 for liquid, 24 V
- **4** External pressure valve G1 for liquid, 230 V
- **8** Like 3 but with P3 control throttle and P3 gauge
- **9** Like 4 but with P3 control throttle and P3 gauge

Drain valve

- **2** Ball valve, electropneumatic 24 V DC
- **3** Ball valve, electropneumatic 230 V AC
- **4** Ball valve, electric 24 V DC
- **5** Ball valve, electric 230 V AC

Cleaning valve

- **2** Ball valve, electropneumatic 24 V DC
- **3** Ball valve, electropneumatic 230 V AC
- **4** Ball valve, electric 24 V DC
- **5** Ball valve, electric 230 V AC

Optional features

- **0** Without/special version

AF 1736	**3**	**- 13**	**2**	**2**	**-4**	**3**	**2**	**2**	**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 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 AF 100 cartridges

Series

AF 100 Segmented element with topmesh (5 µm to 100 µm)

AF 105 Wave element AF 105216

	Material	Core element	Filter medium	Clamp rings	Wire width in mm
	Segmented element				
	20	Al Hardcoated	1.4571	1.4571	-
	21	1.4571	1.4571 (1.4401)*	1.4571	-

Overall length Diameter x lenght in mm

6 110 x 265

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

001	10 µm	**004**	40 µm	**010**	100 µm
002	20 µm	**006**	60 µm	**013**	130 µm
003	30 µm	**008**	80 µm	**020**	200 µm

Other filter ratings on request

AF 100	**20**	**6**	**-006**

*AF 105 filter media 1.4401

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	PTFE/VA
1	Bush kit		70311579
2	Set of seals (complete)	70316231	70316233
3	Backflush channel moulding	79744004	70312375
4	Backflush channel moulding for wave element*		70597327
5	Distributer	70511099	
6	Cartridge	See name-plate	

*When replacing standard filter element by wave element request wave element kit.

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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70360058.12/2016

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Automatic filter
AF 179 S

with external pressure cleaning and integrated cyclone effect
Nominal diameter DN 100, 125, 150, 200

1. Features

Filtration Group automatic backflush filters are suitable for all applications where low or medium-viscosity liquids have to be filtered.

These compact, inline filter systems are designed for automatic cleaning. The system is cleaned by rotating the filter cartridge and backflushing with external or internal pressure media.

Advantages:

- Low lifecycle costs because no filter material is consumed
- Cleaning without interrupting filtration
- Precise separation quality in accordance with the surface filter principle
- Top-quality, asymmetric filter medium made of multiple-sintered stainless steel fleece on a rugged core element
- Efficient filter cleaning assures maximum process stability
- Solid construction and high-quality materials for a long service life
- Minimal liquid loss during cleaning
- Filter cleaned one segment at a time with a high backflush pulse
- Actual filter rating and nominal separation are indicated
- Integrated preseparation thanks to tangential inflow and preseparator tube
- Material variants open up a wide range of applications (also for high abrasive media)
- Modular Filtration Group Vario system for optimum filter selection
- Optional: Gas-tight shaft seals available
- Optional: Application in Ex zone 1 and 2
- Optional: Certification for Pressure Equipment Directive (PED)
- Optional: Acceptence for ASME U-Stamp
- Easy maintenance
- Worldwide distribution

2. Operating principle

The Filtration Group AF 179 S backflush filter belongs to the large Vario series. The compact Filtration Group automatic filter system is used for fine and micro-filtration of a variety of low-viscosity liquids.

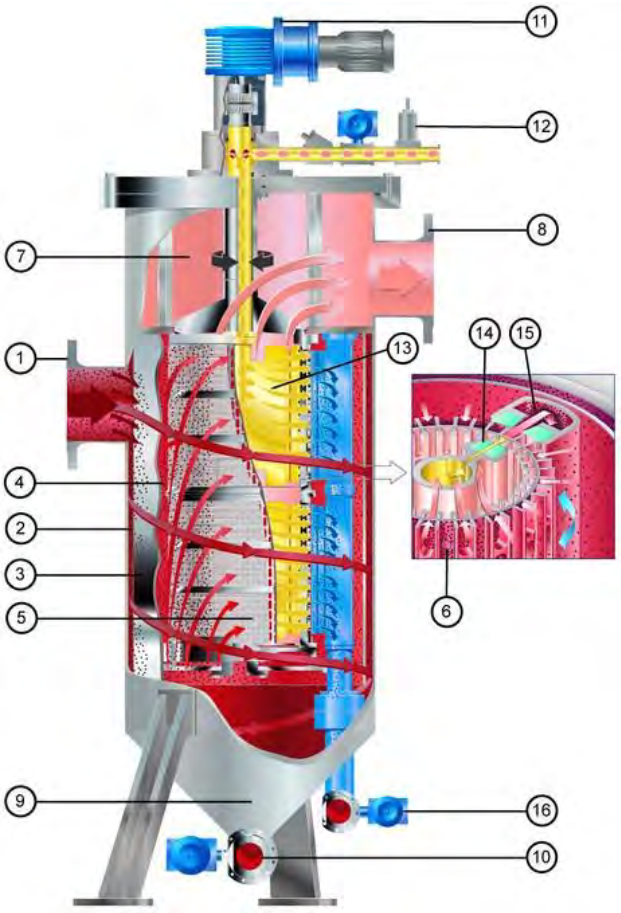
This inline pressure filter consumes no filter material, which means there is also no need for subsequent disposal. The filter is cleaned without interrupting operation. The concentrated solids are drained off simply by opening the system for a short time.

The medium to be cleaned is guided into the filter housing under pressure. It flows inward through the Filtration Group segmented element. Particles settle on the surface of the filter medium. The filtered fluid exits the filter housing at the top opposite the inlet connection.

The integrated preseparator relieves the load on the segmented element, particularly from coarse and heavy particles. This permits a tangential flow around the preseparator tube and the deflection edges. The filter is cleaned when a preset differential pressure limit, a set interval or a defined filtered fluid quantity is reached.

The segmented element is turned as the cleaning and external pressure valves are opened. The segments are then guided one at a time past the pressure channel housing on the inside and the backflush channel on the outside. This causes them to open and close alternately. The integrated external pressure accumulator is pretensioned during closing, so that when one segment opens, an outward surge cleans the separated particles from the filter material. As a result of this pulse cleaning principle, the particles are catapulted out, collected in the backflush channel and discharged almost entirely with external medium. One turn suffices to clean all segments.
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.

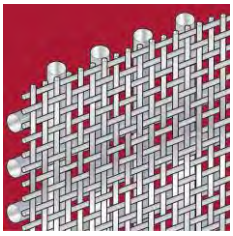
All filters in the Filtration Group Vario series are protected by various patents.



Used Filtration Group filter cartridges in the AF 179 S backflush filter:

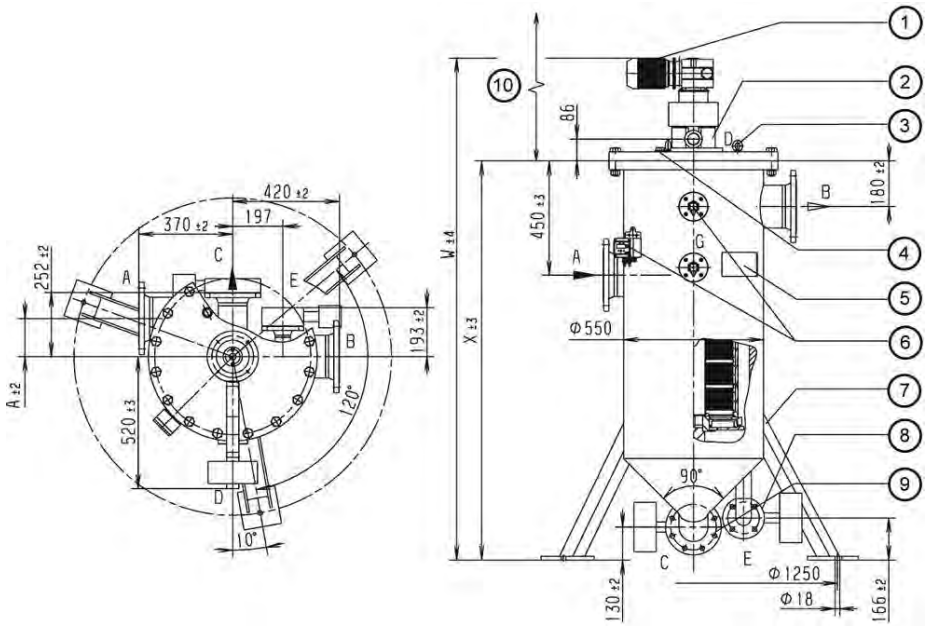
Filtration Group topmesh cartridges (standard):

- Good cleanability due to asymmetric design
- Large effective filter surface
- Defined particle retention
- Several material combinations possible



1 Inlet connection
2 Outer inlet plenum
3 Preseparator tube
4 Inner inlet plenum
5 Filtration Group segmented element
6 Filtration Group filter material
7 Plenum for filtered fluid
8 Outlet connection for filtered fluid
9 Residue collection cone
10 Drain valve
11 Drive motor
12 External pressure connection, external pressure and backflush valves and gauge P_f
13 External pressure accumulator
14 External pressure nozzle
15 Backflush channel (outside)
16 Cleaning valve (P3 control throttle)

3. Technical data



1 Cleaning drive: can be mounted turned 90°, 180° or 270°
2 Optional: Automatic external pressure valve
3 Lifting eyebolts
4 Vent screw G1
5 Name-plate
6 Optional: Differential pressure indicator with differential pressure transmitter G1
7 Feet (3 x 120°)
8 Optional: Automatic back-flush valve
9 Optional: Drain valve, manual or automatic mode
10 Clearance required
Z in mm

Filter data

Max. operating pressure	10 bar
Max. operating temperature:	100 °C
Materials:	- Housing and cover: St. 1.4571 - Internals: St. 1.4571/A2 - Bearing bushes: PTFE based - Seals: FPM (Viton) - Coiled cartridge: St. 1.4571 or 1.4571/Al (Δp max. 6 bar)
Cover fastening:	- 16x M24 hexagon screws - 16x M24 hexagon nuts
Connections and nominal diameters:	- A-inlet, B-outlet: DN100, DN125, DN150, DN200 - C-drain: DN50 - D-external pressure: G1 1/2 - E-backflush: DN50 - G-indicator: DN25 - All threaded holes acc. to DIN 3852 X - flanges acc. to EN 1092-1/11B1/PN 40
Drive shaft seal:	Lip seal with O-ring
Outside coating:	Synthetic resin primer, blue acc. to RAL 6007

Other types available on request!

Technical data is subject to change without notice

Motor data

Worm gear motor
Multi-range winding

V	Hz	kW	U/min	A
△ 230 ± 10%	50	0.18	4.26	1.3
⅄ 400 ± 10%	50	0.18	4.26	0.8
△ 255 ± 10%	60	0.20	5.1	1.3
⅄ 440 ± 10%	60	0.20	5.1	0.8

Protection class: IP55; insulation class F; output torque: 252 Nm

Type	W [mm]	X [mm]	Z [mm]	Volume [l]	Weight [kg]
AF 179123-.1.	1638	1232	860	239	460
AF 179133-.1.	1978	1572	1200	319	500
AF 179153-.1.	2318	1912	1540	399	540
AF 179163-.1.	2658	2252	1880	479	580

Nominal diameter	Dimension A [mm]
DN 200	165
DN 150	190
DN 125	205
DN 100	215

Optional:
- Ex protection acc. to ATEX 2014/34/EU
- Electrical components in Ex II 2G T3
- Mechanical design in Ex II 2G c T3

Differential pressure stability
Segmented elements (aluminium and stainless steel versions): 6 bar

4. Design and application

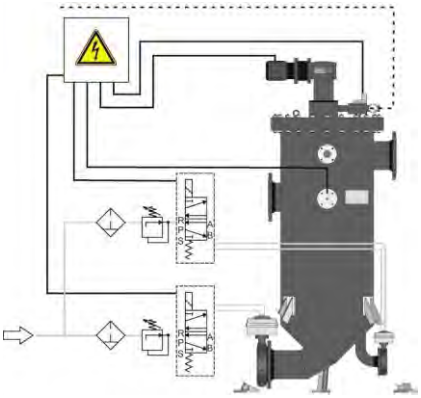
Cartridge type (see section 6)	Total surface in cm²	Gap width in µm / effective filter surface in cm²								
			10	20	30	40	60	80	100	
AF 1002013	2615		2129	2129	2129	2129	2129	2129	2129	
AF 1002113										

Recommended design

The table shows the filter surfaces for one filter cartridge.

For AF 17913.. Filter surface x 2
AF 17915.. Filter surface x 3
AF 17916.. Filter surface x 4

Cleaning and emptying



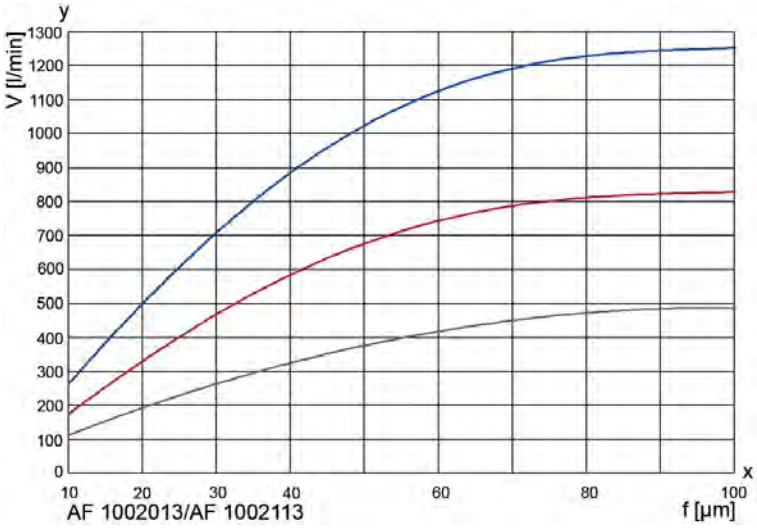
Fully automatic operation

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 a differential pressure of approximately 0.5 to 0.7 bar. The cleaning motor is operated for around 14 s (about one turn of the filter cartridge). The external pressure and cleaning valves remain open for this period. This suffices to clean the filter thoroughly. The drain valve is opened in order to empty the filter. Depending on the residue concentration, this can either take place directly after cleaning or be time or cycle controlled. The opening time of the drain valve is 2 to 3 s.

Refer to the Instruction Manual for further information

Filtration Group's team of specialists will be pleased to assist in any way. Tests can be carried out in the absence of reliable evaluation criteria.

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

1 mm²/s
33 mm²/s
100 mm²/s

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

6. Type number key

Type number key with selection example for AF 179143-711-53660/S4

Size

AF 17912 1 x 300x350										No. of steps x diameter x length [mm]
AF 17913 2 x 300x350										No. of steps x diameter x length [mm]
AF 17915 3 x 300x350										No. of steps x diameter x length [mm]
AF 17916 4 x 300x350										No. of steps x diameter x length [mm]
	Cleaning drive									
	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								
		6 DN100								
		7 DN125								
		8 DN150								
		9 DN200								
			Permissible operating pressure in bar (housing/cover)							
			1 PN10							
				Material Seal FPM, bearing PTFE						
				1 Standard; aluminium, nodular cast iron; steel						
				2 Stainless steel 1.4571/1.4581						
				3 Standard; steel, internals stainless steel 1.4301/1.4571						
					Differential pressure indicator and gauge					
					5 PiS 3175, digital Δp gauge, 2 pressure transmitters settable from 0 to 16 bar					
						Valves and control throttles				
						3 External pressure valve for liquid, 24 V G1½				
						4 External pressure valve for liquid, 230 V G1½				
						8 Like 3 but with P3 control throttle and P3 gauge				
						9 Like 4 but with P3 control throttle and P3 gauge				
							Drain valve			
							2 Ball valve, electropneumatic 24 V DC			
							3 Ball valve, electropneumatic 230 V AC			
							4 Ball valve, electric 24 V DC			
							5 Ball valve, electric 230 V AC			
								Cleaning valve		
								6 Flap, electropneumatic 24 V/10 bar		
								7 Flap, electropneumatic 230 V/10 bar		
								8 Flap, electric 24 V/10 bar		
								9 Flap, electric 230 V/10 bar		
									Optional features	
									0 Without/special version	
AF 17913	**3**	**- 7**	**1**	**1**	**-5**	**3**	**2**	**6**	**0**	**-XXXX (end number for special version)/S4**

*Ergänzung Endnummer:

S2F welded, Version 2, internal pressure
S2F welded, Version 2, external pressure
S4F welded, Version 4, internal pressure
S4F welded, Version 4, external pressure

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
Other numbers	On request

Type number key with selection example for coiled or welded cartridges for AF 1002013-006

Series

AF 100 Segmented element with topmesh

	Material		**Inner Core**	**Filter medium**	**Clamp rings**		
	Segmented element						
	20		Al/hc	1.4571	1.4571		
	21		1.4571	1.4571	1.4571		

Overall length Diameter x length in mm

13 300 x 350

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

001	10 µm	**004**	40 µm	**010**	100 µm
002	20 µm	**006**	60 µm		
003	30 µm	**008**	80 µm		

Other filter ratings on request

AF 100	**20**	**13**	**-006**

7. Spare parts

No.	Designation	Material no.	
		FPM/C steel	**PTFE/VA**
1	Bush kit		70310285
2	Seal kit (complete)	70310287	
3	Backflush channel moulding outside		70310292
4	Backflush channel moulding inside		76364053
5	Filter 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.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70358906.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Process filtration
PiP

Elements for bag filter housings

1. Features

The Filtration Group series of bag filter replacement elements are designed in two different styles. They can be used without changing the bag filter housings. After removing the bag filter the Filtration Group bag replacement elements can be mounted, immediately. The advantage of the Filtration Group bag replacement elements:

- high dirt holding capacity because of pleated elements with large filter surface area
- filtration of small particles < 25 µm

Independent of the selected type of bag replacement element you receive best Filtration Group quality without expensive reconstruction.

Please contact us if you have a requirement for something you have not found in our regular program.

2. Specifications

2.1 Bag Filter Replacement Type 1

The Filtration Group high quality element is used instead of the filter bag. The flow is from inside to outside.

2.2 Bag Filter Replacement Type 2

In this type of construction the bag replacement element is mounted in an adapter of stainless steel instead of the bag in original housing. In this type of construction the bag replacement element is mounted in an adapter of stainless steel instead of the bag in original housing. The flow is as usual by Filtration Group from the outside to the inner side of the element. For changing the element the adapter is lifted out of the housing and can be cleaned very comfortably.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com

05/2019

Filters for industrial process technology
PiP K10

Cartridge filter housing

1. Features

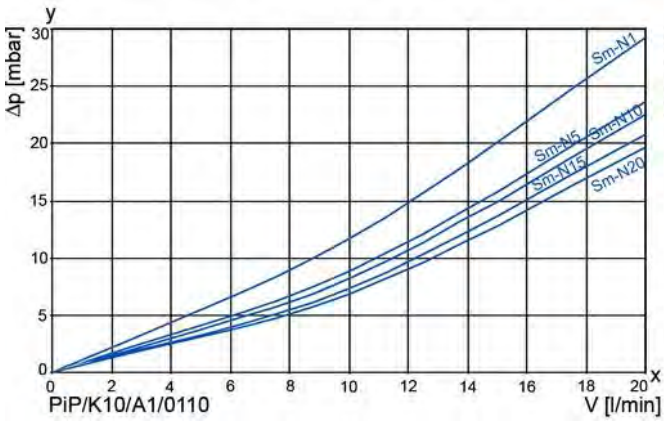
High-performance filters for modern process systems

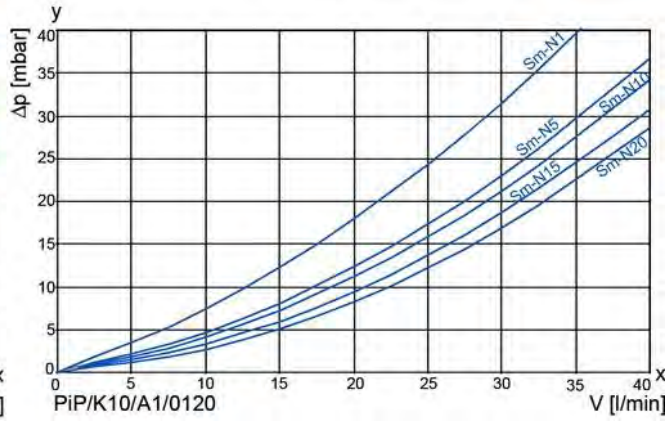
Filtration Group GmbH can call on a long history of experience in the production of high-quality filters and cartridges for hydraulic filtration. This know-how is also leveraged for other applications, such as the filtration of washing fluids for cleaning components.
Increasingly strict requirements are specified regarding the cleanliness of industrial parts - and thus the washing fluids.
The filters and filter materials are suitable for all popular washing media used to clean components.

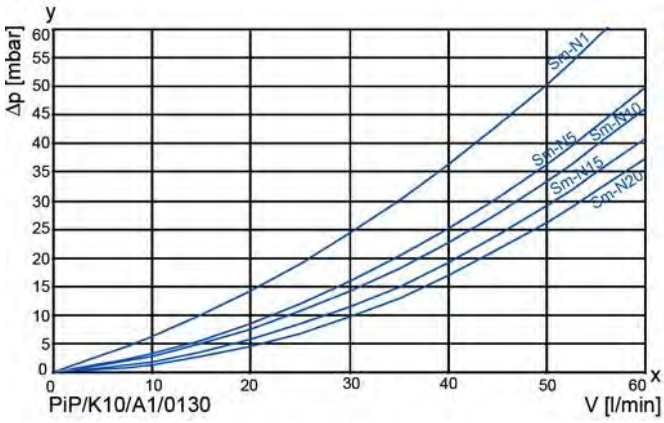
These filter housings are manufactured completely from stainless steel and installed in a wide variety of process filtration systems.

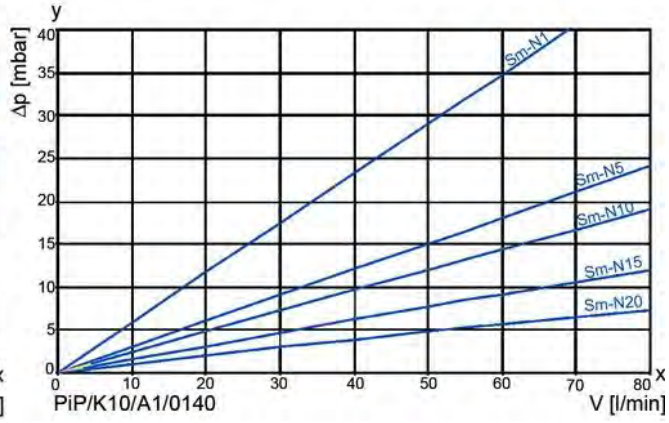
- Low space requirement thanks to compact construction
- Minimal pressure loss due to flow optimized design of components
- Visual/electrical/digital maintenance indicator
- DIN flanges
- Easy adaptation to higher dirt load by fitting a taller top housing part and longer cartridge - with no need to convert the system
- Equipped with high-efficient Sm-N filter cartridges
- High differential pressure stability and dirt holding capacity of the cartridges for optimum operating lifetime
- Guaranteed separation rates acc. to ISO 16889 multi-pass test
- Filter cartridges freely accessible when top part of housing is lifted off
- Worldwide distribution

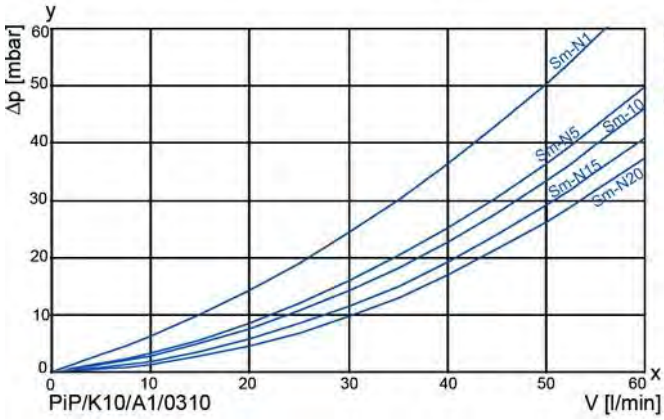
2. Flow rate/pressure drop curve complete filters with single or three-cartridge configuration

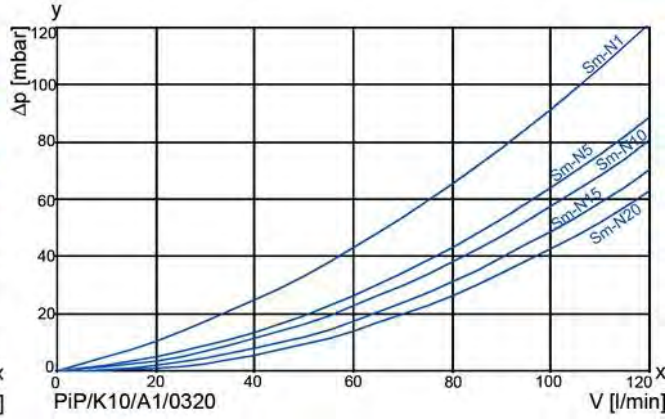


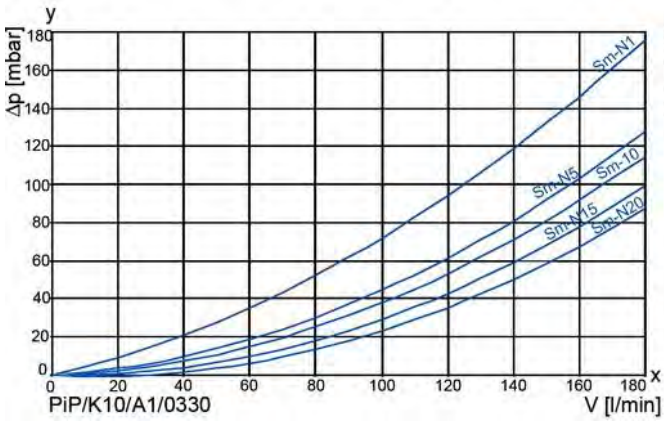


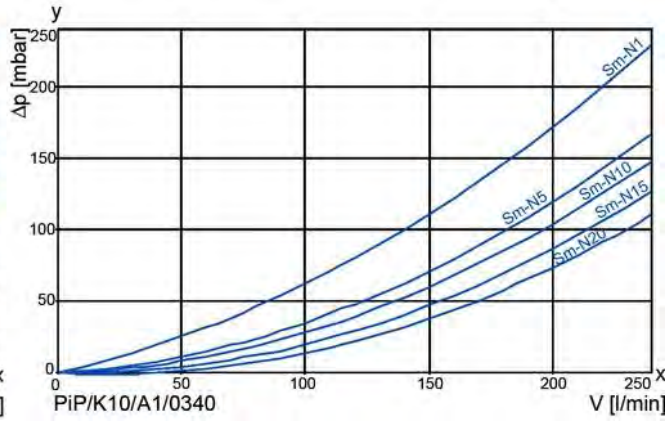








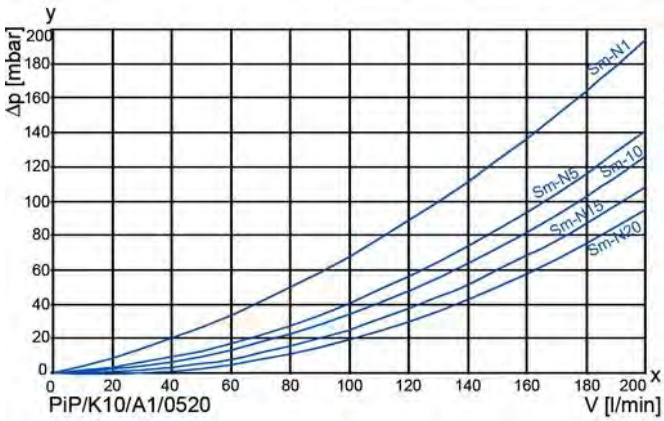


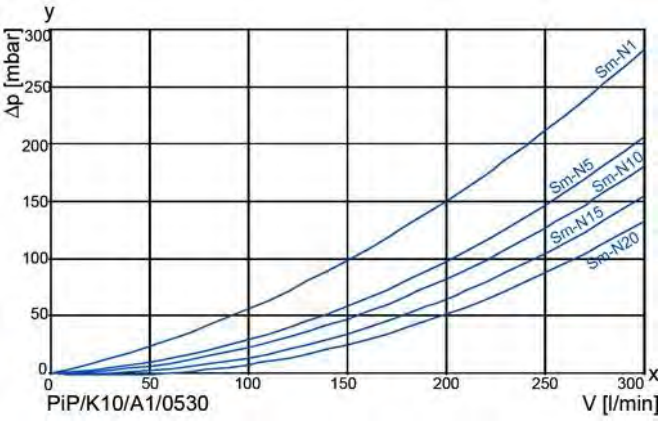


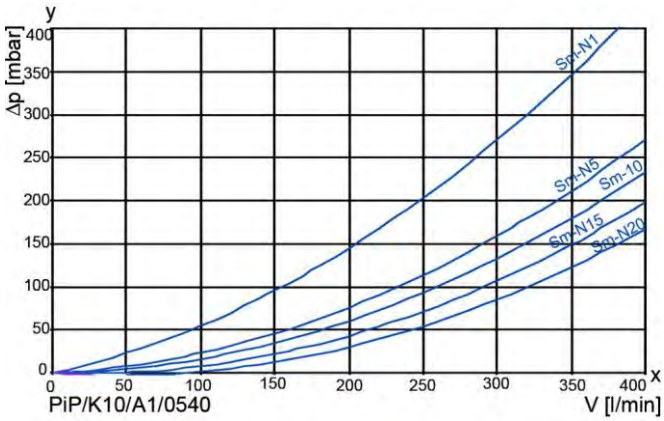
x = flow rate [l/min]

