

Process filtration

PiP

Pleated cartridges

1. Features

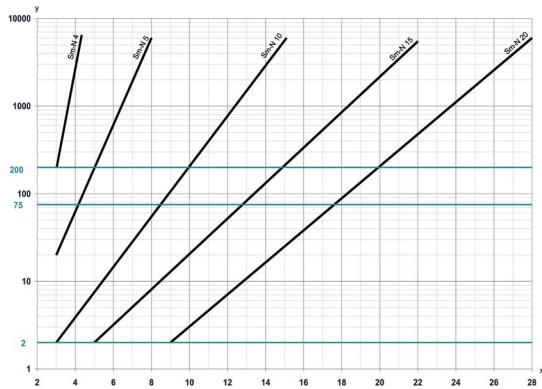
MAHLE pleated cartridges of the PiP-series are high-efficient Sm-N pleated cartridges for process filtration. These cartridges are used for lots of demanding applications in the industrial production process. They are especially suitable for the filtration of cleaning fluids in the process technology. Furthermore, the PiP-series can be used for water treatment as well as for filtration of low-viscosity oils and emulsions. With this particular filter series for the industrial process filtration, MAHLE offers a depth filter with a great efficient filter surface as well as a collection efficiency.

Characteristics

- High-efficient Sm-N cartridges
- Standard lengths: 10", 20", 30" and 40"
- High differential pressure stability and dirt holding capacity for optimum operating lifetime
- Guaranteed separation rates acc. to ISO 16889 multi-pass test
- Worldwide distribution



2. Separation grade characteristics



x = particle size [μm]

y = beta value

determined by multi-pass tests (ISO 16889)

calibration according to ISO 11171 (NIST)

3. Filter performance data

testet according to ISO 16889 (Multipass-Test)

Sm-N with max. Δp 3 bar

		$\beta_{x(C)} 200$	$\beta_{x(C)} 1000$	$\beta_{x(C)} 3000$
Sm-N 1	1	$\leq 4 \mu m$	$\leq 4 \mu m$	$\sim 4 \mu m$
Sm-N 5	5	$5 \mu m$	$\sim 6,5 \mu m$	$\sim 7,5 \mu m$
Sm-N 10	10	$10 \mu m$	$\sim 12,5 \mu m$	$\sim 14 \mu m$
Sm-N 15	15	$15 \mu m$	$\sim 18,5 \mu m$	$\sim 20,5 \mu m$
Sm-N 20	20	$20 \mu m$	$\sim 23,5 \mu m$	$\sim 26,5 \mu m$

values guaranteed up to 2.2 bar differential pressure

Degree of filtration acc. NIST-definition (ISO 11171) equivalent to ACFTD definition (ISO 4402:1991) $\leq 1 \mu m$.

4. 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

5. Type number key and order numbers

5.1 Type number key PiP pleated cartridges

Type

PiP Filter for industrial process technology

Design

KF Pleated cartridge

Cartridge spigot

- A** Double o-ring, SOE 222
- B** Bayonet, double o-ring, SOE 226
- C** Cross-groove, double o-ring, SOE
- D** Flat seal, DOE

Cartridge type

- 0** Open at one end (SOE) without centre point
- 1** Open at one end (SOE) with centre point
- 2** Open at both ends (DOE)

Cartridge length

- 10** 10"
- 20** 20"
- 30** 30"
- 40** 40"

