MAHLE Industry

Oil Filter Module
Pi 8300

Volume flow 110 und 220 l/min

1. Features

Compact, ready-to connect oil filter module for modern hydraulic and lubrication systems

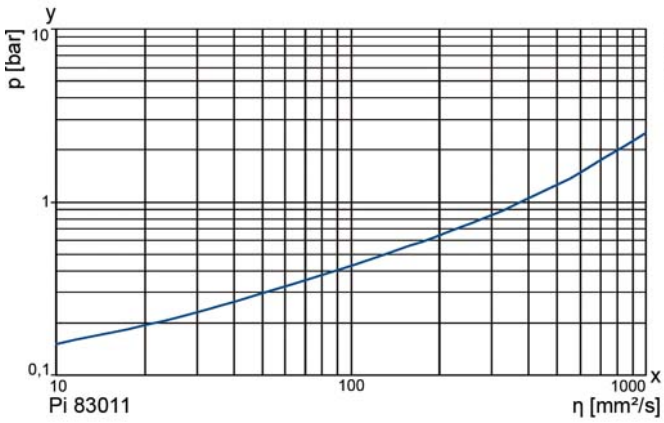
- Low noise internal gear pump
- Minimum loss of performance due to the high efficiency and the volume flow optimised design of parts
- Integrated check valve
- Integrated pressure relieve valve
- Visual/electrical maintenance indicators optional
- Thermo valve optional
- Drain outlet clean side
- Drain outlet dirt side
- Equipped with highly efficient MAHLE Premium Select filter elements
- Compact and weight optimised design
- Variable mounting possibilities
- Guaranteed retention rates according to ISO 16889 multipass test
- High dirt holding capacity
- Defined cleanliness classes according to ISO 4406
- Easy to service
- Worldwide sales and service

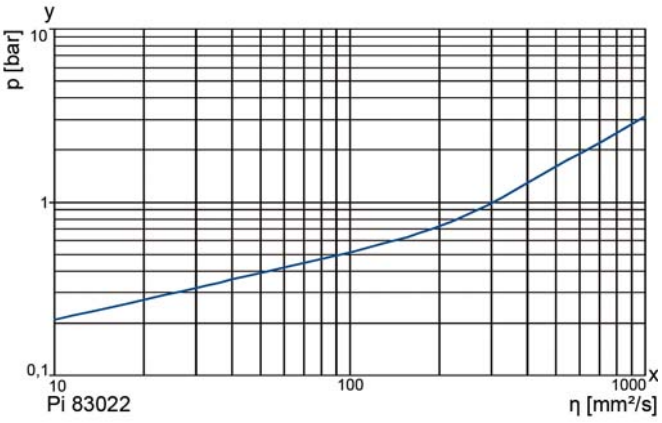
2. Mode of operation

The oil filter module consists of a filter block with an integrated electric motor, a gear pump, a filter housing and a filter element.
The internal-gear pump is extremely quiet and virtually vibration-free, with excellent suction capacity and sophisticated mechanical and volumetric efficiencies.
The oil filter module is fitted with a 2-step filter element with MAHLE Premium Select (PS) filter media. The filter element combines a fine filter and a raw filter stage. The first filtration stage is a 10 µm fine filter and the second stage a 50 µm safety filter. Other versions are available on request.
This oil filter module with MAHLE PS filter elements achieves an excellent cleanliness class according ISO 4406/1999.

For monitoring the filter element, optional a maintenance indicator is available.
For customized requirements we offer a wide range of MAHLE maintenance indicators with 1 or 2 setting-points, LED indicators, various types of contacts, analog outputs, temperature suppression and connecting plugs.
The oil filter modules are suitable for all mineral-oil-based hydraulic oils and lubricating oils.
The standard scope of supply includes the complete module with electric motor, internal-gear pump, filter housing and filter element.
The oil filter module is designed for an operating pressure up to 25 bar/360 psi.

3. Flow rate/pressure drop curve (filter housing incl. element)

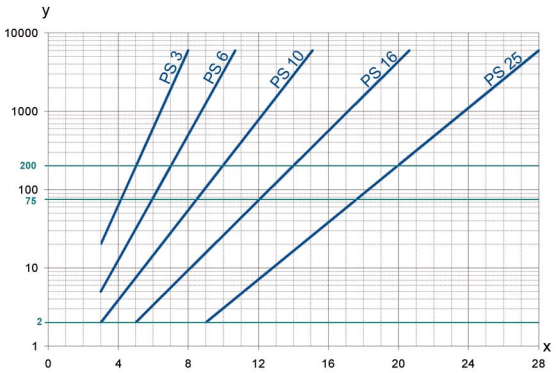




y = pressure p [bar]
x = viscosity [mm²/s]

A wider range of grade of filtration on request.

