



Automatic Metal Edge Filter

with radial cleaning device

Pi 73 G

casted version
 for liquids, pastes and similar media
 Connection size G 2, flange DN 50 and DN 65

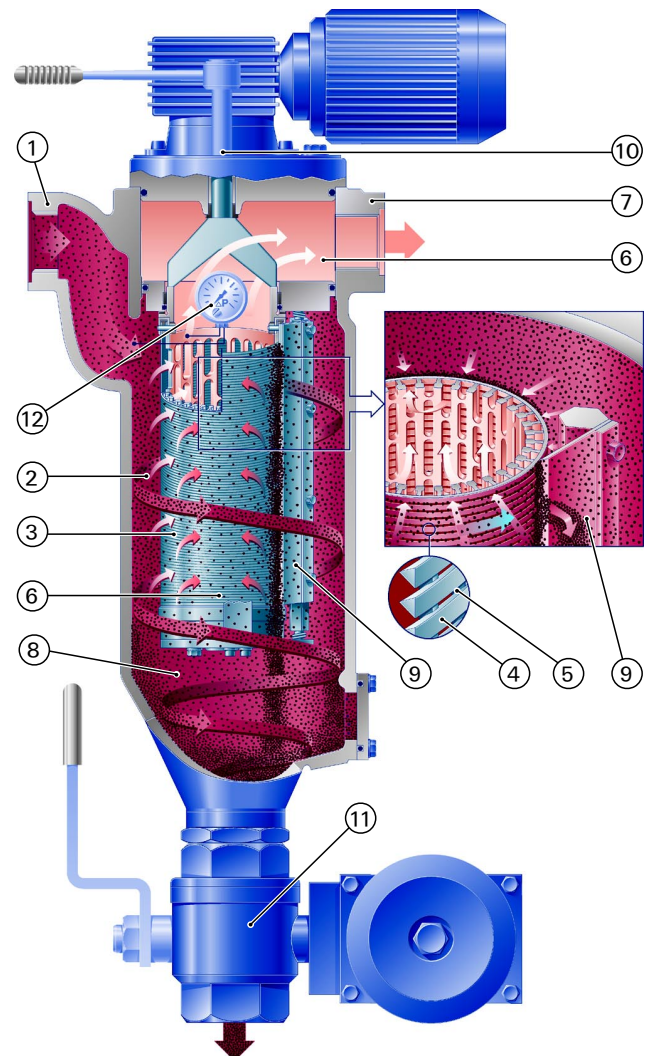
1. Principle of operation

The **MAHLE metal edge filter system** is used for filtering and homogenising a wide range of liquids, wastes and such like. This compact in-line pressure filter requires no maintenance, nor is there any need to dispose of the auxiliary filter media. It can be cleaned fully or semi-automatically without having to interrupt operations.

The liquid flows from the outside inwards through the **MAHLE filter cartridge**. The filtrate is discharged at the top, opposite the in-flow connection point. Solid matter, etc. is separated on the triangular profiled winding on the filter support tube.

The MAHLE filter cartridge is cleaned by rotating against a scraper blade. The special shape of the edge gaps serves to facilitate a very effective cleaning process. The **patented AKF system** prevents high axial forces, ensuring that the cleaning process runs easily.

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.

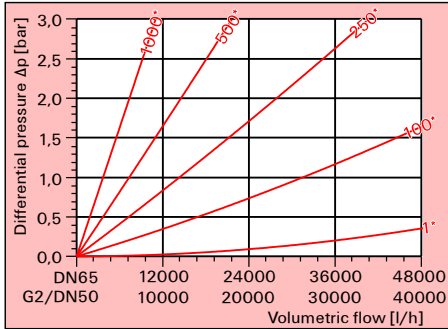


- | | |
|--------------------------------|---|
| 1. In-flow connection point | 9. Scraper |
| 2. In-flow chamber | 10. Cleaning drive with a gear motor or manual ratchet |
| 3. MAHLE filter cartridge | 11. Drain valve |
| 4. Triangular profiled winding | 12. Differential pressure contact-making pressure gauge (required under certain conditions) |
| 5. Edge gap | |
| 6. Filtrate chamber | |
| 7. Discharge connection point | |
| 8. Residue collection cone | |

