

# STR & MPA - MPM series

Flow rate up to 875 l/min



The correct filter sizing have to be based on the variable pressure drop depending by the application. For example, for the return filter the pressure drop have to be in the range 0.4 - 0.6 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop in the housing is proportional to the fluid density (kg/dm<sup>3</sup>); all the graphs in the catalogue are referred to mineral oil with density of 0.86 kg/dm<sup>3</sup>.

The filter element pressure drop is proportional to its viscosity (mm<sup>2</sup>/s), the corrective factor Y is related to an oil viscosity different than 30 mm<sup>2</sup>/s.

### Sizing data for single cartridge, head at top

$\Delta p_c$  = Filter housing pressure drop [bar]

$\Delta p_e$  = Filter element pressure drop [bar]

Y = Multiplication factor Y (see correspondent table), depending on the filter element size, on the filter element lenght and on the filter media

Q = flow rate (l/min)

V1 reference viscosity = 30 mm<sup>2</sup>/s (cSt)

V2 = operating viscosity in mm<sup>2</sup>/s (cSt)

$\Delta p_e = Y : 1000 \times Q \times (V2/V1)$

$\Delta p_{Tot.} = \Delta p_c + \Delta p_e$

### Calculation examples with HLP Mineral oil Variation in viscosity

Application data:

Top tank return filter

Filter with in-line connections

Pressure Pmax = 10 bar

Flow rate Q = 120 l/min

Viscosity V2 = 46 mm<sup>2</sup>/s (cSt)

Oil viscosity = 0.86 kg/dm<sup>3</sup>

Required filtration efficiency = 25 µm with absolute filtration

With bypass valve and 1 1/4" inlet connection

From the working pressure and the flow rate we understand it should be possible using the following top tank return filter series: MPT, MPH and FRI. Let's proceed with MPT series.

The size 20 doesn't achieve the required flow rate, therefore we have to consider the size 100. The final version of size 100 (101, 104, 110, 120 and 114) will be then defined in function of the mounting characteristics.

$\Delta p_c = 0.03 \text{ bar}$  (\* see graphic below, considering size 100 with the max available lenght to get the lowest pressure drop)

$\Delta p_e = (2.0 : 1000) \times 120 \times (46/30) = 0.37 \text{ bar}$

$\Delta p_{Tot.} = 0.03 + 0.37 = 0.4 \text{ bar}$

The selection is correct because the total pressure drop value is inside the admissible range for top tank return filters. It is of course possible trying to find a different solution, according to the mounting position or to other commercial need, repeating the previous steps while using a different series or lenght.



### Filter housings $\Delta p$ pressure drop.

The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

**Corrective factor Y, to be used for the filter element pressure drop calculation. The values depend to the filter size and lenght and to the filter media.**

Reference viscosity 30 mm<sup>2</sup>/s

### Return filters

Filter element Type	Absolute filtration H Series					Nominal filtration N Series			
	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90	
MF 020	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	2	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
	3	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
MF 030 MFX 030	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MF 100 MFX 100	1	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	2	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	3	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	4	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82
MF 180 MFX 180	1	3.67	3.05	1.64	1.56	1.24	1.18	1.06	0.26
	2	1.69	1.37	0.68	0.54	0.51	0.43	0.39	0.12
MF 190 MFX 190	2	1.69	1.37	0.60	0.49	0.44	0.35	0.31	0.11
MF 400 MFX 400	1	3.20	2.75	1.39	1.33	1.06	0.96	0.87	0.22
	2	2.00	1.87	0.88	0.85	0.55	0.49	0.45	0.13
	3	1.90	1.60	0.63	0.51	0.49	0.39	0.35	0.11
MF 750 MFX 750	1	1.08	0.84	0.49	0.36	0.26	0.21	0.19	0.06
CU 025		78.00	48.00	28.00	24.00	9.33	9.33	8.51	1.25
CU 040		25.88	20.88	10.44	10.00	3.78	3.78	3.30	1.25
CU 100		15.20	14.53	5.14	4.95	2.00	2.00	0.17	1.10
CU 250		3.25	2.55	1.55	1.35	0.71	0.71	0.59	0.25
CU 630		1.96	1.68	0.85	0.72	0.42	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04
MR 100	1	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	2	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	3	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	4	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	5	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MR 250	1	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	2	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	3	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	4	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MR 630	1	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	2	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	3	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	4	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	5	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MR 850	1	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	2	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	3	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	4	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

