

Medium pressure filter

Pi 350

Operating pressure 315 bar, Nominal size up to 80

1. Features

Efficient filters for modern hydraulic systems

- Modular design
- Minimal pressure loss
- Compact design
- Visual / electrical / electronic differential pressure indication
- Threaded ports

Quality filters, easy to service

- Highly efficient Mic- or Sm-x-filter elements
- β -rated elements per ISO 4572
- Large dirt holding capacity and high-differential pressure stability providing optimal element service life
- 100% bubble-point tested elements

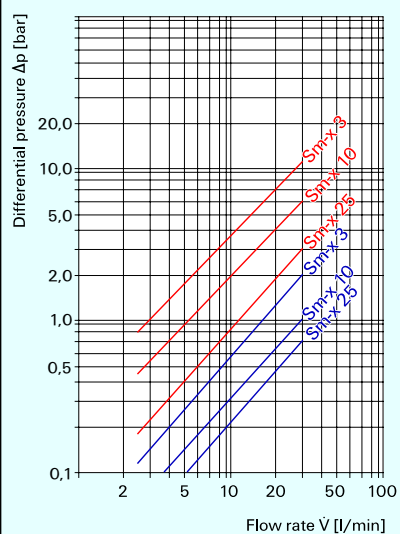
World-wide sales



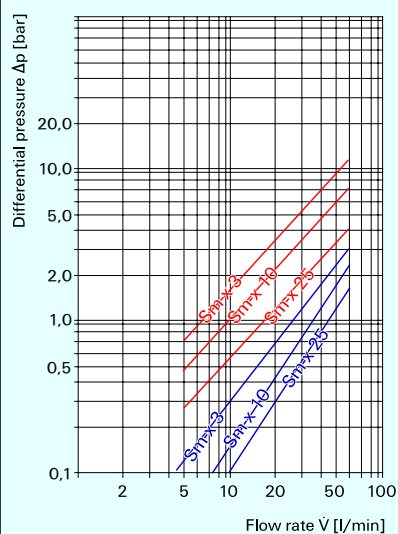
2. Flow rate / pressure drop curve compl. filter

■ $190 \text{ mm}^2/\text{s}$ (25° E)
■ $33 \text{ mm}^2/\text{s}$ ($4,5^\circ \text{ E}$)