4. Separation grade characteristics



y = beta-value
x = particle size [µm

determined by multipass tests (ISO 16889)
calibration according to ISO 11171 (NIST)

5. Filter performance data

tested according to ISO 16889 (Multipass-Test)

PS elements with max.Δ p 10 bar

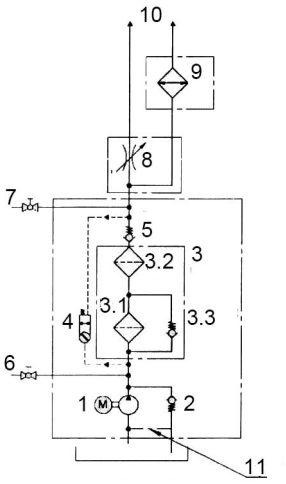
PS	3	$\beta_{5(C)} \geq 200$
PS	6	$\beta_{7(C)} \geq 200$
PS	10	$\beta_{10(C)} \geq 200$

6. Quality assurance

MAHLE filters and filter elements are produced according to the following international standards:

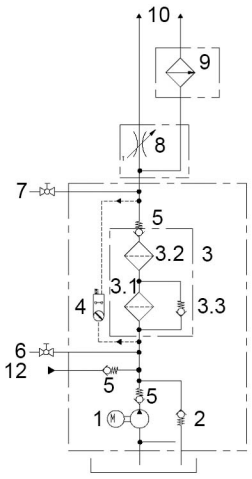
Norm	Designation
DIN ISO 2941	Hydraulic fluid power filter elements; verification of collapse/burst resistance
DIN ISO 2942	Hydraulic fluid power filter elements; verification of fabrication integrity
DIN ISO 2943	Hydraulic fluid power filter elements; verification of material compatibility with fluids
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

7. Symbols



Pi 83011/Pi 83022

1	Pump
2	Pressure limitation valve 12 bar/174 psi
3	Filter element
3.1	Fine filter 10 µm
3.2	Safety filter 50 µm
3.3	Bypass valve 5 bar/75.5 psi
4	Maintanance indicator 3.5 bar/51 psi
5	Check valve 0.2 bar/2.9 psi
6	Drain outlet dirt side
7	Drain outlet clean side
8	Thermovalve optional
9	Cooler optional
10	Outlet to gear box
11	Internal oil return optional
12	Inlet for oil from mechanical operated pump



Pi 83011 MOP/Pi 83022 MOP

8. Order numbers

Example for ordering filters:

1. Filter module	2. Filter element
V = 110 l/min with visual/electrical maintenance indicator including connection for mechanical operated pump Type: Pi 83011-134 Order number: 70532056	PS 10 Type: 852 099 PS 10/Drg 50/V 5.0 Order number: 70514957

8.1 Oil filter module

Nominal size NG [l/min]	Order number	Type	no options	with visual/ electrical indicator
110	70517981	Pi 83011-046		
	70532056	Pi 83011-134		
220	70519362	Pi 83022-046		
	70532057	Pi 83022-134		

8.2 Filter elements (a wider range of element types is availble on request)						
Nominal size NG [l/min]	**Order number**	**Type**	**Filter material**	**max. Δ p [bar]**		**Filter surface [cm²]**
110	70535473	852 099 PS 3/V 5.0	PS 3	10	Fine element	22100
	70535472	852 099 PS 6/V 5.0	PS 6	10	Fine element	22100
	70535470	852 099 PS 10/V 5.0	PS 10	10	Fine element	22100
	70534327	852 099 PS 6/Drg 50/V 5.0	PS 6	10	Fine element	22100
			Drg 50		Safety element	2525
	70514957	852 099 PS 10/Drg 50/V 5.0	PS 10	10	Fine element	22100
			Drg 50		Safety element	2525
220	70535476	852 100 PS 3/V 5.0	PS 3	10	Fine element	52000
	70535475	852 100 PS 6/V 5.0	PS 6	10	Fine element	52000
	70535474	852 100 PS 10/V 5.0	PS 10	10	Fine element	52000
	70535918	852 100 PS 6/Drg 50/V 5.0	PS 6	10	Fine element	52000
			Drg 50		Safety element	5200
	70517355	852 100 PS 10/Drg 50/V 5.0	PS 10	10	Fine element	52000
			Drg 50		Safety element	5200