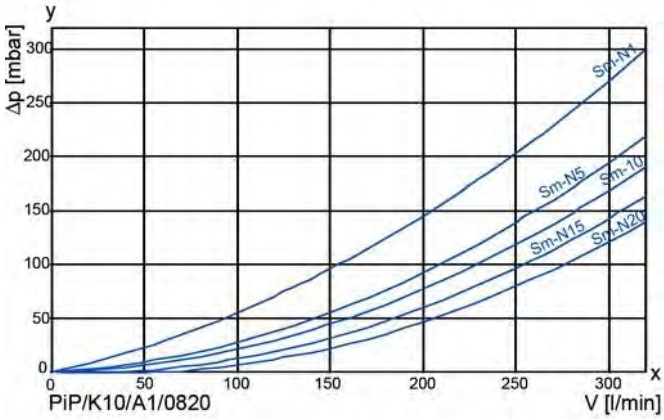
y = Δ p [mbar]

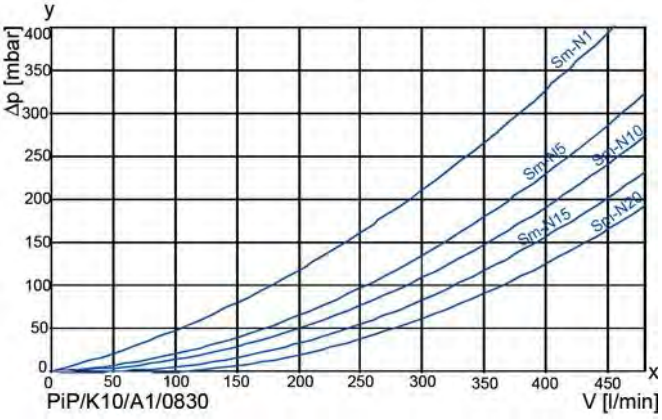
2. Flow rate/pressure drop curve complete filter with five or eight-cartridge configuration

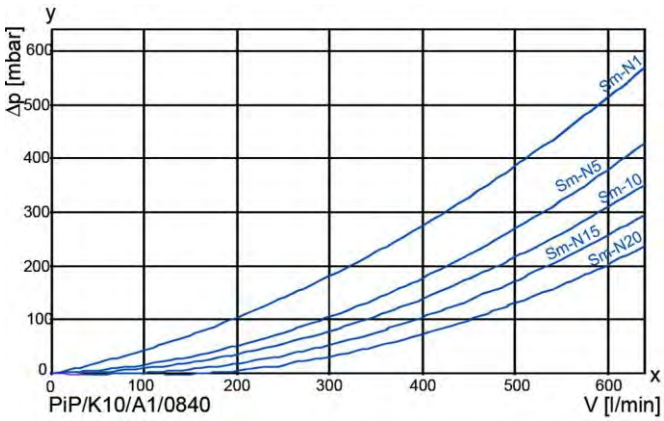








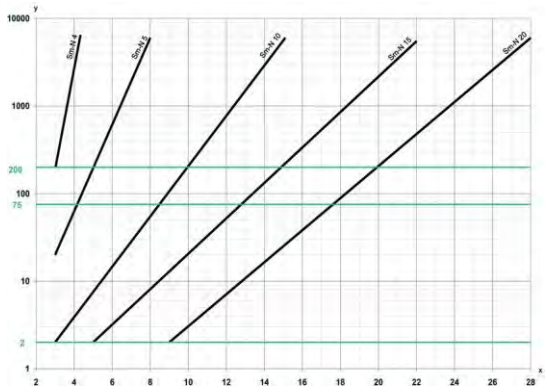




x = flow rate [l/min]

y = Δ p [mbar]

3. Separation grade characteristics



x = particle size [µm]
y = beta value

determined by multipass tests
calibration according to ISO 11171 (NIST)

4. Filter performance data

testet according to ISO 16889 (Multipass-Test)

Sm-N elements with max. Δ p 3 bar

Sm-N	1	$\beta_{4(C)}$	≥	3000
Sm-N	5	$\beta_{5(C)}$	≥	200
Sm-N	10	$\beta_{10(C)}$	≥	200
Sm-N	15	$\beta_{15(C)}$	≥	200
Sm-N	20	$\beta_{20(C)}$	≥	200

values guaranteed up to 2.2 bar differential pressure

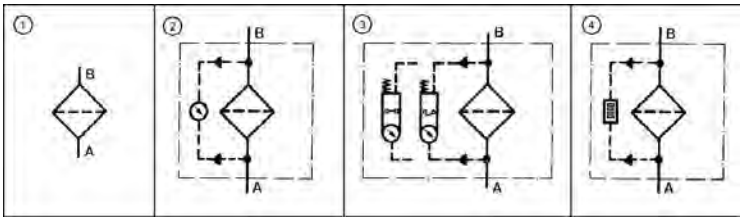
Degree of filtration acc. NIST-definition (ISO 11171); equivalent to ACFTD-definition (ISO 4402:1991) ≤ 1 µm

5. Quality assurance

Filtration Group GmbH filters and filter elements are produced according to the following international standards:

Norm	Designation
DIN ISO 2941	Hydraulic fluid power - filter elements - verification of collapse/burst resistance
DIN ISO 2942	Hydraulic fluid power - filter elements - verification of fabrication integrity
DIN ISO 2943	Hydraulic fluid power - filter elements - verification of material compatibility with fluids
DIN ISO 3723	Hydraulic fluid power - filter elements - method for end load test
DIN ISO 3724	Hydraulic fluid power - filter elements - verification of flow fatigue characteristics
ISO 3968	Hydraulic fluid power-filters-evaluation of pressure drop versus flow characteristics
ISO 10771.1	Fatigue pressure testing of metal containing envelopes in hydraulic fluid applications
ISO 16889	Hydraulic fluid power filters-multipass method for evaluation filtration performance of a filter element

6. Symbols



7. Type number key and order numbers

7.1 Type number key PiP filter housings

Type

PiP Filter for industrial process technology

Design

K10 Filter housing, max. 10 bar operating pressure

Housing lock

F Bracket, flat-gasket DIN 32676

O Bracket, o-ring seal

Cartridge spigot

A Double o-ring (SOE 222)

B Bayonet, double o-ring (SOE 226)

Cartridge type

0 Open at one end (SOE) without centre point

1 Open at one end(SOE) with centre point

No. of cartridges

01 1 cartridge

03 3 cartridges

05 5 cartridges

08 8 cartridges

Cartridge length

10 10 "

20 20 "

30 30 "

40 40 "

Connection

G Flange DIN EN 1092-1

M Thread

Housing fixing

F Tri-pod

S Bracket

H Support angle

Maintenance indicator

010 without

068 visual

069 electrical

161 digital

PiP/	**K10**	**F/**	**A-**	**1/**	**03**	**20/**	**G/**	**F-**	**069**	**Example for ordering**

7.2 Order numbers PiP filter housings

Nominal size NG [l/min]	No. of cartridges	Order number	Type	① with cavity for indicator	② with visual indicator	③ with electr. indicator	④ with digital in-dicator
25	1	70340535	PiP/K10F/A-1/0110/G/H-010	■			
		70330162	PiP/K10F/A-1/0110/G/H-068		■		
		70330201	PiP/K10F/A-1/0110/G/H-069			■	
		70330202	PiP/K10F/A-1/0110/G/H-161				■
		70340602	PiP/K10F/A-1/0110/M/H-010	■			
		70340604	PiP/K10F/A-1/0110/M/H-068		■		
		70340605	PiP/K10F/A-1/0110/M/H-069			■	
		70340606	PiP/K10F/A-1/0110/M/H-161				■
50	1	70340536	PiP/K10F/A-1/0120/G/H-010	■			
		70330163	PiP/K10F/A-1/0120/G/H-068		■		
		70330203	PiP/K10F/A-1/0120/G/H-069			■	
		70330204	PiP/K10F/A-1/0120/G/H-161				■

When filter with non indicator configuration is selected, the collapse pressure of the element must not be exceeded.

7.2 Order numbers PiP filter housings							
Nominal size NG [l/min]	No. of cartridges	Order number	Type	① with cavity for indicator	② with visual indicator	③ with electr. indicator	④ with digital in-dicator
75	1	70340537	PiP/K10F/A-1/0130/G/F-010	■			
		70330165	PiP/K10F/A-1/0130/G/F-068		■		
		70330206	PiP/K10F/A-1/0130/G/F-069			■	
		70330207	PiP/K10F/A-1/0130/G/F-161				■
100	1	70340538	PiP/K10F/A-1/0140/G/F-010	■			
		70330167	PiP/K10F/A-1/0140/G/F-068		■		
		70330208	PiP/K10F/A-1/0140/G/F-069			■	
		70330209	PiP/K10F/A-1/0140/G/F-161				■
75	3	70340540	PiP/K10F/A-1/0310/G/F-010	■			
		70330168	PiP/K10F/A-1/0310/G/F-068		■		
		70330210	PiP/K10F/A-1/0310/G/F-069			■	
		70330211	PiP/K10F/A-1/0310/G/F-161				■
150	3	70340541	PiP/K10F/A-1/0320/G/F-010	■			
		70330169	PiP/K10F/A-1/0320/G/F-068		■		
		70330212	PiP/K10F/A-1/0320/G/F-069			■	
		70330213	PiP/K10F/A-1/0320/G/F-161				■
225	3	70340542	PiP/K10F/A-1/0330/G/F-010	■			
		70330173	PiP/K10F/A-1/0330/G/F-068		■		
		70330215	PiP/K10F/A-1/0330/G/F-069			■	
		70330216	PiP/K10F/A-1/0330/G/F-161				■
300	3	70340543	PiP/K10F/A-1/0340/G/F-010	■			
		70330174	PiP/K10F/A-1/0340/G/F-068		■		
		70330217	PiP/K10F/A-1/0340/G/F-069			■	
		70330218	PiP/K10F/A-1/0340/G/F-161				■
250	5	70340545	PiP/K10F/A-1/0520/G/F-010	■			
		70330175	PiP/K10F/A-1/0520/G/F-068		■		
		70330219	PiP/K10F/A-1/0520/G/F-069			■	
		70330220	PiP/K10F/A-1/0520/G/F-161				■
375	5	70340546	PiP/K10F/A-1/0530/G/F-010	■			
		70330176	PiP/K10F/A-1/0530/G/F-068		■		
		70330221	PiP/K10F/A-1/0530/G/F-069			■	
		70330222	PiP/K10F/A-1/0530/G/F-161				■
500	5	70340547	PiP/K10F/A-1/0540/G/F-010	■			
		70330177	PiP/K10F/A-1/0540/G/F-068		■		
		70330223	PiP/K10F/A-1/0540/G/F-069			■	
		70330224	PiP/K10F/A-1/0540/G/F-161				■

When filter with non indicator configuration is selected, the collapse pressure of the element must not be exceeded.

7.2 Order numbers PiP filter housings

Nominal size NG [l/min]	No. of cartridges	Order number	Type	① with cavity for indicator	② with visual indicator	③ with electr. indicator	④ with digital in-dicator
400	8	70340548	PiP/K10F/A-1/0820/G/F-010	■			
		70330178	PiP/K10F/A-1/0820/G/F-068		■		
		70330225	PiP/K10F/A-1/0820/G/F-069			■	
		70330226	PiP/K10F/A-1/0820/G/F-161				■
600	8	70340549	PiP/K10F/A-1/0830/G/F-010	■			
		70330179	PiP/K10F/A-1/0830/G/F-068		■		
		70330227	PiP/K10F/A-1/0830/G/F-069			■	
		70330228	PiP/K10F/A-1/0830/G/F-161				■
800	8	70340550	PiP/K10F/A-1/0840/G/F-010	■			
		70330180	PiP/K10F/A-1/0840/G/F-068		■		
		70330229	PiP/K10F/A-1/0840/G/F-069			■	
		70330230	PiP/K10F/A-1/0840/G/F-161				■

When filter with non indicator configuration is selected, the collapse pressure of the element must not be exceeded.

7.3 Order numbers PiP filter elements*

Nominal size NG [l/min]	recommended volume flow [l/min]	Order number	Type	Filter material	max. Δp [bar]	Filter surface [cm²]
25	10	70323913	PiP/A-1/10-Sm-N 1	Sm-N 1	3	2580
	15	70323950	PiP/A-1/10-Sm-N 5	Sm-N 5		
	20	70323970	PiP/A-1/10-Sm-N 10	Sm-N 10		
	23	70323983	PiP/A-1/10-Sm-N 15	Sm-N 15		
	25	70324006	PiP/A-1/10-Sm-N 20	Sm-N 20		
50	20	70324081	PiP/A-1/20-Sm-N 1	Sm-N 1	3	5270
	30	70324087	PiP/A-1/20-Sm-N 5	Sm-N 5		
	40	70324094	PiP/A-1/20-Sm-N 10	Sm-N 10		
	46	70324099	PiP/A-1/20-Sm-N 15	Sm-N 15		
	50	70324103	PiP/A-1/20-Sm-N 20	Sm-N 20		
75	30	70324106	PiP/A-1/30-Sm-N 1	Sm-N 1	3	8270
	45	70324466	PiP/A-1/30-Sm-N 5	Sm-N 5		
	60	70324479	PiP/A-1/30-Sm-N 10	Sm-N 10		
	69	70324486	PiP/A-1/30-Sm-N 15	Sm-N 15		
	75	70324490	PiP/A-1/30-Sm-N 20	Sm-N 20		
100	40	70324563	PiP/A-1/40-Sm-N 1	Sm-N 1	3	11000
	60	70324575	PiP/A-1/40-Sm-N 5	Sm-N 5		
	80	70324589	PiP/A-1/40-Sm-N 10	Sm-N 10		
	92	70326186	PiP/A-1/40-Sm-N 15	Sm-N 15		
	100	70326194	PiP/A-1/40-Sm-N 20	Sm-N 20		

*A wider range of element types is available on request.

8. Technical specification

Housing

Housing material:	1.4403/1.4571 media contact 1.4301 no media contact
Seal material:	FPM/PTFE
Nominal/test pressure:	10/13 bar (145/188 psi)
Temperature range:	-10 to +90 °C (other temperature ranges on request)
Maintenance indicator setting:	Δ p 2.2 $\pm$ 0,3 bar

Electrical data of electrical maintenance indicator

Max. voltage:	AC 250 V/DC 200 V
Max. current:	1 A
Contact load:	70 W
Type of protection:	IP 65 in inserted and secured status
Contact:	normally open/normally closed
Cable sleave:	M20x1.5

Electrical data of digital maintenance indicator

Max. voltage:	AC/DC 12 bis 32 V
Contact load approx.:	2 VA/W
Type of protection:	IP 65 acc. DIN EN 60529
Contacts:	2 floating relay contacts, programmable as normally open (NO) or normally closed (NC)
Connection:	2x plug connection M12

Technical data is subject to change without notice!

The switching function can be changed by turning the electric upper-part by 180° (normally closed contact or normally open contact). The state on delivery is a normally closed contact. By inductivity in the-direct current circuit the use of suitable protection circuit should be-considered. Further maintenance indicator details and designs are available in the maintenance indicator data sheet. Further indicator details about digital maintenance indicator are available in the maintenance indicator data sheet or manual instruction PiS 3170.

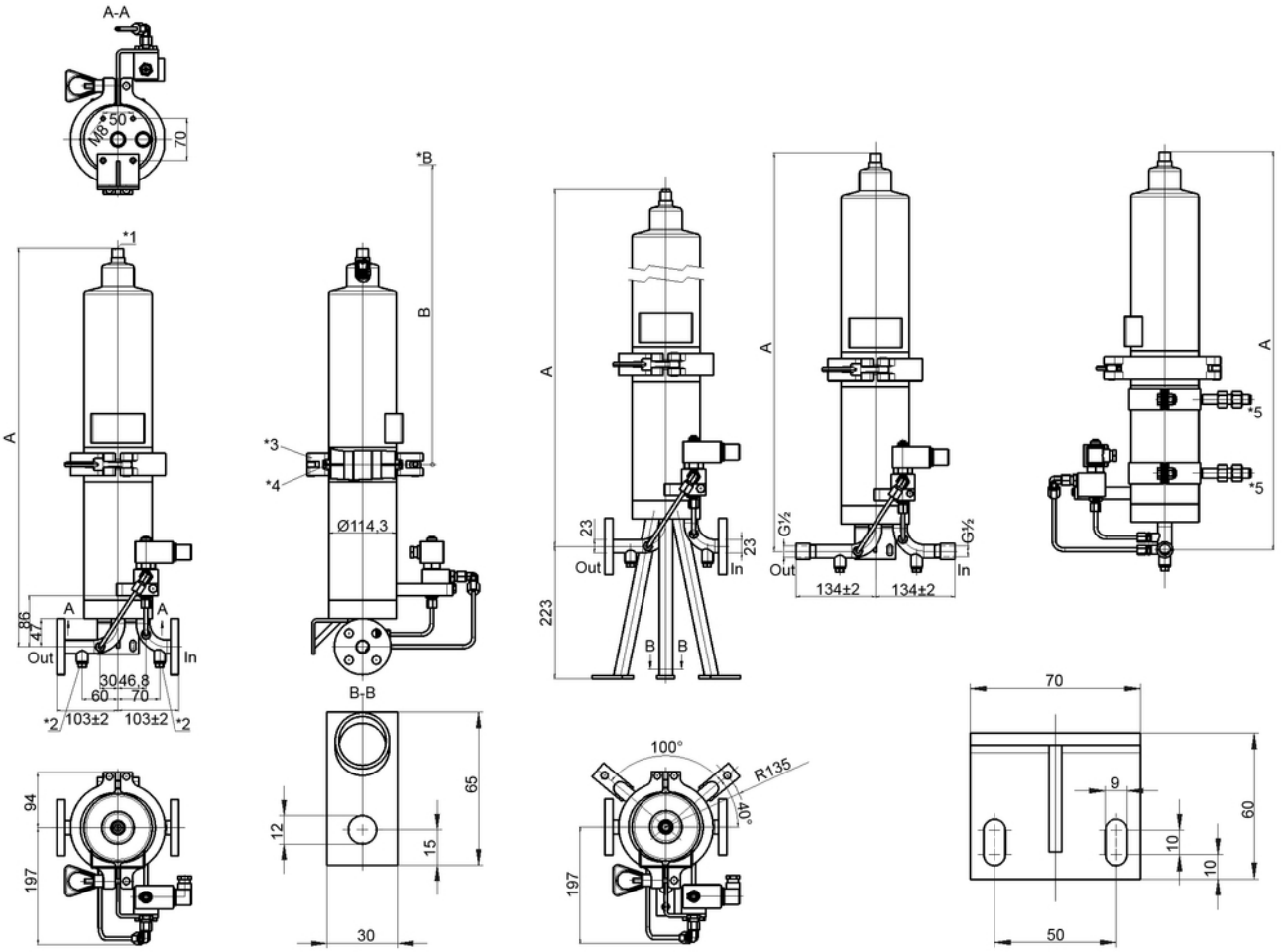
We draw attention to the fact that all values indicated are aver-agevalues and do not always occur in specific cases of applica-tion. Ourproducts are continually being further developed. Values, dimensi-ons and weights can change as a result of this. Our special-ized de-partment will be pleased to offer you advice.

We recommend you to contact us concerning applications of our fil-ters in areas governed by the EU Directive 94/9 EC (ATEX 95). Thestandard version can be used for liquids based on mineral oil (cor-responding to the fluids in Group 2 of Directive 97/23 EC Article 9).If you consider to use other fluids please contact us for additional-support.

The filter housings (pressure equipment) in standard design accord-ing pressure equipment-directive 97/23/EG are applicable for
a) fluids whose vapour pressure comes up to max. 0.5 bar above the standard atmospheric pressure (1013 mbar) at the permissible temperature (art. 3/1.1/b).
b) fluids of liquid group 2 (art.9) with max. 90 °C.
Filter design and production is made according pressure equip-ment-directive 97/23/EG art. 3, paragraph 3.
For this kind of filter housings, no CE-conformity declaration accord-ing to 97/23/EG can be issued.

The standard design can be used for all current cleaning fluids in the process technology. This contains the most hydrous, neutral, basic, acid and hydrocarbon cleaners. With amine-containing cleaners, the exact operating conditions (concentration as well as temperature) have to be clarified in advance. Other applications and media only available on request and if necessary after laboratory investigation.

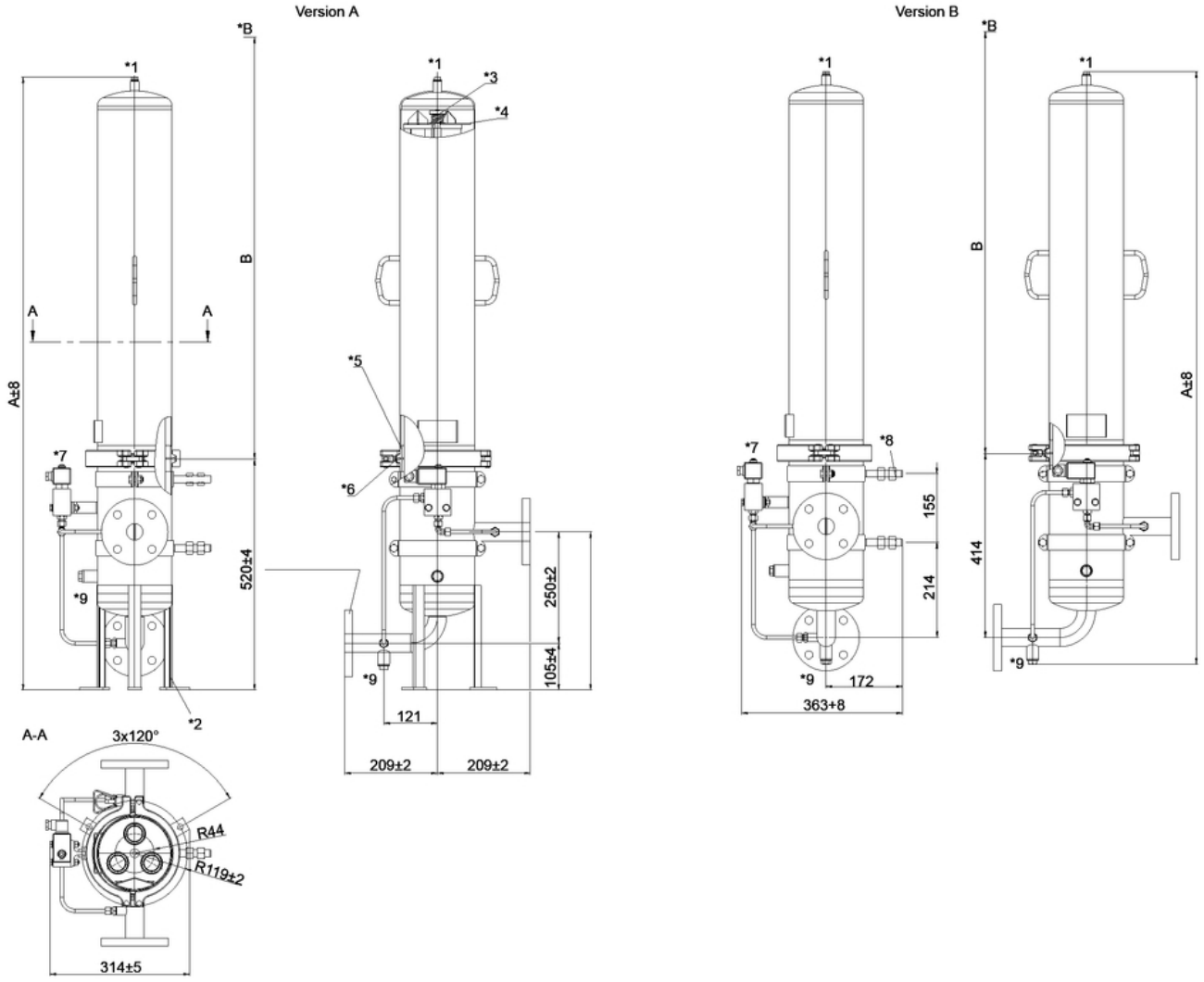
9. Dimensions



All dimensions in mm.