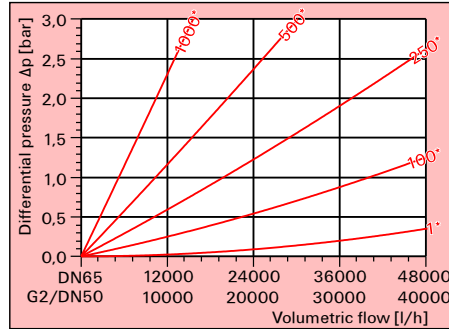
2. Differential pressure characteristics

*) Viscosity
in mm²/s

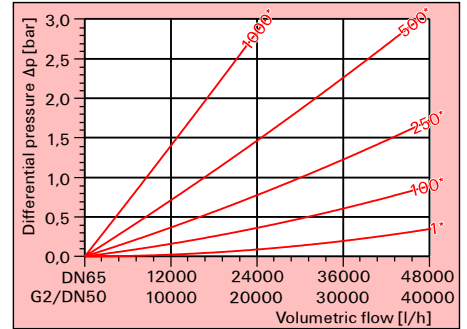
Standard values for pure liquids, pastes and similar media with Newtonian flow properties



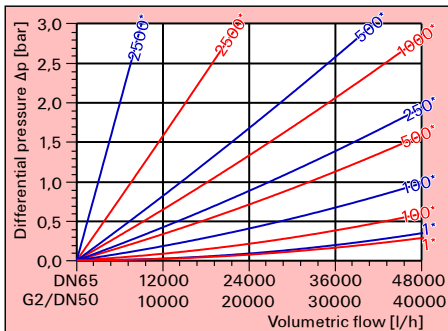
30 µm with Pi 6016-003 und Pi 6036-003



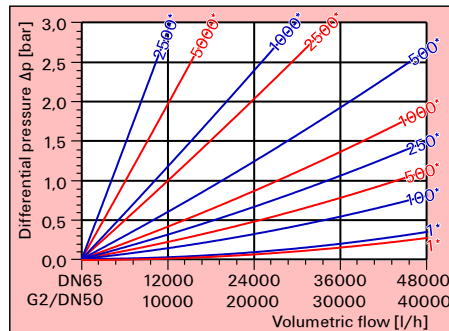
40 µm with Pi 6016-004 and Pi 6036-004



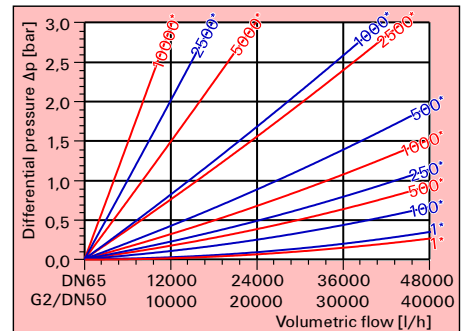
50 µm with Pi 6016-005 and Pi 6036-005



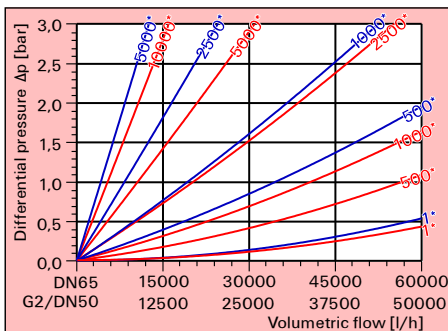
60 µm with Pi 6016-006, Pi 6036-006,
Pi 6076-006



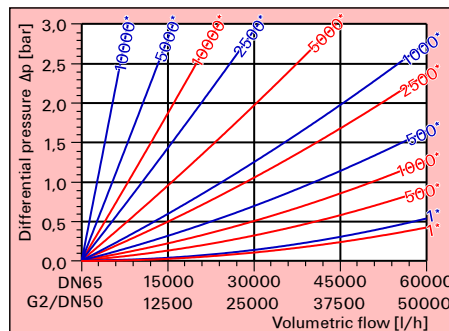
80 µm with Pi 6016-008, Pi 6036-008,
Pi 6076-008



