

# HYDRAULIC FILTRATION PRODUCTS

SUCTION FILTERS



PASSION TO PERFORM







## A WORLDWIDE LEADER IN THE FIELD OF HYDRAULIC FILTRATION EQUIPMENT.

Our company started life in 1964, when Bruno Pasotto decided to attempt to cater for the requests of a market still to be fully explored, with the study, design, development, production and marketing of a vast range of filters for hydraulic equipment, capable of satisfying the needs of manufacturers in all sectors. The quality of our products, our extreme competitiveness compared with major international producers and our constant activities of research, design and development has made us a worldwide leader in the field of hydraulic circuit filtering. Present for over 50 years in the market, we have played a truly decisive role in defining our sector, and by now we are a group capable of controlling our entire chain of production, monitoring all manufacturing processes to guarantee superior quality standards and to provide concrete solutions for the rapidly evolving needs of customers and the market.

## MARKET LEADER



Our work is based on a skillful interaction between advanced technology and fine workmanship, **customizing products according to specific market requests**, focusing strongly on innovation and quality, and following every step in the manufacturing of both standard and special products, fully respecting customer expectations.



Our customer-oriented philosophy, which enables us to satisfy all customer requests **rapidly and with personalized products**, makes us a **dynamic and flexible enterprise**. The possibility of constantly controlling and monitoring the entire production process is essential to allow us to guarantee the quality of our products.

## WORLDWIDE PRESENCE

Our foreign Branches enable us to offer a diversified range of products that allow us to successfully face the aggressive challenge of international competition, and also to maintain a stable presence at a local level.

The Group boasts **8** business branches



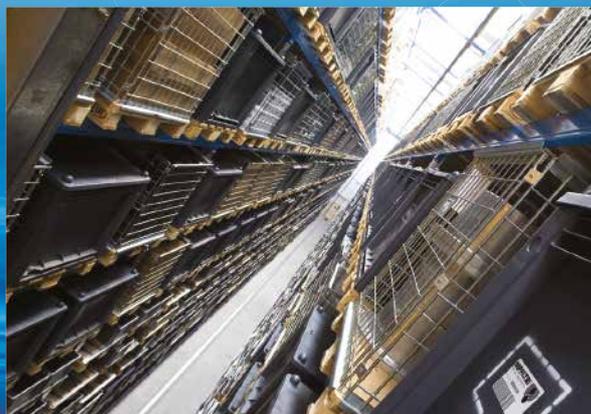
## TECHNOLOGY

Our constant **quest for excellence in quality and technological innovation** allows us to offer only the best solutions and services for applications in many fields, including general industry, test rigs, lubrication, heavy engineering, renewable energies, naval engineering, offshore engineering, aviation systems, emerging technologies and mobile plant (i.e. tractors, excavators, concrete pumps, platforms).



## AND PRODUCTION

Our high level of technological expertise means **we can rely entirely on our own resources, without resorting to external providers.** This in turn enables us to satisfy a growing number of customer requests, also exploiting our constantly updated range of machines and equipment, featuring **fully-automated workstations** capable of **24-hour production.**





### SUCTION FILTERS

Flow rates  
up to 875 l/min

- Mounting:
- Tank immersed
  - In-Line
  - In tank with shut off valve
  - In tank with flooded suction

### RETURN FILTERS

Flow rates  
up to 3000 l/min

- Pressure  
up to 20 bar
- Mounting:
- In-Line
  - Tank top
  - In single and duplex designs

### RETURN / SUCTION FILTERS

Flow rates  
up to 300 l/min

- Pressure  
up to 80 bar
- Mounting:
- In-Line
  - Tank top

### SPIN-ON FILTERS

Flow rates  
up to 365 l/min

- Pressure  
up to 35 bar
- Mounting:
- In-Line
  - Tank top

### LOW & MEDIUM PRESSURE FILTERS

Flow rates  
up to 3000 l/min

- Pressure  
up to 80 bar
- Mounting:
- In-Line
  - Parallel manifold version
  - In single and duplex designs

### HIGH PRESSURE FILTERS

Flow rates  
up to 750 l/min

- Pressure from 110 bar  
up to 560 bar
- Mounting:
- In-Line
  - Manifold
  - In single and duplex designs

# PRODUCT RANGE

MP Filtri can offer a vast and articulated range of products for the global market, suitable for all industrial sectors using hydraulic equipment.

This includes filters (suction, return, return/suction, spin-on, pressure, stainless steel pressure) and structural components (motor/pump bell-housings, transmission couplings, damping rings, foot brackets, aluminium tanks, cleaning covers).

We can provide all the skills and solutions required by the modern hydraulics industry to monitor contamination levels and other fluid conditions.

Mobile filtration units and a full range of accessories allow us to supply everything necessary for a complete service in the hydraulic circuits.



## STAINLESS STEEL HIGH PRESSURE FILTERS

Flow rates up to 125 l/min  
Pressure from 320 bar up to 1000 bar

- Mounting:
- In-Line
  - Manifold
  - In single and duplex designs

## CONTAMINATION MONITORING PRODUCTS

- Online, in-line particle counters
- Off-line bottle sampling products
- Fully calibrated using relevant ISO standards
- A wide range of variants to support fluid types and communication protocols

## MOBILE FILTRATION UNITS

Flow rates from 15 l/min up to 200 l/min

## POWER TRANSMISSION PRODUCTS

- Aluminium bell-housings for motors from 0.12 kW to 400 kW
- Couplings in Aluminium Cast Iron - Steel
- Damping rings
- Foot bracket
- Aluminium tanks
- Cleaning covers

## TANK ACCESSORIES

- Oil filler and air breather plugs
- Optical and electrical level gauges
- Pressure gauge valve selectors
- Pipe fixing brackets
- Pressure gauges

# HYDRAULIC FILTRATION PRODUCTS

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<b>28</b>	<b>page</b>	<b>SUCTION FILTERS</b>			<b>up to <math>Q_{max}</math></b>
					<b>l/min</b>   <b>gpm</b>
31	STR & MPA - MPM	Submerged suction filter, with bypass or magnetic column			875   231
39	SF2 250 - 350	Semi-submerged positive head suction filter, low flow rate			160   42
47	SF2 500	Semi-submerged positive head suction filter, high flow rate			800   211
57	CLOGGING INDICATORS				

<b>60</b>	<b>page</b>	<b>RETURN FILTERS</b>		<b>up to <math>P_{max}</math></b>	<b>up to <math>Q_{max}</math></b>
			<b>bar</b>   <b>psi</b>	<b>l/min</b>   <b>gpm</b>	
63	MPFX	Tank top semi-immersed filter, standard filter element disassembly	8   116	750   198	
91	MPLX	Tank top semi-immersed filter, standard filter element disassembly	10   145	1800   476	
99	MPTX	Tank top semi-immersed filter, easy filter element disassembly	8   116	300   79	
117	MFBX	Bowl assembly	8   116	500   132	
125	MPF	Tank top semi-immersed filter, standard filter element disassembly	8   116	750   198	
153	MPT	Tank top semi-immersed filter, easy filter element disassembly	8   116	300   79	
171	MFB	Bowl assembly	8   116	500   132	
179	MPH	Tank top semi-immersed filter, standard filter element disassembly	10   145	3000   793	
203	MPI	Tank top semi-immersed filter, standard filter element disassembly	10   145	3000   793	
215	FRI	Tank top semi-immersed filter, easy filter element disassembly, it can be used also as in-line filter	20   290	1500   396	
231	RF2	Semi-immersed under-head filter, easy filter element disassembly	20   290	350   92	
238	CLOGGING INDICATORS				
248	ACCESSORIES				

<b>250</b>	<b>page</b>	<b>RETURN / SUCTION FILTERS</b>		<b>up to <math>P_{max}</math></b>	<b>up to <math>Q_{max}</math></b>
			<b>bar</b>   <b>psi</b>	<b>l/min</b>   <b>gpm</b>	
253	MRSX	Unique TANK TOP filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	10   145	300   79	
265	LMP 124 MULTIPORT	Unique IN-LINE filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	80   1160	200   53	
273	CLOGGING INDICATORS				

<b>286</b>	<b>page</b>	<b>SPIN-ON FILTERS</b>		<b>up to <math>P_{max}</math></b>	<b>up to <math>Q_{max}</math></b>
			<b>bar</b>   <b>psi</b>	<b>l/min</b>   <b>gpm</b>	
289	MPS	Low pressure filter, available with single cartridge (CS) for in-line or flange mounting or with two cartridge on the same axis on the opposite sides	12   174	365   96	
305	MSH	In-line low and medium pressure filter available with single cartridge (CH)	35   508	195   52	
311	CLOGGING INDICATORS				

page	LOW & MEDIUM PRESSURE FILTERS	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
325	LMP 110 - 120 - 123 MULTIPORT	In-line filter with Multiport design for multiple choice connection	80	1160	200	53
341	LMP 210 - 211	In-line low & medium pressure filter, low flow rate	60	870	330	87
351	LMP 400 - 401 & 430 - 431	In-line low & medium pressure filter, high flow rate	60	870	740	195
363	LMP 950 - 951	In-line filter, available with 2 and up to 6 different heads	30	435	2400	634
371	LMP 952 - 953 - 954	In-line low pressure filter specifically designed to be mounted in series	25	363	3000	793
383	LMD 211	In-line duplex medium pressure filter	60	870	330	87
391	LMD 400 - 401 & 431	In-line duplex low pressure filter	16	232	590	156
407	LMD 951	In-line duplex filter, available with 2 up to 6 different heads	16	232	1200	317
415	Filter elements designed according to DIN 24550					
417	LDP - LDD	In-line and duplex medium pressure filter	60	870	330	87
427	LMP 900 - 901	In-line low pressure filter	30	435	2000	528
435	LMP 902 - 903	In-line filter specifically designed to be mounted in series	20	290	3000	793
444	CLOGGING INDICATORS					
450	ACCESSORIES					

page	HIGH PRESSURE FILTERS	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
455	FMP 039	Filter high pressure, low flow rate applications	110	1595	80	21
463	FMP	Filter high pressure, high flow rate applications	320	4641	475	125
475	FHP	Typical high pressure filter for mobile applications, high flow rate	420	6092	750	198
493	FMM	Typical high pressure filter for mobile applications, low flow rate	420	6092	250	66
503	FHA 051	Filter optimized for use in high pressure operating systems, low flow rate	560	8122	140	37
511	FHM	High pressure filter with intermediate manifold construction	320	4641	450	119
529	FHB	High pressure for block mounting	320	4641	485	128
543	FHF 325	In-line manifold top mounting	350	5076	500	132
553	FHD	In-line duplex high pressure filter	350	5076	345	91
566	CLOGGING INDICATORS					

page	STAINLESS STEEL HIGH PRESSURE FILTERS	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
577	FZP	In-line pressure filter with threaded mount	420	6092	150	40
587	FZH	In-line pressure filter with threaded mount for higher pressure	700	10153	50	13
597	FZX	In-line pressure filter with threaded mount up to 1000 bar	1000	14504	10	3
605	FZM	Manifold top mounting	320	4641	70	18
613	FZB	Manifold side mounting	320	4641	75	20
621	FZD	Duplex pressure filter for continuous operation requirements	350	5076	90	24
631	CLOGGING INDICATORS					

page	CLOGGING INDICATORS
639	QUICK REFERENCE GUIDE

**THE CORRECT FILTER SIZING HAVE TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING BY THE APPLICATION.**

THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN SUCTION FILTER HAVE TO BE IN THE RANGE 0.08 ÷ 0.10 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  $\Delta p_c$  of the housing is proportional to the fluid density ( $\text{kg}/\text{dm}^3$ ); all the graphs in the catalogue are referred to mineral oil with density of  $0.86 \text{ kg}/\text{dm}^3$ .

The filter element pressure drop  $\Delta p_e$  is proportional to its viscosity ( $\text{mm}^2/\text{s}$ ), the corrective factor Y have to be used in case of an oil viscosity different than  $30 \text{ mm}^2/\text{s}$  (cSt).

