MAHLE

Industrial Filtration

Duplex-tank top return line filter
Pi 5100

Nominal size 40 up to 1000
according DIN 24550

1. Features

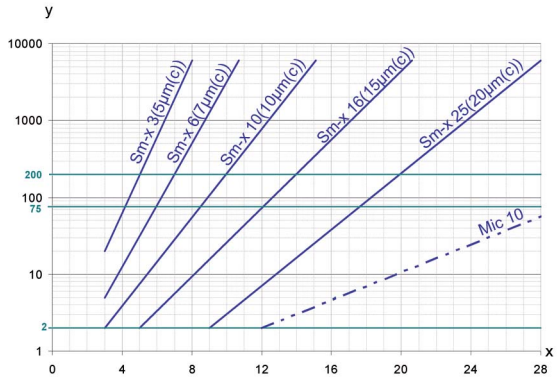
High performance filters for modern hydraulic systems

- Provided for tank top installation
- Modular system
- Compact design
- Minimal pressure drop through optimal flow design
- Visual/electrical/electronic maintenance indicator
- Threaded and flanged connections
- Quality filters, easy to service
- Equipped with highly efficient glass fibre Sm-x filter elements
- Beta rated elements according to ISO 16889 multipass test
- Elements with high differential pressure stability and dirt holding capacity
- Worldwide distribution

2. Flow rate/pressure drop curve complete filter

see data sheet Pi 5000

3. Separation grade characteristics



y = beta-value
x = particle size [µm]

determined by multipass tests (ISO 16889)
calibration according to ISO 1171 (NIST)

4. Filter performance data

tested according to ISO 16889 (multipass test)
Sm-x elements with
max. Δ p 10 bar

Sm-x	3	$\beta_{5(C)}$	≥200
Sm-x	6	$\beta_{7(C)}$	≥200
Sm-x	10	$\beta_{10(C)}$	≥200
Sm-x	16	$\beta_{15(C)}$	≥200
Sm-x	25	$\beta_{20(C)}$	≥200

values guaranteed up to
5 bar differential pressure

5. Quality assurance

MAHLE 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 material compatibility with fluids
DIN ISO 2923	Fluidtechnik-Hydraulik Filterelemente; method for end load test
DIN ISO 2924	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

see data sheet Pi 5000

7. Order numbers

7.1 Housing design

Nominal size NG [l/min]	Order number	Type	① with bypass 3.5 bar and indicator cavity	② with bypass 3.5 bar and visual indicator 2.2 bar	③ with bypass 3.5 bar and electrical indicator 2.2 bar	with electrical indicator (2 setting points, 3 LED)
40	78337438	Pi 51004-047	■			
	78275729	Pi 51004-057		■		
	78275737	Pi 51004-058			■	
	78278202	Pi 51004-058/PiS 3103				■
63	78337446	Pi 51006-047	■			
	78275513	Pi 51006-057		■		
	78275307	Pi 51006-058			■	
	78337453	Pi 51006-058/PiS 3103				■
100	77994320	Pi 51010-047	■			
	78274110	Pi 51010-057		■		
	77993306	Pi 51010-058			■	
	78337461	Pi 51010-058/PiS 3103				■
160	78276453	Pi 51016-047	■			
	78337479	Pi 51016-057		■		
	78276644	Pi 51016-058			■	
	78267775	Pi 51016-058/PiS 3103				■
250	78276479	Pi 51025-047	■			
	78336323	Pi 51025-057		■		
	78316044	Pi 51025-058			■	
	78276420	Pi 51025-058/PiS 3103				■
400	78276487	Pi 51040-047	■			
	78337495	Pi 51040-057		■		
	78337503	Pi 51040-058			■	
	78337511	Pi 51040-058/PiS 3103				■
630	78276495	Pi 51063-047/6	■			
	78336844	Pi 51063-057/6		■		
	78336547	Pi 51063-058/6			■	
	78337529	Pi 51063-058/6/PiS 3103				■
1000	78337537	Pi 51100-047	■			
	78337545	Pi 51100-057		■		
	78337420	Pi 51100-058			■	
	78337552	Pi 51100-0/PiS 3103				■