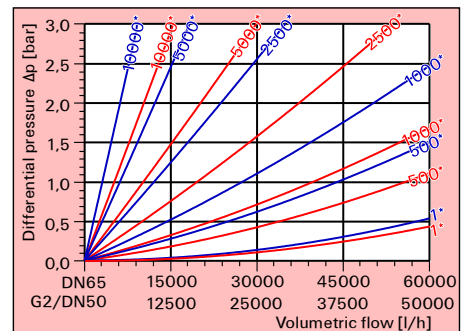
100 µm with Pi 6016-010, Pi 6036-010,
Pi 6076-010



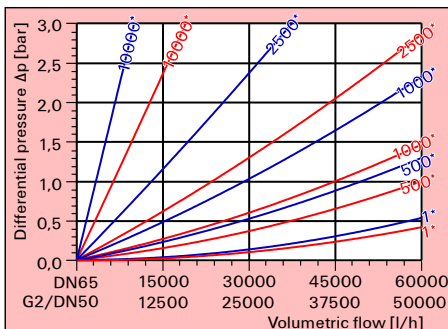
130 µm with Pi 6016-013, Pi 6036-013,
Pi 6076-013



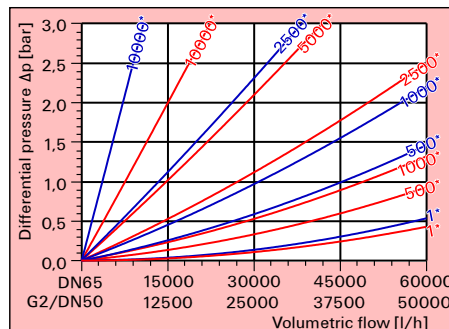
160 µm with Pi 6016-016, Pi 6036-016,
Pi 6076-016



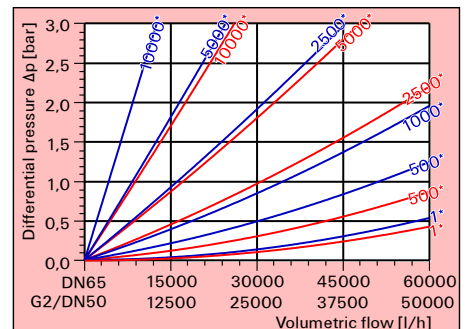
200 µm with Pi 6026-020, Pi 6046-020,
Pi 6076-020



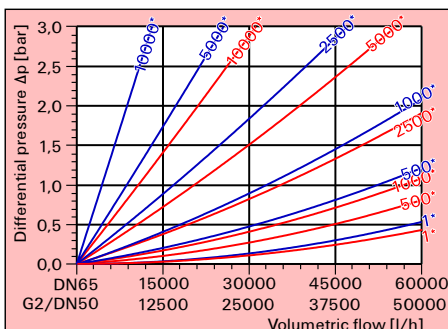
250 µm with Pi 6026-025, Pi 6046-025,
Pi 6076-025



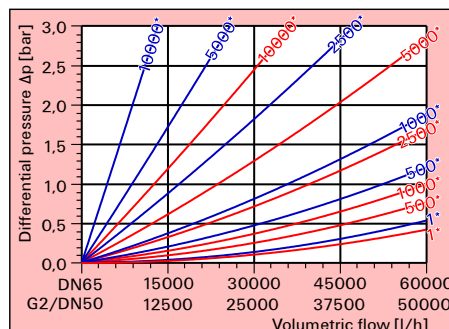
360 µm with Pi 6026-036, Pi 6046-036
Pi 6076-036



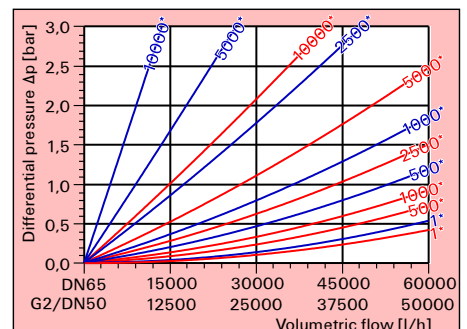
500 µm with Pi 6026-050, Pi 6046-050
Pi 6066-050