**Corrective factor Y, to be used for the filter element pressure drop calculation.**  
**The values depend to the filter size and lenght and to the filter media.**

Reference viscosity 30 mm<sup>2</sup>/s

## Suction filters

Filter element	Nominal filtration N Series	
	P10	P25
<b>SF 250</b>	65	21

## Return / Suction filters

Filter element	Absolute filtration			
	A10	A16	A25	
<b>RSX 116</b>	1	5.12	4.33	3.85
	2	2.22	1.87	1.22
<b>RSX 165</b>	1	2.06	1.75	1.46
	2	1.24	1.05	0.96
	3	0.94	0.86	0.61

## Low & Medium pressure filters

Filter element	Type	Absolute filtration N-W Series					Nominal filtration N Series		
		A03	A06	A10	A16	A25	P10	P25	M25
<b>CU 110</b>	1	16.25	15.16	8.75	8.14	5.87	2.86	2.65	0.14
	2	12.62	10.44	6.11	6.02	4.15	1.60	1.49	0.12
	3	8.57	7.95	5.07	4.07	2.40	1.24	1.15	0.11
	4	5.76	4.05	2.80	2.36	1.14	0.91	0.85	0.05
<b>CU 210</b>	1	5.30	4.80	2.00	1.66	1.32	0.56	0.43	0.12
	2	3.44	2.95	1.24	1.09	0.70	0.42	0.35	0.09
	3	2.40	1.70	0.94	0.84	0.54	0.33	0.23	0.05
<b>DN</b>	016	7.95	7.20	3.00	2.49	1.98	0.84	0.65	0.18
	025	5.00	4.53	1.89	1.57	1.25	0.53	0.41	0.11
	040	3.13	2.66	1.12	0.98	0.63	0.38	0.32	0.08
<b>CU 400</b>	2	3.13	2.55	1.46	1.22	0.78	0.75	0.64	0.19
	3	2.15	1.70	0.94	0.78	0.50	0.40	0.34	0.10
	4	1.60	1.28	0.71	0.61	0.40	0.34	0.27	0.08
	5	1.00	0.83	0.47	0.34	0.20	0.24	0.19	0.06
	6	0.82	0.58	0.30	0.27	0.17	0.22	0.18	0.05
	900	1	0.86	0.63	0.32	0.30	0.21	-	-
<b>CU 950</b>	2	1.03	0.80	0.59	0.40	0.26	-	-	0.05
	3	0.44	0.40	0.27	0.18	0.15	-	-	0.02
<b>MR 630</b>	7	0.88	0.78	0.36	0.34	0.16	0.12	0.96	0.47

# FILTER SIZING Corrective factor

Corrective factor **Y**, to be used for the filter element pressure drop calculation.  
The values depend to the filter size and lenght and to the filter media.