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

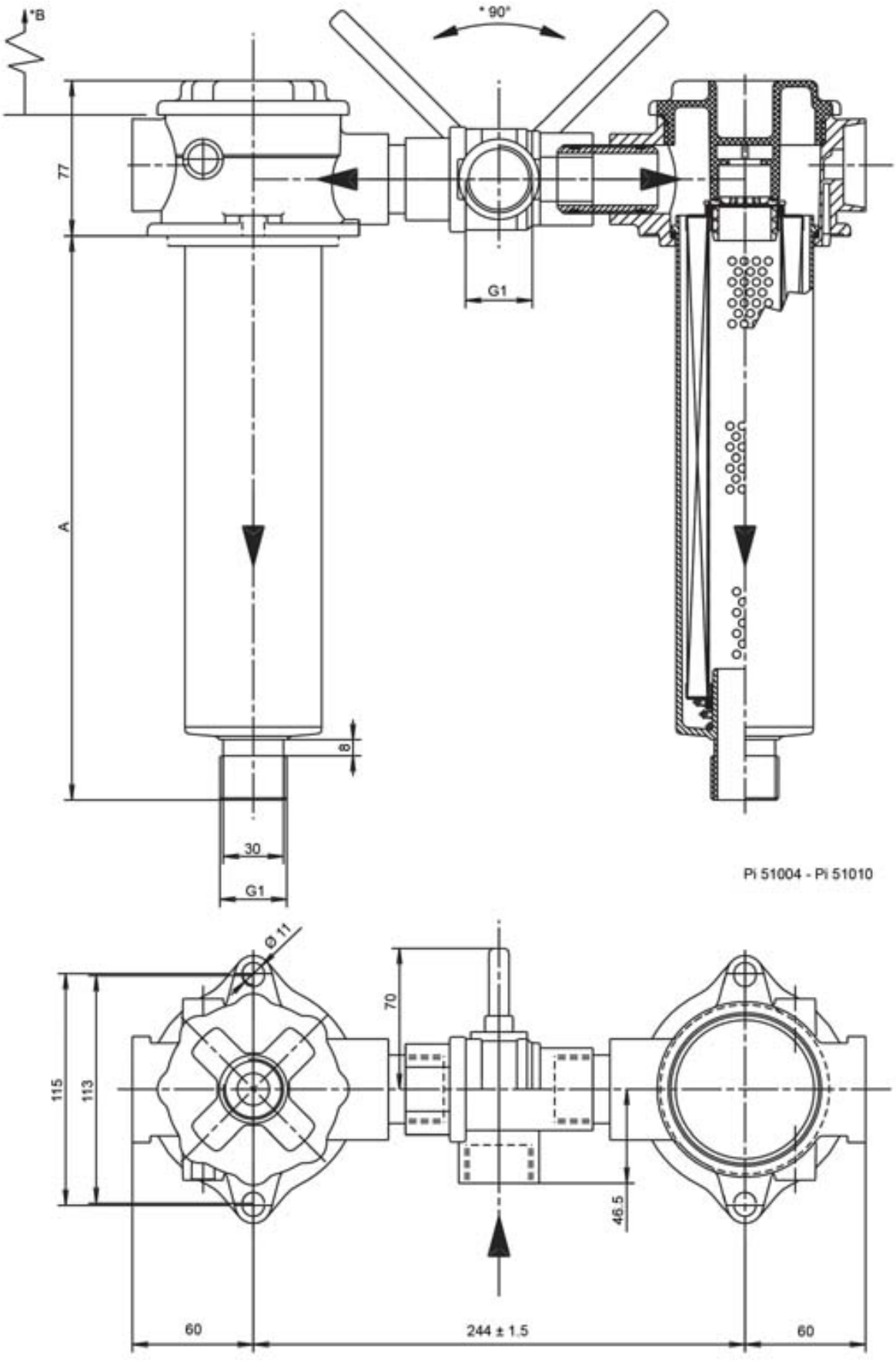
7.2 Filter elements

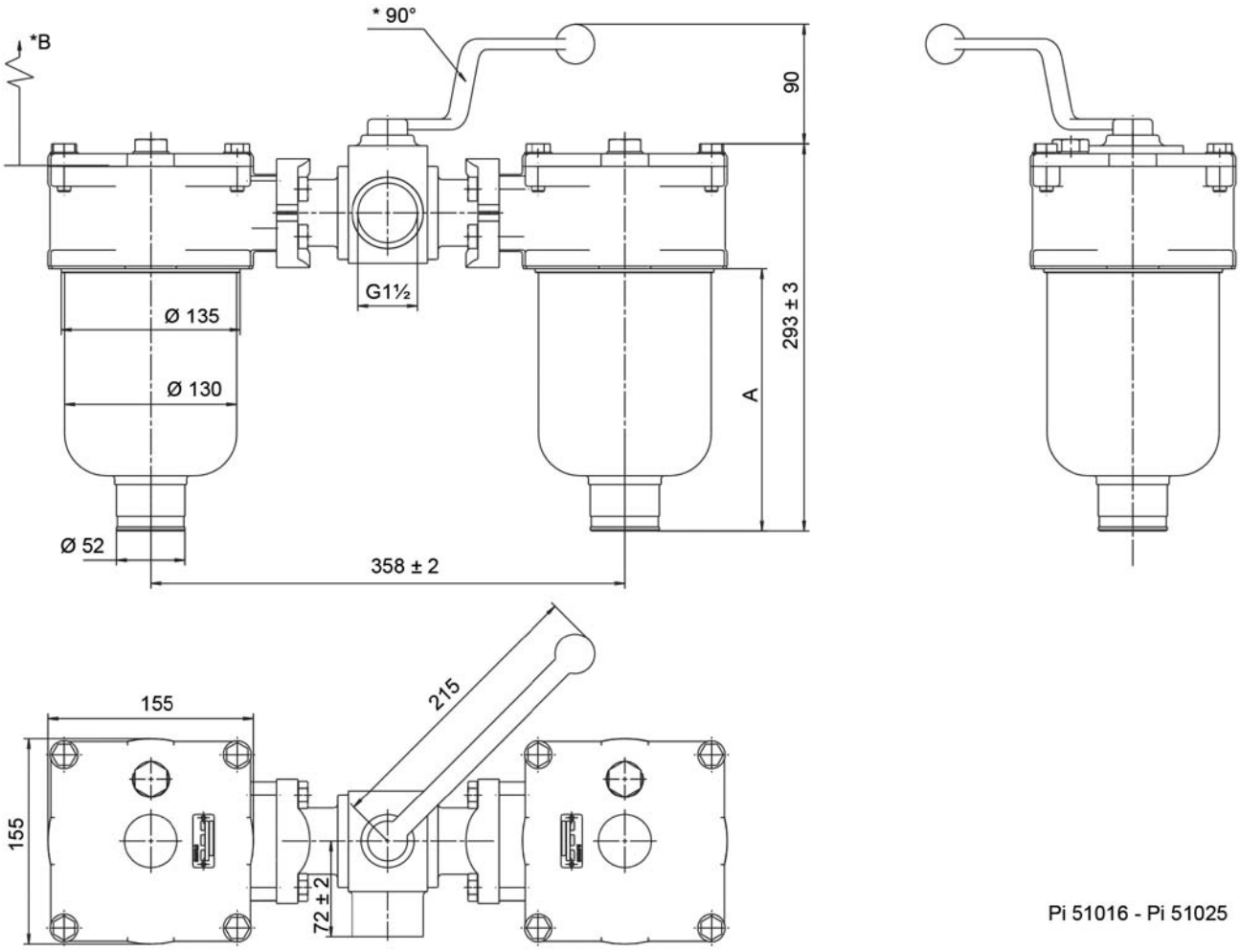
