

Medium Pressure Filter

Pi 340

Operating pressure 350 (250) bar, Nominal size up to 450

1. Features

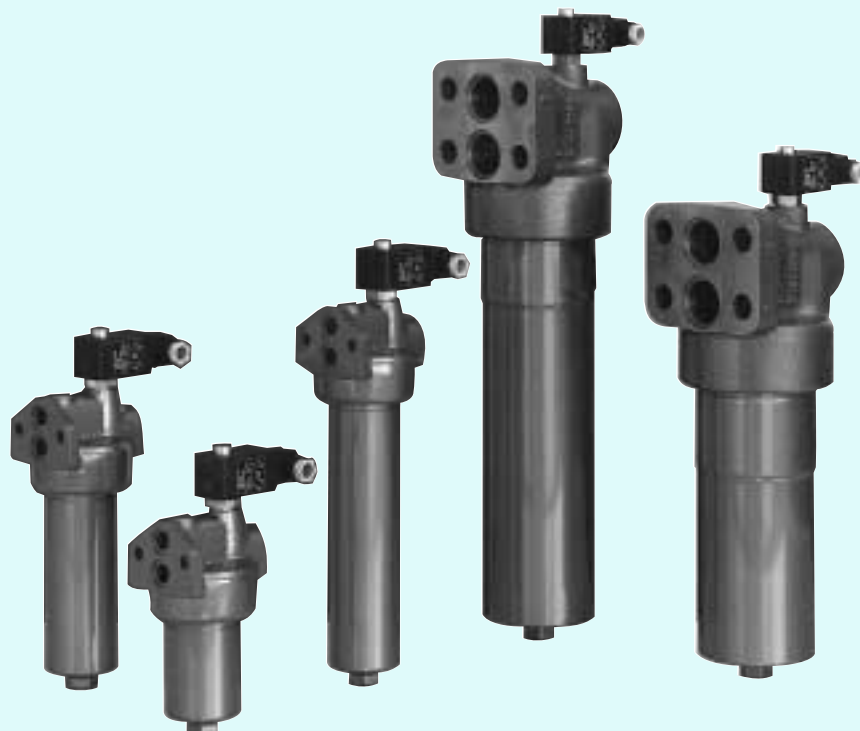
Efficient filters for modern hydraulic systems

- Modular design
- Minimal pressure loss
- Compact design
- Visual / electrical / electronical differential pressure indication