Type	A	B
PiP/K10F.../0110/...	485	225
PiP/K10F.../0120/...	721	690
PiP/K10F.../0130/...	1216	1235
PiP/K10F.../0140/...	1468	1735

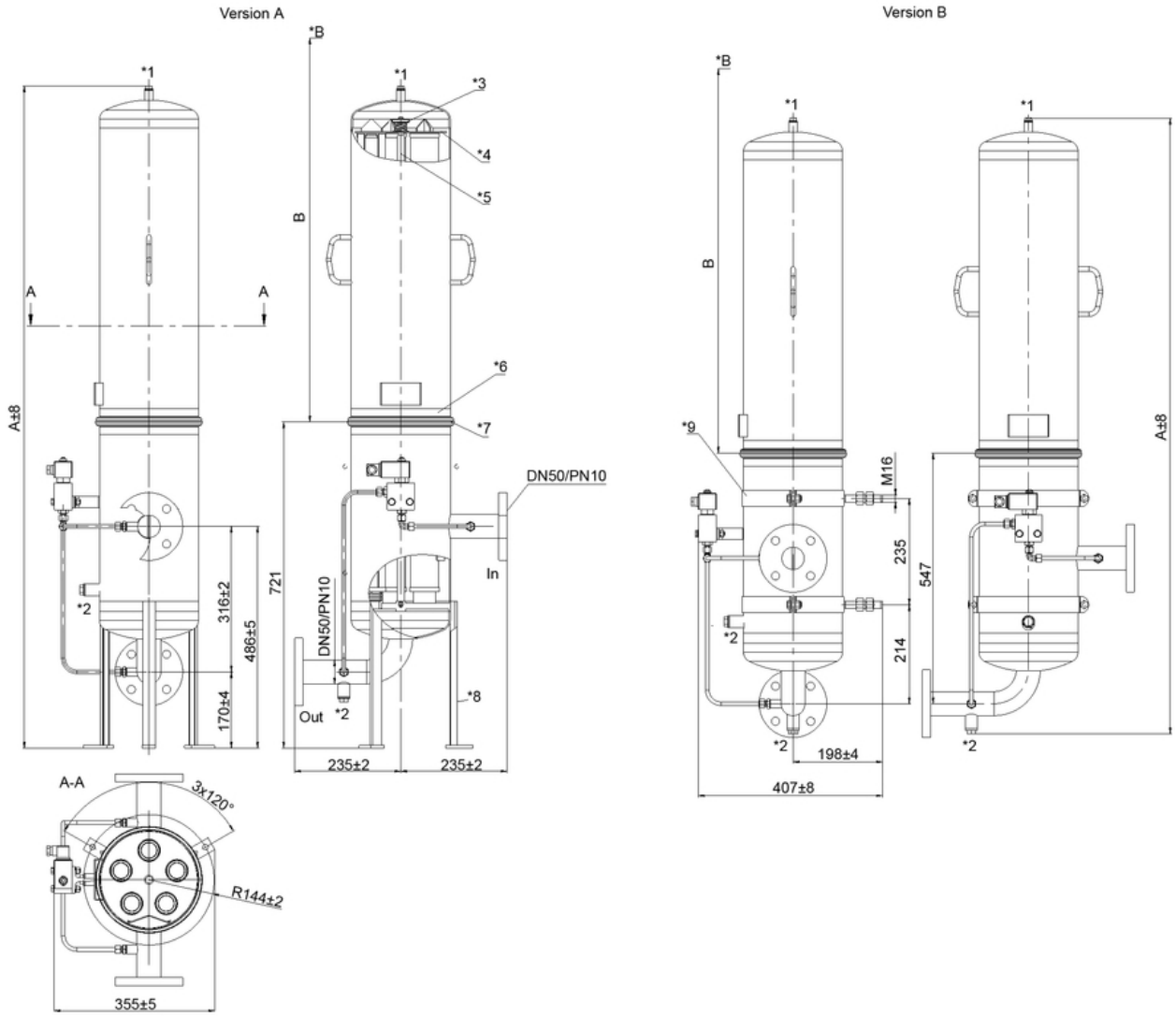
In = inlet
Out = oulet
*B = height required for element removal
*1 = vent screw G¼
*2 = drain screw G¼
*3 = housing flange
*4 = sealing and bracket
*5 = fixing optional



All dimensions in mm.

	Version A		Version B	
Type	**A**	**B**	**A**	**B**
PiP/K10F/.../0310/...	624	306	576	306
PiP/K10F/.../0320/...	857	542	809	542
PiP/K10F/.../0330/...	1129	814	1081	814
PiP/K10F/.../0340/...	1381	1066	1333	1066

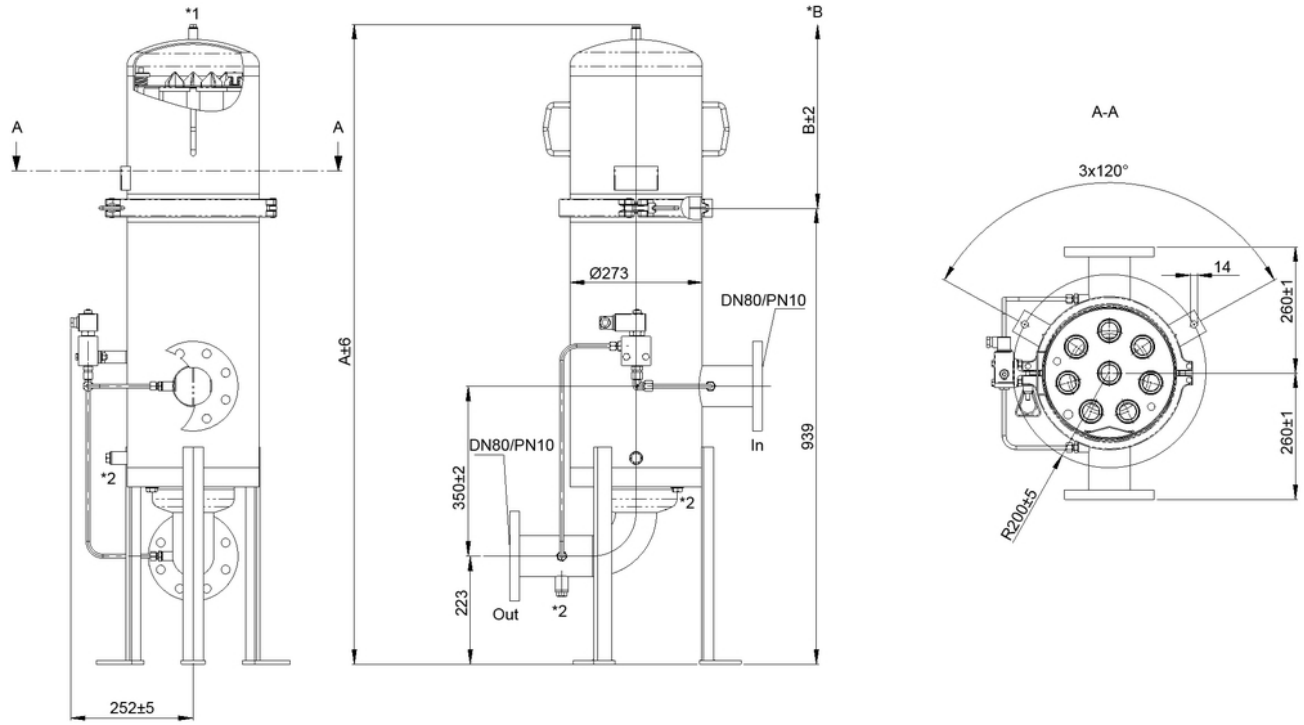
In = inlet
Out = outlet
*B = height required for element removal
*1 = vent screw G¼
*2 = fixing
*3 = clamping screw
*4 = element holder
*5 = housing flange
*6 = sealing and bracket
*7 = maintenance indicator
*8 = fixing variable ±15
*9 = drain screw G½



All dimensions in mm.

	Version A		Version B	
Type	**A**	**B**	**A**	**B**
PiP/K10F/.../0520/...	914	542	772	542
PiP/K10F/.../0530/...	1213	814	1044	814
PiP/K10F/.../0540/...	1465	1066	1296	1066

In = inlet
Out = outlet
*B = height required for element removal
*1 = vent screw G¼
*2 = drain screw G½
*3 = clamping screw
*4 = element holder
*5 = distance piece
*6 = housing flange
*7 = sealing and bracket
*8 = fixing
*9 = fixing variable ±15



All dimensions in mm.

Type	A	B
PiP/K10F/.../0820/...	1070	550
PiP/K10F/.../0830/...	1310	815
PiP/K10F/.../0840/...	1565	1155

In = inlet
Out = outlet
*B = height required for element removal

*1 = vent screw G¼
*2 = fixing

10. Installation, operating and maintenance instructions

10.1 Filter installation

When installing the filter make sure that sufficient space is available to remove filter element and filter housing. The maintenance indicator must be visible.

10.2 Connecting the electrical maintenance indicator

1. The electrical indicator is connected via a 2-pole appliance plug according to DIN EN 175301-803 with poles marked 1 and 2. The electrical section can be inverted to change from normally open position to normally closed position or vice versa (see data sheet PiS 3192/2.2).
2. Filter with a digital differential gauge and analog signal outlet, can be integrated into an existing system control. The programming of the PiS 3170 has to be made according to parameter sheet enclosed, in order to ensure an element replacement at 2.2 bar(see data sheet/manual instruction PiS 3170).

10.3 When should the filter element be replaced?

1. Filters equipped with visual and electrical maintenance indicator:
   During cold starts, the indicator may give a warning signal. Press the red button of the visual indicator once again only after operating temperature has been reached. If the red button immediately pops up again and/or the electrical signal has not switched off after reaching operating temperature, the filter element must be replaced.
2. Filter with a digital differential gauge, analogue signal outlet and switch contact:
   The signal for element replacement can be displayed via the switch contact or the analog signal output and a system control unit.
3. Filters without maintenance indicator:
   The filter element should be replaced when a differential pressure of 2.2 bar is reached. Afterwards follow instructions of the manufacturer.
4. Please always ensure that you have original Filtration Group GmbH spare elements in stock: Disposable elements (Sm-N) cannot be cleaned.

10.4 Element replacement

1. Stop system and relieve filter from pressure.
2. Discharge the filter housing completely.
3. Open clamps or black flange screws.
4. Remove cover carefully.
5. With filter housings with more cartridge configuration, loose and remove the elements' holding plate/fixing.
6. Pull the filter element out of its spigot by turning and light listing.
7. Make sure that the order number on the spare element corresponds to the order number of the filter name-plate.
8. For insertion of the new elements, lightly bathe the o-rings with the medium to be filtered.
9. Attach and fix the elements' holding plate/fixing.
10. Check O-ring on the filter housing for damage. Replace, if necessary.
11. Attach the cover carefully and close with the clamp or with black flange tighten the screws.
12. Close the drain plug and vent the filter completely.
13. After venting, check the housing on leak tightness.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 66-0
Fax +49 7941 66-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70340388.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Process filtration
PiP

Pleated cartridges

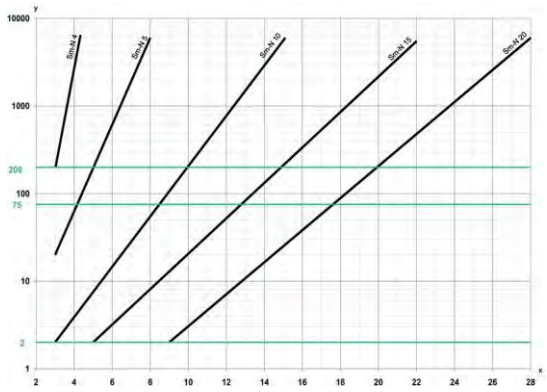
1. Features

Filtration Group GmbH pleated cartridges of the PiP-series are high-efficient Sm-N pleated cartridges for process filtration. These cartridges are used for lots of demanding applications in the industrial production process. They are especially suitable for the filtration of cleaning fluids in the process technology. Furthermore, the PiP-series can be used for water treatment as well as for filtration of low-viscosity oils and emulsions. With this particular filter series for the industrial process filtration, Filtration Group GmbH offers a depth filter with a great efficient filter surface as well as a collection efficiency.

Characteristics

- High-efficient Sm-N cartridges
- Standard lengths: 10", 20", 30" and 40"
- High differential pressure stability and dirt holding capacity for optimum operating lifetime
- Guaranteed separation rates acc. to ISO 16889 multi-pass test
- Worldwide distribution

2. Separation grade characteristics



x = particle size [µm]
y = beta value

determined by multi-pass tests (ISO 16889)
calibration according to ISO 11171 (NIST)

3. Filter performance data

testet according to ISO 16889 (Multipass-Test)
Sm-N with max. Δ p 3 bar

		$ß_{x(C)}$ 200	$ß_{x(C)}$ 1000	$ß_{x(C)}$ 3000
Sm-N 1	1	≤ 4 µ m	≤ 4 µ m	~ 4 µ m
Sm-N 5	5	5 µ m	~ 6,5 µ m	~ 7,5 µ m
Sm-N 10	10	10 µ m	~ 12,5 µ m	~ 14 µ m
Sm-N 15	15	15 µ m	~ 18,5 µ m	~ 20,5 µ m
Sm-N 20	20	20 µ m	~ 23,5 µ m	~ 26,5 µ m

values guaranteed up to 2.2 bar differential pressure

Degree of filtration acc. NIST-definition (ISO 11171) equivalent to ACFTD definition (ISO 4402:1991) ≤ 1 µ m.

4. Quality assurance

Filtration Group GmbH filters and filter elements are produced according to the following international standards:

Norm	Designation
DIN ISO 2941	Hydraulic fluid power - filter elements - verification of collapse/burst resistance
DIN ISO 2942	Hydraulic fluid power - filter elements - verification of fabrication integrity
DIN ISO 2943	Hydraulic fluid power - filter elements - verification of material compatibility with fluids
DIN ISO 3723	Hydraulic fluid power - filter elements - method for end load test
DIN ISO 3724	Hydraulic fluid power - filter elements - verification of flow fatigue characteristics
ISO 3968	Hydraulic fluid power-filters-evaluation of pressure drop versus flow characteristics
ISO 10771.1	Fatigue pressure testing of metal containing envelopes in hydraulic fluid applications
ISO 16889	Hydraulic fluid power filters-multipass method for evaluation filtration performance of a filter element

5. Type number key and order numbers

5.1 Type number key PiP pleated cartridges

Type							
PiP	Filter for industrial process technology						
	Design						
	KF	Pleated cartridge					
		Cartridge spigot					
		A	Double o-ring, SOE 222				
		B	Bayonet, double o-ring, SOE 226				
		C	Cross-groove, double o-ring, SOE				
		D	Flat seal, DOE				
			Cartridge type				
			0	Open at one end (SOE) without centre point			
			1	Open at one end (SOE) with centre point			
			2	Open at both ends (DOE)			
				Cartridge length			
				10	10"		
				20	20"		
				30	30"		
				40	40"		
					Filter material		
					Sm-N		
						Degree of filtration	
						1	1 µ m
						5	5 µ m
						10	10 µ m
						15	15 µ m
						20	20 µ m
PiP/	**KF/**	**A-**	**1/**	**10-**	**Sm-N**	**5**	**Example for ordering**

5.2 Order numbers PiP pleated crtridges

Nominal size NG [l/min]	Recomm. flow rate [l/min]	Order number	Type	Filter material	Δ p max. [bar]	Filter surface [cm²]
25	10	70329906	PiP/KF/A-0/10-Sm-N 1	Sm-N 1	**3**	**2580**
	15	70329913	PiP/KF/A-0/10-Sm-N 5	Sm-N 5		
	20	70329917	PiP/KF/A-0/10-Sm-N 10	Sm-N 10		
	23	70329919	PiP/KF/A-0/10-Sm-N 15	Sm-N 15		
	25	70329923	PiP/KF/A-0/10-Sm-N 20	Sm-N 20		
50	20	70329929	PiP/KF/A-0/20-Sm-N 1	Sm-N 1	**3**	**5270**
	30	70329936	PiP/KF/A-0/20-Sm-N 5	Sm-N 5		
	40	70329944	PiP/KF/A-0/20-Sm-N 10	Sm-N 10		
	46	70329948	PiP/KF/A-0/20-Sm-N 15	Sm-N 15		
	50	70329964	PiP/KF/A-0/20-Sm-N 20	Sm-N 20		
75	30	70329967	PiP/KF/A-0/30-Sm-N 1	Sm-N 1	**3**	**8270**
	45	70329973	PiP/KF/A-0/30-Sm-N 5	Sm-N 5		
	60	70329975	PiP/KF/A-0/30-Sm-N 10	Sm-N 10		
	69	70329977	PiP/KF/A-0/30-Sm-N 15	Sm-N 15		
	75	70329979	PiP/KF/A-0/30-Sm-N 20	Sm-N 20		
100	40	70329983	PiP/KF/A-0/40-Sm-N 1	Sm-N 1	**3**	**11000**.
	60	70329986	PiP/KF/A-0/40-Sm-N 5	Sm-N 5		
	80	70329929	PiP/KF/A-0/40-Sm-N 10	Sm-N 10		
	92	70330001	PiP/KF/A-0/40-Sm-N 15	Sm-N 15		
	100	70330004	PiP/KF/A-0/40-Sm-N 20	Sm-N 20		

5.2 Order numbers PiP pleated crtridges						
Nominal size NG [l/min]	**Recomm. flow rate [l/min]**	**Order number**	**Type**	**Filter material**	**Δ p max. [bar]**	**Filter surface [cm²]**
25	10	70323913	PiP/KF/A-1/10-Sm-N 1	Sm-N 1	**3**	**2580**
	15	70323950	PiP/KF/A-1/10-Sm-N 5	Sm-N 5		
	20	70323970	PiP/KF/A-1/10-Sm-N 10	Sm-N 10		
	23	70323983	PiP/KF/A-1/10-Sm-N 15	Sm-N 15		
	25	70324006	PiP/KF/A-1/10-Sm-N 20	Sm-N 20		
50	20	70324081	PiP/KF/A-1/20-Sm-N 1	Sm-N 1	**3**	**5270**
	30	70324087	PiP/KF/A-1/20-Sm-N 5	Sm-N 5		
	40	70324094	PiP/KF/A-1/20-Sm-N 10	Sm-N 10		
	46	70324099	PiP/KF/A-1/20-Sm-N 15	Sm-N 15		
	50	70324103	PiP/KF/A-1/20-Sm-N 20	Sm-N 20		
75	30	70324106	PiP/KF/A-1/30-Sm-N 1	Sm-N 1	**3**	**8270**
	45	70324466	PiP/KF/A-1/30-Sm-N 5	Sm-N 5		
	60	70324479	PiP/KF/A-1/30-Sm-N 10	Sm-N 10		
	69	70324486	PiP/KF/A-1/30-Sm-N 15	Sm-N 15		
	75	70324490	PiP/KF/A-1/30-Sm-N 20	Sm-N 20		
100	40	70324563	PiP/KF/A-1/40-Sm-N 1	Sm-N 1	**3**	**11000**
	60	70324575	PiP/KF/A-1/40-Sm-N 5	Sm-N 5		
	80	70324589	PiP/KF/A-1/40-Sm-N 10	Sm-N 10		
	92	70326186	PiP/KF/A-1/40-Sm-N 15	Sm-N 15		
	100	70326194	PiP/KF/A-1/40-Sm-N 20	Sm-N 20		
25	10	70314642	PiP/KF/B-0/10-Sm-N 1	Sm-N 1	**3**	**3100**
	15	70314644	PiP/KF/B-0/10-Sm-N 5	Sm-N 5		
	20	70329530	PiP/KF/B-0/10-Sm-N 10	Sm-N 10		
	23	70329590	PiP/KF/B-0/10-Sm-N 15	Sm-N 15		
	25	70329612	PiP/KF/B-0/10-Sm-N 20	Sm-N 20		
50	20	70314651	PiP/KF/B-0/20-Sm-N 1	Sm-N 1	**3**	**6250**
	30	70314652	PiP/KF/B-0/20-Sm-N 5	Sm-N 5		
	40	70329623	PiP/KF/B-0/20-Sm-N 10	Sm-N 10		
	46	70329634	PiP/KF/B-0/20-Sm-N 15	Sm-N 15		
	50	70329646	PiP/KF/B-0/20-Sm-N 20	Sm-N 20		
25	10	70329601	PiP/KF/D-2/10-Sm-N 1	Sm-N 1	**3**	**3140**
	15	70329606	PiP/KF/D-2/10-Sm-N 5	Sm-N 5		
	20	70329607	PiP/KF/D-2/10-Sm-N 10	Sm-N 10		
	23	70329608	PiP/KF/D-2/10-Sm-N 15	Sm-N 15		
	25	70329610	PiP/KF/D-2/10-Sm-N 20	Sm-N 20		
50	20	70307272	PiP/KF/D-2/20-Sm-N 1	Sm-N 1	**3**	**6380**
	30	70319962	PiP/KF/D-2/20-Sm-N 5	Sm-N 5		
	40	70319969	PiP/KF/D-2/20-Sm-N 10	Sm-N 10		
	46	70321386	PiP/KF/D-2/20-Sm-N 15	Sm-N 15		
	50	70329636	PiP/KF/D-2/20-Sm-N 20	Sm-N 20		

5.2 Order numbers PiP pleated crtridges						
Nominal size NG [l/min]	**Recomm. flow rate [l/min]**	**Order number**	**Type**	**Filter material**	**Δ p max. [bar]**	**Filter surface [cm²]**
75	30	70329637	PiP/KF/D-2/30-Sm-N 1	Sm-N 1	**3**	**9900**
	45	70314541	PiP/KF/D-2/30-Sm-N 5	Sm-N 5		
	60	70319303	PiP/KF/D-2/30-Sm-N 10	Sm-N 10		
	69	70320742	PiP/KF/D-2/30-Sm-N 15	Sm-N 15		
	75	70329638	PiP/KF/D-2/30-Sm-N 20	Sm-N 20		
100	40	70329701	PiP/KF/D-2/40-Sm-N 1	Sm-N 1	**3**	**13250**.
	60	70329702	PiP/KF/D-2/40-Sm-N 5	Sm-N 5		
	80	70329703	PiP/KF/D-2/40-Sm-N 10	Sm-N 10		
	92	70329704	PiP/KF/D-2/40-Sm-N 15	Sm-N 15		
	100	70329705	PiP/KF/D-2/40-Sm-N 20	Sm-N 20		

6. Technical specification

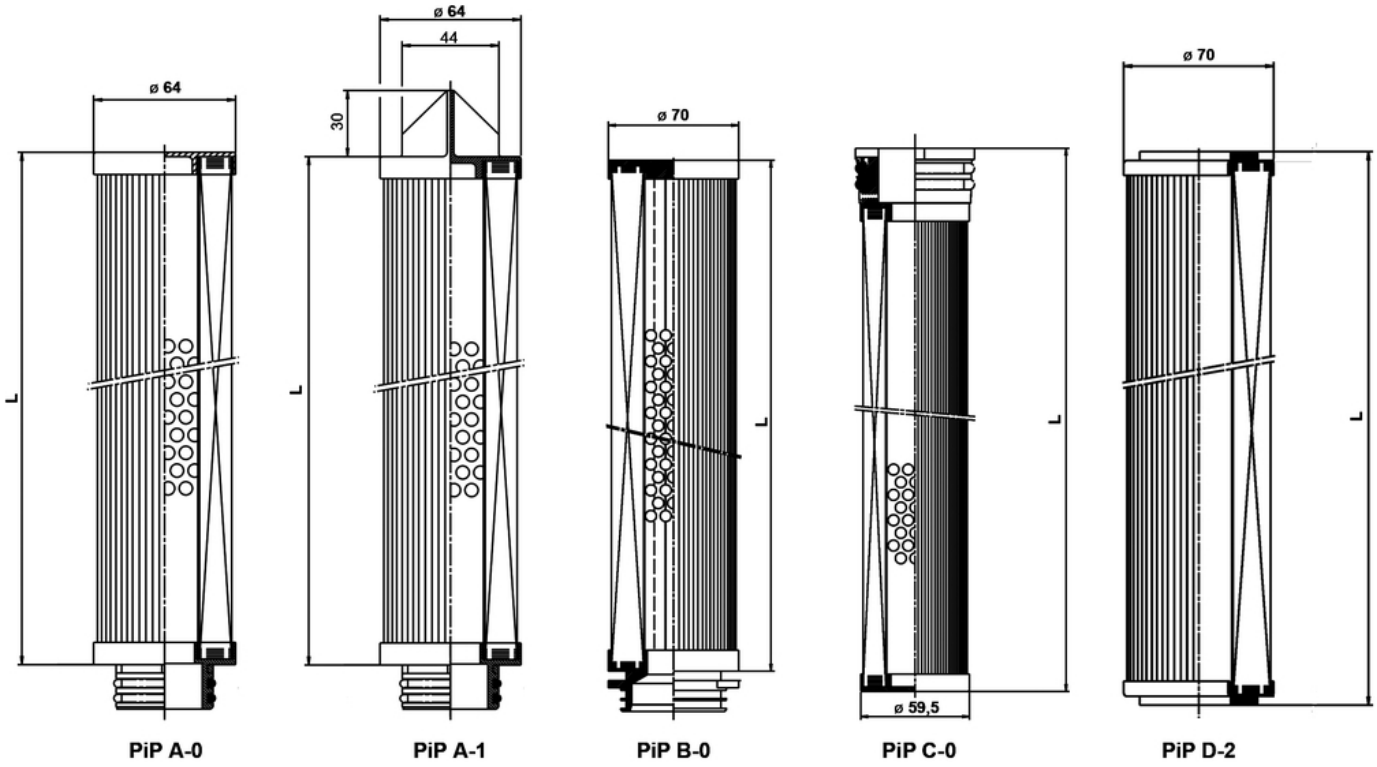
Material

End caps: PA/1.4571/1.4404
Seal material: FPM
Filter material: Micro glass fibre
Frames: 1.4301
Temperature range: 0 to + 80 °C (other ranges on request)
recommended. Δ p: up to 2.2 bar
max. Δ p: 3 bar

Technical data is subject to change without notice!

The standard type is suitable for all popular washing fluids used to clean components, including most aqueous, neutral, alkaline, acid and hydrocarbon cleaners. If an amine cleaner is used, the specific operating conditions (concentration and temperature) must be clarified beforehand. Furthermore, the pleated cartridges can be used for water treatment, low-viscosity oils and emulsions.
Other applications or media require prior consultation and possibly laboratory tests.
These cartridges are not cleanable!

7. Dimensions



Type	L [mm]
PiP/KF/A-0/10-Sm-N ...	256
PiP/KF/A-0/20-Sm-N ...	492
PiP/KF/A-0/30-Sm-N ...	764
PiP/KF/A-0/40-Sm-N ...	1016
PiP/KF/A-1/10-Sm-N ...	256
PiP/KF/A-1/20-Sm-N ...	492
PiP/KF/A-1/30-Sm-N ...	764
PiP/KF/A-1/40-Sm-N ...	1016
PiP/KF/B-0/10-Sm-N ...	254,5
PiP/KF/B-0/20-Sm-N ...	490,5
PiP/KF/C-0/30-Sm-N ...	793
PiP/KF/C-0/40-Sm-N ...	1045
PiP/KF/D-2/10-Sm-N ...	260
PiP/KF/D-2/20-Sm-N ...	501,5
PiP/KF/D-2/30-Sm-N ...	768
PiP/KF/D-2/40-Sm-N ...	1020

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70340343.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Topchange-Filter Series
PiP TC2

Features

Filter series for bag filter housings

Due to very high requirements for material durability and pressure stability combined with high separation performance, Filtration Group has further expanded its filtration expertise.

Bag filters are a tried-and-tested filtration system. However, when high separation rates are vital, cartridges make a better alternative.

Filtration Group Topchange filter elements allow you to combine the efficiency of cartridges with the benefits of filter bags while keeping your existing bag filter housing.

The PiP TC2 series consists of adapters for bag filter housings and absolute cartridge elements with a defined, high separation rate.