9. Technical specifications

Type:	Pi 83011				Pi 83022			
Volume flow:	55 l/min	110 l/min	67 l/min	134 l/min	110 l/min	220 l/min	132 l/min	264 l/min
Nominal pressure:	25 bar/363 psi		25 bar/363 psi		25 bar/363 psi		25 bar/363 psi	
Test pressure:	40 bar/581 psi		40 bar/581 psi		40 bar/581 psi		40 bar/581 psi	
Oil temperature:	-40 °C to +100 °C		-40 °C to +100 °C		-40 °C to +100 °C		-40 °C to +100 °C	
Temperature range:	+60 °C		+60 °C		+60 °C		+60 °C	
Bypass setting in filter element:	5 bar/72 psi		5 bar/72 psi		5 bar/72 psi		5 bar/72 psi	
Maintenance indicator setting:	3.5 bar/51 psi		3.5 bar/51 psi		3.5 bar/51 psi		3.5 bar/51 psi	
Connection suction side*:	SAE 2.5		SAE 2.5		SAE 2.5		SAE 2.5	
Connection pressure side*:	SAE 2.5		SAE 2.5		SAE 2.5		SAE 2.5	
Motor output:	3.5 kW	6 kW	3.5 kW	6 kW	7 kW	11 kW	7 kW	11 kW
Revolutions:	710 1/min	1410 1/min	860 1/min	1720 1/min	730 1/min	1465 1/min	875 1/min	1760 1/min
Voltage:	400 V AC/50Hz		400 V AC/60Hz		400 V AC/50Hz		400 V AC/60Hz	
Nominal current:	9.9 A	11.5 A	8.2 A	11.5 A	17 A	24 A	15.5 A	20 A
Type of protection:	IP55		IP55		IP55		IP55	
Viscosity range:	10 to 10,000 mm²/s		10 to 10,000 mm²/s		10 to 10,000 mm²/s		10 to 10,000 mm²/s	