Quality filters, easy to service

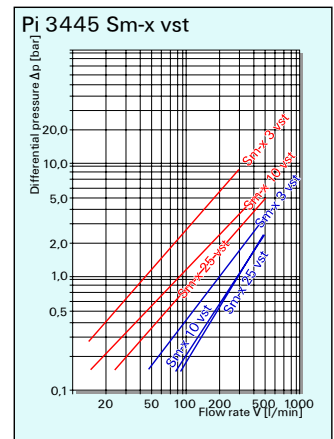
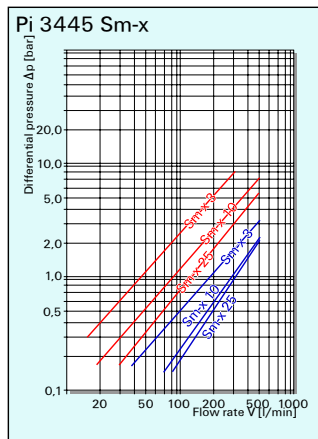
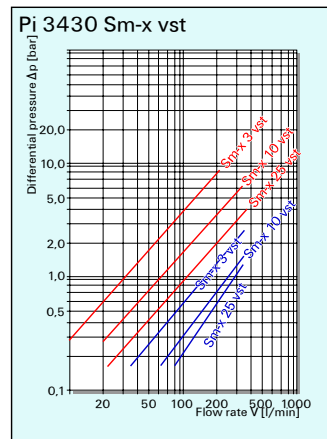
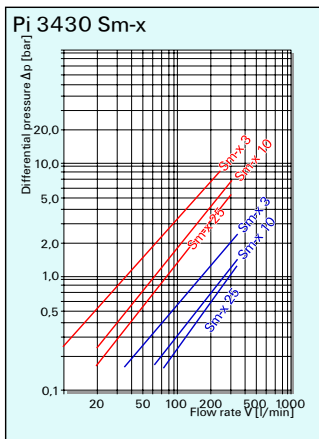
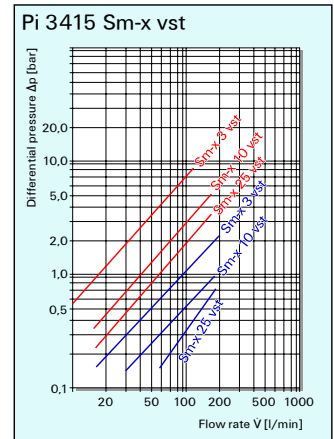
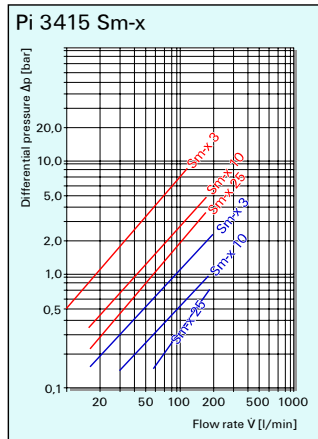
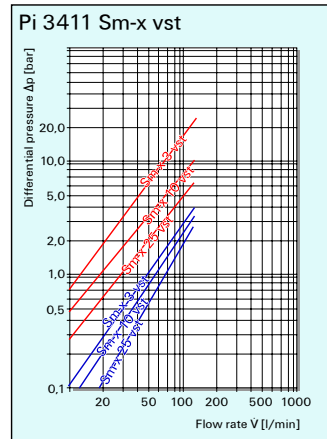
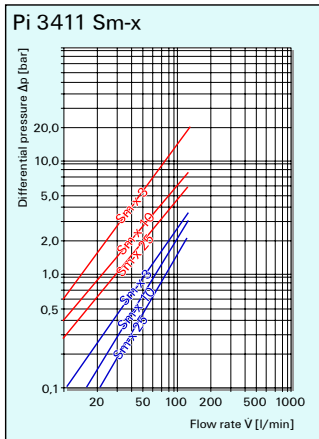
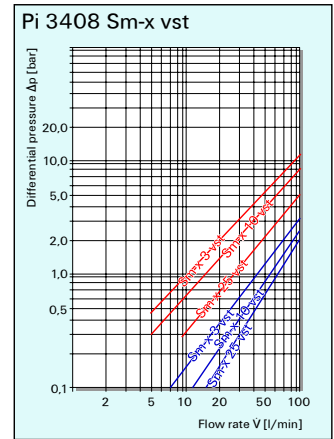
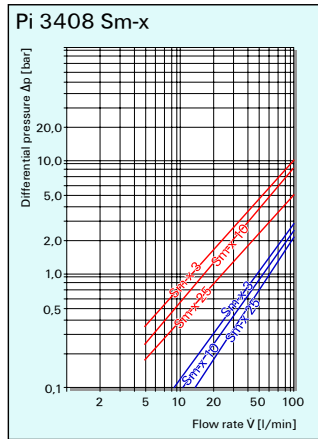
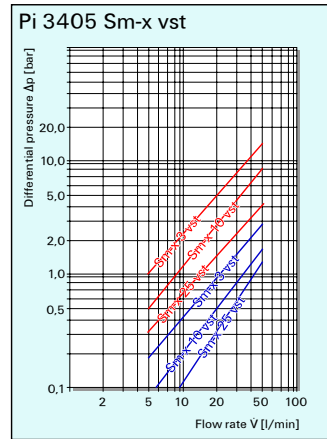
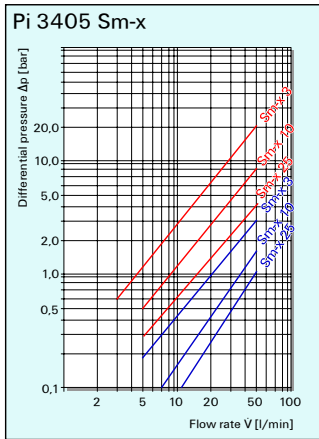
- Highly efficient Sm-x filter elements
- β -rated elements per ISO 4572
- Large dirt holding capacity and high differential pressure stability providing optimal element service life