see data sheet Pi 5000

8. Technical specifications

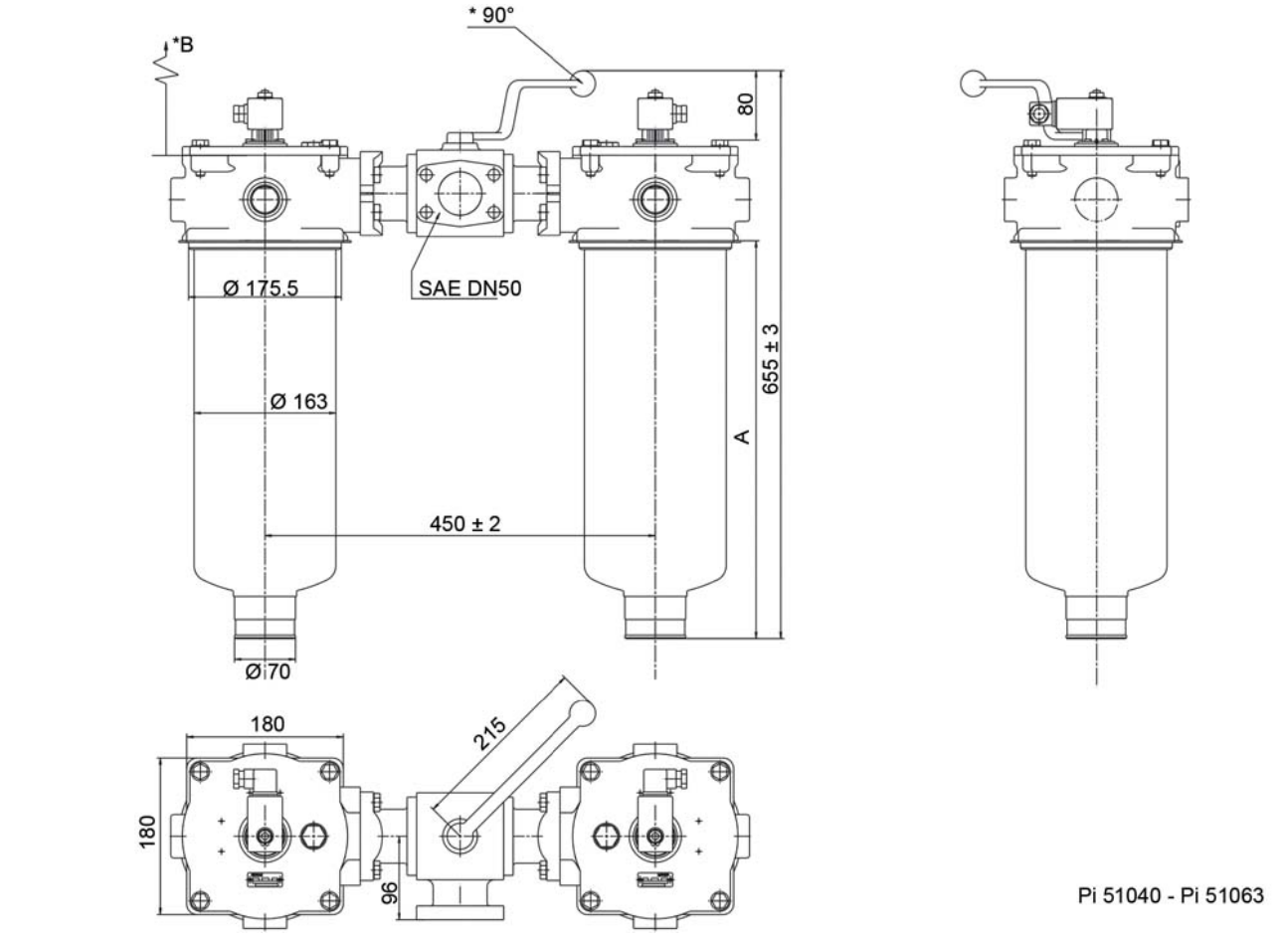
see data sheet Pi 5000

9. Dimensions

