MAHLE Industriefilter

Automatic Filter

with pulsating external pressure segment cleaning and integrated cyclone effect

AF 173 G

Casted version

for liquids

Connection sizes: G 2, flange DN 50 and DN 65

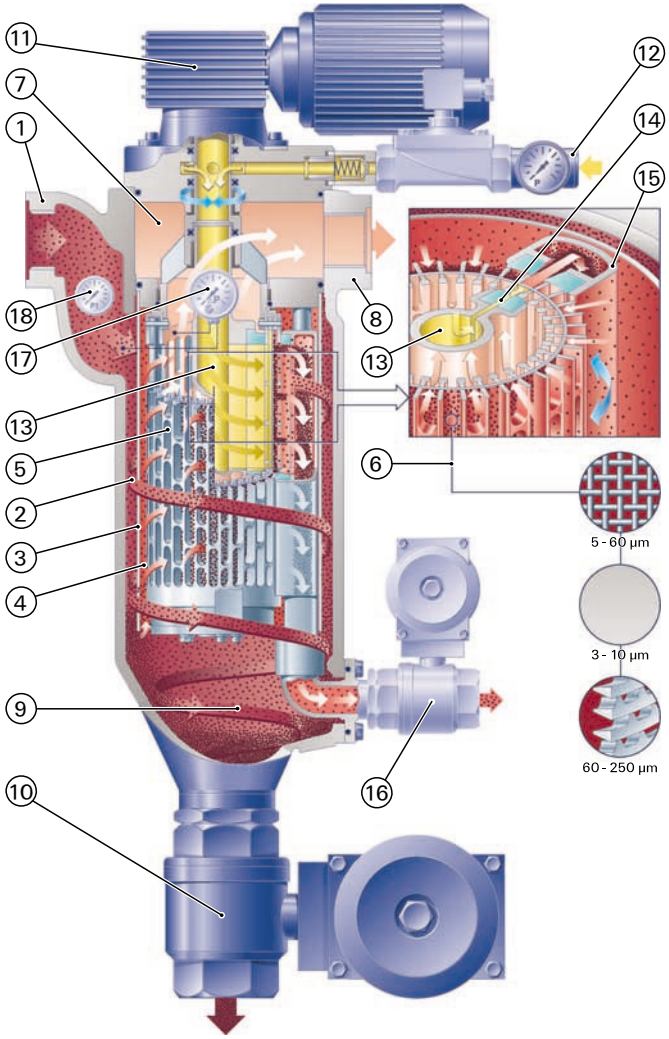
1. Principle of operation

The compact **MAHLE automatic filter system** is used for the extra-fine and fine filtration of a wide range of different low-viscosity liquids. With this in-line pressure filter, the filtrate flow is neither interrupted nor noticeably reduced during optimum cleaning in-process. It necessitates no waste disposal, for example, in the case of used filter material.

The integrated cyclone effect and the downward, tangential flow of the immersion pipe via the outer in-flow chamber relieve the load in the segment element and facilitate pre-separation, of coarse and heavy particles in particular, due to sedimentation in the collection cone. The liquid then flows inward through the **MAHLE segment element**, up via the inner in-flow chamber. The defined separation of the residual particles takes place on the **MAHLE filter material**. The filtrate then flows out of the filter at the top, opposite the in-flow connection point.

Once the differential pressure limit or the set interval have been reached, the segment element is turned briefly and the cleaning valve is opened at the same time, for the purposes of brief cleaning in the opposite direction, with compressed air or filtered liquid. The segments pass the external pressure nozzle on the inside and the rinsing channel on the outside. The nozzle alternates between open and closed tightly. The pressure builds up in the external pressure reservoir when the nozzle is closed tightly. Then, whenever it is opened in one of the segments, an outward **blast of pressure** cleans the deposits of particles from the filter material. The particles are trapped on the outside by the rinsing channel and virtually only discharged with external medium. It only takes one rotation to clean all the segments. The residue deposited in the collection cone can then be emptied through the drain valve while the system is switched off or while it is in operation.