Reference viscosity 30 mm<sup>2</sup>/s

## High pressure filters

Filter element	Absolute filtration N - R Series					Nominal filtration N Series	
	Type	A03	A06	A10	A16		A25
HP 011	1	332.71	250.07	184.32	152.36	128.36	-
	2	220.28	165.56	74.08	59.13	37.05	-
	3	123.24	92.68	41.48	33.08	20.72	-
	4	77.76	58.52	28.37	22.67	16.17	-
HP 039	1	70.66	53.20	25.77	20.57	14.67	4.90
	2	36.57	32.28	18.00	13.38	8.00	2.90
	3	26.57	23.27	12.46	8.80	5.58	2.20
HP 050	1	31.75	30.30	13.16	12.3	7.29	1.60
	2	24.25	21.26	11.70	9.09	4.90	1.40
	3	17.37	16.25	8.90	7.18	3.63	1.25
	4	12.12	10.75	6.10	5.75	3.08	1.07
	5	7.00	6.56	3.60	3.10	2.25	0.80
HP 065	1	58.50	43.46	23.16	19.66	10.71	1.28
	2	42.60	25.64	16.22	13.88	7.32	1.11
	3	20.50	15.88	8.18	6.81	3.91	0.58
HP 135	1	20.33	18.80	9.71	8.66	4.78	2.78
	2	11.14	10.16	6.60	6.38	2.22	1.11
	3	6.48	6.33	3.38	3.16	2.14	1.01
HP 320	1	10.88	9.73	5.02	3.73	2.54	1.04
	2	4.40	3.83	1.75	1.48	0.88	0.71
	3	2.75	2.11	1.05	0.87	0.77	0.61
	4	2.12	1.77	0.98	0.78	0.55	0.47
HP 500	1	4.44	3.67	2.30	2.10	1.65	0.15
	2	3.37	2.77	1.78	1.68	1.24	0.10
	3	2.22	1.98	1.11	1.09	0.75	0.08
	4	1.81	1.33	0.93	0.86	0.68	0.05
	5	1.33	1.15	0.77	0.68	0.48	0.04

Filter element	Absolute filtration N Series					Nominal filtration N Series	
	Type	A03	A06	A10	A16		A25
HF 320	1	3.65	2.95	2.80	1.80	0.90	0.38
	2	2.03	1.73	1.61	1.35	0.85	0.36
	3	1.84	1.42	1.32	1.22	0.80	0.35

## Stainless steel high pressure filters

Filter element	Absolute filtration N Series					
	Type	A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36
	2	220.28	165.56	74.08	59.13	37.05
	3	123.24	92.68	41.48	33.08	20.72
	4	77.76	58.52	28.37	22.67	16.17
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	0.88	5.58
	1	31.75	30.30	13.16	12.3	7.29
HP 050	2	24.25	21.26	11.70	9.09	4.90
	3	17.37	16.25	8.90	7.18	3.63
	4	12.12	10.75	6.10	5.75	3.08
	5	7.00	6.56	3.60	3.10	2.25
	1	20.33	18.80	9.71	8.66	4.78
HP 135	2	11.14	10.16	6.60	6.38	2.22
	3	6.48	6.33	3.38	3.16	2.14

Filter element	Absolute filtration H - U Series					
	Type	A03	A06	A10	A16	A25
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
	1	47.33	34.25	21.50	20.50	14.71
HP 050	2	29.10	25.95	14.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
	1	29.16	25.33	13.00	12.47	5.92
HP 135	2	14.28	11.04	7.86	7.60	4.44
	3	8.96	7.46	4.89	4.16	3.07

**Step 1** Select "FILTERS"



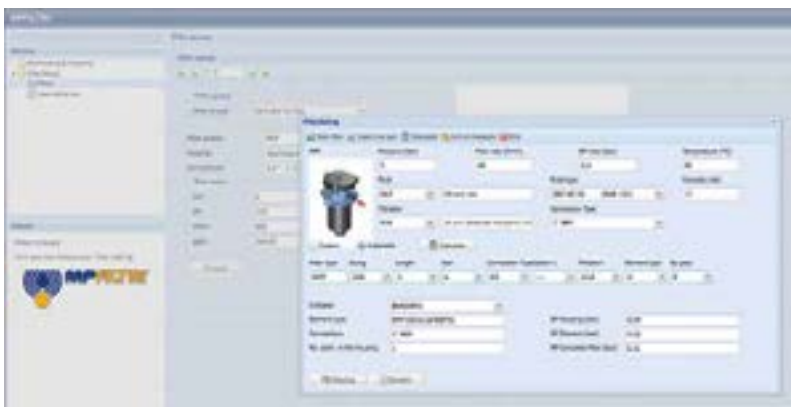
**Step 2** Choose filter group (Return Filter, Pressure Filter, etc.)