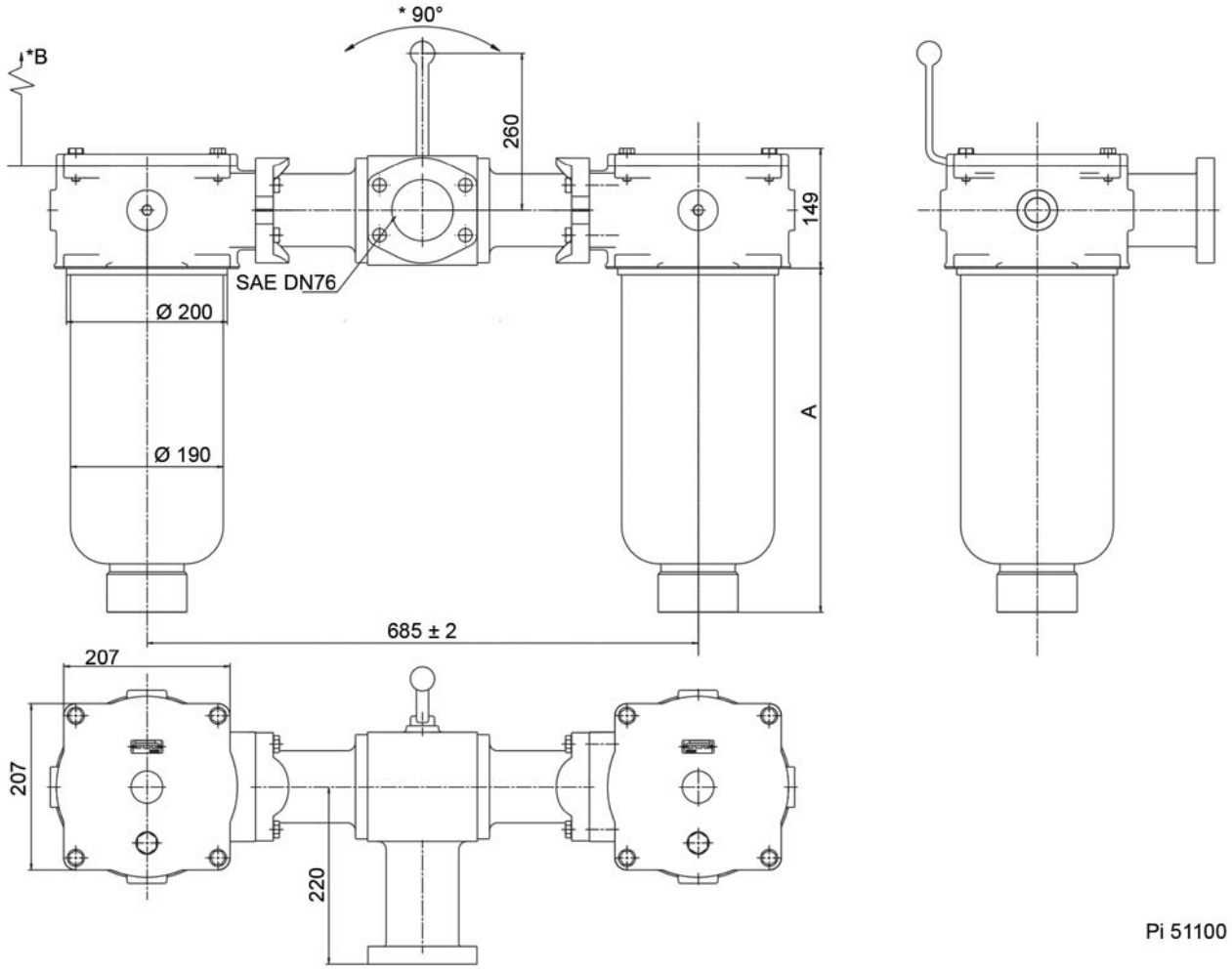




Pi 51016 - Pi 25



Pi 51040 - Pi 51063



*B= Minimum clearance for filter element removal

* 90°= Pivoting range

Type	A	B
Pi 51004	130	150
Pi 51006	190	210
Pi 51010	280	300
Pi 51016	198	220
Pi 51025	290	310
Pi 51040	458	480
Pi 51063	458	480
Pi 51100	427	450