- Extremely efficient, inorganic filter material with protective membrane
- Progressive structure due to the graduated mesh size of the material
- Stainless steel wire mesh support ensures high rigidity
- Stainless steel inner tube provides high strength and pressure resistance
- High differential pressure stability and dirt holding capacity for maximum operating lifetime and high cost-effectiveness
- Filter ratings up to 1 µm absolute
- Guaranteed separation rates acc. to ISO 16889
- Quality filter, easy to service
- Worldwide distribution and service

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Simplex filter
EG1

With threaded connection, rated pressure up to 16 bar (232 psi)
Connection sizes: G3/4" to G2", cast design

1. Features

High-performance filters for modern systems

- Entry-level model among Filtration Group GmbH products
- Used as a protective or safety filter in shipping and industry
- Simple, robust design
- Compact design
- Minimal pressure drop through optimal flow design
- Elements with high differential pressure stability and dirt holding capacity
- Filter ratings from 25 to 5000 µm absolute, other ratings on request
- Suitable for use with fluids of all types
- Easy to service
- Worldwide distribution

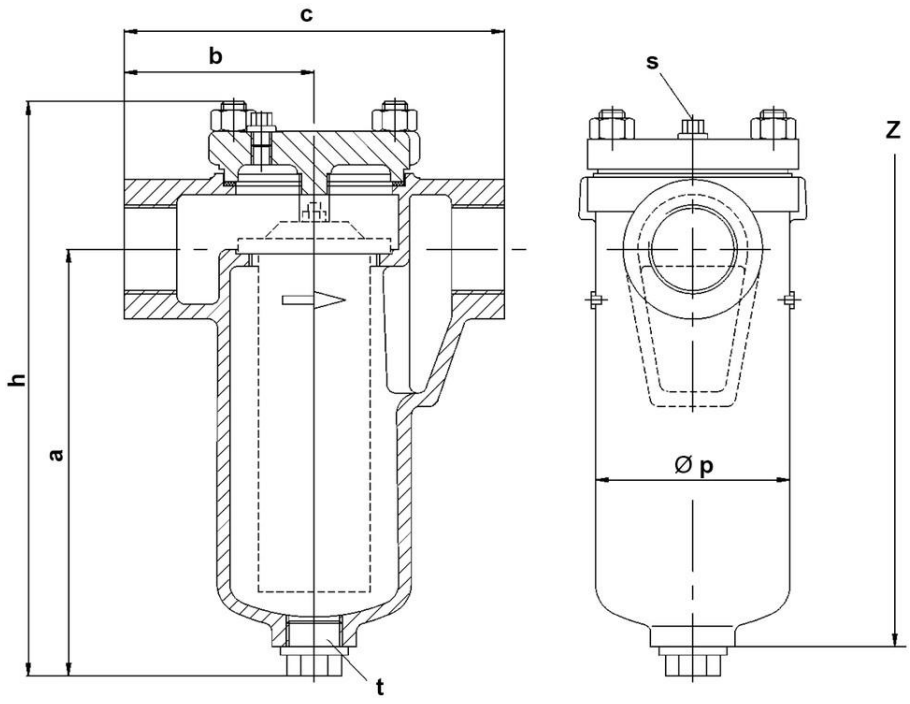
2. Operating principle

- The medium flows through the filter element (perforated, smooth or pleated) from the inside to the outside.
- Contaminants are trapped on the inside of the element.
- The filtration process is interrupted when a settable fouling threshold is reached.
- The filter is opened and the element removed for cleaning.
- Simplex filters require no maintenance apart from cleaning the filter elements and inspecting the seals.

3. Technical Data

Connection:	G¾“ to G2“
Material:	Nodular cast iron 40
Max. operating pressure:	16 bar
Test overpressure:	24 bar
Max. operating temperature:	120 °C
Filter element:	Screen basket (perforated, smooth or pleated)
Filter rating:	25 to 5000 µm absolute, other ratings on request

4. Dimensions



s = Vent
t = Drain
Z = Clearance required

All dimensions except "DN", "s" and "t" in mm.

Type	DN	a	b	c	h	Ø p	s	t	Z	Weight [kg]
AE45T210A02	G3/4	131	65	130	185	70	-	G3/8	275	3.0
AE46T210A03	G1	150	75	150	215	90	G1/8	G3/4	315	5.0
AE47T210A04	G1 1/4	201	90	180	265	90	G1/8	G3/4	420	6.0
AE48T210A05	G1 1/2	263	100	235	340	126	G1/4	G1	535	11.0
AE49T210A05	G2	263	100	235	340	126	G1/4	G1	535	11.0

5. Design and application

A wide range of filter elements are available for every filter. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

Each filter can be supplied with various options to ensure the optimum performance for each particular application.

Options:

- Heating with steam/thermal oil or electric
- Magnetic elements
- Differential pressure indicator/switch as a removable part

Simplex filters are not at all complicated to use. The necessary steps are described in the following:

- The filter comprises a cylindrical housing, a cover and a filter element. It is fitted with a vent screw and a drain plug.
- Stress relief must be provided for all pipe connections. The filter must be filled and vented before it is put into service. Install the filter piping so that the medium flows through the filter in the direction indicated by the arrow.
- During the filtration process, the medium flows through the filter element from the inside to the outside. Contaminants are trapped on the inside of the element. As the filter element becomes increasingly dirty, the flow resistance rises accordingly. The degree of fouling is indicated on the differential gauge (optional). The filter element must be cleaned when the pressure difference reaches 0.7 bar.
- In order to remove the filter element, loosen the cover fastening nuts on the depressurised filter and lift off the cover. The dirty element can then be withdrawn without any problems.
- To clean the filter element, either blow it out with compressed air, steam or water or brush it with a soft brush. Be careful not to damage the filter fabric or the perforated sheet and avoid pushing the element inwards as it is blown out. Pre-treat the element with a suitable solvent if the dirt deposits cannot be removed easily.

6. Type number key

Type number key with selection example for EG1 simplex filter with G½" to G2" threaded connection											
Main product group											
A	Simplex filter, cast design										
	Series										
	E	Simplex filter with filter element									
		Inlet and outlet connections									
		45	G¾" threaded connection								
		46	G1" threaded connection								
		47	G1¼" threaded connection								
		48	G1½" threaded connection								
		49	G2" threaded connection								
			Filter connection standard + rated pressure								
			T	PN 16 bar							
				Position of main connections							
				2	Opposite each other on the same axis						
					Cover fastening						
					1	Stud bolts or hexagon screws					
						Options					
						0	Standard version				
						2	Electric cartridge heater				
						3	Steam/thermal cartridge heater				
						7	Version without non-ferrous metals				
							Type of inner assembly				
							A	Filter elements for simplex filter			
								Inner assembly size			
								XX			
									Housing version		
									2	Nodular cast iron	
										Nozzle material	
										0	No material specified (not assigned)
											Number for special types or design features
											XX
A	**E**	**45**	**T**	**2**	**1**	**0**	**A**	**02**	**2**	**0**	**00**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381728.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Simplex filter
EG2

Flanged connection, rated pressure up to 16 bar (232 psi)
Connection sizes: DN 20 to DN 150, cast design

1. Features

High-performance filters for modern systems

- Entry-level model among Filtration Group GmbH products
- Used as a protective or safety filter in shipping and industry
- Simple, robust design
- Compact design
- Minimal pressure drop through optimal flow design
- Elements with high differential pressure stability and dirt holding capacity
- Filter ratings from 25 to 5000 µm absolute, other ratings on request
- Suitable for use with fluids of all types
- Easy service
- Worldwide distribution

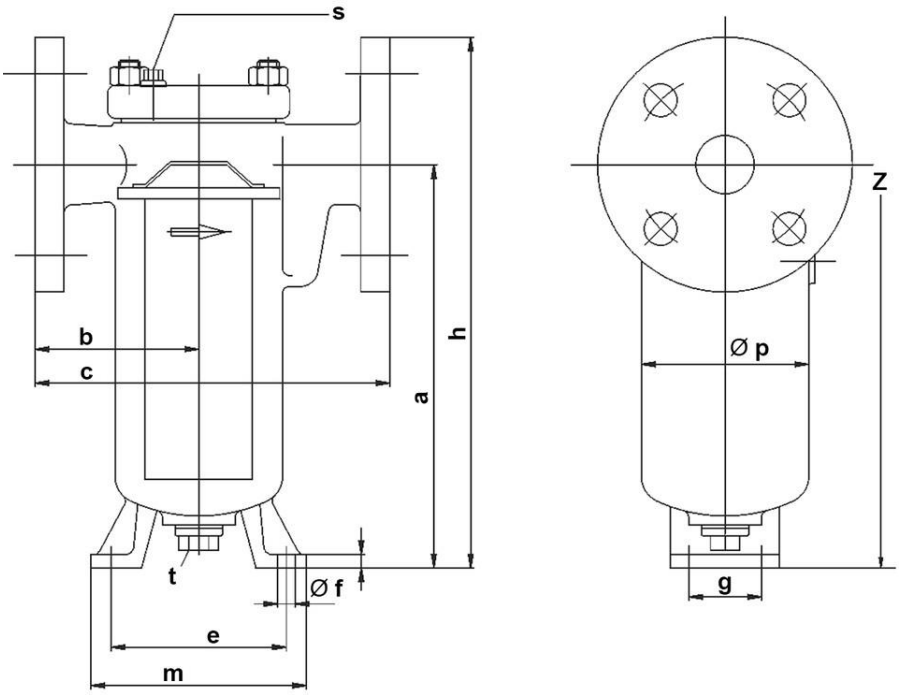
2. Operating principle

- The medium flows through the filter element (perforated, smooth or pleated) from the inside to the outside.
- Contaminants are trapped on the inside of the element.
- The filtration process is interrupted when a settable fouling threshold is reached.
- The filter is opened and the element removed for cleaning.
- Simplex filters require no maintenance apart from cleaning the filter elements and inspecting the seals.

3. Technical Data

Connection:	DN 20 to DN 150
Flange:	DIN 2501 PN 16
Material:	Nodular cast iron 40, CrNi-Guss 1.4581 (nur bis DN 100)
Max. operating pressure:	16 bar
Test overpressure:	21 bar
Max. operating temperature:	100 °C
Filter element:	Screen basket, cartridge
Filter rating:	25 to 5000 µm absolute, other ratings on request

4. Dimensions



s = Vent
t = Drain
Z = Clearance required

All dimensions except "s" and "t" in mm.

Type	DN	a	b	c	m	e	Ø f	g	h	l	Ø p	s	t	Z	Weight [kg]
AE033210A02*	20	136	75	160	-	-	-	-	189	-	70	G1/8	G¾	285	5
AE043210A03*	25	162	85	180	-	-	-	-	219	-	92	G1/8	G¾	338	8
AE053210A04*	32	214	90	195	-	-	-	-	284	-	92	G1/8	G¾	424	10
AE063210A05*	40	263	105	230	-	-	-	-	337	-	126	G1/4	G1	523	13
AE073210A05*	50	263	105	240	-	-	-	-	346	-	126	G1/4	G1	523	16
AE083210A07	65	340	115	275	160	130	14	60	433	14	146	G1/4	G1	719	30
AE093210A08	80	390	130	325	210	170	18	60	490	16	178	G1/4	G1½	839	42
AE103210A09	100	480	145	365	220	180	18	70	590	16	204	G1/4	G1½	1018	64
AE113210A10	125	660	190	480	260	220	18	170	785	18	260	G3/8	G1½	1343	97
AE123210A11	150	760	210	530	320	270	23	200	903	20	308	G3/8	G1½	1534	136

* type without feet

5. Design and application

A wide range of filter elements are available for every filter. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

Each filter can be supplied with various options to ensure the optimum performance for each particular application.

Options:

- Heating with steam/thermal oil or electric
- Magnetic elements
- Differential pressure indicator/switch as a removable part
- Internal coating or rubber coating

Simplex filters are not at all complicated to use. The necessary steps are described in the following:

- The filter comprises a cylindrical housing, a cover and a filter element. It is fitted with a vent screw and a drain plug.
- Stress relief must be provided for all pipe connections. The filter must be filled and vented before it is put into service. Install the filter piping so that the medium flows through the filter in the direction indicated by the arrow.
- During the filtration process, the medium flows through the filter element from the inside to the outside. Contaminants are trapped on the inside of the element. As the filter element becomes increasingly dirty, the flow resistance rises accordingly. The degree of fouling is indicated on the differential gauge (optional). The filter element must be cleaned when the pressure difference reaches 0.7 bar.
- In order to remove the filter element, loosen the cover fastening nuts on the depressurised filter and lift off the cover. The dirty element can then be withdrawn without any problems.
- To clean the filter element, either blow it out with compressed air, steam or water or brush it with a soft brush. Be careful not to damage the filter fabric or the perforated sheet and avoid pushing the element inwards as it is blown out. Pre-treat the element with a suitable solvent if the dirt deposits cannot be removed easily.

6. Type number key

Type number key with selection example for EG2 simplex filter with DN 20 to DN 150											
Main product group											
A Simplex filter, cast design											
	Series										
	E Simplex filter with filter element or cartridge										
		Inlet and outlet connections									
		03 Flange DN 20									
		06 Flange DN 40									
		07 Flange DN 50									
		08 Flange DN 65									
		09 Flange DN 80									
		10 Flange DN 100									
		11 Flange DN 125									
		12 Flange DN 150									
			Filter connection standard + rated pressure								
			3 EN 1092 PN 16 bar								
				Position of main connections							
				2 Opposite each other on the same axis							
					Cover fastening						
					1 Stud bolts or hexagon screws						
						Options					
						0 Standard version					
						2 Electric cartridge heater					
						3 Steam/thermal cartridge heater					
						7 Version without non-ferrous metals					
						G Rubber coating					
							Type of inner assembly				
							A Filter elements for simplex filter				
								Inner assembly size			
								XX			
									Housing version		
									2 Nodular cast iron		
										Nozzle material	
										0 No material specified (not assigned)	
											Number of special types or design features
											XX
A	**E**	**09**	**3**	**2**	**1**	**0**	**A**	**08**	**2**	**0**	**00**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381732.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Simplex filter
EG3

Flanged connection, rated pressure up to 16 bar (232 psi)
Connecting sizes: DN 100 to DN 200, cast design

1. Features

High-performance filters for modern systems

- Entry-level model among Filtration Group GmbH products
- Used as a protective or safety filter in shipping and industry
- Simple, robust design
- Compact design
- Minimal pressure drop through optimal flow design
- Elements with high differential pressure stability and dirt holding capacity
- Filter ratings from 25 to 5000 µm absolute, other ratings on request
- Suitable for use with fluids of all types
- Easy to service
- Worldwide distribution

2. Operating principle

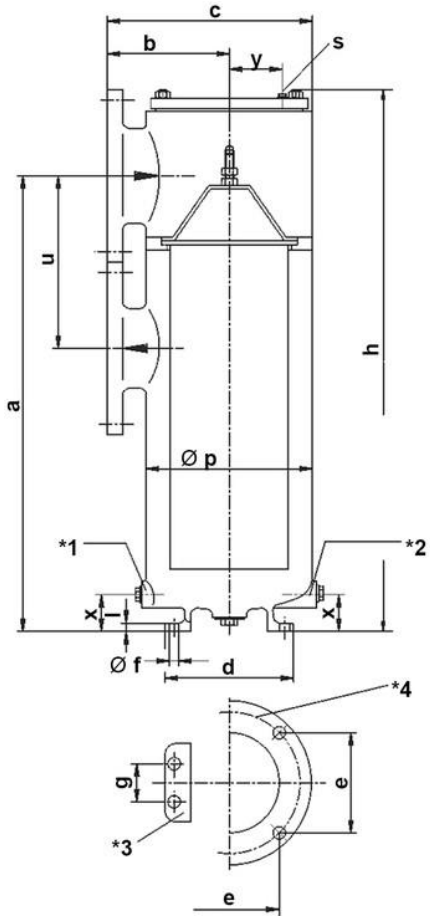
- The medium flows through the filter element (perforated, smooth or pleated) from the inside to the outside.
- Contaminants are trapped on the inside of the element.
- The filtration process is interrupted when a settable fouling threshold is reached.
- The filter is opened and the element removed for cleaning.
- Simplex filters require no maintenance apart from cleaning the filter elements and inspecting the seals.

3. Technical Data

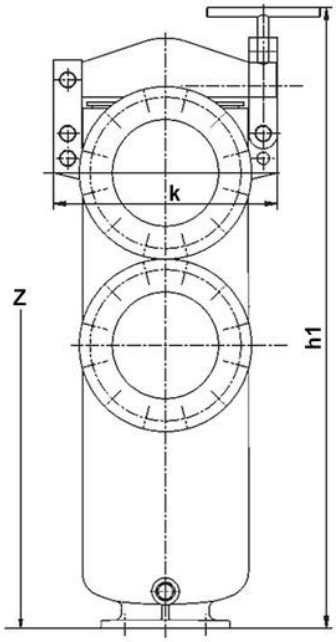
Connection:	DN 100 to DN 200
Flange Type 1:	DIN 2501 PN 16
Material:	Nodular cast iron 40
Max. operating pressure Type 1:	6 bar
Max. operating pressure Type 2:	16 bar
Test overpressure Type1:	10 bar
Test overpressure Type2:	21 bar
Max. operating temperature:	180 °C
Filter element:	Screen basket, cartridge
Filter rating:	25 to 5000 µm absolute, other ratings on request

4. Dimensions

Type 2
Index **1**



Type 1
Index **3**



s = Vent
*1 = Drain G1
*2 = Position drain at DN 100
*3 = Position of feet at DN 100 - 150
*4 = Position of feet at DN 200
Z = Clearance required

All dimensions except "s" in mm.

Type	DN	a	b	c	d	e	Ø f	g	h	h1	k	l	Ø p	s	u	x	y	Z	Weight [kg]
AE1031*0A09	100	480	173	282	220	180	18	70	594	676	234	16	204	G1/4	250	90	50	1018	57
AE1131*0A10	125	660	190	330	260	220	18	170	788	925	370	18	260	G3/8	270	130	80	1343	94
AE1231*0A11	150	760	230	375	320	270	23	200	909	1035	424	20	308	G3/8	310	135	100	1536	129
AE1431*0A13	200	810	270	445	290	176	23	-	996	1175	526	20	384	G3/8	350	90	120	1736	209

* Insert index **"3"** for type 1, insert index **"1"** for type 2

5. Design and application

A wide range of filter elements are available for every filter. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

Each filter can be supplied with various options to ensure the optimum performance for each particular application.

Options:

- Heating with steam/thermal oil or electric
- Magnetic elements
- Differential pressure indicator/switch as a removable part
- Snap closing
- Internal coating or rubber coating

Simplex filters are not at all complicated to use. The necessary steps are described in the following:

- The filter comprises a cylindrical housing, a cover and a filter element. It is fitted with a vent screw and a drain plug.
- Stress relief must be provided for all pipe connections. The filter must be filled and vented before it is put into service. Install the filter piping so that the medium flows through the filter in the direction indicated by the arrow.
- During the filtration process, the medium flows through the filter element from the inside to the outside. Contaminants are trapped on the inside of the element. As the filter element becomes increasingly dirty, the flow resistance rises accordingly. The degree of fouling is indicated on the differential gauge (optional). The filter element must be cleaned when the pressure difference reaches 0.7 bar.
- In order to remove the filter element, loosen the cover fastening nuts on the depressurised filter and lift off the cover. The dirty element can then be withdrawn without any problems.
- To clean the filter element, either blow it out with compressed air, steam or water or brush it with a soft brush. Be careful not to damage the filter fabric or the perforated sheet and avoid pushing the element inwards as it is blown out. Pre-treat the element with a suitable solvent if the dirt deposits cannot be removed easily.

6. Type number key

Type number key with selection example for EG3 simplex filter with DN 100 to DN 250											
Main product group											
A Simplex filter, cast design											
	Series										
	E Simplex filter with filter element or cartridge										
		Inlet and outlet connections									
		10 Flange DN 100									
		11 Flange DN 125									
		12 Flange DN 150									
		14 Flange DN 200									
		15 Flange DN 250									
			Filter connection standard + rates pressure								
			3 EN 1092 PN 16 bar								
				Position of main connections							
				1 Stacked on the same side							
					Cover fastening						
					1 Stud bolts or hexagon screws						
						Options					
						0 Standard version					
						2 Electric cartridge heater					
						3 Steam/thermal cartridge heater					
						7 Version without non-ferrous metals					
						G Rubber coating					
							Type of inner assembly				
							A Filter elements for simplex filter				
								Inner assembly size			
								XX			
									Housing version		
									2 Nodular cast iron		
										Nozzle material	
										0 No material specified (not assigned)	
											Number for special types or design features
											XX
A	**E**	**12**	**3**	**1**	**1**	**0**	**A**	**11**	**2**	**0**	**00**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381734.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Simplex filter
ES46

Simplex filter, welded design, rated pressure up to 40 bar (580 psi)
Connection sizes: DN 15 to DN 300, steel structure

1. Features

High-performance filters for modern systems

- Entry-level model among Filtration Group GmbH products
- Used as a protective or safety filter in shipping and industry
- Simple, robust design
- Compact design
- Minimal pressure drop through optimal flow design
- Elements with high differential pressure stability and dirt holding capacity
- Filter ratings from 25 to 5000 µm absolute, other ratings on request
- Suitable for use with fluids of all types
- Easy to service
- Worldwide distribution

2. Operating principle

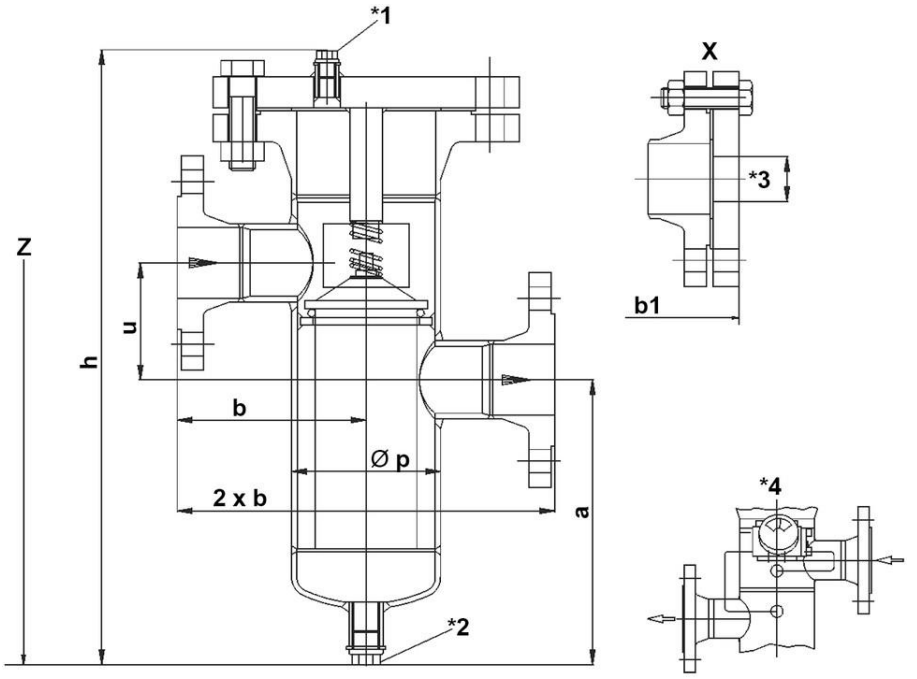
- The medium flows through the filter element (perforated, smooth or pleated) from the inside to the outside.
- Contaminants are trapped on the inside of the element.
- The filtration process is interrupted when a settable fouling threshold is reached.
- The filter is opened and the element removed for cleaning.
- Simplex filters require no maintenance apart from cleaning the filter elements and inspecting the seals.

3. Technical Data

Connection:	DN 15 to DN 300
Flange up to DN 50:	DIN 2635
Flange from DN 65:	DIN 2633 PN 33 (x = 3)
	DIN 2635 PN 40 (x = 5)
Flange DN 65 to DN 150:	DIN 2632 PN 10 (x = 3)
	DIN 2634 PN 25 (x = 5)
Flange DN 200 to DN 300:	DIN 2632 PN 10 (x = 2)
	DIN 2634 PN 25 (x = 4)
Material:	C-Steel/Stainless steel
Max. operating pressure:	10-40 bar
Test overpressure up to DN 50:	57.5 bar
Test overpressure from DN 65:	14.5 - 57.5 bar
Max. operating temperature:	120 °C
Filter element:	Screen basket, cartridge
Filter rating:	25 to 5000 µm absolute, other ratings on request

x = pressure stage of flange connection

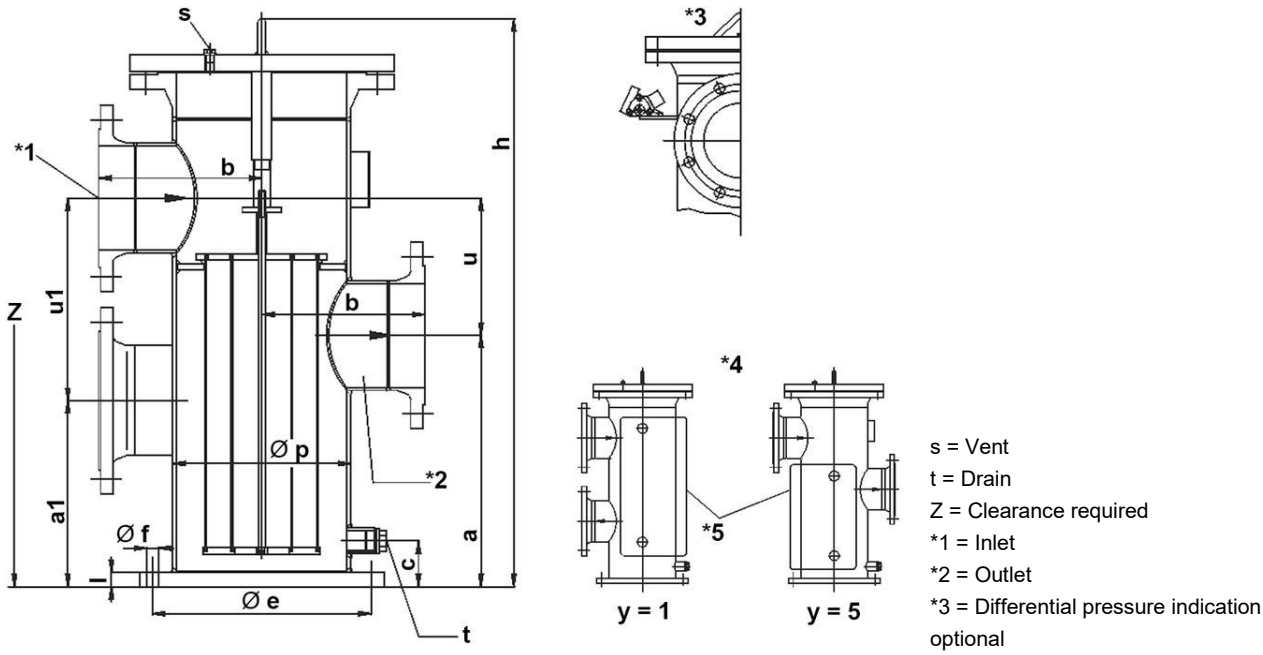
4. Dimensions



*1 = Vent G¼
*2 = Drain G½
*3 = Bore counter-flange
*4 = Differential pressure indication optional
Z = Clearance required

Type	DN	a	b	b1	h	Ø p	u	Z	Capacity [l]	Weight [kg]
BG025510A040000 *	15	187	120	140	388	88,9	70	540	1.6	28.0
BG035510A040000 *	20	187	120	140	388	88,9	70	540	1.6	28.0
BG045510A040000 *	25	187	120	140	388	88,9	70	540	1.6	28.0
BG055510A040000	32	187	120	140	388	88,9	70	540	1.6	18.3
BG045510A050000 *	25	219	145	167	473	114,3	90	640	3.2	39.0
BG055510A050000 *	32	219	145	167	473	114,3	90	640	3.2	39.0
BG065510A050000 *	40	219	145	167	473	114,3	90	640	3.2	39.0
BG075510A050000	50	219	145	167	473	114,3	90	640	3.2	26.5

* Type with counter-flange see Detail "X", blind-flange DIN 2527 PN 40 with bore according to DIN 2576.



s = Vent
t = Drain
Z = Clearance required
*1 = Inlet
*2 = Outlet
*3 = Differential pressure indication optional
*4 = Flange position
*5 = Type with heating jacket

All dimensions except "s" and "t" in mm.