**Step 3** Choose filter type (MPF, MPT, etc.) in function of the max working pressure and the max flow rate



**Step 4** Push "PROCEED"



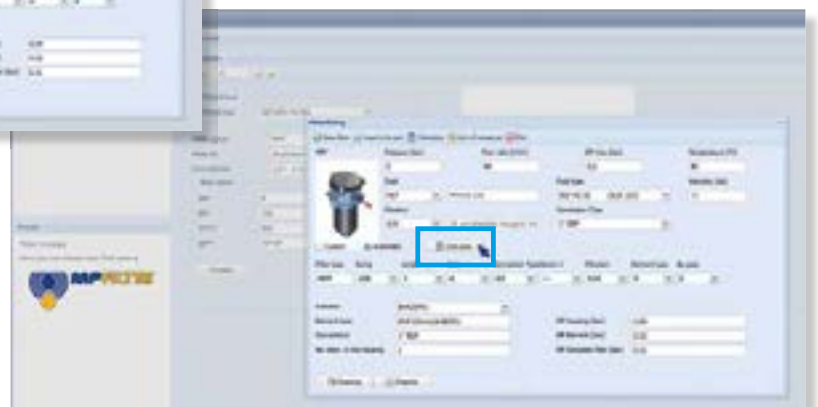
**Step 5**

Insert all application data to calculate the filter size following the sequence:

- working pressure
- working flow rate
- working pressure drop
- working temperature
- fluid material and fluid type
- filtration media
- connection type

**Step 6**

Push "CALCULATE" to have result; in case of any mistake, the system will advice which parameter is out of range to allow to modify/adjust the selection



**Step 7**

Download PDF Datasheet "Report.aspx" pushing the button "Drawing"



# STR & MPA - MPM series

Flow rate up to 875 l/min



# STR & MPA-MPM GENERAL INFORMATION

## Technical data

**Suction filters** Flow rate up to 875 l/min

### STR materials

- 1 - Connection: Polyamide, GF reinforced
- 2 - Core tube: Tinned Steel
- 3 - Wire mesh
- 4 - End cap: Polyamide, GF reinforced
- 5 - Bypass valve: Polyamide, GF reinforced - Steel

### MPA - MPM materials

- 1 - Connection: Aluminium
- 2 - Magnetic column
- 3 - Tie rod: Galvanized Steel
- 4 - End cap: Galvanized Steel
- 5 - Core tube: Galvanized Steel
- 6 - Filter media: Wire mesh
- 7 - Bottom: Galvanized Steel
- 8 - Washer: Galvanized Steel
- 9 - Self-locking nut: Galvanized Steel - Nylon

### Bypass valve

Opening pressure 30 kPa (0.3 bar)

### Elements

Fluid flow through the filter element from OUT to IN.

### Temperature

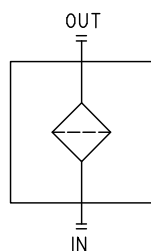
From -25 °C to +110 °C

## Weights [kg]

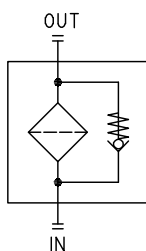
<b>STR</b>	see page 31
<b>MPA - MPM</b>	see page 33