**Sizing data for single filter element, head at top**

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

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

Y = Corrective factor Y (see correspondent table), depending on the filter type, on the filter element size, on the filter element length and on the filter media

Q = flow rate (l/min)

V1 reference oil viscosity =  $30 \text{ mm}^2/\text{s}$  (cSt)

V2 = operating oil viscosity in  $\text{mm}^2/\text{s}$  (cSt)

**Filter element pressure drop calculation with an oil viscosity different than  $30 \text{ mm}^2/\text{s}$  (cSt)**

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

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

**Verification formula**

$\Delta p_{\text{Tot.}} \leq \Delta p_{\text{max allowed}}$

**Maximum total pressure drop ( $\Delta p_{\text{max}}$ ) allowed by a new and clean filter**

Application	Range (bar)
<b>Suction filters</b>	0.08 ÷ 0.10
<b>Return filters</b>	0.4 ÷ 0.6
<b>Return - Suction filters*</b>	0.8 ÷ 1.0
	0.4 ÷ 0.6 return lines
	0.3 ÷ 0.5 lubrication lines
<b>Low &amp; Medium Pressure filters</b>	0.3 ÷ 0.4 off-line in power systems
	0.1 ÷ 0.3 off-line in test benches
	0.4 ÷ 0.6 over-boost
<b>High Pressure filters</b>	0.8 ÷ 1.5
<b>Stainless Steel filters</b>	0.8 ÷ 1.5

\* The suction flow rate should not exceed 30% of the return flow rate

**Generic filter calculation example**

Application data:

Suction filter with shut-off valve

Flow rate Q = 90 l/min

Viscosity V2 =  $46 \text{ mm}^2/\text{s}$  (cSt)

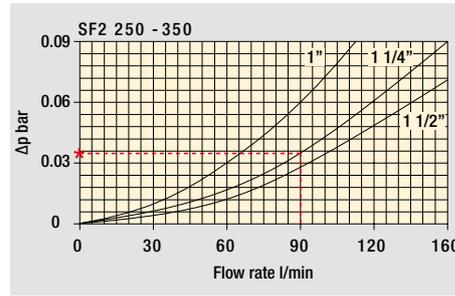
Oil density =  $0.86 \text{ kg}/\text{dm}^3$

Required filtration efficiency =  $25 \mu\text{m}$  with resin impregnated paper

With bypass valve and G 1 1/4" inlet connection

Calculation:

$\Delta p_c = 0.036 \text{ bar}$  (see graphic below)



Filter housings  $\Delta p$  pressure drop. The curves are plotted using mineral oil with density of  $0.86 \text{ kg}/\text{dm}^3$  in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

$\Delta p_e = (0.20 : 1000) \times 90 \times (46 : 30) = 0.03 \text{ bar}$

Filter element	Nominal filtration N Series					
	P10	P25	M25	M60	M90	M250
SF 250	0.65	0.20	0.10	0.08	0.05	0.03

$\Delta p_{\text{Tot.}} = 0.036 + 0.03 = 0.066 \text{ bar}$

The selection is correct because the total pressure drop value is inside the admissible range for suction filters.

In case the allowed max total pressure drop is not verified, it is necessary to repeat the calculation changing the filter length/size.

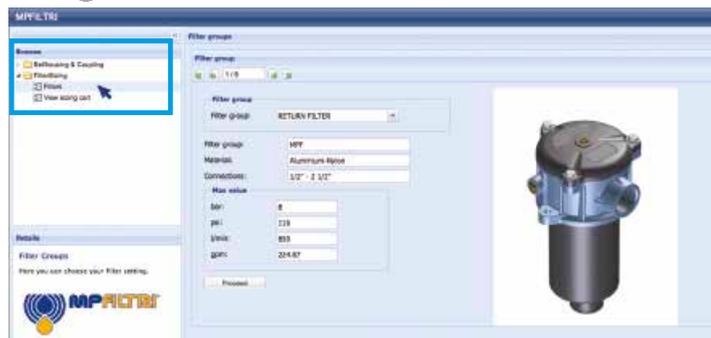
**Corrective factor Y to be used for the filter element pressure drop calculation. The values depend to the filter size and length and to the filter media.**  
Reference oil viscosity 30 mm<sup>2</sup>/s

## Suction filters

Filter element	Nominal filtration N Series					
	P10	P25	M25	M60	M90	M250
<b>SF 250</b>	0.65	0.20	0.10	0.08	0.05	0.03
<b>SF 503</b>	–	–	0.17	0.11	0.11	0.11
<b>SF 504</b>	–	–	0.11	0.08	0.08	0.08
<b>SF 505</b>	–	–	0.23	0.18	0.18	0.18
<b>SF 510</b>	–	–	0.18	0.14	0.14	0.14
<b>SF 535</b>	–	–	0.08	0.05	0.05	0.05
<b>SF 540</b>	–	–	0.05	0.04	0.04	0.04

# TYPICAL FILTER SIZING Selection Software

**Step 1** Select "FILTERS"



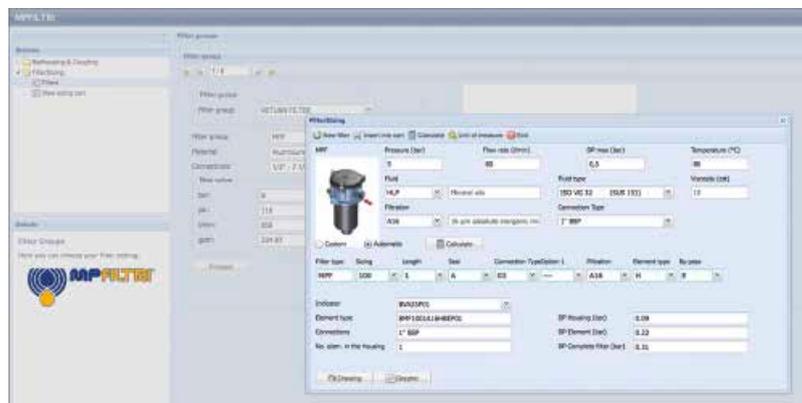
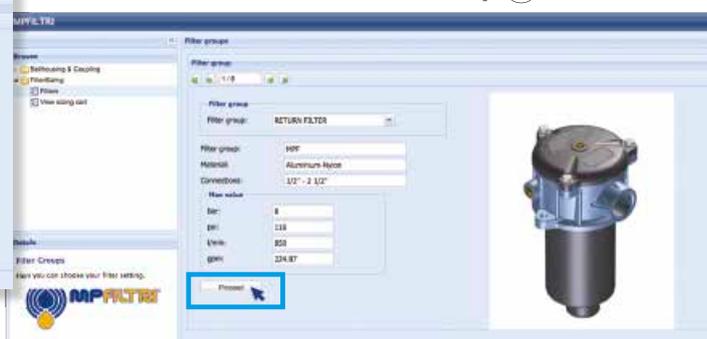
**Step 2** Choose filter group (Return Filter, Pressure Filter, etc.)



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



**Step 4** Push "PROCEED"



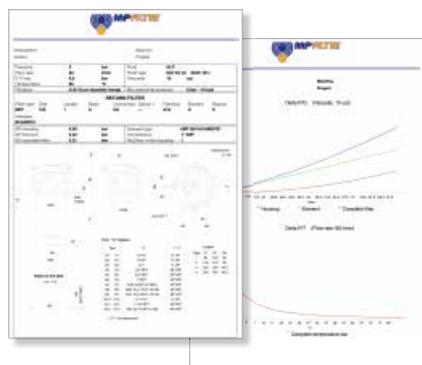
**Step 5**

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"



**Suction filters are used as safety filters to protect pumps from gross contamination which can cause them to grip.**

**They are available in 2 styles:**

- **Suction Strainer (STR, MPA, MPM)**
- **SF2 external filters, for mounting semi-immersed under the oil level**

**SF2 semi-immersed filters, which shut-off oil flow while the filter element is being replaced, replace the butterfly valves usually used for servicing hydraulic pumps.**

## FILTER SIZING

**For the proper corrective factor Y click [here](#).**

# Suction filters



STR & MPA - MPM	page 31
SF2 250 - 350	39
SF2 500	47
INDICATORS	57



# STR & MPA - MPM series

Flow rate up to 875 l/min



# STR & MPA-MPM GENERAL INFORMATION

## Description

## Technical data

### Suction filters

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

#### STR

STR is a range of suction strainers for protection of the downstream pump against the coarse contamination.

They are placed below the oil level directly connected to the suction line of the pump.

#### Available features:

- Female threaded connections up to 3", for a maximum flow rate of 875 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media

#### Common application:

- Mobile machines (Construction and Agriculture machines)
- Industrial equipment

#### MPA - MPM

MPA and MPM are ranges of suction strainers for protection of the downstream pump against the coarse contamination.

They are placed below the minimum oil level, directly connected to the suction line of the pump.

The robust design allows the use of these filters in any heavy duty application.

#### Available features:

- Female threaded connections up to 3", for a maximum flow rate of 875 l/min
- Magnetic column (MPM), to hold the ferrous particles

#### Common application:

Industrial equipment

#### 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.

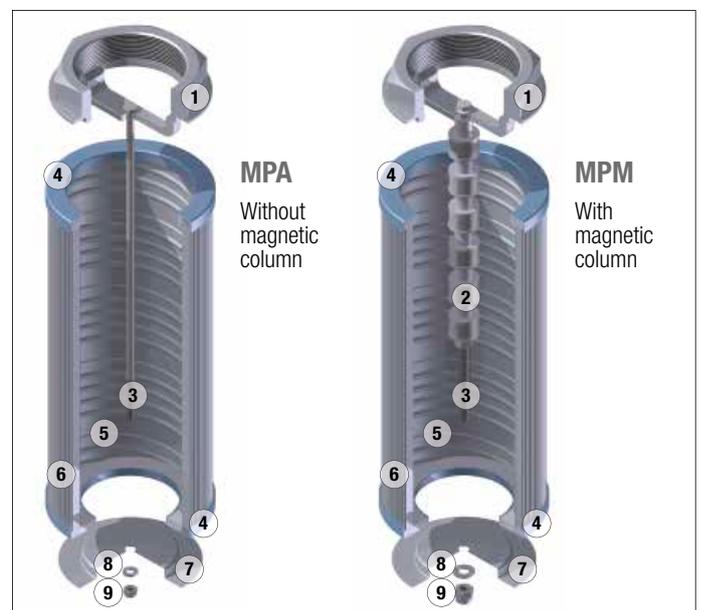


#### Temperature

From -25 °C to +110 °C

## Weights [kg]

Filter series	
STR	see page 35
MPA - MPM	see page 37



Filter series	Thread	l/min
<b>STR &amp; MPA - MPM</b>	3/8"	19
	1/2"	28
	3/4"	67
	1"	126
	1 1/4"	167
	1 1/2"	258
	2"	480
	2 1/2"	854
	3"	995

### Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

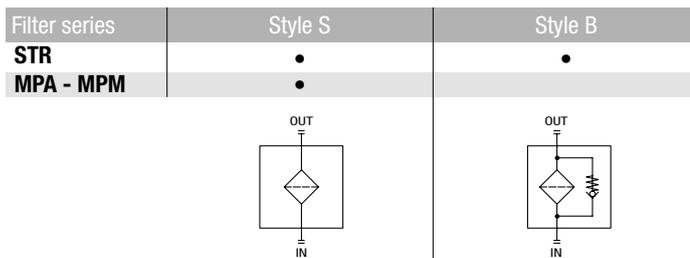
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.

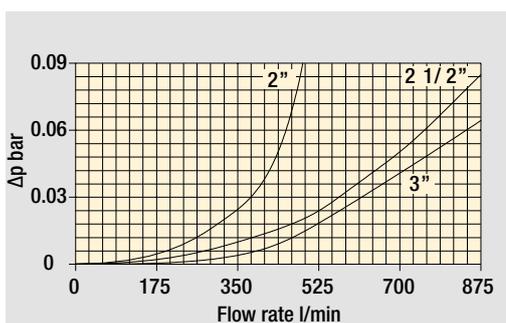
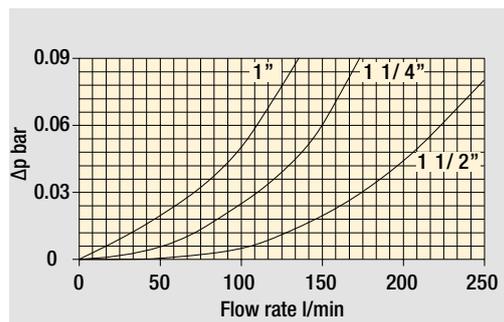
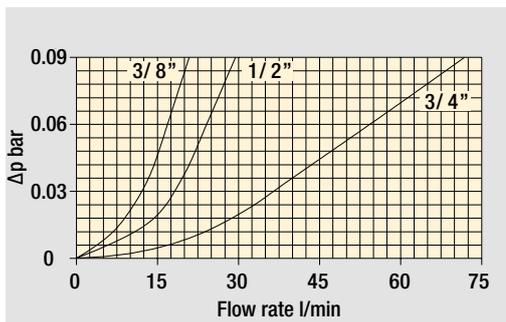
Please, contact our Sales Department for further additional information.

## Hydraulic symbols



## Pressure drop

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



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.