World-wide sales

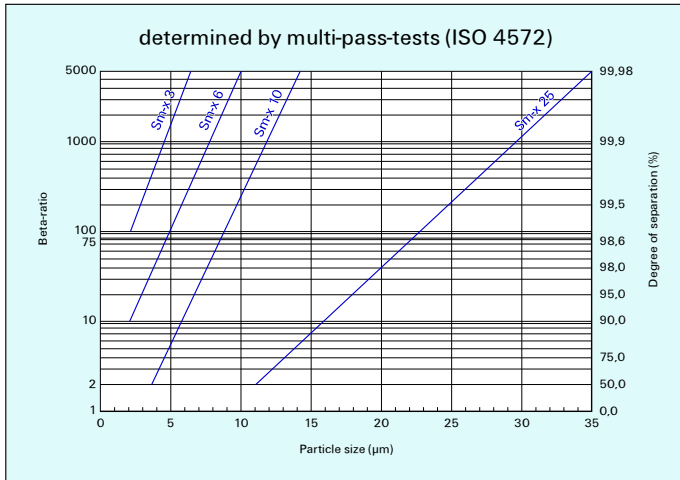


2. Flow rate / pressure drop curve compl. filter

■ 190 mm²/s (25 ° E)
■ 33 mm²/s (4,5 ° E)



3. Separation characteristics



4. Filter performance data

tested according to ISO 4572 (Multi-Pass-Test)

Sm-x elements
with Δp 20 bar

Sm-x 3 $\beta_3 \geq 75$
 Sm-x 6 $\beta_6 \geq 75$
 Sm-x 10 $\beta_{10} \geq 75$
 Sm-x 25 $\beta_{25} \geq 75$

at 7 bar differential pressure

Sm-x vst Elements
with Δp 210 bar

Sm-x vst 3 $\beta_3 \geq 75$
 Sm-x vst 6 $\beta_6 \geq 75$
 Sm-x vst 10 $\beta_{10} \geq 75$
 Sm-x vst 25 $\beta_{25} \geq 75$

at 16 bar differential pressure

Example for ordering filters:

1. Housing design $\dot{V} = 80$ l/min, electrical Indication
Type-No. Pi 3408-69

Bestell-Nr. 787.441.5

+ 2. Filter element Sm-x vst 3
Type-No. Pi 2208

Bestell-Nr. 768.020.0

7. Order numbers

7.1 Housing design

Order number	Type number	Nominal size (NG)	① With bypass valve and visual indicator	② With bypass valve and electrical indicator	③ With visual indicator	④ With electrical indicator
787.432.4	Pi 3405 - 12	50				
787.433.2	Pi 3405 - 13					
787.434.0	Pi 3405 - 14					
787.435.7	Pi 3405 - 15					
787.438.1	Pi 3408 - 12	80				
787.439.9	Pi 3408 - 13					
787.440.7	Pi 3408 - 14					
787.441.5	Pi 3408 - 15					
787.449.9	Pi 3411 - 12	110				
787.445.6	Pi 3411 - 13					
787.446.4	Pi 3411 - 14					
787.447.2	Pi 3411 - 15					
792.191.9	Pi 3415 - 12	150				
792.192.7	Pi 3415 - 13					
792.193.5	Pi 3415 - 14					
792.194.3	Pi 3415 - 15					
792.196.8	Pi 3430 - 12	300				
792.197.6	Pi 3430 - 13					
792.198.4	Pi 3430 - 14					
792.199.2	Pi 3430 - 15					
792.200.8	Pi 3445 - 12	450				
792.201.6	Pi 3445 - 13					
792.202.4	Pi 3445 - 14					
792.203.2	Pi 3445 - 15					

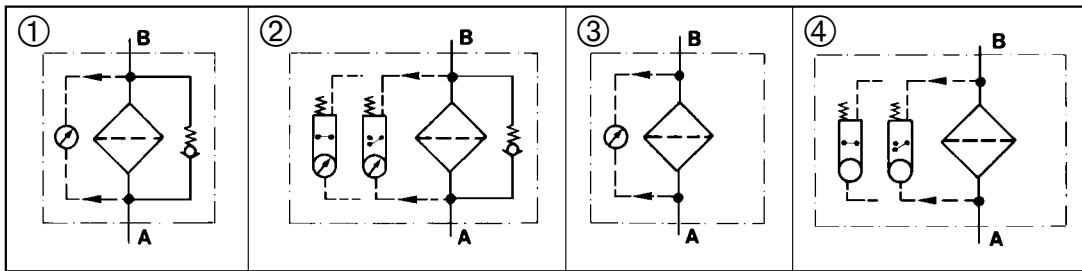
When filter with non bypass configuration is selected the collapse pressure of the element may not be exceeded