## Hydraulic symbols

STR - MPA - MPM  
Style S



STR  
Style B





## STR

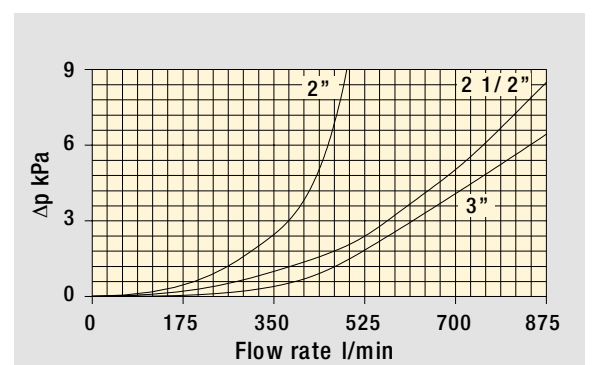
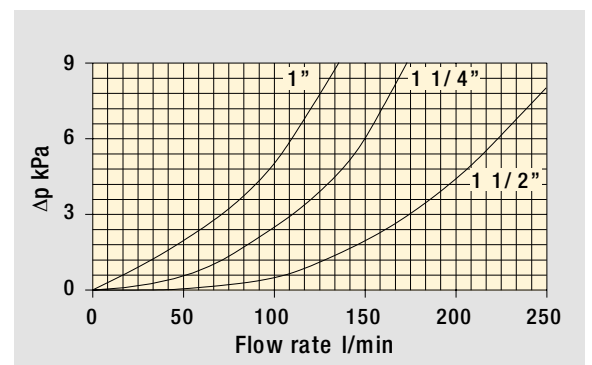
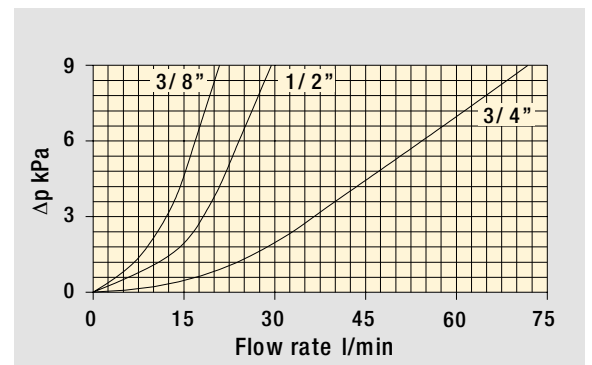


### Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.

$\Delta p$  varies proportionally with density.

Filters pressure drop  $\Delta p$  in function of connection type



## MPA

Without magnetic column



## MPM

With magnetic column



### COMPLETE FILTER

#### Element series and size

<b>STR045</b>
<b>STR050</b>
<b>STR065</b>
<b>STR070</b>
<b>STR086</b>
<b>STR100</b>
<b>STR140</b>
<b>STR150</b>

Configuration example 1: 

STR045	1	B	G1	M60	P01
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Configuration example 2: 

STR100	4	S	G2	M250	P01
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#### Connection nominal diameter

	STR045	STR050	STR065	STR070	STR086	STR100	STR140	STR150
<b>1</b>	3/8"	3/8"	1/2"	1/2"	1 1/2"	1 1/4"	1 1/2"	2"
<b>2</b>	1/2"	1/2"	3/4"	3/4"	2"	1 1/4"	2"	2 1/2"
<b>3</b>	-	-	3/4"	3/4"	1 1/2"	1 1/2"	2"	3"
<b>4</b>	-	-	1"	1"	2"	2"	2 1/2"	-
<b>5</b>	-	-	-	-	1 1/2"	1 1/2"	3"	-
<b>6</b>	-	-	-	1/2"	2"	-	3"	-

#### Valves

<b>S</b>	Without bypass
<b>B</b>	With bypass 6 bar

#### Connection type

<b>G1</b>	Thread GAS
<b>G2</b>	Thread NPT

#### Filtration rating (filter media)

<b>M25</b>	Wire mesh	25 µm
<b>M60</b>	Wire mesh	60 µm
<b>M90</b>	Wire mesh	90 µm
<b>M250</b>	Wire mesh	250 µm