1000 µm with Pi 6026-100, Pi 6046-100
Pi 6066-100



1500 µm with Pi 6026-150, Pi 6046-150,
Pi 6066-150



2000 µm with Pi 6026-200, Pi 6046-200,
Pi 6066-200

3. Type key

Type key for filters without a reel/motor can

Filter types used in specimen applications:

Pi 736		3	-	13	2	1	-	1	0	2	0	0	/ G 1	
Size, quantity, Ø and length of the cartridge in mm	Cleaning drive	In-flow / discharge connections	Permissible operating pressure [bar] Housing / cover	Standard material with FPM seal + PTFE bearing	Differential pressure display / switch	Drain valve	Bypass valve	End no. for	Design variants	Type	Serial no.			
1 x Ø 110 x 265	2 Man. ratchet	13 G2	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 Manual ball valve	1 20 bar	3001	Standard filter	G	Continuous			
	3 Stand. motor 220 – 240 V/ 380 – 415 V/ 50 Hz	14 Screw-in flange DN 50	3 PN 25		2 PIS 3076/0,7 bar/ stat. 63 bar Al/FPM	2 Automatic ball valve, electro-pneumatic, 24 V, double-action	2 40 bar		Standard filter insert complete without a housing and motor					
	4 Stand. motor Ex 230/400 V/ 50 Hz EEEx II T4	15 Screw-in flange DN 65	4 PN 40	3 Housing, cover, NCI 40, internal parts high-grade steel 1.4301	3 delta-p contact-making pressure gauge 0 – 6 bar	3 Automatic ball valve, electro-pneumatic, 230 V double-action	Others available on request		3002			Standard filter insert complete without a housing, with a ratchet or a motor		
	Others available on request	Others available on request	Others available on request	4 Housing, cover, NCI 40, internal parts, ch. steel, aluminium-free	4 delta-p contact-making pressure gauge 0 – 1,6 bar	4 Automatic ball valve, electric 24 V			3700			PTFE seals		
	0 Different design, see end no.	0 Different design, see end no.	0 Different design, see end no.	0 Different design, see end no.	5 Housing, cover, NCI 40, chemical nickel-plated internal parts high-grade steel 1.4301	6 delta-p contact-making pressure gauge 0 – 1,6 bar with a pressure centring flange 0 – 6 bar	5 Automatic ball valve, electric 230 V		Others available on request			Welded finish available on request		
					Others available on request	8 PIS-3076/2,2 bar stat. 63 bar Al/FPM	0 Without or different design, see end no.					0 Without or diff. design, see end no.	s	
						9 PIS-3076/5 bar stat. 63 bar Al/FPM								

Unless otherwise specified, the same or similar material and at least the permissible operating pressure apply for accessories.

The complete filter insert is built as standard with the highest pressure level. If the cleaning motor is used in explosion-protected design, the drain valve is also designed to be explosion-protected.

Type key for cartridges

Cartridge types used in specimen applications:

Pi 60		1					6	-	010	
Series	Cartridge (coiled)	Profile support material	Triangular profiled winding material	Supporting ring material	Triangular profile width in mm	Ø x length in mm	Gap in µm			
Pi 60	Cartridge (coiled)	1 Al	1.4571	1.4571	0,5	6 Ø 110 x 265	003	30		
		2 Al	1.4571	1.4571	0,8		004	40		
		3 1.4581	1.4571	-	0,5		005	50		
		4 1.4581	1.4571	-	0,8		006	60		
	Cartridge (welded)	6 -	1.4571	1.4571	1,5 – 1,8		008	80		
		7 -	1.4571	1.4571	1,0		010	100		
							013	130		
							016	160		
							020	200		
							025	250		
				036	360					
				050	500					
				100	1000					
				150	1500					
				200	2000					
					Others available on request					