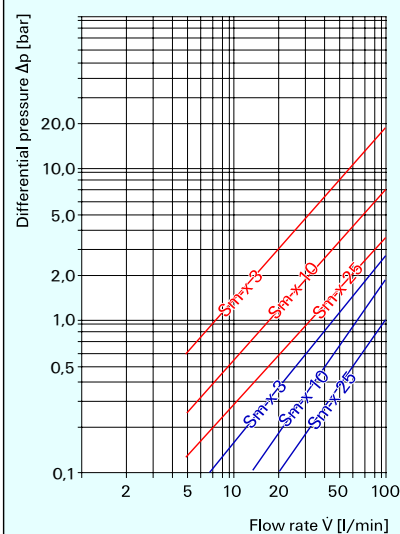
Pi 3502 Sm-x



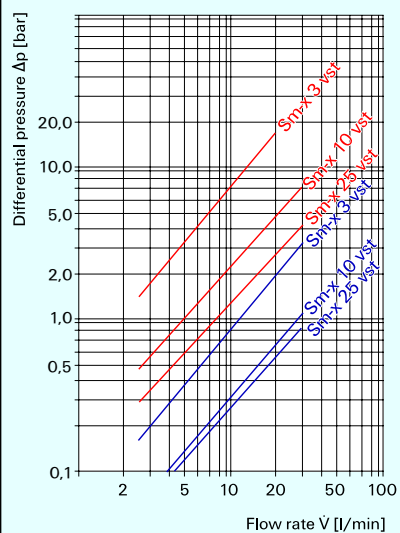
Pi 3504 Sm-x



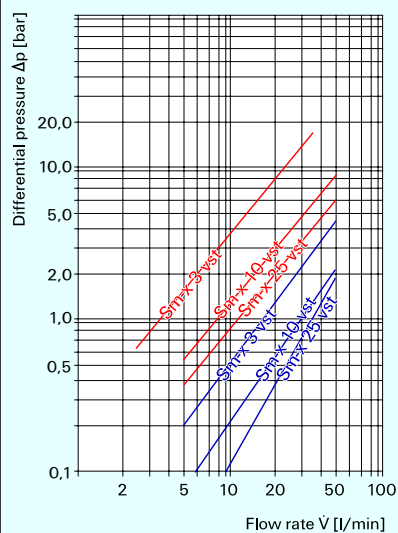
Pi 3508 Sm-x



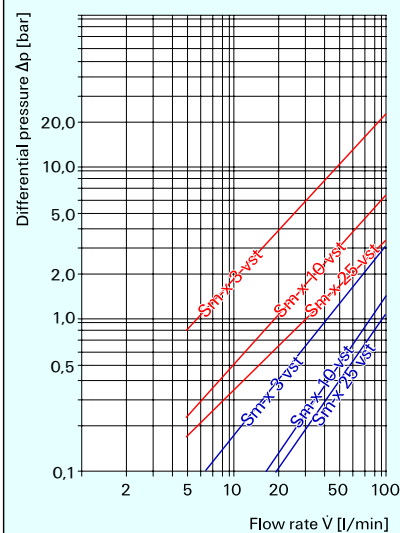
Pi 3502 Sm-x vst



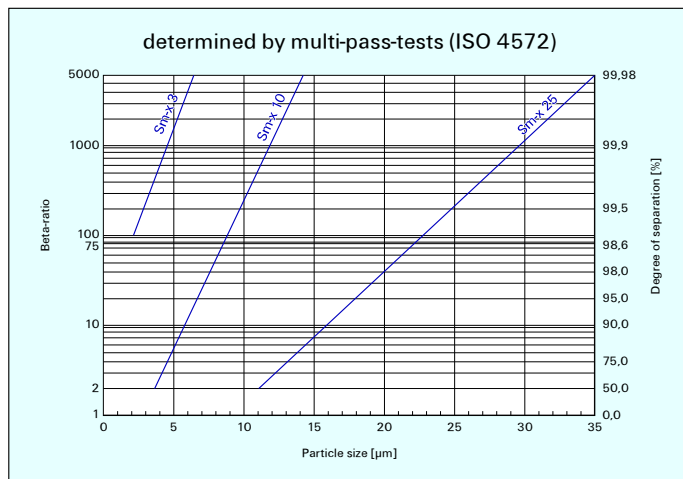
Pi 3504 Sm-x vst



Pi 3508 Sm-x vst



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 10 $\beta_{10} \geq 75$
Sm-x 25 $\beta_{25} \geq 75$

at 7 bar differential pressure

Sm-x vst elements
with Δp 160 bar

Sm-x vst 3 $\beta_3 \geq 75$
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 3508-15**

Order-no. **773.202.7**

+ 2. Filter element Sm-x vst 3
Type-no. **852 127 Sm-x vst 3**

Order-no.. **768.365.9**

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
765.992.3	Pi 3502 – 12	20				
773.193.8	Pi 3502 – 13					
773.195.3	Pi 3502 – 14					
773.192.0	Pi 3502 – 15					
765.994.9	Pi 3504 – 12	40				
773.198.7	Pi 3504 – 13					
773.200.1	Pi 3504 – 14					
773.197.9	Pi 3504 – 15					
767.451.8	Pi 3508 – 12	80				
773.203.5	Pi 3508 – 13					
773.205.0	Pi 3508 – 14					
773.202.7	Pi 3508 – 15					

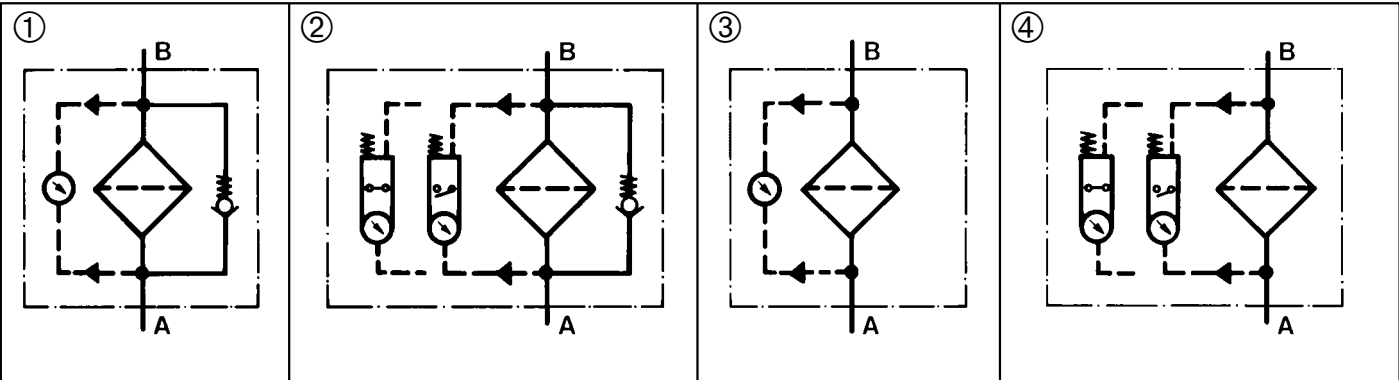
When filter with non bypass configuration is selected the collapse pressure of the element may not be exceeded