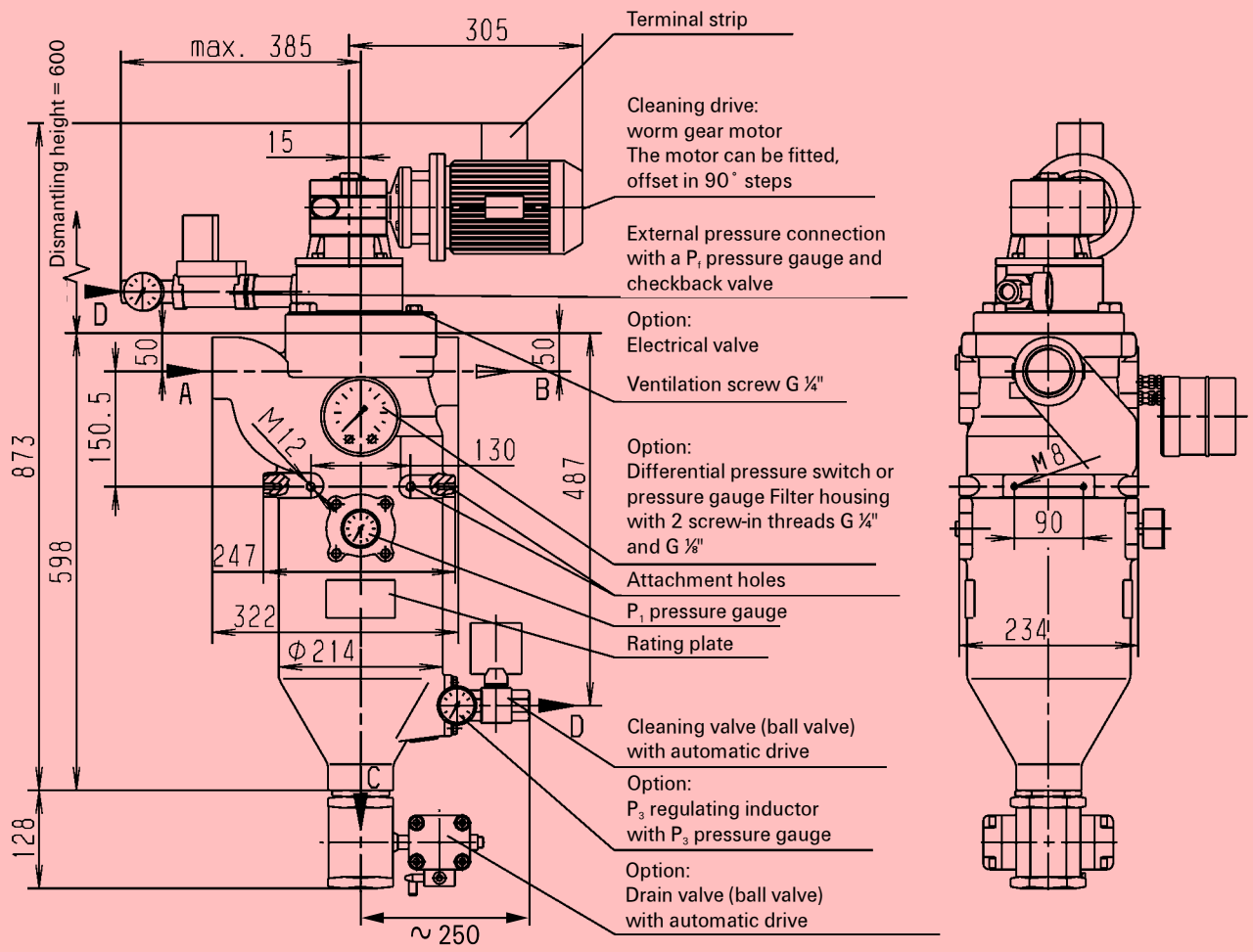
An automatic filter variable series, based on this filter and protected by various **patents** allows great flexibility in responding to a wide range of different filtration requirements, with different cleaning systems and filter materials.



1. Inlet connection
2. Outer in-flow chamber
3. Immersion pipe
4. Inner in-flow chamber
5. MAHLE segment element
6. MAHLE filter materials
7. Filtrate chamber
8. Outlet connection
9. Residue collection cone
10. Drain valve
11. Drive motor
12. External pressure connection point, external pressure and checkback valve, as well as P_1 pressure gauge
13. External pressure reservoir
14. External pressure nozzle
15. Outer rinsing channel
16. Cleaning valve (P_3 regulating inductor)
17. Differential pressure contact-making pressure gauge
18. P_1 pressure gauge

MAHLE Filtersysteme GmbH · **Bereich Industriefilter** · Postfach 13 09 · 74603 Öhringen · Telefon (0 79 41) 67-0 · Telefax (0 79 41) 67-4 29

2. Dimensions and data



Motor data

Worm gear motor
MB 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

Degree of protection: IP 55 F; insulation class F; output torque: 97 Nm

Worm gear motor with explosion protection
EExe II part 4; output torque: 97 Nm

V	Hz	kW	rpm	A
△ 230 ± 10 %	50	0,18	9,3	1,2
⅄ 400 ± 10 %	50	0,18	9,3	0,7

Dimensions / Type	Contents (l)	Weight (kg)	Cleaning
AF17363-...-...	12	92	Gear motor
AF17364-...-...	12	92	Gear motor (expl.-prot.)