4. Design / Specimem application

Cartridge types	Total area of the filter in cm ²	Cartridge in µm / Effective filtering surface in cm ²															
		30	40	50	60	80	100	130	160	200	250	360	500	1000	1500	2000	
Pi 6016-...	881,3	49,9	65,3	80,1	94,4	121,6	146,9	181,9	213,7								
Pi 6026-...	881,3			51,8	61,5	80,1	97,9	123,2	146,9	176,3	209,8	273,5	339,0	489,6	574,8	629,5	
Pi 6036-...	836,4	47,3	62,0	76,0	89,6	115,4	139,4	172,6	202,8								
Pi 6046-...	836,4			49,2	58,4	76,0	92,9	116,9	139,4	167,3	199,1	259,6	321,7	464,7	545,5	597,4	
Pi 6076-...	836,4			39,8	47,3	62,0	76,0	96,2	115,4	139,4	167,3	221,4	278,8				
Pi 6066-...	836,4										83,6	102,0	139,4	181,8	298,7	380,2	440,2

Working pressure [bar]	Viscosity [mm ² /s]	Recommended initial differential pressure (Δp)
> approx. 2 - < ca. 25	< approx. 1000 > approx. 1000	≤ approx. 0,3 - 0,6 bar ≥ approx. 0,6 - 1,0 bar
> approx. 25 - 100	< approx. 1000 > approx. 1000	≤ approx. 0,6 - 1,0 bar ≥ approx. 1,0 - 1,5 bar
< approx. 2 and suction-action	< approx. 1000	≤ approx. 0,05 - 0,1 bar

Recommended designs

Cleaning/motor start once Δp = 1,2 bar has been reached
 Cleaning time/motor running time is set to 10 s (= approx. 3 rpm)
 Initial differential pressure after cleaning 0,3 bar
 Drain valve is set to be emptied every 30 minutes
 Drainage or opening time of the drain valve is set to 3 seconds

Specimen application:

Filter type : Pi 7363-1321-10200/G1

Reel type: Pi 6016-010

Liquid being filtered: Heavy oil (mineral)
 Viscosity at operating temperature: 380 mm²/s at 40 °C
 Particles/matter to separate off: Cinders, pipe rust, etc.
 Volumetric flow: 23000 l/h
 Working pressure: 5 bar
 Gap width: 100 µm

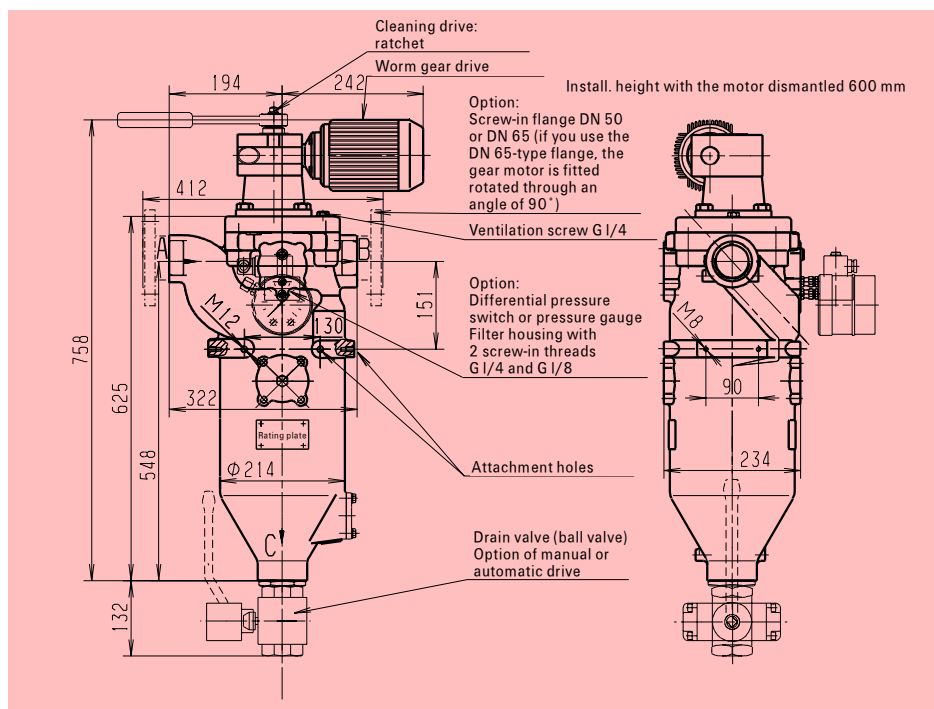
Filter equipment for fully automatic cleaning operation using a drive motor, differential pressure switch and drain valve. The on-site controller is integrated into the system.