Filter material

Sm-N

Degree of filtration

- 1** 1 µm
- 5** 5 µm
- 10** 10 µm
- 15** 15 µm
- 20** 20 µm

PiP/ KF/ A- 1/ 10- Sm-N 5 Example for ordering

5.2 Order numbers PiP pleated cartridges

Nominal size NG [l/min]	Recomm. flow rate [l/min]	Order number	Type	Filter material	Δ p max. [bar]	Filter surface [cm²]
25	10	70329906	PiP/KF/A-0/10-Sm-N 1	Sm-N 1	3	2580
	15	70329913	PiP/KF/A-0/10-Sm-N 5	Sm-N 5		
	20	70329917	PiP/KF/A-0/10-Sm-N 10	Sm-N 10		
	23	70329919	PiP/KF/A-0/10-Sm-N 15	Sm-N 15		
	25	70329923	PiP/KF/A-0/10-Sm-N 20	Sm-N 20		
50	20	70329929	PiP/KF/A-0/20-Sm-N 1	Sm-N 1	3	5270
	30	70329936	PiP/KF/A-0/20-Sm-N 5	Sm-N 5		
	40	70329944	PiP/KF/A-0/20-Sm-N 10	Sm-N 10		
	46	70329948	PiP/KF/A-0/20-Sm-N 15	Sm-N 15		
	50	70329964	PiP/KF/A-0/20-Sm-N 20	Sm-N 20		
75	30	70329967	PiP/KF/A-0/30-Sm-N 1	Sm-N 1	3	8270
	45	70329973	PiP/KF/A-0/30-Sm-N 5	Sm-N 5		
	60	70329975	PiP/KF/A-0/30-Sm-N 10	Sm-N 10		
	69	70329977	PiP/KF/A-0/30-Sm-N 15	Sm-N 15		
	75	70329979	PiP/KF/A-0/30-Sm-N 20	Sm-N 20		
100	40	70329983	PiP/KF/A-0/40-Sm-N 1	Sm-N 1	3	11000
	60	70329986	PiP/KF/A-0/40-Sm-N 5	Sm-N 5		
	80	70329929	PiP/KF/A-0/40-Sm-N 10	Sm-N 10		
	92	70330001	PiP/KF/A-0/40-Sm-N 15	Sm-N 15		
	100	70330004	PiP/KF/A-0/40-Sm-N 20	Sm-N 20		

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Nominal size NG [l/min]	Recomm. flow rate [l/min]	Order number	Type	Filter material	Δp max. [bar]	Filter surface [cm ²]
25	10	70323913	PiP/KF/A-1/10-Sm-N 1	Sm-N 1	3	2580
	15	70323950	PiP/KF/A-1/10-Sm-N 5	Sm-N 5		
	20	70323970	PiP/KF/A-1/10-Sm-N 10	Sm-N 10		
	23	70323983	PiP/KF/A-1/10-Sm-N 15	Sm-N 15		
	25	70324006	PiP/KF/A-1/10-Sm-N 20	Sm-N 20		
50	20	70324081	PiP/KF/A-1/20-Sm-N 1	Sm-N 1	3	5270
	30	70324087	PiP/KF/A-1/20-Sm-N 5	Sm-N 5		
	40	70324094	PiP/KF/A-1/20-Sm-N 10	Sm-N 10		
	46	70324099	PiP/KF/A-1/20-Sm-N 15	Sm-N 15		
	50	70324103	PiP/KF/A-1/20-Sm-N 20	Sm-N 20		
75	30	70324106	PiP/KF/A-1/30-Sm-N 1	Sm-N 1	3	8270
	45	70324466	PiP/KF/A-1/30-Sm-N 5	Sm-N 5		
	60	70324479	PiP/KF/A-1/30-Sm-N 10	Sm-N 10		
	69	70324486	PiP/KF/A-1/30-Sm-N 15	Sm-N 15		
	75	70324490	PiP/KF/A-1/30-Sm-N 20	Sm-N 20		
100	40	70324563	PiP/KF/A-1/40-Sm-N 1	Sm-N 1	3	11000
	60	70324575	PiP/KF/A-1/40-Sm-N 5	Sm-N 5		
	80	70324589	PiP/KF/A-1/40-Sm-N 10	Sm-N 10		
	92	70326186	PiP/KF/A-1/40-Sm-N 15	Sm-N 15		
	100	70326194	PiP/KF/A-1/40-Sm-N 20	Sm-N 20		
25	10	70314642	PiP/KF/B-0/10-Sm-N 1	Sm-N 1	3	3100
	15	70314644	PiP/KF/B-0/10-Sm-N 5	Sm-N 5		
	20	70329530	PiP/KF/B-0/10-Sm-N 10	Sm-N 10		
	23	70329590	PiP/KF/B-0/10-Sm-N 15	Sm-N 15		
	25	70329612	PiP/KF/B-0/10-Sm-N 20	Sm-N 20		
50	20	70314651	PiP/KF/B-0/20-Sm-N 1	Sm-N 1	3	6250
	30	70314652	PiP/KF/B-0/20-Sm-N 5	Sm-N 5		
	40	70329623	PiP/KF/B-0/20-Sm-N 10	Sm-N 10		
	46	70329634	PiP/KF/B-0/20-Sm-N 15	Sm-N 15		
	50	70329646	PiP/KF/B-0/20-Sm-N 20	Sm-N 20		
25	10	70329601	PiP/KF/D-2/10-Sm-N 1	Sm-N 1	3	3140
	15	70329606	PiP/KF/D-2/10-Sm-N 5	Sm-N 5		
	20	70329607	PiP/KF/D-2/10-Sm-N 10	Sm-N 10		
	23	70329608	PiP/KF/D-2/10-Sm-N 15	Sm-N 15		
	25	70329610	PiP/KF/D-2/10-Sm-N 20	Sm-N 20		
50	20	70307272	PiP/KF/D-2/20-Sm-N 1	Sm-N 1	3	6380
	30	70319962	PiP/KF/D-2/20-Sm-N 5	Sm-N 5		
	40	70319969	PiP/KF/D-2/20-Sm-N 10	Sm-N 10		
	46	70321386	PiP/KF/D-2/20-Sm-N 15	Sm-N 15		
	50	70329636	PiP/KF/D-2/20-Sm-N 20	Sm-N 20		