5. Test regulations

MAHLE filter elements are manufactured respectively, tested in accordance with the following international standards:

No .	Designation
ISO 2941	Hydraulic -filter elements: Verification of burst resistance
ISO 2942	Hydraulic -filter elements: Determination of fabrication integrity
ISO 2943	Hydraulic -filter elements: Verification of material compatibility with hydraulic fluids
ISO 3723	Hydraulic -filter elements: Method for testing end -cap load
ISO 3724	Hydraulic -filter elements: Verification of flow fatigue characteristics
ISO 3968 . 2	Hydraulic -filters: Evaluation of pressure drop versus flow
ISO 4572	Hydraulic -filter elements: Testing of filter performance (multi -pass -test)

6. Symbols



7.2 Filter elements*

() = filter surface area [] = type number

Sm-x 3 Δp 20 bar	Sm-x 6 Δp 20 bar	Sm-x 10 Δp 20 bar	Sm-x 25 Δp 20 bar	Sm-x vst 3 Δp 210 bar	Sm-x vst 6 Δp 210 bar	Sm-x vst 10 Δp 210 bar	Sm-x vst 25 Δp 210 bar
(590 cm ²)	(590 cm ²)	(590 cm ²)	(590 cm ²)	(470 cm ²)	(470 cm ²)	(470 cm ²)	(470 cm ²)
768.013.5	794.350.9	768.032.5	768.044.0				
768.013.5	794.350.9	768.032.5	768.044.0	[Pi 2205]	[Pi 5205]	[Pi 3205]	[Pi 4205]
[Pi 2105]	[Pi 5105]	[Pi 3105]	[Pi 4105]	768.019.2	794.353.3	768.038.2	768.050.7
				768.019.2	794.353.3	768.038.2	768.050.7
(1150 cm ²)	(1150 cm ²)	(1150 cm ²)	(1150 cm ²)	(900 cm ²)	(900 cm ²)	(900 cm ²)	(900 cm ²)
768.014.3	794.351.7	768.034.1	768.045.7				
768.014.3	794.351.7	768.034.1	768.045.7	[Pi 2208]	[Pi 5208]	[Pi 3208]	[Pi 4208]
[Pi 2108]	[Pi 5108]	[Pi 3108]	[Pi 4108]	768.020.0	794.354.1	768.119.0	768.051.5
				768.020.0	794.354.1	768.119.0	768.051.5
(1700 cm ²)	(1700 cm ²)	(1700 cm ²)	(1700 cm ²)	(1315 cm ²)	(1315 cm ²)	(1315 cm ²)	(1315 cm ²)
768.015.0	794.352.5	768.033.3	768.046.5				
768.015.0	794.352.5	768.033.3	768.046.5	[Pi 2211]	[Pi 5211]	[Pi 3211]	[Pi 4211]
[Pi 2111]	[Pi 5111]	[Pi 3111]	[Pi 4111]	768.021.8	794.355.8	768.039.0	768.052.3
				768.021.8	794.355.8	768.039.0	768.052.3
(2350 cm ²)	(2350 cm ²)	(2350 cm ²)	(2350 cm ²)	(2010 cm ²)	(2010 cm ²)	(2010 cm ²)	(2010 cm ²)
768.016.8	795.509.9	768.035.8	768.047.3				
768.016.8	795.509.9	768.035.8	768.047.3	[Pi 2215]	[Pi 5215]	[Pi 3215]	[Pi 4215]
[Pi 2115]	[Pi 5115]	[Pi 3115]	[Pi 4115]	768.022.6	795.512.3	768.040.8	768.053.1
				768.022.6	795.512.3	768.040.8	768.053.1
(4420 cm ²)	(4420 cm ²)	(4420 cm ²)	(4420 cm ²)	(3800 cm ²)	(3800 cm ²)	(3800 cm ²)	(3800 cm ²)
768.017.6	795.510.7	768.036.6	768.048.1				
768.017.6	795.510.7	768.036.6	768.048.1	[Pi 2230]	[Pi 5230]	[Pi 3230]	[Pi 4230]
[Pi 2130]	[Pi 5130]	[Pi 3130]	[Pi 4130]	768.023.4	795.513.1	768.041.6	768.054.9
				768.023.4	768.513.1	768.041.6	768.054.9
(6540 cm ²)	(6540 cm ²)	(6540 cm ²)	(6540 cm ²)	(5600 cm ²)	(5600 cm ²)	(5600 cm ²)	(5600 cm ²)
768.018.4	795.511.5	768.037.4	768.049.9				
768.018.4	795.511.5	768.037.4	768.049.9	[Pi 2245]	[Pi 5245]	[Pi 3245]	[Pi 4245]
[Pi 2145]	[Pi 5145]	[Pi 3145]	[Pi 4145]	768.024.2	795.514.9	768.042.4	768.055.6
				768.024.2	795.514.9	768.042.4	768.055.6