10. Installation, operating and maintenance instructions

see data sheet Pi 5000

11. Spare parts list

see data sheet Pi 5000

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8. Technical specifications

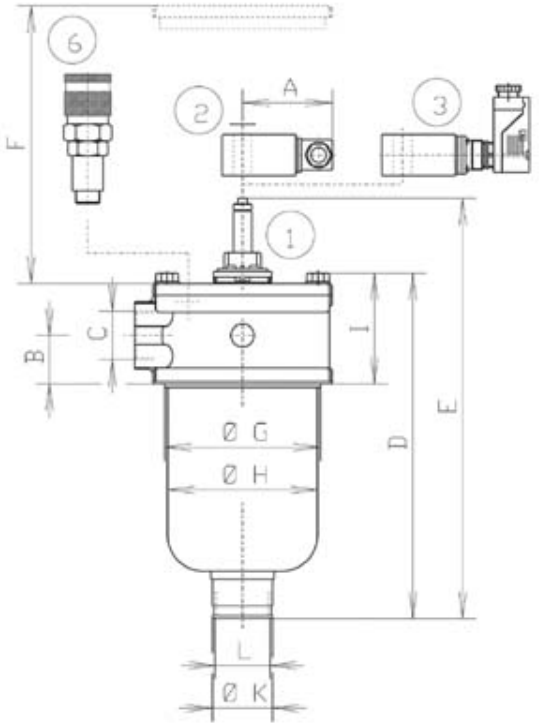
Design:	tank top mounting filter
Nominal pressure .:	10 bar (140 psi)
Test pressure:	13 bar (180 psi)
Temperature range:	- 10 °C to + 80 °C
	(other temperature ranges on request)
Bypass setting:	Δ p 3.5 bar ± 10 %
Filter head material:	GD Al
Filter housing material:	St.
Filter cover material:	GD Al/G Al
Maintenance indicator setting:	Δ p 2.2 bar ± 10 %
Electrical data of maintenance indicator:	
Maximum voltage:	250 V AC/200 V DC
Maximum current:	1 A
Contact load:	70 W
Type of protection:	IP 65 in inserted and secured status
Contact:	normally open/closed
Cable sleave:	M20x1.5

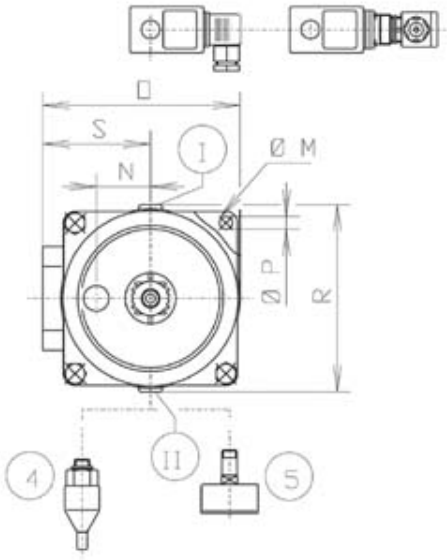
The switching function can be changed by turning the electric upper part by 180° (normally closed contact or normally open contact). The state on delivery is a normally closed contact. By inductivity in the direct current circuit the use of suitable protection circuit should be considered. Further maintenance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

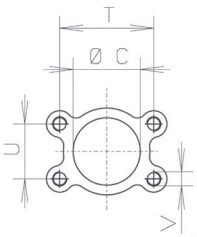
We draw attention to the fact that all values indicated are average values and do not always occur in specific cases of application. Our products are continually being further developed. Values, dimensions and weights can change as a result of this. Our specialized department will be pleased to offer you advice.

We recommend you to contact us concerning applications of our filters in areas governed by the EU Directive 94/9 EC (ATEX 95). The standard version can be used for liquids based on mineral oil (corresponding 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.

Subject to technical alteration without prior notice.







1 = Standard maintenance indicator visual PiS 3084
1 + 2 = Standard maintenance indicator electrical PiS 3085
3 = Further executions see data sheet maintenance indicator
4 = Pressure switch
4 + 5 = Can be mounted at I or II alternatively
5 = Pressure gauge
6 = Coupling for filling

9. Dimensions

All Dimensions except "L" in mm.