Standard version designed for group 2 liquids in accordance with EC Directive 97/23/EC Article 9

Other designs available on request
Subject to technical modifications!

Filter data

Permissible operating pressure: 16, 25 bar
Permissible operating temperature: max. 120°C

Perm. differential pressure	for
10 bar	segment element with top-mesh or high-grade steel fleece
25 bar	segment element with V-profiled spacer winding

		Possible on request		
	Series	With reduction	With a screw-in flange	
A-B / Inlet/outlet connection:	G 2	G 1	DN 50	DN 65
C / Drain connection:	G 2	G 1	G 2	G 2
D / Cleaning connection:	G 1	G 1	G 2	G 2

E / Ext. pressure connection: G ½ for air, G 1 for liquid

All screw-in holes, conforming to DIN 3852, X-type
Flanges DN 50 / DN 65, conforming to DIN 2527

Standard materials: Housing and cover NCI 40
Option: certificate conf. to EN 10204 - 3.1B
Installations st. 1.4301, NCI 40, PTFE
Bearing bushes PTFE-based
Seals, FPM (Viton)

Cover lock: 4 x hexagon head screws, M20

Drive shaft seal: Quad rings made from FPM (Viton)

Outer paintwork: Artificial resin primer, blue conforming to RAL 5007

3. Type key

Type key for filters without a segment element
Specimen selection:

AF 1736 3 – 13 2 1 – 4 1 2 1 0 / G 1

Size, quantity, Ø and length of the segment element in mm		Cleaning drive		In-flow / drain connections		Permissible operating pressure [bar] Housing / cover		Standard material with FPM seal + PTFE bearing		Differential pressure display/prss. gauge with electrical contact		External pressure valve P_3 regulating inductor		Drain valve 1)		Cleaning valve 2)			End no. for	Design variants	Type	
1 x Ø 110 x 265	3	Standard gear motor 230/400 V/50 Hz 266/460 V/60 Hz 10 rpm	12	G 1	2	PN 16	1	Housing, cover, nodular cast iron 40, internal parts ch. steel or similar	1	PIS-3076/ 1,2 bar stat. 63 bar Al/FPM	1	External pressure valve G 1/2 for air, 24 V / DC	2	Automatic ball valve, el.-pneum., 24 V / DC double-action	2	Automatic ball valve, el.-pneum., 24 V / DC double-action		none	Standard filter	G	Cast iron finish
			13	G 2	3	PN 25			2	PIS 3076/ 0,7 bar/ stat. 63 bar Al/FPM	2	External pressure valve G 1/2 for air, 230 V / AC						3001	Standard filter insert, complete without housing and motor		
	4	Standard gear motor 230/400 V/50 Hz EExe II Part 4	14	Screw-in flange DN 50 for a casted version		Others available on request	3	Housing, cover, NCI 40, internal parts high-grade steel or similar	4	delta-p contact-making pressure gauge 0 – 1,6 bar	3	External pressure valve G 1 for liquid, 24 V / DC	3	Automatic ball valve, el.-pneum., 230 V / AC double-action	3	Automatic ball valve, el.-pneum., 230 V / AC double-action		3001	Standard filter insert, complete without housing and motor		
		Others available on request	15	Screw-in flange DN 50 for a casted version			5	Housing, cover, NCI 40, chemical nickel-plated internal parts, high-grade steel or similar			4	External pressure valve G 1 for liquid, 230 V / AC	4	Automatic ball valve, el. 24 V / DC	4	Automatic ball valve, el. 24 V / DC		3002	Standard filter insert, complete without housing, with ratchet or motor		
				Others available on request			6	Housing, cover, NCI with anti corrosion coating, internal parts high-grade steel or similar			5	–	5	Automatic ball valve, el. 230 V / AC	5	Automatic ball valve, el. 230 V / AC	Free	3700	PTFE seals		
								Others available on request			6	Same as 1 except with additional P_3 regulat. inductor		Others available on request		Others available on request				S	Welded finish available on request
											7	Same as 2 except with additional P_3- regulat. inductor									
											8	Same as 3 except with additional P_3-regulat. inductor									
											9	Same as 4 except with additional P_3-regulat. inductor									
	0	Without or different design, see end no.	0	Different design, see end no.	0	Different design, see end no.	0	Different design, see end no.	0	Without or different design, see end no.	0	Without or different design, see end no.	0	Without or different design, see end no.	0	Without or different design, see end no.			Others available on request		

Serial design number

Unless otherwise specified, accessories are made from the same or similar materials and are subject to at least the permissible filter operating pressure.