Type	DN	a (a1)	b	c	Ø e	Ø f	h	l	Ø p	s	t	u (u1)	Z	Capa-city [l]	Weight [kg]
BG08xy10A07	65	255 (150)	210	55	225	8x18	640	18	168	G1/4	G3/4	145 (250)	900	10	47
BG09xy10A07	80														50
BG10xy10A07	100														52
BG08xy10A08	65														47
BG09xy10A08	80														50
BG10xy10A08	100														52
BG10xy10A09	100	405 (305)	280	80	350	12x22	950	26	273	G1/4	G1	210 (310)	1360	44	150
BG11xy10A09	125														154
BG12xy10A09	150														158
BG10xy10A10	100	405 (305)	280	80	350	12x22	950	26	273	G1/4	G1	210 (310)	1450	44	150
BG11xy10A10	125														154
BG12xy10A10	150														158
BG12xy10A11*	150	460 (370)	300	70	395	12x22	960	22	324	G3/8	G1	220 (310)	1520	66	170
BG14xy10A13*	200	450 (350)	350	95	470	16x26	1113	30	406	G3/8	G1	300 (400)	1800	120	255
BG15xy10A14*	250	630 (520)	400	80	620	20x26	1360	28	508	G3/8	G1	350 (460)	2250	235	400
BG16xy10A15*	300	750 (640)	500	125	720	3x23	1600	25	610	G1/2	G1	400 (510)	2650	410	550

x = Index for pressure stage
y = Index for flange position
* Type with counter-flange see Detail "X" (page 2), blind-flange DIN 2527 PN 40 with bore according to DIN 2576.

5. Design and application

A wide range of filter elements are available for every filter. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

Each filter can be supplied with various options to ensure the optimum performance for each particular application.

Options:

- Heating cartridge steam/thermal oil or electric
- Heating jacket steam/thermal oil
- Magnetic elements
- Differential pressure indicator/switch as a assembled part
- Internal coating or rubber coating

Simplex filters are not at all complicated to use. The necessary steps are described in the following:

- The filter comprises a cylindrical housing, a cover and a filter element. It is fitted with a vent screw and a drain plug.
- Stress relief must be provided for all pipe connections. The filter must be filled and vented before it is put into service. Install the filter piping so that the medium flows through the filter in the direction indicated by the arrow.
- During the filtration process, the medium flows through the filter element from the inside to the outside. Contaminants are trapped on the inside of the element. As the filter element becomes increasingly dirty, the flow resistance rises accordingly. The degree of fouling is indicated on the differential pressure gauge (optional). The filter element must be cleaned when the pressure difference reaches 0.7 bar.
- In order to remove the filter element, loosen the cover fastening nuts on the depressurised filter and lift off the cover. The dirty element can then be withdrawn without any problems.
- To clean the filter element, either blow it out with compressed air, steam or water or brush it with a soft brush. Be careful not to damage the filter fabric or the perforated sheet and avoid pushing the element inwards as it is blown out. Pre-treat the element with a suitable solvent if the dirt deposits cannot be removed easily.

6. Type number key

Type number key with selection example for ES46 simplex filter with DN 15 to DN 300

Main product group

B Simplex filter, welded design

Series

G Simplex filter with filter element or cartridge

Inlet and outlet connections

02 Flange DN 15
03 Flange DN 20
04 Flange DN 25
05 Flange DN 32
06 Flange DN 40
07 Flange DN 50
08 Flange DN 65
09 Flange DN 80
10 Flange DN 100
11 Flange DN 125
12 Flange DN 150
14 Flange DN 200
15 Flange DN 250
16 Flange DN 300

Filter connection standard + rated pressure

5 EN 1092 PN 40 bar

Position of main connections

1 Stacked on the same side
5 Opposite each other, offset pattern

Cover fastening

1 Stud bolts or hexagon screws

Options

0 Standard version
2 Electric cartridge heater
3 Steam/thermal cartridge heater
7 Version without non-ferrous metals
G Rubber coating

Type of inner assembly

A Filter elements for simplex filter

Inner assembly size

XX

Housing version

A C-Steel/Stainless steel
H Boiler plate HII and ST35.8

Nozzle material

0 No material specified (not assigned)

Number for special types or design features

XX

B	**G**	**12**	**5**	**1**	**1**	**0**	**A**	**11**	**H**	**0**	**00**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381736.05/2019

Filtration Group®
Filtering The World

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Backflush filter
AF 8

Nominal pressure up to 10 bar
Connection sizes: DN 100 up to DN 400, cast version

1. Short description

Powerful, fully automatic filtration

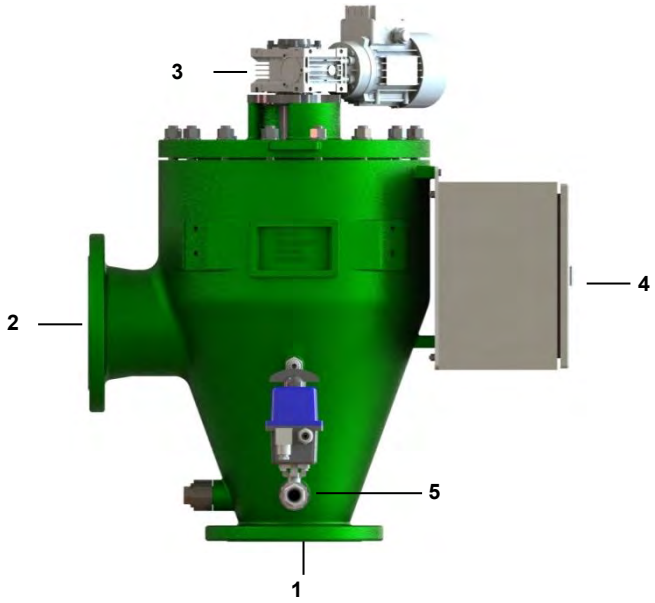
- Application in water treatment
- Mature technology and robust construction
- Low space requirement due to compact desig
- Filter finenesses from 25 - 1000 µm absolute
- Variable positioning of the base unit
- Optional with pipe bend and feet, four different flange positions possible
- Low TCO
- Minimal need for spare parts, thus protecting the environment and resources
- Optimal synthesis between ecology and economy
- Support of the rational flow of production processes through continuous filtration
- Efficient filtration due to low backwash volumes at optimal cleaning of the filter element
- Consumption-free
- High cleaning efficiency due to direct placement of the back-wash nozzle on the filter element
- Service-friendly and simple handling
- Worldwide sales and service network

2. Operating principle

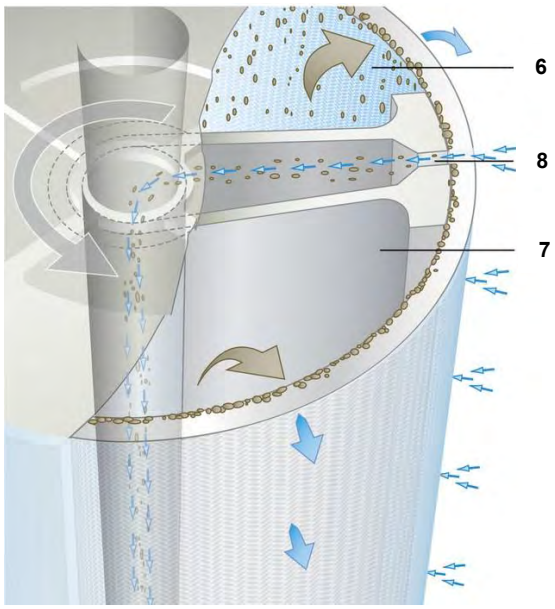
- The medium to be filtered flows through the inlet connection (1) into the filter housing and into the filter element (6) open at the bottom. The medium flows through the filter element from the inside to the outside, collecting the dirt particles on the inside of the filter fabric.
- When the set time or the maximum differential pressure is reached, the automatic cleaning starts. The cleaning nozzle (7) is rotated by the gear motor (3).
- The pressureless flushing line is opened by the flushing valve (5) and the gear motor (3) sets in motion the cleaning nozzle (7) positioned in the filter element, which leads past the entire filter surface of the filter element (6).
- Through the vertical nozzle slot (8), which is directly located at the filter element, a small quantity of already filtered medium flows in the reverse direction at high flow velocity through the filter fabric and carries the accumulated solids out of the system through the flushing line.
- After turning the cleaning nozzle (7) by approx. 400°, the flushing valve (5) is closed and the cleaning process is completed after a few seconds.
- By rotating the cleaning nozzle, only the covered part of the filter element is cleaned and the remaining part is still available for filtration. The filtration operation will not be interrupted.

3. Technical data

Connection:	DN 100 up to DN 400
Flanges:	DIN
Materials:	GGG-40
Coating:	Rilsan
max. operating pressure:	10 bar
max. operating temperature:	100 °C
Filter element:	Screen basket with pleated fabric covering
Filter fineness:	25 – 1000 µm absolute
Motor data:	
Voltage:	230/400 V
Nominal current:	0.67 – 1.20 A
Motor power:	0.18/0.21 kW
Speed:	9.3 – 17 U/min
Protection class:	IP55
Torque:	60 Nm



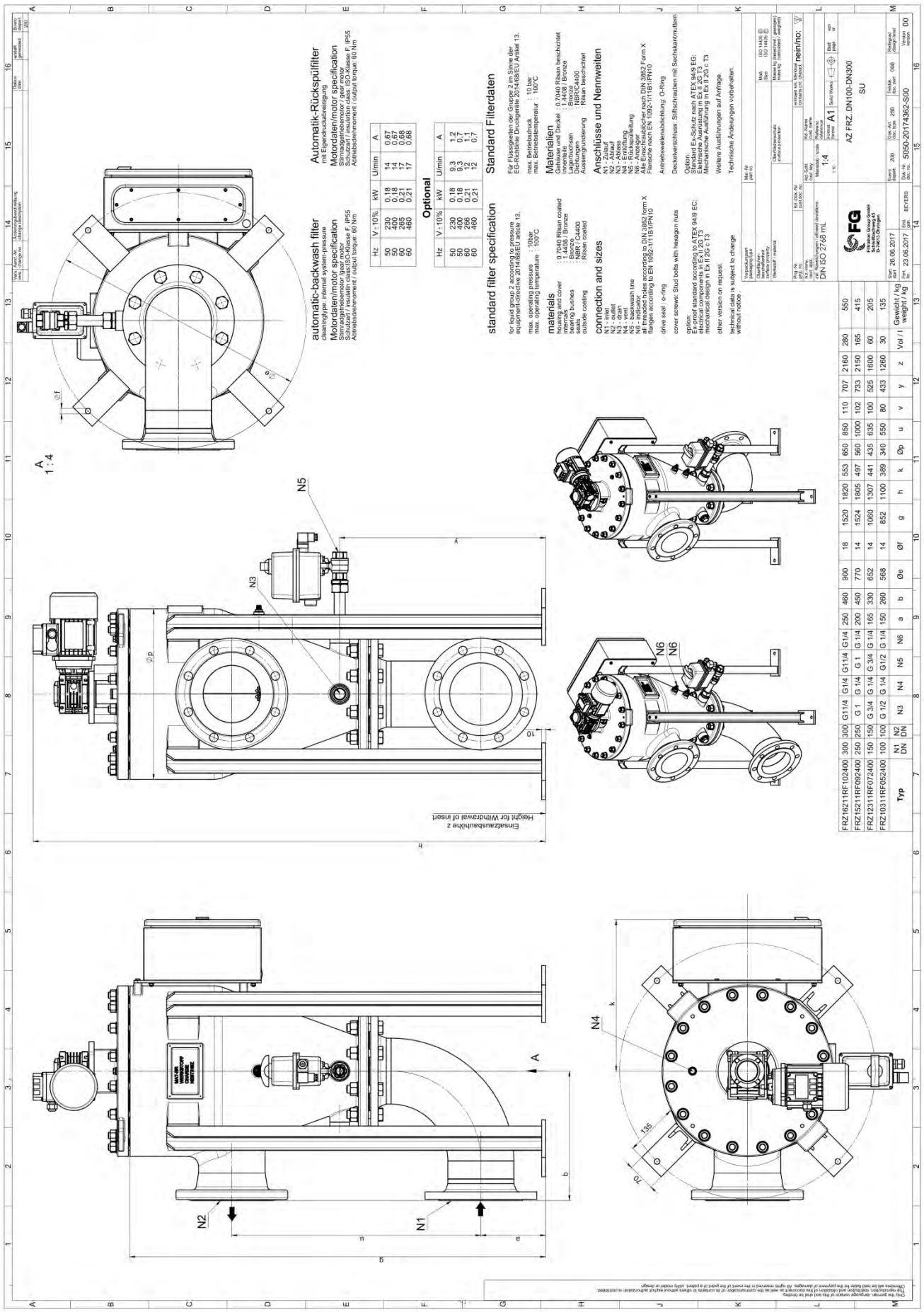
1 Inlet
2 Outlet
3 Gear motor
4 Control cabinet
5 Flush valve
6 Filter element
7 Cleaning nozzle
8 Nozzle slot



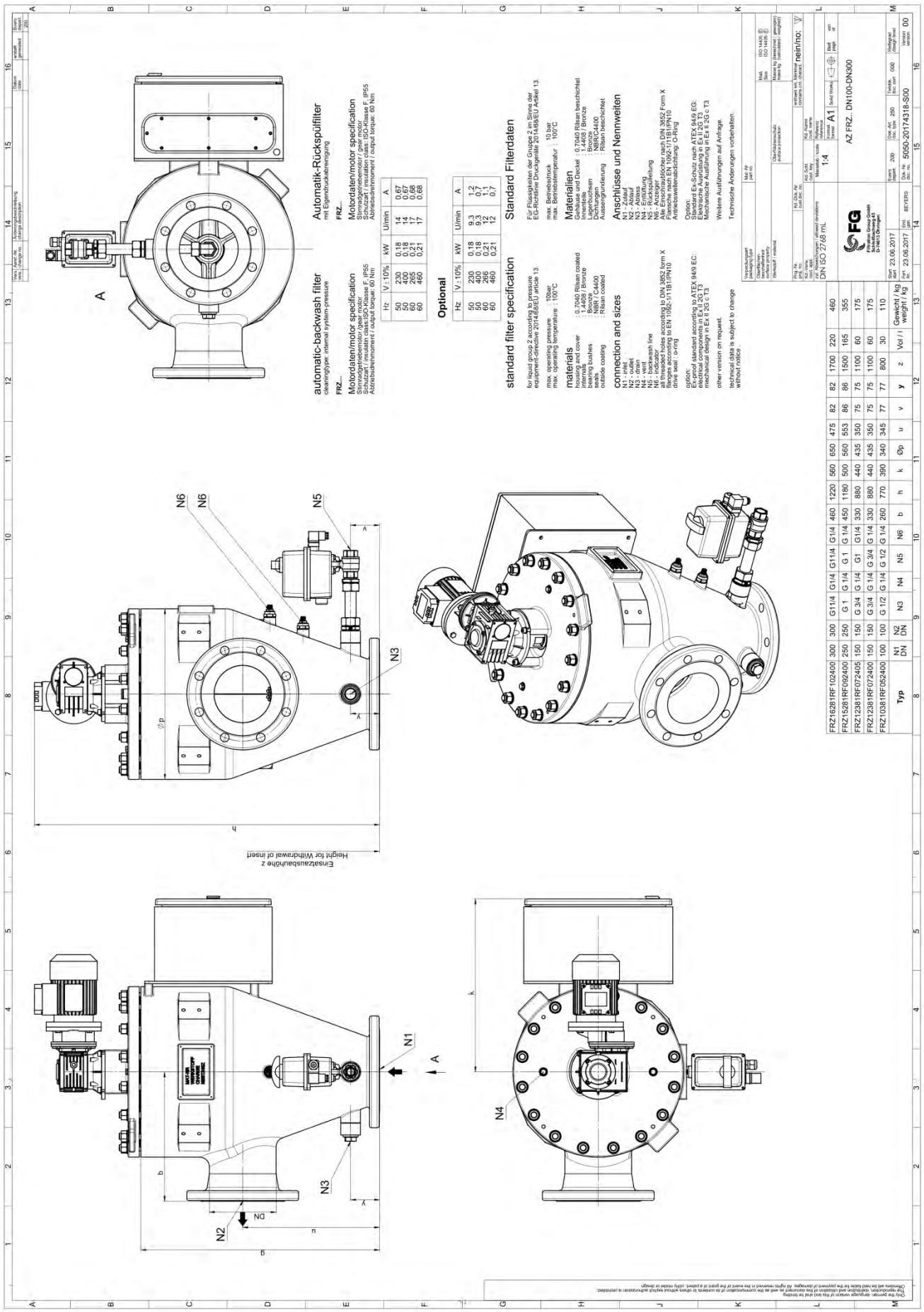
Piping example

4. Dimensions

4.1 Flange position 1



4.2 Flange position 8



5. Design and application

The design of the back flush filters is based on the respective customer requirements. Material, design, filter area and fineness are optimally designed for the respective filtration task depending on the medium and the performance

The back flush filter options can be freely varied and lead to the optimization of the respective filtration task.

Options:

- Control
  The control takes place via a switch box with programmable automation module.
- Pressure transmitter
  The differential pressure is controlled by pressure transmitters. This allows a precise differential pressure control via the control module in the control box.

- Figure 1
  In the standard version, the filter housing is flanged directly onto the pipeline so that the filter can be integrated into an existing pipeline system to save space. The low space requirement and good accessibility are supplemented by an optional bypass

- Figure 2
  Optional filter design with four support legs and a 90° pipe bend. The position of the pipe bend can be rotated in 90° steps around the vertical axis.

The use of back flush filters is simple, uncomplicated and ensures uninterrupted filtration operation. Please take the individual steps from the following description:

- The bowl contains a venting and drain connection as well as a filter element.
- Before commissioning, the filter must be filled and vented. It must not be driven into the empty filter with full pump capacity.
- Switch on the filter control and trigger a flushing process manually. In the case of media whose viscosity is strongly temperature-dependent, the filter control must not be switched on until the operating temperature has been reached.
- If the system is not in operation, the filter control must be switched off.
- For efficient backflushing, a sufficient flushing pressure of 3 bar is required during the flushing process at the outlet of the filter.
- Automatic backflushing starts after a specified time or after reaching the maximum differential pressure.
- After a flushing process has been triggered, the gear motor is switched on and the flushing valve for the flushing medium outlet is opened. While the gear motor rotates the flushing nozzle, the flushing medium flows from the clean side through the filter element into the inner nozzle to the flushing medium outlet.
- The rinsing medium flows through the filter fabric at high speed, thereby the dirt particles retained in the fabric are detached and discharged via the rinsing medium outlet and the connected rinsing line.
- The control is set so that after approx. 1¼ revolutions of the flushing nozzle the flushing valve closes and the gear motor switches off.

Fig. 1

Fig. 2

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
04/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

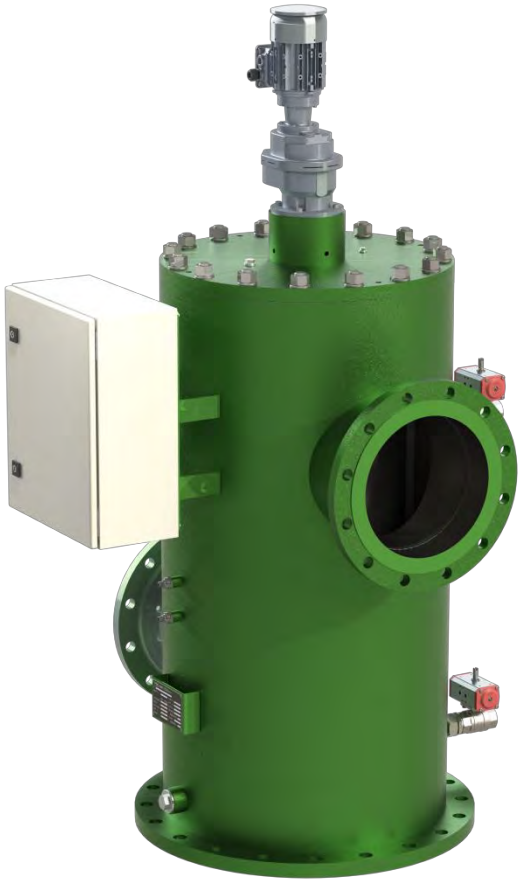
Backflush filter
R3-7

Nominal pressure up to 16 bar
Connection sizes: DN 200 up to DN 500, welded version

1. Short description

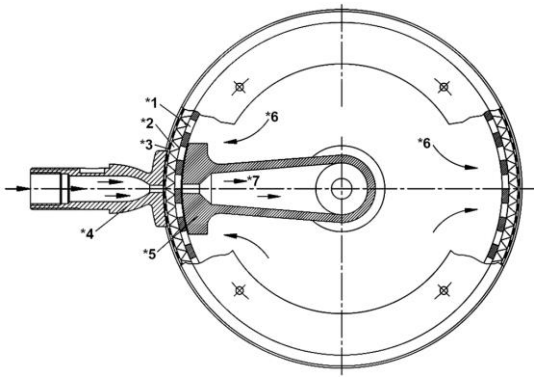
Powerful, fully automatic filtration

- Application in industries
- Mature technology and robust construction
- Low space requirement due to compact desig
- Filter finenesses from 25 - 1000 µm absolute
- Optimal synthesis between ecology and economy
- Support of the rational flow of production processes through continuous filtration
- Efficient filtration due to low backwash volumes at optimal cleaning of the filter element
- Consumption-free
- High cleaning efficiency due to direct placement of the back-wash nozzle on the filter element
- Service-friendly and simple handling
- Worldwide sales and service network



2. Operating principle

- The fully automatic backwashing is triggered when a defined differential pressure or adjustable time interval is reached. The standard version of the backwash filter is backwashed with a foreign medium. For effective backwashing, an operating overpressure of at least 3 bar is required at the inlet of the external nozzle. The difference between the overpressure in the outer nozzle and the atmospheric pressure at the flushing line outlet is used for backwashing.
- When the backwash time is reached, controlled by the differential pressure or time interval, the backwash valve is opened and the geared motor rotates the filter element positioned between the nozzles.
- Through the vertical nozzle slot of the external nozzle, which is placed directly on the filter element, the external medium or already filtered own medium flows by means of pump pressure at high flow speed through the filter fabric into the internal nozzle and carries the accumulated impurities through the flushing line to the outside.

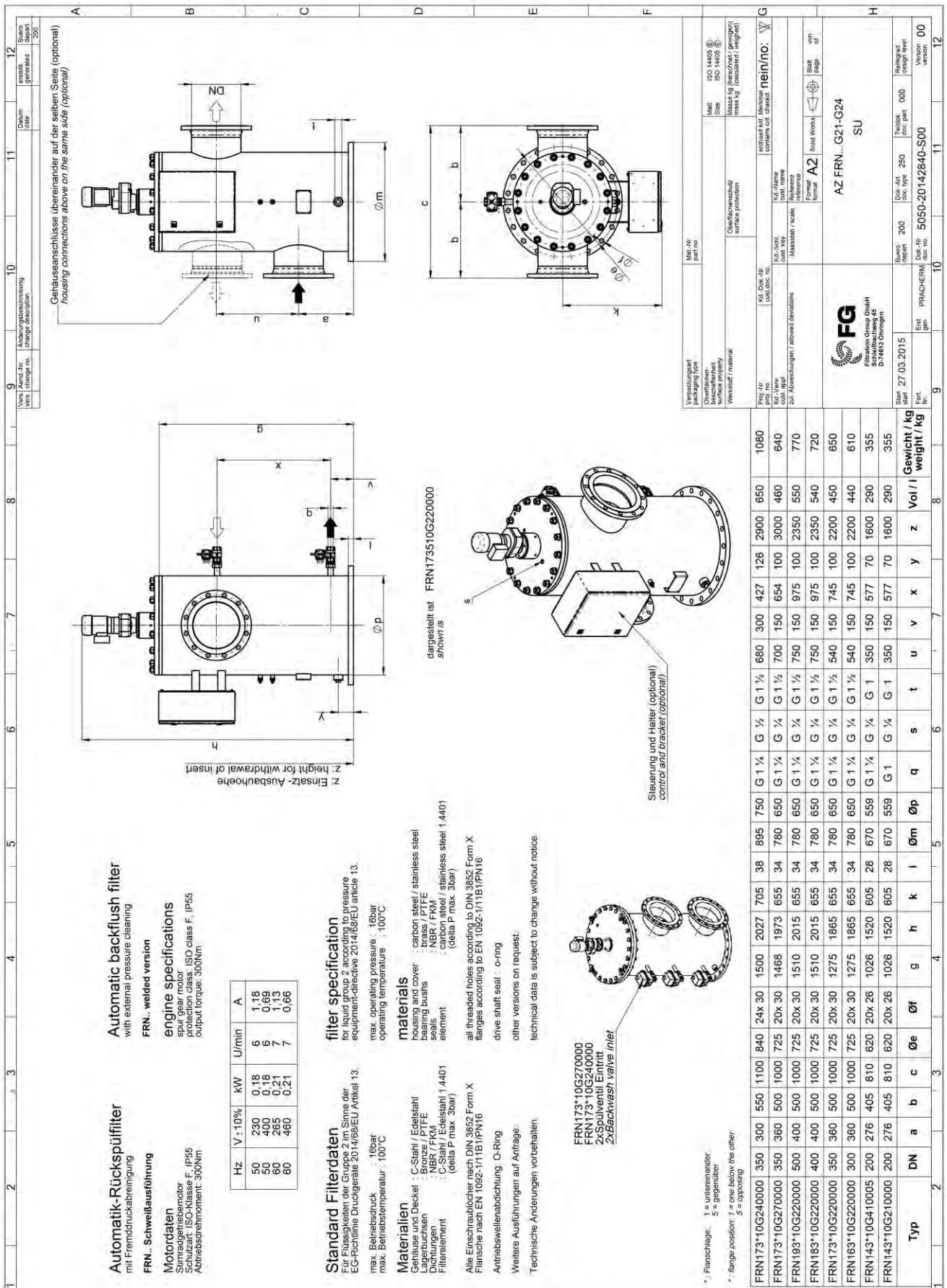


*1 Basic body
*2 Pleated fabric cylinders
*3 Support cylinder
*4 External nozzle
*5 Internal nozzle
*6 Flow direction (dirt side)
*7 Flush volume

3. Technical data

Connection:	DN 200 up to DN 500
Flanges:	DIN
Materials:	HII/1.0425
Coating:	Rilsan
max. operating pressure:	16 bar
max. operating temperature:	100 °C
Filter element:	Screen basket with fabric (smooth or pleated), slotted screen insert
Filter fineness:	25 – 1000 µm absolute other finenesses on request
Motor data:	
Voltage:	230/400 V
Nominal current:	0.18 – 0.69 A
Motor power:	0.18 kW
Speed:	6 U/min
Protection class:	IP55
Torque:	300 Nm

4. Dimensions



5. Design and application

The design of the backflush filters is based on the respective customer requirements. Material, design, filter area and fineness are optimally designed for the respective filtration task depending on the medium and the performance

The backflush filter options can be freely varied and lead to the optimization of the respective filtration task.