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 10 Δp 20 bar	Sm-x 25 Δp 20 bar	Sm-x vst 3 Δp 160 bar	Sm-x vst 10 Δp 160 bar	Sm-x vst 25 Δp 160 bar
(330 cm²)	(330 cm²)	(330 cm²)	(250 cm²)	(250 cm²)	(225 cm²)
768.273.5	768.275.0	768.277.6			
768.273.5	768.275.0	768.277.6	[852 125 Sm-x vst 3]	[852 125 Sm-x vst 10]	[852 125 Sm-x vst 25]
[852 125 Sm-x 3]	[852 125 Sm-x 10]	[852 125 Sm-x 25]	768.278.4	768.280.0	768.281.8
			768.278.4	768.280.0	768.281.8
(590 cm²)	(590 cm²)	(590 cm²)	(410 cm²)	(410 cm²)	(380 cm²)
768.314.7	768.316.2	768.318.8			
768.314.7	768.316.2	768.318.8	[852 126 Sm-x vst 3]	[852 126 Sm-x vst 10]	[852 126 Sm-x vst 25]
[852 126 Sm-x 3]	[852 126 Sm-x 10]	[852 126 Sm-x 25]	768.319.6	768.321.2	768.324.6
			768.319.6	768.321.2	768.324.6
(1025 cm²)	(1025 cm²)	(1025 cm²)	(1025 cm²)	(1025 cm²)	(1025 cm²)
768.360.0	768.361.8	768.364.2			
768.360.0	768.361.8	768.364.2	[852 127 Sm-x vst 3]	[852 127 Sm-x vst 10]	[852 127 Sm-x vst 25]
[852 127 Sm-x 3]	[852 127 Sm-x 10]	[852 127 Sm-x 25]	768.365.9	768.367.5	768.369.1
			768.365.9	768.367.5	768.369.1

*Other element executions upon request

8. Specifications

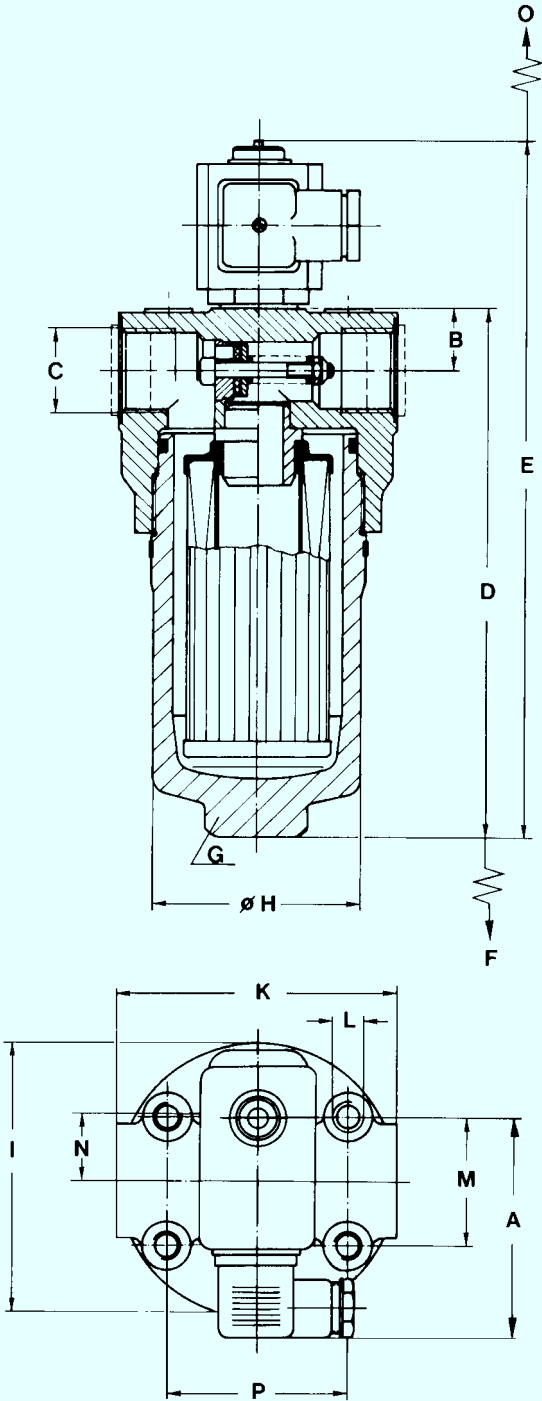
Design:	line mounting filter
Operating pressure:	315 bar
Test pressure:	630 bar
Temperature range:	-10 °C to +120 °C
	(other temperature ranges on request)
Bypass opening pressure:	Δp 7 bar ±10%
Filter head material:	GGG
Filter bowl material:	St
Material of seals:	NBR / PTFE / AL
Activating pressure of visual / electrical differential pressure indicator:	Δp 5 bar ±10%
Electrical data of contamination indicator:	
Maximum voltage:	230 V ~/=
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 Ø 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.