*Other element executions upon request

8. Specifications

Design:	Flange filter
Operating pressure:	250 bar*
Static test pressure:	325 bar
Temperature range:	-10 °C to +120 °C (other temperature ranges on request)
Bypass opening pressure:	Δp 7 bar \pm 10 %
Filter head material:	GGG
Filter bowl material:	St
Material of seals:	NBR / PTFE / Cu
Activating pressure of visual / electrical differential pressure indicator:	Δp 5 bar \pm 10 %
Electrical data of contamination indicator:	
Maximum voltage:	230 V \sim / =
Maximum current on contact:	2,5 A
Maximum contact load:	60 VA / 40 W
Inrush current:	70 VA
Type of protection:	IP 65 when inserted and secured
Contact:	bistable
Cable connection:	PG 11 \varnothing 6-10

The electrical indicator function can be changed from the Normally Open position to the Normally Closed position or visa versa by inverting the electrical section.

With the inrush current of 70 VA the indicator can trigger small contactors or contactor relays.

Inductivity in the direct current may require the use of a signal eraser.

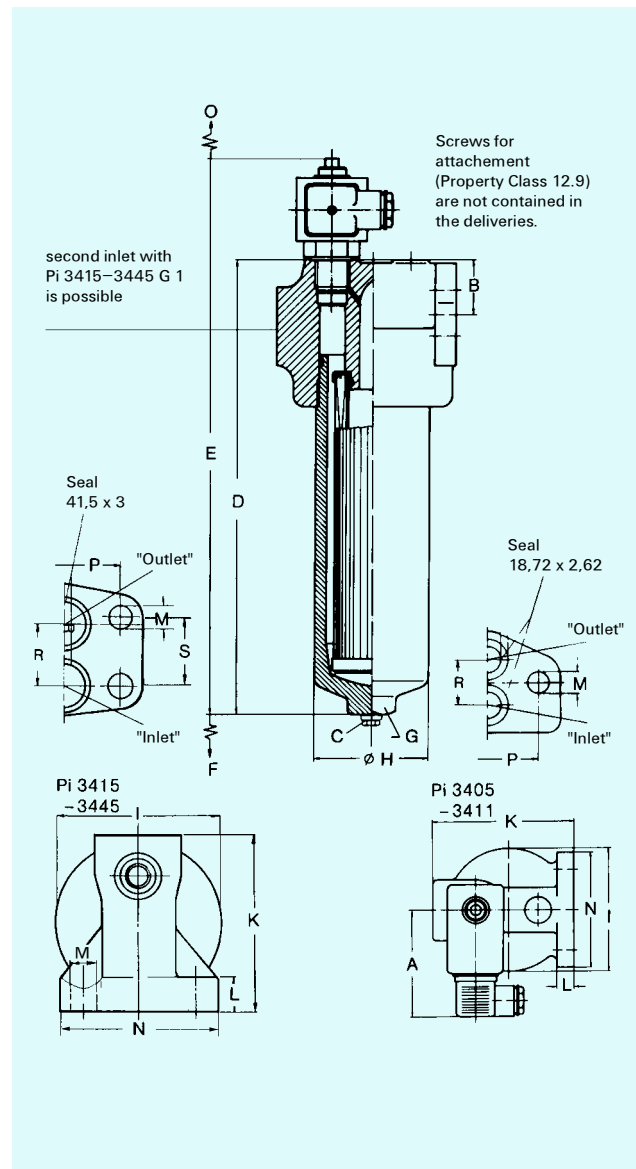
For further information and executions please see our leaflet Contamination indicators.

Filters compatible with standard mineral oils.

Please contact us in case of using other media.

* Types Pi 3405... - 3411... have an operating pressure of 350 bar, test pressure 455 bar.