Options:

- Heating
  Performance and size are optimally matched to the filter sizes. Steam and electric versions available.
- Magnetic elements
  Can be equipped with strong permanent magnets.
- Control
  The control takes place via a switch box with programmable automation module. Parameterisation by means of keys and display possible in a simple way. Programming and simulation via PC possible.
- Pressure transmitter
  The differential pressure is controlled by pressure transmitters. This allows a precise differential pressure control via the control module in the control box.
  Measurement tolerance: 0.3 %
- Bypass Filter
  Manual, semi-automatic, fully automatic with switching element

The use of backflush filters is simple, uncomplicated and ensures uninterrupted filtration operation. Please take the individual steps from the following description:

- The filter consists of a filter pot with lid and gear motor. The bowl contains a venting and draining connection as well as a filter element.
- Before commissioning, the filter must be filled and vented. It must not be driven into the empty filter with full pump capacity.
- Switch on the filter control and trigger a flushing process manually. In the case of media whose viscosity is strongly temperature-dependent, the filter control must not be switched on until the operating temperature has been reached.
- If the system is not in operation, the filter control must be switched off.
- For sufficient back flushing, a flushing pressure of at least 3 bar during the flushing process at the inlet of the external nozzle is required.
- After a specified time or after reaching the maximum differential pressure, the automatic backwashing starts. If the differential pressure rises above 3 bar, the filter must be taken out of operation or switched to bypass. Then dismantle the filter and clean the fabric cylinder (see section Cleaning).
- After a flushing process has been triggered, the geared motor is switched on and the flushing valve for the flushing medium inlet and outlet is opened. While the geared motor rotates the filter element, the flushing medium flows from the external nozzle through the filter element into the internal nozzle.
- The rinsing medium flows through the filter fabric at high speed, thereby the dirt particles retained in the fabric are detached and discharged via the rinsing medium outlet and the connected rinsing line.
- The control is set so that after approx. 1¼ revolutions of the filter element the flushing valves close and the geared motor switches off.
- For cleaning, switch off the filter control, disassemble the geared motor, loosen the cover fixing screws and lift off the cover. The filter element can be lifted completely upwards out of the filter.
- For manual cleaning, the filter element must be sprayed from the outside to the inside with steam, compressed air or water. In the case of strongly adhering dirt, treatment with a suitable solvent is recommended. If necessary, remove the pleated fabric cylinder.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
04/2019

Backflush filter
R5-3

Variable segment cleaning with external medium, rated pressure up to 16 bar (232 psi)
Connection sizes: DN 65 to DN 200, cast design

1. Features

Powerful, fully automatic filtration

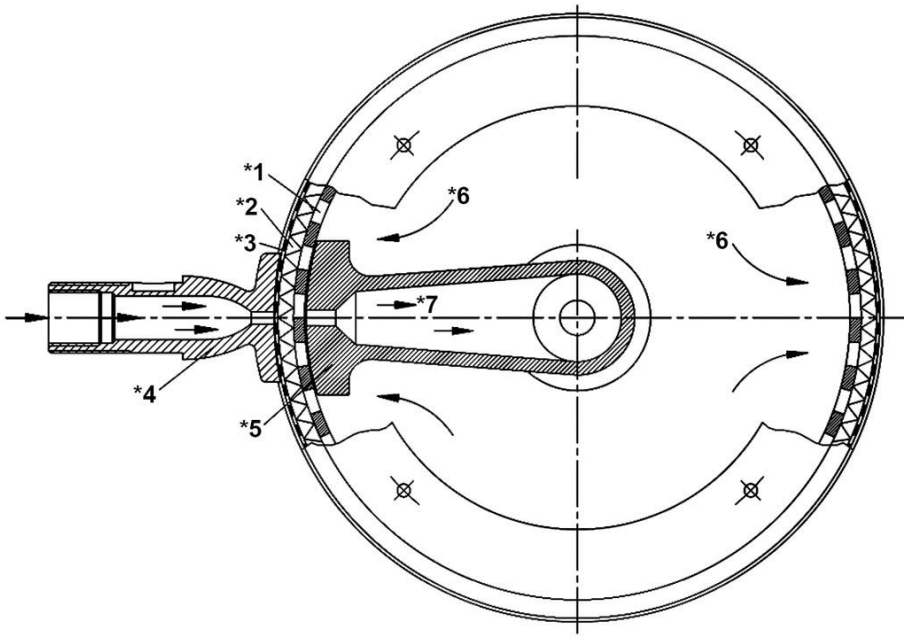
- Used in shipping and industry
- Continuous filtration supports rational production processes
- Low backflush flow rates and optimal cleaning of the filter element improve filtration efficiency
- Backflush nozzle positioned directly on the filter element guarantees maximum cleaning effectiveness
- Perfect synthesis of ecology and economy
- Mature engineering and robust design
- Compact design
- Filter ratings from 25 to 1000 µm absolute, other ratings on request
- Easy to service
- Worldwide network of distribution and service agents

2. Operating principle

- The fully automatic backflush process starts when a defined differential pressure is reached or after a settable time interval. In the standard version, the backflush filter is backflushed with external medium.
- A minimum operating pressure of 3 bar at the inlet of the external nozzle is required to achieve efficient backflushing.
- The difference between the overpressure in the external nozzle and the atmospheric pressure at the outlet of the flush pipe is used for backflushing.
- When the backflush start time, determined by the differential pressure or the time interval, is reached, the flush valve opens and the gear motor starts to turn the filter element positioned between the nozzles.
- As a result of the pump pressure, the external medium – or the process medium that has already been filtered – flows at high speed through the vertical slot in the external nozzle, which is located directly on the filter element. The impurities trapped in the filter are discharged from the system via the flush pipe when the medium flows through the wire cloth into the internal nozzle.
- The flush valve closes again when the filter element has been turned approximately 400°, so that the backflush process is completed in only a few seconds.
- Since the element is turned, only the part covered by the cleaning nozzle is actually cleaned; the remainder can continue to be used for filtration → operation is not interrupted.

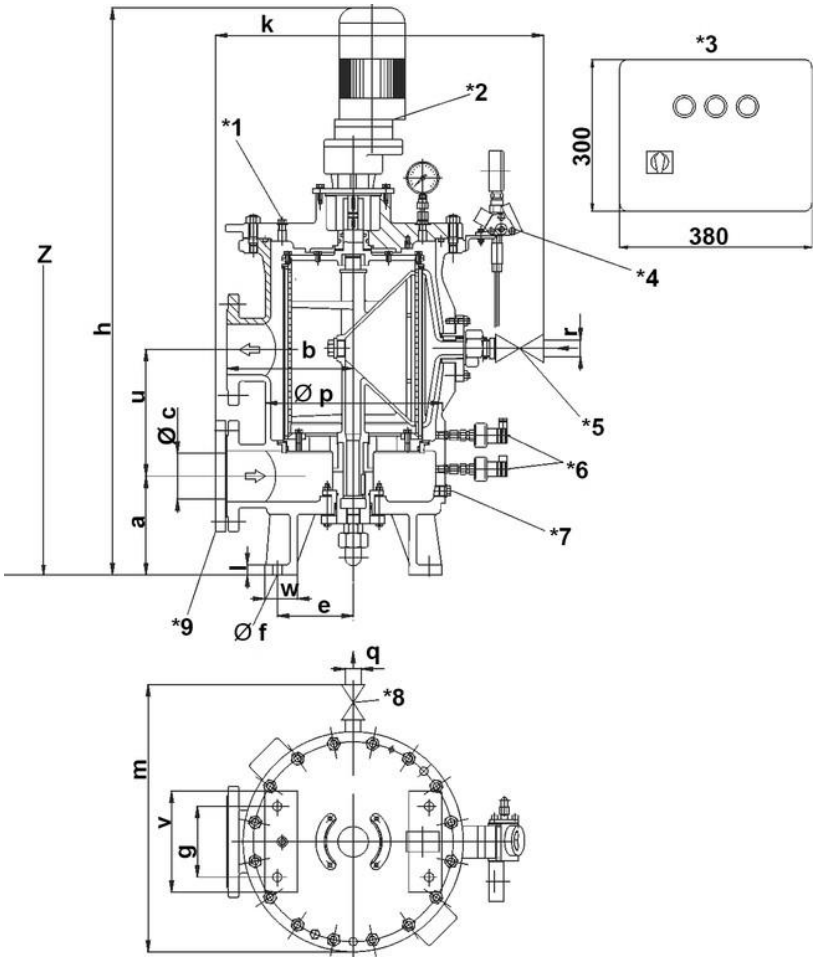
3. Technical Data

Connection:	DN 65 to DN 200
Material:	Nodular cast iron 40/0.7040
Max. operating pressure:	16 bar
Test overpressure:	32 bar
Max. operating temperature:	180 °C
Filter element:	Screen basket with wire cloth (smooth or pleated), perforated sheet (profiled), screen sieve
Filter rating:	25 to 1000 µm absolute, other ratings on request



*1 = Body
*2 = Pleated wire cloth cylinder
*3 = Support cylinder
*4 = External nozzle
*5 = Internal nozzle
*6 = Flow direction (dirt side)
*7 = Flush flow rate

4. Dimensions



Z = Clearance required
*1 = Vent G¼
*2 = Motor
*3 = Switch box
*4 = Differential pressure indicator optional
*5 = Flushing medium inlet
*6 = Pressure transmitter
*7 = Drain G½
*8 = Flush pipe
*9 = Reducing mating flange

All dimensions except "q" and "r" in mm.

Type	DN	a	b	Ø c	e	Ø f	g	h	k	l	m	Ø p	q	r	u	v	w	Z	Capa-city [l]	Weight [kg]
RR08W110G03	65*	130	160	77	123	14	100	900	450	12	480	270	G½	G½	190	160	41	920	19	130
RR09W110G03	80*	130	160	90	123	14	100	900	450	12	480	270	G½	G½	190	160	41	920	19	130
RR093110G20	80*	195	250	90	150	18	140	125	650	20	560	346	G¾	G¾	250	200	65	1260	45	225
RR103110G20	100	195	250	100	150	18	140	125	650	20	560	346	G¾	G¾	250	200	65	1260	45	225
RR113110G11	125	236	280	125	175	23	200	1300	760	20	650	400	G1	G1	270	260	62	1600	80	270
RR123110G21	150*	276	350	169	225	23	200	1421	820	20	740	516	G1	G1	350	280	65	1810	154	525
RR143110G21	200	276	350	200	225	23	200	1421	820	20	740	516	G1	G1	350	280	65	1810	154	525

* Reducing mating flanges (DN 100, DN 125 and DN 200) to DIN 2501 PN 16 for DN 65, DN 80 and DN 150 connections.

5. Design and application

The design of the backflush filters is based on the respective customer's requirements. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

The task can be optimised with the freely variable options available for the backflush filters.

Options:

- Heater
  Capacity and size optimally matched to filter sizes.
  Steam and electric versions available.
- Magnetic elements
  Strong permanent magnets can be used.
- Control
  Control by means of a switch box with a programmable automation module.
  Easy parameterising with buttons and display.
  Programming and simulation on a PC.
- Pressure transmitter
  Differential pressure monitored with a pressure transmitter.
  This permits precise monitoring of the differential pressure using the PLC module in the switch box.
  Max. temperature: 150 °C
  Max. operating pressure: 40 bar
  Measuring tolerance: 0.3 %
- Bypass filter
  Manual, semi-automatic, fully automatic with change-over unit (manual, fully automatic).

Backflush filters are not at all complicated to use and they guarantee continuous filtration. The necessary steps are described in the following:

- The filter comprises a bowl with a cover and a gear motor.
- The bowl contains a vent port, a drain port and a filter element.
- The filter must be filled and vented before it is put into service. It must not be operated with the full pump flow when empty.
- Switch on the filter controller and start a flushing process with the hand release. If the viscosity of the medium is very sensitive to temperature, the filter controller should not be switched on until the filter reaches its normal service temperature.
- The filter controller must be switched off if the plant is not in service
- A minimum pressure of 3.0 bar at the inlet of the external nozzle must be present during the flushing process to ensure efficient backflushing.
- Backflushing starts automatically after a defined time or when the maximum differential pressure is reached. If the differential pressure exceeds 3 bar, the filter must be removed from service or changed over to bypass. Then dismantle the filter and clean the wire cloth cylinder (refer to "Cleaning").
- When a flushing process is tripped, the gear motor is switched on and the flush valve for the flushing medium inlet and outlet opens. The medium flows from the external nozzle through the filter element and into the internal nozzle as the element is turned by the motor.
- The flushing medium flows through the wire cloth at high speed, so that the contaminants trapped in the filter are detached and discharged via the flushing outlet and the flush pipe connected to it.
- The filter controller is programmed so that the flush valves close again and the gear motor is switched off after approximately 1¼ turns of the filter element.
- To clean the filter, switch off the filter controller, dismantle the gear motor, loosen the cover fixing screws and remove the cover. The complete filter element can now be lifted vertically out of the filter. To clean the filter element manually, spray it with steam, compressed air or water from the outside towards the inside. Pretreat the element with a suitable solvent if the dirt cannot be removed easily. It may be necessary to dismantle the pleated wire cloth cylinder.

6. Type number key

Type number key with selection example for R5-3 backflush filter DN 65 to DN 200											
Main product group											
R Automatic filter											
	Series										
	R Cast design										
		Inlet and outlet connections									
		08 Flange DN 65									
		09 Flange DN 80									
		10 Flange DN 100									
		11 Flange DN 125									
		12 Flange DN 150									
		14 Flange DN 200									
			Filter connection standard + rated pressure								
			3 EN 1092 PN 16 bar								
			W Flanges acc. to factory standard								
				Position of main connections							
				1 Above one another on the same side							
					Cover fastening						
					1 Stud bolts or hexagon screws						
						Options					
						0 Standard version					
						2 Electric cartridge heater					
						3 Steam/thermal cartridge heater					
						7 Version without non-ferrous metals					
						G Rubber coating					
							Type of inner assembly				
							G Inner assemblies for automatic filter with external medium				
								Inner assembly size			
								XX			
									Housing version		
									B Coated		
										Nozzle material	
										4 Cast bronze	
											Number for special types or design features
											XX
											10 Nominal diameter 150/200
R	**R**	**09**	**3**	**1**	**1**	**0**	**G**	**20**	**B**	**4**	**10**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381738.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Backflush filter
R5-8

Variable segment cleaning with internal medium, rated pressure up to 16 bar (232 psi)
Connection sizes: DN 32 to DN 200, cast design

1. Features

Powerful, fully automatic filtration

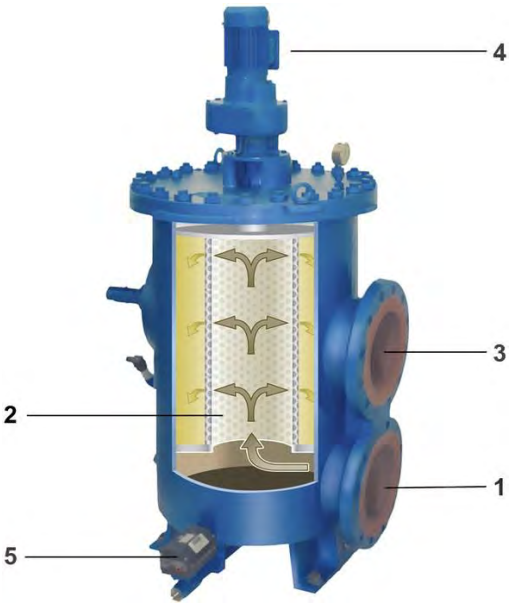
- Used in shipping and industry
- Continuous filtration supports rational production processes
- Low backflush flow rates and optimal cleaning of the filter element improve filtration efficiency
- Backflush nozzle positioned directly on the filter element guarantees maximum cleaning effectiveness
- Perfect synthesis of ecology and economy
- Mature engineering and robust design
- Compact design
- Filter ratings from 25 to 1000 µm absolute
- Easy to service
- Worldwide network of distribution and service agents

2. Operating principle

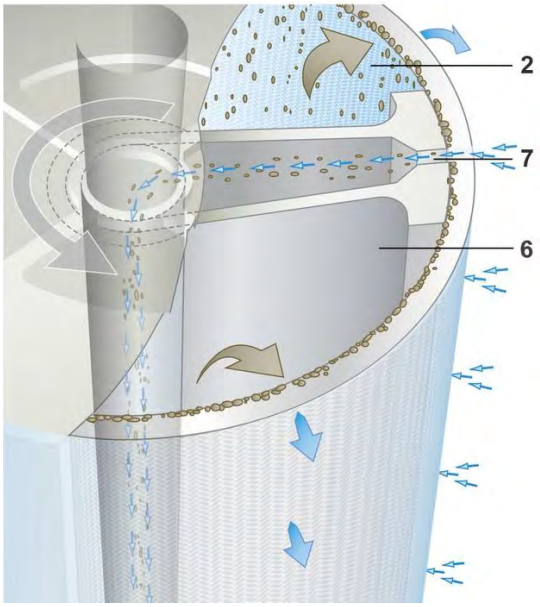
- The medium being filtered flows via the inlet tube (1) into the filter housing and into the filter insert, which is open at the bottom (2). The medium passes through the filter element from the inside to the outside. During this process, contaminants are trapped on the inner side of the wire cloth.
- The filter housing contains a filter element with pleated wire cloth through which the medium flows and contaminants are trapped (2).
- When a defined differential pressure is reached or after a settable time interval, the fully automatic backflush process starts. In order for the backflushing process to be efficient, there must be operating overpressure on the outlet side (clean side) of the filter.
- When the backflush start time is reached the flush valve opens (5) and the gear motor (4) starts to turn the flushing nozzle (6), which is located in the filter element. Thereby the whole filter surface (2) bypasses the flushing nozzle.
- The process medium that has already been filtered flows at high speed in the opposite direction through the vertical slot (7), which is located directly on the filter element. The trapped contaminants (7) are discharged from the system via the flush pipe.
- The flush valve closes again when the filter element has been turned approximately 400°, so that the backflush process is completed in only a few seconds.
- Since the element is turned, only the part covered by the cleaning nozzle is actuallly cleaned; the remainder can continue to be used for filtratiion → operation is not interrupted.

3. Technical Data

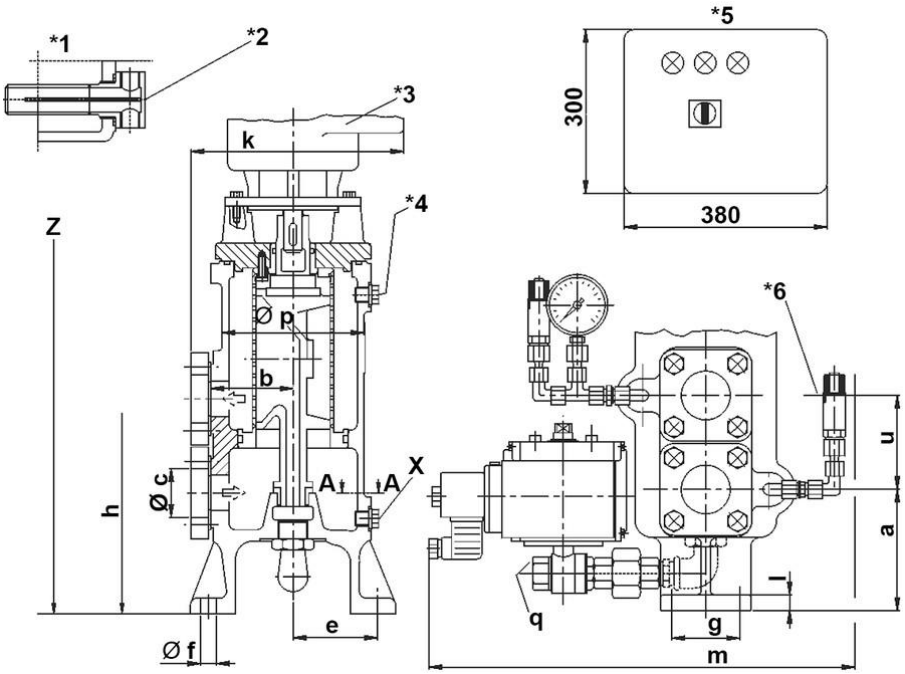
Connection:	DN 32 to DN 200
Flange:	DIN 2501 PN 16
Material:	Nodular cast iron 40/0.7040
Max. operating pressure:	16 bar
Test overpressure:	32 bar
Max. operating temperature:	180 °C
Filter element:	Screen basket with pleated wire cloth
Filter rating:	25 to 1000 µm absolute



3 = Outlet pipe



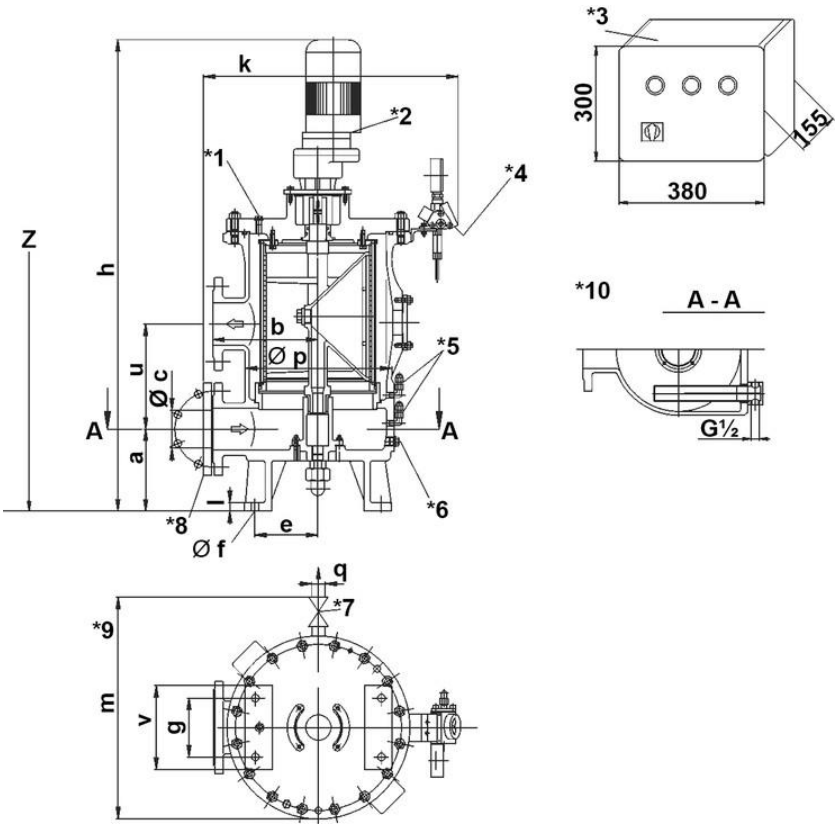
4. Dimensions



h = Total height
q = Flush pipe
X = Drain
Z = Clearance required
*1 = Section A - A
*2 = Heating cartridge optional
*3 = Motor
*4 = Vent G¼
*5 = Switch box
*6 = Pressure transmitter

All dimensions except "q" and "X" in mm.

Type	DN	a	b	Ø c	e	Ø f	g	h	k	l	m	Ø p	q	u	X	Z	Capacity [l]	Weight [kg]
RA05W110F02	32	108	73	43	75.0	14	50	740	190	14	378	126	G½	84	G¼	660	2.1	39
RA06W110F03	40	113	120	49	75.0	14	90	810	285	13	410	176	G½	115	G¼	750	5.5	54
RA07W110F03	50	113	120	61	75.0	14	90	810	285	13	410	176	G½	115	G¼	750	5.5	54
RR08W110F05	65	130	160	77	123.5	14	100	938	350	12	550	270	G½	190	G½	900	19.0	97
RR09W110F05	80	130	160	90	123.5	14	100	938	350	12	550	270	G½	190	G½	900	19.0	97



Z = Clearance required
*1 = Vent G¼
*2 = Motor
*3 = Switch box
*4 = Differential pressure indicator optional
*5 = Pressure transmitter
*6 = Drain G½
*7 = Flush pipe
*8 = Reducing mating flange
*9 = Graph without motor
*10 = Heating cartridge

All dimensions except "q" in mm.

Type	DN	a	b	Ø c	e	Ø f	g	h	k	l	m	Ø p	q	u	v	Z	Capacity [l]	Weight [kg]
RR093110F07	80*	195	250	90	150	18	140	1125	650	20	560	346	G¾	250	200	1180	45.0	205
RR103110F07	100	195	250	100	150	18	140	1125	650	20	560	346	G¾	250	200	1180	45.0	205
RR113110F46	125	236	280	125	175	23	200	1300	760	20	650	400	G1	270	260	1600	80.0	250
RR113110F09	125*	276	350	141	225	23	200	1421	820	20	740	516	G1	350	280	1680	154.0	495
RR123110F09	150*	276	350	169	225	23	200	1421	820	20	740	516	G1	350	280	1680	154.0	495
RR143110F09	200	276	350	200	225	23	200	1421	820	20	740	516	G1	350	280	1680	154.0	495

* Reducing mating flanges (DN 100, DN 125, and DN 200) to DIN 2501 PN 16 for DN 80 and DN 150 connections.

5. Design and application

The design of the backflush filters is based on the respective customer's requirements. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

The task can be optimised with the freely variable options available for the backflush filters.

Options:

- Heater
  Capacity and size optimally matched to filter sizes.
  Steam and electric versions available.
- Magnetic elements
  Strong permanent magnets can be used.
- Control
  Control by means of a switch box with a programmable automation module.
  Easy parameterising with buttons and display.
  Programming and simulation on a PC.
- Pressure transmitter
  Differential pressure monitored with a pressure transmitter.
  This permits precise monitoring of the differential pressure using the PLC module in the switch box.
  Max. temperature: 150 °C
  Max. operating pressure: 40 bar
  Measuring tolerance: 0.3 %
- Bypass filter
  Manual, semi-automatic, fully automatic with change-over unit (manual, fully automatic).
- Step nozzle
  To reduce flush volume.

Backflush filters are not at all complicated to use and they guarantee continuous filtration. The necessary steps are described in the following:

- The filter comprises a bowl with a cover and a gear motor.
- The bowl contains a vent port, a drain port and a filter element.
- The filter must be filled and vented before it is put into service. It must not be operated with the full pump flow when empty.
- Switch on the filter controller and start a flushing process with the hand release. If the viscosity of the medium is very sensitive to temperature, the filter controller should not be switched on until the filter reaches its normal service temperature.
- The filter controller must be switched off if the plant is not in service.
- In order for the backflushing process to be efficient, there must be operating overpressure during the flushing process on the outlet side of the filter.
- Backflushing starts automatically after a defined time or when the maximum differential pressure is reached. If the differential pressure exceeds 3 bar, the filter must be removed from service or changed over to bypass. Then dismantle the filter and clean the wire cloth cylinder (refer to "Cleaning").
- When a flushing process is tripped, the gear motor is switched on and the flush valve for the flushing medium outlet opens. The medium flows from the clean side through the filter element and into the internal nozzle as the flushing nozzle is turned by the gear motor.
- The flushing medium flows through the wire cloth at high speed, so that the contaminants trapped in the filter are detached and discharged via the flushing outlet and the flush pipe connected to it.
- The filter controller is programmed so that the flush valve closes and the gear motor is switched off after approximately 1¼ turns of the flushing nozzle.
- To clean the filter, switch off the filter controller, dismantle the gear motor, loosen the cover fixing screws and remove the cover. The complete filter element can now be lifted vertically out of the filter. To clean the filter element manually, spray it with steam, compressed air or water from the outside towards the inside. Pretreat the element with a suitable solvent if the dirt cannot be removed easily. It may be necessary to dismantle the pleated wire cloth cylinder.