### 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 type

	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 0.3 bar

#### Thread 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

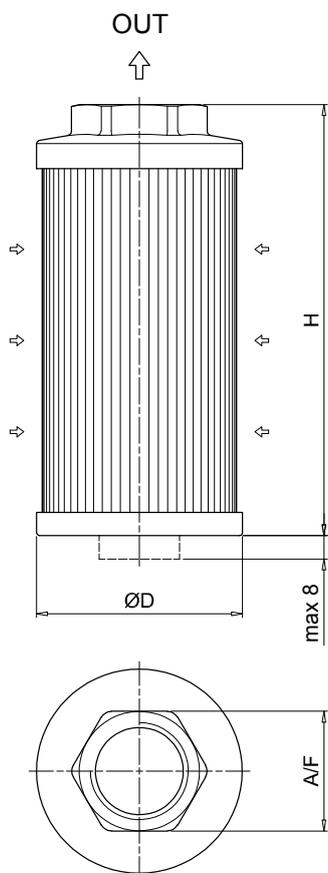
### OTHER INFORMATION

#### 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	Connection type	Thread	ØD [mm]	H [mm]	A / F [mm]	Weight [kg]
<b>045</b>	1	3/8"	46	105	30	0.15
	2	1/2"	46	105	30	0.19
<b>050</b>	1	3/8"	52	79	30	0.11
	2	1/2"	52	79	30	0.11
<b>065</b>	1	1/2"	65	110	41	0.19
	2	3/4"	65	110	41	0.22
	3	3/4"	65	144	41	0.24
<b>070</b>	4	1"	65	144	41	0.22
	1	1/2"	70	95	41	0.18
	2	3/4"	70	95	41	0.17
<b>086</b>	3	3/4"	70	141	41	0.23
	4	1"	70	141	41	0.22
	6	1/2"	70	141	41	0.24
	1	1 1/2"	86	143	69	0.33
<b>100</b>	2	2"	86	143	69	0.30
	3	1 1/2"	86	201	69	0.43
	4	2"	86	201	69	0.40
	5	1 1/2"	86	261	69	0.53
	6	2"	86	261	69	0.50
	1	1 1/4"	99	137	69	0.47
<b>140</b>	2	1 1/4"	99	227	69	0.58
	3	1 1/2"	99	227	69	0.55
	4	2"	99	227	69	0.51
	5	1 1/2"	99	137	69	0.43
	1	1 1/2"	130	160	69	0.70
<b>150</b>	2	2"	130	160	69	0.68
	3	2"	130	262	69	0.94
	4	2 1/2"	130	272	101	1.10
	5	3"	130	272	101	1.00
	6	3"	130	330	101	1.17
	1	2"	150	150	70	0.34
<b>150</b>	2	2 1/2"	150	212	90	0.37
	3	3"	150	272	100	0.40

# MPA-MPM

## Designation & Ordering code

### COMPLETE FILTER

Element series	
<b>MPA</b>	Without magnetic column
<b>MPM</b>	With magnetic column

Configuration example 1: 

MPA	030	G1	M60	P01
-----	-----	----	-----	-----

Configuration example 2: 

MPM	430	G2	M250	P01
-----	-----	----	------	-----

Connections	
<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"

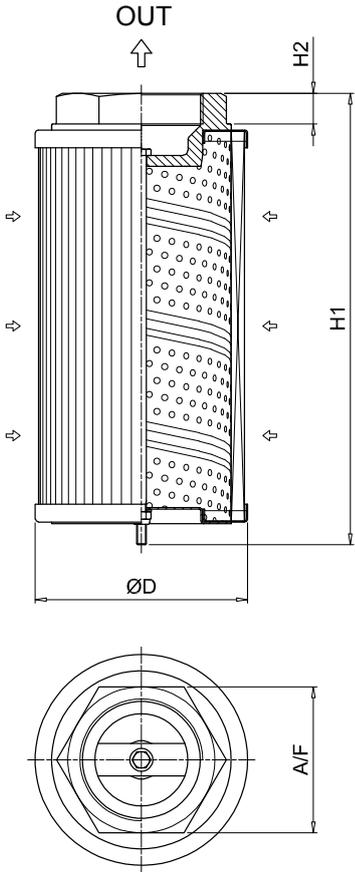
Thread type	
<b>G1</b>	Thread GAS
<b>G2</b>	Thread NPT

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

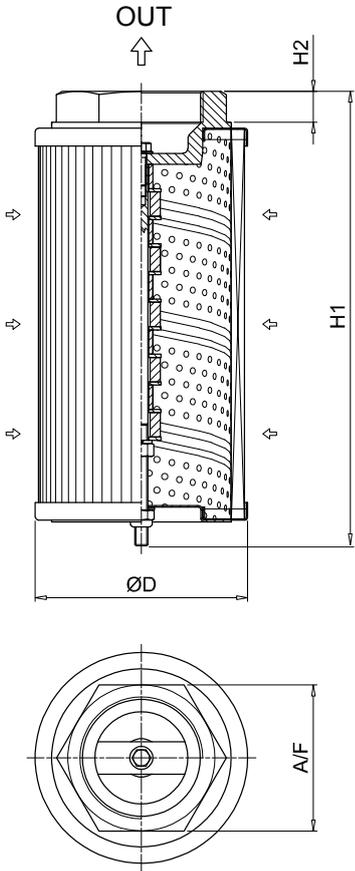
Execution	
<b>P01</b>	MP Filtri standard
<b>Pxx</b>	Customized

### 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	Thread	ØD [mm]	H1 [mm]	H2 [mm]	A/F [mm]	Weight [kg]
012	3/8"	50	98	16	28	0.17
015	1/2"	50	98	16	28	0.17
025	1/2"	70	113	16	28	0.27
030	3/4"	70	115	18	42	0.36
045	3/4"	70	160	18	42	0.39
050	1"	70	160	18	42	0.35
075	1"	99	145	18	42	0.54
095	1 1/4"	99	148	20	60	0.63
120	1 1/4"	99	239	20	60	0.95
150	1 1/2"	99	239	20	60	0.91
180	1 1/2"	130	174	20	60	0.98
220	2"	130	162	13	80	1.00
280	2"	130	272	13	80	1.60
300	2 1/2"	130	281	20	90	1.67
380	2"	130	322	13	80	1.60
430	3"	130	335	22	106	1.93



MPM						
Filter size	Thread	ØD [mm]	H1 [mm]	H2 [mm]	A/F [mm]	Weight [kg]
012	3/8"	50	98	16	28	0.17
015	1/2"	50	98	16	28	0.17
025	1/2"	70	113	16	28	0.27
030	3/4"	70	115	18	42	0.36
045	3/4"	70	160	18	42	0.39
050	1"	70	160	18	42	0.35
075	1"	99	148	18	42	0.54
095	1 1/4"	99	154	20	60	0.63
120	1 1/4"	99	244	20	60	0.95
150	1 1/2"	99	244	20	60	0.91
180	1 1/2"	130	174	20	60	0.98
220	2"	130	163	13	80	1.00
280	2"	130	273	13	80	1.60
300	2 1/2"	130	282	20	90	1.67
380	2"	130	323	13	80	1.60
430	3"	130	336	22	106	1.93



# SF2 250-350 series

Flow rate up to 160 l/min



# SF2 250-350 GENERAL INFORMATION

## Description

## Technical data

### Suction filters

#### Flow rate up to 160 l/min

SF2 250 and SF2 350 are ranges of suction filters with integrated shut-off valve for protection of the downstream pump against the coarse contamination.

They are placed below the minimum oil level, directly connected to the suction line of the pump.

They can be fitted on the side or below the tank, allowing a more flexible design of the tank.

The shut-off valve closes automatically when the cover is removed, allowing the filter element replacement without the fluid drop.

#### Available features:

- Female threaded connections up to 1" and flanged connections up to 1 1/2", for a maximum flow rate of 160 l/min
- Multiple connections, to connect several suction lines
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic column, to hold the ferrous particles
- Visual, electrical and electronic clogging indicators

#### Common application:

- Mobile machines
- Industrial equipment

### Filter housing materials

- Filter body: Aluminium
- Cover: Polyamide, GF reinforced
- Valve: Polyamide, GF reinforced - Steel
- Anti-Emptying valve: Steel

### Bypass valve

Opening pressure 30 kPa (0.3 bar)  $\pm 10\%$

### Elements

Fluid flow through the filter element from IN to OUT

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

SF2 250-350 filters mounting, see the drawings on page 43 and following.



## Weights [kg]

Filter series	
<b>SF2 250</b>	2.6
<b>SF2 350</b>	2.6

# GENERAL INFORMATION SF2 250-350

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Filter element design - N Series					
	M25	M60	M90	M250	P10	P25
SF2 250	147	151	155	160	85	132
SF2 350	147	151	155	160	85	132

## Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

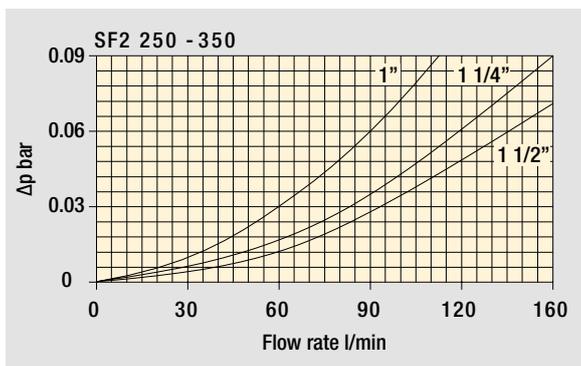
## Hydraulic symbols

Filter series	Style R - S		Style Q - H	
SF2 250	•	•	•	•
SF2 350	•	•	•	•

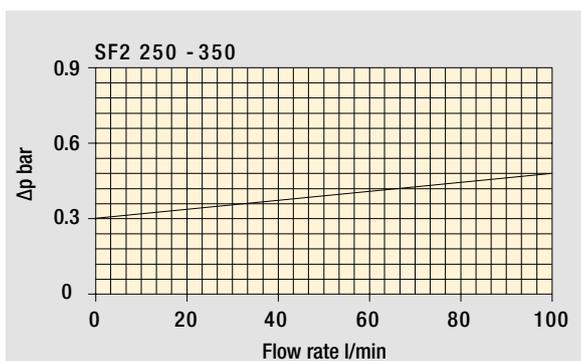
  

## Pressure drop

Filter housings  $\Delta p$  pressure drop



Bypass valve 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.