Evaluation criteria for safe cleaning and filtration

The nature, condition, size, characteristics and concentration of the particles/matter etc., as well as other properties of the liquid or paste.

Our consultants will be happy to tell you about this and the different design variants. If you do not have any reliable evaluation criteria to hand, principle trials can also be performed using test filters.

5. Dimensions and data



Motor data

Worm gear motor

Δ 230 V ± 10 % 50 Hz 0,18 kW 1,20 A
 Λ 400 V ± 10 % 50 Hz 0,18 kW 0,70 A
 Δ 266 V ± 10 % 60 Hz 0,22 kW 1,20 A
 Λ 460 V ± 10 % 60 Hz 0,22 kW 0,70 A

Degree of protection: IP 55 F

Output speed: 17,1 rpm 50 Hz
 21,0 rpm 60 Hz

Output torque: 52 Nm

Worm gear motor with explosion protect.

Δ 230 V ± 10 % 50 Hz 0,18 kW 1,0 A
 Λ 400 V ± 10 % 50 Hz 0,18 kW 0,57 A

EExe II T4

Output speed: 16,9 rpm
 Output torque: 52 Nm

Other designs available on request
 Subject to technical modifications!

Filter data

Operating pressure: 16, 25, 40, 63, 100 bar

Operating temperature: up to 40 bar, max. 200 °C / 63 bar max. 100 °C

Sealing material at operating temperatures of up to 180 °C FPM (Viton),
 200 °C PTFE base

Differential press. resistance: Cartridge (welded) max. 40 bar,
 cartridge (coiled) max. 10 bar

	Series	Possible on request		
		With reduction	With a schrew-in flange	
A-B/In-flow drain conn.	G2	G1	DN50	DN65
C/Drain connection	G2	G1	G2	G2

All screw-in holes, conforming to DIN 3582, X-type
 Flanges confirming to DIN 2527, up to 40 bar, 63 bar

Materials: See 3. Type key

Cover lock: 4x hexagon head screws, M16

Drive shaft seal: Stuffing box packing rings made from PTFE
 yarn with disc spring pre-tensioning

Volume/weight: 12 l/73 kg with a ratchet and max. accessories
 12 l/82 kg with a motor and max. accessories