6. Type number key

Type number key with selection example for R5-8 backflush filter DN 32 to DN 200											
Main product group											
R Automatic filter											
	Series										
	R Cast design										
	A For nominal diameters 32 - 50										
		Inlet and outlet connections									
		05 Flange DN 32									
		06 Flange DN 40									
		07 Flange DN 50									
		08 Flange DN 65									
		09 Flange DN 80									
		10 Flange DN 100									
		11 Flange DN 125									
		12 Flange DN 150									
		14 Flange DN 200									
			Filter connection standard + rated pressure								
			3 EN 1092 PN 16 bar								
			W Factory standard								
				Position of main connections							
				1 Above one another on the same side							
					Cover fastening						
					1 Stud bolts or hexagon screws						
						Options					
						0 Standard version					
						2 Electric cartridge heater					
						3 Steam/thermal cartridge heater					
						7 Version without non-ferrous metals					
						G Rubber coating					
							Type of inner assembly				
							F Inner assemblies for automatic filter with internal medium				
								Inner assembly size			
								XX			
									Housing version		
									B Coated		
										Nozzle material	
										4 Cast bronze	
											Number for special types or design features
											XX
											10 Nominal diameter 150/200
R	**R**	**10**	**3**	**1**	**1**	**G**	**F**	**07**	**B**	**4**	**10**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381740.05/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Backflush Filter
R8-10

Nominal pressure up to 40 bar
Connections: DN 40 up to DN 500, welded design

1. Features

Powerful, fully automatic filtration

- Used in industry and shipping
- Continuous filtration supports rational production processes
- Low backflush flow rates and optimal cleaning of the filter element improve filtration efficiency
- Backflush nozzle positioned directly on the filter element guarantees maximum cleaning effectiveness
- Perfect synthesis of ecology and economy
- Mature engineering and robust design
- Compact design
- Filter ratings from 25 to 1000 µm absolute
- Easy to service
- Worldwide network of distribution and service agents

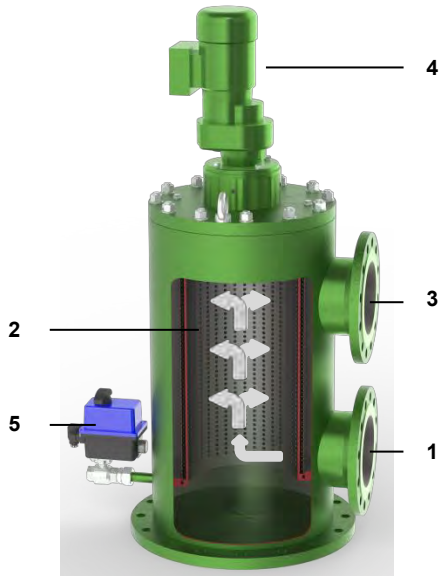
2. Operating principle

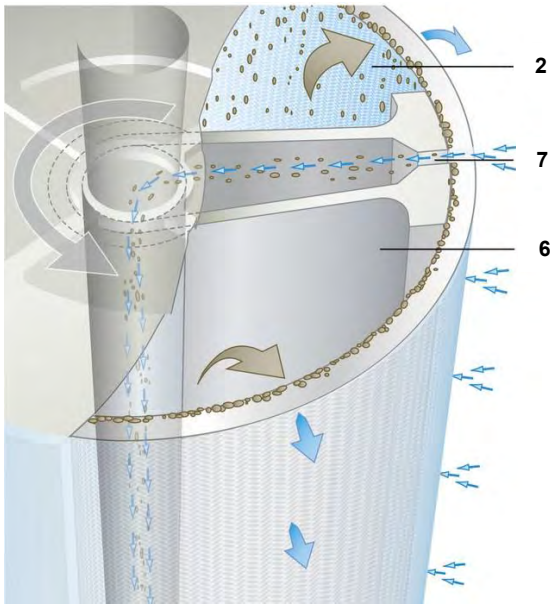
- The medium being filtered flows via the inlet tube (1) into the filter housing and into the filter insert, which is open at the bottom (2). The medium passes through the filter element from the inside to the outside. During this process, contaminants are trapped on the inner side of the wire cloth.
- The filter housing contains a filter element with pleated wire cloth through which the medium flows and contaminants are trapped (2).
- When a defined differential pressure is reached or after a settable time interval, the fully automatic backflush process starts. In order for the backflushing process to be efficient, there must be operating overpressure on the outlet side (clean side) of the filter.
- When the backflush start time is reached the flush valve opens (5) and the gear motor (4) starts to turn the flushing nozzle (6), which is located in the filter element. Thereby the whole filter surface (2) bypasses the flushing nozzle.
- The process medium that has already been filtered flows at high speed in the opposite direction through the vertical slot (7), which is located directly on the filter element. The trapped contaminants (7) are discharged from the system via the flush pipe.

- The flush valve closes again when the filter element has been turned approximately 400°, so that the backflush process is completed in only a few seconds.
- Since the element is turned, only the part covered by the cleaning nozzle is actuallly cleaned; the remainder can continue to be used for filtratiion → operation is not interrupted.

3. Technical Data

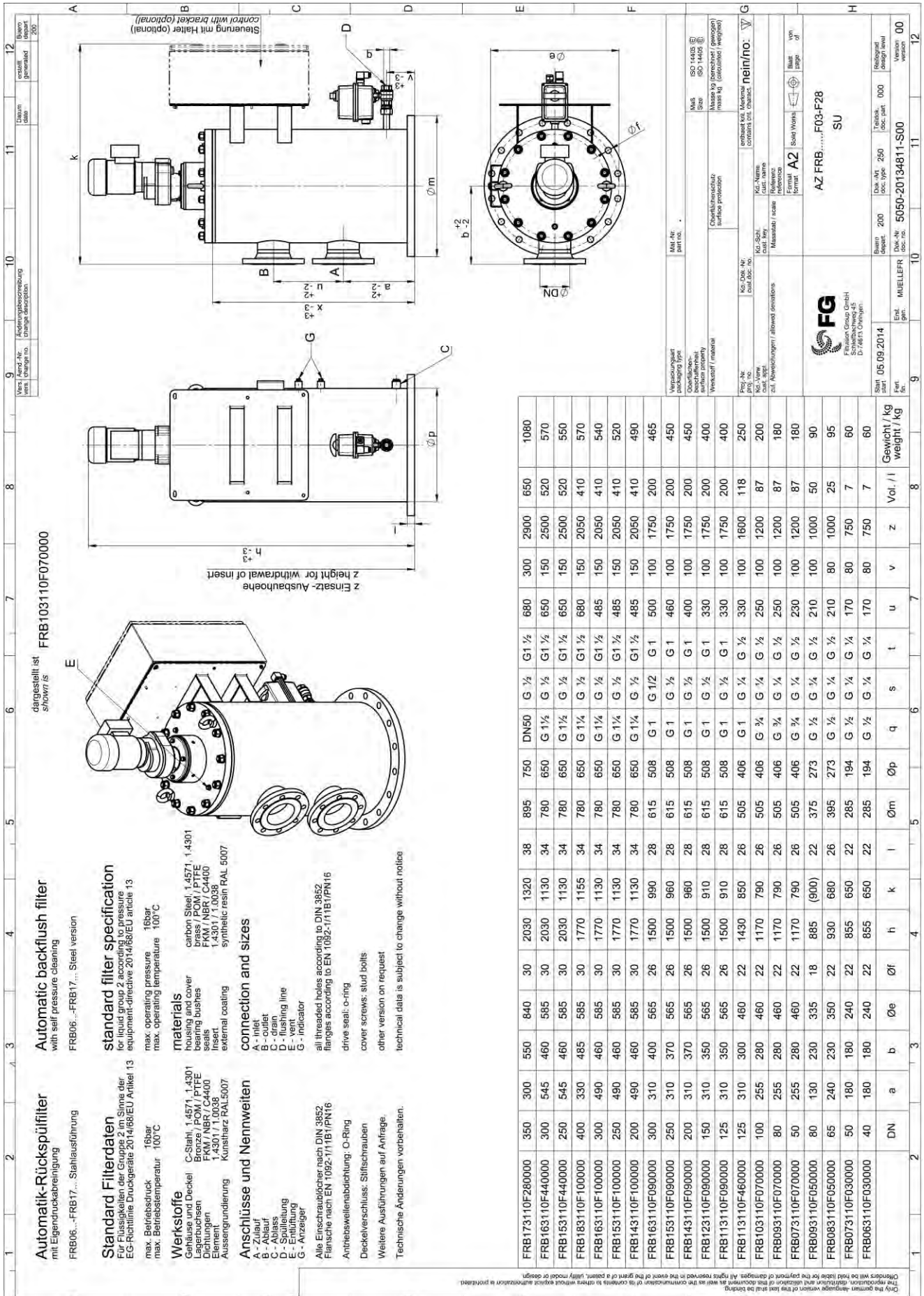
Connection:	DN 40 to DN 500
Flange:	DIN alternative ANSI
Material:	Steel/Stainless steel
Coating (optional):	Rilsan or Epoxy
Max. operating pressure:	16 bar
Optional operating pressure:	6/10/25/40 bar
Max. operating temperature:	100 °C
Filter element:	Screen basket with pleated wire cloth
Filter rating:	25 – 1.000 µm absolute





1 Inlet
2 Filter element
3 Outlet
4 Gear motor
5 Flush valve
6 Internal nozzle
7 Nozzle slot

4. Dimensions



	DN	a	b	Øe	Øf	h	k	l	Øm	Øp	q	s	t	u	v	z	Vol. / l	Gewicht / kg weight / kg
FRB173110F280000	350	300	550	840	30	2030	1320	38	895	750	DN50	G ¾	G 1 ½	680	300	2900	650	1080
FRB163110F440000	300	545	460	585	30	2030	1130	34	780	650	G 1½	G ½	G 1 ½	650	150	2500	520	570
FRB153110F440000	250	545	460	585	30	2030	1130	34	780	650	G 1½	G ½	G 1 ½	650	150	2500	520	550
FRB183110F100000	400	330	485	585	30	1770	1155	34	780	650	G 1¼	G ½	G 1 ½	680	150	2050	410	570
FRB163110F100000	300	490	460	585	30	1770	1130	34	780	650	G 1¼	G ½	G 1 ½	485	150	2050	410	540
FRB153110F100000	250	490	460	585	30	1770	1130	34	780	650	G 1¼	G ½	G 1 ½	485	150	2050	410	520
FRB143110F100000	200	490	460	585	30	1770	1130	34	780	650	G 1¼	G ½	G 1 ½	485	150	2050	410	490
FRB163110F090000	300	310	400	565	26	1500	990	28	615	508	G 1	G 1/2	G 1	500	100	1750	200	465
FRB153110F090000	250	310	370	565	26	1500	960	28	615	508	G 1	G ½	G 1	460	100	1750	200	450
FRB143110F090000	200	310	370	565	26	1500	960	28	615	508	G 1	G ½	G 1	400	100	1750	200	450
FRB123110F090000	150	310	350	565	26	1500	910	28	615	508	G 1	G ½	G 1	330	100	1750	200	400
FRB113110F090000	125	310	350	565	26	1500	910	28	615	508	G 1	G ¼	G 1	330	100	1750	200	400
FRB113110F460000	125	310	300	460	22	1430	850	26	505	406	G 1	G ¼	G ½	330	100	1600	118	250
FRB103110F070000	100	255	280	460	22	1170	790	26	505	406	G ¾	G ¼	G ½	250	100	1200	87	200
FRB093110F070000	80	255	280	460	22	1170	790	26	505	406	G ¾	G ¼	G ½	250	100	1200	87	180
FRB073110F070000	50	255	280	460	22	1170	790	26	505	406	G ¾	G ¼	G ½	230	100	1200	87	180
FRB083110F050000	80	130	230	335	18	885	(900)	22	375	273	G ½	G ¼	G ½	210	100	1000	50	90
FRB073110F030000	65	240	230	350	22	930	680	26	395	273	G ½	G ¼	G ½	210	80	1000	25	95
FRB073110F030000	50	180	180	240	22	855	650	22	285	194	G ½	G ¼	G ¼	170	80	750	7	60
FRB063110F030000	40	180	180	240	22	855	650	22	285	194	G ½	G ¼	G ¼	170	80	750	7	60

5. Design and application

The design of the backflush filters is based on the respective customer's requirements. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration tas based on the medium and capacity.

The task can be optimised with the freely variable options available for the backflush filters.

Options:

- Heater
  Capacity and size optimally matched to filter sizes.
  Steam and electric versions available.
- Magnetic elements
  Strong permanent magnets can be used.
- Control
  Control by means of a switch box with a programmable automation module.
  Easy parameterising with buttons and display.
  Programming and simulation on a PC.
- Pressure transmitter
  Differential pressure monitored with a pressure transmitter.
  This permits precise monitoring of the differential pressure using the PLC module in the switch box.
  *Max. temperature: 100 °C
  *Max. operating pressure: 16 bar
  Measuring tolerance: 0.3 %
- Bypass filter
  Manual, semi-automatic, fully automatic with change-over unit (manual, fully automatic).
- Step nozzle
  To reduce flush volume.

  *other temperature and pressure range on request

Backflush filters are not at all complicated to use and they guarantee continuous filtration. The necessary steps are described in the following:

- The filter comprises a bowl with a cover and a gear motor.
- The bowl contains a vent port, a drain port and a filter element
- The filter must be filled and vented before it is put into service. It must not be operated with the full pump flow when empty.
- Switch on the filter controller and start a flushing process with the hand release. If the viscosity of the medium is very sensitive to temperature, the filter controller should not be switched on until the filter reaches its normal service temperature.
- The filter controller must be switched off if the plant is not in service.
- In order for the backflushing process to be efficient, there must be operating overpressure during the flushing process on the outlet side of the filter.
- Backflushing starts automatically after a defined time or when the maximum differential pressure is reached. If the differential pressure exceeds 3 bar, the filter must be removed from service or changed over to bypass. Then dismantle the filter and clean the wire cloth cylinder (refer to "Cleaning").
- When a flushing process is tripped, the gear motor is switched on and the flush valve for the flushing medium outlet opens. The medium flows from the clean side through the filter element and into the internal nozzle as the flushing nozzle is turned by the gear motor.
- The flushing medium flows through the wire cloth at high speed, so that the contaminants trapped in the filter are detached and discharged via the flushing outlet and the flush pipe connected to it.
- The filter controller is programmed so that the flush valve closes and the gear motor is switched off after approximately 1¼ turns of the flushing nozzle.
- To clean the filter, switch off the filter controller, dismantle the gear motor, loosen the cover fixing screws and remove the cover. The complete filter element can now be lifted vertically out of the filter. To clean the filter element manually, spray it with steam, compressed air or water from the outside towards the inside. Pretreat the element with a suitable solvent if the dirt cannot be removed easily. It may be necessary to dismantle the pleated wire cloth cylinder.

6. Type number key

Type number key with selection example for R8-10 backflush filter

Main product group

R

Series

B R 8-10 series (welded design)

Inlet and outlet connections

- **06** Flange DN 40
- **07** Flange DN 50
- **08** Flange DN 65
- **09** Flange DN 80
- **10** Flange DN 100
- **11** Flange DN 125
- **12** Flange DN 150
- **14** Flange DN 200
- **15** Flange DN 250
- **16** Flange DN 300
- **17** Flange DN 350
- **18** Flange DN 400
- **19** Flange DN 450/500

Rated pressure + filter connection standard

Flange acc. to DIN EN 1092-1

- **1** PN 6
- **2** PN 10
- **3** **PN 16**
- **4** PN 25
- **5** PN 40

Flange acc. to ANSI

- **A** 150 lbs
- **B** 300 lbs
- **C** 400 lbs
- **D** 600 lbs

Position of main connections

- **1** above one another on the same side
- **2** opposed, same height
- **3** same height, inlet 9 o'clock position, outlet 12 o'clock position
- **4** same height, inlet 9 o'clock position, outlet 6 o'clock position
- **5** opposed, different height
- **6** different height, outlet 12 o'clock position, inlet 3 o'clock position
- **7** different height, outlet 6 o'clock position, inlet 3 o'clock position
- **9** Other position of main connections

Cover fastening

- **1** Stift- oder Dehnschrauben

Options

- **0** Standard version
- **2** Electric cartridge heater
- **3** Steam/thermal cartridge heater
- **7** Version without non-ferrous metals
- **R** Rilsan coating
- **D** Step nozzle

Type of inner assembly

- **F** Inner assemblies for automatic filter with internal medium

Inner assembly size

- **03** 1.310 (1.530*) cm²
- **05** 3.100 (3.750*) cm²
- **07** 6.280 (8.074*) cm²
- **09** 14.750 (19.175*) cm²
- **10** 21.200 (30.285*) cm²
- **28** 37.500 (53.000*) cm²
- **44** 28.000 (41.250*) cm²
- **46** 10.390 (14.800*) cm²

Housing version

- **9** Special material
- **B** Coated
- **C** Steel
- **E** CrNi

Nozzle material

- **4** Cast bronze
- **2** GGG 40

Number for special types or design features

xx

R

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
04/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Duplex filter
UG54

With stopcock change-over, rated pressure up to 10 bar (145 psi)
Connection sizes: DN 20 to DN 80, cast design

1. Features

High-performance, continuous filtration for plants

- Used in shipping and industry
- Continuous filtration supports rational production processes
- Mature engineering and robust design
- Compact design
- Minimal pressure drop through optimal flow design
- Elements with high differential pressure stability and dirt holding capacity
- Filter ratings from 25 to 5000 µm absolute, other ratings on request
- Suitable for use with fluids of all types
- Easy to service
- Worldwide distribution

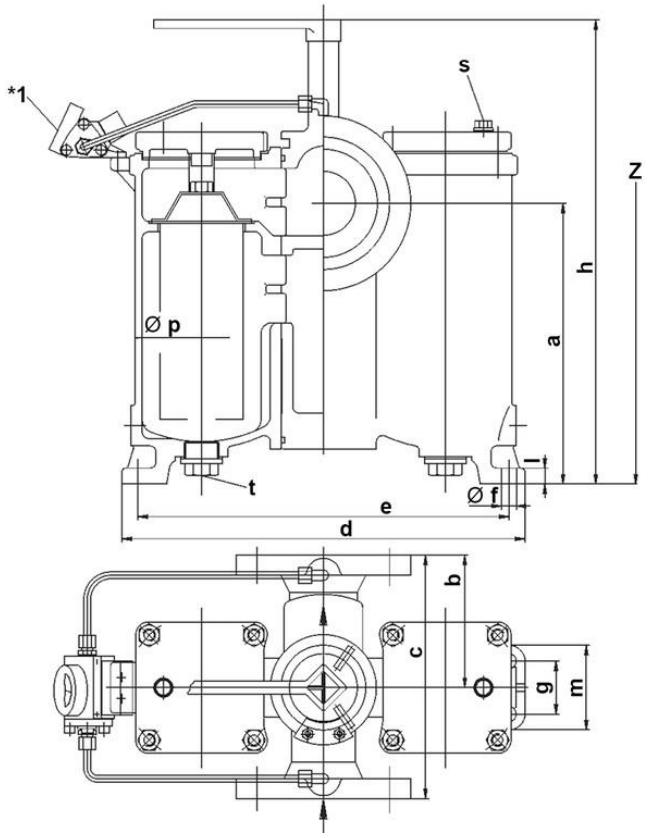
2. Operating principle

- The two bowls of the duplex filter are each fitted with a filter element (perforated, smooth or pleated) through which the medium flows from the inside to the outside.
- One filter bowl is pressurised during operation to allow the medium to flow through the filter element in the required direction.
- The filter changes over to the second bowl without interrupting the filtration process when a settable fouling threshold is reached.
- The non-operational bowl can then be opened and the filter element removed for cleaning.
- Duplex filters require no maintenance apart from cleaning the filter elements and inspecting the seals.

3. Technical Data

Connection:	DN 20 to DN 80
Flange:	DIN 2501 PN 16
Material:	Nodular cast iron 40
Max. operating pressure:	10 bar
Test overpressure:	15 bar
Max. operating temperature:	120 °C
Filter element:	Screen basket
Filter rating:	25 to 5000 µm absolute, other ratings on request

4. Dimensions



t = Drain
s = Vent
Z = Clearance required
*1 = Differential pressure indicator optional

All dimensions except "s" and "t" in mm.

Type	DN	a	b	c	d	e	Ø f	g	m	h	l	Ø p	s	t	Z	Capacity [l]	Weight [kg]
CT093210A08	80	380	170	295	520	480	18.0	60	100	580	16	176	G1/4	G1 1/2	810	8.0	87
CT083210A07	65	330	145	260	450	410	18.0	50	90	540	14	144	G1/4	G1	685	4.3	64
CT073210A05	50	265	125	230	380	350	14.0	50	80	438	15	126	G1/4	G1	565	2.7	40
CT063210A05	40	260	100	200	350	320	11.5	50	80	425	12	126	G1/4	G1	540	2.7	35
CT053210A04	32	210	95	180	284	260	11.5	36	60	340	10	90	G1/8	G3/4	520	0.8	21
CT043210A03	25	158	83	165	272	248	11.5	36	60	310	10	90	G1/8	G3/4	315	0.8	17
CT033210A02	20	140	75	145	232	212	9.5	28	48	254	8	70	G1/8	G3/8	275	0.4	14

5. Design and application

A wide range of filter elements are available for every duplex filter. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

Each duplex filter can be supplied with various options to ensure the optimum performance for each particular application.

Options:

- Heating (steam/thermal oil, electric)
- Magnetic elements
- Differential pressure indicator/switch mounted on the filter

Duplex filters are not at all complicated to use and they guarantee continuous filtration. The necessary steps are described in the following:

- The filter comprises two bowls with a cover and a parallel unit.
- Each bowl contains a vent port, a drain port and a filter element.
- The filter must be filled and vented before it is put into service. Make sure the liquid flows through the filter in the direction indicated by the arrow, so that it enters the filter element at the top.
- Cylindrical elements are used for the filtration process. Impurities are trapped in the element and removed together with the latter when it is withdrawn from the housing for cleaning. The inside of the housing is permanently dirt-free as a result.
- The filter must be changed over and cleaned when a differential pressure of approx. 7 m/water column is reached. This is done by turning the spanner in the direction of the other bowl. The spanner should be applied according to the marking. The flow direction of the medium in the pressurised bowl is indicated by a marking on the stopcock spanner hub.
- If the filter has a pressure balance pipe, the valve for this pipe must be opened and closed again prior to changing over to the other bowl.
- After the filter has been changed over, the cover of the non-pressurised bowl can be opened and the element lifted out vertically. To clean the filter element, either flush or blow it out or brush it with a soft brush. Carefully insert the cleaned element again vertically. When the cover is closed, the element is pressed against the support ring by means of the cover spring.
- The filter must be mounted without stress on flanges and feet.
- If the medium has a tendency to form deposits, the filter must not be allowed to run dry.
- If the change-over unit is stiff (because the medium has formed deposits), the stopcock must be switched once every day.
- In order to replace the O-rings, press the stopcock down so that the bottom ring can be removed, then pull it up to enable the top ring to be removed. Be careful not to adjust the stopcock any farther than is absolutely necessary to replace the O-rings.

6. Type number key

Type number key with selection example for UG54 duplex filter DN 20 to DN 80											
Main product group											
C Duplex filter, cast design											
	Series										
	T Duplex filter with stopcock										
		Inlet and outlet connections									
		03 Flange DN 20									
		04 Flange DN 25									
		05 Flange DN 32									
		06 Flange DN 40									
		07 Flange DN 50									
		08 Flange DN 65									
		09 Flange DN 80									
			Filter connection standard + rated pressure								
			3 EN 1092 PN 16 bar								
				Position of main connections							
				2 Opposite each other on the same axis							
					Cover fastening						
					1 Stud bolts or hexagon screws						
						Options					
						0 Standard version					
						2 Electric cartridge heater					
						3 Steam/thermal cartridge heater					
						7 Version without non-ferrous metals					
							Type of inner assembly				
							A Filter elements for simplex filter				
								Inner assembly size			
								XX			
									Housing version		
									2 Nodular cast iron		
									E Stainless steel		
										Stopcock material	
										2 Nodular cast iron	
											Number for special types or design features
											XX
C	**T**	**08**	**3**	**2**	**1**	**0**	**A**	**07**	**2**	**2**	**00**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen Phone +49
7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381744.06/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

Duplex filter
VS87-1

With smooth-running vessel change-over, rated pressure up to 16 bar (232 psi)
Connection sizes: DN 100 to DN 250, cast design

1. Features

High-performance, continuous filtration

- Used in shipping and industry
- Continuous filtration supports rational production processes
- Filtration efficiency due to interruption free operation
- Mature engineering and robust design
- Compact design
- Elements with high differential pressure stability (up to 5 bar → unrivalled) and dirt holding capacity
- Filter ratings from 25 to 5000 µm absolute, other ratings on request
- Suitable for use with fluids of all types
- Easy to service
- Worldwide distribution

2. Operating principle

- The two bowls of the duplex filter are each fitted with a filter element (smooth or pleated) through which the medium flows from the inside to the outside.
- One filter bowl is pressurised during operation to allow the medium to flow through the filter element in the required direction.
- The filter changes over to the second bowl without interrupting the filtration process when a settable fouling threshold is reached.
- The non-operational bowl can then be opened and the filter element removed for cleaning.
- Duplex filters require no maintenance apart from cleaning the filter elements and inspecting the seals.

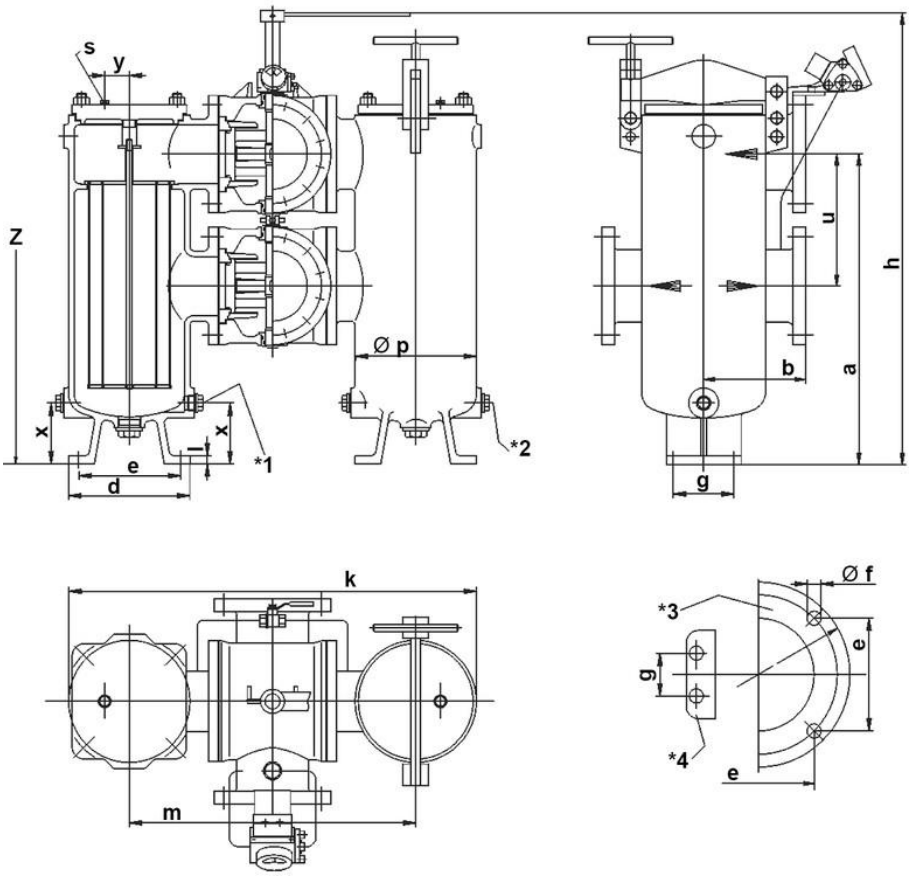
3. Technical Data

Connection:	DN 100 to DN 250
Flange Type 1:	DIN 2501 PN 16
Material:	Nodular cast iron
Max. operating pressure Type 1:	6 bar
Max. operating pressure Type 2:	16 bar
Test overpressure Type 1:	9 bar
Test overpressure Type 2:	23 bar
Max. operating temperature:	180 °C
Filter element:	Screen basket, cartridges
Filter rating:	25 to 5000 µm absolute, other ratings on request

4. Dimensions

Type 2
Index **1**

Type 1
Index **3**



s = Vent
Z = Clearance required
*1 = Drain G1
*2 = Position of drain for DN 100
*3 = Position of feet for DN 200 - 250
*4 = Position of feet for DN 100 - 150

All dimensions except "s" in mm.

Type	DN	a	b	d	e	Ø f	g	h	k	l	s	m	p	u	x	y	Z	Weight [kg]
CE103**0A09	100	480	180	220	180	18	70	720	800	16	G1/4	550	204	250	90	50	980	200
CE113**0A10	125	660	200	260	220	18	170	925	960	18	G3/8	644	260	270	130	80	1320	296
CE123**0A11	150	760	210	320	270	23	200	1035	1090	20	G3/8	724	308	310	135	100	1500	390
CE143**0A13	200	810	240	290	176	23	-	1175	1310	20	G3/8	862	384	350	90	120	1695	645
CE153**0A92	250	1070	270	302	184	23	-	1430	1390	20	G3/8	944	390	405	90	120	2200	787

* first position: insert index **"1"** for flange position on the same side, insert index **"5"** for flange position opposite each other

* second position: insert index**"3"** for type 1, insert index **"1"** for type 2

5. Design and application

A wide range of filter elements are available for every duplex filter. The material, type of construction and filter surface and rating are expertly adapted to the specific filtration task based on the medium and capacity.