# SF2 250-350

## Designation & Ordering code

### COMPLETE FILTER

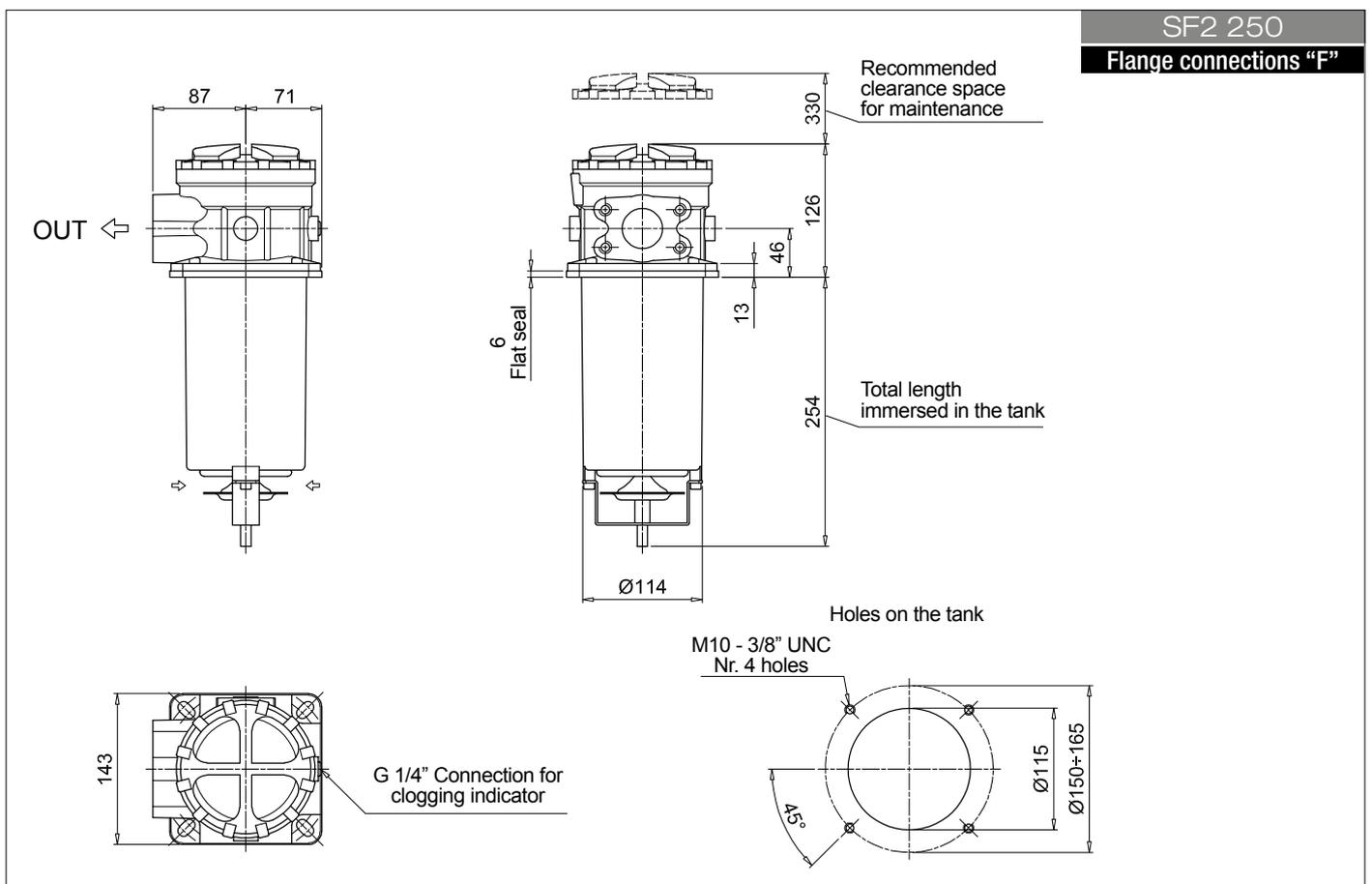
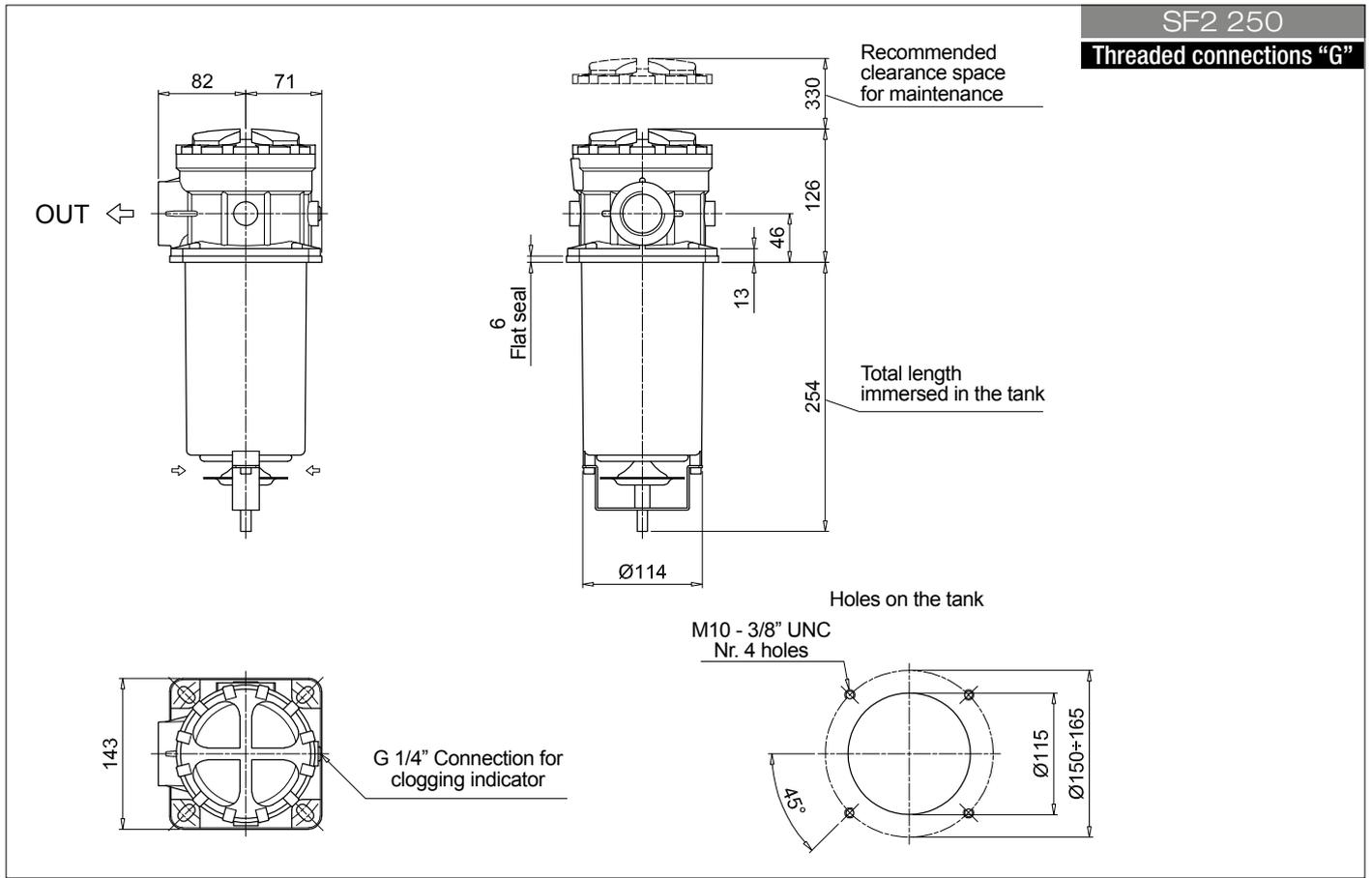
<b>Series and size</b>		Configuration example 1: <b>SF2250</b> <b>W</b> <b>F2</b> <b>R</b> <b>M25</b> <b>P01</b>					
<b>SF2250</b>		Configuration example 2: <b>SF2350</b> <b>A</b> <b>G1</b> <b>S</b> <b>M90</b> <b>P01</b>					
<b>SF2350</b>							
<b>Seals and treatments</b>		<b>Filtration rating</b>					
		<b>Mxx</b>	<b>Pxx</b>				
<b>A</b>	NBR	•	•				
<b>V</b>	FPM	•	•				
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC	•					
<b>Z</b>	FPM compatible with fluids HFA-HFB-HFC	•					
<b>Connections</b>		<b>Aux (only SF2350)</b>	<b>SF2250</b>	<b>SF2350</b>			
<b>G1</b>	G 1 1/2"	G 1"	•	•			
<b>G2</b>	1 1/2" NPT	-	•				
<b>G3</b>	SAE 24 - 1 7/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN	•	•			
<b>G4</b>	G 1 1/4"	-	•				
<b>G5</b>	1 1/4" NPT	-	•				
<b>G6</b>	SAE 20 - 1 5/8" - 12 UN	-	•				
<b>G7</b>	G 1"	-	•				
<b>G8</b>	1" NPT	-	•				
<b>G9</b>	SAE 16 - 1 5/16" - 12 UN	-	•				
<b>F1</b>	1 1/2" SAE 3000 psi/M	-	•				
<b>F2</b>	1 1/2" SAE 3000 psi/UNC	-	•				
<b>Bypass valve and magnetic column</b>							
<b>R</b>	With bypass, with magnetic column	<b>Q</b>	Without bypass, with magnetic column				
<b>S</b>	With bypass, without magnetic column	<b>H</b>	Without bypass, without magnetic column				
<b>Filtration rating (filter media)</b>							
<b>M25</b>	Wire mesh 25 µm	<b>P10</b>	Resin impregnated paper 10 µm				
<b>M60</b>	Wire mesh 60 µm	<b>P25</b>	Resin impregnated paper 25 µm				
<b>M90</b>	Wire mesh 90 µm						
<b>M250</b>	Wire mesh 250 µm						
				<b>Execution</b>			
				<b>P01</b> MP Filtri standard			
				<b>Pxx</b> Customized			

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>SF250</b> <b>M25</b> <b>W</b> <b>P01</b>			
<b>SF250</b>		Configuration example 2: <b>SF250</b> <b>M90</b> <b>N</b> <b>P01</b>			
<b>Filtration rating (filter media)</b>					
<b>M25</b>	Wire mesh 25 µm	<b>P10</b>	Resin impregnated paper 10 µm		
<b>M60</b>	Wire mesh 60 µm	<b>P25</b>	Resin impregnated paper 25 µm		
<b>M90</b>	Wire mesh 90 µm				
<b>M250</b>	Wire mesh 250 µm				
<b>Seals and treatments</b>		<b>Filtration rating</b>			
		<b>Mxx</b>	<b>Pxx</b>		
<b>N</b>	NBR	•	•		
<b>V</b>	FPM	•	•		
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC	•			
<b>Z</b>	FPM compatible with fluids HFA-HFB-HFC	•			
				<b>Execution</b>	
				<b>P01</b> MP Filtri standard	
				<b>Pxx</b> Customized	

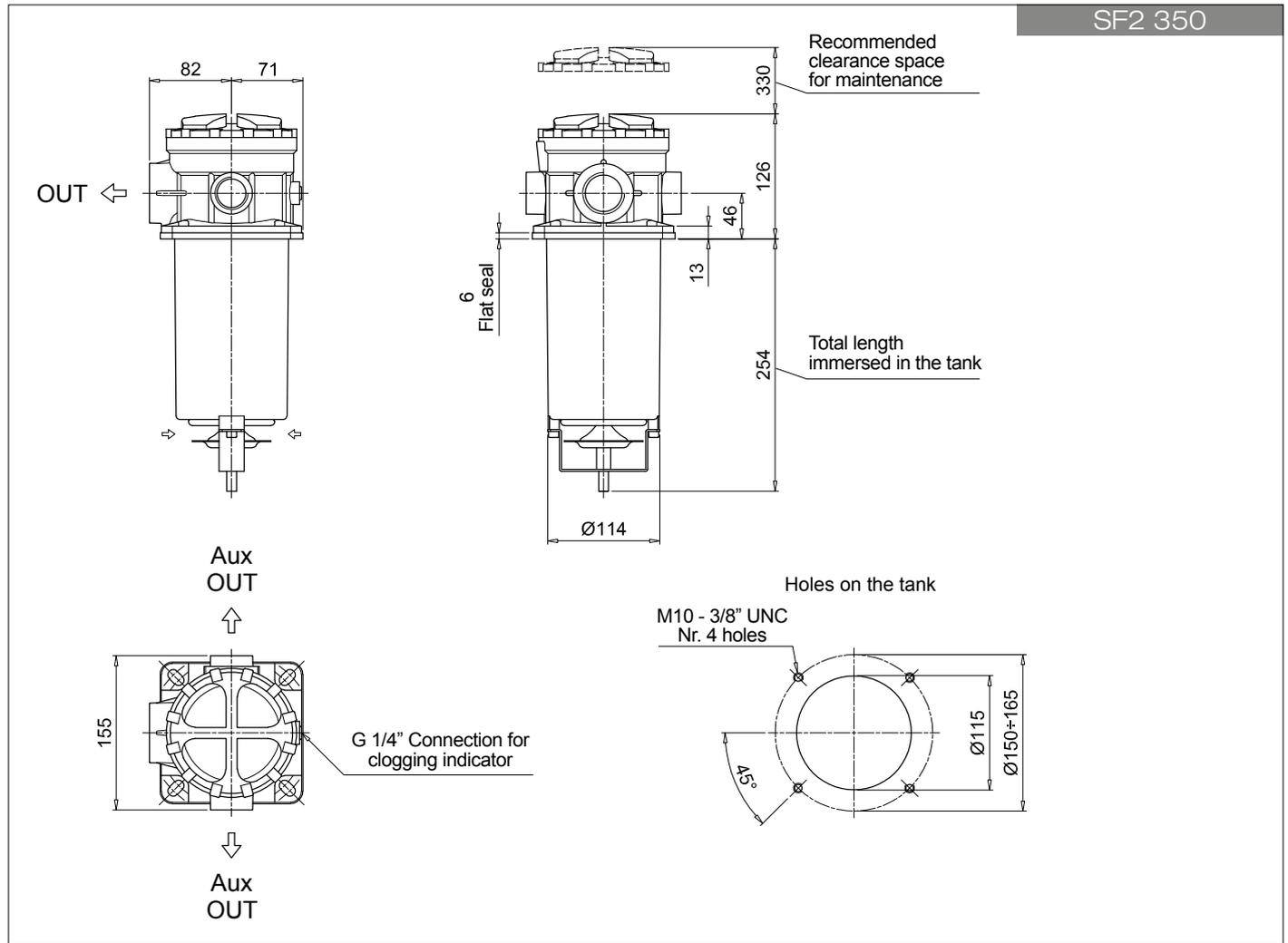
### ACCESSORIES

<b>Clogging indicators</b>		<b>page</b>
<b>VVA</b>	Axial vacuum gauge	59
<b>VVR</b>	Radial vacuum gauge	59
<b>VEA</b>	Electrical vacuum indicator	58
<b>VLA</b>	Electrical / visual vacuum indicator	58



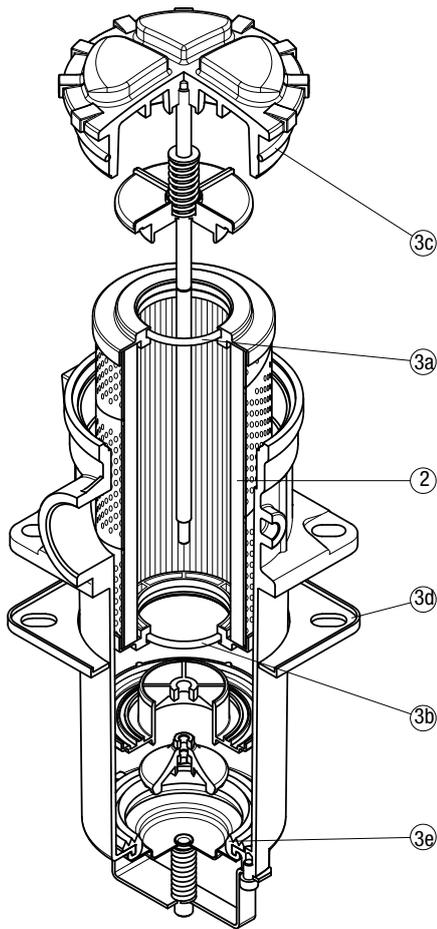
# SF2 250-350

## Dimensions



# SPARE PARTS SF2 250-350

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>SF2 250 - 350</b>	<b>2</b> See order table	<b>3</b> (3a ÷ 3e) 02050586	02050587



# SF2 500 series

Flow rate up to 800 l/min



# SF2 500 GENERAL INFORMATION

## Description

### Suction filters

#### Flow rate up to 800 l/min

SF2 500 is a range of suction filters with integrated shut-off valve for protection of the downstream pump against the coarse contamination. They are placed below the minimum oil level, directly connected to the suction line of the pump.