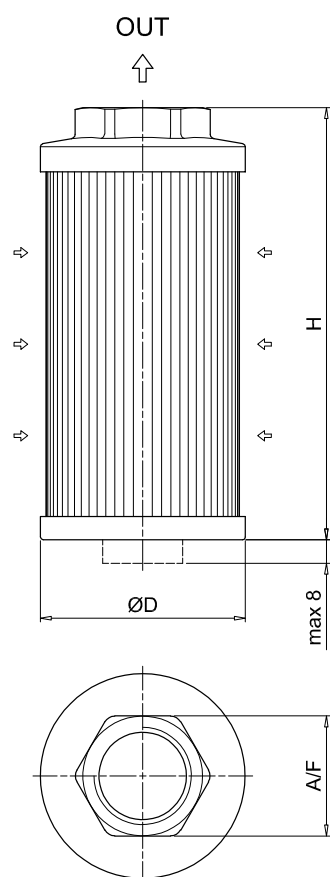
### OTHER INFORMATION

#### Conditions of packaging

Filter size	Pcs. per box
<b>045</b>	12
<b>050</b>	12
<b>065</b>	6
<b>070</b>	6
<b>086</b>	6
<b>100</b>	6
<b>140</b>	1
<b>150</b>	1

#### Execution

<b>P01</b>	MP Filtri standard
<b>Pxx</b>	Customized



STR					
Filter size	Nominal diameter	ØD [mm]	H [mm]	A / F [mm]	Weight [kg]
<b>045</b>	1	46	105	30	0.15
	2	46	105	30	0.19
<b>050</b>	1	52	79	30	0.11
	2	52	79	30	0.11
<b>065</b>	1	65	110	41	0.19
	2	65	110	41	0.22
	3	65	144	41	0.24
	4	65	144	41	0.22
<b>070</b>	1	70	95	41	0.18
	2	70	95	41	0.17
	3	70	141	41	0.23
	4	70	141	41	0.22
	6	70	141	41	0.24
<b>086</b>	1	86	143	69	0.33
	2	86	143	69	0.30
	3	86	201	69	0.43
	4	86	201	69	0.40
	5	86	261	69	0.53
	6	86	261	69	0.50
<b>100</b>	1	99	137	69	0.47
	2	99	227	69	0.58
	3	99	227	69	0.55
	4	99	227	69	0.51
	5	99	137	69	0.43
<b>140</b>	1	130	160	69	0.70
	2	130	160	69	0.68
	3	130	262	69	0.94
	4	130	272	101	1.10
	5	130	272	101	1.00
	6	130	330	101	1.17
<b>150</b>	1	150	150	70	0.34
	2	150	212	90	0.37
	3	150	272	100	0.40