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Nominal size NG [l/min]	Recomm. flow rate [l/min]	Order number	Type	Filter material	Δp max. [bar]	Filter surface [cm ²]
75	30	70329637	PiP/KF/D-2/30-Sm-N 1	Sm-N 1	3	9900
	45	70314541	PiP/KF/D-2/30-Sm-N 5	Sm-N 5		
	60	70319303	PiP/KF/D-2/30-Sm-N 10	Sm-N 10		
	69	70320742	PiP/KF/D-2/30-Sm-N 15	Sm-N 15		
	75	70329638	PiP/KF/D-2/30-Sm-N 20	Sm-N 20		
100	40	70329701	PiP/KF/D-2/40-Sm-N 1	Sm-N 1	3	13250
	60	70329702	PiP/KF/D-2/40-Sm-N 5	Sm-N 5		
	80	70329703	PiP/KF/D-2/40-Sm-N 10	Sm-N 10		
	92	70329704	PiP/KF/D-2/40-Sm-N 15	Sm-N 15		
	100	70329705	PiP/KF/D-2/40-Sm-N 20	Sm-N 20		

6. Technical specification

Material

End caps: PA/1.4571/1.4404

Seal material: FPM

Filter material: Micro glass fibre

Frames: 1.4301

Temperature range: 0 to + 80 °C (other ranges on request)