Each duplex filter can be supplied with various options to ensure the optimum performance for each particular application.

Options:

- Heating (steam/thermal oil, electric)
- Magnetic elements
- Differential pressure indicator/switch mounted on the filter
- Automatic switch-over

Duplex filters are not at all complicated to use and they guarantee continuous filtration. The necessary steps are described in the following:

- The filter comprises two bowls with a cover and a parallel unit.
- Each bowl contains a vent port, a drain port and a filter element.
- The filter must be filled and vented before it is put into service. Make sure the liquid flows through the filter in the direction indicated by the arrow, so that it enters the filter element at the top.
- Cylindrical elements are used for the filtration process. Impurities are trapped in the element and removed together with the latter when it is withdrawn from the housing for cleaning. The inside of the housing is permanently dirt-free as a result.
- The filter must be changed over and cleaned when a differential pressure of approx. 7 m/water column is reached. This is done by turning the spanner in the direction of the other bowl. The spanner should be applied according to the marking. The flow direction of the medium in the pressurised bowl is indicated by a marking on the stopcock spanner hub.
- If the filter has a pressure balance pipe, the valve for this pipe must be opened and closed again prior to changing over to the other bowl.
- After the filter has been changed over, the cover of the non-pressurised bowl can be opened and the element lifted out vertically. To clean the filter element, either flush or blow it out or brush it with a soft brush. Carefully insert the cleaned element again vertically. When the cover is closed, the element is pressed against the support ring by means of the cover spring.
- The filter must be mounted without stress on flanges and feet.
- If the medium has a tendency to form deposits, the filter must not be allowed to run dry.

6. Type number key

Type number key with selection example for VS87-1 valve filter DN 100 to DN 250											
Main product group											
C Duplex filter, cast design											
	Series										
	E Duplex filter with valve switch-over										
		Inlet and outlet connections									
		10 Flange DN 100									
		11 Flange DN 125									
		12 Flange DN 150									
		14 Flange DN 200									
		15 Flange DN 250									
			Filter connection standard + rated pressure								
			3 EN 1092 PN 16 bar								
				Position of main connections							
				5 Opposite each other, offset pattern							
					Cover fastening						
					3 Retractable screwtop						
						Options					
						0 Standard version					
						2 Electric cartridge heater					
						3 Steam/thermal cartridge heater					
						7 Version without non-ferrous metals					
						G Rubber coating					
							Type of inner assembly				
							A Filter elements for simplex filter				
								Inner assembly size			
								XX			
									Housing version		
									2 Nodular cast iron		
										Parallel unit material	
										2 Nodular cast iron	
											Number for special types or design features
											XX
C	**E**	**11**	**3**	**5**	**3**	**0**	**A**	**10**	**2**	**2**	**01**

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen Phone +49
7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70381746.06/2019

Automatic filters
Accessories

Differential pressure switches, measuring and display units, valves, electric control units, secondary processing

1. Features

The greatest possible potential offered by Filtration Group automatic filters is only achieved by combining them with the right accessories. These include the following attachment parts:

- Differential pressure switches, measuring and display units
- Valves
- Electric control units
- Secondary processing

2. Differential pressure switches, measuring and display units

The efficiency of an automatic filter is only evident when it is working optimally. This encompasses both the filtration as such as well as automatic cleaning. In practice, this is usually controlled by either differential pressure or time. In order to be able to offer you the optimum solution, Filtration Group has various measuring instruments available for a wide range of different process tasks..

2.1 Differential pressure switches

Analogue differential pressure switches are a low-cost option for monitoring processes. Changes in pressure are recorded within this differential pressure switch by changes in a piston path. When the switching point is reached, the red indicator button pops out of the optical display and the electrical contact switches. If the differential pressure falls again, the indicator button remains out, the electrical contact reverts. The indicator button must be reset in its original position manually (manual acknowledgement).
The switching function can be changed by turning the switching part through 180° and reconnecting it (normally closed or normally open). When delivered, it is in the normally closed state.

- Low-cost monitoring unit
- Optical and electrical display with check function
- Normally open/normally closed combination
- Worldwide distribution

The electrical maintenance indicators, which are mentioned in the Filtration Group list of released products, are simple electrical devices according to DIN EN 60079-11, without own supply voltage. The electrical components consits of reed-contacts, bimetal switches, plug connections and terminal clamps.
For equipment group II, category 2 G (zone 1) and category 2 D (zone 21), these simple electrical components can be used acc. EN 60079-14 and EN241-11 in intrinsically safe circuits [EEX ib] without making and certification.
The EN 60079-12 (gas) and EN 61241-14 (dust) Installation regulations have to be observed as well as the national security terms and accident prevention regulations.

Please contact us for detailed technical information about use of differential pressure switches in ATEX areas.

2.1.1 Technical data

	PiS 3076	**PiS 3077**	**PiS 3079**	**PiS 3192**	**5.01**	**5.02**
Switching point/ Differential pressure	PiS 3076/0.3*	PiS 3077/0.3	-	-	-	-
	PiS 3076/0.7	PiS 3077/0.7	PiS 3079/0.7	-	5.01/0.7	5.02/0.7
	PiS 3076/1.2	PiS 3077/1.2	PiS 3079/1.2	-	-	-
	PiS 3076/2.2	PiS 3077/2.2	PiS 3079/2.2	PiS 3192/2.2	-	-
Max. stat. operating pressure	63 bar	63 bar	63 bar	450 bar	100 bar	100 bar
Perm. operating temperature	10 bis+120 °C					
Max. perm. viscosity	1000 mm²/s					
Type of contact		without			5.01 C0 without	5.02 C0 without
	1 contact NO/NC	-	1 contact NO/NC	1 contact t NO/NC	5.01 C1 1 contact NO/NC	5.02 C1 1 contact NO/NC
	-	-	-	-	5.01 C2 2 contacts 75+100% NO+NO/NC	5.02 C2 2 contact 75+100% NO+NO/NC
Electr. connection	Wiring box DIN EN 175301-803	-	M12x1 (4-pole)	Wiring box DIN EN 175301-803	Terminal strip	Terminal strip
Process connection	2x G$^{1}/_{8}$ direct	2x G$^{1}/_{8}$ direct	2x G$^{1}/_{8}$ direct	2x G¼ via mounting block	2x R¼ connected to pipes	2x R¼ connected to pipes
Material Upper part/lower part/membrane	PA6/Al/FKM**	PA6/Al/FKM**	PA6/Al/FKM**	PA6/stainless steel /FKM**	5.01/… AlSi12/ALhc/FKM**	5.02/… AlSi12/VA/FKM**
	PiS 3076 V2A PA6/VA/FKM**	PiS 3077 V2A PA6/VA/FKM**	PiS 3079 V2A PA6/VA/FKM	-	-	-
Switching voltage	250 VAC/200 VDC	-	250 VAC/200 VDC	250 VAC/200 VDC	250 VAC/200 VDC	250 VAC/200 VDC
Max. Switching current	1 A	-	1 A	1 A	1,5 A	1,5 A
Protection class DIN 40050	IP 65	-	IP 65	IP 65	IP 65	IP 65

*Switching point in bar – for example 0.3 bar
** Fluororubber
NO = normally open contact, NO/NC = changeover contact

2.2 Analogue manometers and digital differential pressure measuring and switching units

Alongside low-cost pressure switches, Filtration Group also offers you digital differential pressure manometers for process monitoring and control. The differential pressure manometers allow you to adapt the switching point for cleaning optimally to your process. The differential pressure can be read off conveniently at any time on the LED display. As an option, you can tap an analogue signal, which allows your process to be monitored from a measuring station, 0 to 10V or 4 to 20mA.
Filtration Group offers different measuring units and connections for the respective task, depending on the process.
You will also find suitable solutions for potentially explosive areas here..

2.2.1 Technical data

	Gauge	PiS 3340	PiS 3170	PiS 3175	PiS 3180 Ex
					
	Analogue display	**No display**	**Digital display**		
Basic measuring range differential pressure	0 to 16 bar	0 to 4 bar	0 to 40 bar	0 to 6/0 to 40 bar	-1.3 to 16 bar
Max. operating pressure (overpressure-resistant)	25 bar	16 (20) bar	40 (80) bar	16 (32)/40 (80) bar	16 (40) bar
Perm. temperature	< 70 °C	-20 to +80 °C	-10 to +70 °C	< 80 °C (optional max. 200 °C version available)	-25 to +85/+150
Protection class DIN 40050	IP 54	IP 65	IP 65	IP 65	IP 65
Nominal voltage	-	24	24	24	24
Perm. operating voltage	-	19 to 28 VDC	12 to 32 VDC	12 to 32 VDC	13.5 to 45 VDC
Output signal	-	4 to 20 mA	4 to 20 mA/ 0 to 10 V	4 to 20 mA/0 to 10 V	4 to 20 mA + Hart 5.1
Switching contacts	-	-	2 relay contacts NO/NC programmable	2 relay contacts NO/NC programmable	-
Measured value display	analogue	-	3.5-line LED	3.5-line LED	5-line LED
ATEX	No ATEX marking necessary	-	-	(optionally available in Ex 3G)	Ex II 2G Exd IIC T5
Electr. connection	-	M12x1	M12x1 for supply and 2 switching contacts + M8x1 analogue output signal	M12x1 für Versorgung u. 2 switching contacts + M8x1 analogue output signal	M20x1,5 wiring through terminals
Process connection	G1/4 (inside)	G1/8 (inside)	2x G1/8, mechanical joint suitable for direct fitting to Filtration Group filters	Pressure transmitter connection: 2x G1 optionally with flange 2x DN 25 PN40	2x remote seal DN 25 PN40 with capillary tube
Housing material	Stainless steel	CuZn	Polyamide PA	Polyamide PA	Stainless steel/Al
Material which comes into contact with media	CuZn (inside)	CuZn, ceramic	Stainless steel, FKM*, CuZn, ceramic	Stainless steel, FKM*	Stainless steel
Certificate	-	-	-	-	ATEX, GOST

* Fluororubber

3. Valves

One important component of Filtration Group automatic filters are the valves, through which automated processes are possible in the first place. The built-in valves on the automatic filter control the different volume flows from the filter. Filtration Group offers suitable valves for every filtration process. Special versions can also be provided on request.

3.1 Check valves

In the automatic filter segment, check valves are mainly used on draining or emptying connections with nominal widths greater than or equal to DN 50.

Advantages:

- Low-cost variant from DN 80 onwards
- Selection of manually actuated, electric/pneumatic (EL/PN) or purely electric versions (EL)
- Different material compositions allow ideal adaptation for every process
- Electrical standard connection device socket DIN 43650, also as M12x1 if required

Special versions:

- High-temperature versions
- Brands according to customer requirement
- Special materials
- ATEX version
- ISO 1
- Metal-to-metal sealing

Example illustration

3.1.1 Technical data

Nominal width	Max. operating pressure [bar]	Temp. of the medium [°C]	Ambient temperature [°C]	Actuation/ mode of operation	Nominal voltage [V]	Material			Ex protection
						Housing	Flap	Seal	ATEX 2014/34/EC
DN 80 - DN 1000	PN6 - PN16	-10 to +80	-20 to +80	Manual or EL or EL/PN/ double operation	24 VDC (EL/PN), 24 VDC (EL), 230 VAC (EL)	CuZn, GGG*, stainless steel	stainless steel	FKM**, PTFE	Optionally in Ex II 2G T3

*Nodular cast iron
**Fluororubber
Special versions on request.

3.2 Ball valves

Advantages:

- Virtually pocket-free design
- Small dimensions
- High air-tightness
- Full passage
- Different material compositions allow ideal adaptation for every process
- Electrical standard connection DIN 43650, optionally M12x1

Special versions:

- High-temperature versions
- High-pressure versions
- Brands according to customer requirement
- Special materials
- ATEX version
- Heating jacket

Example illustration

3.2.1 Technical data								
Nominal width	**Max. operating pressure [bar]**	**Temp. of the medium [°C]**	**Ambient temperature [°C]**	**Actuation/ mode of operation**	**Nominal voltage [V]**	**Material**		**Ex protection**
						Housing	Flap	Seal	ATEX 2014/34/EC
G½ - G2½, DN25-DN100	PN40	-10 to +120	-20 to +80	Manual or EL or EL/PN/ double operation	24 VDC (EL/PN), 24 VDC (EL), 230 VAC (EL)	CuZn nickel plated, C-steel, stainless steel	CuZn hard chrome plated, stainless steel	FKM*, PTFE	Optionally in Ex II 2G T3

* Fluororubber
Special versions on request.

4. Electric control units for automatic filters

A control workflow adapted to the functions of Filtration Group automatic filters is important for smooth operation, optimum adaptation to the filtration task and the right reaction to operating conditions. Where electrical actuation cannot be taken over by the whole system incorporating an automatic filter, a decentral Filtration Group control box for automatic filters can be used.

Adaptation of the existing control cabinets and software is very complex in retrofit situations as well, which means a separate control for the automatic filter is an economic solution in such situations too. Filtration Group automatic filter control units have respective exchange contacts for meaningful communication options.

4.1 Electric control unit MFS-AF

Universal control unit for all Filtration Group automatic filter types. the optimum control functions and control parameters can be set using software parameters.The filter cleaning workflow can be triggered via the control contact of a differential pressure measuring unit or switch. In addition, it can be combined with a time function or be controlled exclusively by the time function. Time and counting functions are optionally available for drain valve control. Controlled by a release contact, triggering of filter cleaning is only carried out when there is an external release.A fault message contact reports faults to higher-order control points.

- Prepared for all automatic filter series
  Adaptation through software configuration
- Micro-PLC made by Siemens of the type LOGO! with display
- Service-friendly operation
- Sturdy style
- Compact design
- Versions for different supply voltages
- Versions with different motor protection relays to match the nominal current of the automatic filter drive motor
- Versions with switch amplifier for actuating filters in potentially explosive areas (control box outside the potentially explosive area)
- Versions for parallel-operation installation for two automatic filters
- Input for external release for filter cleaning
- Collective fault message
- Cable markings
- Operating equipment markings included in the scope of supply

Example illustration

4.1.1 Technical data		
Housing	Material	Steel plate coated in RAL 7035
	Housing protection class DIN 40050	IP 65
	Dimensions	400x500x210
Electrical data	Supply voltage	standard 3~ 230/400 - 500 V/PE/50 Hz + 60 Hz, others on request
	Pre-fuse/power supply cable (recommended)	10 A/5x2.5 mm²
	Control voltage	24 VDC
	Motor feeder/motor protection switch	3~ 400 V, standard 0.6 to1.0 A, optional: 0.4 to 0.6 A, 1.0 to 1.6 A
	Switching outputs 24 VDC	Switching outputs for valves, each with up to 5 A load
	Contact exchange	Release (external potential-free), fault message: Changeover contact NO/NC potential-free
	ATEX	Version MFS-AF EX with switch amplifier for actuating filters in potentially explosive areas (control box outside the potentially explosive area)
	Electrical connections	Terminal strip

4.2 Digital differential pressure measuring unit with control function PiS 3170 MFC

The Filtration Group automatic filter variants with pneumatic drive are particularly interesting for retrofit purposes, since the drive energy comes from the compressed air network while the 24 V control voltage of a system is used for the control functions. This means a 400 V power pack does not have to be retrofitted and intervention in the system software is not necessary.
The control functions are realised by the correspondingly extended MFC variant of the tried-and-trusted digital differential pressure measuring unit PiS 3170.
Automatic filters with pneumatic drive and PiS 3170 MFC work independently and fully automatically (if required: cleaning only following external release).Communication with higher-order system control via contact exchange for release, start of filter cleaning and fault message.

- For automatic filters with pneumatic rotary drive
- Compakt
- Low cost
- Two pressure sensors measure the input and output pressure at the filter, the display and control unit uses these values to determine the differential pressure.
  The differential pressure display unit PiS 3170 MFC can display all three pressure values.
- Differential pressure is an indicator for filter blockage and is used to control automatic filter cleaning.
- The first differential pressure switching point triggers filter cleaning, the second differential switching point triggers a fault message output
- Measuring range 0 to 16 bar for input, output and differential pressure
- Resistant to overpressure up to 32 bar
- Power supply: 24 VDC
- 4 switching outputs for valves, each with up to 0.5 A load
  1 output for rotary drive, up to 1.0 A load
- Outputs protected against short-circuit and overload, free-wheeling diode prevents faults with inductive loads
- Input for external release for filter cleaning
- Input for external start of filter cleaning
- Fault message output
- No 400 V power pack, no intervention in electrical system control units necessary

Example illustration

4.2.1 Technical data		
Operating data	Basic measuring range	0 to 16 bar
	Max. stat. operating pressure	32 bar
	Perm. media temperature	-10 to +70°C
	Housing protection class DIN 40050	IP 54
Electrical data	Supply/control voltage	24 VDC
	Switching outputs 24 VDC	4 switching outputs for valves, each with up to 0.5 A load 1 output for rotary drive, up to 1.0 A load
	Measured value display	3 digits + sign
	ATEX	Not available at the moment
	Electrical connections	Terminal strip, cable glands
Connections	Process connection	Inner thread $G^1/_8$, suitable for direct fitting to Filtration Group filters
Materials	Sensor in contact with media	Stainless steel, FKM (fluororubber), NBR
	Housing	Polyamide PA

5. Secondary processing

5.1 Sedimentation tank

The Filtration Group sedimentation tank is a convenient secondary processing stage to trap the backflush and sludge volume from the Filtration Group automatic filter and collect particles which can be sedimented in a sediment strainer tank.

- Can be used for Filtration Group automatic filters of the types VARIO series 2 and 3
- Coarse dirt is trapped in the strainer and can then be easily disposed of or further processed
- Low maintenance effort
- Mounting concept adapted to Filtration Group automatic filters
- Available in two different sizes

5.1.1 Filtration Group sedimentation tank type 1

- 2 strainers
- Separate draining area for the second strainer
- Attachment bracket for automatic filter

Width x depth:	530x700 mm
Tank height:	580 mm
Height with filter bracket:	1395 mm

5.1.2 Filtration Group sedimentation tank type 2

- 1 strainer
- Draining area for strainer on the opened cover
- Attachment bracket for automatic filter

Width x depth:	530x700 mm
Tank height:	580 mm
Height with filter bracket:	1395 mm

Example illustration

5.2 Filtration Group fine dirt discharger MFA 500

Particle concentrate from Filtration Group automatic filters is processed by sedimentation by the Filtration Group MFA 500. MFA 500 is an automatic particle discharge system. Sedimented particles are discharged from the tank sump via a scraper conveyor.
The combination of Filtration Group automatic filter with MFA 500 and electric control box MFS-AF results in a complete, ready-to-operate and fully automatic filter station (see illustration).

- Tank with attachment bracket for automatic filter
- For automatic filters of the VARIO series 2 and 3
- Calmed inlet zone to prevent turbulence
- Scraper conveyor chain with clearing strips, driven by gear motor
- Mechanical safety switch to prevent operation with the cover open
- Maintenance-friendly

5.2.1 Technical data

Width x depth:	500x700 mm
Tank height:	500 mm
Height with filter bracket:	1315 mm
Discharge tank:	485x200x100 mm
Drive via angled gear motor:	230/400 VAC/50 Hz 0.09 kW
Return flow connection:	Rp 1½“
Drain screw:	Rp ¾“

Example illustration

5.3 Filtration Group dry separator MTS 10

The MTS 10 combines the properties of the MFA and the Filtration Group sedimentation tank. Thanks to its large capacity, it can cope with the drain volume flows from several automatic backflush filters.

The MTS 10 combines the following processes:

- Sedimentation
- Fluid extraction
- Filtration
- Dry retentate discharge

5.3.1 Technical data

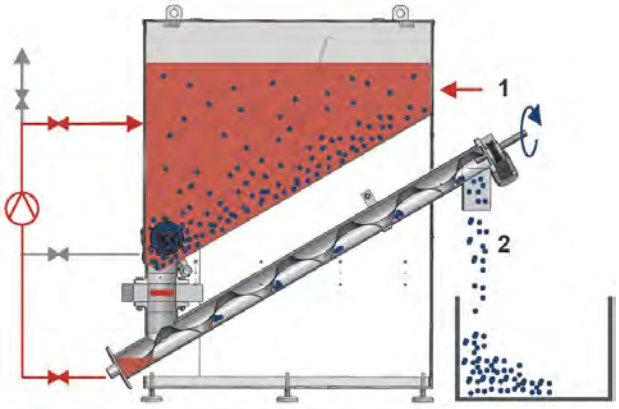
Electrical power requirement:	230/400 VAC
Power consumption:	2,2 kW
Drive via angled gear motor:	230/400 VAC 50 Hz 0,18 kW
Max. operating temperature:	80 °C
Noise emission (briefly):	< 70 dB(A)
Overall empty weight (without valves):	approx. 650 kg
Width x depth:	1350x1144 mm
Tank height:	1906 mm
Height MTS 10:	2047 mm
Max. volume capacity:	930 l

Example illustration

Functional description:

The backflush retentate is discharged at intervals from the automatic filter into the buffer tank of the Filtration Group dry separator. This serves as a sedimentation tank at the same time. There is a Filtration Group automatic filter of the smaller VARIO series (AF 73) integrated in this tank.
The fluid phase is extracted through the automatic filter via a sturdy suction pump mounted in the housing. The filter fineness should correspond to that of the main volume flow filtration. The automatic filter leaves the solids in the tank. Filtration and sedimentation results in a solid concentrate.In the next step, this is drained in seconds through a large-sized gate valve into the inclined pipe screw conveyor located underneath.
Due to the special tank design, all the sedimented solids are picked up. The inclined screw conveyor is operated at a low rotating speed and intermittently, and transports the solids slowly upwards and out of the fluid. The solids are dried off well through movement through the long conveyor. The dry solid is ejected directly into a waste container. After the gate valve has closed the buffer tank can be filled again with retentate from the next backflush process. The residual fluid in the inclined screw conveyor is extracted by the suction pump and pumped back into the retentate tank.
The retentate processing cycle then begins again.

Technical data is subject to change without notice.



1 = back flush material
2 = dry solid

Example illustration

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
72369930.06/2019

FG Fluid Solutions
Filtration Group

MAHLE Industrialfiltration is now Filtration Group. For more information, visit www.fluid.filtrationgroup.com

ATEX recommendation process technology
Process filters in hazardous zones

Recommendation for the use of process filters and maintenance indicators in hazardous zones
acc. to Directive 2014/34/EU (ATEX)

Short description

Process filters

Process filters in fluid systems could be subject to this directive.

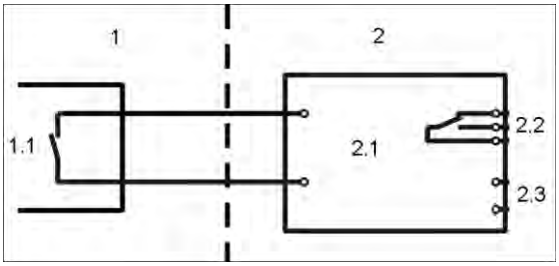
Accordant a CE- marking is necessary.

For process filters to be used in hazardous zones, the ignition sources have to be analysed by the operator, considering the complete installation. Filtration Group GmbH as manufacturer of the process filters may assist.

For use in hazardous zones, Filtration Group GmbH recommends to use only metal filter housings and to connect the housing electrically to ground.

The earthing is realised by using the clamping bolts. The maximum content of magnesium is less than 7,5 %.
The size of the largest projected nonconducting areas are smaller than 100 sqcm (400 sqcm if a conducting framing is provided).
Because of low circumferencial speed process filters are easy, not electrical apparatuses, considering of EN 13463. Therefor a participation of a named area is not necessary.
According to 2014/34/EU (ATEX) the Filtration Group process filters are suitable for the use in appliance group II category G up to 120 Deg C.

The function of the electrical maintenance indicator is described in the right column.



Subject to technical alteration without prior notice.

Maintenance indicators

The electrical maintenance indicators, which are mentioned in the Filtration Group list of released products, are simple electrical devices
according to DIN EN 60079-11, without own supply voltage.
The electrical components consits of reed-contacts, bimetal switches, plug connections and terminal clamps.

The components are in accordance with DIN EN 50014 and DIN EN 50020.

For equipment group II, category 2 G (zone 1) and category 2 D (zone 21), these simple electrical components can be used acc. EN 60079-14 and EN241-11 in intrinsically safe circuits [EEX ib] without making and certification.
The EN 60079-12 (gas) and EN 61241-14 (dust) Installation regulations have to be observed as well as the national security terms and accident prevention regulations.

The electrical utilities are attributed to category ib and temperature class T5.
Das If the electrical upper part is used conventional (intrinsically safe circuit) it will not present itself as a heat source.

Usage in EX- zones is possible when the indicators are connected intrinsically safe (EX-i).

For that purpose a switch-amplifier with an intrinsically safe input is required. The switch amplifier must be installed outside the EX- zone, leaving only the intrinsically safe wires in contact with the hazardous zone.

1. Ex-zones
1.1 Maintenance indicator
2. Intrinsically safe input
2.1 Switch-amplifier with PTB-approval
2.2 Output cast
2.3 Power-supply

The required switch-amplifiers are offered by manufacturers of Ex-control equipment.
A two-step indicator requires a switch amplifier with two intrinsically safe inputs.

Filtration Group GmbH
Schleifbachweg 45
D-74613 Öhringen
Phone +49 7941 6466-0
Fax +49 7941 6466-429
fm.de.sales@filtrationgroup.com
www.fluid.filtrationgroup.com
70316710.I03.06/2019

WORLDWIDE AT OVER 100 LOCATIONS IN 28 COUNTRIES

ADDRESSES

Filtration Group GmbH

Schleifbachweg 45
74613 Öhringen
Germany

Phone: +49 7941 / 6466 - 0
Fax: +49 7941 / 6466 - 429
Email: fm.de.sales@filtrationgroup.com

FG Filtration Group USA

2400 Zinga Drive
Reedsburg, Wisconsin 53959
USA

Phone: +1 608 / 524 - 4200
Fax: +1 608 / 524 - 4220
Email: fg-usa@filtrationgroup.com

Filtration Group Japan Corporation

IS Yumicho Bldg, 1-28-24 Hongo
Bunkyo-ku
Tokyo 113-0033
Japan

Phone: +81 3 / 5802 - 7340
Fax: +81 3 / 5802 - 7345
Email: fm.jp.industrialfiltration@filtrationgroup.com

Filtration Group (Shanghai) Co. Ltd.

B 501, Hangyi Road 8
Fengxian District
Shanghai 201401
China

Phone: +86 400 / 821 - 5175
Email: info_shanghai@filtrationgroup.com

Filtration Group Srl.

Calea Stan Vidrighin 5A
Timisoara 300645
Romania

Phone: +40 256 / 408 - 230
Email: fm.ro.office@filtrationgroup.com

Filtrair B.V.

De Werf 16
8447 GE Heerenveen
The Netherlands

Phone: +31 513 / 626 - 355
Email: marketing-filtrair@filtrationgroup.com

Clear Edge Filtration CFE GmbH

Erzwäsche 44
D-38229 Salzgitter-Calbecht
Germany

Phone: +49 5341 / 8151 - 0
Fax: +49 5341 / 8151 - 52

Further information about our products and a local contact person from our worldwide partner network can be found on our website:
www.fluid.filtrationgroup.com/en-US/contact

www.fluid.filtrationgroup.com

Filtration Group®
Safer | Healthier | More Productive