They can be fitted on the side or below the tank, allowing a more flexible design of the tank.

The shut-off valve closes automatically when the cover is removed, allowing the filter element replacement without the fluid drop.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 800 l/min
- Optional hose fitting installed, to connect the suction line without the use of flanges
- Magnetic column, to hold the ferrous particles
- Plastic and metal handle, to close the shut-off valve before the cover removal
- Electrical switch, to signal the closed shut-off valve
- Visual, electrical and electronic clogging indicators

#### Common application:

Industrial equipment

## Technical data

### Filter housing materials

- Housing:
  - Anodized Aluminium
  - Steel (chemical heat treatment): only for SF2 535 - 540
- Cover:
  - Anodized Aluminium
  - Steel (chemical heat treatment): only for SF2 535 - 540
- Optional flange:
  - Anodized Aluminium

### Elements

Fluid flow through the filter element from IN to OUT

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

SF2 500 filters mounting, see the drawings on page 51 and following



## Weights [kg]

Filter series	
<b>SF2 500-501</b>	4.0
<b>SF2 503</b>	4.8
<b>SF2 504</b>	5.8
<b>SF2 505</b>	6.0
<b>SF2 510</b>	7.2
<b>SF2 535</b>	17
<b>SF2 540</b>	19

Filter series	Filter element design - N Series	
	M25	M60 M90 M250
SF2 500	219	234
SF2 501	259	282
SF2 503	325	390
SF2 504	484	543
SF2 505	199	221
SF2 510	259	282
SF2 535	439	479
SF2 540	644	688

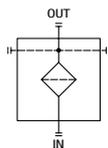
### Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

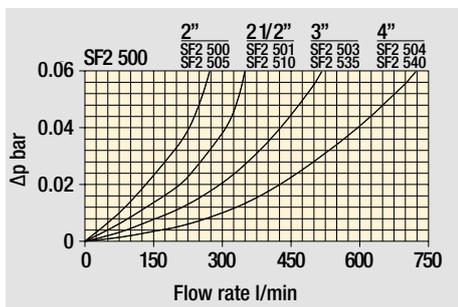
Filter series	
SF2 500	•



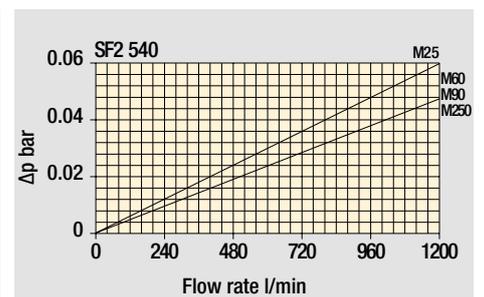
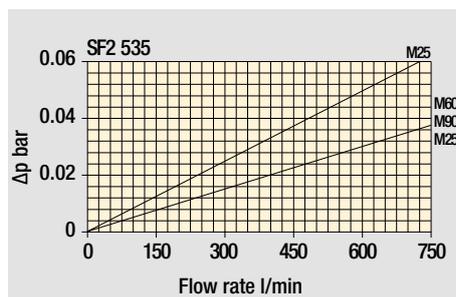
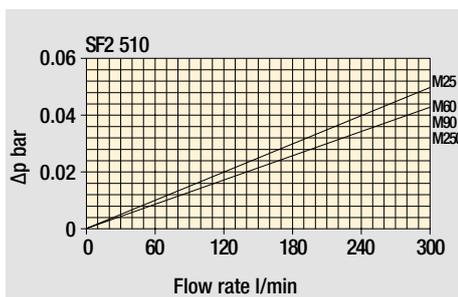
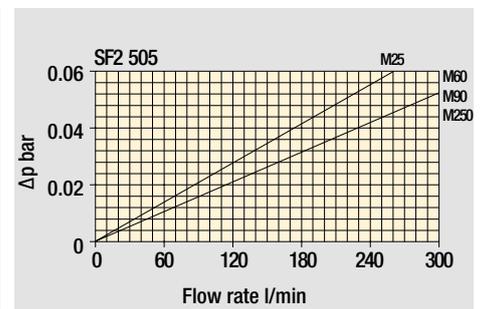
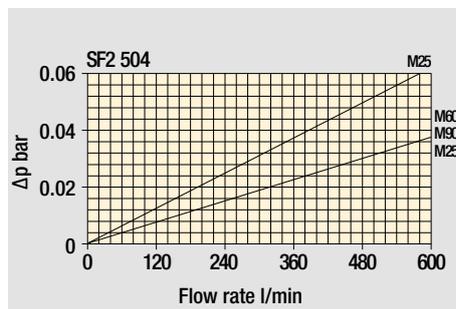
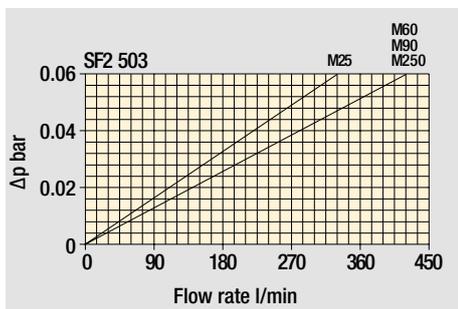
Hydraulic symbols

Pressure drop

Filter housings  $\Delta p$  pressure drop



Filter element  $\Delta p$  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.

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>SF2500</b> <b>W</b> <b>F1</b> <b>D</b> <b>M25</b> <b>P01</b>					
<b>SF2500</b>		Configuration example 2: <b>SF2535</b> <b>A</b> <b>F2</b> <b>C</b> <b>M60</b> <b>P01</b>					
<b>SF2501</b>							
<b>SF2503</b>							
<b>SF2504</b>							
<b>SF2505</b>							
<b>SF2510</b>							
<b>SF2535</b>							
<b>SF2540</b>							
<b>Seals and treatments</b>		Filtration rating					
		Mxx	Pxx				
<b>A</b>	NBR	•	•				
<b>V</b>	FPM	•	•				
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC	•					
<b>Z</b>	FPM compatible with fluids HFA-HFB-HFC	•					
<b>Connections</b>							
SF2500 - SF2505		SF2501 - SF2510		SF2503 - SF2535		SF2504 - SF2540	
<b>F1</b>	2" SAE 3000 psi/M	2 1/2" SAE 3000 psi/M	3" SAE 3000 psi/M	4" SAE 3000 psi/M			
<b>F2</b>	2" SAE 3000 psi/UNC	2 1/2" SAE 3000 psi/UNC	3" SAE 3000 psi/UNC	4" SAE 3000 psi/UNC			
<b>C1</b>	Hose barb 2"/M	Hose barb 2 1/2"/M	Hose barb 3"/M	Hose barb 4"/M			
<b>Microswitch and Handweel</b>							
		SF2500 - SF2501	SF2503 - SF2504	SF2505 - SF2510	SF2535 - SF2540		
<b>S</b>	Without microswitch, without handweel	•	•	•	•		
<b>C</b>	With microswitch, without handweel			•	•		
<b>D</b>	With microswitch, with Nylon handweel	•	•				
<b>K</b>	With microswitch, with steel handweel	•	•				
<b>M</b>	Without microswitch, with Nylon handweel	•	•				
<b>Filtration rating (filter media)</b>							
<b>M25</b>	Wire mesh 25 µm	<b>M90</b>	Wire mesh 90 µm				
<b>M60</b>	Wire mesh 60 µm	<b>M250</b>	Wire mesh 250 µm				