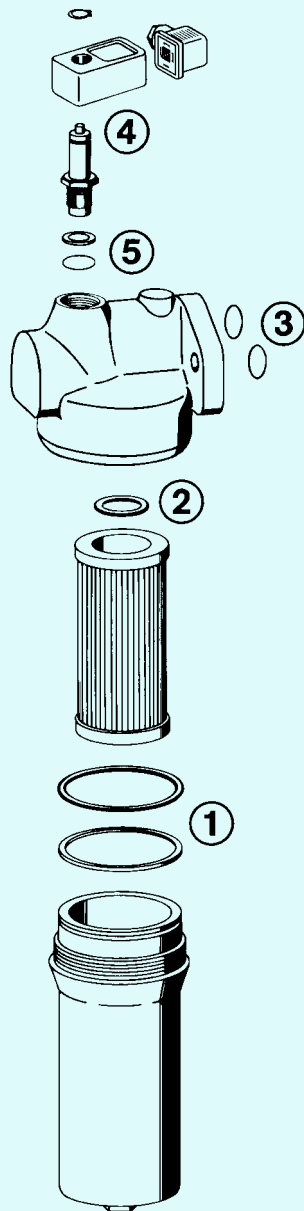
Types Pi 3415... - 3445... without bypass have an operating pressure of 315 bar, test pressure 410 bar.



9. Dimensions

All dimensions (except "C") in mm

Dimension Type	Dimension																	Weight kg
	A	B	C	D	E	F	G SW	H	I	K	L	M Ø	N	O	P	R	S	
Pi 3405	78	29	-	181	241	110	27	66	90	101	13	11	83	45	58	26	-	3,5
Pi 3408	78	29	-	259	319	110	27	66	90	101	13	11	83	45	58	26	-	4,5
Pi 3411	78	29	-	335	395	110	27	66	90	101	13	11	83	45	58	26	-	5,5
Pi 3415	78	60	-	308	368	110	30	109	140	150	30	22	135	45	95	52	58	14,8
Pi 3430	78	60	G ¼	433	493	110	30	109	140	150	30	22	135	45	95	52	58	17,3
Pi 3445	78	60	G ¼	550	610	110	30	109	140	150	30	22	135	45	95	52	58	19,6



12. Spare parts list

Pos.	Type number / housing		
	Pi 3405-Pi 3411		Pi 3415-Pi 3445
① to ③	Seal kit NBR 785.038.1 FPM 785.039.9 EPDM 785.040.7	Seal kit NBR 793.620.6 FPM 793.621.4 EPDM 793.622.2	
④	Contamination indicator visual 5 bar 766.991.4 Pis 3093/5	electrical 5 bar 766.986.4 Pis 3092/5	electrical upper part only 753.655.0
⑤	Seal kit for contamination indicator NBR 776.027.5 FPM 776.028.3 EPDM 776.029.1		

11. 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 bowl. Preferable the filter should be installed with the filter bowl pointing downwards. The contamination indicator must be visible.

10.2 Connecting the electrical contamination indicator

The electrical indicator is connected via a 2-pole appliance plug according DIN 43 650 with poles marked 1 and 2.

The electrical section can be inverted to change from Normally Open position to Normally Closed position or visa versa.

10.3 When must the filter element be replaced?

- Filters equipped with visual and electrical contamination indicator:
During cold starts, the indicator may give a warning signal. Depress the red button of the visual indicator once again only after operating temperature has been reached. If the red button immediately pops out 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.
- Filters without contamination indicator:
The filter element should be replaced after the trial run or flushing of the system. Afterwards follow instructions of the manufacturer.
- Please always ensure that you have original MAHLE-replacement elements in stock: disposable elements (Sm-x) cannot be cleaned.

10.4 Element replacement

- Stop system and relieve filter from pressure.
- Unscrew the filter bowl by turning counter-clockwise. Clean the bowl using a suitable cleaning solvent.
- Remove filter element with a side-to-side motion.
- Check O-ring and back-up ring on the filter bowl and spigot for damage. Replace, if necessary.
- Make sure that the part number on the spare element corresponds with the part number of the filter label. Open the plastic bag and push element over the spigot in the filter head. Now remove plastic bag.
- Complete installation by screwing on the bowl, turning clockwise until it comes to a full stop. Back off the bowl $\frac{1}{8}$ to $\frac{1}{2}$ turn.

Subject to technical alteration without prior notice.

MAHLE

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