# MPA-MPM

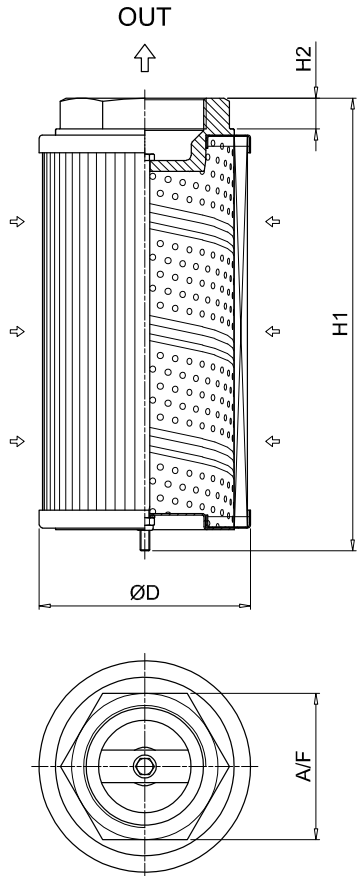
## Designation & Ordering code

### COMPLETE FILTER

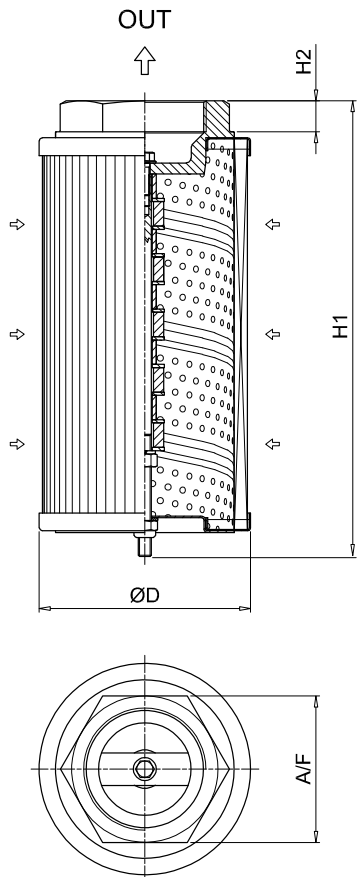
Element series		Configuration example 1:				
<b>MPA</b>	Without magnetic column	<b>MPA</b>	<b>030</b>	<b>G1</b>	<b>M60</b>	<b>P01</b>
<b>MPM</b>	With magnetic column	Configuration example 2:				
		<b>MPM</b>	<b>430</b>	<b>G2</b>	<b>M250</b>	<b>P01</b>
Size - Connection nominal diameter						
<b>012</b>	3/8"					
<b>015</b>	1/2"					
<b>025</b>	1/2"					
<b>030</b>	3/4"					
<b>045</b>	3/4"					
<b>050</b>	1"					
<b>075</b>	1"					
<b>095</b>	1 1/4"					
<b>120</b>	1 1/4"					
<b>150</b>	1 1/2"					
<b>180</b>	1 1/2"					
<b>220</b>	2"					
<b>280</b>	2"					
<b>300</b>	2 1/2"					
<b>380</b>	2"					
<b>430</b>	3"					
Connection type						
<b>G1</b>	Thread GAS					
<b>G2</b>	Thread NPT					
Filtration rating (filter media)						
<b>M25</b>	Wire mesh 25 µm					
<b>M60</b>	Wire mesh 60 µm					
<b>M90</b>	Wire mesh 90 µm					
<b>M250</b>	Wire mesh 250 µm					
		Execution				
		<b>P01</b>	MP Filtri standard			
		<b>Pxx</b>	Customized			

### OTHER INFORMATION

Conditions of packaging	
Size	Pcs. per box
<b>012</b>	12
<b>015</b>	6
<b>025</b>	6
<b>030</b>	6
<b>045</b>	6
<b>050</b>	6
<b>075</b>	6
<b>095</b>	6
<b>120</b>	6
<b>150</b>	6
<b>180</b>	1
<b>220</b>	1
<b>280</b>	1
<b>300</b>	1
<b>380</b>	1
<b>430</b>	1



MPA					
Filter size	ØD [mm]	H1 [mm]	H2 [mm]	A/F [mm]	Weight [kg]
<b>012</b>	50	98	16	28	0.17
<b>015</b>	50	98	16	28	0.17
<b>025</b>	70	113	16	28	0.27
<b>030</b>	70	115	18	42	0.36
<b>045</b>	70	160	18	42	0.39
<b>050</b>	70	160	18	42	0.35
<b>075</b>	99	145	18	42	0.54
<b>095</b>	99	148	20	60	0.63
<b>120</b>	99	239	20	60	0.95
<b>150</b>	99	239	20	60	0.91
<b>180</b>	130	174	20	60	0.98
<b>220</b>	130	162	13	80	1.00
<b>280</b>	130	272	13	80	1.60
<b>300</b>	130	281	20	90	1.67
<b>380</b>	130	322	13	80	1.60
<b>430</b>	130	335	22	106	1.93



MPM					
Filter size	ØD [mm]	H1 [mm]	H2 [mm]	A/F [mm]	Weight [kg]
<b>012</b>	50	98	16	28	0.17
<b>015</b>	50	98	16	28	0.17
<b>025</b>	70	113	16	28	0.27
<b>030</b>	70	115	18	42	0.36
<b>045</b>	70	160	18	42	0.39
<b>050</b>	70	160	18	42	0.35
<b>075</b>	99	148	18	42	0.54
<b>095</b>	99	154	20	60	0.63
<b>120</b>	99	244	20	60	0.95
<b>150</b>	99	244	20	60	0.91
<b>180</b>	130	174	20	60	0.98
<b>220</b>	130	163	13	80	1.00
<b>280</b>	130	273	13	80	1.60
<b>300</b>	130	282	20	90	1.67
<b>380</b>	130	323	13	80	1.60
<b>430</b>	130	336	22	106	1.93