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

### FILTER ELEMENT

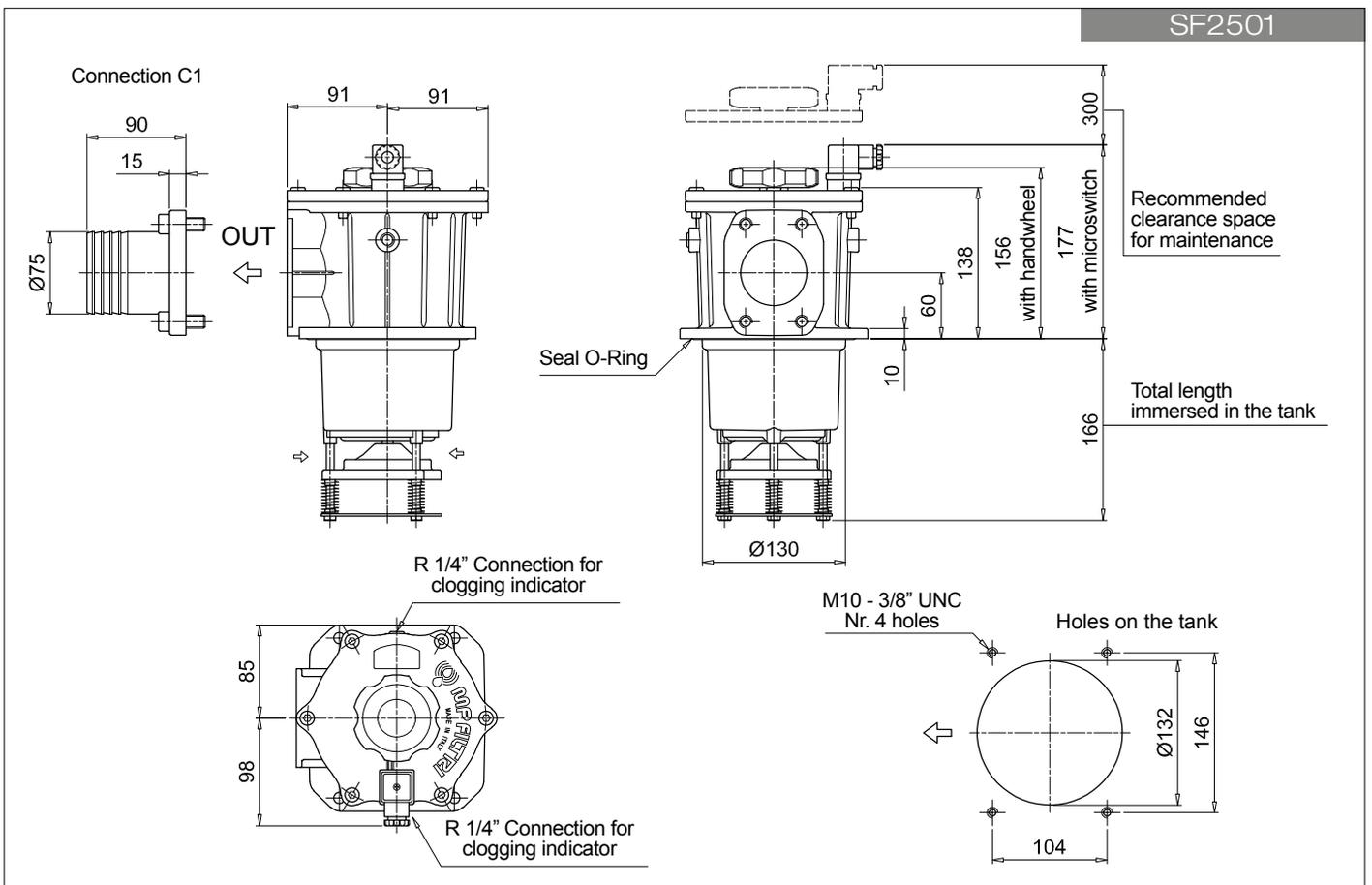
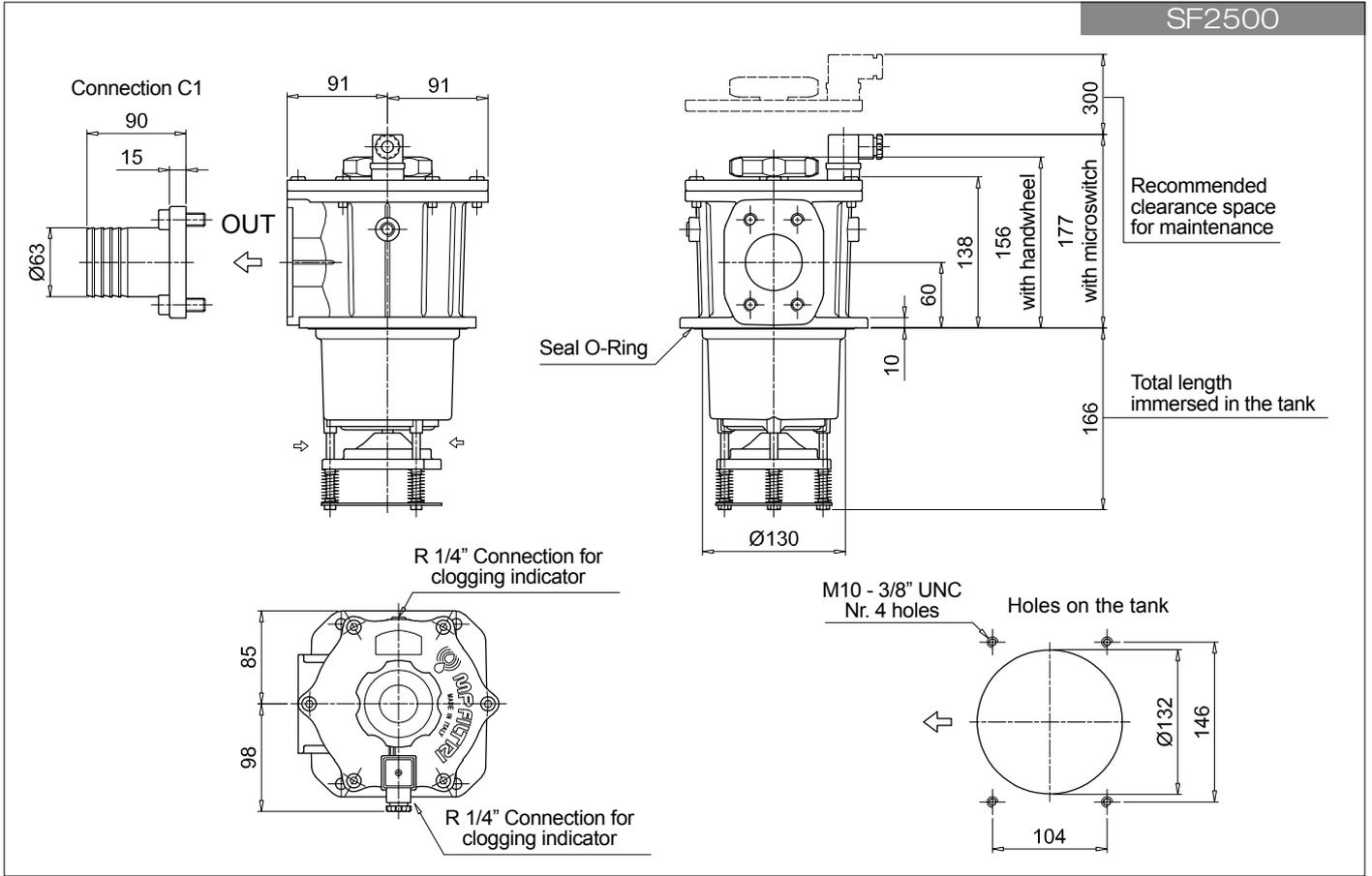
<b>Element series and size</b>								Configuration example 1: <b>SF510</b> <b>M25</b> <b>W</b> <b>P01</b>				
								Configuration example 2: <b>SF535</b> <b>M60</b> <b></b> <b>P01</b>				
	SF2500	SF2501	SF2503	SF2504	SF2505	SF2510	SF2535	SF2540				
<b>SF503</b>			•									
<b>SF504</b>				•								
<b>SF505</b>					•							
<b>SF510</b>	•	•				•						
<b>SF535</b>							•					
<b>SF540</b>								•				
<b>Filtration rating (filter media)</b>												
<b>M25</b>	Wire mesh 25 µm	<b>M90</b>	Wire mesh 90 µm									
<b>M60</b>	Wire mesh 60 µm	<b>M250</b>	Wire mesh 250 µm									

<b>Seals and treatments</b>		Filtration rating	
		Mxx	Pxx
Standard version		•	•
<b>W</b>	Compatible with fluids HFA-HFB-HFC	•	

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

### ACCESSORIES

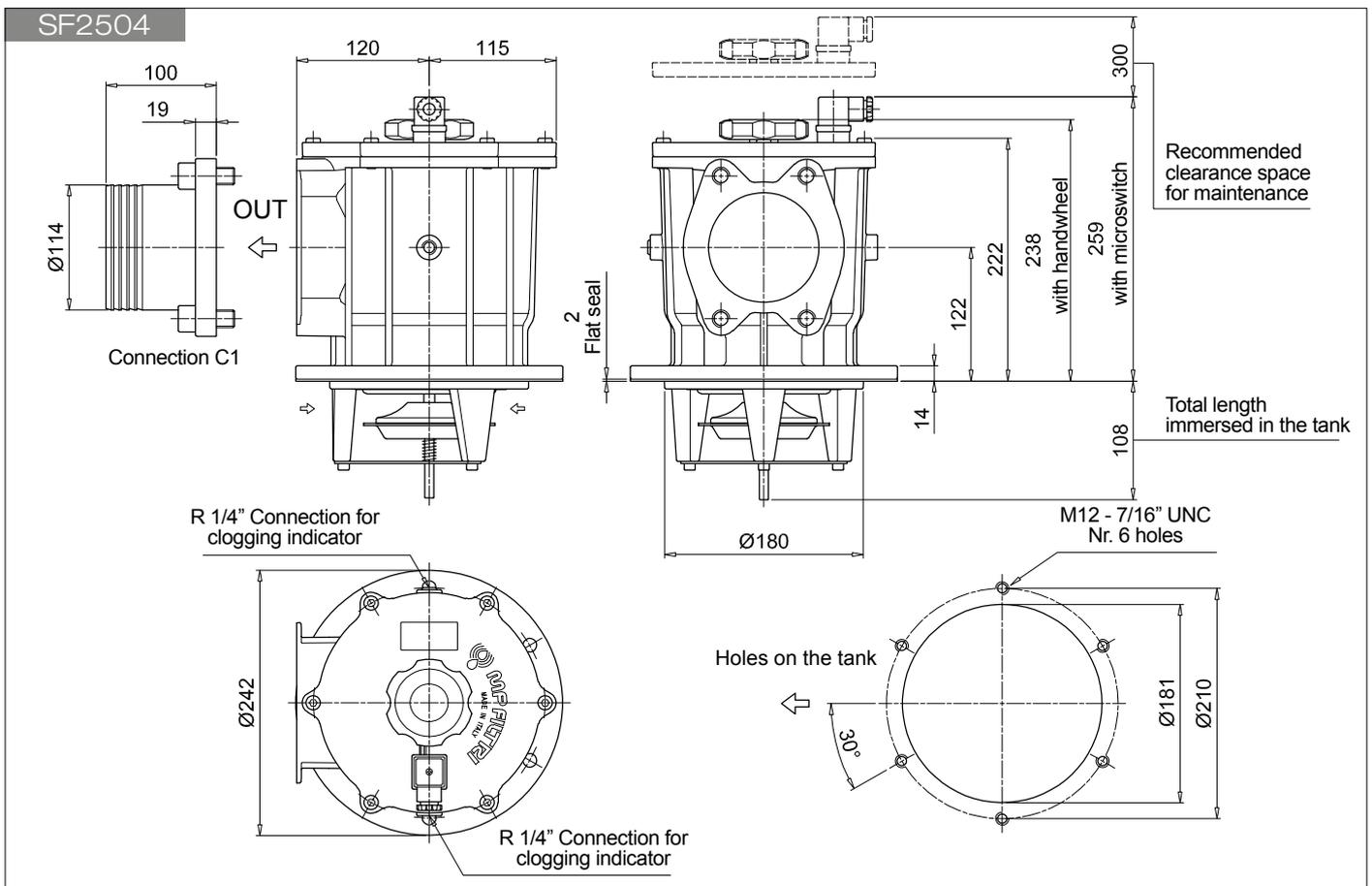
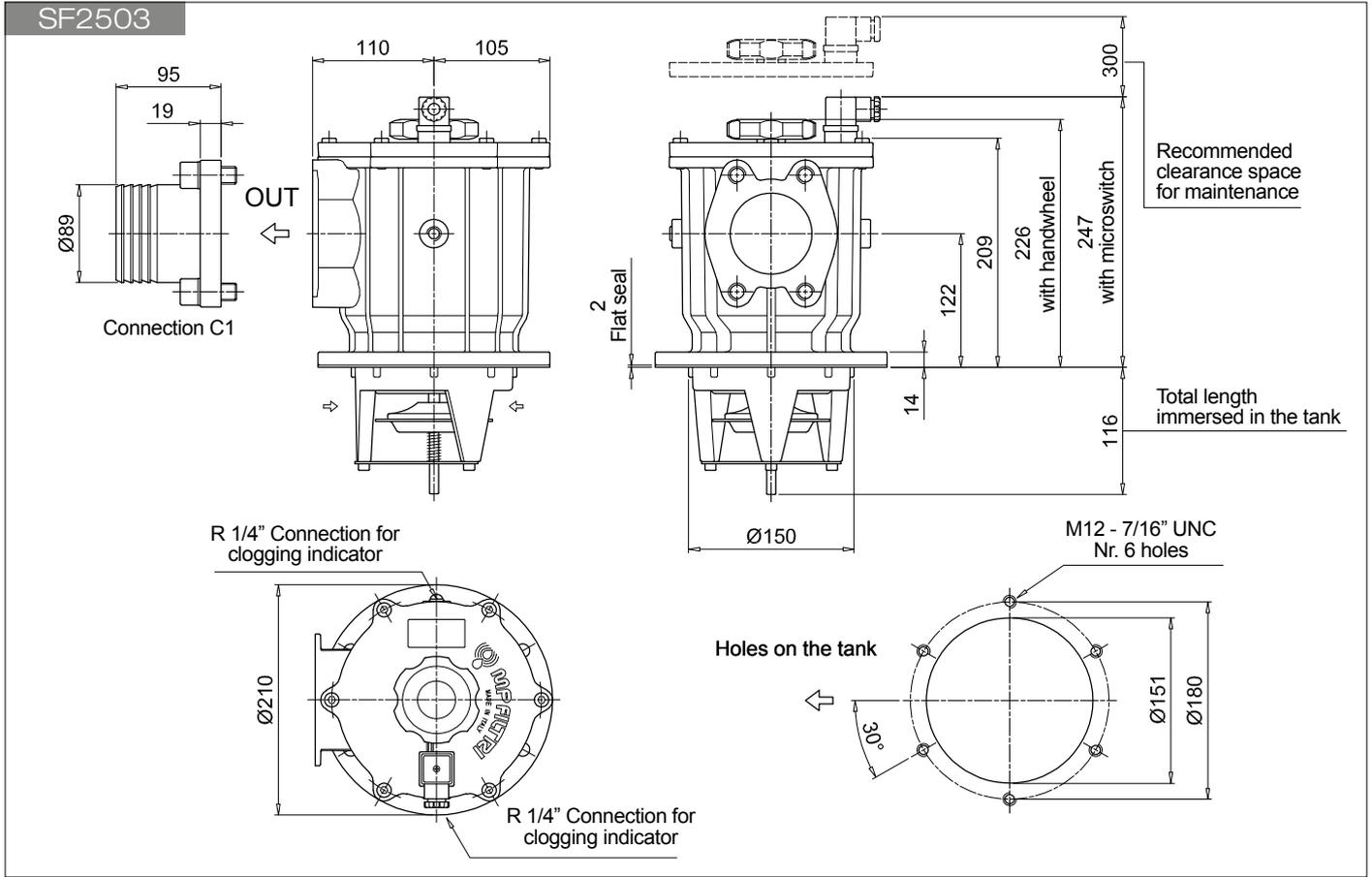
<b>Clogging indicators</b>		page
<b>VVA</b>	Axial vacuum gauge	59
<b>VVR</b>	Radial vacuum gauge	59
<b>VEA</b>	Electrical vacuum indicator	58
<b>VLA</b>	Electrical / visual vacuum indicator	58