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

6. Accessories

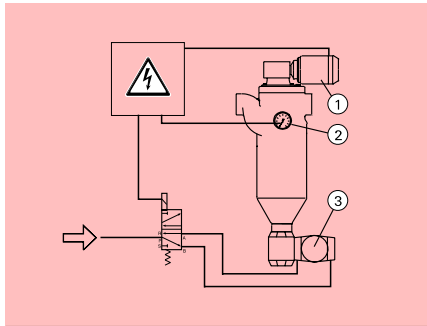
	Description/Data	Display and switching press.	Application criteria	Figure/Dimensions
Differential pressure display / Switch *)	<p>Mounting kit for a differential pressure switch PIS-3076 with an optical display and electric contact</p> <p>Permissible static operating pressure: 63 bar</p> <p>Permissible operating temp.: -10 to +120 °C</p> <p>Mater. for parts contacting product: AL/FPM</p> <p>Electrical data:</p> <p>Type of contact: Make/break contacts</p> <p>Max. voltage: 230 V, AC/DC</p> <p>Max. switched current: 2,5 A</p> <p>Max. switching capacity: 60 VA/40 W</p> <p>Contact current closing rating: 70 VA</p> <p>Degree of protection: IP 65</p> <p>Cable guide: PG 11 Ø6 - 10</p>	0,7 bar	up to approx. 1000 mm ² /s ¹)	
		1,2 bar		
		2,2 bar		
Differential pressure display / Switch *)	<p>Mounting kit for a differential pressure gauge with an adjustable contact</p> <p>Perm. static operating press. 25 bar, high-grade steel 40 bar</p> <p>Permissible operating temperature: 70 °C</p> <p>Mater. for parts cont. product in acc. with the filter (Type key)</p> <p>Adjustable micro switch with a 1-pin changeover contact</p> <p>Max. switching capacity: 5 A/250 V AC, 0,4 A/ 30 V DC</p> <p>Degree of protection: IP 54</p>	0 -1,6 bar	up to approx. 500 mm ² /s ¹)	
		0 - 6 bar		
Differential pressure display / Switch *)	<p>Mounting kit for a differential pressure gauge with an adjustable contact and pressure centring flange</p> <p>Permissible static operating pressure: 25 bar</p> <p>Permissible operating temperature: 150 °C</p> <p>Orifice flange and diaphragms with ECTFE coating (PTFE basis): Ø 50</p> <p>Adjustable contact: Max. make contact M1</p> <p>Max. switching capacity: 30 W/50 VA</p> <p>Degree of protection: IP 54</p>	0,6 bar Adjustable switching contact	Also suitable for high viscosities and for high concentrations of solid matter	
Drain valve	<p>Mounting kit for a drain valve (ball valve) with an electro-pneumatic swivel drive or hand level</p> <p>Connection: G 2</p> <p>Operating pressure: 40 bar</p> <p>Permissible operating temperature: 120 °C</p> <p>Housing material: nickel-plated MS</p> <p>Ball material: hard chrome-plated MS</p> <p>Ball seal material: PTFE</p> <p>Spindle seal: FPM (Viton)</p> <p>Swivel drive: Pneumatic double piston</p> <p>Control pressure: 6 - 8 bar</p> <p>Compressed air connection: G 1/4 (DN 8)</p> <p>El. pilot control voltage: 24 V DC/optional explosion protection or 230 V AC/optional explosion protection</p> <p>Power consumption: 2,5 Watt at 24 V DC, 4,5 VA at 230 V AC</p> <p>Degree of protection: IP 65 DIN 40050</p> <p>Control function: Closed without current</p>			
Controller	<p>MAHLE switchgear cabinet with a SIEMENS logo</p> <p>User-programmable controller for different operating conditions</p> <p>Input voltage: 3/PE/N AC 400/230 V</p> <p>Control voltage: 24 V DC oder 230 V AC</p> <p>Degree of protection: IP 65</p> <p>Optional: Filter within the controller, outside the explosion range</p>			

Other designs available on request
Subject to technical modifications

*) Cleaning can take place at timed intervals or in cycles

1) A differential pressure gauge with a pressure centring flange is used at higher viscosities

7. Operating modes for cleaning and emptying



Fully automatic operation

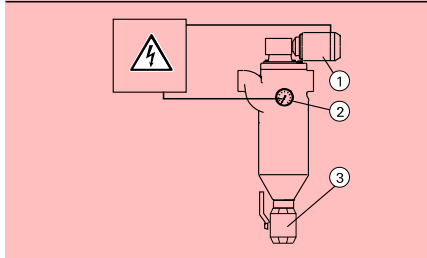
The drive motor ① can be cleaned or set into operation by means of time, cycle or differential pressure control via switch or pressure gauge contacts ②. We recommend that cleaning take place at about four times the initial Δp . The motor can also run permanently at short filtration phases (rotating the drive shaft clockwise).

Cleaning time/engine running time 10 s (\approx approx. 3 rpm).

Depending on the residue concentration, the drain valve ③ can be opened for drainage purposes synchronously with the start of the cleaning process or by means of time or cycle control.

The emptying or opening time of the drain valve is set at between 3 and 6 seconds.

In suction applications, it can be opened by means of an intermediate buffer or if the volumetric flow is interrupted.

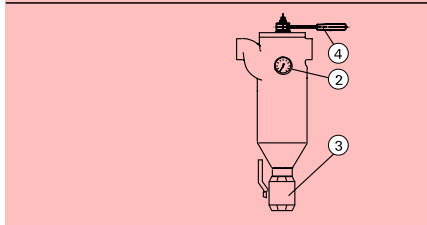


Semi-automatic operation

The details described above apply for the cleaning/operation of the drive motor.