The complete filter insert is built as standard at the highest pressure level. If the cleaning motor is used in explosion-protected design, the drain valve is also designed to be explosion-protected. The filter is equipped as standard with a checkback valve and a pressure control gauge for P_1, P_2 or P_3.

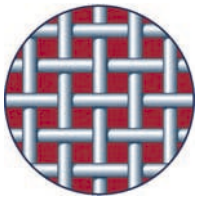
In-flow / drain connection	G1	G2 / DN 50	DN 65
1) Drain valve	G1	G2	G2
2) Cleaning valve	G1	G1	G1

Type key for segment elements
Specimen selection:

AF 100 17 6 – 006 / E1

AF	Series	Profile support material		High-grade steel foil, topmesh, V-profiled nap winding or high-grade steel fleece	Supporting ring material	Ø x length in mm		Filter gauge / gap in µm		
100	Segment element with top-mesh 5 - 60 µm	17	Al	1.4571	St	6	Ø 110 x 265	0003	3	Serial design number
								0005	5	
								001	10	
120	Segment element with a V-profiled spacer winding 60 - 250 µm	20	Al-hard coaded	1.4571	1.4571	6	Ø 110 x 265	002	20	
								003	30	
								004	40	
								006	60	
150	Segment element with a high-grade steel fleece 3 - 10 µm							008	80	
								010	100	
								013	130	
								016	160	
								025	250	
		Others available on request							Others available on request	

4. Filter materials

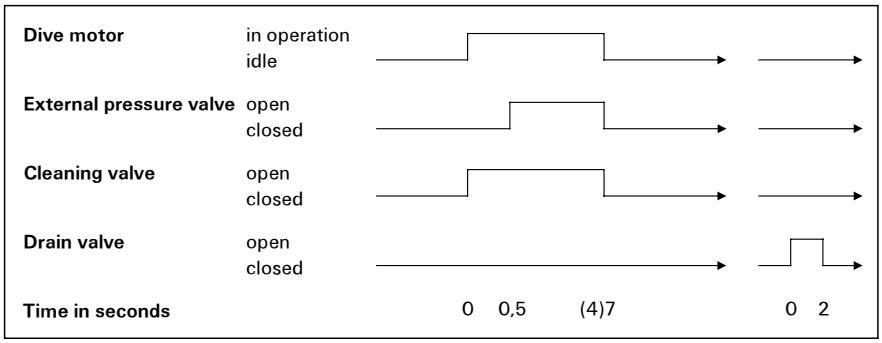
Filter material	 V-profiled spacer winding		 Top-mesh		 Reinforced high-grade steel fleece	
Nominal filter gauge / gap width in µm	Open filter surface		Open filter surface		Porosity	
	cm²	%	cm²	%	–	%
3 µm	–	–	–	–	–	65
5 µm	–	–	25	4	–	–
10 µm	–	–	38	6	–	72
20 µm	–	–	201	32	–	–
30 µm	–	–	244	39	–	–
40 µm	–	–	251	40	–	–
60 µm	88	14	251	40	–	–
80 µm	119	19	–	–	–	–
100 µm	138	22	–	–	–	–
130 µm	147	24	–	–	–	–
160 µm	156	25	–	–	–	–
200 µm	175	28	–	–	–	–
250 µm	194	31	–	–	–	–
Filtration effect	■■■■		■■■■■		■■■■■■	
Cleaning behaviour	■■■■■■		■■■■■		■■■■	
Differential-pressure strength	■■■■■■		■■■■		■■■■	

Evaluation scale: ■■■■■■ very good
■ bad

Other nominal gauges / filter materials available on request!

The permissible volumetric flow and the filtration and cleaning behavior of the suspensions are evaluated depending on the viscosity and properties, as well as the size, condition and concentration of the particles or substances which occur.

5. Standard cleaning control



The cleaning process can be started by means of a differential pressure contact set to a limit, via time intervals or by counting machine cycles.

Our consultants will be happy to assist you. If you do not have reliable evaluation criteria to hand, tests can also be performed.

Subject to technical changes!

MAHLE Industriefilter
MAHLE Filtersysteme GmbH
Bereich Industriefilter
Schleifbachweg 45 · D-74613 Öhringen
Postfach 13 09 · D-74603 Öhringen
Telefon (0 79 41) 67-0 · Telefax (0 79 41) 67-429
Internet: http://www.mahle.com · E-mail: ub2.industrie@mahle.com

Printed in Germany/Imprimé en Allemagne 01/03 Ba 3000 979.913.1