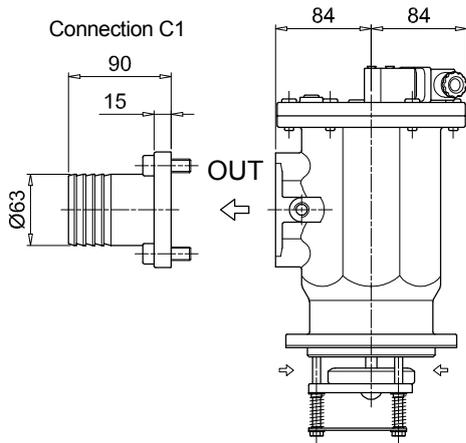
# SF2 500

SF2500 - SF2501 - SF2503 - SF2504 - SF2505 - SF2510 - SF2535 - SF2540

## Dimensions



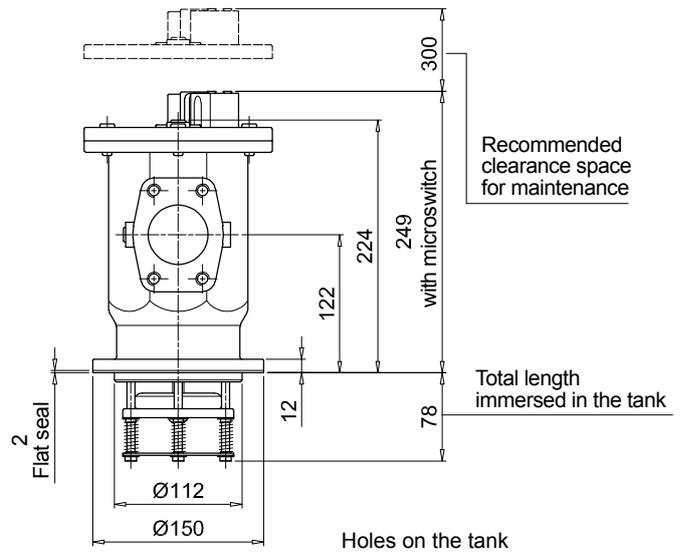
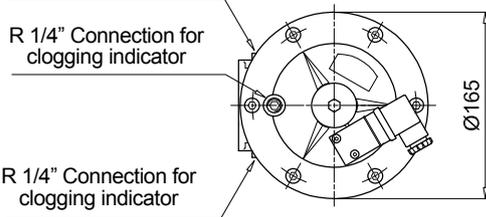
SF2505



R 1/4" Connection for clogging indicator

R 1/4" Connection for clogging indicator

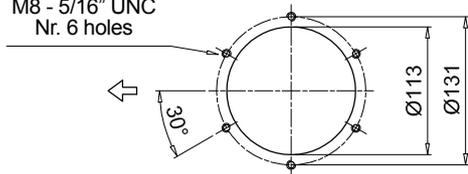
R 1/4" Connection for clogging indicator



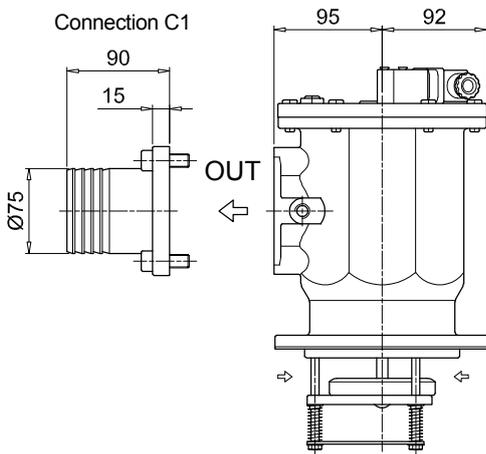
Recommended clearance space for maintenance

Total length immersed in the tank

M8 - 5/16" UNC  
Nr. 6 holes



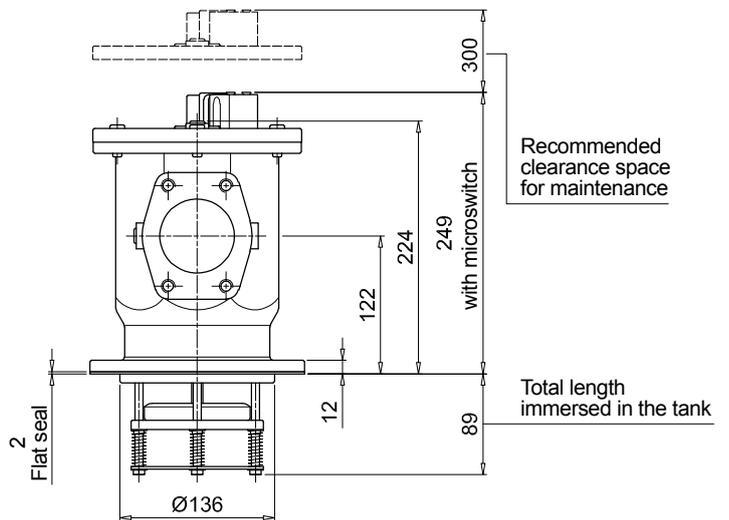
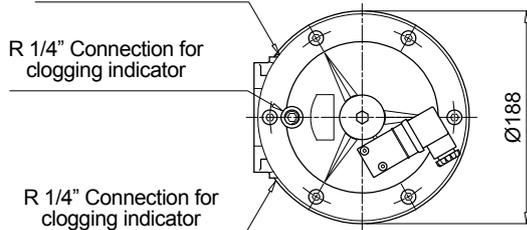
SF2510



R 1/4" Connection for clogging indicator

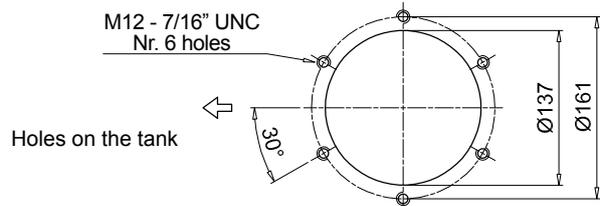
R 1/4" Connection for clogging indicator

R 1/4" Connection for clogging indicator



Recommended clearance space for maintenance

M12 - 7/16" UNC  
Nr. 6 holes

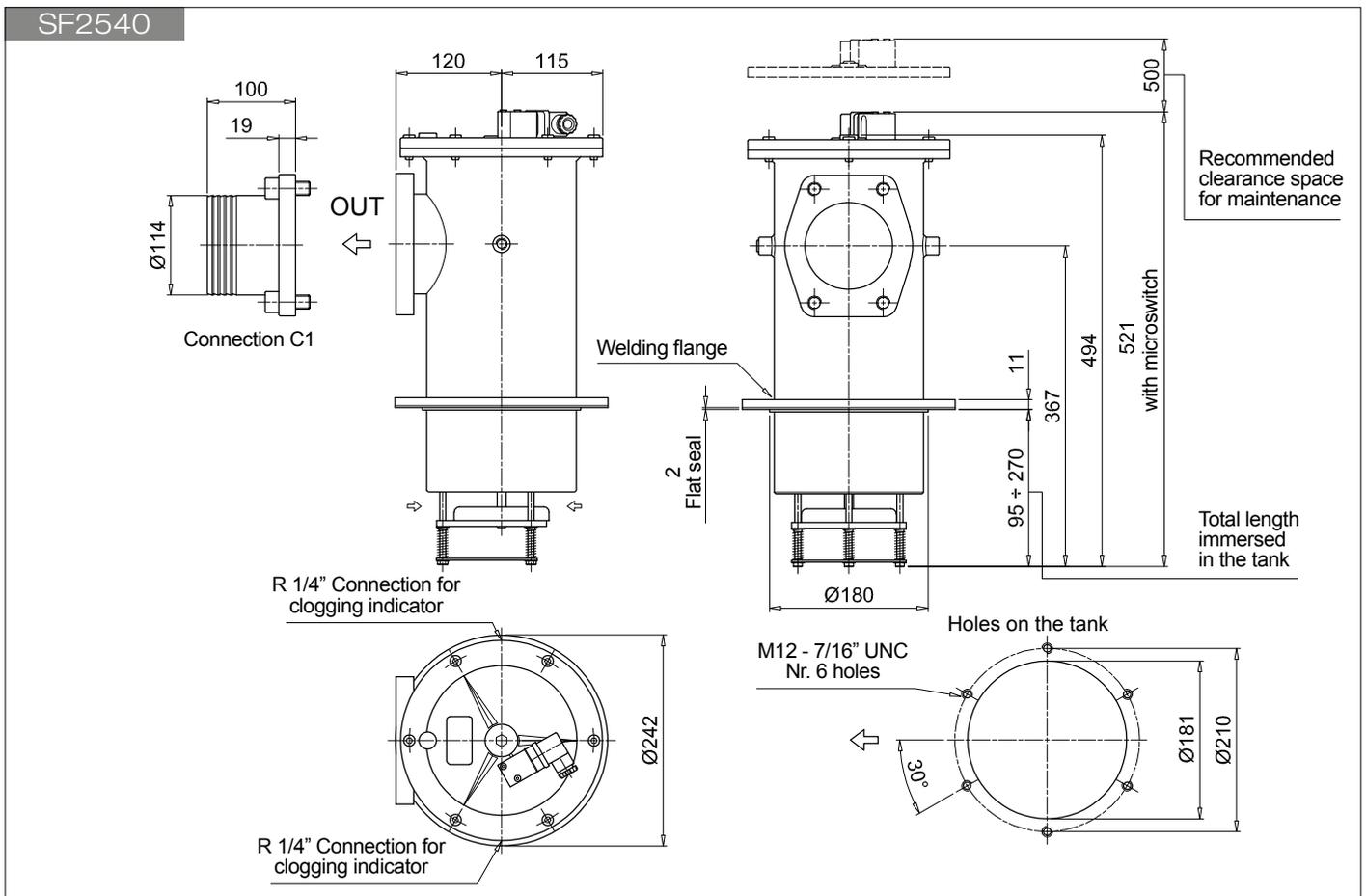
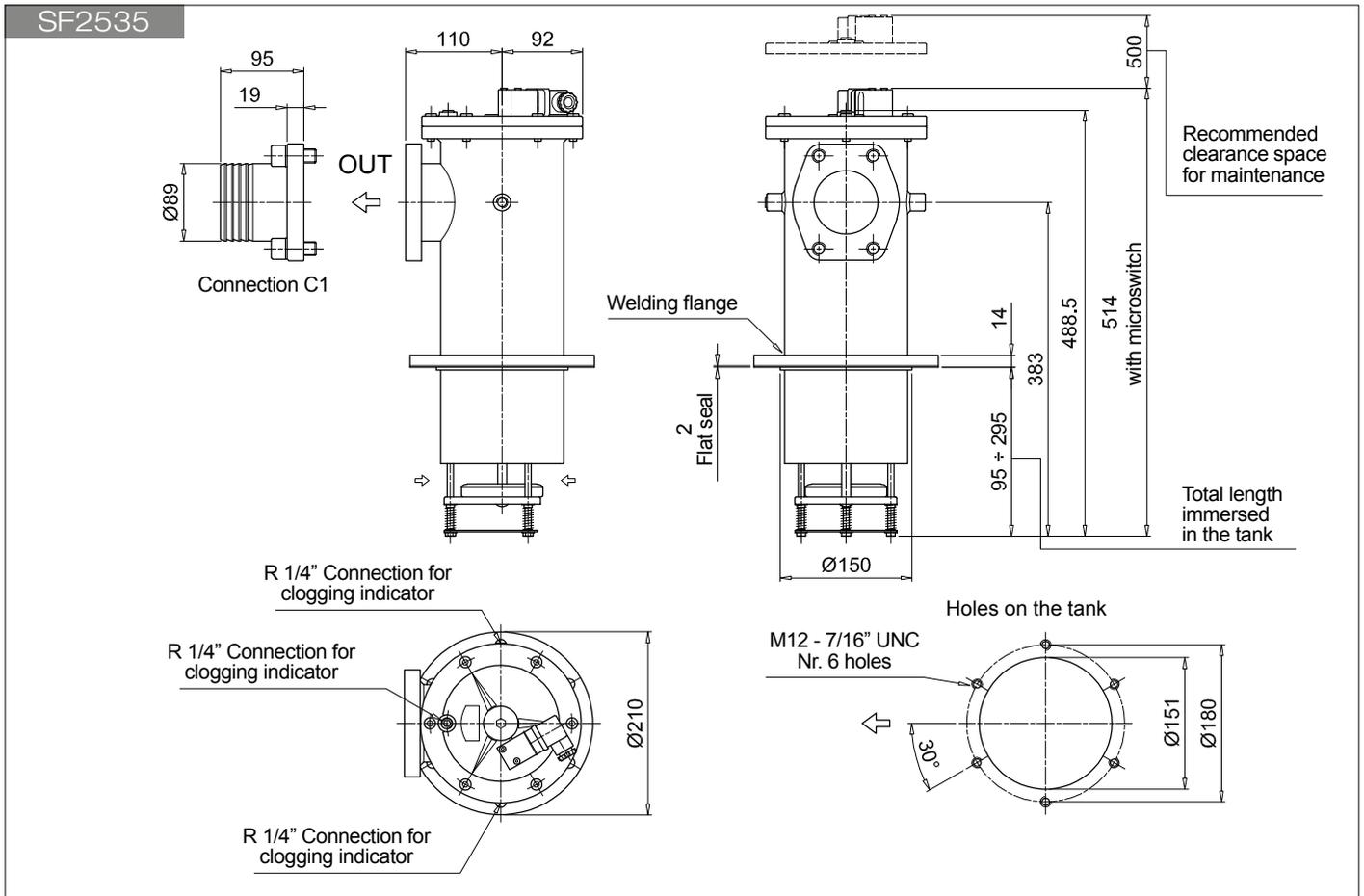