If the concentration of particles, solid matter or agglomerates is low, it can be emptied manually via the drain valve ③, e.g. at the end of a batch, while the system is idle or on a time-controlled basis.

The details described above apply for the emptying or opening time.



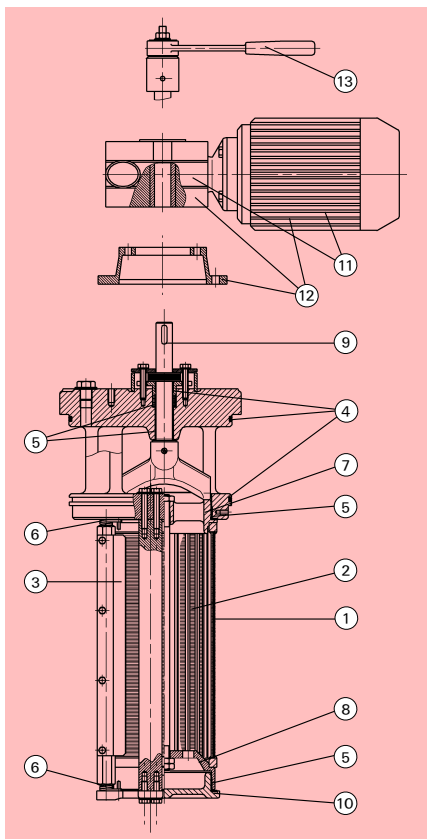
Operation with a manual ratchet

It can also be cleaned manually with a ratchet ④ during short filtration phases or if the concentration of particles, solid matter or agglomerates is low. This requires 2 complete clockwise rotations.

The details described above for semi-automatic operation apply for the emptying or opening time.

The filter is supplied complete with a detailed description taken from the operating manual.

8. Spare parts and add-on kits



NR.	Description	Types
1	Filter insert, fully assembled (1-10), comprising a cover with a drive shaft and reel with a stripper. Optionally also available with a drive motor 12 or ratchet 13	Is defined with reference to the full name of the filter or, where necessary, using the type key. Selected example: Pi 7360-051-00000-3001/G, Pi 6016-010
2	Cartridge with a triangular profiled winding 1.4571 borne on an Al profile support	Selected example from the type key or filter area table: Pi 6016-005 (50 μm) Pi 6026-020 (200 μm)
	Cartridge with a triangular profiled winding 1.4571 borne on a high-grade steel profile supp. 1.4581	Pi 6034-005 (50 μm)
	Cartridge, made fully from 1.4571, with a profiled winding welded onto support rods	Pi 6084-008 (80 μm) Pi 6074-025 (250 μm) Pi 6064-100 (1000 μm)
3	High-grade scraper 1.4310	975 352 6
4	FPM (Viton) sealing kit	936 034 8
	VMQ/FEP (PTFE-based) sealing kit	970 957 7
5	PTFE-based bearing bush kit	938 310 0
6	High-grade steel leg spring kit 1.4310	975 349 2
7	Driver ring/C-steel	975 353 4
	Driver ring/high-grade steel 1.4301	975 354 2
8	Bottom cartridge ring/C-steel	975 355 9
	Bottom cartridge ring/high-grade steel 1.4301	975 356 7
9	Drive shaft 1.4301, complete with a NCI driver fork	975 357 5
	Drive shaft cpl. with a driver fork 1.4301	975 358 3
10	Centring flange/NCI 40	975 359 1
	Centring flange/high-grade steel 1.4301	975 360 9
11	Drive motor (with gears) Motor data, see 5. Dimensions and data	930 242 3
	Drive motor, explosion protection (with gears) Motor data, see 5. Dimensions and data	939 832 2
12	Motor add-on kit (with gears and a motor frame) Motor data, see 5. Dimensions and data	970 831 4
	Motor add-on kit, Ex-proof (with gears and a motor frame) Motor data, see 5. Dimensions and data	975 348 4



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Subject to technical modifications