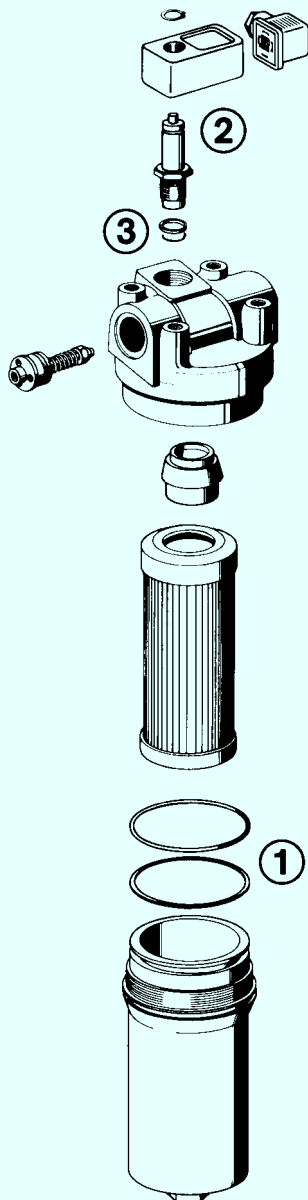
For further information also see our leaflet Contamination indicators.



9. Dimensions

All dimensions except of "C" in mm

Dimen- sion Type	A	B	C	D	E	F	G SW	H	I	K	L	M	N	O	P	Weight
Pi 3502	78	23	G ½	184	237	80	27	64.5	84	85	M 8 x 15	40	23	45	55	3.5 kg
Pi 3504	78	23	G ½	184	237	80	27	64.5	84	85	M 8 x 15	40	23	45	55	3.5 kg
Pi 3508	78	24	G 1	260	313	80	19	76	98	100	M 10 x 15	50	25	45	60	8.5 kg



10. 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 43650 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.

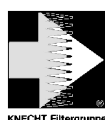
10.4 Element replacement

- 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 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 $\frac{1}{4}$ to $\frac{1}{2}$ turn.

11. Spare parts list

Pos.		Type-no. / housing		
		Pi 3502	Pi 3504	Pi 3508
①	Seal kit			
	NBR	764.777.9	764.778.7	764.779.5
	FPM	776.038.2	776.040.8	776.042.4
	EPDM	776.039.0	776.041.6	776.043.2
②	Contamination indicator			
	Activating pressure	visual	electrcal	el. upper
	Δp 5 bar	766.991.4	766.986.4	part only
		Pis 3093/5	Pis 3092/5	753.655.0
③	Seal kit for contamination indicator			
	NBR	776.027.5		
	FPM	776.028.3		
	EPDM	776.029.1		

Subject to technical alteration without prior notice.



MAHLE
Industriefilter

KNECHT Filtergruppe

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