Type	A	B	C	D	G	H	I	K	L	M	N	R	S	T	U	V	Weight [kg]
Pi 50016 - ...	185	40	see 7.2	207	135	130	94	52	G1½	11	47	162	93.5	70	35.7	M12	2.8
Pi 50025 - ...	185	40		297	135	130	94	52	G1½	11	47	162	93.5	70	35.7	M12	4.2
Pi 50040 - ...	220	55		309	175,5	163	118	70	G2	11	60	212	108	77.8	42.9	M12	6.4
Pi 50063 - ...	220	55		459	175,5	163	118	70	G2	11	60	212	108	89	50.8	M12	7.2
Pi 50100 - ...	250	70		430	200	190	149	-	G3	11	75	240	135	106.4	62	M16	10.6

10. Installation, operating and maintenance instructions

10.1 Filter installation

When installing the filter make sure that:

a) that sufficient space is available to remove filter element and filter housing,

b) the mounting hole in the tank top is not excessively large, to ensure proper sealing,

c) the filter is free of tension after installation

Preferably the filter should be installed with the filter housing pointing downwards. In this position the maintenance indicator is accessible and visible.

10.2 Connecting the electricalmaintenance indicator

The electrical maintenance indicator is connected via a 2-pole appliance plug according to DIN EN 17 5301-803 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.

10.3 When must the filter element be replaced?

1 . Filters equipped with visual and/or electrical maintenance indicator:
   During cold starts, the indicator may give a warning signal. Press the 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 after the end of the shift.
2 . Filters without maintenance indicator:
   The filter element should be replaced after trial run or flushing of the system. Afterward folow instructions of the manufacturer.
3 . Please always ensure that you have original MAHLE spare elements in stock: Disposable elements (Sm-x and Mic) cannot be cleaned.

10.4 Element replacement

1 . Stop system and relieve filter from pressure.
2 . Unscrew cover, turning counter-clockwise.
3 . Remove filter housing and filter element by pulling upwards.
4 . Remove filter element with a side-to-side motion.
5 . Clean the housing using a suitable cleaning solvent.
6 . Check O-ring on filter cover and filter housing for damage. Replace, if necessary.
7 . Make sure that the order number on the spare element corresponds to the order number of the filter name-plate.
8 . Remove filter element from the plastic bag and reassemble filter in reverse order (items 1 to 6).

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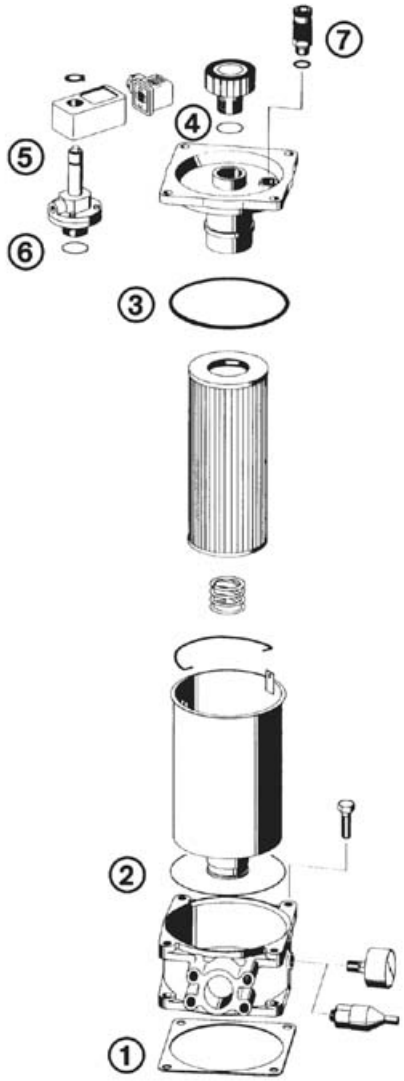
11. Spare parts list

Order number for spare parts list		
Position	**Type**	**Order number**
	Seal kit for housing	
① to ④	**NG 160/250**	
	NBR	78227902
	FPM	78227910
	EPDM	78227928
	NG 400/630	
	NBR	78227936
	FPM	78227944
	EPDM	78227951
	NG 1000	
	NBR	78227969
	FPM	78227977
	EPDM	78227985
⑤	Maintenance indicator	
	Visual PiS 3084/2.2	77669914
	Electrical PiS 3085/2.2	77669864
	Electrical upper section only	77536550
	Pressure gauge	78381998
	Pressure switch Normally open Normally closed	 77845845 77870595
⑥	Seal kit for maintenance indicator	
	NBR	78383382
	FPM	78383390
	EPDM	78383408
⑦	Quick-release coupling	77965130



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