Holes on the tank

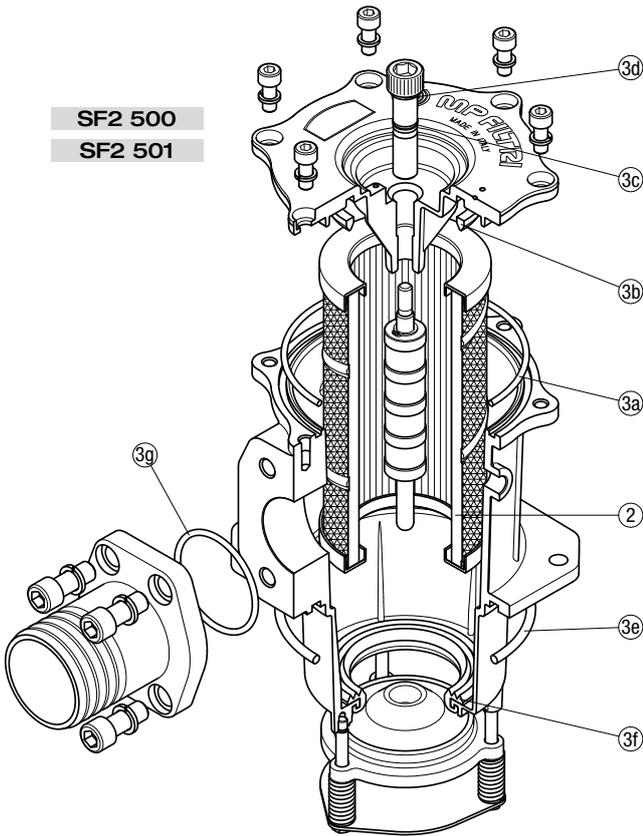
# SF2 500

SF2500 - SF2501 - SF2503 - SF2504 - SF2505 - SF2510 - SF2535 - SF2540

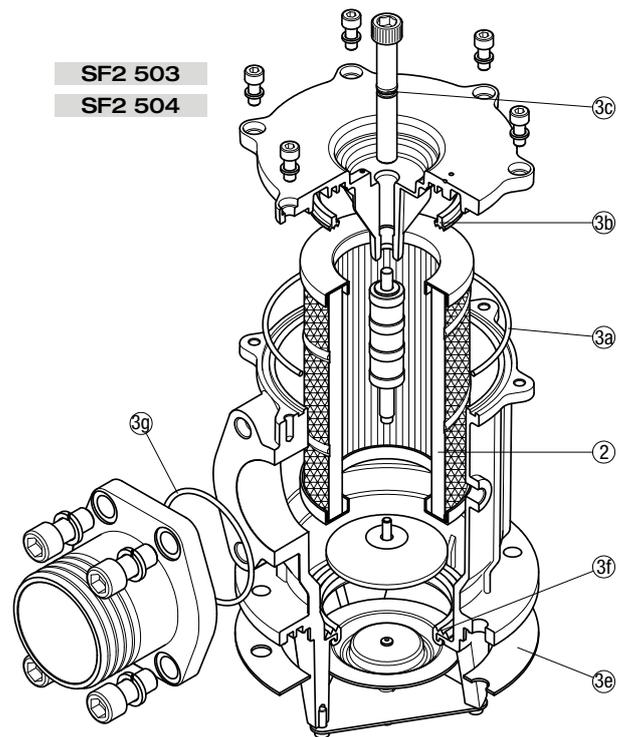
## Dimensions



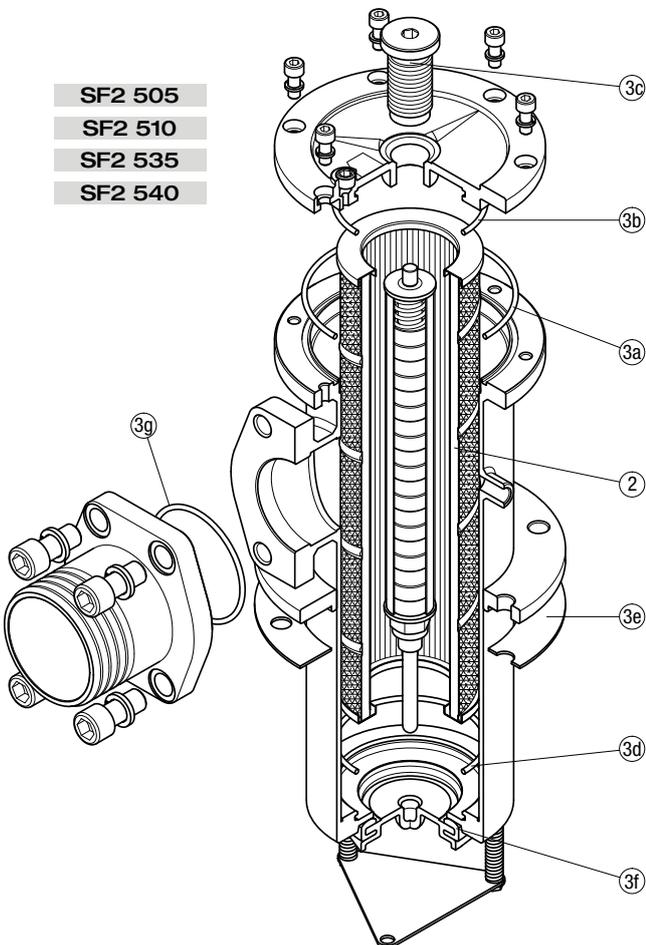
SF2 500  
SF2 501



SF2 503  
SF2 504



SF2 505  
SF2 510  
SF2 535  
SF2 540



Item:	Q.ty: 1 pc.		
	2	3 (3a = 3g)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
SF2 500	See order table	02050141	02050142
SF2 501		02050143	02050144
SF2 503		02050070	02050071
SF2 504		02050072	02050073
SF2 505		02050043	02050044
SF2 510		02050045	02050046
SF2 535		02050051	02050052
SF2 540		02050053	02050054



# Clogging indicators

## Vacuum indicators

### Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

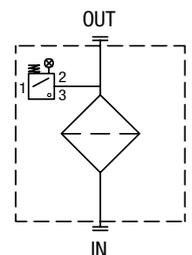
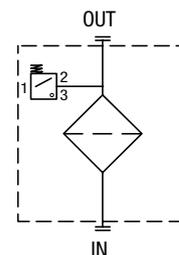
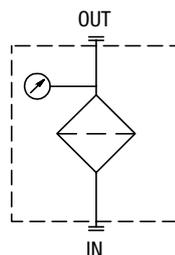
The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply vacuum indicators with a visual, electrical or both signals.

### Suitable indicator types

#### VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficiency of the filter element. They measure the pressure downstream of the filter element. Standard items are produced with R 1/4" EN 10226 connection.



### Quick reference guide

Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator
SF2 250 - 350	VVA16P01		VLA21AA51P01
SF2 500 - 501 - 503 - 504 - 505	VVR16P01	VEA21AA50P01	VLA21AA52P01
SF2 510 - 535 - 540			VLA21AA53P01
			VLA21AA71P01





**Clogging indicators are devices that check the life time of the filter elements. They measure the pressure drop through the filter element directly connected to the filter housing.**

**These devices trip when the clogging of the filter element causes a pressure drop increasing across the filter element.**

**Filter elements are efficient only if their Dirt Holding Capacity is fully exploited.**

**This is achieved by using filter housings equipped with clogging indicators.**

**The indicator is set to alarm before the element becomes fully clogged.**

**MP Filtri can supply indicators of the following designs:**

- Vacuum switches and gauges**
- Pressure switches and gauges**
- Differential pressure indicators**

**These type of devices can be provided with a visual, electrical or both signals.**

**The electronic differential pressure clogging indicator is also available.**

**It provides both analogical 4-20 mA output and digital warning (75% of clogging) and alarm (clogging) outputs.**

# Clogging Indicators



# Clogging indicators



## Suitable indicator types

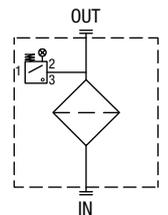
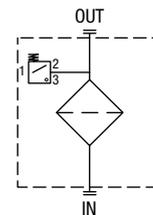
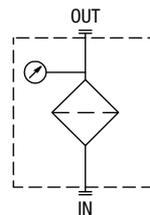
### VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficiency of the filter element.

They measure the pressure downstream of the filter element.

Standard items are produced with R 1/4" EN 10226 connection.

Available products with R 1/8" EN 10226 to be fitted on MPS series.

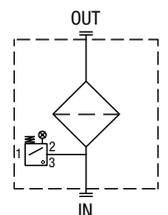
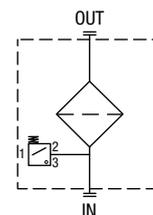
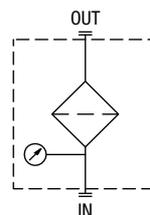


### BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficiency of the filter element.

They measure the pressure upstream of the filter element.

Standard items are produced with R 1/8" EN 10226 connection.



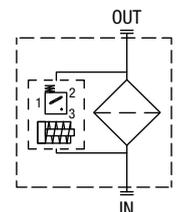
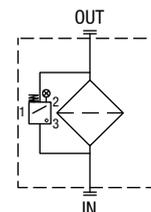
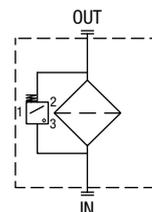
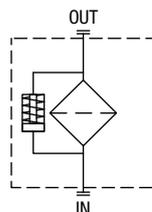
### DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficiency of the filter element.

They measure the pressure upstream and downstream of the filter element (differential pressure).

Standard items are produced with special connection G 1/2" size.

Also available in Stainless Steel models.



Filter family	Filter series	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Visual indicator
SUCTION FILTERS	ELIXIR® SFEX060-080-110-160	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01		VVA16P01 VVR16P01
RETURN FILTERS	With bypass valve ELIXIR® RFEX060-080-110-160	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01
	Without bypass valve ELIXIR® RFEX060-080-110-160	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
	With bypass valve MPFX-MPTX-MPF-MPT - bypass 1.75 bar MPH - bypass 1.75 bar RF2250 - RF2350 - bypass 1.75 bar	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01
	With bypass valve MPFX-MPTX-MPF-MPT - bypass 3 bar MPH - bypass 2.5 bar FRI 255 RF2250 - RF2350 - bypass 3 bar	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
MPLX FRI 025 - 040 - 100 - 250 - 630 - 850	DEA20xA50P01 DEM20xA10P01 DEM20xA20P01 DEM20xA30P01 DEM20xA35P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	DVA20xP01 DVM20xP01	
RETURN / SUCTION FILTERS	Suction line MRSX 116 - 165 - 166	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	Return line MRSX 116 - 165 - 166 LMP 124 MULTIPORT	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
SPIN-ON FILTERS	Suction line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	Return line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01
	In-line MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DLE20xF50P01 DLE20xF50P01	DTA12xA70P01 DTA12xF70P01 DTA20xA70P01 DTA20xF70P01	DVA12xP01 DVM12xP01

Filter family	Filter series	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Visual indicator	Hazardous area electronic indicator 		
LOW & MEDIUM PRESSURE FILTERS	With bypass valve	ELIXIR® LFEX060-080-110-160	DES25HA10P01 DES25HA30P01 DES25HA80P01			DVS25HP01		
	Without bypass valve	ELIXIR® LFEX060-080-110-160	DES40HA10P01 DES40HA30P01 DES40HA80P01			DVS40HP01		
		LMP 110 - 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP				DVS25HP01 DVS40HP01		
	With bypass valve	LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	DVA20xP01 DVM20xP01		
	Without bypass valve	LMP 110 - 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DVA50xP01 DVM50xP01		
	HIGH PRESSURE FILTERS	With bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 065 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DVA50xP01 DVM50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
		Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 065 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DEA70xA50P01 DEM70xAxxP01 DEA95xA50P01 DEM95xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01 DLA95xA51P01 DLA95xA52P01 DLE95xA50P01 DLE95xF50P01	DTA70xF70P01 DTA95xF70P01	DVA70xP01 DVM70xP01 DVA95xP01 DVM95xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
		With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01		DVX50xP01 DZY50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
			Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DEX70xA50P01 DEX95xA50P01	DLX70xA51P01 DLX70xA52P01 DLX95xA51P01		DVX70xP01 DZY70xP01 DZY95xP01

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