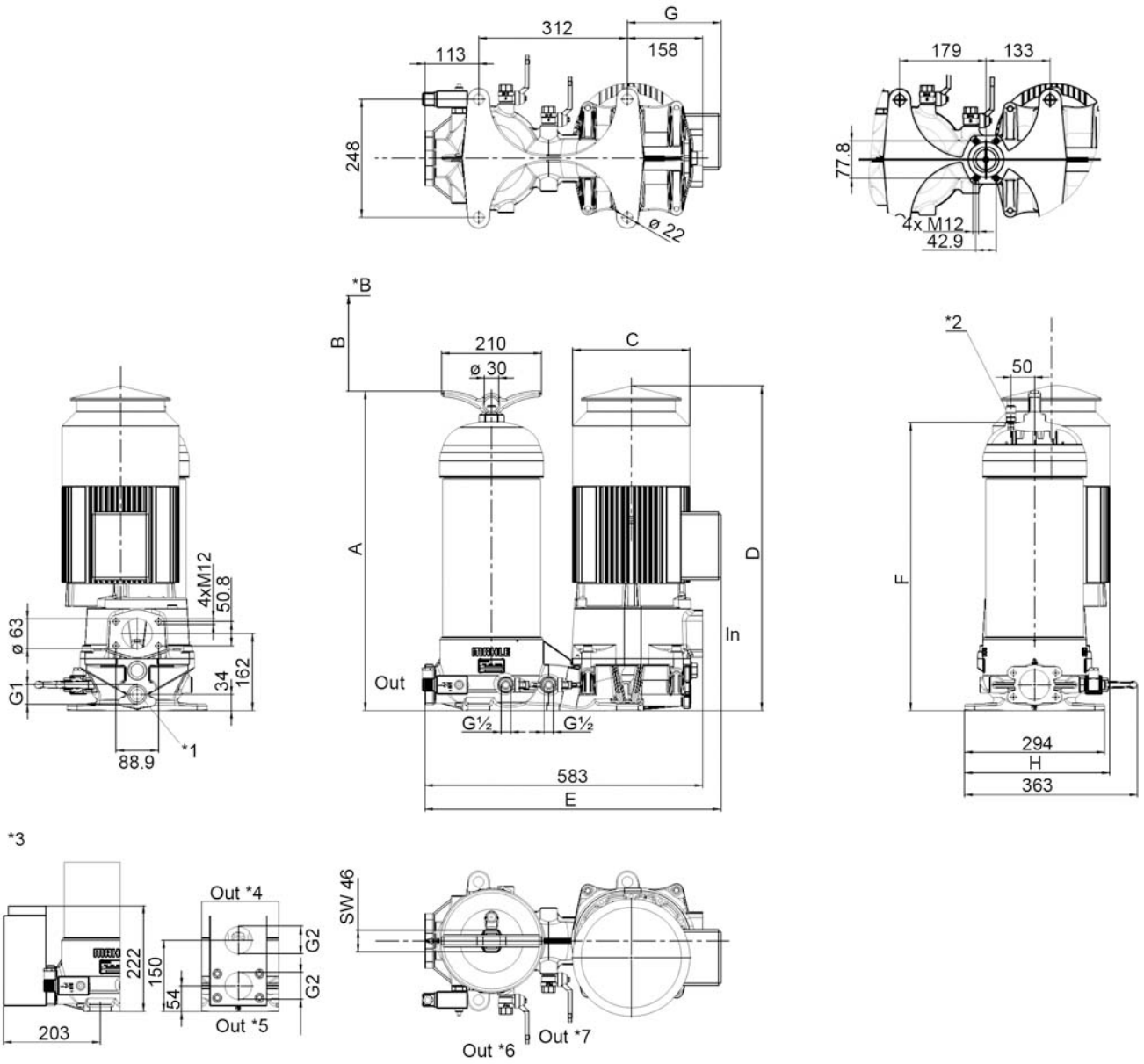
* SAE 2 connections optional

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.

Subject to technical alteration without prior notice.

10. Dimensions



*1	Outlet pressure limitation valve	*B	Minimum clearance for filter element
*2	Ventilation system connection	Out *4	Outlet to gear box
*3	Thermo valve optional	Out *5	Outlet to cooler
In	Inlet	Out *6	Drain outlet clean side
Out	Outlet	Out *7	Drain outlet dirt side

All dimensions in mm.

Type	A	B	C	D	E	F	G	H
Pi 83011	670	440	246	682	621	605	196	305
Pi 83022	1203	970	312	788	683	1138	258	338

11. Installation, operating and maintenance instructions

11.1 Filter module installation

When installing the filter make sure that sufficient space is available to remove filter element. Preferably the filter should be installed with the filter housing pointing upwards.
The maintenance indicator must be visible.

11.2 Connecting the electrical maintenance indicator PiS 3119

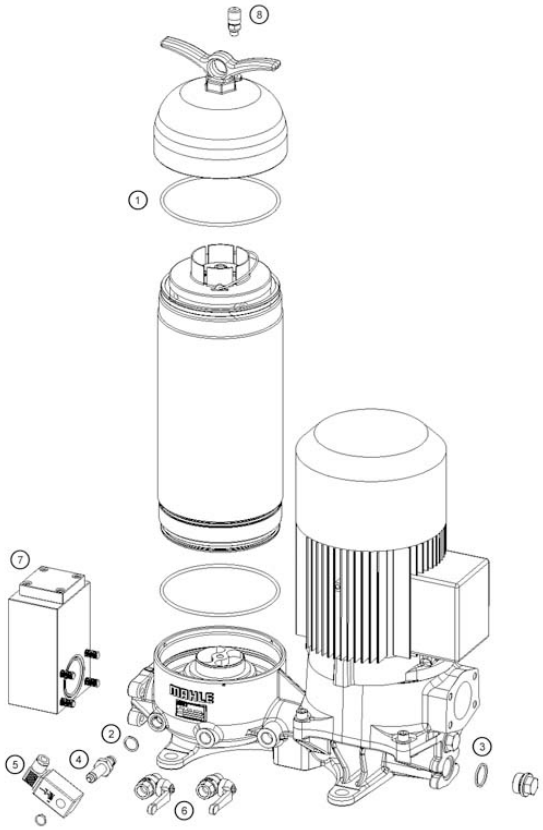
The electrical indicator is connected via a 3-pole appliance plug according to DIN EN 175301-803 with poles marked 1, 2 and 3. The electrical section is setted in normally closed position.

11.3 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 after the end of the shift.
2 . Filters without maintenance indicator:
   The filter element should be replaced after the trial run or flushing of the system. Afterwards follow instructions of the manufacturer.
3 . Please always ensure that you have original MAHLE spare elements in stock: Disposable elements (PS) cannot be cleaned.

11.4 Element replacement

1 . Stop system and relieve filter module from pressure.
2 . Unscrew the cover with an open-end wrench and remove it.
3 . Open the drain and discharge the housing completely.
4 . Remove element out of the housing carefully.
5 . Check seals on the filter housing for damage. Replace, if necessary.
6 . Make sure that the order number on the spare element corresponds to the order number of the filter name-plate.
   To ensure no contamination occurs during the exchange of the element first open the plastic bag and push the element over the spigot in the filter head. Now remove plastic bag.
7 . Close the drain.
8 . Tighten the cover with an open-end wrench.
9 . Vent the filter module.



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