recommended. Δp : up to 2.2 bar

max. Δp : 3 bar

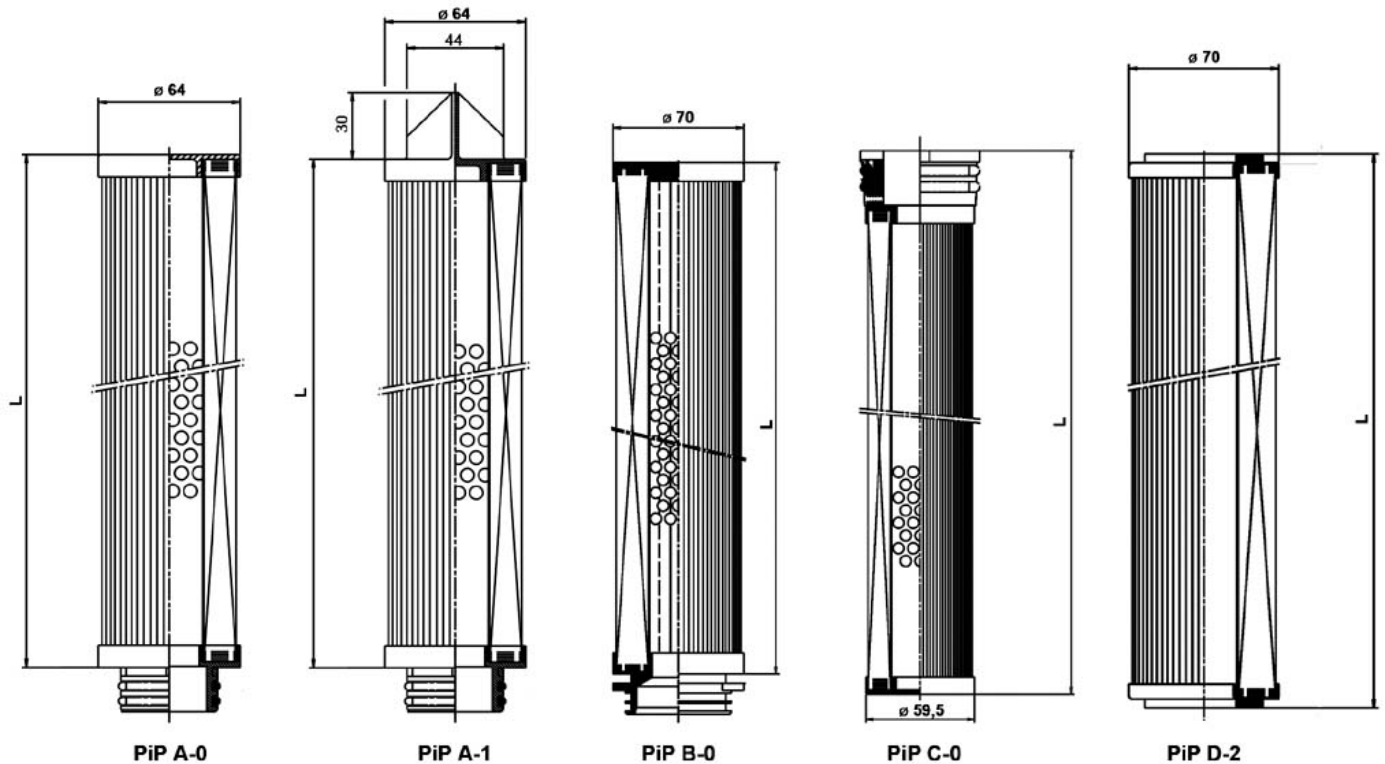
Technical data is subject to change without notice!

The standard type is suitable for all popular washing fluids used to clean components, including most aqueous, neutral, alkaline, acid and hydrocarbon cleaners. If an amine cleaner is used, the specific operating conditions (concentration and temperature) must be clarified beforehand. Furthermore, the pleated cartridges can be used for water treatment, low-viscosity oils and emulsions.

Other applications or media require prior consultation and possibly laboratory tests.

These cartridges are not cleanable!

7. Dimensions



Type	L [mm]
PiP/KF/A-0/10-Sm-N ...	256
PiP/KF/A-0/20-Sm-N ...	492
PiP/KF/A-0/30-Sm-N ...	764
PiP/KF/A-0/40-Sm-N ...	1016
PiP/KF/A-1/10-Sm-N ...	256
PiP/KF/A-1/20-Sm-N ...	492
PiP/KF/A-1/30-Sm-N ...	764
PiP/KF/A-1/40-Sm-N ...	1016
PiP/KF/B-0/10-Sm-N ...	254,5
PiP/KF/B-0/20-Sm-N ...	490,5
PiP/KF/C-0/30-Sm-N ...	793
PiP/KF/C-0/40-Sm-N ...	1045
PiP/KF/D-2/10-Sm-N ...	260
PiP/KF/D-2/20-Sm-N ...	501,5
PiP/KF/D-2/30-Sm-N ...	768
PiP/KF/D-2/40-Sm-N ...	1020

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